SEMIKRON
innovation + service

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2018.10

Power Electronics

CATALOGUE

Application Expertise is Our Strength

Helping your business use our products

Being able to access service, technical support and experts that our customers can always rely on is instrumental to our customers' success.

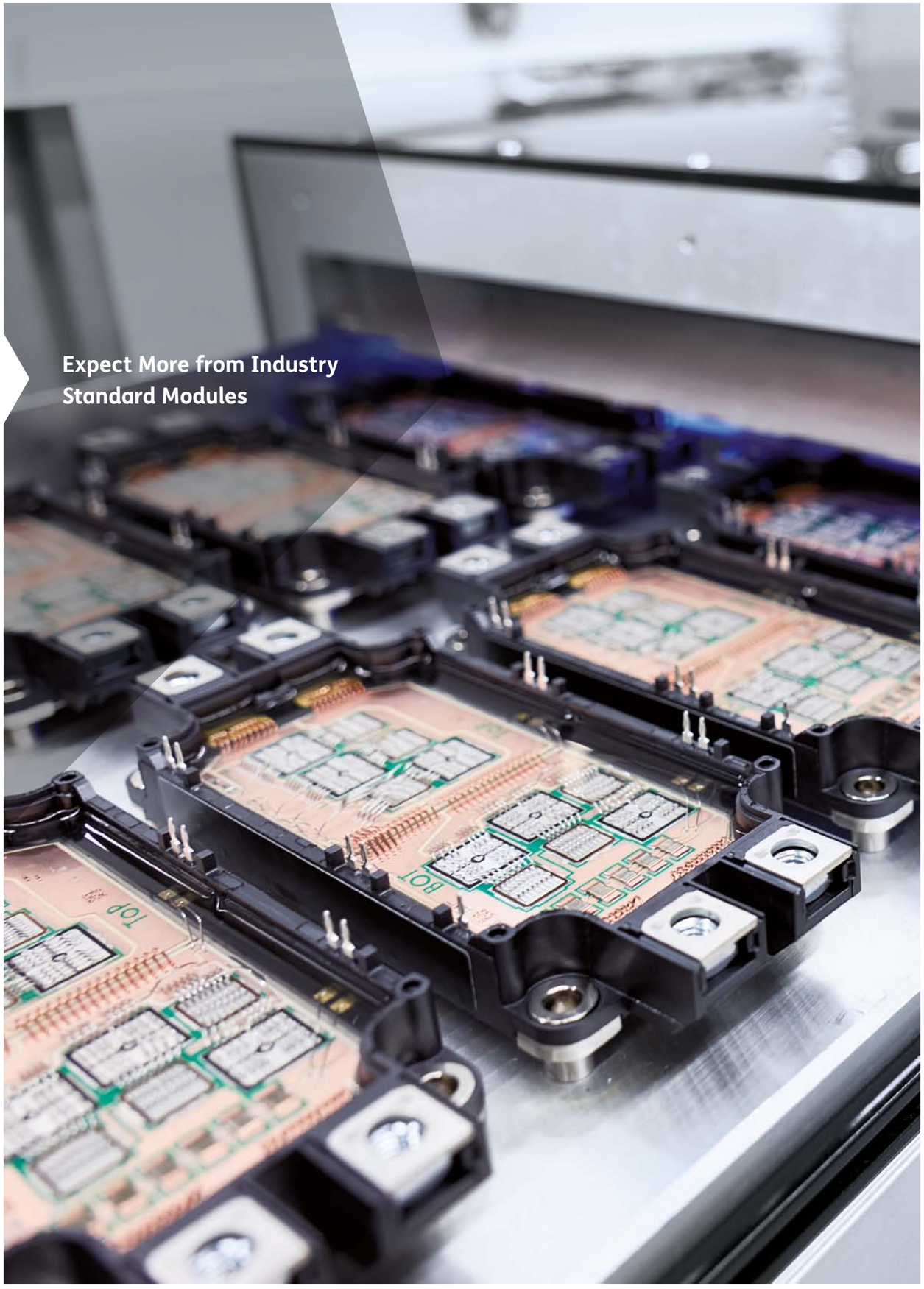
Today, increased product diversity in power semiconductors calls for customer support far beyond the information contained in data sheets. Only comparison under application-specific conditions – such as voltage, switching frequency or cooling conditions – can demonstrate the differences in performance of available devices. That's why we continue to invest in our professional application engineering support, including lab space and reference designs.

In recent years, we have built a network comprising 25 sites across the globe to provide fast, comprehensive application support. Our application engineering teams work both locally and globally with our customers throughout the entire project life cycle. We strive to understand and help our customers overcome both big and small challenges throughout their projects. For example, we conduct circuit topology studies to fully understand the advantages in the end user application and carry out benchmark investigations when needed. It is this „application-centred" approach that sets us apart from others.

How can SEMIKRON's Application Team help you with inverter design?

- Heatsink selection and TIM application
- DC link design and capacitor selection
- Isolation coordination
- Lifetime calculations
- Measurement support
- Application samples and reference designs

www.semikron.com/semisel



Expect More from Industry Standard Modules

Increased production capacity

Industry standard power modules are the key to supply chain safety. With increased production capacities, SEMIKRON can ensure it‘s on track to meet present and future demands. Being compatible on the one hand, SEMIKRON standard modules even exceed these requirements on the other hand.

At the same time power densities and reliability requirements are constantly increasing. The SEMIKRON technology portfolio of sintering and wire-bonding technologies takes output power capability and reliability to new levels. Module-integrated current measurement shunts, plug & play drivers and pre-applied thermal interface materials with superior performance reduce the system parts count and development times, cutting system costs and time-to-market.

Demand for industry standard modules has risen sharply in recent years owing to their wide range of applications. For this reason, we have already begun to expand our production lines for SEMIX5 and SEMIX3p by doubling the production capacity. An additional fully automated production line is also in the pipeline for MiniSKiiP, increasing volume output by 50%. SEMIKRON is and remains your reliable partner, supplying everything you need from a one-stop shop.

www.semikron.com/video/miniskiip

Investing in the Future

Large-scale production facilities for sintered products

In 2017, to facilitate the expansion of production capacities, SEMIKRON built a state-of-the-art production and office building with a gross usable surface area of some 12,000m². The 73,000m³ of enclosed space equates to the volume of approximately 125 terraced houses. Production is scheduled to start in the first half of 2019.

The clean rooms built during the building project at the Nuremberg site guarantee the large-scale automated production of sintered products and meet the high requirements associated with the production environment. The technical installations are rather impressive: for example, the filters installed in the clean room ceiling filter and recirculate approximately 200,000m³ of air per hour (the equivalent of 10 million balloons). The air-treatment systems heat, cool, humidify and dehumidify 140,000m³ of air every hour, the same amount that a single person breathes in 40 years.

The Research and Development department at SEMIKRON has been evaluating and further developing sinter technology since the start of the 1990s. Today, sinter technology is already used in the production of a number of products and has demonstrated its highly promising potential in a range of special applications.

The new production facilities will allow us to position the company in the future fields and growth areas of industrial drive technology, renewable energy and electromobility. Compared with conventional soldering technology, silver sinter technology offers greater long-term reliability at high operating temperatures and improved heat dissipation from the chips.

New Large-scale production facilities for sintered products
- Total surface area of production and office building: approx. 12,000m²
- Enclosed space: 73,000m³
- Clean room ISO 6
- Clean room ISO 8

Power Electronic Stacks

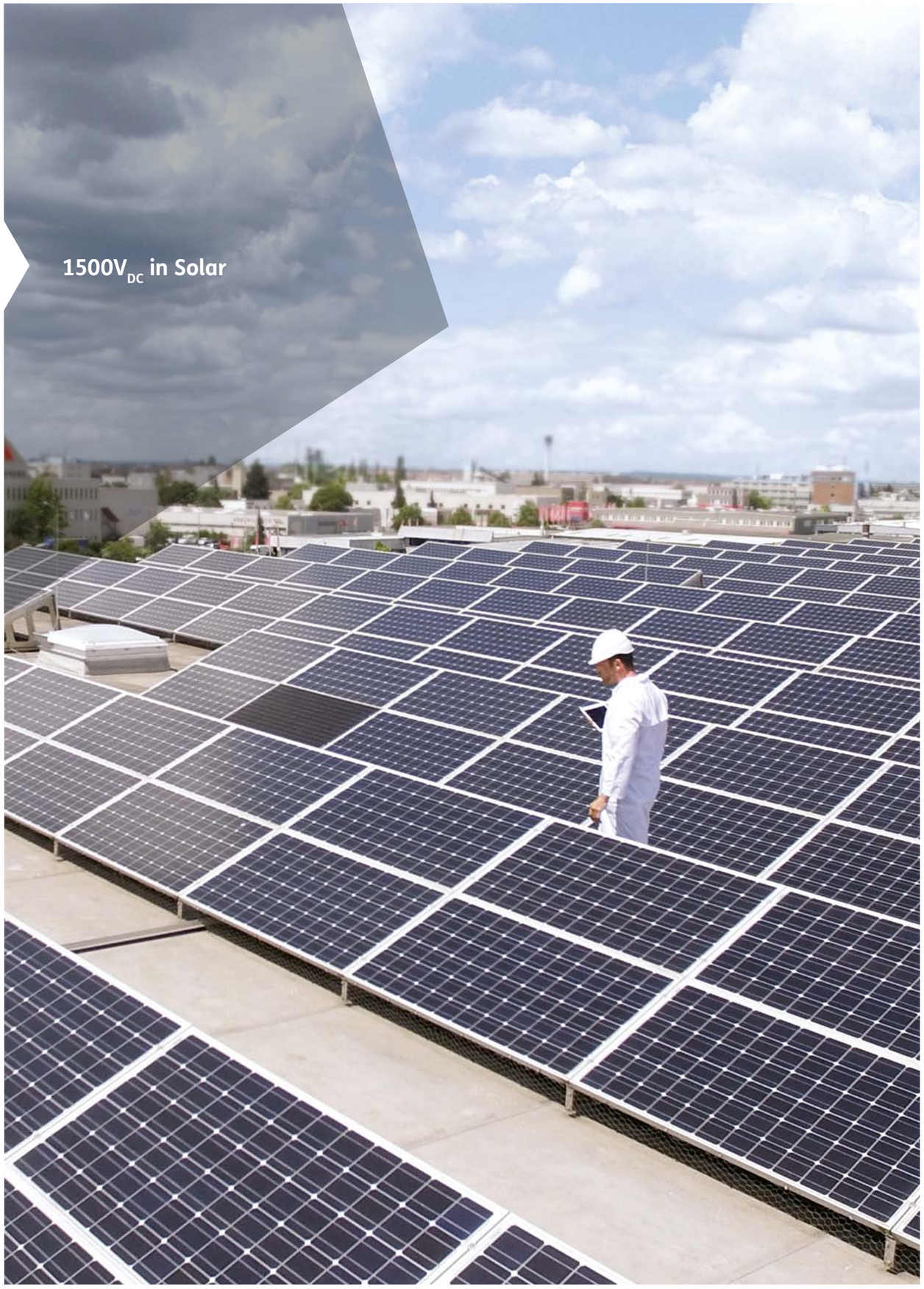
Four Key Factors for Your Success

SEMIKRON's power electronic stacks enable our customers to prosper in dynamic markets and meet any global challenge. With more than 100,000 stacks in the field, SEMIKRON is the global market leader for power electronic stacks.

Our services are as multifaceted as our customers, highlighted by these four distinctive attributes: **time to market, cost savings, global production and engineering experience**. Our passion for power electronics and our commitment to high-performance design are the factors that make us your ultimate partner for value creation in the dynamic power electronics market.

The experience we have gained in over 40 years of high-performance stack design has reinforced the four essential ingredients needed for your success. In emerging markets, where new product innovation is essential, companies need to be nimble and have a fast time to market. In global markets, multiple production locations play a vital role in ensuring rapid deployment to more than one country, while also meeting local demand and building customer relationships. Quality and cost control are crucial factors in the long-term success of any project. Finally, success in highly competitive markets is underpinned by superior technical capability. All four of these prerequisites are addressed by SEMIKRON's power electronic stacks.

Contact us: power-stack@semikron.com
www.semikron.com/video/power-electronic-stacks



1500V$_{DC}$ in Solar ?

We Cover all Your Needs

SEMIKRON' s portfolio includes a wide range of products for efficient solar inverters across every power range. Especially for increased DC voltage up to 1500VDC, this enables a significant reduction in system costs. SEMIKRON offers a broad portfolio of power modules, IPMs and ready-to-use power electronic stacks.

Power Modules
- Broad portfolio of 2-level, 3-level and booster modules
- Up to 750kW (air-cooled) without paralleling with SEMITRANS 10
- Up to 400A for direct PCB mounting with MiniSKiiP
- Latest Si and SiC chip technologies
- All connection technologies available: solder pins, press-fit pins, screw connectors and spring contacts
- Plug & Play drivers

IPMs
- Dedicated SKiiP 4 version for 1500V PV applications
- Water- and air-cooled versions
- Maximum reliability thanks to sinter technology and SEMIKRON ASIC driver chipset

Stacks
- Fast time-to-market with ready-to-use power stacks
- Customised designs for individual customer applications
- Includes SEMIKRON drivers with ASIC chipset

Further information: www.semikron.com/1500v-solar

Innovation is our passion

Overview

Highlights

Product Lines

Product Classes

Service & Contact

MiniSKiiP® with IGBT 7

New Standard in Power Density

In 2017, the MiniSKiiP celebrated its 20th birthday. In 2018, SEMIKRON is demonstrating its innovation potential once again. With the introduction of the latest IGBT chip generation, the MiniSKiiP is once more setting a new standard in power density and performance for low and medium power motor drives. Combined with the well-known advantages of MiniSKiiP SPRiNG technology and its easy assembly process, a new performance benchmark is being set.

Key features

- Latest chip technology in a proven package
- Optimised production processes thanks to fast and easy assembly
- Highly reliable SPRiNG technology
- Optimised layouts and topologies for motor drive applications

MiniSKiiP® Dual Split MLI

Maximum Power Density for Compact String Inverter Designs

The MiniSKiiP is entering new markets: the MiniSKiiP Dual Split MLI takes the superior reliability of MiniSKiiP technology to 1500VDC solar applications up to 180kW. The use of SiC Schottky diodes in the neutral path delivers supreme efficiency and maximum power density for compact string inverter designs.

Key features

- Up to 180kW non-baseplate design for direct PCB mounting
- Maximum efficiency using SiC Schottky diodes in the neutral path
- Low inductance DC-link connection
- Spring contacts for easy PCB routing
- Well-established and highly reliable MiniSKiiP package

SEMITOP® E1/E2

Exceeding the Standard for Superior Performance and Supply Chain Safety

SEMITOP E1/E2 is a module platform with a height of 12mm, two lateral mounting screws, press-fit pins, and no baseplate.
The platform is designed for the low and medium power range up to 70kW by offering a compact and low inductance design. These features, combined with the latest chip technologies and a pin grid philosophy for flexible design layouts, make SEMITOP E1 and E2 suitable for different markets such as UPS, solar (incl. up to 1500VDC bus for string inverter solutions), motor drives, power supplies and the new emerging EV battery charger market.

Key features

- Industry standard package
- Low stray inductance design
- Optimised footprint for excellent thermal performance
- High design flexibility
- Latest Si and SiC technologies
- Optionally available with snubber capacitor

Silicon Carbide

Hybrid SiC Power Modules

Portfolio: MiniSKiiP, SEMiX 3 Press-Fit, SEMITRANS, SKiM 63/93

Full SiC Power Modules

Portfolio: MiniSKiiP, SEMITOP, SEMITOP E1/E2, SEMITRANS, SEMIPACK

Leading Chip and Packaging Technology for Maximum Energy Efficiency

SEMIKRON's silicon carbide power modules combine industry standard package outlines with sophisticated packaging technologies. The multiple chip sourcing strategy allows SEMIKRON to propose the best supplier for every application. Optimised power module designs and technologies will help you to get the most out of silicon carbide.

Key features

- Hybrid silicon carbide modules achieve up to 50% lower power losses, convertible into triple the switching frequency
- Full silicon carbide modules achieve 99% at the highest of switching frequencies
- Optimised power module designs allow you to get the most out of silicon carbide
- Optimised chip sets thanks to multiple SiC chip sources

Product Lines

Product Lines

Fast, Cost Efficient and Reliable One Screw Mounting

MiniSKiiP®

Short facts

Low cost assembly, high production run rate, high yield

Small and compact inverter design

High reliability and long product life time

Key features

Solder-free SPRiNG technology for fast and easy assembly

Without copper baseplate for cost efficient concept

Easy and flexible PCB routing without pin holes

Current range 4A to 400A for inverter range up to 90kW with one product platform

Comprehensive setup of topologies: CIB, 6-pack, twin 6-pack, H-bridge, half-bridge, 3-level, bridge rectifiers with brake chopper

Applications

With 2 decades of field experience and 40 million modules in the field, this module platform has proven successful in all standard applications. Key applications include all kinds of inverters, such as standard drives, stand-alone drives, servo drives, system drives, solar inverters, UPS systems and welding machines. Thanks to the high reliability of spring contacts, applications such as agricultural vehicles or pitch motors of windmills benefit from the MiniSKiiP technology as well.

Benefits

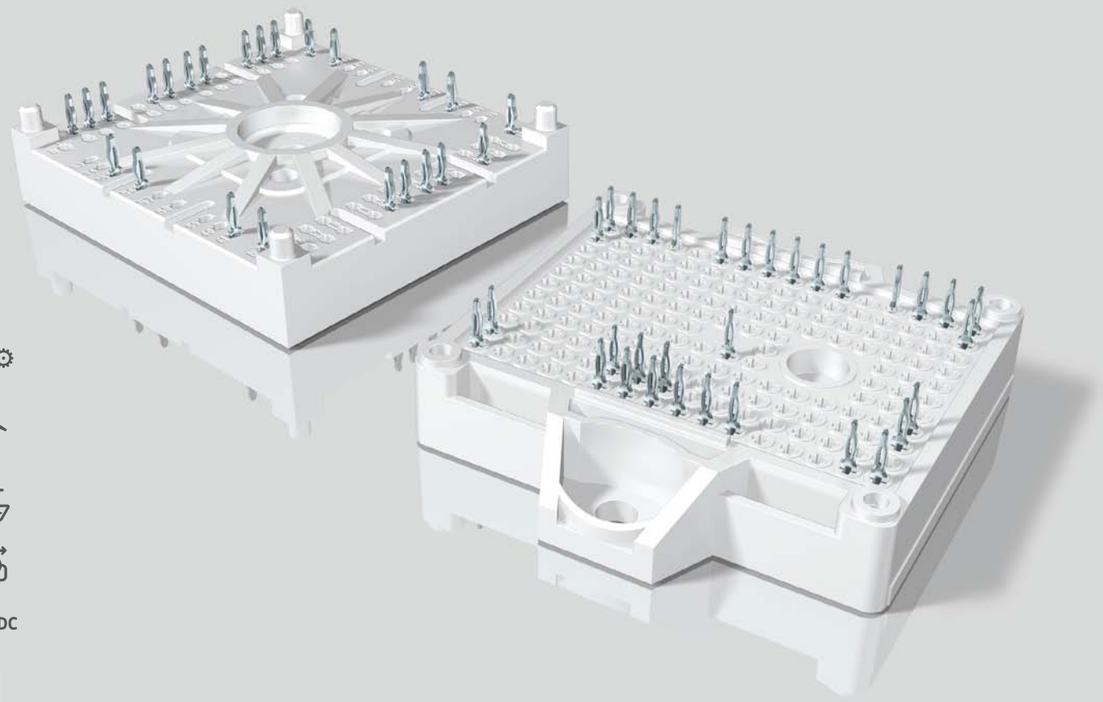
An important mechanical feature of MiniSKiiP modules is the outstandingly easy assembly and service friendly spring contact for load and gate terminals. Compared to conventionally soldered modules, where expensive soldering equipment is required for time-consuming solder processes, no special tools are needed for MiniSKiiP assembly. Instead, a single screw connection is used. The printed circuit board (PCB), the power module and the heat sink are assembled in one mounting step. This connection technology features a number of addit-ional advantages: the PCB can be more flexible in design, as the power circuit board does not need to include holes for solder pins. The springs provide a flexible connection between the PCB and the power circuitry which is far superior to a sol-dered joint, particularly under thermal or mechanical stress conditions which can affect lifetime. Thanks to the high mechanical pressure provided by the springs, an air-tight, reliable electrical connection is achieved.

Product range

MiniSKiiP modules are designed for 600V/650V, 1200V and 1700V with 4A - 400A nominal chip currents, and feature Trench IGBT technology in combination with the SEMIKRON CAL diodes. 1200V Trench IGBT4 and CAL 4 diodes are designed for maximum junction temperatures of 175°C. In addition to CIB, 6-pack, twin 6-pack, H-bridge, half-bridge, 3-level and uncontrolled/half-controlled rectifiers plus brake chopper, customer-specific modules are also available. In addition, the latest chip technology such as full and hybrid Silicon Carbide power modules meet the highest of power density and efficiency demands. For fast evaluation, lab test boards can be ordered for each module type.

Further information: www.semikron.com/miniskiip

SEMITOP® 1-4
SEMITOP® E1/E2



Flexible and High Performing Product for a Comprehensive Portfolio

SEMITOP®

Portfolio

SEMITOP 1, 2, 3, 4	up to 55kW
SEMITOP E1/E2	up to 70kW

Short facts

- 12mm module height
- Reliable solder or press-fit connection
- Low stray inductance case

Key features

- No baseplate
- Complex configurations possible
- Different chip technologies and manufacturer available
- Optmised system costs

Applications

The SEMITOP family features a cost effective design. This product generation is designed for the low and medium-power range of up to 70kW following the latest introduction of the SEMITOP E family. The ability to offer a compact and low inductance design, coupled with the latest chip technologies and different topologies, makes the two platforms suitable for different markets like UPS, solar, motor drives, power supplies and the new, emerging EV battery charger market.

Benefits

The SEMITOP platform centers around 12-mm-high modules, covering the low and medium-power range, with one or two mounting screws and no baseplate, featuring PCB interface via solder or press-fit pins. Low commutation inductance design and the availability of latest Si and SiC chip technologies make this product suitable for UPS and solar applications, motor drives, power supplies, welding and the new EV battery charger market. A large variety of configurations is possible within the SEMITOP family, including 3-level (NPC/TNPC) and CIB (converter-inverter-brake) topologies.

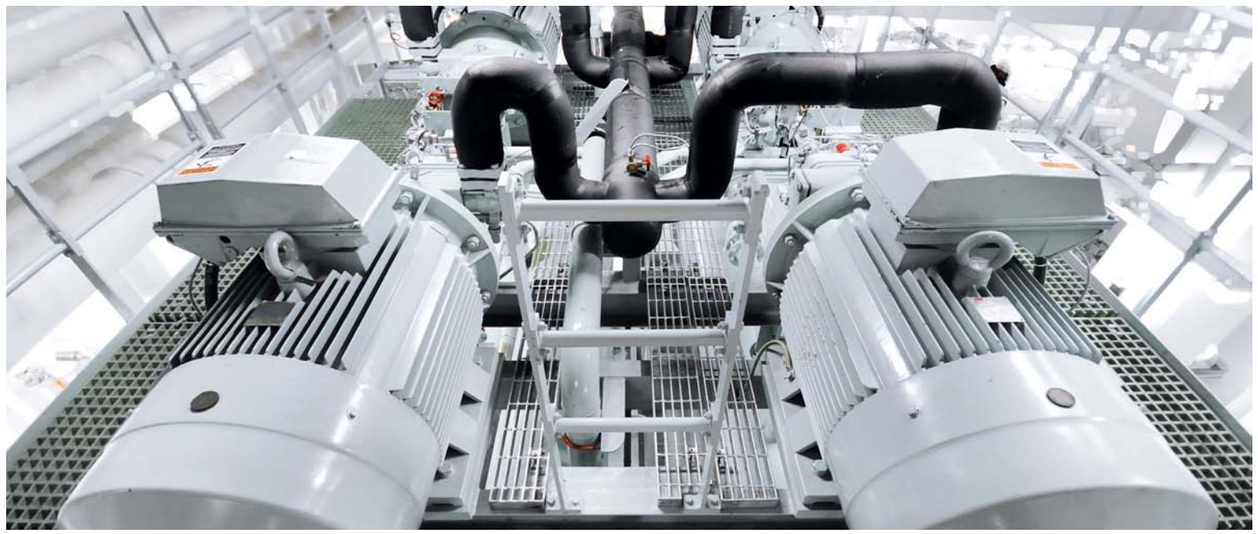
Product range

SEMITOP can include fast-Si diodes, fast IGBTs 650V/1200V versions and MOSFETs even for high voltage. Even the latest SiC chip technologies for diodes and MOSFETs can be evaluated in the platform, making a lot of different configurations with different chip combinations:

- Neutral point clamp 3-level configuration (NPC)
- T-type NPC 3-level configuration (TNPC)
- 3-phase inverter
- CIB configurations (converter-inverter-brake)
- 3-phase bridge rectifier
- Full SiC and hybrid configurations
- Custom electrical configurations also possible

Further information: www.semikron.com/semitop

SEMiX® Spring
SEMiX® 3 Press-Fit
SEMiX® 5



IGBT and Rectifier Module Family for Solder-Free Mounting

› SEMiX®

Portfolio

SEMiX Spring	75A up to 600A
SEMiX Press-Fit	225A up to 600A
SEMiX 5	up to 350kVA

Short facts

- Low stray inductance case
- Reliable spring or press-fit connection
- Flat and compact inverter design

Key features

- Half-bridge, chopper and 6-pack topologies
- Isolated copper baseplate using DBC technology
- Also available with integrated shunt resistor (SEMiX 3 press-fit)
- Multiple IGBT sources

Applications

SEMiX is a flexible and application-oriented module. On the basis of a scalable platform concept, modern chip technology is integrated into IGBT and rectifier modules which are used in a wide variety of applications, such as AC motor drives, switching power supplies and current source inverters. Other typical applications include uninterruptible power supplies, photovoltaic systems and the field of wind energy.

Benefits

The family concept of SEMiX includes a unification of IGBT and rectifier housings. All have the same height (17mm) and can be connected by one principle DC-link design. This saves development time and makes a simple and low-inductance DC-link profile possible. SPRiNG or press-fit contacts allow a gate driver to be mounted directly on top of the module eliminating the risk of noise on wires or loose connectors. Thanks to the flat package and separated AC and DC terminals, a highly compact, state-of-the-art inverter construction is possible. The auxiliary contacts avoid solder joints and offer highly reliable pressure contacts. This leads to an increased product reliability and lifetime. The solder-free contacts offer a fast and easy assembly process. Production at the customer site can be optimised by a uniform direction of assembly (everything top down). This simplifies logistics and reduces manufacturing costs.
The half-bridge topologies come with a selection of choices for connection technologies such as press-fit and spring contact as well as for the integration level: current measurement shunts can be included in the power module, plug & play driver solutions and pre-printed Phase Change Material can be supplied to shorten the time-to-market and development times.

Product range

For the IGBT modules different housing sizes are available in 600V, 1200V and 1700V. Half-bridge, 6-pack and chopper topologies are available with a current range from 75A to 600A. Besides IGBT3 and IGBT4 chips, the 1200V range also includes a series with V-IGBT devices. Controlled, half-controlled and uncontrolled rectifier modules with identical footprint and 17mm height are also available. For the newest housing versions, we offer optional integrated shunt resistors, 3-level topologies (NPC, T-NPC or Buck-Boost-Converters).

Further information: www.semikron.com/semix

SEMITRANS® 2-9
SEMITRANS® 10
SEMITRANS® 20

Low Inductance Package Design down to 10nH

SEMITRANS®

Portfolio

SEMITRANS 2 - 9	45kW up to 500kW
SEMITRANS 10	500kW up to 2MW
SEMITRANS 20	3.3 kV, 450A / Half-bridge

Short facts

- Safe operation with high DC-link voltages
- Maximum power output
- Multiple IGBT sources

Key features

- Half-bridge, chopper, single switch, MLI, common emitter
- Isolated copper baseplate using DBC technology
- With integrated gate resitor
- High isolation voltage

Applications

SEMITRANS power modules are designed for a broad range of applications such as motor drives, regenerative inverters, power supplies or traction applications. The long service life is perfectly suited to ambitious applications such as AC drives, switched reluctance and DC motors.

Benefits

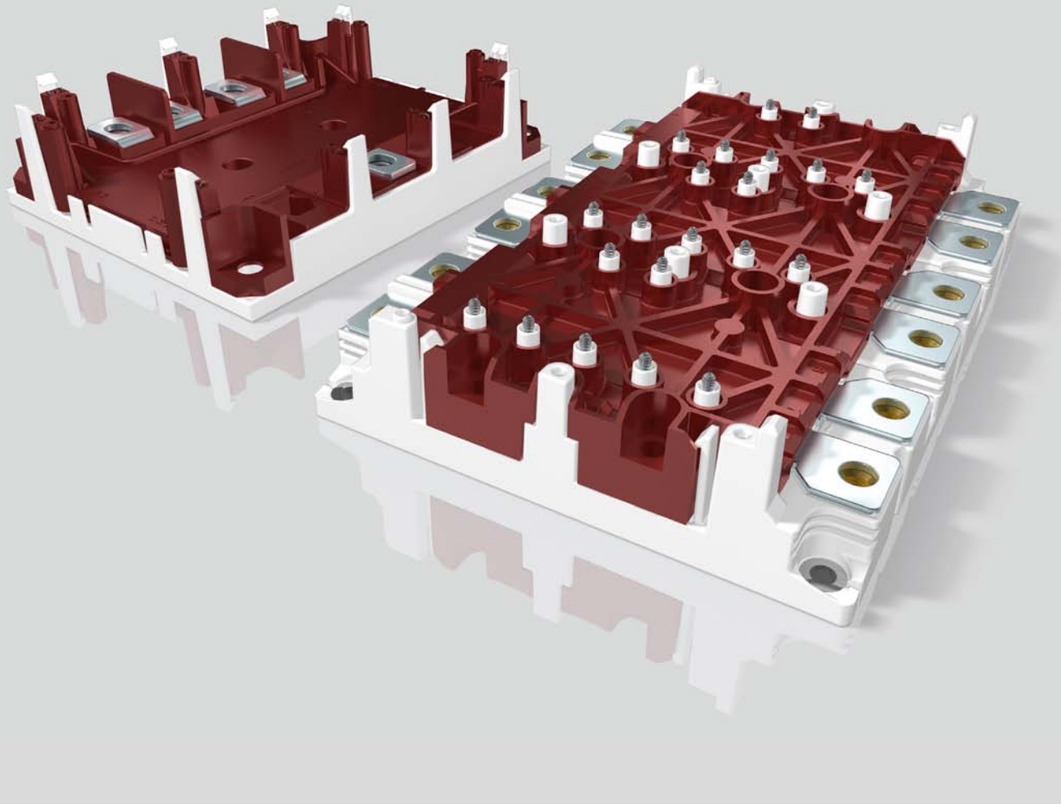
SEMITRANS 2-9 feature well-proven designs that come from over 25 years of market experience, but are still suitable for the latest generation of chips, including Silicon Carbide, thanks to its low-inductance design. SEMITRANS 10 takes the power range into the realm of mega-watt applications, utilizing the latest SEMIKRON packaging technologies including Direct Pressed Die technology for maximum reliability and minimum thermal resistance. SEMITRANS 20 serves medium-voltage applications with a low-inductance and easy-to-parallel power module design.

Product range

The SEMITRANS family offers a broad range of topologies and power ranges. All the standard voltage classes from 600V to 3300V are available. The current rating extends from 25A to 1800A. The SEMITRANS package is available as half-bridge, chopper, single switch, MLI and common emitter.

Further information: www.semikron.com/semitrans

SKiM® 4-5
SKiM® 63/93



100% Solder-Free Ensures Durability

SKiM®

Portfolio

SKiM 4, 5	200A up to 600A
SKiM 63/93	22kW up to 180kW

Short facts

- No solder delamination thanks to sintered chips – SKiM 63/93
- 1500 temperature cycles without failure – SKiM 63/93
- Up to 23% more performance with AlCu-bonded diodes and high performance thermal grease

Key features

- IGBT power module in 6-pack configuration with 3 separated half-bridges - SKiM 63/93
- Available in 600V, 1200V and 1700V and from 200A to 900A
- MLI and TMLI configuration - SKiM4/5
- In 1200V, 600A also available in buck/boost configuration - SKiM 63/93
- Solder-free design for highest durability - SKiM 63/93
- Design without baseplate
- Solder-free mounting of the module and the driver PCB
- Low inductance design thanks to symmetrical layout

Applications

The SKiM 63/93 is designed for applications that require high inverter reliability. This applies first and foremost to automotive applications such as electric powertrains in electric utility vehicles, heavy-duty construction machinery and tractors. It can also provide leading-edge performance in super sports and race cars. The SKiM 4/5 with its proven 3-level topologies can be found in ambitious applications such as solar and UPS.

Benefits

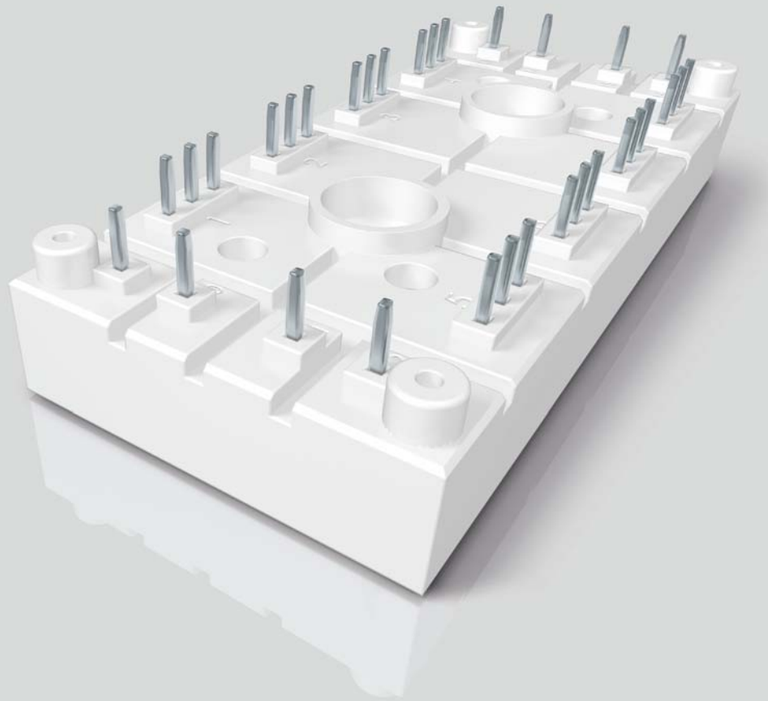
The SKiM module can increase the reliability of inverters by several factors, even under substantial active and passive temperature swings. In addition to sintered chips, pressure contacts and spring technology, the SKiM63/93 featuring AlCu-bonded diodes and high performance thermal grease delivers as much as 23.3% better performance with the same chip set and same lifetime or twice the power cycling capability than standard sinter modules.

Product range

The SKiM 4/5 modules are available as 6-pack, MLI and TMLI configurations with nominal currents from 200A to 600A. The SKiM 63/93 offers 3-phase inverter topologies at 600V, 1200V and 1700V. The power ranges from 20kW to 180kW with nominal currents of 300A to 900A. Modules in buck and boost configuration for 1200V/600A complete the portfolio. Driver solutions are available as does an optimised water cooler for fast and customer-friendly evaluation. In addition, paralleling boards for a simple and powerful half-bridge configuration are also available.

Further information: www.semikron.com/skim

SEMIPONT®



Compact Package with Various Configurations

SEMIPONT®

Short facts

Compact packages with screw, fast on or lead terminals

High insulation voltages

Diode, thyristor rectifier, rectifier/brake chopper and AC controller

Key features

Diode, thyristor rectifier, rectifier/brake chopper and AC controller

From 400V up to 1.8kV blocking voltages

From 28A up to 207A

Compact packages with screw, fast on or lead terminals

Applications

Typical application areas for the broad field of SEMIPONT power bridge rectifiers include AC and DC drives, servo drives, (controlled) field rectifiers for DC motors, (controllable) rectifiers for power supplies, input rectifiers for variable frequency drives, soft motor starters, temperature control, (controlled) battery charger rectifiers, DC motor controllers and DC power supplies.

Benefits

With blocking voltages up to 1.8kV the SEMIPONT family offers high ruggedness for harsh industrial applications. The different housings with soldered PCB connection allow for compact inverter designs.

Product range

The SEMIPONT bridge rectifier family is available in various configurations with diode and thyristor rectifiers, rectifier/brake chopper or AC controller. The compact screw-mounted packages enable fast PCB assembly. High blocking voltages of up to 1800V, high ruggedness for harsh industrial applications and high insulation voltages are also available.

Further information: www.semikron.com/semipont

SEMIPACK®

AC | DC

Bipolar Modules from the Market Leader

SEMIPACK®

Short facts

Well established thyristor diode package

Market experience over 40 years

Broad power and topology range

Key features

Industrial standard thyristor/diode modules

Over 40 years of market experience

Wide power and topology range

800V up to 2200V

15A up to 1360A

Uncontrolled, half-controlled and controlled rectifiers

Single thyristors and diodes

Applications

The target applications for the thyristor, thyristor/diode or diode modules include input rectifiers (single-phase, three-phase, uncontrolled, half-controlled or controlled) for inverters or UPS systems, soft start applications and control systems.

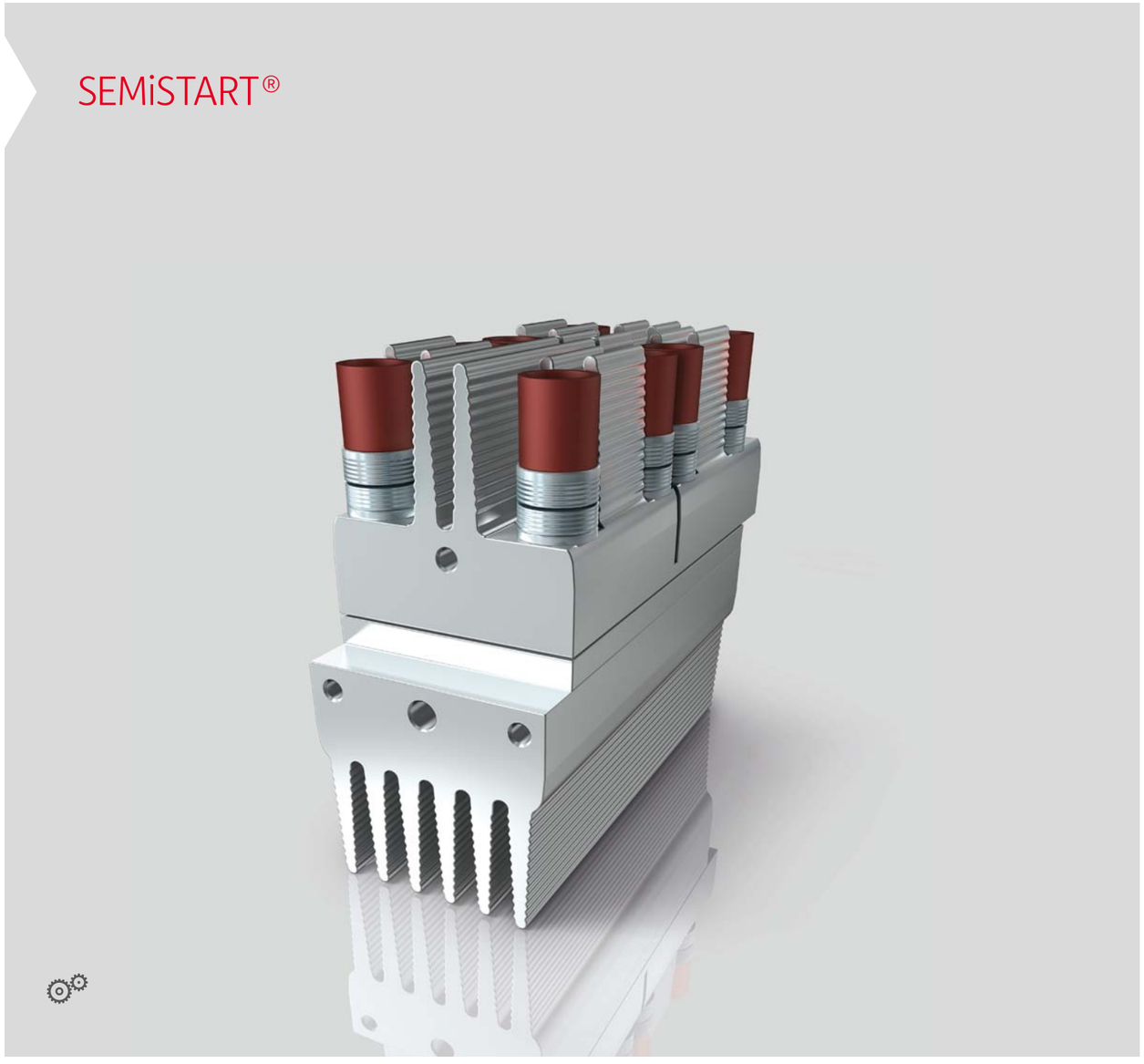
Benefits

SEMIPACK delivers a well-established industrial standard with regard to footprint and module outline. Thanks to the comprehensive product range, the ideal solution can be found for any application. With SemiSel, the free online calculation and simulation tool for losses and temperature, the power electronic system developer can make the right power module choice.

Product range

The SEMIPACK product line includes a comprehensive range The SEMIPACK product line is a comprehensive product range with seven module lines covering voltage classes from 800V to 2200V, insulation voltages of 3.6kV, 4.8kV@1s and a current range from 15A to 1360A. The SEMIPACK product line includes uncontrolled, half-controlled and controlled rectifier modules. Also available are, custom topologies, single thyristor or diode modules and SEMIPACK modules featuring fast switching diodes for dedicated applications. The SEMIPACK FAST product line covers a current range from 40A to 600A with voltage classes from 600V to 1700V. The portfolio of the SEMIPACK product line is extended continuously to meet market requirements.

Further information: www.semikron.com/semipack



Compact Soft-Starter Module

SEMiSTART®

Short facts

- Double-sided cooling for high load cycle capability
- Robust pressure contact technology
- Low thermal resistance

Key features

- Up to 3080A
- Qualified plug & play subsystem
- Robust pressure contact technology
- Double-sided cooling for high load cycle capability
- Excellent thermal performance
- From 560A to 3080A overload current

Applications

SEMiSTART, the anti-parallel thyristor module, is designed for soft-start applications.

Benefits

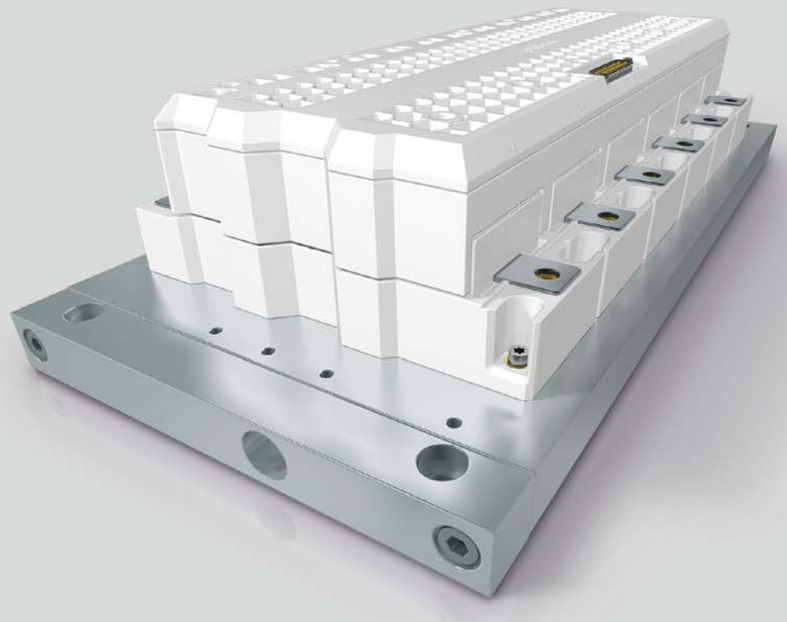
SEMiSTART – a power module with integrated heat sink – provides an ultra-compact design for soft-start applications. Double-sided cooling along with pressure contact technology allow for a high current capability with overload currents of up to 3080A for 20s overload duration. SEMiSTART is a robust plug & play subsystem that helps cut development time and system costs.

Product range

SEMiSTART power modules are available in three housing sizes for overload currents ranging from 560A to 3080A. All overload current classes are available for voltages of 1400V and 1800V.

Further information www.semikron.com/semistart

SKiiP® 3-4



Intelligent Power Module (IPM) for Maximum Reliability

SKiiP®

Portfolio

SKiiP 3, 4	500A up to 3600A

Short facts

- 3-in-1: Driver, semiconductors and cooling
- 2-3 times higher power cycling capability thanks to sinter technology
- Completely assembled and 100% tested

Key features

- Integrated driver, semiconductor and cooling
- Integrated temperature measurement
- Integrated current sensors (SKiiP 3, SKiiP 4)
- Integrated DC-Link monitoring (SKiiP 3, SKiiP 4)
- 100% solder-free (SKiiP 4)

Applications

SKiiP meets the requirements specifically for wind turbines in a power range of 0.5 to 6MW in an outstanding way. Besides wind power applications, SKiiP modules can also be found in elevators, solar power and railway applications – in fact, in any area where powerful, safe and reliable IGBT IPMs are a must.

Benefits

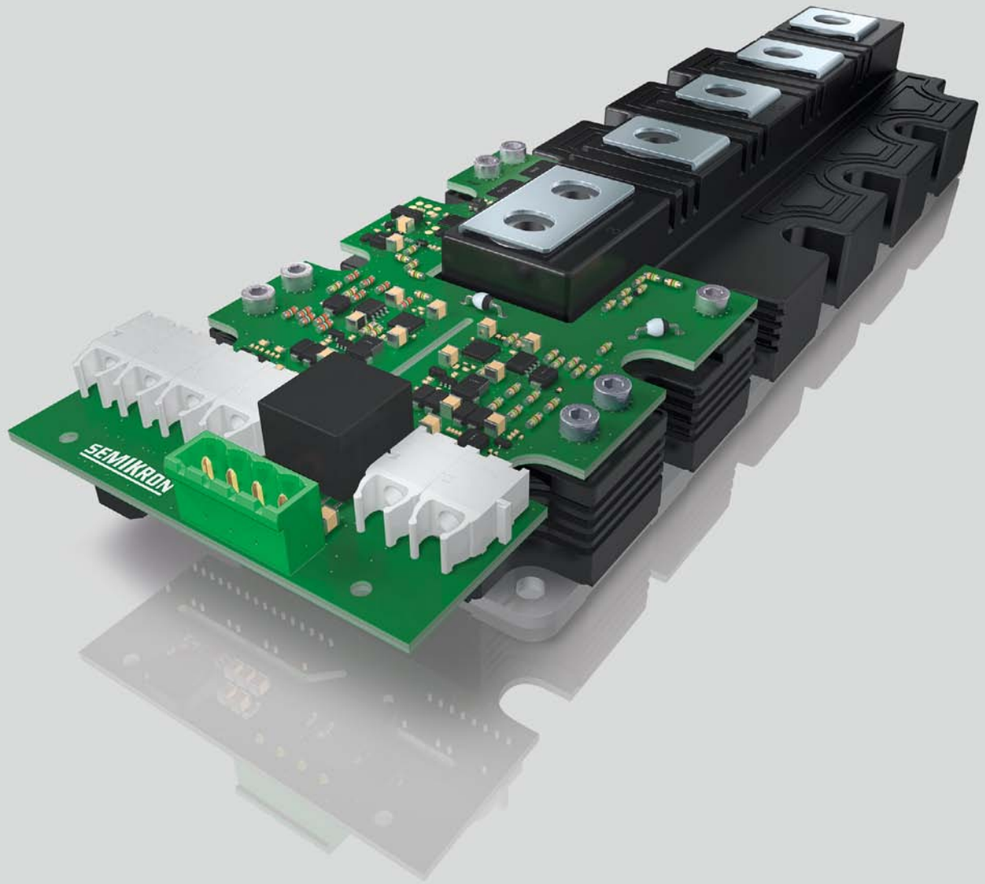
SKiiP is the most powerful IPM on the market. The power semiconductors used in SKiiP 4 modules can be operated up to a junction temperature of 175°C. To make sure these components can be reliably used at these temperatures, the power circuitry is 100% solder-free. Sinter technology is used to create a sintered silver layer instead of the solder layer which could limit the service life of power modules. Reliability during active and passive thermal cycling is greatly improved.
The integrated gate driver in the SKiiP 4 sets new standards in terms of reliability and functionality. The digital driver guarantees safe isolation between the primary and secondary side for both switching signals and parameter measurement. This means the user no longer has to introduce complex and costly circuit components to provide safe isolation.

Product range

SKiiP IPMs are available in half-bridge and 6-pack topologies in power ratings up to 6MW. The cooling varies from water to air-cooled systems and customized cooling in SKiiP 3/4.
A wide range of accessories is now available for both SKiiP 3 and SKiiP 4. These include fiber optic boards, paralleling boards for SKiiP systems and adapter boards to connect SKiiP 4 to SKiiP 3 controller.

Further information: www.semikron.com/skiip

Plug & Play Driver
Driver Cores
Adapter Boards



Drives 3 Times Longer

SKYPER®

Short facts

- MTBF rate of 5 x 10^6 hours (29500) with new SEMIKRON ASIC chipset
- Safe gate control with separate signal transmission
- 7kV burst durability thanks to interlayer connection and metal pad ASICs

Key features

- Two driver channels for IGBT single and half-bridges
- For 600V, 1200V and 1700V IGBT modules
- Driving up to 2500A
- Short pulse suppression and EMC cage
- SoftOff and separate error channels
- Adjustable filter and failure management
- Customized adapter boards on request

Applications

SKYPER 12R is the latest driver core which delivers 20A output but is smaller than a matchbox. Thanks to its feature set and robustness the driver is suitable for simple drives as well as ambitious interleaved applications. The SKYPER 12PF is a plug & play driver solution based on the same platform, allowing a solution without adapterboard for 17mm modules. SKYPER 42LJ offers the benefits of digital signal consistency while maintaining full performance. Ambitious applications such as medical or large drives up to 500kW are securely powered. SKYPER 32 is the perfect solution for industrial drives and process control applications. SKYPER 42 meets the requirements of induction heating / welding applications that call for high currents, durable solar inverters and motor drives between 500kW and 1.5MW. The new plug & play driver SKYPER Prime and Prime O is the best match for high power with SEMITRANS 10 modules up to 1700V and 1800A.

Benefits

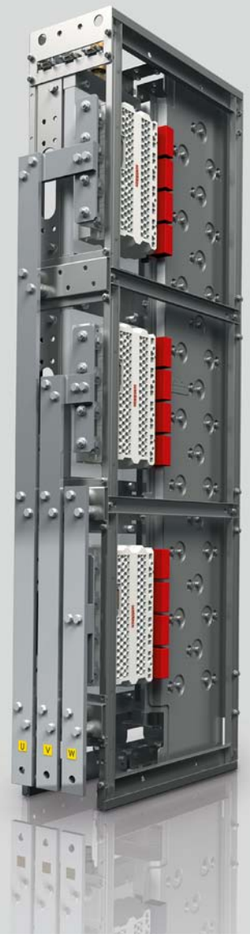
The high integration of SEMIKRON's new ASIC chipset provides for safe IGBT gate control over the whole lifecycle. Short circuits are managed very fast by separate error channels. SoftOff and over voltage feedback avoid dangerous overvoltages. The mixed signal ASICs guarantee minimum tolerances over the full temperature range. MLI or paralleled IGBT topologies are managed by adjustable error handling.
With an optimized interface and the adjustable filter setting the SKYPER IGBT driver family survives external interferences over 100% of IEC standards.

Product range

The SKYPER drivers are available as IGBT driver cores and plug & play drivers. The SKYPER platform can drive 600V, 1200V and 1700V IGBT modules. SKYPER 32 drives with a standard and a PRO version 1W per channel. The PRO version has additional protection features such as external failure inputs and SoftOff. The SKYPER 42 has 4W per channel and can drive up to 2500A IGBTs. The SKYPER 42LJ has 3W per channel, closing the gap between SKYPER 32 and 42. The driver core SKYPER 12 R and the two qualified plug & play drivers, SKYPER 12 press-fit and SKYPER Prime, offer maximum performance when using SEMiX press-fit or SEMITRANS 10 modules.

Further information: www.semikron.com/skyper

SEMISTACK® RE
SKiiPRACK®



IGBT Platforms up to 6MVA
Standards for Water-Cooled Inverter

Water-Cooled IGBT
STACKS

Short facts

- Off-the-shelf product range
- 2- and 4-quadrant 3-phase converter
- IGBT inverter power density of up to 10.4kVA/L
- Long life expectancy

Key features

- Maximum continuous output current from 600A to 1400A_{RMS}
- DC bus voltage of up to 1250V_{DC}
- Inverter output voltage of up to 690V_{AC}
- DC bus polypropylene capacitor bank lifetime rates at 100,000 hours at 40°C
- Analogue measurements for $T_{heatsink}$, V_{bus}, I_{out}
- CAN Interface (configuration & monitoring)

Applications

The SEMISTACK platforms comply with wind turbine requirements, making it possible to build 4-quadrant converters that are suitable for use with synchronous generators and double fed induction generators, with an optional brake chopper design. The platform flexibility allows for the requirements of solar central inverters to be met with a continuous DC bus voltage of up to 900V_{DC}. Alternatively, SEMISTACK platforms can be used in low-voltage applications requiring high power and a high degree of reliability, such as 3-phase inverters in a shipyard or in a battery energy storage unit installed close to renewable energy power plants.

Benefits

The SEMISTACK water-cooled platforms offer a pre-qualified power assembly ready for integration following rigorous SEMIKRON qualification tests and the latest environmental standards (IEC 60721-3). The platform design has been optimized to achieve an optimum balance between costs and performance for a water-cooled power inverter in the megawatt power range. They are designed for applications requiring a high degree of reliability and long lifetimes of up to 20 years. The design and footprint enables compact integration in standard industrial cabinets, making high power of up to 6MVA low-voltage possible. Specified for wind turbine applications, the SEMISTACK family boasts excellent IGBT cycling capability and a high capacitor bank lifetime, reducing maintenance.

Product range

The SEMISTACK water-cooled platform offers various inverter sizes to fit two power sub-assemblies into a 600 x 600 x 2000mm cabinet. The standard size has a current range between 1000A and 1400A_{RMS}. For applications with lower current ratings or with tighter cabinet size constraints, a smaller inverter size is available with a continuous output current rated for up to 900A_{RMS}. The SEMISTACKs embed the SKiiP IPM product family, which in turn integrates IGBT gate driver and monitoring analogue outputs (temperature, output current and DC bus voltage). As an option, a CAN interface is also available to monitor the SKiiP. To increase power capacity up to 6MVA, SEMISTACKs can be put in parallel, connected together through the DC bus and controlled all-in-one using a SEMIKRON paralleling board. Optionally, SEMISTACK platforms are also available integrated into an industrial cabinet with suitable AC and/or DC power filters, electrical and hydraulic distribution systems.

Further information: www.semikron.com/water-cooled-igbt-stacks

SEMIKUBE®
SEMIKUBE® SlimLine
SEMIKUBE® 1500V

IGBT Converter Family up to 1MVA
Standards for Air-Cooled Inverter

Air-Cooled IGBT

STACKS

Short facts

- Off-the shelf product range
- Air-cooled power assemblies
- Maximum output current from 150A to 1500A
- Customizable

Key features

- Frame sizes ranging from 75kVA up to 1500kVA
- AC output voltage of up to 690V_{AC}
- Current measurement accuracy <1%
- Analogue measurements or CAN monitoring for $T_{heatsink}$, V_{bus}, I_{out}
- Forced-air cooled platform
- Fits into 300mm cabinet
- UL1741 1500V ready

Applications

The SEMIKUBE platform is optimized for general-purpose inverters and central solar inverters. Designed for the most commonly used PV central inverter ratings on the market, i.e. 500kW, 670kW up to as much as 1200kW, the SEMIKUBE 3-phase inverter operates at up to 1500V_{DC} bus voltage. Designed in accordance with IEC 62109, the platform is set to obtain UL recognition. The SEMIKUBE family complies with most AC drives application requirements. The current measurement precision of 1% (at 25°C) allows for premium motor control as required in highly dynamic applications and motion control systems.

Benefits

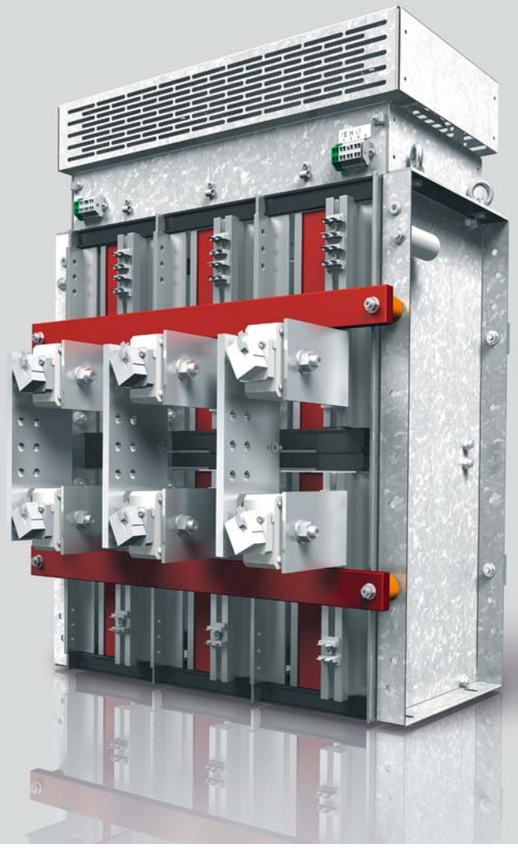
The SEMIKUBE platform is a family of pre-qualified power assemblies which are in line with the rigorous SEMIKRON qualification tests and certifications. The platform integrates advanced technologies which maximize performance and power density. SEMIKUBE, thanks to its modular design and patented DC connections, enables designs in various converter power ranges.

Product range

The SEMIKUBE platform comes in four frame sizes for continuous rated currents ranging from 150A to 1500A and features SEMITRANS 1200V and 1700V IGBT Trench E4 modules. The SEMIKUBE design is optimized for 3-phase inverter topologies. A dedicated rectifier with 3-phase inverter and optional brake chopper can be added. The IGBTs are controlled by a SEMIKRON embedded driver for error management, and analogue outputs for current, DC voltage and heatsink temperature.
For the SEMIKUBE SlimLine a CAN interface is available for parameter configuration and diagnostics monitoring. Air cooling is provided by highly efficient long-life axial and radial fans, achieving maximum power within a compact package.
SEMIKUBE is a versatile product, allowing for converter designs around a common DC link, including four quadrant converters, multiphase converters and a 1500V inverter for central solar power systems. Thanks to its optimized layout , the platform integrates state of the art hybrid SiC and full SiC modules, extending the SEMIKUBE Slimline portfolio.

Further information: www.semikron.com/air-cooled-igbt-stacks

SEMISTACK® CLASSIC B6U
SEMISTACK® CLASSIC B6C
SEMISTACK® CLASSIC W3C



Rectifier Stacks
Standards for LV Diode/Thyristor Rectifiers

Diode/Thyristor
STACKS

Short facts

- Off-the shelf product range
- Air-cooled power assemblies
- Ready for integration
- Customizable

Key features

- Various topologies (B6U, B6C, B2C, B2U, W3C, W1C)
- Maximum continuous DC Current from 60A to 4015A
- Rectifier AC voltage of up to 500V_{AC}
- DC bus voltage of up to 670V_{DC}
- RC, fuses, cooling fans and thermal switches

Applications

The SEMISTACK CLASSIC product range is designed for fast integration of industrial rectifiers. Each power bridge has been sized to embed semiconductors with a suitable RC commutation circuit, proper AC fuses and cooling devices. The high power range of rectifiers has been improved using a new heatsink profile, resulting in modularity, various fan options, low maintenance and weight reductions.

Benefits

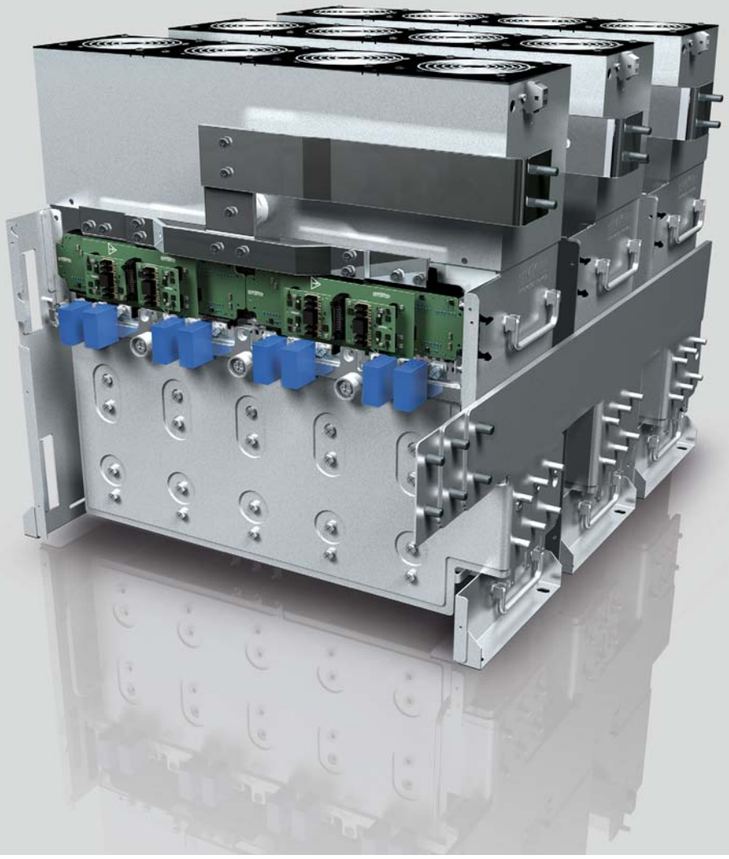
The SEMISTACK CLASSIC family offers a pre-qualified power assembly ready for integration following rigorous SEMIKRON qualification tests and current environmental standards. The platform design has been optimized to achieve the best balance between costs and performance for power inverters and rectifiers as far up as the megawatt range.

Product range

The SEMISTACK family consists of a broad portfolio of over 200 stacks with different topologies of uncontrolled, half-controlled and fully controlled rectifiers. These products are available with natural or forced cooling, with or without fuses. All SEMISTACK Classics include RC protection circuitry and are optimized for fast cabinet integration.

Further information: www.semikron.com/diode-thyristor-stacks

SEMISTACK® Application



Customized Power Electronic Stacks Create the Standard for Your Inverter

Customized
STACKS

Short facts

- 45 years of experience in stack design, manufacture and service
- Global market leader in power electronic stacks
- 7 local engineering & production locations for direct and fast communication
- More than 200,000 stacks already in the field
- 1,500 different assemblies available
- Air and water-cooled power assemblies

Outsource design and manufacturing to:

- Focus on your core competencies
- Reduce production fluctuations
- Benefit from economy of scale
- Cut design, assembly and production costs
- Reduce your risks

Applications

SEMIKRON provides custom stacks to the world´s leading electric industries, ranging from simple press-fit diode plates for battery chargers or welding equipment, to thyristor and IGBT industrial drives, complex high-power four quadrant inverters for wind energy generation, and IGBT converters for main traction drives in railway applications. SEMIKRON has experience in many different applications each with their specific constraints. This extensive knowledge ensures a robust and reliable design.

Benefits

If our platforms and/or standard stacks do not suit the customer requirements, our stack center can always offer a 100% customized turn-key solution. Our unparalleled experience in the stack business coupled with direct access to our core semiconductor and driver technology enables us to provide highly efficient, cost effective designs to meet every customer need. We encourage exchange and transfers between the stack centers and transform local success into global competence. Thanks to this internal information exchange, you get an optimized, prequalified and field-tested stack in the shortest possible time.

Product range

SEMIKRON designs, builds and tests customized stacks based on your needs. With our long-term experience and successful track record, we are the global market leader in stack design and production. With our vast portfolio of standard stacks we deliver short lead times while adapting them to your requirements. SEMIKRON continously develops new stack assemblies with the latest materials, topologies and technologies in order to guarantee our customers up-to-date products for a short time-to-market. Semikron offers full cycle cooperation from the product concept stage to mass delivery and beyond for repairs & aftermarket services. Costs and delivery times are kept to the minimum. Our R&D departments continuously focus on designing re-useable standard sub-assemblies in our SEMISTACKs. As an example, the SEMIKUBE platform is the result of 45 years of experience in the stacks business and with more than 75,000 SEMIKUBEs in the field, the most successful stack to date.

SKAI®2 HV
SKAI®2 LV

Most Compact Power Electronic System “Off-the-shelf” for Electro-Mobility

›SKAI®

Short facts

- Suitable for battery voltages 24V up to 800V
- Sintered power semiconductors
- EMI compliant
- “off-the-shelf” variants with gate driver interface, vector control software, automotive power connections

Key features

- Compact integration in IP 67 enclosure
- Voltage, current and temperature sensors
- Gate driver with protection
- IGBT/ MOSFET power semiconductors
- Fully programmable digital signal processor
- EMI filters
- Versatile cooling system (liquid cooled, forced air cooled, base plate)
- DC link capacitors
- Motor control software

Applications

The SKAI 2 “off-the-shelf” power electronic building block family has been introduced to cover a broad range of vehicle electrification applications. Examples are electric drivetrains with standardized motor/generator flanges to fit or retrofit the drives easily into existing vehicle designs. These types of drivetrains have been developed for many vehicle types, i.e. buses, light trucks, agriculture and construction machinery as well as marine applications or cars.

Benefits

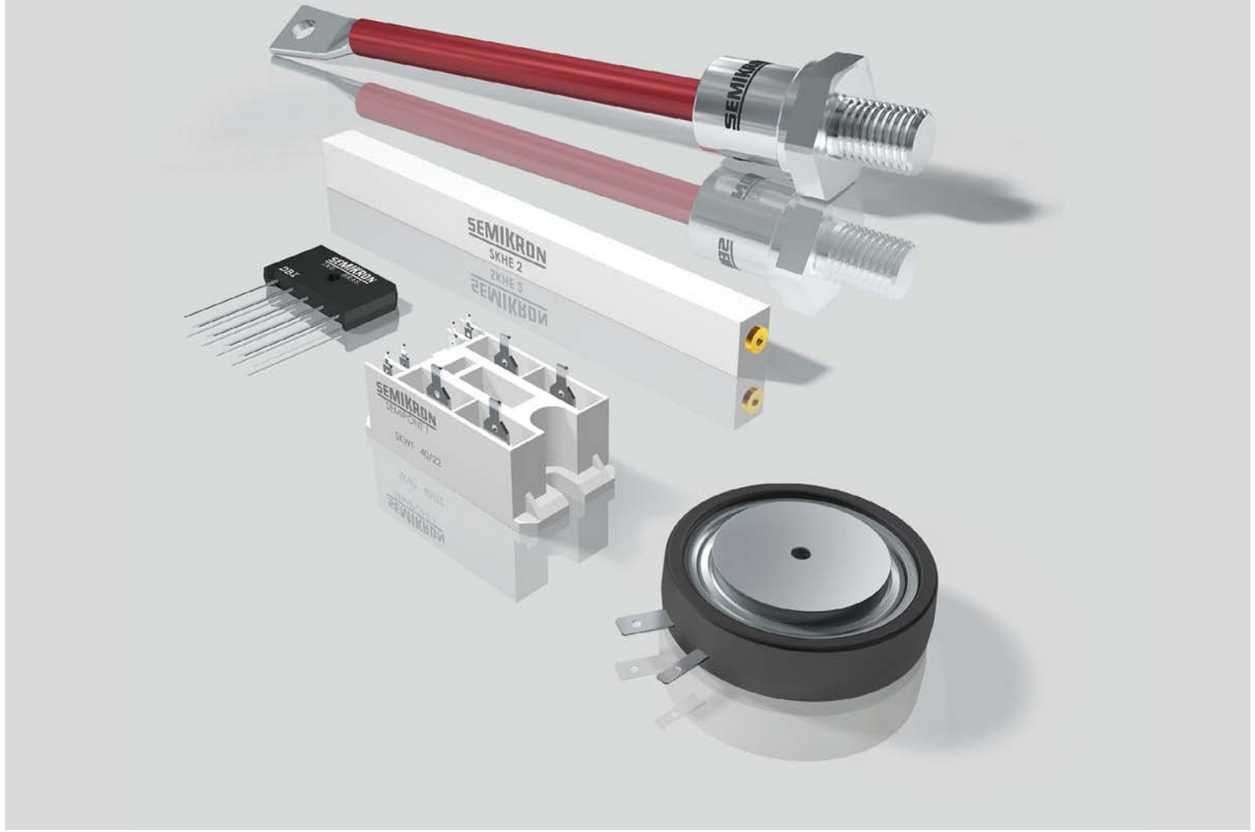
The SKAI power electronic platform – now in its 2nd generation – comprises highly integrated motor controllers which provide the ideal powertrain solution for mobile electric and hybrid applications. Power densities of up to 20 kVA / liter provide a notable size reduction compared with other available standard motor controller products. The systems are designed to operate with supply voltages of 24V up to 800V and with output power ratings of up to 250 kVA. The IGBT-based SKAI 2 HV motor controller operates on sintered 100% solder-free 600V or 1200V power semiconductors and it features polypropylene film DC-link capacitors. The MOS-based SKAI 2 LV motor controller uses the established SkiiP technology with a very low-inductance connection to the DC-link capacitors, driver electronics, latest generation DSP controller, current, voltage and temperature sensors. It is integrated in a waterproof IP67 enclosure. The compact motor controllers withstand high vibration amplitudes up to 10g rms. QUASAR motor control software functionally complements the system and completes this tried-and-tested package. SEMIKRON provides engineering services to support customers in the integration of the SKAI 2 motor controller systems. Available services include, for instance, lifetime estimation, field application support, individual parameterization of motor control software etc.

Product range

There are versatile SKAI 2 HV “off-the-shelf” variants available. The SKAI 2 LV is available as single or dual motor controller for supply voltages between 24V and 115V. Cooling methods are liquid, forced air cooling or base plate. There are different optional services available like end-of-line flashing of customer specific software, lifetime estimation based on application profile analysis, field application support, individual parameterization of motor control software and further services on request.

Further information: www.semikron.com/skai

Discrete Diodes
Discrete Thyristors
Rectifier Bridges



Discrete Devices – Robust and Easy to Use

Discretes

Short facts

- Discrete diodes and thyristors for low to high power applications
- Rectifier bridges for low to medium power applications
- Available in voltage classes from 200V to 8000V
- Current ratings from 1A to 6000A
- Wide range of case designs

Key features

- Recommended for natural convection, forced air and water cooling
- Compact case with high current capability
- Stud and disc types: forward drop selections available for easy paralleling
- Axial diodes for PCB mounting
- Standard, avalanche and fast types

Discrete benefits

Discrete components are used in a wide variety of applications. Particular benefits are achieved whenever high current, uncommon topologies, natural cooling or resistance to harsh conditions are required.
The SEMIKRON portfolio includes axial leaded diodes up to 6A, diodes and thyristors in screw fit (stud) and capsule housings which range from 6000A and 8000V for diodes to 1200A and 1800V for thyristors.

- Easy assembly
- Hermetic sealing
- Rugged construction

Rectifier bridge benefits

SEMIKRON rectifier bridges are the best solution in many applications where performance, space and fast production are paramount. Single or 3-phase topologies using diodes, thyristors and IGBTs in isolated compact cases are possible. Whether your preference is connection by solder, solderless spring or press-fit contacts, mechanical screw connections, fast-on or busbars, SEMIKRON has a product to meet your needs.

Discrete applications

Key applications include welding machines, battery chargers, electroplating, soft starters, DC motor control, AC controllers (e.g. for temperature control), alternators and others. With sealed cases, discrete devices are convenient for both natural convection and forced cooling, allowing for use in wider fields of application. With over 50 years of field experience and millions of units produced every year, the SEMIKRON portfolio provides options that are competitive, flexible and highly reliable

Avalanche diodes

- No over-voltage suppressors needed
- Insensitive to short term reverse overloads
- High blocking voltages possible without static or dynamic voltage sharing circuits

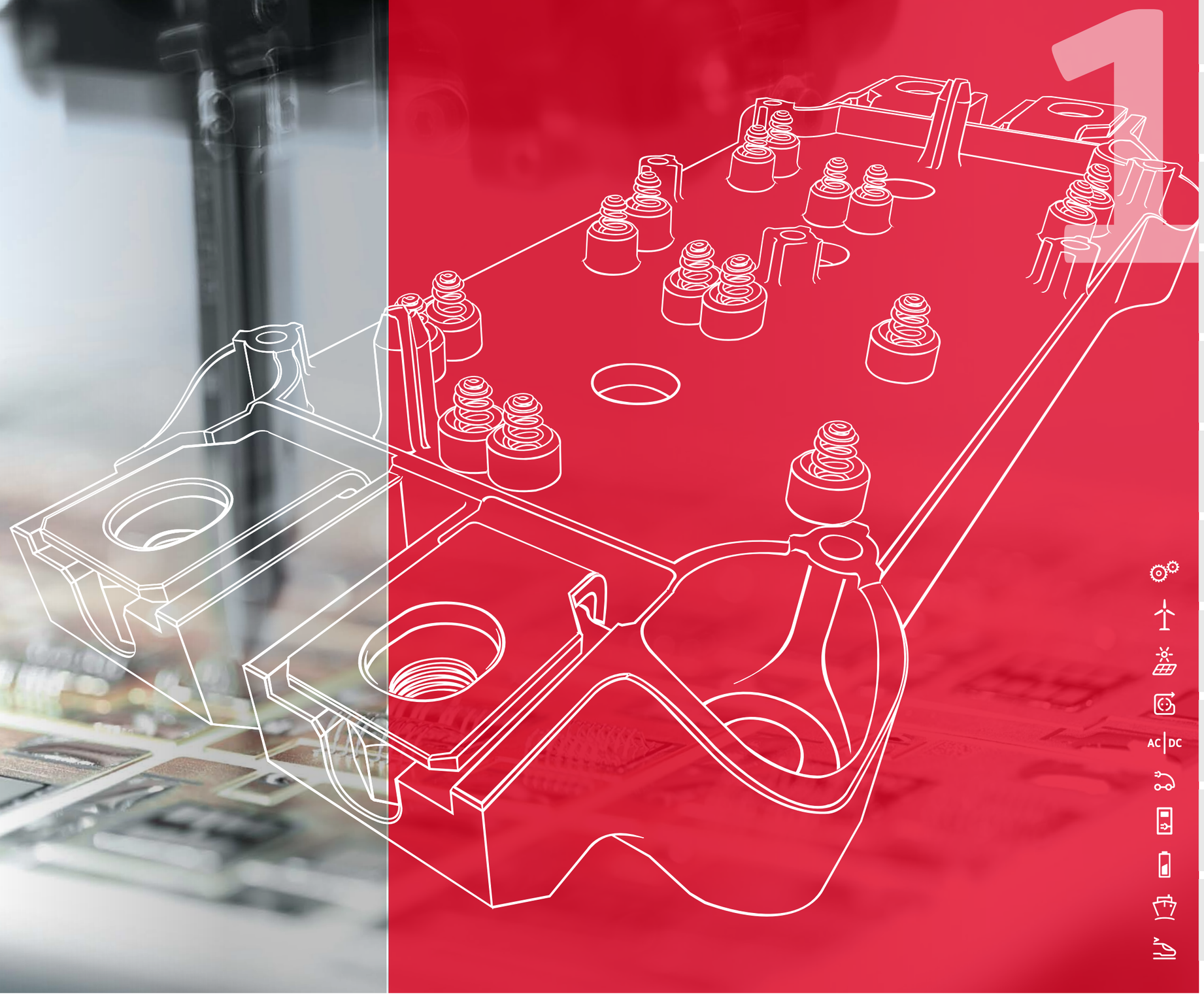
Rectifier bridge applications

Key applications include battery chargers, motor drive input rectifiers, power supplies, DC motor control, rectifiers with PFC, AC controllers, static switches (SKWT types) for natural convection or forced cooling.

Further information: www.semikron.com/discrete-diodes-thyristors
www.semikron.com/rectifier-bridges

Product Classes

IGBT Modules



Product Classes

IGBT Modules
For Maximum Performance

SEMIKRON offers IGBT (insulated-gate bipolar transistor) modules in SEMITRANS, SEMiX, SKiM, MiniSKiiP and SEMITOP packages in different topologies, current and voltage ratings. Starting from 4A to 1400A in voltage classes from 600V to 1800V, the IGBT modules are used in a variety of applications and feature key technologies such as sintering, spring or press-fit contacts for quick and easy assembly.

Different topologies such as CIB (converter inverter brake), half-bridge, H-bridge, 6-pack and 3-level are available, covering almost every application field. The latest IGBT chip and diode technologies offer optimized switching performance up to Tj max= 175°C.

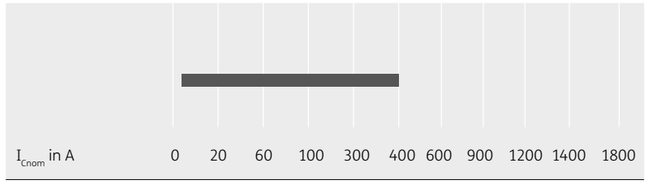
For detailed information please refer to data sheets.

Further information: www.semikron.com/igbt-modules

MiniSKiiP®

6-pack
3-level
H-bridge
CIB
half-bridge
twin 6-pack

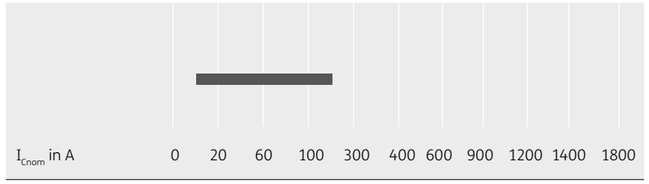
600V up to 1700V



SEMITOP®

half-bridge
6-pack
3-level
chopper
H-bridge
CIB

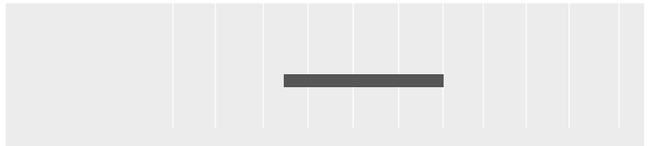
600V up to 1200V



SEMiX®

half-bridge
6-pack
3-level
chopper
buck-boost converter

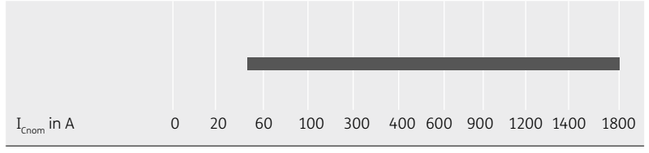
600V up to 1700V



SEMITRANS®

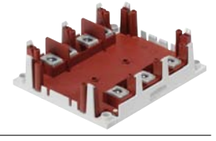
half-bridge
6-pack
chopper
single switch
multi level

600V up to 3300V

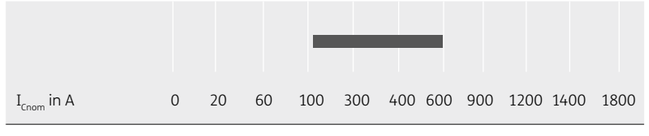


SKiM®4/5

6-pack
3-level

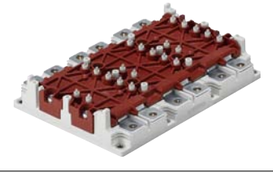


600V up to 1700V

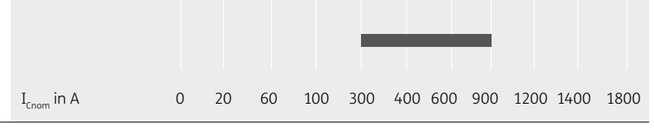


SKiM®63/93

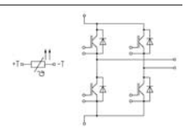
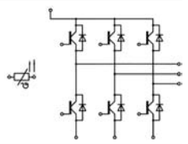
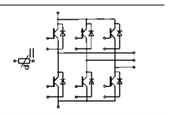
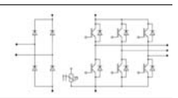
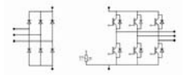
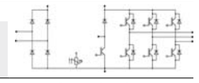
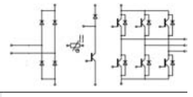
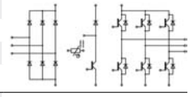
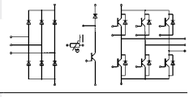
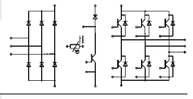
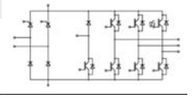
6-pack
chopper



600V up to 1700V

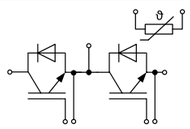
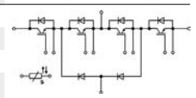
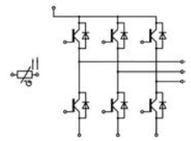
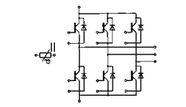
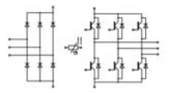
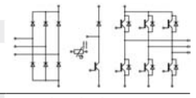
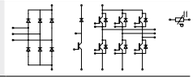
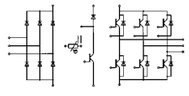
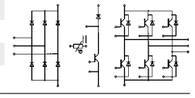


IGBT Modules / MiniSKiiP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
600V - IGBT3 (Trench)														
SKiiP 16GH066V1	65	50	1.45	1.7	1.7	0.95	56	1.50	1.3	1.6	-	-	II 1	
SKiiP 27GH066V1	88	75	1.45	2.7	3	0.75	77	1.50	1.8	1.2	-	-	II 2	
SKiiP 28GH066V1	112	100	1.45	3.4	3.5	0.6	112	1.30	3.3	0.8	-	-	II 2	
SKiiP 02AC066V1	20	10	1.45	0.45	0.3	2	20	1.30	0.3	2.5	-	-	II 0	
SKiiP 04AC066V1	33	20	1.45	0.8	0.7	1.6	31	1.60	0.55	2.5	-	-	II 0	
SKiiP 15AC066V1	40	30	1.45	1	1.1	1.35	39	1.50	1.1	2.1	-	-	II 1	
SKiiP 26AC066V1	65	50	1.45	1.6	1.6	0.95	56	1.50	1.3	1.6	-	-	II 2	
SKiiP 27AC066V1	88	75	1.45	2.7	3	0.75	77	1.50	1.8	1.2	-	-	II 2	
SKiiP 28AC066V1	112	100	1.45	3.4	3.5	0.6	112	1.30	3.3	0.8	-	-	II 2	
SKiiP 39AC066V4	146	150	1.45	7.9	5.6	0.5	164	1.30	3.5	0.55	-	-	II 3	
SKiiP 01NEC066V3	12	6	1.45	0.3	0.2	2.4	12	1.30	0.2	3	220	1.5	II 0	
SKiiP 02NEC066V3	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.5	220	1.5	II 0	
SKiiP 03NEC066V3	27	15	1.45	0.6	0.5	1.8	28	1.40	0.5	2.5	220	1.5	II 0	
SKiiP 01NAC066V3	12	6	1.45	0.3	0.2	2.4	12	1.30	0.2	3	220	1.5	II 0	
SKiiP 02NAC066V3	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.5	220	1.5	II 0	
SKiiP 02NEB066V3	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.46	220	1.5	II 0	
SKiiP 03NEB066V3	27	15	1.45	0.6	0.5	1.8	28	1.40	0.5	2.5	220	1.5	II 0	
SKiiP 25NEB066V1	43	30	1.45	0.9	1.2	1.35	39	1.50	1.1	2.1	370	1.5	II 2	
SKiiP 11NAB066V1	12	6	1.45	0.3	0.2	2.4	12	1.30	0.2	3	220	1.5	II 1	
SKiiP 12NAB066V1	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.5	220	1.5	II 1	
SKiiP 13NAB066V1	27	15	1.45	0.6	0.5	1.8	28	1.40	0.5	2.5	220	1.5	II 1	
SKiiP 14NAB066V1	33	20	1.45	0.75	0.7	1.6	31	1.60	0.55	2.5	220	1.5	II 1	
SKiiP 25NAB066V1	43	30	1.45	0.9	1.2	1.35	39	1.50	1.1	2.1	370	1.5	II 2	
SKiiP 26NAB066V1	65	50	1.45	1.6	1.6	0.95	56	1.50	1.3	1.6	370	1.5	II 2	
SKiiP 37NAB066V1	88	75	1.45	2.7	3	0.75	77	1.50	1.8	1.2	700	0.9	II 3	
SKiiP 38NAB066V1	112	100	1.45	3.4	3.5	0.6	112	1.30	3.3	0.8	700	0.9	II 3	
SKiiP 11HEB066V1	27	15	1.50	0.6	0.5	1.8	28	1.40	0.5	2.46	370	1.25	II 1	
SKiiP 12HEB066V1	33	15	1.50	0.8	0.7	1.6	29	1.40	0.6	2.1	370	1.25	II 1	

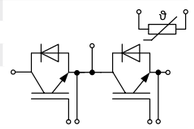
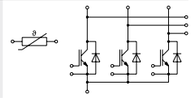
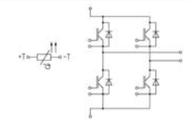
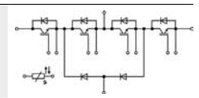
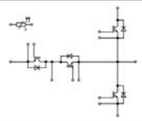
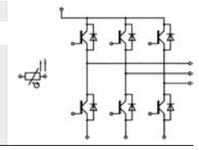
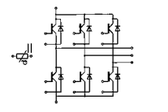
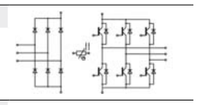
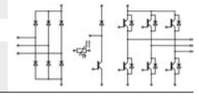
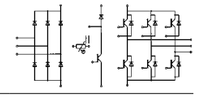
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / MiniSKiiP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
650V - IGBT3 (Trench)														
SKiiP 24GB07E3V1 [2]	185	150	1.45	2.2	5.1	0.33	161	1.54	3.7	0.45	-	-	II 2	
SKiiP 26GB07E3V1 [2]	229	200	1.45	4.4	7.4	0.28	235	1.40	4.5	0.35	-	-	II 2	
SKiiP 38GB07E3V1 [2]	287	300	1.45	5.5	10.6	0.25	310	1.40	5.1	0.28	-	-	II 3	
SKiiP 26MLI07E3V1 [2]	98	75	1.45	2.8	2.8	0.6	75	1.54	1.4	1	-	-	II 2	
SKiiP 27MLI07E3V1 [2]	110	100	1.45	4.2	4.2	0.6	107	1.40	3.5	0.8	-	-	II 2	
SKiiP 28MLI07E3V1 [2]	135	150	1.45	5.5	5.6	0.55	126	1.40	5.5	0.75	-	-	II 2	
SKiiP 39MLI07E3V1 [2]	159	200	1.45	3.6	8.9	0.5	163	1.39	8.3	0.6	-	-	II 3	
1200V - IGBT3 (Trench)														
SKiiP 03AC126V1 [3]	16	8	1.70	0.9	0.9	1	8	1.90	0.7	2.5	-	-	II 0	
SKiiP 11AC126V1 [3]	16	8	1.70	0.9	1	1.5	14	1.90	0.9	2.5	-	-	II 1	
SKiiP 11AC126V10 [3]	16	6	1.65	18	1	1.5	48	1.10	16.4	2.5	-	-	II 1	
SKiiP 12AC126V1 [3]	28	15	1.70	1.7	1.9	1.15	26	1.60	1.2	1.95	-	-	II 1	
SKiiP 13AC126V1 [3]	41	25	1.70	4.1	3.1	0.9	30	1.80	2.2	1.7	-	-	II 1	
SKiiP 13AC126V20 [3]	41	25	1.65	2.9	3	0.9	27	2.00	1.2	1.5	-	-	II 1	
SKiiP 23AC126V1 [3]	41	25	1.70	3.7	3.1	0.9	30	1.80	2.6	1.7	-	-	II 2	
SKiiP 24AC126V1 [3]	52	35	1.70	4.2	4.4	0.75	38	1.80	3.5	1.5	-	-	II 2	
SKiiP 25AC126V1 [3]	73	50	1.70	5.8	6.5	0.55	62	1.60	5.1	1	-	-	II 2	
SKiiP 26AC126V1 [3]	88	70	1.70	9	7.7	0.5	91	1.50	7.5	0.7	-	-	II 2	
SKiiP 37AC126V2 [3]	97	75	1.70	9.6	8.7	0.45	90	1.60	9.6	0.7	-	-	II 3	
SKiiP 38AC126V2 [3]	118	105	1.70	13.1	13	0.4	118	1.60	11.2	0.55	-	-	II 3	
SKiiP 39AC126V2 [3]	157	140	1.70	19.9	17.2	0.3	167	1.50	16.2	0.4	-	-	II 3	
SKiiP 39AC126V20 [3]	157	140	1.65	13	17	0.3	-	2.00	8.1	0.4	-	-	II 3	
SKiiP 03NAC126V1 [3]	16	8	1.70	0.9	0.9	1.5	14	1.60	0.7	2.5	220	1.5	II 0	
SKiiP 11NAB126V1 [3]	16	8	1.70	0.8	1	1.5	14	1.90	0.9	2.5	220	1.5	II 1	
SKiiP 12NAB126V1 [3]	28	15	1.70	2	1.9	1.15	26	1.60	1.3	1.95	220	1.5	II 1	
SKiiP 12NAB126V20 [3]	28	15	1.65	1.5	1.8	1.15	28	2.45	0.9	1.95	220	1.5	II 1	
SKiiP 22NAB126V10 [3]	28	15	1.65	2	1.9	1.15	28	1.60	1.1	1.95	700	0.9	II 2	
SKiiP 23NAB126V1 [3]	41	25	1.70	3.5	3	0.9	30	1.80	2.5	1.7	370	1.25	II 2	
SKiiP 23NAB126V10 [3]	41	25	1.70	3.5	3	0.9	30	1.80	2.5	1.7	635	0.9	II 2	
SKiiP 23NAB126V20 [3]	-	25	1.65	2.7	2.9	0.9	41	2.00	1.2	1.5	370	1.25	II 2	
SKiiP 24NAB126V1 [3]	52	35	1.70	4.6	4	0.75	38	1.80	3.3	1.5	370	1.25	II 2	
SKiiP 24NAB126V10 [3]	52	35	1.70	4.6	4	0.75	38	1.80	3.3	1.5	635	0.9	II 2	
SKiiP 35NAB126V1 [3]	73	50	1.70	6.5	6.1	0.55	62	1.60	4.7	1	700	0.9	II 3	
SKiiP 35NAB126V10 [3]	72	50	1.70	6.5	6.1	0.55	60	1.67	4.7	1	850	0.85	II 3	
SKiiP 36NAB126V1 [3]	88	70	1.70	9	7.7	0.5	91	1.50	7.5	0.7	700	0.9	II 3	
SKiiP 36NAB126V10 [3]	91	80	1.70	9	7.7	0.5	87	1.64	7.5	0.7	850	0.85	II 3	

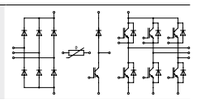
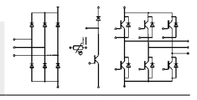
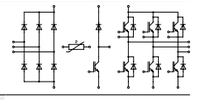
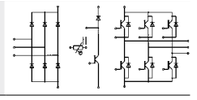
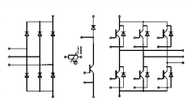
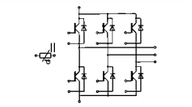
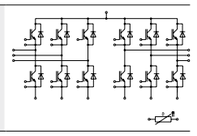
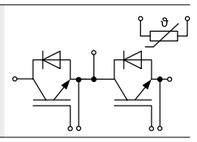
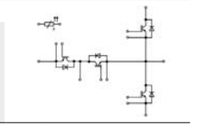
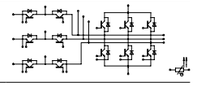
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / MiniSKiiP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1200V - IGBT4 (Trench)														
SKiiP 24GB12T4V1 [2]	170	150	1.85	10.8	15.6	0.32	157	2.17	10.3	0.41	-	-	II 2	
SKiiP 26GB12T4V1 [2]	224	200	1.80	13.6	22.1	0.25	194	2.20	13.4	0.34	-	-	II 2	
SKiiP 38GB12E4V1 [2]	329	300	1.85	19.1	34.6	0.17	267	2.20	21.5	0.26	-	-	II 3	
SKiiP 39GB12E4V1 [2]	388	400	1.80	20.8	49.7	0.16	363	2.20	30.2	0.19	-	-	II 3	
SKiiP 39GA12T4V1 [2]	167	150	1.85	22.5	14	0.33	136	2.14	11.4	0.52	-	-	II 3	
SKiiP 26GH12T4V11	90	70	1.85	9.5	7.1	0.55	83	2.17	5.6	0.75	-	-	II 2	
SKiiP 39MLI12T4V1 [1]	167	150	1.85	11.1	16.9	0.33	134	2.14	10.9	0.53	-	-	II 3	
SKiiP 39TMLI12T4V2 [2]	235	200	1.80	7.5	12.8	0.23	194	2.20	9.7	0.34	-	-	II 3	
SKiiP 11AC12T4V1	12	8	1.85	0.87	0.75	1.84	15	2.33	0.53	2.53	-	-	II 1	
SKiiP 12AC12T4V1	18	15	1.85	1.65	1.5	1.3	23	2.38	0.79	1.92	-	-	II 1	
SKiiP 13AC12T4V1	41	25	1.85	3.7	2.4	1	32	2.41	1.64	1.52	-	-	II 1	
SKiiP 23AC12T4V1	41	25	1.85	3.7	2.4	1	32	2.41	1.64	1.52	-	-	II 2	
SKiiP 24AC12T4V1	52	35	1.85	3.7	3	0.85	44	2.30	2.3	1.2	-	-	II 2	
SKiiP 25AC12T4V1	69	50	1.85	6	4.5	0.71	60	2.22	3.2	0.95	-	-	II 2	
SKiiP 26AC12T4V1	90	70	1.85	9.5	7.1	0.55	83	2.17	5.6	0.75	-	-	II 2	
SKiiP 37AC12T4V1	90	75	1.85	11.5	6.8	0.58	83	2.17	5.5	0.75	-	-	II 3	
SKiiP 38AC12T4V1	115	100	1.80	13.7	9.7	0.48	100	2.20	6.5	0.66	-	-	II 3	
SKiiP 39AC12T4V1	167	150	1.85	22.5	14	0.33	136	2.14	11.4	0.52	-	-	II 3	
SKiiP 02NAC12T4V1	6	4	1.85	0.66	0.37	2.49	7.5	1.82	0.34	2.53	220	1.5	II 0	
SKiiP 03NAC12T4V1	7.5	8	1.85	0.9	0.7	1.84	9	2.33	0.5	2.53	220	1.5	II 0	
SKiiP 10NAB12T4V1	6	4	1.85	0.66	0.37	2.49	7.5	1.82	0.34	2.53	220	1.5	II 1	
SKiiP 11NAB12T4V1	18	8	1.85	0.87	0.74	1.84	15	2.33	0.57	2.53	220	1.5	II 1	
SKiiP 12NAB12T4V1	28	15	1.85	1.4	1.3	1.3	23	2.38	1.1	1.92	220	1.5	II 1	
SKiiP 23NAB12T4V1	37	25	1.85	2.65	2.3	1.2	32	2.41	1.6	1.52	370	1.25	II 2	

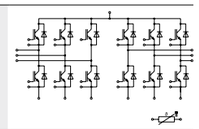
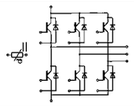
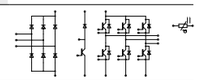
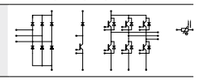
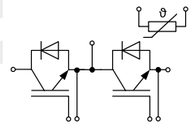
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / MiniSKiiP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1200V - IGBT4 (Trench)														
SKiiP 23NAB12T4V2 [2]	37	25	1.85	3.1	2.56	1.2	32	2.41	1.4	1.52	370	1.25	II 2	
SKiiP 23NAB12T4V10	37	25	1.85	2.65	2.3	1.2	30	2.41	1.6	1.52	700	0.9	II 2	
SKiiP 24NAB12T4V1	48	35	1.85	4.3	3.25	1	44	2.30	2.4	1.2	370	1.25	II 2	
SKiiP 24NAB12T4V4 [2]	48	35	1.85	4.3	3.25	1	40	2.30	2.4	1.4	370	1.25	II 2	
SKiiP 24NAB12T4V10	48	35	1.85	4.3	3.25	1	44	2.30	2.4	1.2	700	0.9	II 2	
SKiiP 34NAB12T4V1	52	35	1.85	4.3	3.3	0.85	44	2.30	2.4	1.2	370	1.25	II 3	
SKiiP 35NAB12T4V1	69	50	1.85	6	4.7	0.71	60	2.22	3.4	0.95	700	0.9	II 3	
SKiiP 37NAB12T4V1	90	75	1.85	9.7	6.8	0.58	83	2.17	4.9	0.75	700	0.9	II 3	
SKiiP 37NAB12T4V10	90	75	1.85	9.7	6.8	0.58	83	2.17	4.9	0.75	850	0.85	II 3	
SKiiP 38NAB12T4V1	115	100	1.80	11.2	10	0.48	99	2.20	6.5	0.66	1000	0.7	II 3	
SKiiP 12ACC12T4V10 [2]	28	15	1.85	2.1	1.6	1.3	23	2.38	0.8	1.92	60	2.5	II 1	
SKiiP 23ACC12T4V10 [2]	41	25	1.85	3.5	2.7	1	32	2.41	1.15	1.52	65	1.92	II 2	
SKiiP 24ACC12T4V10 [2]	52	35	1.85	3.9	3.5	0.85	44	2.30	2.3	1.2	100	1.52	II 2	
SKiiP 39AC12T4V21 [2]	192	150	1.85	22.5	14	0.26	149	2.14	11.4	0.45	-	-	II 3	
SKiiP 35ACC12F4V1 [2]	54	50	2.05	4.8	3.4	0.87	58	2.22	3	1.02	270	0.97	II 3	
1200V - IGBT4 (Fast Trench)														
SKiiP 26GB12F4V1 [2]	197	200	2.05	16.8	16.3	0.25	194	2.20	11.7	0.34	-	-	II 2	
SKiiP 28TMLI12F4V1 [2]	93	80	2.05	3.4	2.2	0.49	76	2.17	1.7	0.86	-	-	II 2	
SKiiP 29TMLI12F4V1 [2]	144	150	2.05	5.2	6.1	0.35	148	2.17	6.5	0.45	-	-	II 2	
SKiiP 35TMLI12F4V2 [1]	49	40	2.05	1.2	1.7	0.88	46	2.30	1	1.13	-	-	II 3	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / MiniSKiiP

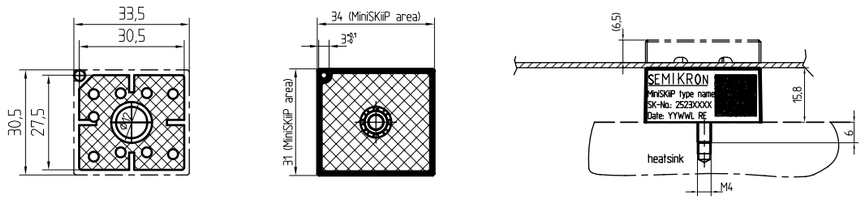
Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1200V - IGBT4 (Fast Trench)														
SKiiP 35ACC12F4V1 [2]	54	50	2.05	4.8	3.4	0.87	58	2.22	3	1.02	270	0.97	II 3	
1700V - IGBT3 (Trench)														
SKiiP 38AC176V2 [2]	118	100	2.00	23.8	32.2	0.38	115	1.76	26.2	0.61	-	-	II 3	
SKiiP 24NAB176V1 [2]	38	29	2.00	5.1	6.3	0.91	48	2.00	4.9	1.14	370	1.32	II 2	
SKiiP 34NAB176V3 [2]	67	58	2.00	11.2	12.8	0.57	66	2.06	6.6	0.84	635	0.86	II 3	
1700V - IGBT4 (Trench)														
SKiiP 22GB17E4V1 [2]	117	100	1.90	22.2	30.7	0.43	91	2.00	20.9	0.7	-	-	II 2	
SKiiP 24GB17E4V1 [2]	177	150	1.90	26	46	0.28	149	2.00	32.4	0.41	-	-	II 2	
SKiiP 36GB17E4V1 [2]	224	200	1.90	37	66	0.23	193	2.00	47	0.32	-	-	II 3	
SKiiP 38GB17E4V1 [2]	341	300	1.90	47	102	0.15	267	2.00	69	0.24	-	-	II 3	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

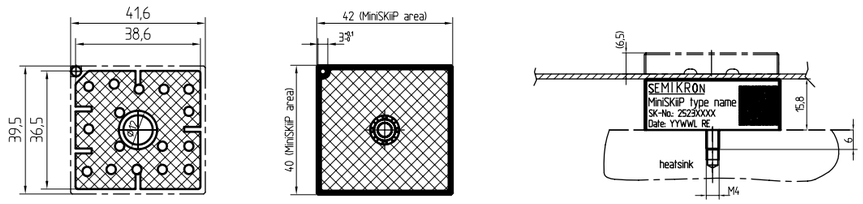
IGBT Modules / MiniSKiiP

Cases

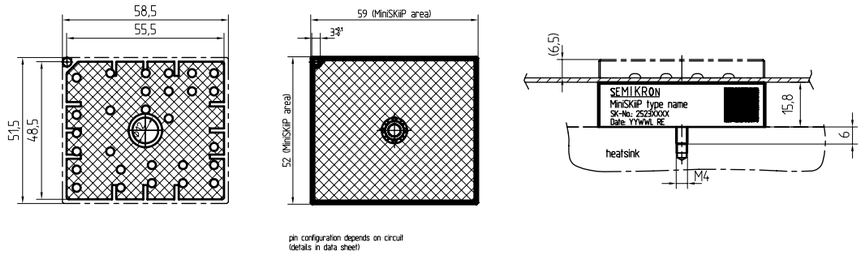
MiniSKiiP II 0



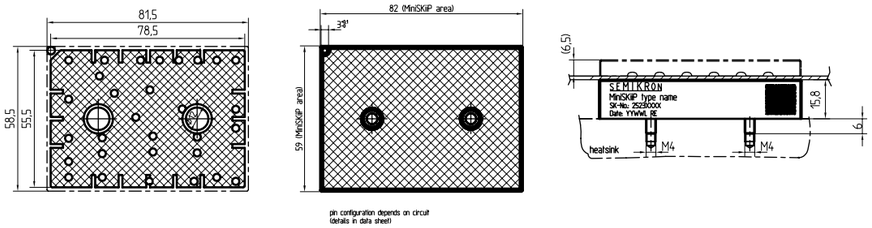
MiniSKiiP II 1



MiniSKiiP II 2

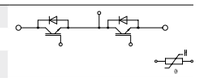
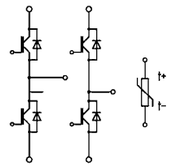
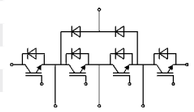
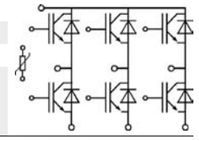
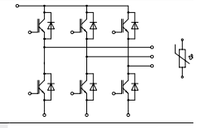
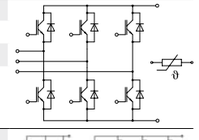
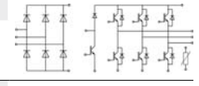
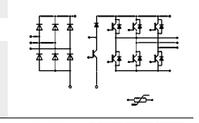
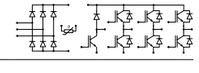


MiniSKiiP II 3



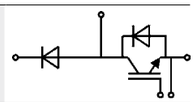
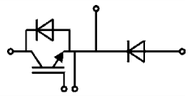
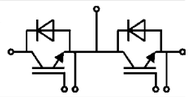
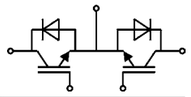
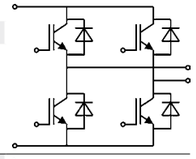
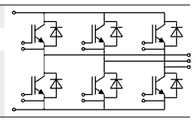
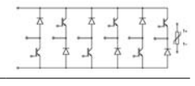
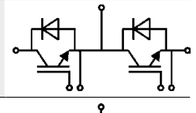
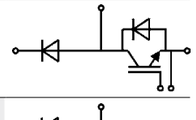
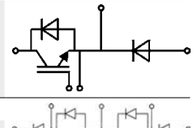
Dimensions in mm

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - IGBT3 (Trench)														
SK 75 GB 066 T	77	75	1.45	3.1	2.8	0.94	62	1.35	0.85	1.55	-	-	3	
SK 100 GB 066 T	96	100	1.45	7	6	0.78	108	1.35	1.7	0.91	-	-	3	
SK 150 GB 066 T	124	150	1.45	6.25	5.7	0.55	135	1.35	1.7	0.73	-	-	3	
SK 30 GBB 066 T	40	30	1.45	0.97	1.77	1.65	36	1.45	0.26	2.1	-	-	3	
SK 50 GBB 066 T	60	50	1.45	2.2	1.73	1.11	56	1.50	0.72	1.7	-	-	3	
SK 75 GBB 066 T	77	75	1.45	3.1	2.8	0.94	77	1.35	0.85	1.55	-	-	3	
SK 20 MLI 066	30	20	1.45	0.4	1.07	1.95	30	1.60	0.2	2.46	-	-	3	
SK 30 MLI 066	40	30	1.45	0.97	1.77	1.65	37	1.50	0.26	2.3	-	-	3	
SK 30 MLI 066p [1]	37	30	1.45	0.97	1.77	1.65	34	1.50	0.26	2.3	-	-	3p	
SK 50 MLI 066	60	50	1.45	1.46	2.02	1.11	56	1.50	1.07	1.7	-	-	3	
SK 75 MLI 066 T	83	75	1.45	1.7	2.8	0.75	92	1.50	1.1	1.2	-	-	4	
SK 100 MLI 066 T	105	100	1.45	2.5	4.2	0.65	110	1.35	1.9	0.9	-	-	4	
SK 150 MLI 066 T	151	150	1.45	2.7	5.9	0.55	115	1.50	2.6	0.72	-	-	4	
SK 20 GD 066 ET	30	20	1.45	0.34	0.63	1.95	31	1.45	0.2	2.46	-	-	3	
SK 30 GD 066 ET	40	30	1.45	0.97	1.77	1.65	36	1.45	0.26	2.1	-	-	3	
SK 50 GD 066 ET	60	50	1.45	2.2	1.73	1.11	56	1.50	0.72	1.7	-	-	3	
SK 50 GD 066 ETp [1]	59	50	1.45	2.2	1.73	1.11	51	1.47	0.72	1.7	-	-	3p	
SK 30 GD 066 ETp [1]	40	30	1.45	0.97	1.77	1.65	36	1.45	0.26	2.1	-	-	3p	
SK 75 GD 066 T	83	75	1.45	3.1	2.8	0.75	92	1.35	0.85	1.2	-	-	4	
SK 100 GD 066 T	105	100	1.45	7	6	0.65	99	1.30	1.7	0.8	-	-	4	
SK 150 GD 066 T	151	150	1.45	6.25	5.7	0.55	198	1.30	1.7	0.54	-	-	4	
SK 200 GD 066 T	174	200	1.45	13.9	12	0.45	99	1.30	3.4	0.8	-	-	4	
SK 20 DGDL 066 ET	30	20	1.45	0.3	0.6	1.95	27	1.40	0.2	2.46	2.15	220	3	
SK 30 DGDL 066 ET	40	30	1.45	0.55	1.15	1.65	36	1.50	0.53	2.3	1.7	370	3	
SK 50 DGDL 066 T	69	50	1.45	2.2	1.74	0.95	54	1.35	0.73	1.6	1.5	370	4	
SK 75 DGDL 066 T [3]	81	75	1.45	3.1	2.8	0.75	64	1.35	0.9	1.2	0.9	700	4	
SK 100 DGDL 066 T	106	100	1.45	4.4	3.5	0.65	99	1.10	1.45	0.8	0.9	700	4	
SK 50 DGDL 066 ETE2 [1]	53	50	1.45	0.85	1.6	1.31	51	1.00	0.9	1.46	1.8	520	E2	

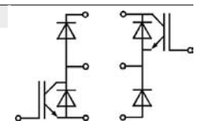
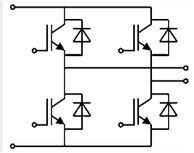
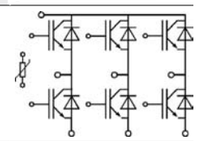
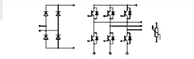
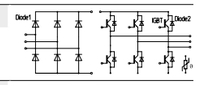
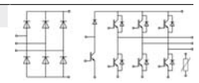
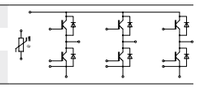
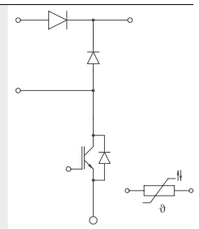
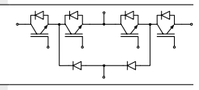
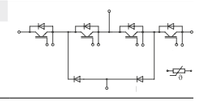
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - NPT IGBT (Standard)														
SK 45 GAL 063 [3]	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	
SK 45 GAR 063 [3]	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	
SK 45 GB 063 [3]	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	
SK 80 GB 063 [3]	81	100	2.10	4	3	0.6	79	1.40	1.2	0.9	-	-	3	
SK 80 GM 063 [3]	81	100	2.00	3	2.3	0.6	105	1.30	0.2	1.2	-	-	2	
SK 15 GH 063 [3]	20	15	2.00	0.71	0.4	1.9	20	1.45	0.45	1.2	-	-	2	
SK 25 GH 063 [3]	30	30	2.10	1.1	0.8	1.4	36	1.45	0.25	1.7	-	-	2	
SK 45 GH 063 [3]	45	50	2.10	1.4	1.2	1	57	1.30	0.9	1.2	-	-	3	
SK 13 GD 063 [3]	18	10	2.10	0.6	0.4	2	22	1.45	0.1	2.3	-	-	3	
SK 25 GD 063 [3]	30	30	2.10	1.3	0.9	1.4	36	1.45	0.25	1.7	-	-	3	
SK 45 GD 063 [3]	45	50	2.10	1.4	1.2	1	36	1.45	0.25	1.7	-	-	3	
SK 25 GAD 063 T [3]	30	30	2.10	1.3	0.9	1.4	36	1.45	0.25	1.7	-	-	3	
600V - NPT IGBT (Ultrafast)														
SK 50 GB 065 [3]	54	60	2.00	1.1	0.7	0.85	64	1.45	0.55	1.1	-	-	2	
SK 50 GAL 065 [3]	54	60	2.00	1.1	0.7	0.85	57	1.30	0.2	1.2	-	-	2	
SK 50 GAR 065 [3]	54	60	2.00	1.1	0.7	0.85	57	1.30	0.2	1.2	-	-	2	
SK 50 GARL 065 F	54	60	1.70	1.03	0.8	0.85	82	1.70	0.45	2.3	-	-	2	
SK 50 GARL 065 USA [3]	54	60	1.70	1.07	0.76	0.85	64	1.40	0.55	2.3	-	-	2	

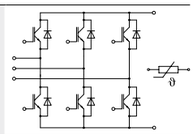
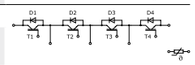
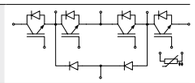
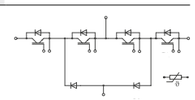
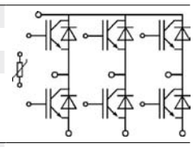
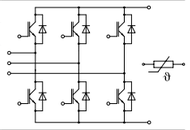
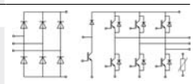
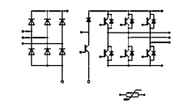
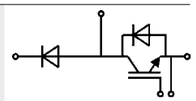
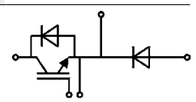
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - NPT IGBT (Ultrafast)														
SK 55 GARL 065 E [3]	54	60	1.70	1.1	0.76	0.85	36	1.45	0.9	1.7	-	-	3	
SK 75 GARL 065 E [3]	80	90	1.70	2.71	2.75	0.6	57	1.30	0.2	1.2	-	-	3	
SK 50 GH 065 F [3]	54	60	2.00	1.07	1.76	0.85	82	1.10	0.42	1.1	-	-	3	
SK 35 GD 065 ET [3]	45	50	2.00	1.3	0.6	1	36	1.90	0.9	1.7	-	-	3	
SK 10 BGD 065 ET [3]	17	6	2.00	0.18	0.13	2	22	1.30	0.18	2.3	2.7	220	3	
SK 9 BGD 065 ET [3]	12	6	2.00	0.22	0.12	2.6	20	1.35	0.31	2.7	2.15	220	3	
SK 9 DGD 065 ET [3]	12	6	2.00	0.22	0.12	2.6	20	1.35	0.31	2.7	2.15	220	3	
SK 20 DGD 065 ET [3]	26	20	2.00	0.66	0.4	1.7	25	1.60	-	1.7	1.7	370	3	
SK 10 DGDL 065 ET [3]	17	6	2.00	0.18	0.13	2	22	1.30	0.18	2.3	2.7	220	3	
SK 20 DGDL 065 ET [3]	24	20	2.00	0.69	0.39	1.7	25	1.60	-	1.7	2	220	3	
650V - IGBT3 (Trench)														
SK 75 GD 07E3 ETE2 [1]	66	75	1.45	1.1	2.55	1.1	70	1.43	1.85	1.35	-	-	E2	
SK 50 GD 07E3 ETE1 [1]	49	50	1.45	0.64	1.7	1.45	57	1.37	0.85	1.5	-	-	E1	
SK30GD07E3ETE1V1 [1]	38	30	1.45	0.8	1.45	1.6	37	1.55	0.65	2.2	-	-	E1	
650V - IGBT3 (Fast Trench)														
SK 151 GALE 07F3 TUF [1]	-	150	1.85	8.8	4	0.41	116	1.59	0.55	2.34	1.2	635	3	
SK 50 MLI 07F3 D1p [1]	51	50	1.85	1	1.18	1.11	56	1.37	0.95	1.55	-	-	3p	
SK 100 MLI 07F3 TD1p [1]	92	100	1.85	2	3.36	0.65	118	1.37	1.9	0.72	-	-	4p	
SK 150 MLI 07F3 TD1p [1]	119	150	1.85	9.07	1.3	0.55	118	1.37	1.76	0.72	-	-	4p	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
650V - IGBT3 (Fast Trench)														
SK 100 GD 07F3 TD1 [2]	104	100	1.85	3.92	2.1	0.54	95	1.35	0.92	0.85	-	-	4	
SK150DBB07F3TD1p [1]	68	75	1.85	2.4	1.6	0.9	81	1.35	1.2	1.1	-	-	4p	
SK100DBB07F3TD1p [1]	57	50	1.85	3.6	1.8	0.94	95	1.35	1.2	0.9	-	-	4p	
650V - IGBT L5 (Low saturation voltage Trench5 technology)														
SK 150 MLI 07L5 TD1p [1]	103	150	1.65	2.66	2.5	0.7	118	1.35	2.6	0.83	-	-	4p	
SK 150 MLI 07L5 TD1E2 [1]	103	150	1.65	2.66	2.5	0.7	118	1.35	2.6	0.83	-	-	E2	
1200V - IGBT3 (Trench)														
SK 10 GD 126 ET [3]	15	8	1.70	1	1	2	25	1.90	1.4	2.1	-	-	3	
SK 15 GD 126 ET [3]	22	15	1.70	2	1.8	1.6	25	1.60	1.4	2.1	-	-	3	
SK 25 GD 126 ET	32	25	1.70	3.3	3.1	1.2	28	1.80	2.1	1.9	-	-	3	
SK 35 GD 126 ET	40	35	1.70	4.6	4.3	1.05	34	1.80	2.9	1.7	-	-	3	
SK 50 GD 126 T	68	50	1.70	4.6	6.3	0.6	62	1.35	3.6	1	-	-	4	
SK 75 GD 126 T	88	75	1.70	11.3	10	0.5	91	1.46	6	0.7	-	-	4	
SK 100 GD 126 T [3]	114	100	1.70	9.8	11.7	0.4	118	1.50	7.3	0.55	-	-	4	
SK 10 DGDL 126 ET [3]	15	8	1.70	1	1	2	25	1.90	1.4	2.1	2.7	220	3	
SK 15 DGDL 126 ET	22	15	1.70	2	1.8	1.6	25	1.60	1.1	2.1	2	220	3	
SK 25 DGDL 126 T [3]	41	25	1.70	2.8	3.1	0.9	30	1.50	2	1.7	1.5	370	4	
SK 35 DGDL 126 T	52	35	1.70	3.7	4.8	0.75	38	1.50	3	1.5	1.25	370	4	
SK 50 DGDL 126 T [3]	68	50	1.70	4.6	6.3	0.6	62	1.35	3.6	1	0.9	700	4	
1200V - IGBT4 (Trench)														
SK 35 GAL 12T4	44	35	1.85	3.27	3.3	1.21	38	2.30	1.46	1.55	-	-	2	
SK 35 GAR 12T4 [1]	44	35	1.85	3.27	3.3	1.21	38	2.30	1.46	1.55	-	-	2	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
1200V - IGBT4 (Trench)														
SK 25 GB 12T4 [2]	37	25	1.85	2.27	2.7	1.31	30	2.40	1.28	1.91	-	-	2	
SK 35 GB 12T4	44	35	1.85	3.27	3.3	1.21	38	2.30	1.46	1.55	-	-	2	
SK 50 GB 12T4 T [2]	71	50	1.85	8.3	5	0.9	50	2.20	2.15	1.24	-	-	3	
SK 75 GB 12T4 T	80	75	1.85	13.6	8.2	0.74	70	2.10	3.39	0.97	-	-	3	
SK 100 GB 12T4 T [2]	100	100	1.85	16.6	10	0.6	85	2.25	5.2	0.87	-	-	3	
SK 200 GB 12T4 Tp [1]	210	200	1.80	13.6	22.1	0.28	190	2.20	13.4	0.35	-	-	4p	
SK 150 GAH 12T4 Tp [1]	167	150	1.85	10.8	15.6	0.33	33	2.33	0.82	1.1	-	-	4p	
SK 25 GH 12T4 [2]	35	25	1.85	2.27	2.7	1.31	28	2.41	1.28	1.91	-	-	3	
SK 50 GH 12T4 T [2]	75	50	1.80	8.3	5	0.65	56	2.20	2.15	1.05	-	-	4	
SK 100 GH 12T4 T	126	100	1.80	16.6	10	0.43	102	2.20	5.2	0.62	-	-	4	
SK 35 MLI 12T4 p [1]	43	35	1.85	1.6	3.27	1.21	38	2.30	1.73	1.55	-	-	3p	
SK 70 MLI 12T4 Tp [1]	90	70	1.85	13.5	8.5	0.55	78	2.30	2.73	0.73	-	-	4p	
SK 10 GD 12T4 ET [2]	17	8	1.85	0.41	0.76	2.2	15	2.38	0.41	2.7	-	-	3	
SK 15 GD 12T4 ET	27	15	1.85	0.83	1.52	1.65	21	2.38	0.82	2.34	-	-	3	
SK 25 GD 12T4 ET	37	25	1.85	2.27	2.7	1.31	30	2.40	1.28	1.91	-	-	3	
SK 25 GD 12T4 ETp [1]	35	25	1.85	2.27	2.7	1.31	28	2.41	1.28	1.91	-	-	3p	

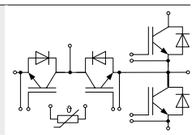
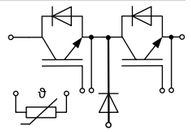
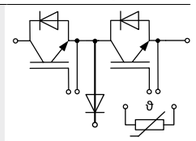
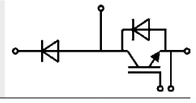
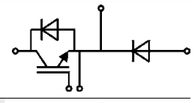
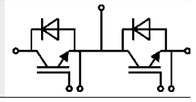
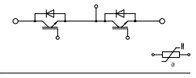
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
1200V - IGBT4 (Trench)														
SK 35 GD 12T4 ET [2]	44	35	1.85	3.27	3.3	1.21	40	2.30	1.46	1.55	-	-	3	
SK 50 GD 12T4 T	75	50	1.85	8.3	5	0.65	60	2.20	2.15	0.97	-	-	4	
SK 50 GD 12T4 Tp [2]	72	50	1.85	8.3	5	0.65	60	2.22	2.15	0.97	-	-	4p	
SK 75 GD 12T4 T	102	75	1.85	13.6	8.2	0.51	83	2.20	3.38	0.75	-	-	4	
SK 75 GD 12T4 Tp [1]	97	75	1.85	13.6	8.2	0.51	83	2.17	3.38	0.75	-	-	4p	
SK 100 GD 12T4 T	126	100	1.85	16.6	10	0.43	102	2.25	5.2	0.62	-	-	4	
SK 10 DGDL 12T4 ET	17	8	1.85	0.41	0.75	2.2	15	2.38	0.41	2.7	2	220	3	
SK 15 DGDL 12T4 ET	27	15	1.85	0.82	1.52	1.65	21	2.38	0.82	2.34	2	220	3	
SK 25 DGDL 12T4 T	45	25	1.85	2.27	2.7	0.96	30	2.40	-	1.7	1.25	370	4	
SK 25 DGDL 12T4 ETE2 [1]	33	25	1.85	2.6	2.35	1.45	53	1.00	2.05	1.46	1.8	520	E2	
SK 35 DGDL 12T4 T	58	35	1.85	3.27	3.3	0.8	46	2.30	1.46	1.37	1.25	370	4	
SK 35 DGDL 12T4 ETE2 [1]	43	35	1.85	3.15	3.2	1.2	53	1.00	2.6	1.46	1.55	520	E2	
SK 50 DGDL 12T4 T	75	50	1.85	8.3	5	0.65	60	2.22	2.15	0.97	0.9	700	4	
SK25GD12T4ETE1 [1]	33	25	1.85	2.6	2.35	1.45	29	2.41	2.05	1.8	-	-	E1	
SK35GD12T4ETE1 [1]	43	35	1.85	3.15	3.2	1.2	38	2.30	2.6	1.55	-	-	E1	
SK50GD12T4ETE2 [1]	66	50	1.85	5.8	4.5	0.75	59	2.22	3.6	0.98	-	-	E2	
SK75GD12T4ETE2 [1]	84	75	1.85	8	6.4	0.65	82	2.17	5.5	0.77	-	-	E2	
1200V - IGBT4 (Fast Trench)														
SK 120 GB 12F4 T [1]	174	120	2.05	8.8	7.47	0.22	29	2.38	2.04	1.25	-	-	3	
SK80TMLI12F4Tp [1]	88	80	2.05	1.9	2.04	0.54	83	2.17	1.6	0.75	-	-	3p	
SK 150 TMLI 12F4 Tp [2]	180	150	2.05	3.13	5.29	0.24	100	2.20	4.8	0.65	-	-	4p	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_c @ T_s = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
1200V - IGBT4 (Fast Trench)														
SK 200 TMLI 12F4 TE2 [1]	147	200	2.05	7.2	4.5	0.4	67	2.17	4	1.05	-	-	E2	
SK 150 MLIT 12F4 TE2 [1]	149	150	2.05	12.6	11	0.33	80	2.20	8.3	0.91	-	-	E2	
SK 150 MLIB 12F4 TE2 [1]	149	150	2.05	12.6	11	0.33	80	2.20	8.3	0.91	-	-	E2	
1200V - NPT IGBT (Ultrafast)														
SK 60 GAL 125 [3]	51	50	3.20	8.36	3.32	0.6	43	2.00	2	1.16	-	-	2	
SK 60 GAR 125 [3]	51	50	3.20	8.36	3.32	0.6	43	2.00	2	1.16	-	-	2	
SK 60 GB 125	51	50	3.20	8.36	3.32	0.6	57	2.00	2	0.9	-	-	3	
SK 80 GB 125 T	85	75	3.20	9.9	5	0.32	90	2.00	1	0.65	-	-	3	

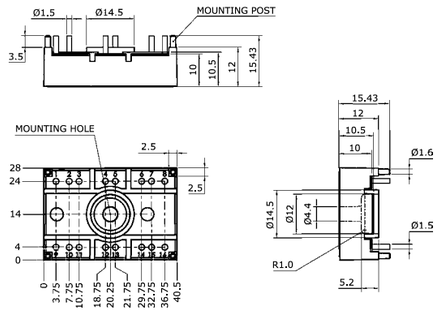
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

IGBT Modules / SEMITOP

Cases

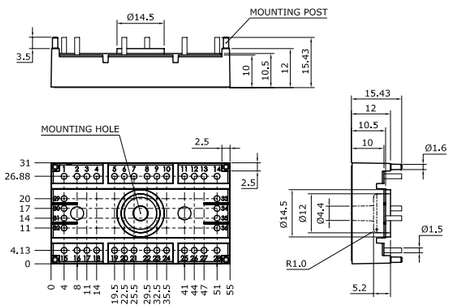
SEMITOP 2

Dimensions: mm
Tolerance system: ISO 2768-m



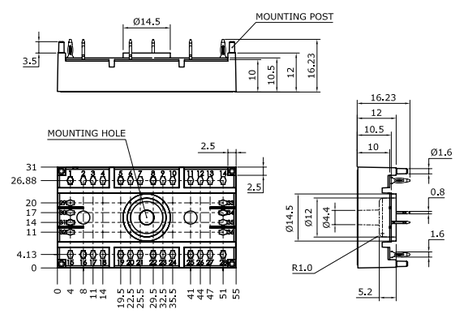
SEMITOP 3

Dimensions: mm
Tolerance system: ISO 2768-m



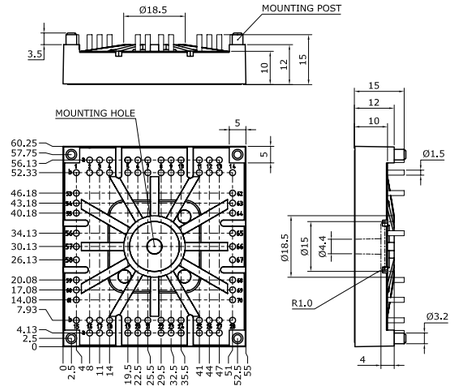
SEMITOP 3 Press-Fit

Dimensions: mm
Tolerance system: ISO 2768-m



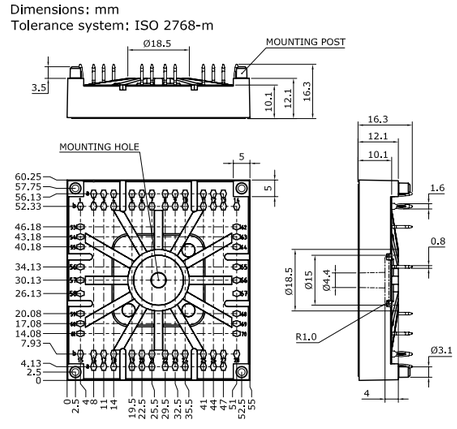
SEMITOP 4

Dimensions: mm
Tolerance system: ISO 2768-m



SEMITOP 4 Press-Fit

Dimensions: mm
Tolerance system: ISO 2768-m

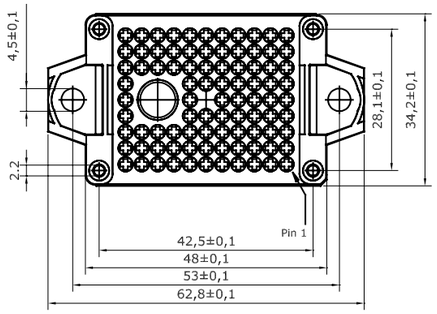


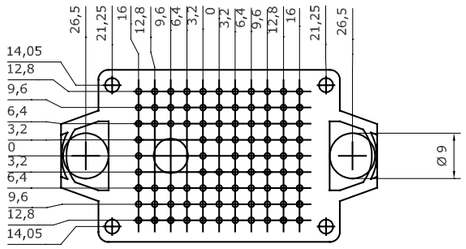
Dimensions in mm

IGBT Modules / SEMITOP

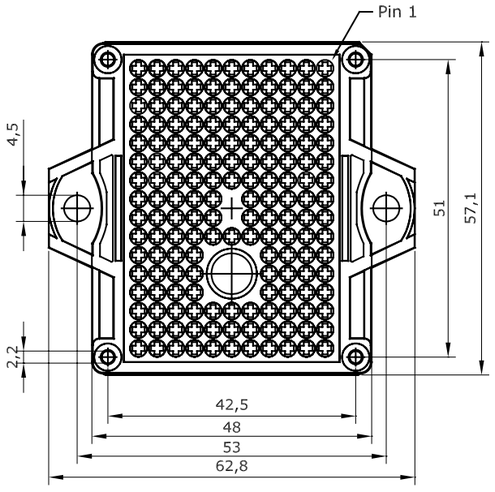
Cases

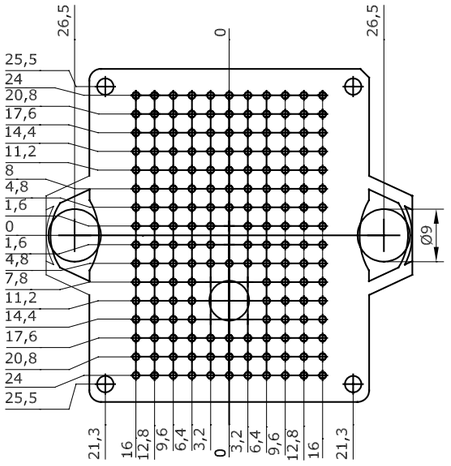
SEMITOP E1





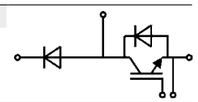
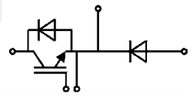
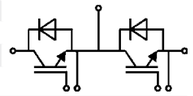
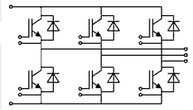
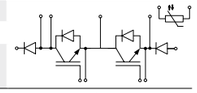
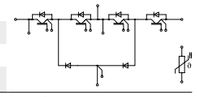
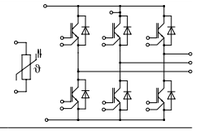
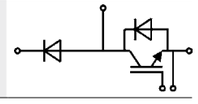
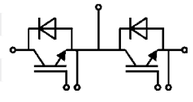
SEMITOP E2





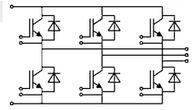
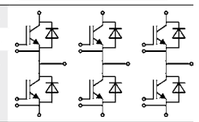
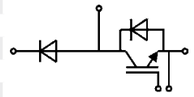
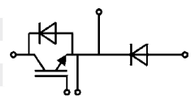
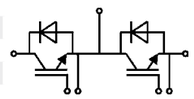
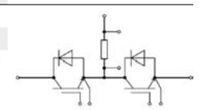
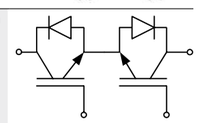
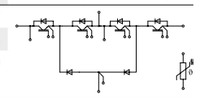
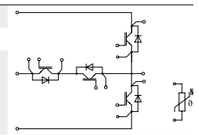
Dimensions in mm

IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
600V - IGBT3 (Trench)													
SEMiX402GAL066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GAL066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX402GAR066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GAR066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX202GB066HDs	272	200	1.45	6	8	0.21	291	1.40	6.5	0.27	2s	0.045	
SEMiX302GB066HDs	379	300	1.45	12	15	0.16	419	1.40	7.5	0.19	2s	0.045	
SEMiX402GB066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GB066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX101GD066HDs	139	100	1.45	3	4	0.41	151	1.40	4.5	0.51	13	0.04	
SEMiX151GD066HDs	200	150	1.45	3.8	6.1	0.29	219	1.40	5.8	0.36	13	0.04	
SEMiX201GD066HDs	258	200	1.45	5	8	0.23	284	1.40	7.5	0.28	13	0.04	
650V - IGBT4 (Trench)													
SEMiX205GARL07E3 [1]	258	200	1.45	16	16	0.23	86	1.37	-	0.81	5p	0.019	
SEMiX305GARL07E3 [1]	353	300	1.45	21	21	0.18	86	1.37	-	0.81	5p	0.018	
SEMiX405GARL07E3 [1]	457	400	1.45	28	28	0.14	86	1.37	-	0.81	5p	0.017	
SEMiX155MLI07E4 [2]	187	150	1.55	1.5	8.6	0.32	145	1.40	2.3	0.51	5p	0.009	
SEMiX205MLI07E4 [2]	262	200	1.55	2	10	0.22	294	1.40	4.5	0.25	5p	0.005	
SEMiX305MLI07E4 [2]	388	300	1.55	2.5	16	0.15	294	1.40	7.7	0.25	5p	0.005	
SEMiX405MLI07E4 [2]	474	400	1.55	5.3	20	0.13	377	1.40	11	0.21	5p	0.004	
SEMiX305GD07E4 [1]	372	300	1.55	5.5	16	0.16	335	1.40	5.2	0.25	5p	0.004	
1200V - V-IGBT													
SEMiX151GAL12Vs	231	150	1.75	19	17	0.19	189	2.14	12	0.31	1s	0.075	
SEMiX151GB12Vs	231	150	1.75	19	17	0.19	189	2.14	12	0.31	1s	0.075	
SEMiX202GB12Vs	310	200	1.75	25	24	0.14	229	2.20	15	0.26	2s	0.045	
SEMiX223GB12Vs	323	225	1.85	20	27	0.14	263	2.17	16	0.23	3s	0.04	
SEMiX302GB12Vs	448	300	1.75	37	36	0.1	356	2.14	22	0.17	2s	0.045	
SEMiX303GB12Vs	448	300	1.75	27	36	0.1	327	2.20	21	0.19	3s	0.04	
SEMiX404GB12Vs	596	400	1.75	39	52	0.075	440	2.20	34	0.14	4s	0.03	
SEMiX453GB12Vs	673	450	1.75	40	54	0.067	516	2.14	33	0.12	3s	0.04	
SEMiX603GB12Vs	800	600	1.85	50	83	0.057	516	2.42	40	0.12	3s	0.04	
SEMiX604GB12Vs	880	600	1.75	59	79	0.051	707	2.14	50	0.086	4s	0.03	

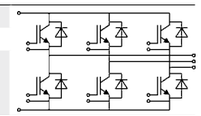
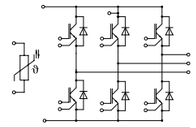
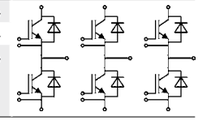
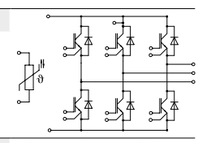
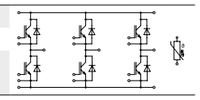
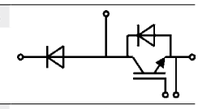
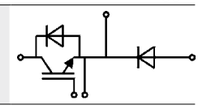
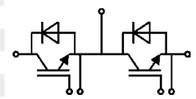
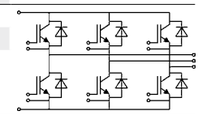
Footnotes: 1) Sample status / 2) In production new

IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - V-IGBT													
SEMiX101GD12Vs	159	100	1.75	13	11	0.27	121	2.20	7.7	0.48	13	0.04	
SEMiX151GD12Vs	231	150	1.75	19	17	0.19	189	2.14	12	0.31	13	0.04	
SEMiX223GD12Vc	323	225	1.85	20	27	0.14	263	2.17	16	0.23	33c	0.014	
SEMiX303GD12Vc	448	300	1.75	27	36	0.1	327	2.20	21	0.19	33c	0.014	
SEMiX453GD12Vc	673	450	1.75	40	54	0.067	516	2.14	33	0.12	33c	0.014	
1200V - IGBT4 (Trench)													
SEMiX151GAL12E4s	232	150	1.80	17	18	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX302GAL12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX453GAL12E4s	683	450	1.80	45	67	0.065	544	2.14	28	0.11	3s	0.04	
SEMiX603GAL12E4p [2]	1110	600	1.80	59	76	0.037	856	2.08	33	0.065	3p	0.009	
SEMiX604GAL12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	
SEMiX151GAR12E4s	232	150	1.80	17	18	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX302GAR12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX453GAR12E4s	683	450	1.80	45	67	0.065	544	2.14	28	0.11	3s	0.04	
SEMiX603GAR12E4p [2]	1110	600	1.80	64	76	0.037	856	2.08	32	0.065	3p	0.009	
SEMiX604GAR12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	
SEMiX151GB12E4s	232	150	1.80	17	18	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX202GB12E4s	312	200	1.80	22	28	0.14	229	2.20	12	0.26	2s	0.045	
SEMiX223GB12E4p	326	225	1.85	14	26	0.14	287	2.17	17	0.2	3p	0.009	
SEMiX302GB12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX303GB12E4p	469	300	1.80	23	38	0.094	378	2.20	23	0.15	3p	0.009	
SEMiX303GB12E4s	466	300	1.80	30	41	0.095	338	2.20	18	0.18	3s	0.04	
SEMiX404GB12E4s	618	400	1.80	27	60	0.072	440	2.20	26	0.14	4s	0.03	
SEMiX453GB12E4p	678	450	1.80	25	57	0.066	578	2.14	37	0.1	3p	0.009	
SEMiX453GB12E4s	683	450	1.80	45	67	0.065	544	2.14	28	0.11	3s	0.009	
SEMiX603GB12E4p	1110	600	1.80	69	80	0.037	856	2.08	40	0.065	3p	0.009	
SEMiX604GB12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	
SEMiX303GB12E4I50p [1]	469	300	1.80	23	38	0.094	378	2.20	23	0.15	3Ip	0.009	
SEMiX453GB12E4Ip	678	450	1.80	33	57	0.066	578	2.14	39	0.1	3Ip	0.009	
SEMiX603GB12E4Ip	1110	600	1.80	63	80	0.037	856	2.08	40	0.065	3Ip	0.009	
SEMiX453GM12E4p [1]	678	450	1.80	11	66	0.066	544	2.14	32	0.11	3Ip	0.009	
SEMiX155MLI12E4 [1]	237	150	1.85	12	17	0.18	191	2.17	5.5	0.3	5p	0.007	
SEMiX205MLI12E4 [1]	313	200	1.80	13	25	0.14	229	2.20	5.8	0.26	5p	0.006	
SEMiX305MLI12E4 [2]	451	300	1.80	17	39	0.1	344	2.14	22	0.18	5p	0.009	
SEMiX205TMLI12E4B [2]	318	200	1.80	5	4	0.136	229	2.20	5.9	0.26	5p	0.008	
SEMiX305TMLI12E4B [2]	479	300	1.80	4.5	21	0.09	363	2.20	8.8	0.16	5p	0.006	
SEMiX405TMLI12E4B [2]	636	400	1.80	6	28	0.068	461	2.20	12	0.13	5p	0.005	

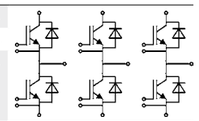
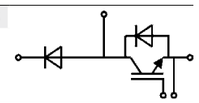
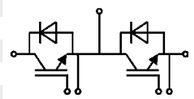
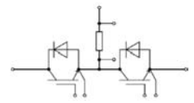
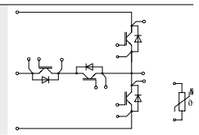
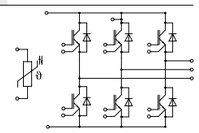
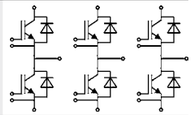
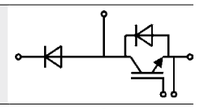
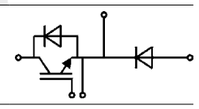
Footnotes: 1) Sample status / 2) In production new

IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - IGBT4 (Trench)													
SEMiX71GD12E4s	115	75	1.85	7.5	9	0.38	97	2.17	5.3	0.58	13	0.04	
SEMiX101GD12E4s	160	100	1.80	11	13	0.27	121	2.20	6.5	0.48	13	0.04	
SEMiX151GD12E4s	232	150	1.80	14	19	0.19	189	2.14	8.9	0.31	13	0.04	
SEMiX205GD12E4 [2]	313	200	1.80	14	23	0.15	224	2.20	16	0.27	5p	0.005	
SEMiX223GD12E4c	333	225	1.85	22	31	0.135	270	2.17	17	0.22	33c	0.014	
SEMiX303GD12E4c	466	300	1.80	29	42	0.095	338	2.20	23	0.18	33c	0.014	
SEMiX453GD12E4c	683	450	1.80	52	68	0.065	544	2.14	28	0.11	33c	0.014	
1200V - IGBT4 (Fast Trench)													
SEMiX105GD12T4 [1]	163	100	1.80	12	19	0.26	129	2.20	12	0.43	5p	t.b.d.	
SEMiX155GD12T4 [1]	219	150	1.80	13	21	0.21	175	2.14	14	0.35	5p	t.b.d.	
SEMiX106GD12T4p[1]	153	100	1.80	7.5	9.5	0.29	128	1.70	8	0.5	6p	t.b.d.	
SEMiX156GD12T4p[1]	225	150	1.80	10	16	0.2	177	1.70	13.5	0.375	6p	t.b.d.	
SEMiX206GD12T4p[1]	302	200	1.80	29.4	31.4	0.15	249	1.70	22.9	0.26	6p	t.b.d.	
1200V - IGBT3 (Trench)													
SEMiX452GAL126HDs	455	300	1.70	35	45	0.083	394	1.60	33	0.15	2s	0.045	
SEMiX703GAL126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX703GAR126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX252GB126HDs	242	150	1.70	20	21	0.15	228	1.60	18	0.24	2s	0.045	
SEMiX302GB126HDs	311	200	1.70	30	26	0.12	292	1.60	23	0.19	2s	0.045	
SEMiX353GB126HDs	364	225	1.70	27	33	0.1	329	1.60	29	0.17	3s	0.04	
SEMiX452GB126HDs	455	300	1.70	35	45	0.083	394	1.60	33	0.15	2s	0.045	
SEMiX503GB126HDs	466	300	1.70	28	44	0.08	431	1.60	33	0.13	3s	0.04	
SEMiX604GB126HDs	590	400	1.70	36	60	0.065	533	1.60	46	0.11	4s	0.03	
SEMiX703GB126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX904GB126HDs	821	600	1.70	60	88	0.05	752	1.60	75	0.081	4s	0.03	
SEMiX101GD126HDs	129	75	1.70	10	11	0.27	117	1.60	9	0.46	13	0.04	
SEMiX151GD126HDs	168	100	1.70	12	14	0.21	152	1.60	12	0.36	13	0.04	
SEMiX251GD126HDs	242	150	1.70	19	22	0.15	207	1.60	15	0.28	13	0.04	

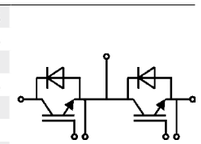
Footnotes: 1) Sample status / 2) In production new

IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - IGBT3 (Trench)													
SEMiX353GD126HDc	364	225	1.70	27	33	0.1	329	1.60	29	0.17	33c	0.014	
SEMiX503GD126HDc	466	300	1.70	28	44	0.08	412	1.60	33	0.14	33c	0.014	
SEMiX703GD126HDc	642	450	1.70	32	68	0.061	561	1.59	60	0.11	33c	0.014	
1700V - IGBT4 (Trench)													
SEMiX302GAL17E4s	516	300	1.90	140	122	0.083	324	1.98	70	0.184	2s	0.045	
SEMiX453GAL17E4s	762	450	1.90	250	190	0.056	482	1.98	100	0.125	3s	0.04	
SEMiX151GB17E4s	260	150	1.90	52	60	0.162	169	1.98	41	0.345	1s	0.075	
SEMiX202GB17E4s	321	200	1.90	75	82	0.122	213	2.00	55	0.276	2s	0.045	
SEMiX302GB17E4s	516	300	1.90	140	122	0.083	324	1.98	70	0.184	2s	0.045	
SEMiX303GB17E4s	477	300	1.90	140	125	0.083	311	2.00	85	0.191	3s	0.04	
SEMiX404GB17E4s	633	400	1.90	190	165	0.062	412	2.00	97	0.145	4s	0.03	
SEMiX453GB17E4p	731	450	1.90	131	146	0.06	557	1.98	72	0.1	3p	0.009	
SEMiX453GB17E4s	762	450	1.90	250	190	0.056	482	1.98	100	0.125	3s	0.04	
SEMiX603GB17E4p [2]	981	600	1.95	125	200	0.037	794	1.88	120	0.073	3p	0.009	
SEMiX604GB17E4s	1015	600	1.90	255	255	0.042	629	1.98	150	0.095	4s	0.03	
SEMiX453GB17E4Ip	731	450	1.90	153	150	0.06	557	1.98	73	0.1	3Ip	0.009	
SEMiX305TMLI17E4C [1]	486	300	1.90	38	60	0.08	338	2.00	38	0.17	5p	0.005	
SEMiX155GD17E4 [1]	245	150	1.90	-	-	0.18	175	2.00	-	0.32	5p	t.b.d.	
SEMiX453GD17E4c	762	450	1.90	186	183	0.056	482	1.98	122	0.125	33c	0.014	
1700V - IGBT3 (Trench)													
SEMiX653GAL176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	
SEMiX653GAR176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	

Footnotes: 1) Sample status / 2) In production new

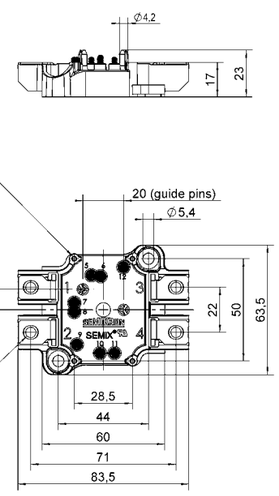
IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1700V - IGBT3 (Trench)													
SEMiX252GB176HDs	246	150	2.00	90	55	0.12	288	1.55	32	0.19	2s	0.045	
SEMiX302GB176HDs	308	200	2.00	130	77	0.1	389	1.50	43	0.15	2s	0.045	
SEMiX353GB176HDs	353	225	2.00	155	85	0.086	428	1.55	45	0.13	3s	0.04	
SEMiX452GB176HDs	437	300	2.00	180	110	0.073	389	1.70	46	0.15	2s	0.045	
SEMiX453GB176HDs	444	300	2.00	215	125	0.071	545	1.50	65	0.11	3s	0.04	
SEMiX604GB176HDs	567	400	2.00	215	165	0.058	740	1.50	95	0.081	4s	0.03	
SEMiX653GB176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	
SEMiX854GB176HDs	779	600	2.00	300	250	0.045	740	1.70	170	0.081	4s	0.03	
SEMiX353GD176HDc	353	225	2.00	155	85	0.086	428	1.55	45	0.13	33c	0.014	
SEMiX453GD176HDc	444	300	2.00	215	125	0.071	545	1.50	65	0.11	33c	0.014	
SEMiX653GD176HDc	619	450	2.00	300	180	0.054	545	1.70	73	0.11	33c	0.014	

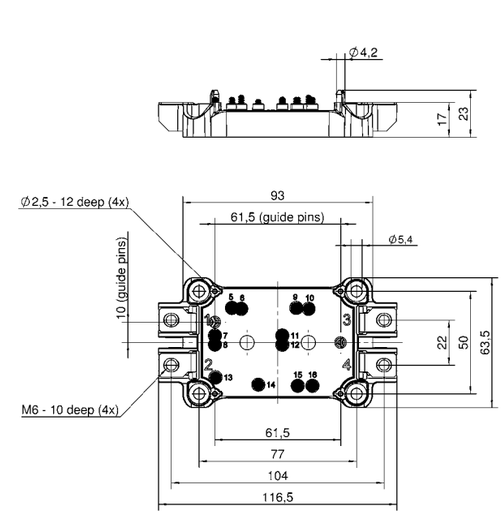
Footnotes: 1) Sample status / 2) In production new

Cases

SEMiX 1s



SEMiX 2s

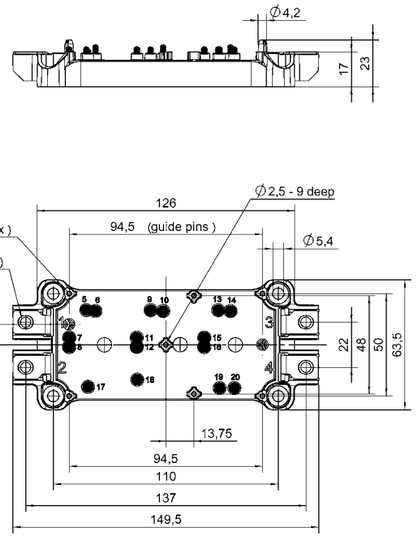


Dimensions in mm

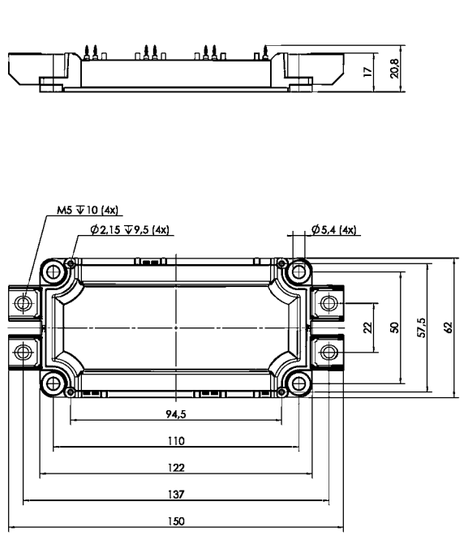
IGBT Modules / SEMiX

Cases

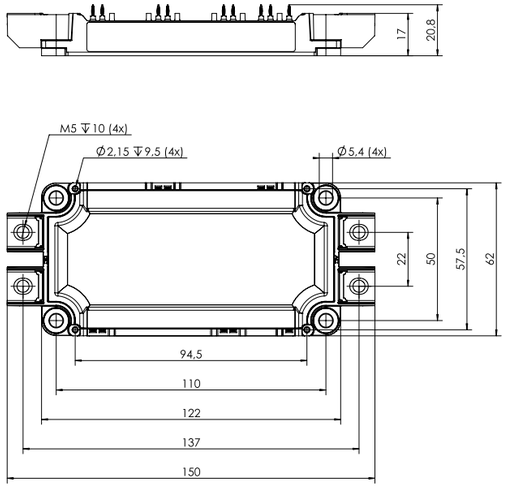
SEMiX 3s



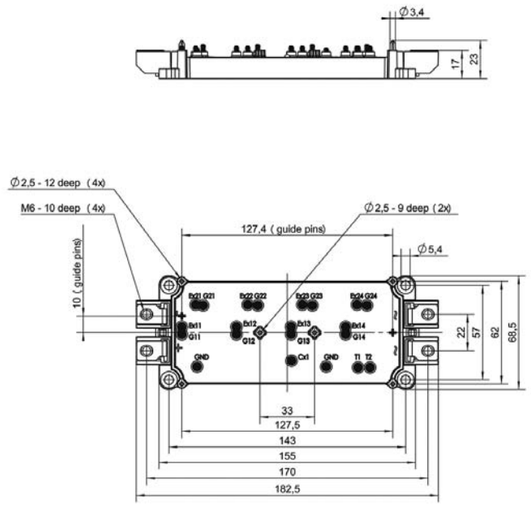
SEMiX 3p



SEMiX 3Ip



SEMiX 4s

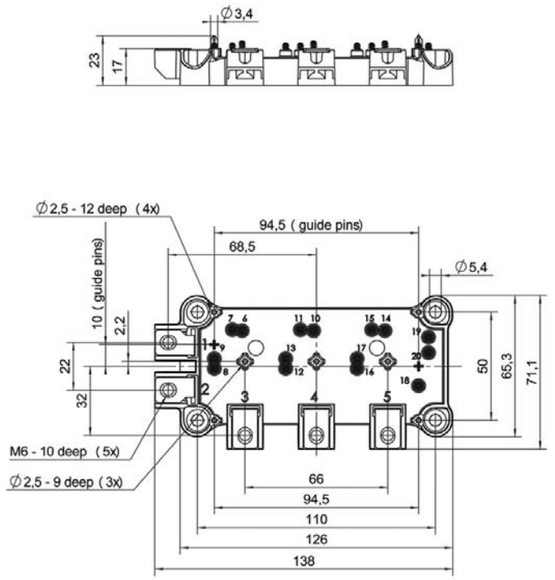


Dimensions in mm

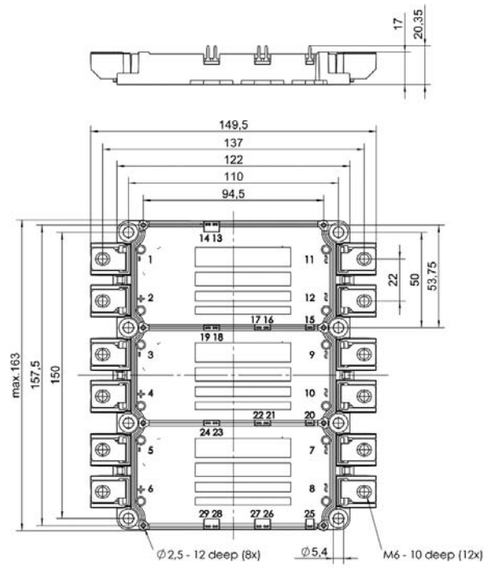
IGBT Modules / SEMiX

Cases

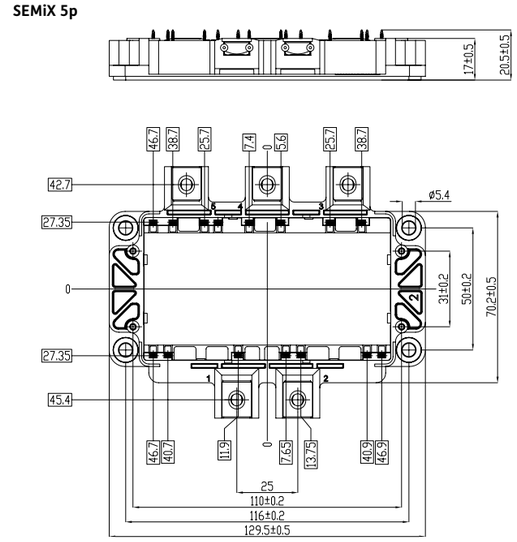
SEMiX 13



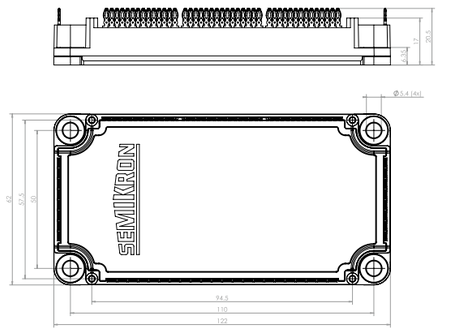
SEMiX 33c



SEMiX 5p

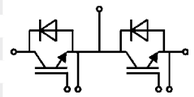
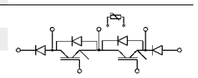
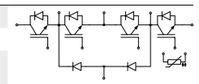
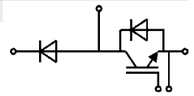
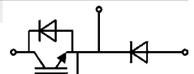
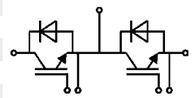
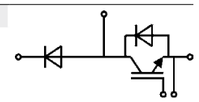
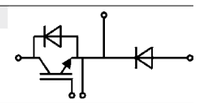
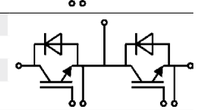
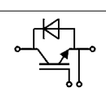
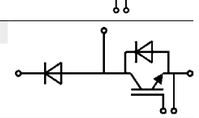


SEMiX 6p



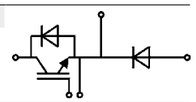
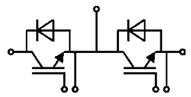
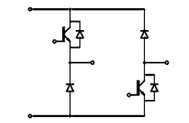
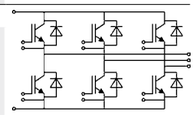
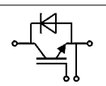
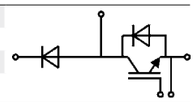
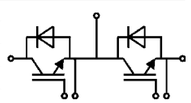
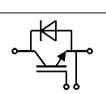
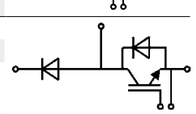
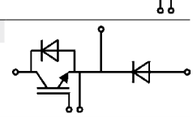
Dimensions in mm

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
600V - IGBT3 (Trench)												
SKM145GB066D	195	150	1.46	8.5	5.5	0.3	150	1.40	3.5	0.5	2	
SKM195GB066D	265	200	1.46	14	8	0.22	200	1.40	5.6	0.4	2	
SKM300GB066D	390	300	1.45	7.5	11.5	0.15	350	1.38	10.5	0.25	3	
SKM400GB066D	500	400	1.45	8	16	0.12	450	1.40	14	0.2	3	
SKM600GB066D	760	600	1.45	7.5	29.5	0.08	700	1.40	25	0.125	3	
SKM200GARL066T [2]	280	200	1.45	2.24	7.89	0.21	270	1.45	4	0.39	5	
SKM300GARL066T [2]	393	300	1.45	3.5	10.1	0.15	421	1.54	4	0.28	5	
SKM400GARL066T [1]	504	400	1.45	4.48	15.78	0.12	421	1.54	8	0.28	5	
SKM150MLI066TAT [1]	200	150	1.45	1.7	5.1	0.29	200	1.35	2	0.52	5	
SKM200MLI066TAT [2]	280	200	1.45	2.53	6.82	0.21	270	1.4	4	0.39	5	
SKM300MLI066TAT [2]	400	300	1.45	3.5	10.1	0.15	324	1.35	4	0.25	5	
600V - NPT IGBT (Standard)												
SKM75GAL063D [3]	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	
SKM300GAL063D [3]	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	
SKM75GAR063D [3]	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	
SKM300GAR063D [3]	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	
SKM50GB063D [3]	70	50	2.10	2.5	1.8	0.5	75	1.35	0.48	1	2	
SKM75GB063D [3]	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	
SKM100GB063D [3]	130	100	2.1	4	3	0.27	100	1.55	1.5	0.6	2	
SKM200GB063D [3]	260	200	2.1	11	7.5	0.14	200	1.55	2.1	0.3	3	
SKM300GB063D [3]	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	
650V - IGBT3 (Trench)												
SKM195GAL07E3 [2]	266	200	1.46	6.3	8.3	0.22	217	1.39	4.2	0.4	2	
SKM300GAL07E3 [2]	382	300	1.45	3	14	0.15	335	1.40	6.4	0.25	3	
SKM195GAR07E3 [2]	266	200	1.46	6.3	8.3	0.22	217	1.39	4.2	0.4	2	
SKM300GAR07E3 [2]	382	300	1.45	3	14	0.15	335	1.40	6.4	0.25	3	
SKM195GB07E3 [2]	266	200	1.46	6.3	8.3	0.22	217	1.39	4.2	0.4	2	
SKM300GB07E3 [2]	382	300	1.45	3	14	0.15	335	1.40	6.4	0.25	3	
SKM400GB07E3 [2]	506	400	1.45	4	17	0.12	449	1.39	12	0.19	3	
SKM600GB07E3 [2]	758	600	1.45	4.7	37	0.08	770	1.40	9.3	0.104	3	
1200V - NPT IGBT (Ultrafast)												
SKM600GA125D	580	400	3.3	30	22	0.041	500	2.00	24	0.09	4	
SKM800GA125D	760	600	3.20	88	48	0.03	720	2.3	28	0.07	4	
SKM200GAL125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	
SKM400GAL125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	

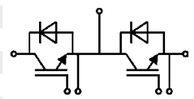
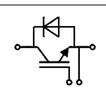
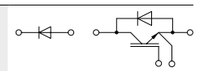
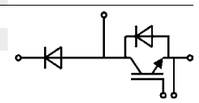
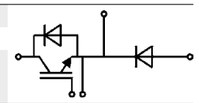
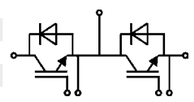
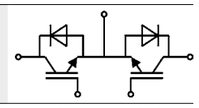
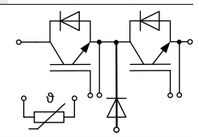
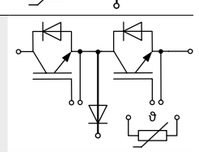
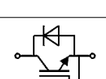
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1200V - NPT IGBT (Ultrafast)												
SKM200GAR125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	
SKM400GAR125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	
SKM100GB125DN	100	75	3.3	9	3.5	0.18	95	2.06	4	0.5	2N	
SKM200GB125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	
SKM300GB125D	300	200	3.3	16	11	0.075	260	2.00	13	0.18	3	
SKM400GB125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	
SKM25GAH125D [2]	39	25	3.20	3.9	1.6	0.56	47	2.13	1.1	1	6	
SKM25GD125D [2]	39	25	3.20	3.9	1.6	0.56	47	2.13	1.1	1	6	
SKM50GD125D [2]	73	50	3.20	8	3.2	0.32	77	2.00	2.1	0.6	6	
1200V - IGBT3 (Trench)												
SKM600GA126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	4	
SKM800GA126D	910	600	1.70	65	95	0.042	703	1.60	59	0.09	4	
SKM195GAL126D	220	150	1.71	16	24.5	0.16	143	2.00	5.8	0.32	2	
SKM200GAL126D	260	150	1.71	18	24	0.13	200	1.60	18	0.3	3	
SKM400GAL126D	470	300	1.69	29	48	0.08	352	1.60	27	0.18	3	
SKM600GAL126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	3	
SKM195GB126D	220	150	1.71	16	24.5	0.16	143	2.00	5.8	0.32	2	
SKM200GB126D	260	150	1.71	18	24	0.13	200	1.60	18	0.3	3	
SKM300GB126D	310	200	1.70	21	33	0.12	250	1.60	18	0.25	3	
SKM400GB126D	470	300	1.69	29	48	0.08	352	1.60	27	0.18	3	
SKM600GB126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	3	
1200V - V-IGBT												
SKM300GA12V	420	300	1.84	23	33	0.11	353	2.17	21	0.17	4	
SKM400GA12V	612	400	1.74	39	42	0.072	440	2.20	26	0.14	4	
SKM600GA12V	908	600	1.75	76	76	0.049	707	2.14	43	0.086	4	
SKM150GAL12V	231	150	1.75	13.5	14.2	0.19	189	2.14	8.9	0.31	2	
SKM200GAL12VL2 [2]	299	200	1.86	24	22	0.14	189	2.14	8.5	0.31	2	
SKM400GAL12V	612	400	1.74	39	42	0.072	440	2.20	26	0.14	3	
SKM150GAR12V [1]	231	150	1.75	13.5	14.2	0.19	189	2.14	8.9	0.31	2	
SKM400GAR12V	612	400	1.74	39	42	0.072	440	2.20	26	0.14	3	

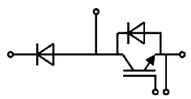
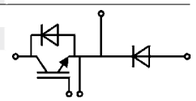
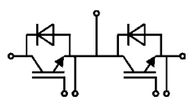
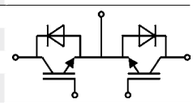
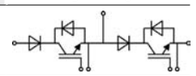
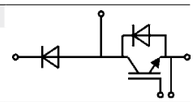
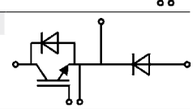
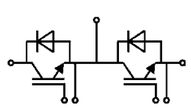
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1200V - V-IGBT												
SKM50GB12V	77	50	1.84	4.9	4.5	0.53	65	2.22	2.8	0.84	2	
SKM75GB12V	114	75	1.84	6.7	7.1	0.38	97	2.17	4.2	0.58	2	
SKM100GB12V	159	100	1.75	10.7	8.7	0.27	121	2.20	5.7	0.48	2	
SKM150GB12V	231	150	1.75	13.5	14.2	0.19	189	2.14	8.9	0.31	2	
SKM150GB12VG	222	150	1.86	10	16.5	0.2	187	2.17	11	0.31	3	
SKM200GB12V	311	200	1.76	14	22	0.14	229	2.20	13	0.26	3	
SKM300GB12V	420	300	1.84	23	33	0.11	353	2.17	21	0.17	3	
SKM400GB12V	612	400	1.74	39	42	0.072	440	2.20	26	0.14	3	
1200V - IGBT4 (Trench)												
SKM300GA12E4	422	300	1.85	23.4	35	0.11	353	2.17	22.2	0.17	4	
SKM400GA12E4	616	400	1.80	28	59	0.072	461	2.20	37	0.13	4	
SKM600GA12E4	913	600	1.80	74	84	0.049	707	2.14	38	0.086	4	
SKM900GA12E4	1305	900	1.83	130	121	0.035	871	2.31	53	0.07	4	
SKM600GAE12E4 [1]	913	600	1.80	81	83	0.049	54	2.41	47	1	5	
SKM200GAL12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	
SKM300GAL12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	
SKM400GAL12E4	616	400	1.80	33	56	0.072	461	2.20	30.5	0.13	3	
SKM200GAR12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	
SKM300GAR12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	
SKM400GAR12E4	616	400	1.80	33	56	0.072	461	2.20	30.5	0.13	3	
SKM200GB12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	
SKM300GB12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	
SKM400GB12E4	616	400	1.80	33	56	0.072	461	2.20	30.5	0.13	3	
SKM450GB12E4	700	450	1.84	32	60	0.062	461	2.31	28	0.13	3	
SKM600GB12E4[1)]	860	600	1.80	75	84	0.049	623	2.12	38	0.095	3	
SKM450GM12E4 [1]	700	450	1.84	32	60	0.062	461	2.31	28	0.13	3	
SKM1200MLI12TE4 [2]	2082	1200	1.80	108	189	0.021	1065	2.46	76	0.057	10	
SKM1200MLI12BE4 [2]	2082	1200	1.80	108	189	0.021	1065	2.46	76	0.057	10	
1200V - IGBT4 Fast (Trench)												
SKM300GA12T4	422	300	1.85	23.4	26	0.11	353	2.17	22.2	0.17	4	
SKM400GA12T4	616	400	1.80	28	44	0.072	461	2.20	37	0.13	4	
SKM600GA12T4	913	600	1.80	74	63	0.049	707	2.14	38	0.086	4	

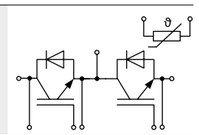
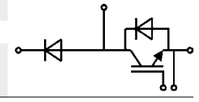
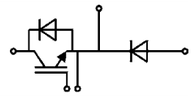
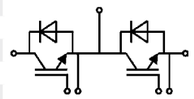
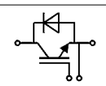
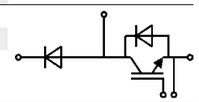
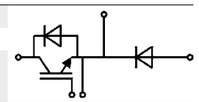
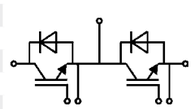
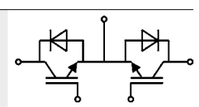
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1200V - IGBT4 Fast (Trench)												
SKM50GAL12T4	81	50	1.85	5.5	4.5	0.53	65	2.22	3.6	0.84	2	
SKM100GAL12T4	160	100	1.80	15	10.2	0.27	121	2.20	5.9	0.48	2	
SKM150GAL12T4	232	150	1.81	19.2	15.8	0.19	189	2.14	13	0.31	2	
SKM200GAL12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	
SKM300GAL12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	
SKM400GAL12T4	616	400	1.80	33	42	0.072	461	2.20	30.5	0.13	3	
SKM600GAL12T4[1)]	913	600	1.80	74	63	0.049	662	2.12	38	0.086	3	
SKM150GAR12T4	232	150	1.81	19.2	15.8	0.19	189	2.14	13	0.31	2	
SKM400GAR12T4	616	400	1.80	33	42	0.072	461	2.20	30.5	0.13	3	
SKM600GAR12T4[1)]	913	600	1.80	74	63	0.049	662	2.12	38	0.086	3	
SKM50GB12T4	81	50	1.85	5.5	4.5	0.53	65	2.22	3.8	0.84	2	
SKM75GB12T4	115	75	1.85	11	6.9	0.38	97	2.17	4.7	0.58	2	
SKM100GB12T4	160	100	1.80	15	10.2	0.27	121	2.20	5.9	0.48	2	
SKM100GB12T4G	154	100	1.90	16.1	8.6	0.29	118	2.22	6	0.49	3	
SKM150GB12T4	232	150	1.81	19.2	15.8	0.19	189	2.14	13	0.31	2	
SKM150GB12T4G	223	150	1.85	18.7	14.1	0.2	183	2.17	9	0.32	3	
SKM200GB12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	
SKM300GB12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	
SKM400GB12T4	616	400	1.80	33	42	0.072	461	2.20	30.5	0.13	3	
SKM450GB12T4 [2]	699	450	1.84	32	49	0.062	461	2.31	28	0.13	3	
SKM600GB12T4[1)]	860	600	1.80	75	60	0.049	623	2.12	38	0.095	3	
SKM150GM12T4G	229	150	1.85	19.2	15.8	0.19	187	2.17	13	0.31	3	
SKM200GM12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	
SKM300GM12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	
SKM400GM12T4	616	400	1.80	33	42	0.072	461	2.20	30.5	0.13	3	
SKM300GBD12T4	422	300	1.85	27	29	0.11	56	2.41	30.5	0.94	3	
1200V - IGBT4 High Speed (Trench) (new product series, target data)												
SKM100GAL12F4[1)]	142	100	2.05	10	7	0.27	113	2.53	3.8	0.48	2	
SKM400GAL12F4[1)]	548	400	2.06	26	28	0.072	408	2.53	20	0.14	3	
SKM100GAR12F4[1)]	142	100	2.05	10	7	0.27	113	2.53	3.8	0.48	2	
SKM400GAR12F4[1)]	548	400	2.06	26	28	0.072	408	2.53	20	0.14	3	
SKM75GB12F4[1)]	103	75	2.08	7	5	0.38	94	2.42	3	0.58	2	
SKM100GB12F4[1)]	142	100	2.05	10	7	0.27	113	2.53	3.8	0.48	2	
SKM150GB12F4[1)]	201	150	2.05	14	10	0.2	176	2.42	5.8	0.32	2	
SKM150GB12F4G[1)]	201	150	2.05	14	10	0.2	176	2.42	5.8	0.32	3	
SKM200GB12F4[1)]	279	200	2.06	15	14	0.14	214	2.53	8.5	0.26	3	
SKM300GB12F4[1)]	380	300	2.06	21	21	0.11	337	2.42	15	0.17	3	
SKM400GB12F4[1)]	548	400	2.06	26	28	0.072	408	2.53	20	0.14	3	

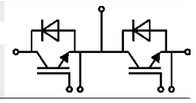
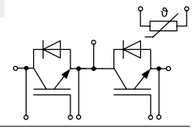
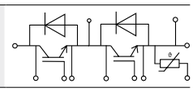
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1200V - IGBT4 High Power (Trench)												
SKM1400GB12P4 2)	2165	1400	1.75	150	277	0.02	1768	2.06	85	0.033	10	
1700V - IGBT3 (Trench)												
SKM600GA176D	660	400	2.00	255	155	0.044	600	1.6	102	0.09	4	
SKM800GA176D	830	600	2.00	335	245	0.04	630	1.6	155	0.07	4	
SKM145GAL176D	160	100	2.00	60	38	0.19	140	1.6	27.5	0.36	2	
SKM200GAL176D	260	150	2.01	93	58	0.12	210	1.70	31	0.25	3	
SKM400GAL176D	432	300	1.99	170	118	0.075	440	1.70	78	0.125	3	
SKM400GAR176D	432	300	1.99	170	118	0.075	440	1.70	78	0.125	3	
SKM75GB176D	80	50	2.00	25	18	0.38	80	1.70	14.5	0.55	2	
SKM100GB176D	125	75	1.98	44	28.5	0.24	100	1.6	21.4	0.45	2	
SKM145GB176D	160	100	2.00	60	38	0.19	140	1.6	27.5	0.36	2	
SKM200GB176D	260	150	2.01	93	58	0.12	210	1.70	31	0.25	3	
SKM400GB176D	432	300	1.99	170	118	0.075	440	1.70	78	0.125	3	
1700V - IGBT4 (Trench)												
SKM600GA17E4	1021	600	1.90	258	246	0.042	629	1.98	132	0.095	4	
SKM100GAL17E4	164	100	1.90	43	39	0.234	113	2.00	26	0.504	2	
SKM200GAL17E4	321	200	1.90	69	79	0.122	213	2.00	45	0.276	3	
SKM400GAL17E4	614	400	1.92	156.5	180	0.066	443	2.00	130	0.13	3	
SKM100GAR17E4	164	100	1.90	43	39	0.234	113	2.00	26	0.504	2	
SKM200GAR17E4	321	200	1.90	69	79	0.122	213	2.00	45	0.276	3	
SKM400GAR17E4	614	400	1.92	156.5	180	0.066	443	2.00	130	0.13	3	
SKM75GB17E4	125	75	1.93	30	29	0.304	88	2.00	21	0.632	2	
SKM100GB17E4	164	100	1.90	43	39	0.234	113	2.00	26	0.504	2	
SKM150GB17E4	261	150	1.90	67	59	0.162	169	1.98	32	0.345	2	
SKM150GB17E4G	242	150	1.90	39	59	0.161	163	2.00	33	0.356	3	
SKM200GB17E4	321	200	1.90	69	79	0.122	213	2.00	45	0.276	3	
SKM300GB17E4	476	300	1.91	88	121	0.083	314	2.00	77	0.19	3	
SKM400GB17E4	614	400	1.92	156.5	180	0.066	443	2.00	130	0.13	3	
SKM400GM17E4	614	400	1.92	156.5	180	0.066	443	2.00	130	0.13	3	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

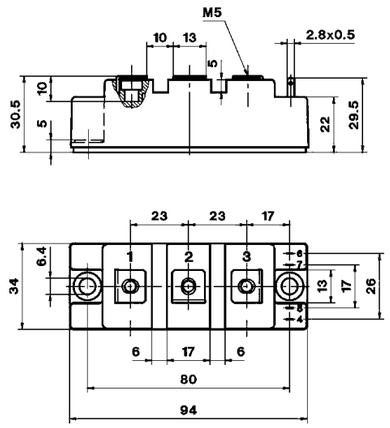
IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module	
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1700V - IGBT4 (Trench) chip - dedicated for humid environment (target data)												
SKM75GB17E4H16 2)	132	75	1.93	37	29	0.304	88	2.00	18	0.632	2	
SKM150GB17E4GH16 2)	255	150	1.96	69	59	0.161	163	2.00	36	0.356	3	
SKM300GB17E4H16 2)	500	300	1.97	106	122	0.083	314	2.00	71	0.19	3	
1700V - Renesas Gen 8												
SKM1000GB17R8 2)	1574	1000	1.66	465	332	0.03	1449	1.78	159	0.042	10	
SKM1400GB17R8 2)	2337	1400	1.63	866	495	0.02	1874	1.84	253	0.032	10	
3300V - N-Channel F-IGBT (new product series, target data)												
SKM450GB33F2) 11)	760	450	2.07	601	601	0.035	674	2.05	542	0.055	20	

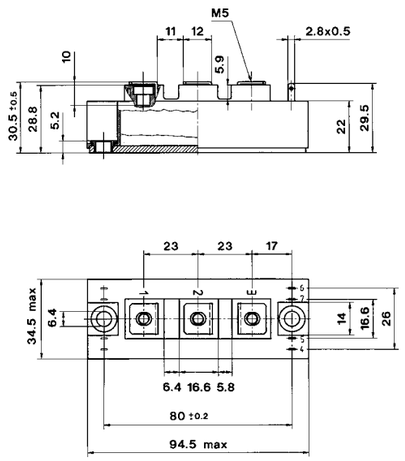
Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs / 11) Values at T_j=150°C

Cases

SEMITRANS 2



SEMITRANS 2N

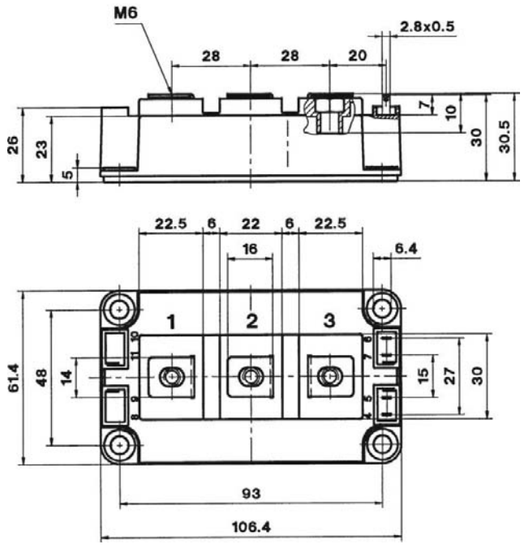


Dimensions in mm

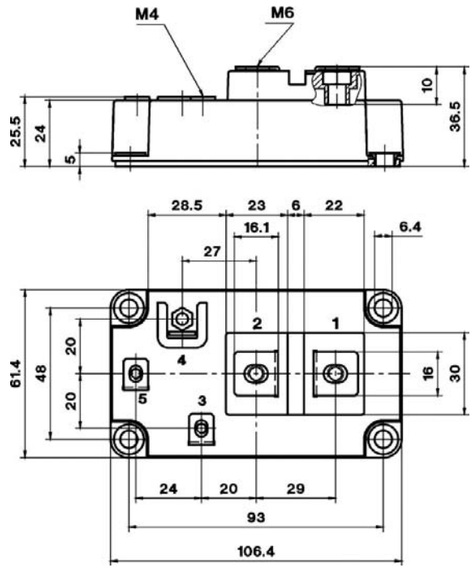
IGBT Modules / SEMITRANS

Cases

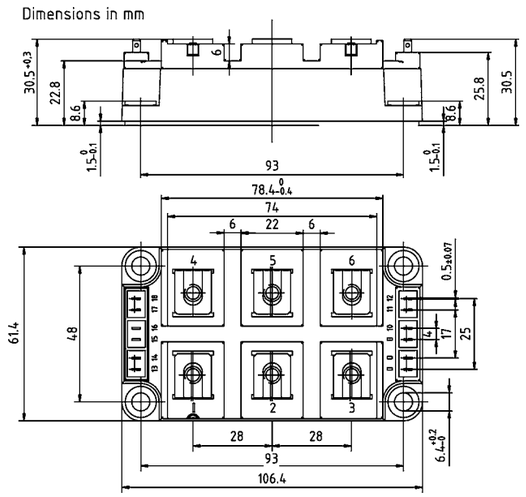
SEMITRANS 3



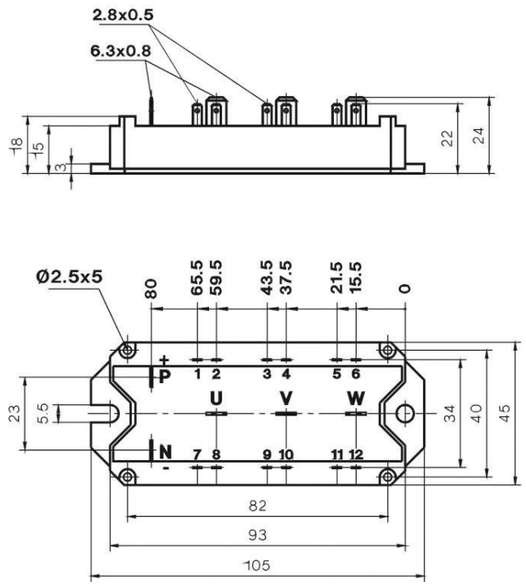
SEMITRANS 4



SEMITRANS 5



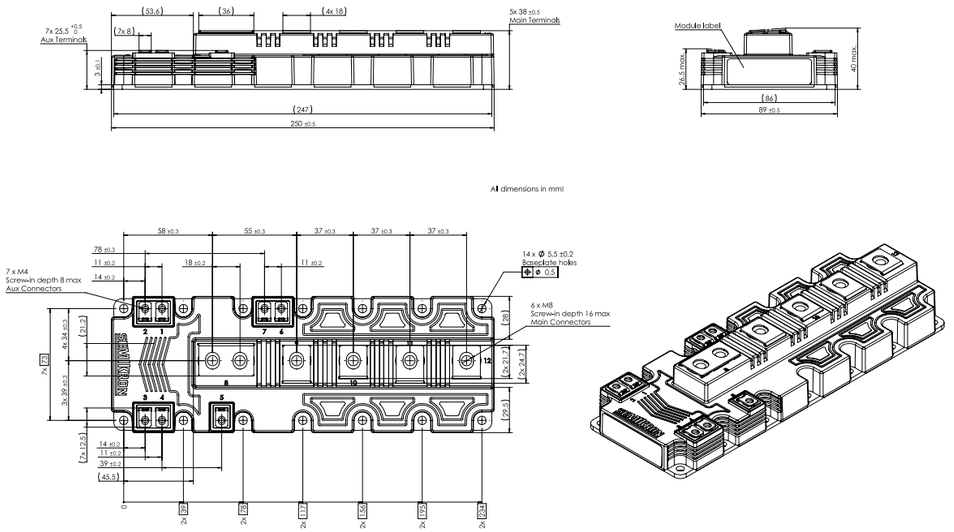
SEMITRANS 6



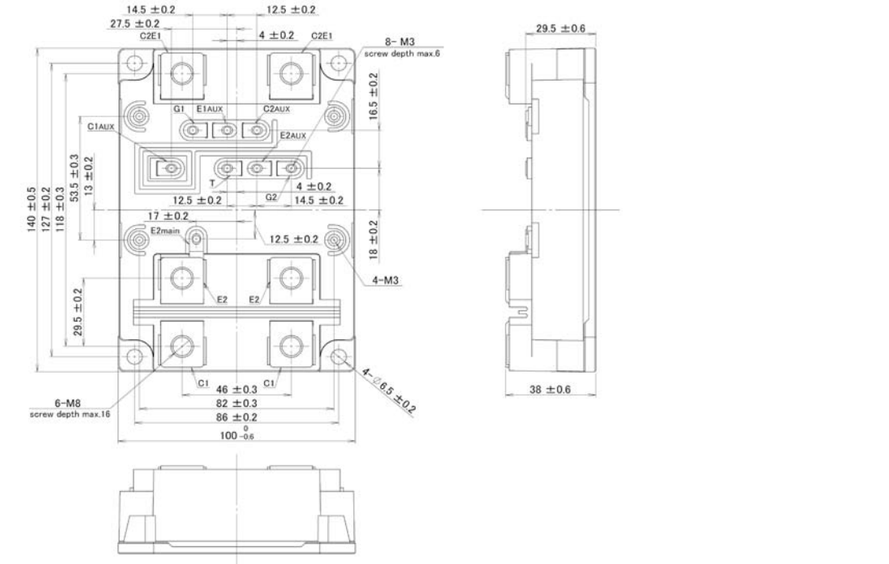
Dimensions in mm

Cases

SEMITRANS 10

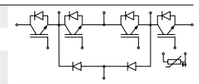
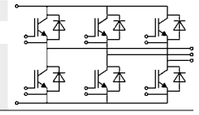
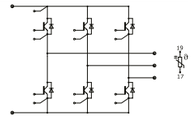
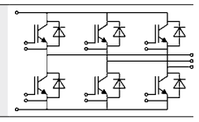
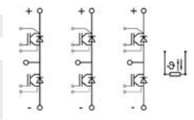
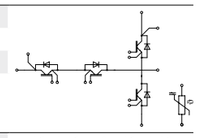
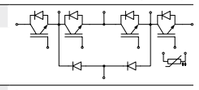
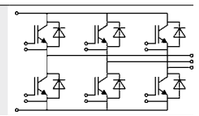
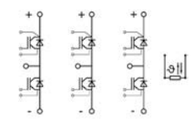


SEMITRANS 20



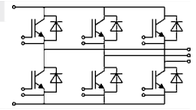
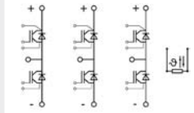
Dimensions in mm

IGBT Modules / SKiM 4/5

Type	IGBT						Diode				Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
600V - IGBT3 (Trench)												
SKiM301MLI07E4 [2]	252	300	1.55	2.8	17	0.3	177	1.40	-	0.53	4	
SKiM401MLI07E4 [2]	314	400	1.55	3.3	21	0.25	289	1.40	1.8	0.31	4	
SKiM601MLI07E4 [2]	433	600	1.55	6.1	44	0.19	318	1.39	2.4	0.31	4	
1200V - IGBT3 (Trench)												
SKiM200GD126D [3]	-	200	1.65	15	25	-	152	2.39	-	0.35	4	
SKiM300GD126D	265	300	1.70	28	47	0.2	260	1.92	-	0.285	4	
SKiM300GD126DL	265	300	1.65	28	47	0.2	260	1.92	-	0.285	4	
SKiM400GD126DM	330	300	1.70	29	46	0.134	300	1.92	-	0.19	4	
SKiM400GD126DLM	330	300	1.65	29	46	0.134	300	1.92	-	0.19	4	
SKiM450GD126D	390	450	1.70	42	70	0.13	345	1.92	-	0.19	5	
SKiM450GD126DL [3]	390	450	1.65	42	70	0.13	345	1.92	-	0.19	5	
SKiM600GD126DLM	480	450	1.65	42	70	0.09	450	1.92	-	0.125	5	
SKiM601GD126DM	480	450	1.70	42	70	0.09	450	1.92	-	0.125	5	
1200V - IGBT4 (Trench)												
SKiM301TMLI12E4B [2]	311	300	1.80	6.6	19	0.19	249	2.20	1.8	0.29	4	
SKiM301TMLI12E4C [1]	294	300	1.80	6.6	19	0.21	274	2.20	1.8	0.25	4	
SKiM401TMLI12E4B	388	400	1.80	8.8	26	0.16	311	2.20	2.4	0.24	4	
SKiM601TMLI12E4B	529	600	1.80	11	45	0.125	495	2.14	4.4	0.15	4	
SKiM201MLI12E4 [2]	206	200	1.80	15	23	0.29	187	2.20	15	0.36	4	
SKiM301MLI12E4	311	300	1.80	22	34	0.19	282	2.20	15	0.24	4	
SKiM304GD12T4D [3]	312	300	1.80	-	-	0.19	221	2.33	-	0.25	4	
SKiM455GD12T4D1 [3]	400	450	1.80	34	40	0.14	295	2.33	28	0.19	5	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

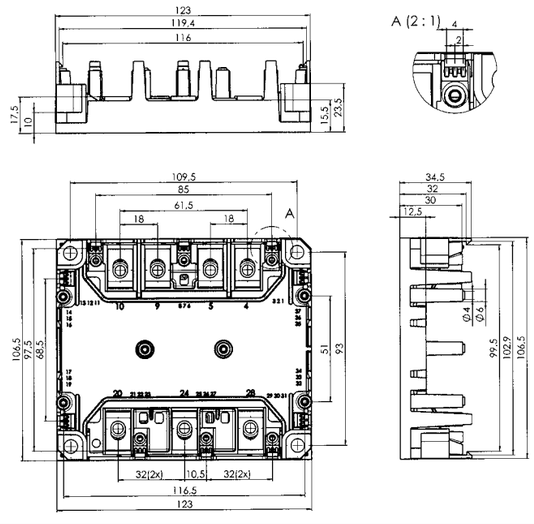
IGBT Modules / SKiM 4/5

Type	IGBT						Diode				Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1700V - IGBT3 (Trench)												
SKiM120GD176D	110	125	2.00	72	46	0.4	105	1.6	22	0.56	4	
SKiM220GD176DH4	220	250	2.00	145	100	0.21	220	1.7	65	0.26	4	
SKiM270GD176D	260	300	2.00	170	120	0.175	215	1.7	-	0.29	5	

Footnotes: 1) Sample status / 2) In production new / 3) Not for new designs

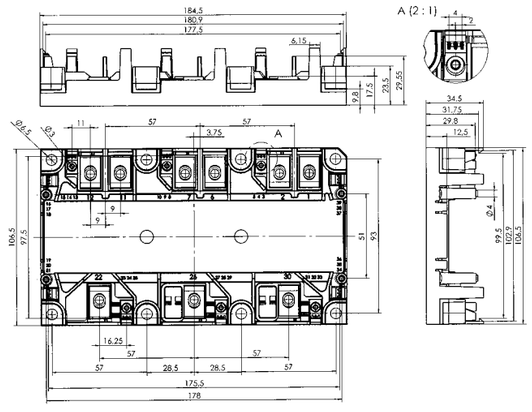
Cases

SKiM 4

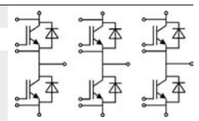
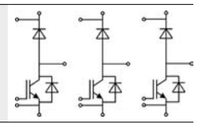
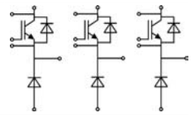
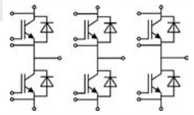
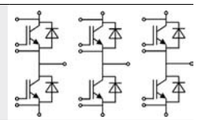


Dimensions in mm

SKiM 5



IGBT Modules / SKiM 63/93

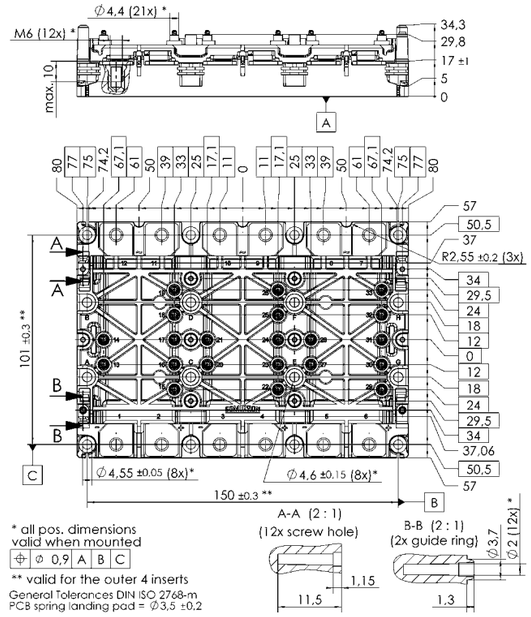
Type	IGBT						Diode				Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
600V - IGBT3 (Trench)												
SKiM406GD066HD[10)]	468	400	1.45	8	25	0.135	360	1.53	12	0.243	63	
SKiM606GD066HD[10)]	640	600	1.45	16	53	0.105	462	1.52	21	0.201	63	
SKiM909GD066HD[10)]	897	900	1.45	36	88	0.078	690	1.52	29	0.135	93	
1200V - IGBT4 (Trench)												
SKiM609GAL12E4[2)]	748	600	1.85	136	83	0.068	1397	1.7	39	0.048	93	
SKiM609GAR12E4[2)]	748	600	1.85	136	83	0.068	1397	1.7	39	0.048	93	
SKiM306GD12E4[10)]	410	300	1.85	19	39	0.116	305	2.14	21	0.218	63	
SKiM459GD12E4[10)]	554	450	1.85	22	57	0.092	438	2.14	40	0.155	93	
1700V - IGBT4 (Trench)												
SKiM429GD17E4HD[2) 10)]	595	420	1.90	245	180	0.079	411	1.66	99	0.169	93	

Footnotes: 2) In production new / 10) Also available with new HpTp, see Accessories/Thermal Interface Materials

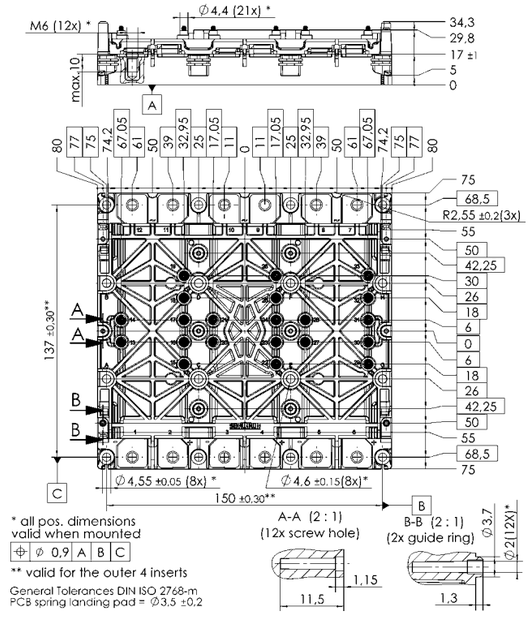
IGBT Modules / SKiM 63/93

Cases

SKiM 63

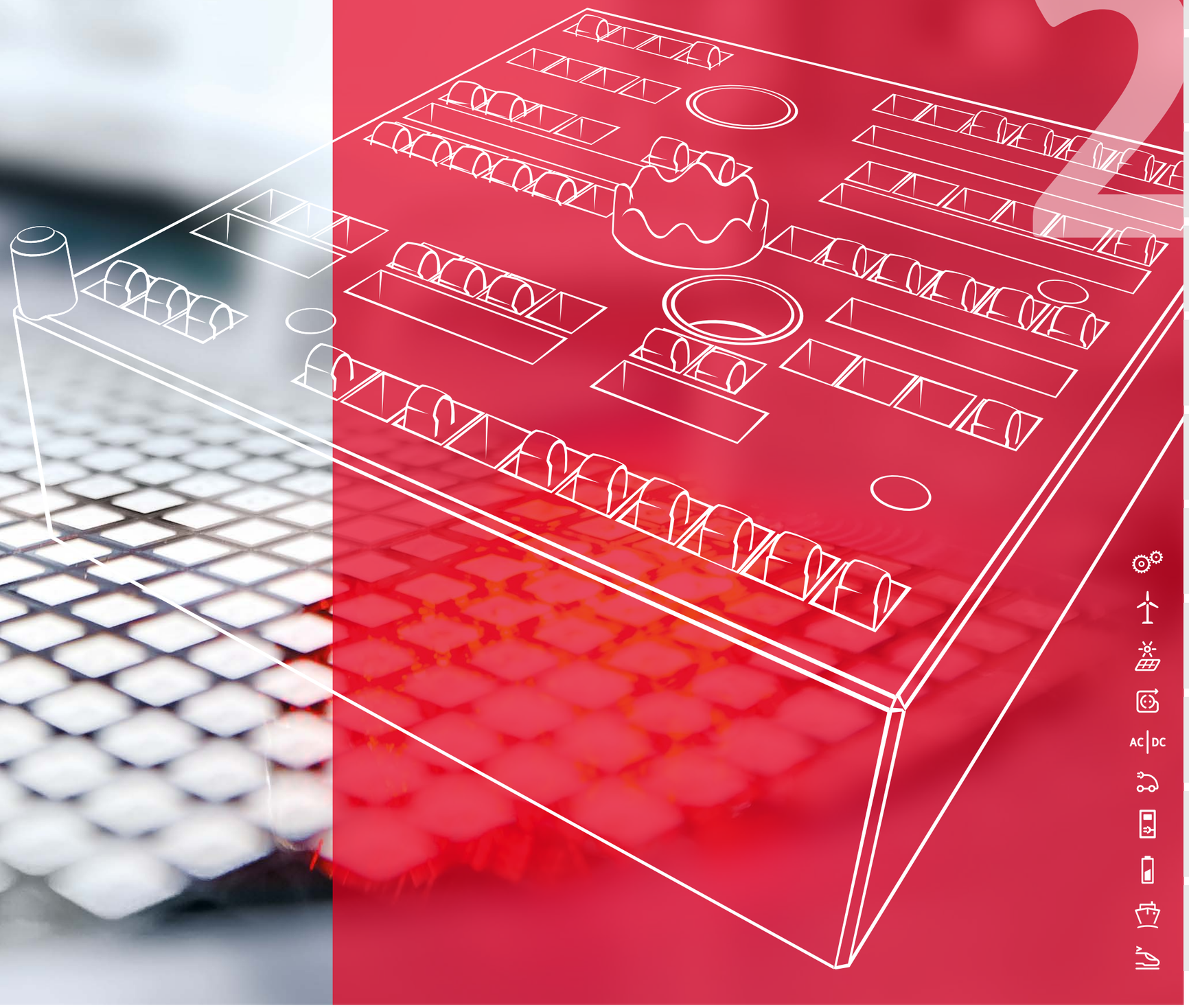


SKiM 93



Dimensions in mm

Silicon Carbide Modules



Product Classes

Full Silicon Carbide Modules
Highest Power Output and Efficiency

SEMIKRON offers full silicon carbide power modules in MiniSKiiP, SEMITOP and SEMITRANS housings. By using SiC MOSFETs of the leading suppliers highest output power and power densities are reached in combination with high switching frequencies, lowest losses and maximum efficiency.

Through the increase of switching frequency the passive filter components can be reduced drastically. Power losses are reduced at the same time which lead to smaller heat sinks and less cooling effort in general. Both benefits result in a major decrease of system cost.

The Full Silicon Carbide Power Modules are available from 20A to 540A in 1200V, with and without anti-parallel free-wheeling Schottky diode.

Covered topologies are 6-packs in classic configuration but also with split output to enable a flexible adaption to your application. Further half bridges and boost converters including a bypass diode are available.

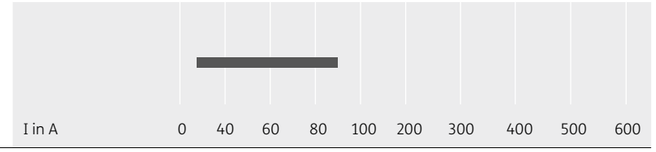
For detailed information please refer to data sheets.

Further information
http://www.semikron.com/full-sic
http://www.semikron.com/hybrid-sic

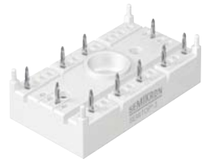
Full SiC

MiniSKiiP®
6-pack

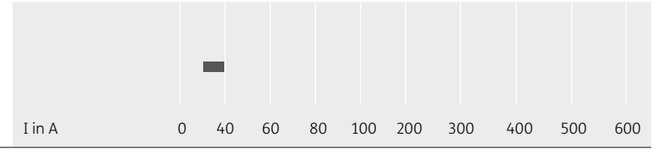
1200V



SEMITOP®
6-pack
chopper
H-bridge
half-bridge

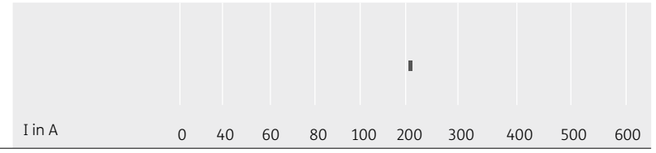


1200V



SEMITOP®E1/E2
half-bridge

1200V

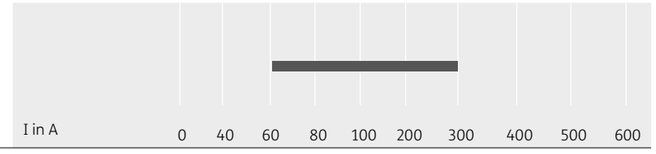


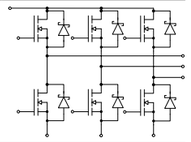
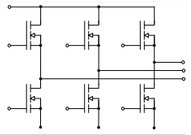
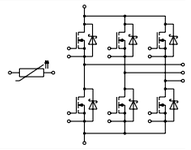
SEMITRANS®
half-bridge

1200V

SEMIPACK®2
rectifier single-switch

1200V

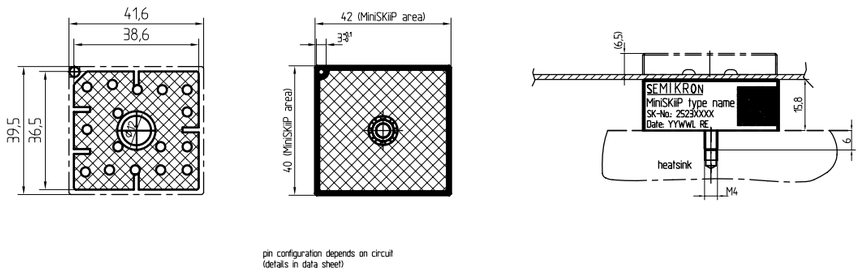


Type	V_{DS}	I_D @ T_C = 25°C	$R_{DS(on)}$ @ T_j = 25°C typ.	$R_{th(j-s)}$	Case	Circuit
	V	A	mΩ	K/W		
1200V - SiC MOSFET						
SKiiP 13ACM12V17 [1)]	1200	25	80	1.5	II 1	
SKiiP 13ACM12V18 [1)]	1200	25	80	1.5	II 1	
SKiiP 26ACM12V17 [1)]	1200	72	23	0.6	II 2	

Footnotes: 1) Sample status

Cases

MiniSKiiP II 1

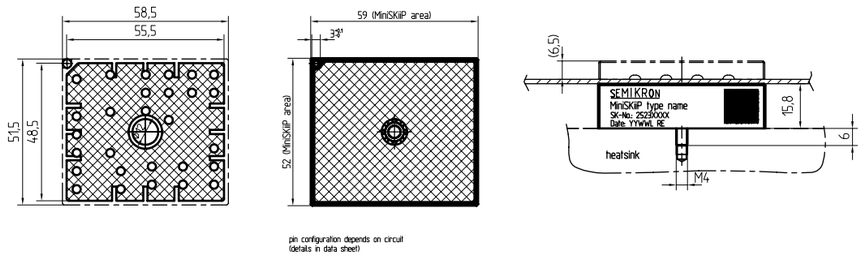


Dimensions in mm

SiC Modules / Full SiC / MiniSKiiP

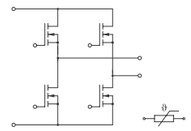
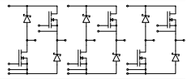
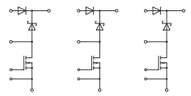
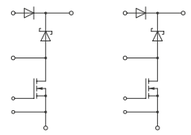
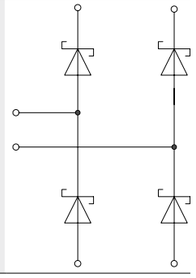
Cases

MiniSKiiP II 2



Dimensions in mm

SiC Modules / Full SiC / SEMITOP

Type	V_{DS}	I_D @ T_C = 25°C	$R_{DS(on)}$ @ T_j = 25°C typ.	$R_{th(j-s)}$	Case	Circuit
	V	A	mΩ	K/W		
1200V - SiC MOSFET						
SK45MH120TSCp [1]	1200	40	45	1	2p	
SK25MH120TSCp [1]	1200	26	80	1.4	2p	
SK45MAHT12SCp [2]	1200	39	45	1.04	3p	
SK45MLET12SCp [1]	1200	39	45	1.04	3p	
SK35MLLE120SCp [1]	1200	36	40	1.4	2p	
SEMITOP rectifier module						
SK20KDD12SCp [1]	1200	18	-	2.65	2p	

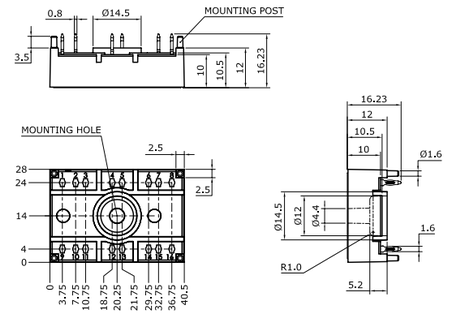
Footnotes: 1) Sample status / 2) In production new

SiC Modules / Full SiC / SEMITOP

Cases

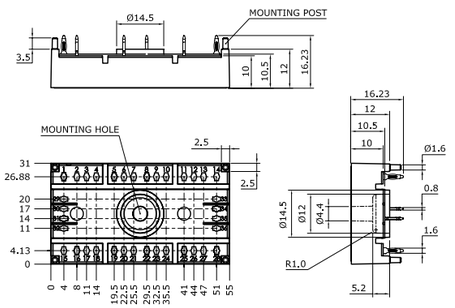
SEMITOP 2 Press-Fit

Dimensions: mm
Tolerance system: ISO 2768-m



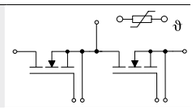
SEMITOP 3 Press-Fit

Dimensions: mm
Tolerance system: ISO 2768-m



Dimensions in mm

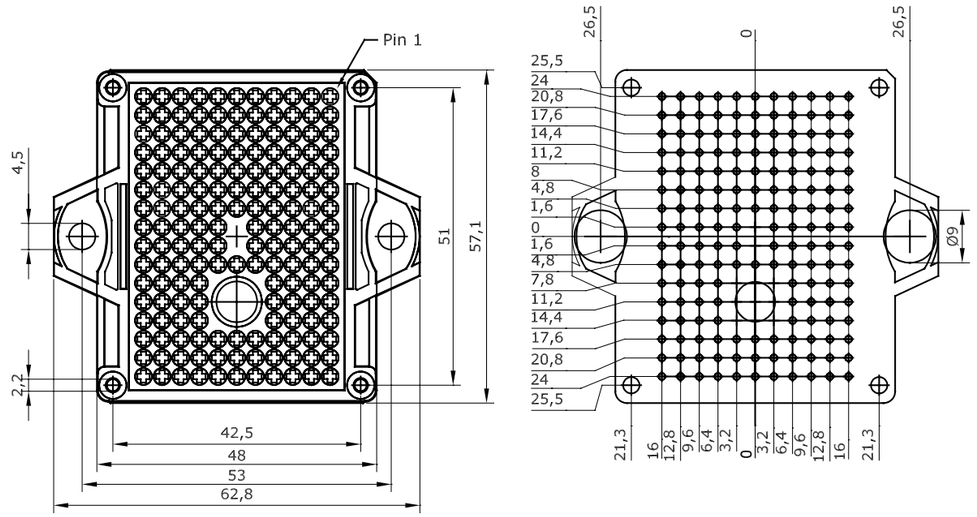
SiC Modules / Full SiC / Semitop E1/E2

Type	V_{DS}	I_D @ T_C = 25°C	$R_{DS(on)}$ @ T_j = 25°C typ.	$R_{th(j-s)}$	Case	Circuit
	V	A	mΩ	K/W		
1200V - SiC MOSFET						
SK200MB120TSCE2 [1)]	1200	400	3.7	0.4	E2	

Footnotes: 1) Sample status

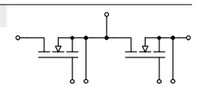
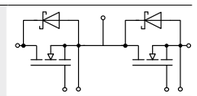
Cases

SEMITOP E2



Dimensions in mm

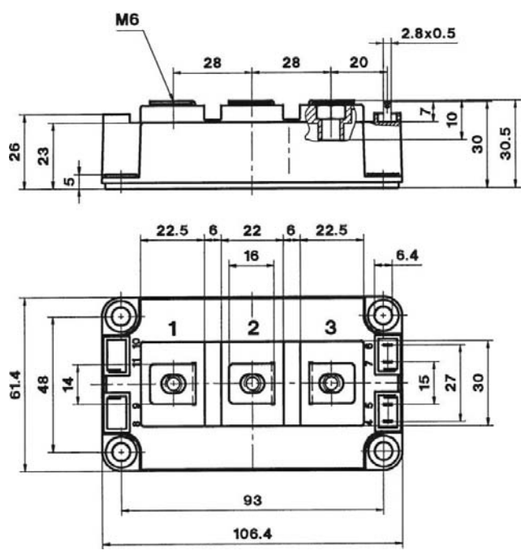
SiC Modules / Full SiC / SEMITRANS

Type	V_{DS}	I_D @ T_C = 25°C	$R_{DS(on)}$ @ T_j = 25°C typ.	$R_{th(j-c)}$	Case	Circuit
	V	A	mΩ	K/W		
1200V - SiC MOSFET						
SKM350MB120SCH15 [1)]	1200	523	5.6	0.05	3	
SKM500MB120SC [1)]	1200	541	3.8	0.07	3	
SKM350MB120SCH17 [1)]	1200	523	5.6	0.045	3	

Footnotes: 1) Sample status

Cases

SEMITRANS 3



Dimensions in mm

SiC Modules / Full SiC / SEMIPACK

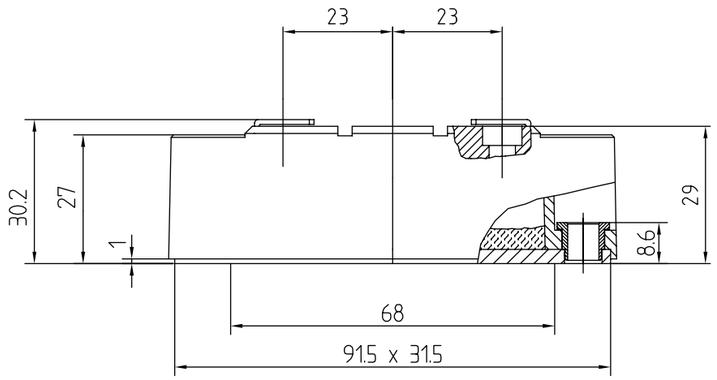
Type

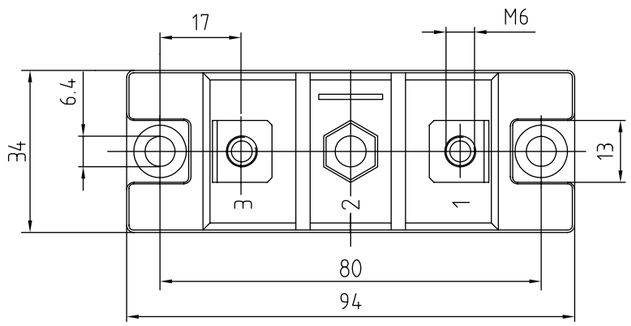
	V_{RRM} V_{DRM}	I_{FAV} @ T_C	T_C	V_{F0} @ T_j = 150°C max.	r_F @ T_j = 150°C max.	$R_{th(j-c)}$	T_j	Case	Circuit
	V	A	°C	V	mΩ	K/W	°C		
SKKE60S12 [1)]	1200	64	85	0.90	15	0.4	-40 ... +175	2	

Footnotes: 1) Sample status

Cases

SEMIPACK 2





Dimensions in mm

Hybrid Silicon Carbide Modules For Maximum Energy Efficiency

SEMIKRON offers hybrid silicon carbide power modules in MiniSKiiP, SEMITRANS, SEMiX 3 Press-Fit and SKiM63/93. Latest IGBT technology is combined with SiC Schottky diodes of the leading suppliers to increase the switching frequency and reduce power losses at the same time.

The hybrid silicon carbide power modules are available from 50A to 600A in 1200V. Covered topologies are 6-packs and half bridges.

SiC Schottky free-wheeling diodes have virtually no switching losses and reduce the turn-on losses of the IGBT drastically. With these effects higher switching frequencies can be reached in the same module package which efficiently lowers the filter efforts on the output side of e.g. solar inverters, UPS systems or high frequency power supplies. Additionally higher output powers compared to standard silicon power modules can be realized.

For detailed information please refer to data sheets.

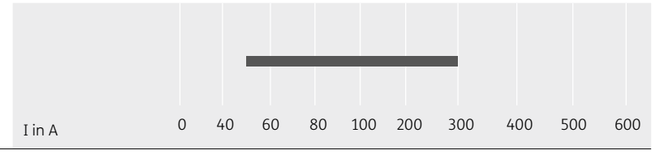
Further information
http://www.semikron.com/full-sic
http://www.semikron.com/hybrid-sic

Hybrid SiC

MiniSkiiP®

half-bridge
6-packs

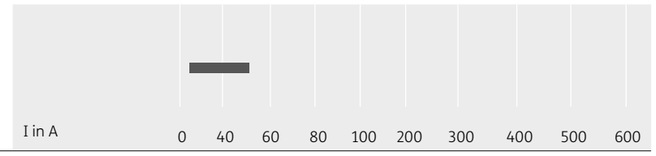
1200V



SEMITOP®

chopper

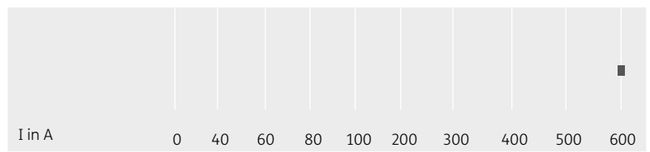
1200V



SEMiX Press-Fit®

half-bridge

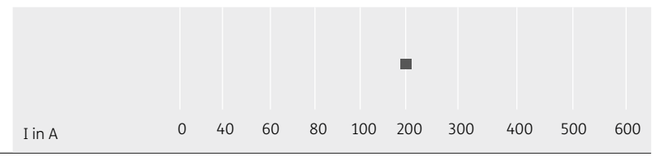
1200V



SEMITRANS®

half-bridge

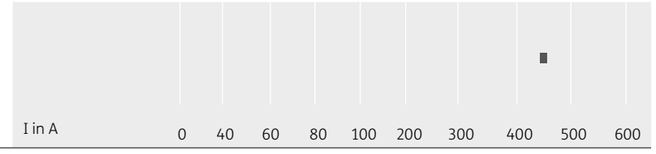
1200V



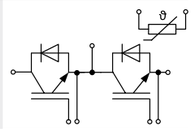
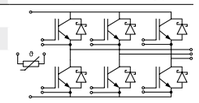
SKiM®63/93

6-pack

1200V



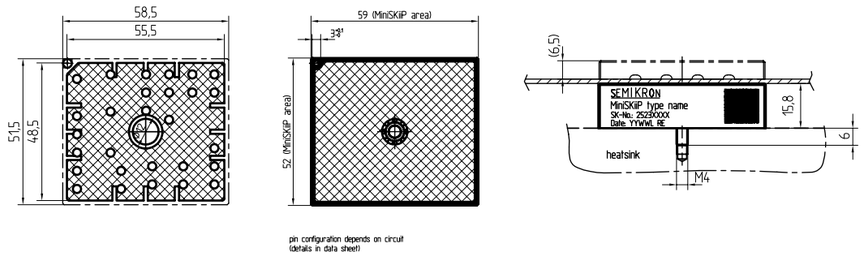
SiC Modules / Hybrid SiC / MiniSKiiP

Type	IGBT						Diode			Module	
	I_C @ T_s= 25°C	Current (A)	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F	$R_{th(j-s)}$	Case	
	A	A	V	mJ	mJ	K/W	A	V	K/W		Circuit
1200V - IGBT4 (Fast Trench)											
SKiiP 38GB12F4V19 [1]	303	300	2.05	10	22	0.16	133	1.40	0.36	II 3	
SKiiP25AC12F4V19[1]	61	50	2.05	2.2	2.8	0.7	45	1.40	1.15	II 2	
SKiiP38AC12F4V19[1]	102	100	2.05	6.4	6.3	0.47	64	1.40	0.9	II 3	
SKiiP39AC12F4V19[1]	144	150	2.05	9.6	9.4	0.35	118	1.40	0.44	II 3	

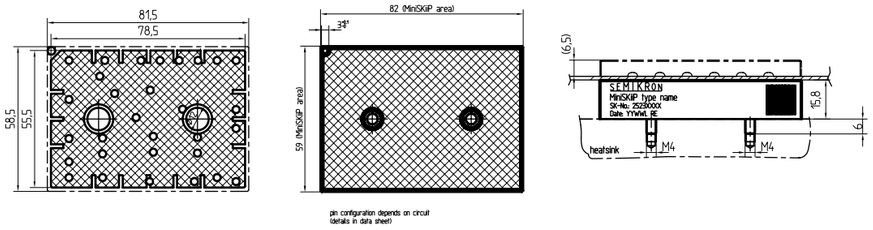
Footnotes: 1) Sample status

Cases

MiniSKiiP II 2

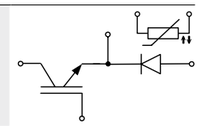
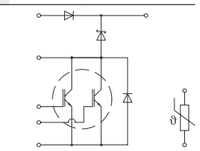


MiniSKiiP II 3



Dimensions in mm

SiC Modules / Hybrid SiC / SEMITOP

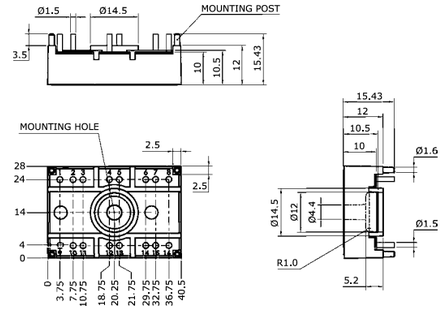
Type	IGBT						Diode			Module	
	I_C @ T_s= 25°C	Current (A)	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F	$R_{th(j-s)}$	Case	
	A	A	V	mJ	mJ	K/W	A	V	K/W		Circuit
1200V - IGBT4 Fast (Trench)											
SK 25 GAR 12F4 TSC [1]	33	25	2.05	2.27	2.7	1.2	21	1.40	2.7	2	
SK 50 GLLE 12F4 TSC [1]	56	50	2.05	4.5	5.4	0.8	67	1.00	1.2	2	

Footnotes: 1) Sample status

Cases

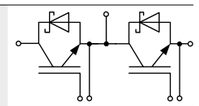
SEMITOP 2

Dimensions: mm
Tolerance system: ISO 2768-m



Dimensions in mm

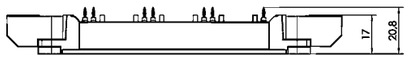
SiC Modules / Hybrid SiC / SEMiX

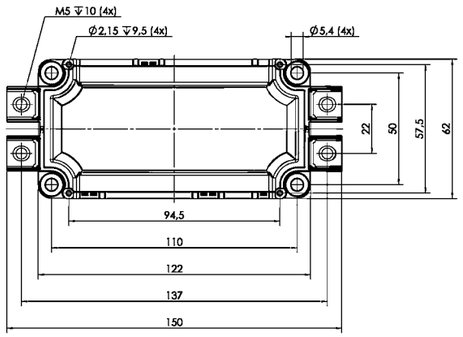
Type	IGBT						Diode			Module		
	I_C @ T_C = 25°C	Current (A)	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	
	A	A	V	mJ	mJ	K/W	A	V	K/W		K/W	Circuit
1200V - IGBT4 (Trench)												
SEMiX603GB12E4SiCp	1110	600	1.80	17	72	0.037	404	1.40	0.14	3p	0.012	

Footnotes: 1) Sample status

Cases

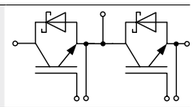
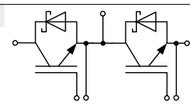
SEMiX 3p





Dimensions in mm

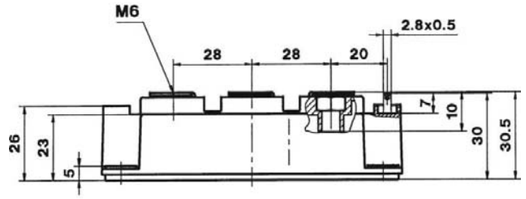
SiC Modules / Hybrid SiC / SEMITRANS

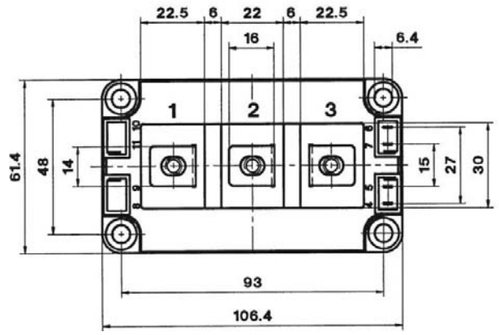
Type	IGBT						Diode			Module		
	I_C @ T_C = 25°C	Current (A)	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	
	A	A	V	mJ	mJ	K/W	A	V	K/W		K/W	Circuit
1200V - IGBT4 (Trench)												
SKM200GB12T4SiC2 [1)]	313	200	1.80	7	20	0.14	246	1.40	0.21	3	0.038	
1200V - IGBT4 (Fast Trench)												
SKM200GB12F4SiC2[1)]	279	200	2.06	7	17	0.14	246	1.40	0.21	3	0.038	
SKM200GB12F4SiC3[1)]	279	200	2.06	7	17	0.14	123	1.40	0.42	3	0.038	

Footnotes: 1) Sample status

Cases

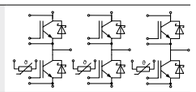
SEMITRANS 3





Dimensions in mm

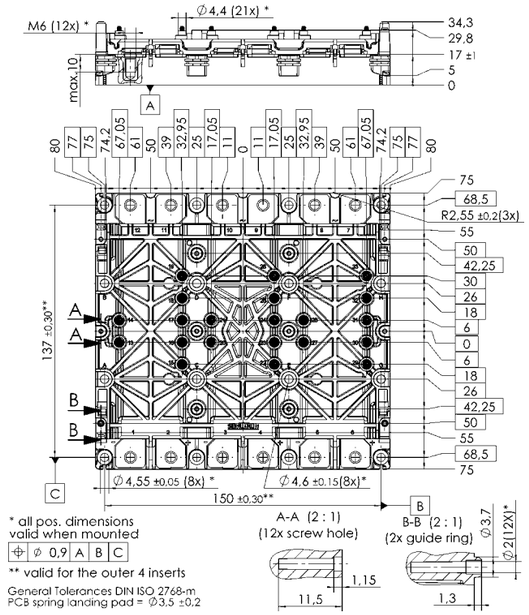
SiC Modules / Hybrid SiC / SKiM 63/93

Type	IGBT						Diode			Module	
	I_C @ T_s= 25°C	Current (A)	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F	$R_{th(j-s)}$	Case	
	A	A	V	mJ	mJ	K/W	A	V	K/W		Circuit
1200V - IGBT4 (Fast Trench)											
SKiM459GD12F4V4 [1)]	435	450	2.05	2	11	0.099	320	1.40	0.172	93	

Footnotes: 1) Sample status

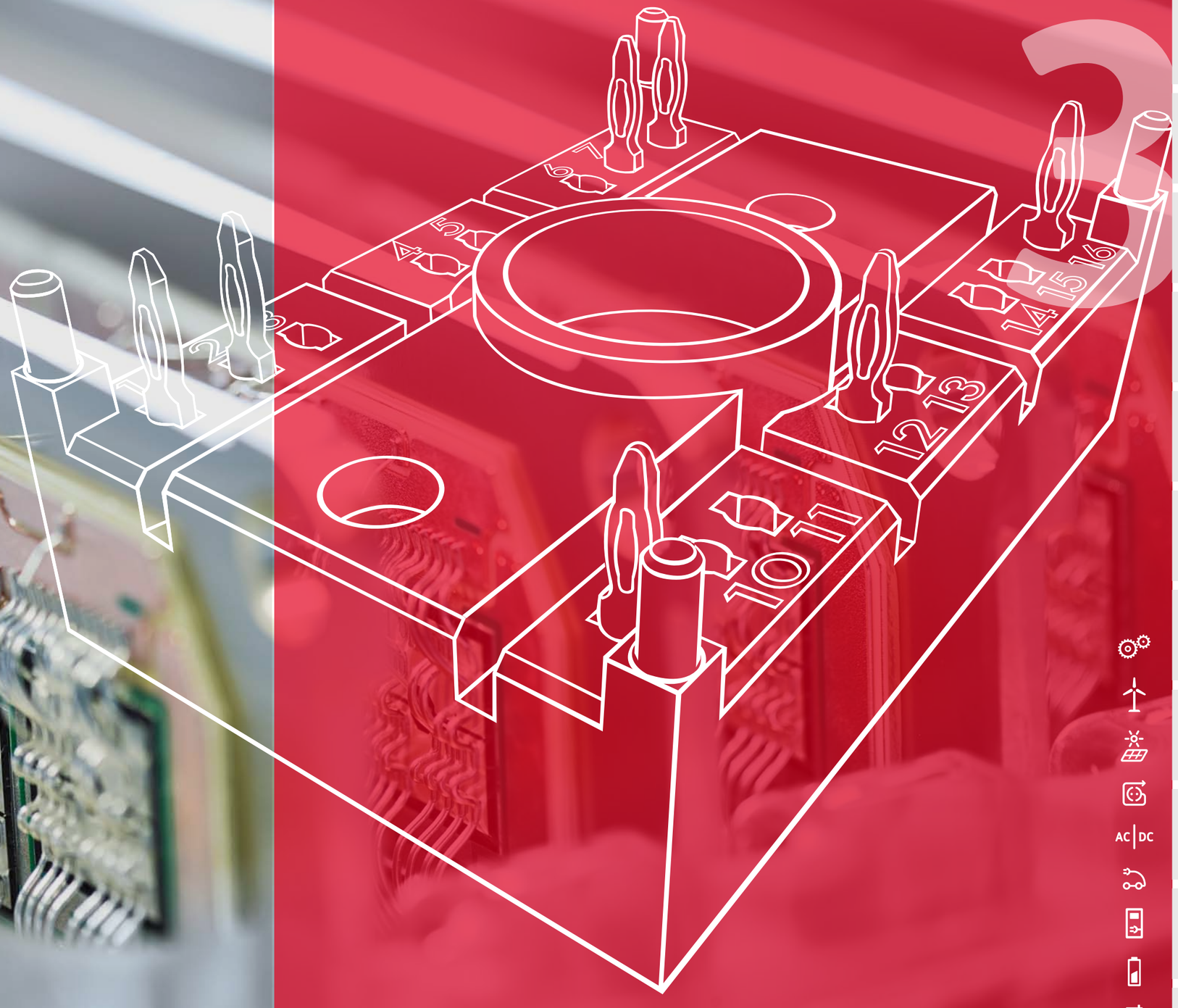
Cases

SKiM 93



Dimensions in mm

MOSFET Modules



Product Classes

MOSFET Modules
Best in Class Switching Performance

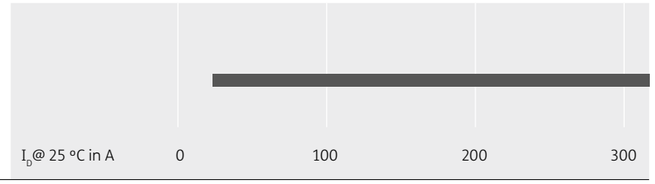
SEMIKRON produces MOSFET (Metal Oxide Semiconductor Field Effect Transistor) modules in single switch, halfbridge, H-bridge and 6-pack configuration in SEMITOP and SEMITRANS packages.

The available MOSFET modules in the voltage range from 55V up to 600V and current ratings of 40A up to 290A are especially designed for high-speed switching applications and boast low switching losses.

SEMITOP®

6-pack
H-bridge
half-bridge

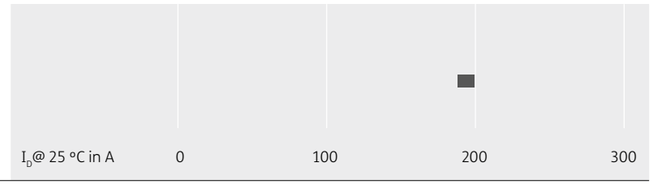
60V up to 100V



SEMITRANS®

single switch

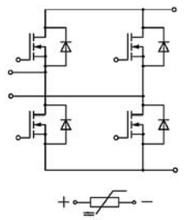
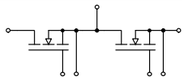
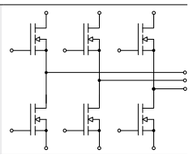
100V up to 200V



For detailed information please refer to data sheets.

Further information: http://www.semikron.com/mosfet-modules

MOSFET Modules / SEMITOP

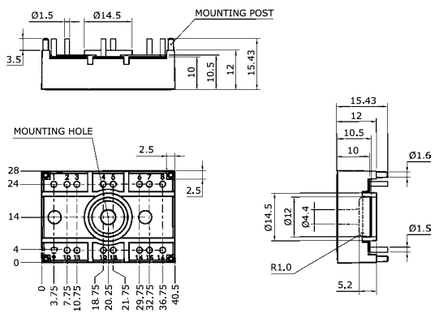
Type	V_{DS} V	I_D @ T_C = 25°C A	$R_{DS(on)}$ @ T_j = 25°C typ. mΩ	$R_{th(j-s)}$ K/W	Case	Circuit
100V						
SK 85 MH 10 T [3]	100	80	-	1.1	2	
SK280MB10 [1]	100	278	1.15	0.68	3	
80V						
SK300MB080 [1]	80	317	0.90	0.68	3	
60V						
SK165MBBB060 [1]	60	190	1.10	1.4	3	

Footnotes: 1) Sample status / 3) Not for new designs

Cases

SEMITOP 2

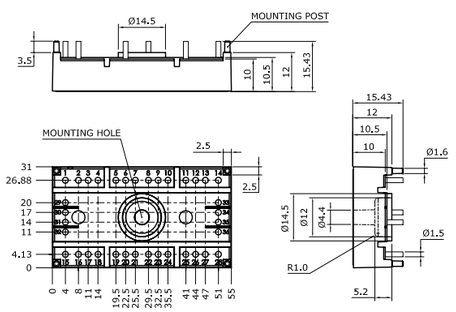
Dimensions: mm
Tolerance system: ISO 2768-m



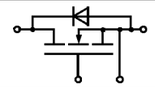
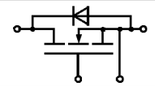
Dimensions in mm

SEMITOP 3

Dimensions: mm
Tolerance system: ISO 2768-m

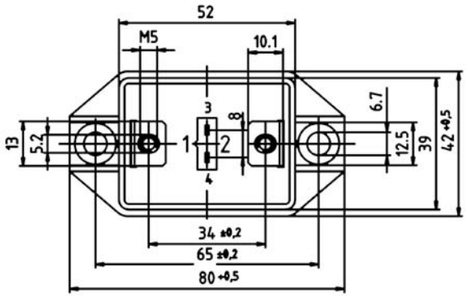


MOSFET Modules / SEMITRANS

Type	V_{DS} V	I_D @ T_C = 25°C A	$R_{DS(on)}$ @ T_j = 25°C typ. mΩ	$R_{th(j-c)}$ K/W	Case	Circuit
100V						
SKM 111 AR	100	200	7	0.18	M1	
SKM 111 RZR	100	200	7	0.18	M1	
200V						
SKM 180 A020	200	180	9	0.18	M1	

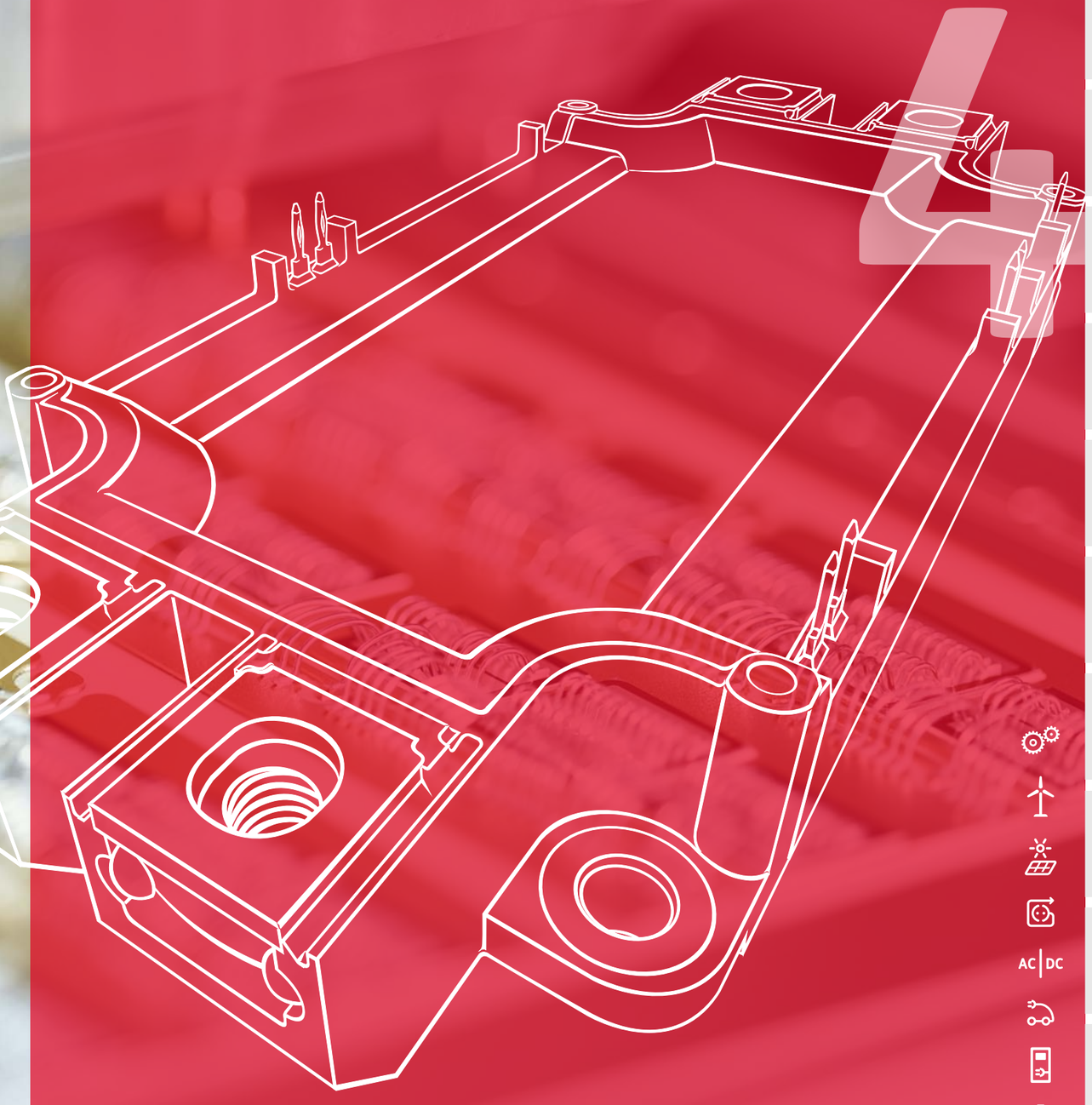
Cases

SEMITRANS M1



Dimensions in mm

Thyristor / Diode Modules



Product Classes

Thyristor / Diode Modules With Proven Packages

The SEMIKRON thyristor/diode modules are available in different packages like SEMIPACK, SEMiSTART, SEMIPONT, SEMiX and SEMITOP. Different contact technologies – soldered contact, bonded contact or pressure contact modules – are available.

The thyristor/diode modules are offered in a variety of dual and single topologies for almost all phase control or rectifier applications.

The product class offers a product range with voltages up to 2200V. Thanks to the comprehensive product range, the optimal solution for each application can be found.

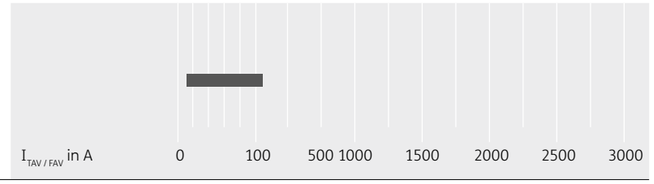
For detailed information please refer to data sheets.

Further information: www.semikron.com/thyristor-diode-modules

SEMITOP®

W1C, WT, W3C
single switch

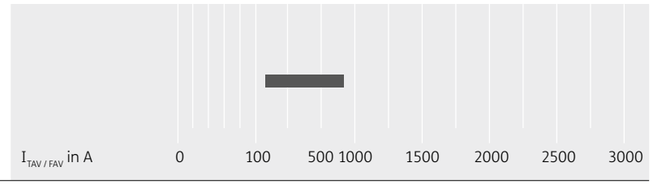
800V up to 1600V



SEMiX®

half-bridge

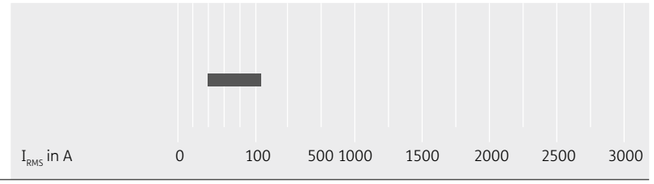
1600V up to 2200V



SEMIPONT®

WT, W3C

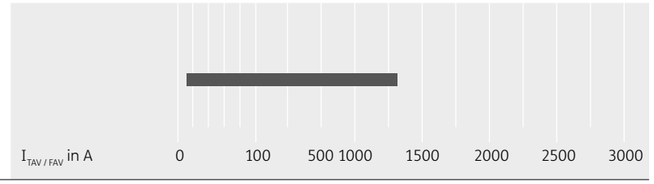
800V up to 2200V



SEMIPACK®

single switch
half-bridge

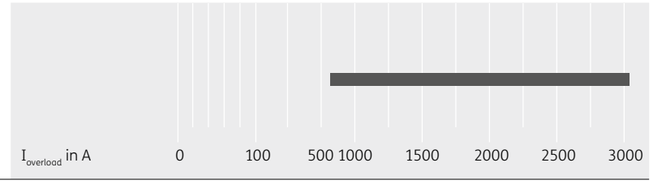
400V up to 2200V



SEMiSTART®

W1C

1400V up to 1800V



Thyristor / Diode Modules / SEMITOP

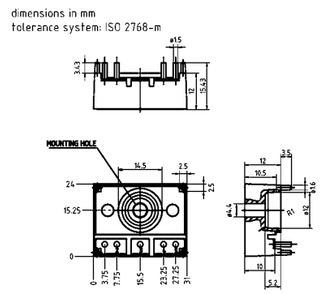
Type	V_{RRM} V_{DRM} V	I_{TAV} I_{FAV} @ T_S A	T_S °C	I_{TSM} I_{FSM} @ T_{jmax} A	$V_{T(TO)}$ @ T_{jmax} V	r_T @ T_{jmax} mΩ	$R_{th(j-s)}$ per chip K/W	T_j °C	Case	Circuit
SK 35 TAA [2]	800-1600	35	80	380	0.85	9.10	1.2	-40 ... +130	2	
SK 55 TAA	800-1600	55	80	900	0.85	5.70	0.8	-40 ... +130	2	
SK 75 TAA [2]	800-1600	75	80	1500	0.90	4.50	0.6	-40 ... +130	2	
SK 100 TAA [2]	800-1600	100	80	2000	0.90	3.50	0.45	-40 ... +130	2	
SK 75 TAE 12	1200	75	80	1250	0.85	4.40	0.6	-40 ... +130	2	
SK 25 KQ	800-1600	29	85	280	1.10	20.00	1.7	-40 ... +125	1	
SK 45 KQ	800-1600	47	85	380	1.00	10.00	1.2	-40 ... +125	1	
SK 70 KQ	800-1600	72	85	900	1	6.00	0.8	-40 ... +125	1	
SK 100 KQ	800-1600	101	85	1350	0.90	4.50	0.6	-40 ... +125	2	
SK 120 KQ	800-1600	134	85	1800	0.90	3.50	0.45	-40 ... +125	2	
SK 25 WT	800-1600	29	85	280	1.10	20.00	1.7	-40 ... +125	2	
SK 45 WT	800-1600	47	85	380	1.00	10.00	1.2	-40 ... +125	2	
SK 70 WT	800-1600	72	85	900	1.00	6.00	0.8	-40 ... +125	3	
SK 100 WT	800-1600	101	85	1350	0.90	4.50	0.6	-40 ... +125	3	
SK 35 BZ [2]	800-1600	35	80	270	0.85	14.00	1.7	-40 ... +125	2	
SK 45 STA	800-1600	47	75	380	1.00	10.00	1.2	-40 ... +125	3	
SK 25 UT	800-1600	29	85	280	1.10	20.00	1.7	-40 ... +125	3	
SK 45 UT	800-1600	47	85	380	1.00	10.00	1.2	-40 ... +125	3	
SK 30 DTA	800-1600	25	80	900	1.00	6.00	1.7	-40 ... +150	3	
SK 60 DTA	800-1600	61	80	1350	0.90	0.60	0.6	-40 ... +125	3	
SK 80 DTA	800-1600	65	80	1800	0.90	3.50	1	-40 ... +150	3	

Footnotes: 2) In production new

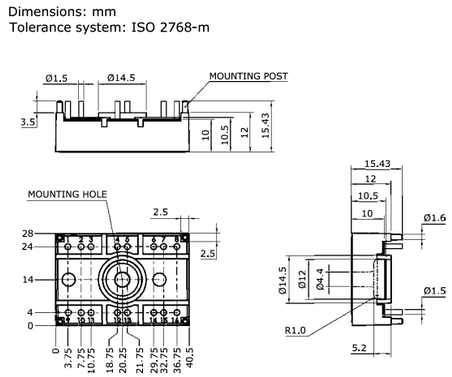
Thyristor / Diode Modules / SEMITOP

Cases

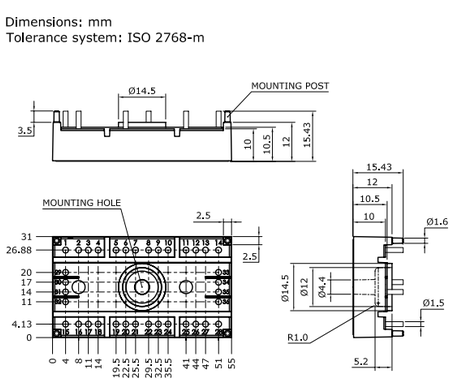
SEMITOP 1



SEMITOP 2



SEMITOP 3

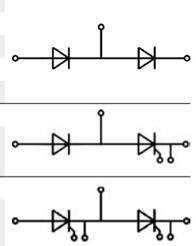


Dimensions in mm

Thyristor / Diode Modules / SEMiX

Type

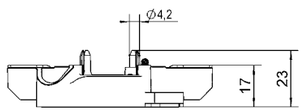
	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ per chip	$R_{th(c-s)}$	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SEMiX191KD16s	1600	190	85	5000	0.85	0.95	0.18	0.075	-40 ... +130	1s	
SEMiX302KD16s	1600	300	85	7500	0.85	1.1	0.091	0.045	-40 ... +130	2s	
SEMiX443KD16p[1)]	1600	585	85	7000	0.916	2.0	0.11	0.019	-40 ... +175	3Ip	
SEMiX603KD16p[1)]	1600	732	85	9000	0.916	1.9	0.09	0.017	-40 ... +175	3Ip	
SEMiX443KD22p[1)]	2200	580	85	8200	0.834	2.0	0.09	0.017	-40 ... +150	3Ip	
SEMiX171KH16s	1600	170	85	4800	0.85	1.5	0.18	0.075	-40 ... +130	1s	
SEMiX302KH16s	1600	300	85	8000	0.85	1.1	0.091	0.045	-40 ... +130	2s	
SEMiX141KT16s	1600	140	85	3000	0.85	2.1	0.21	0.075	-40 ... +130	1s	
SEMiX302KT16s	1600	300	85	8000	0.85	1.7	0.091	0.045	-40 ... +130	2s	

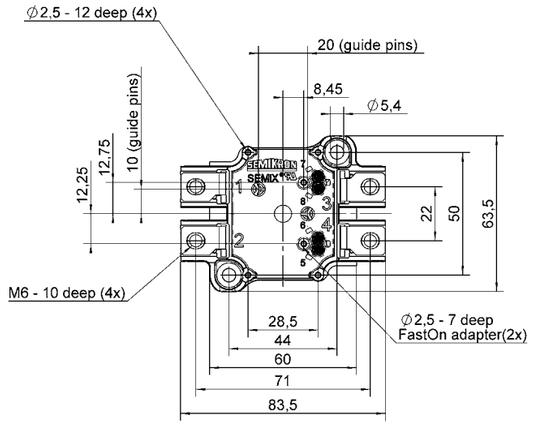


Footnotes: 1) Sample status

Cases

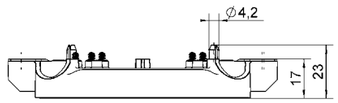
SEMiX 1s

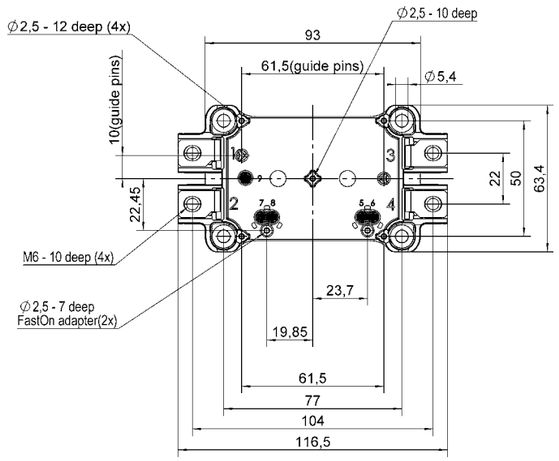




Dimensions in mm

SEMiX 2s

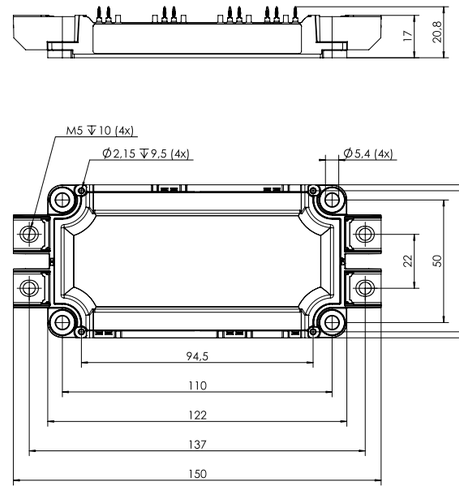




Thyristor / Diode Modules / SEMiX

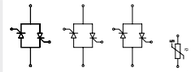
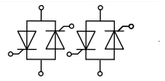
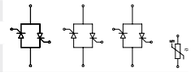
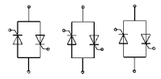
Cases

SEMiX 3Ip



Dimensions in mm

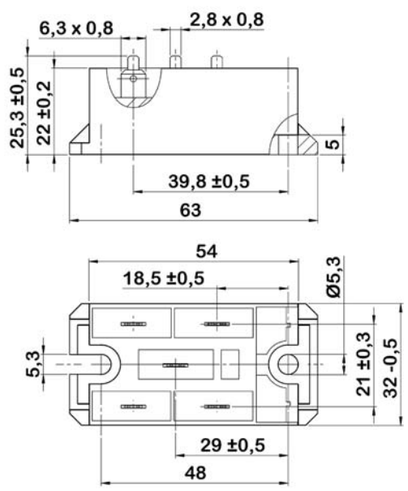
Thyristor / Diode Modules / SEMIPONT

Type	V_{RRM} V_{DRM} V	I_{TAV} I_{FAV} @ T_S A	T_S °C	I_{TSM} I_{FSM} @ T_{jmax} A	$V_{T(TO)}$ @ T_{jmax} V	r_T @ T_{jmax} mΩ	$R_{th(j-s)}$ cont. per chip K/W	T_j °C	Case	Circuit
SKUT 85/12 T V2 [2]	1200	94	85	1050	1.10	6.0	0.85	-40 ... +125	5	
SKWT 40 [1]	800-2200	40	85	580	0.9	6.0	2	-40 ... +125	1	
SKUT 85/16 T V2 [2]	1600	94	85	1050	1.10	6.0	0.85	-40 ... +125	5	
SKUT 115/12T V2 [2]	1200	127	85	1250	0.90	5	0.63	-40 ... +125	5	
SKUT 115/16T V2 [2]	1600	127	85	1250	0.90	5	0.63	-40 ... +125	5	
SKUT 85/12 V2 [2]	1200	85	85	1050	1.1	6.0	0.85	-40 ... +125	5	
SKUT 85/16 V2 [2]	1600	85	85	1050	1.1	6.0	0.85	-40 ... +125	5	
SKUT 115/12 V2 [2]	1200	105	85	1250	0.9	5.0	0.63	-40 ... +125	5	
SKUT 115/16 V2 [2]	1600	105	85	1250	0.9	5.0	0.63	-40 ... +125	5	

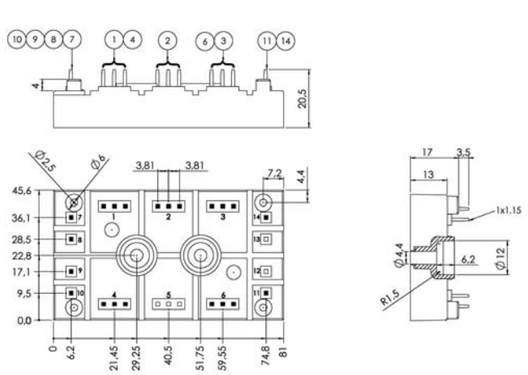
Footnotes: 1) Sample status / 2) In production new

Cases

SEMIPONT 1

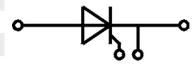
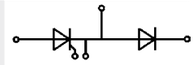
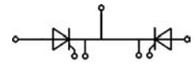
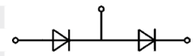
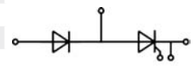


SEMIPONT 5



Dimensions in mm

Thyristor / Diode Modules / SEMIPACK

Type	V_{RRM} V_{DRM} V	I_{TAV} I_{FAV} @ T_C A	T_C °C	I_{TSM} I_{FSM} @ T_{jmax} A	$V_{T(TO)}$ @ T_{jmax} V	r_T @ T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	$R_{th(c-s)}$ per chip K/W	T_j °C	Case	Circuit
SKET 330	800-2200	295	85	8000	1.20	0.55	0.09	0.02	-40 ... +130	4	
SKET 400	800-1800	392	85	12000	0.92	0.3	0.09	0.02	-40 ... +130	4	
SKET 741/22 E	2200	819	85	26500	0.82	0.17	0.0405	0.015	-40 ... +125	6	
SKET 801/18 E	1800	819	85	30000	0.82	0.17	0.0405	0.015	-40 ... +125	6	
SKKE 15	600-1600	14	85	280	0.85	15	2	0.2	-40 ... +125	0	
SKKE 81	800-1600	82	85	1750	0.85	1.8	0.4	0.2	-40 ... +125	1	
SKKE 162	800-2200	195	85	5000	0.85	1.2	0.18	0.1	-40 ... +135	2	
SKKE 380	1200-1600	380	100	10000	0.80	0.35	0.11	0.04	-40 ... +150	3	
SKKE 600	1200-2200	600	100	18000	0.75	0.25	0.07	0.02	-40 ... +150	4	
SKKE 1201/22	2200	1360	85	35000	0.75	0.073	0.047	0.015	-40 ... +125	6	
SKKL 92	800-1800	95	85	1750	0.90	2	0.28	0.2	-40 ... +125	1	
SKMT 92	800-1800	95	85	1750	0.90	2	0.28	0.2	-40 ... +125	1	
SKKD 15	600-1600	14	85	280	0.85	15	2	0.2	-40 ... +125	0	
SKKD 26	1200-1600	31	85	480	0.85	6	1	0.2	-40 ... +125	1	
SKKD 46	400-1800	47	85	600	0.85	5	0.6	0.2	-40 ... +125	1	
SKKD 81	400-1800	82	85	1750	0.85	1.8	0.4	0.2	-40 ... +125	1	
SKKD 81 H4	2000-2200	82	85	1750	0.85	1.8	0.4	0.2	-40 ... +125	1	
SKKD 100	400-1800	100	85	2000	0.85	1.3	0.35	0.2	-40 ... +125	1	
SKKD 101/16	1600	134	85	2000	0.87	2.45	0.19	0.22	-40 ... +130	1	
SKKD 152/16 H1	1600	171	85	4500	0.82	1.35	0.2	0.1	-40 ... +135	2	
SKKD 162	800-2200	195	85	5000	0.85	1.2	0.18	0.1	-40 ... +135	2	
SKKD 212	1200-1800	212	85	5500	0.75	1.05	0.18	0.1	-40 ... +135	2	
SKKD 260	800-2200	260	85	10000	0.9	0.37	0.14	0.04	-40 ... +130	3	
SKKD 353	1200-1800	350	85	9500	0.84	0.75	0.09	0.08	-40 ... +130	3	
SKKD 380	800-2200	380	100	10000	0.80	0.35	0.11	0.04	-40 ... +150	3	
SKKD 701	1200-2200	701	100	22500	0.70	0.28	0.069	0.02	-40 ... +160	5	
SKKH 15	600-1600	13.5	85	280	1.10	20	1.6	0.2	-40 ... +125	0	
SKKH 27	800-1800	25	85	480	0.90	12	0.9	0.2	-40 ... +125	1	
SKKH 42	800-1800	40	85	850	1.00	4.5	0.65	0.2	-40 ... +125	1	
SKKH 57	800-1800	50	85	1250	0.90	3.5	0.57	0.2	-40 ... +125	1	
SKKH 57 H4	2000-2200	50	85	1250	0.90	3.5	0.57	0.2	-40 ... +125	1	
SKKH 58/16 E	1600	55	85	1200	1.00	4.8	0.47	0.22	-40 ... +130	1	
SKKH 72	800-1800	70	85	1450	0.90	3.5	0.35	0.2	-40 ... +125	1	
SKKH 72 H4	2000-2200	70	85	1450	0.90	3.5	0.35	0.2	-40 ... +125	1	
SKKH 92	800-1800	95	85	1750	0.90	2	0.28	0.2	-40 ... +125	1	
SKKH 106	800-1800	106	85	1900	0.90	2	0.28	0.2	-40 ... +130	1	
SKKH 107/16 E	1600	119	85	1900	0.90	3.35	0.19	0.22	-40 ... +130	1	
SKKH 122	800-1800	129	85	3200	0.85	2	0.2	0.13	-40 ... +125	2	
SKKH 132	800-1800	137	85	4000	1.00	1.6	0.18	0.1	-40 ... +125	2	
SKKH 132 H4	2000-2200	128	85	3800	1.10	2	0.17	0.1	-40 ... +125	2	
SKKH 162	800-1800	156	85	5000	0.85	1.5	0.17	0.1	-40 ... +125	2	
SKKH 162 H4	2000-2200	143	85	4800	0.95	2	0.16	0.1	-40 ... +125	2	
SKKH 172/16 E	1600	175	85	5000	0.83	1.3	0.155	0.1	-40 ... +125	2	

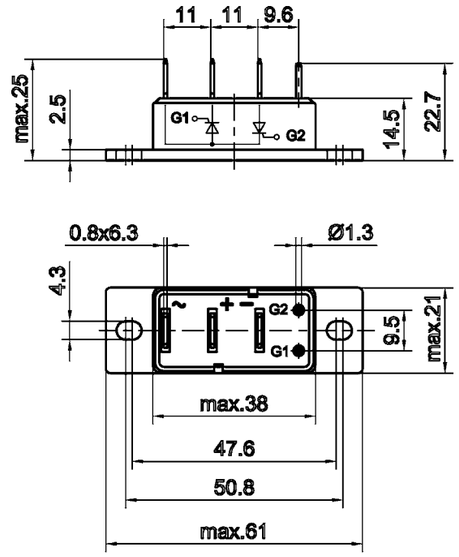
Thyristor / Diode Modules / SEMIPACK

Type	V_{RRM} V_{DRM} V	I_{TAV} I_{FAV} @ T_C A	T_C °C	I_{TSM} I_{FSM} @ T_{jmax} A	$V_{T(TO)}$ @ T_{jmax} V	r_T @ T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	$R_{th(c-s)}$ per chip K/W	T_j °C	Case	Circuit
SKKH 250	1200-1800	250	85	8000	0.93	0.45	0.14	0.04	-40 ... +130	3	
SKKH 273	1200-1800	273	85	8000	0.90	0.92	0.104	0.08	-40 ... +130	3	
SKKH 280 H4	2000-2200	252	85	7500	0.90	0.75	0.11	0.04	-40 ... +125	3	
SKKH 323	1200-1800	320	85	8200	0.81	0.85	0.091	0.08	-40 ... +130	3	
SKKH 330	800-1800	305	85	8000	0.80	0.6	0.11	0.04	-40 ... +130	3	
SKKH 460	1600-2200	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKH 570	1600-1800	570	85	15500	0.78	0.32	0.069	0.02	-40 ... +135	5	
SKKT 15	600-1600	13.5	85	280	1.10	20	1.6	0.2	-40 ... +125	0	
SKKT 20	800-1600	18	85	280	1.00	16	1.2	0.2	-40 ... +125	1	
SKKT 20B	800-1600	18	85	280	1.00	16	1.2	0.2	-40 ... +125	1	
SKKT 27	800-1600	25	85	480	0.90	12	0.9	0.2	-40 ... +125	1	
SKKT 27B	800-1600	25	85	480	0.90	12	0.9	0.2	-40 ... +125	1	
SKKT 42	800-1800	40	85	850	1.00	4.5	0.65	0.2	-40 ... +125	1	
SKKT 42B	800-1800	40	85	850	1.00	4.5	0.65	0.2	-40 ... +125	1	
SKKT 57	800-1800	50	85	1250	0.90	3.5	0.57	0.2	-40 ... +125	1	
SKKT 57B	800-1800	50	85	1250	0.90	3.5	0.57	0.2	-40 ... +125	1	
SKKT 57 H4	2000-2200	50	85	1250	0.90	3.5	0.57	0.2	-40 ... +125	1	
SKKT 58/16 E	1600	55	85	1200	1.00	4.8	0.47	0.22	-40 ... +130	1	
SKKT 58B16 E	1600	55	85	1200	1.00	4.8	0.47	0.22	-40 ... +130	1	
SKKT 72	800-1800	70	85	1450	0.90	3.5	0.35	0.2	-40 ... +125	1	
SKKT 72B	800-1800	70	85	1450	0.90	3.5	0.35	0.2	-40 ... +125	1	
SKKT 72 H4	2000-2200	70	85	1450	0.90	3.5	0.35	0.2	-40 ... +125	1	
SKKT 92	800-1800	95	85	1750	0.90	2	0.28	0.2	-40 ... +125	1	
SKKT 92B	800-1800	95	85	1750	0.90	2	0.28	0.2	-40 ... +125	1	
SKKT 106	800-1800	106	85	1900	0.90	2	0.28	0.2	-40 ... +130	1	
SKKT 106B	800-1800	106	85	1900	0.90	2	0.28	0.2	-40 ... +130	1	
SKKT 107/16 E	1600	119	85	1900	0.90	3.35	0.19	0.22	-40 ... +130	1	
SKKT 107B16 E	1600	119	85	1900	0.90	3.35	0.19	0.22	-40 ... +130	1	
SKKT 122	800-1800	129	85	3200	0.85	2	0.2	0.13	-40 ... +125	2	
SKKT 132	800-1800	137	85	4000	1.00	1.6	0.18	0.1	-40 ... +125	2	
SKKT 132 H4	2000-2200	128	85	3800	1.10	2	0.17	0.1	-40 ... +125	2	
SKKT 162	800-1800	156	85	5000	0.85	1.5	0.17	0.1	-40 ... +125	2	
SKKT 162 H4	2000-2200	143	85	4800	0.95	2	0.16	0.1	-40 ... +125	2	
SKKT 172	1400-1800	175	85	5000	0.83	1.3	0.155	0.1	-40 ... +125	2	
SKKT 250	800-1800	250	85	8000	0.93	0.45	0.14	0.04	-40 ... +130	3	
SKKT 273	1200-1800	273	85	8000	0.90	0.92	0.104	0.08	-40 ... +130	3	
SKKT 280 H4	2000-2200	252	85	7500	0.90	0.75	0.11	0.04	-40 ... +125	3	
SKKT 323	1200-1800	320	85	8200	0.81	0.85	0.091	0.08	-40 ... +130	3	
SKKT 330	800-1800	305	85	8000	0.80	0.6	0.11	0.04	-40 ... +130	3	
SKKT 460/16 E	1600	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKT 460/22 E H4	2200	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKT 570	1200-1800	570	85	15500	0.78	0.32	0.069	0.02	-40 ... +135	5	

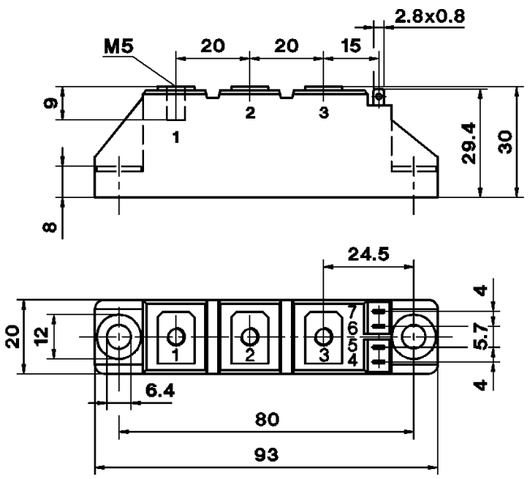
Thyristor / Diode Modules / SEMIPACK

Cases

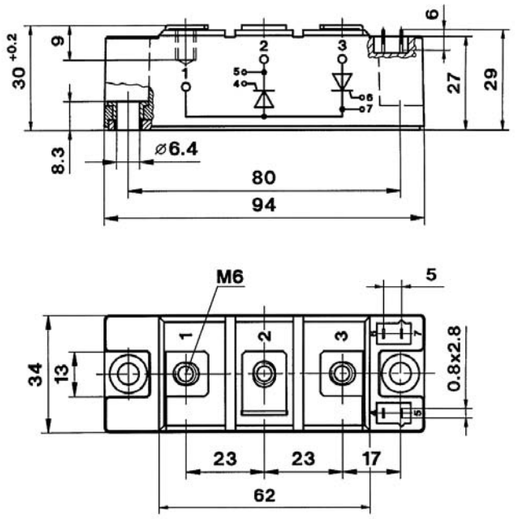
SEMIPACK 0



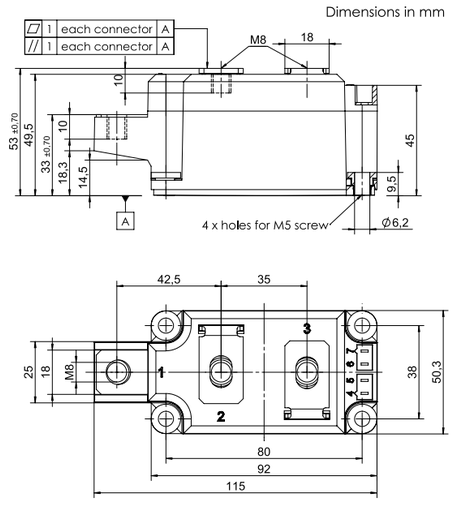
SEMIPACK 1



SEMIPACK 2



SEMIPACK 3



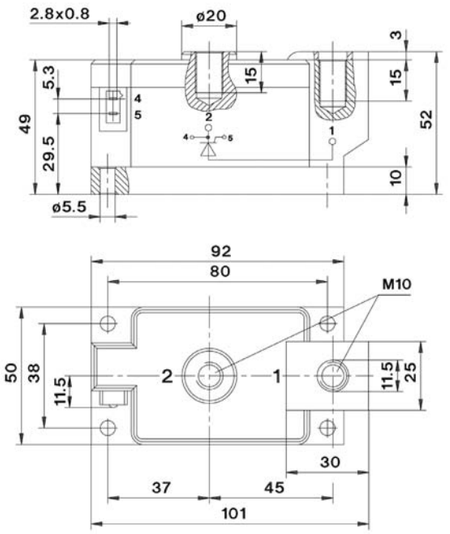
General tolerance ± 0.5 mm

Dimensions in mm

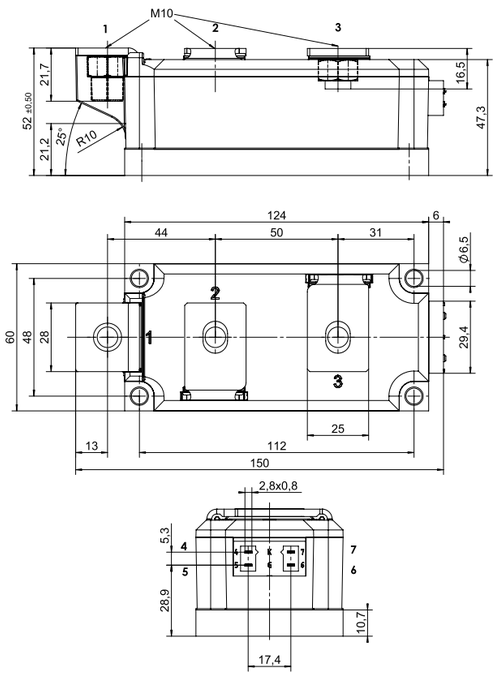
Thyristor / Diode Modules / SEMIPACK

Cases

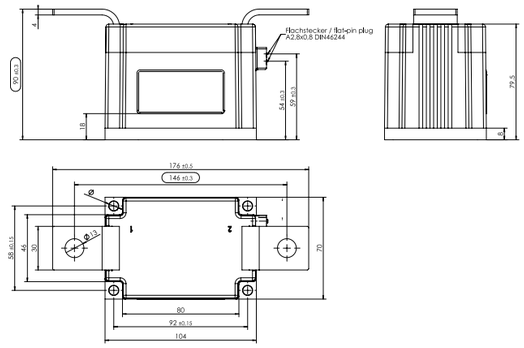
SEMIPACK 4



SEMIPACK 5



SEMIPACK 6



Dimensions in mm

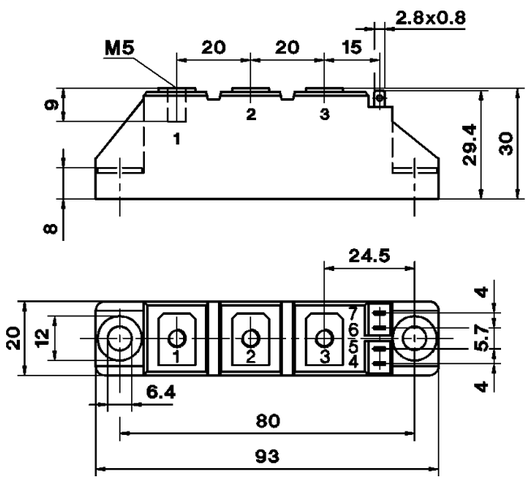
Thyristor / Diode Modules / SEMIPACK FAST

Type	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ per chip	$R_{th(c-s)}$	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SKKE 120F17	1700	120	82	1800	1.5	4.5	0.2	0.05	-40 ... +150	2	
SKKE 290F06	600	290	109	6000	0.9	1.2	0.08	0.05	-40 ... +150	2	
SKKE 301F12	1200	300	43	3600	1.2	2.75	0.11	0.05	-40 ... +150	2	
SKKE 310F12	1200	310	84	5500	1.2	1.9	0.08	0.05	-40 ... +150	2	
SKKE 330F17[5]	1700	330	70	5200	1.5	1.9	0.079	0.038	-40 ... +150	4	
SKKE 600F12[5]	1200	600	85	5800	1.2	1.9	0.062	-	-40 ... +150	4	
SKKD 40F	600-1000	40	80	940	1.2	4	0.7	0.2	-40 ... +125	1	
SKKD 42F	1200-1400	42	85	1100	1	5	0.7	0.2	-40 ... +130	1	
SKKD 60F	1700	60	83	900	1.5	9	0.4	0.1	-40 ... +150	2	
SKKD 75F12	1200	75	55	900	1.2	11	0.4	0.1	-40 ... +150	2	
SKKD 150F12	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKKD 170F	1200	170	85	2300	1.2	3.5	0.14	0.1	-40 ... +150	2	
SKKD 205F06	600	205	87	3000	0.9	2	0.16	0.1	-40 ... +150	2	
SKMD 150F12	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKND 150F12	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKND 205F06	600	205	87	3000	0.9	2	0.16	0.1	-40 ... +150	2	

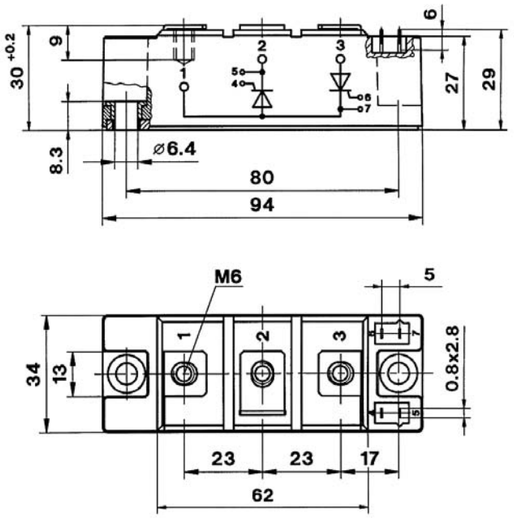
Footnotes: 5) SEMIPACK Fast in SEMITRANS 4 case

Cases

SEMIPACK 1



SEMIPACK 2

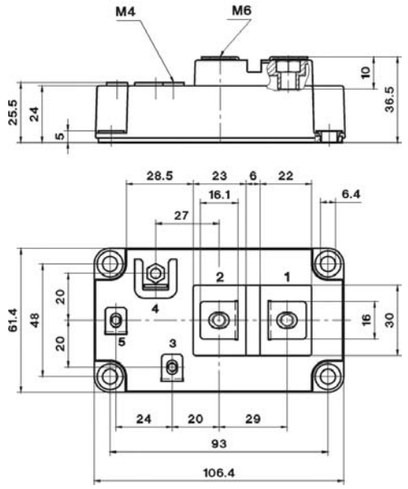


Dimensions in mm

Thyristor / Diode Modules / SEMIPACK FAST

Cases

SEMIPACK Fast in SEMITRANS 4

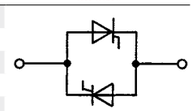


Dimensions in mm

Thyristor Modules / SEMiSTART

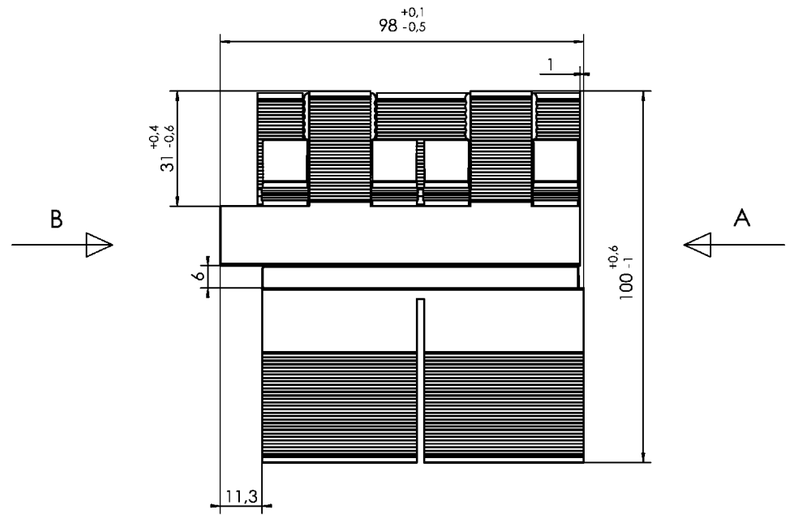
Type

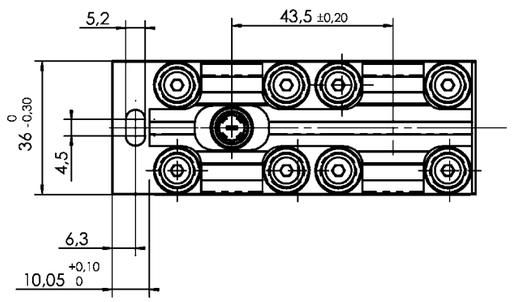
	V_{RRM} V_{DRM}	$I_{overload}$ W1C (for 20s)	T_C	I_{TSM} @ T_j = 125°C	$V_{T(TO)}$ @ T_{jmax} =125°C	r_T @ T_{jmax} =125°C	$R_{th(j-r)}$ cont. per chip	T_{jmax} (for 20s)	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
SKKQ 560	1400-1800	560	150	5200	0.9	0.9	0.106	150	1	
SKKQ 800	1400-1800	800	150	5200	0.9	0.8	0.106	150	2	
SKKQ 1200	1400-1800	1225	150	8000	0.9	0.5	0.066	150	2	
SKKQ 1500	1400-1800	1500	150	15000	0.85	0.3	0.037	150	2	
SKKQ 3000	1400-1800	3080	150	25500	0.95	0.18	0.026	150	3	



Cases

SEMiSTART 1



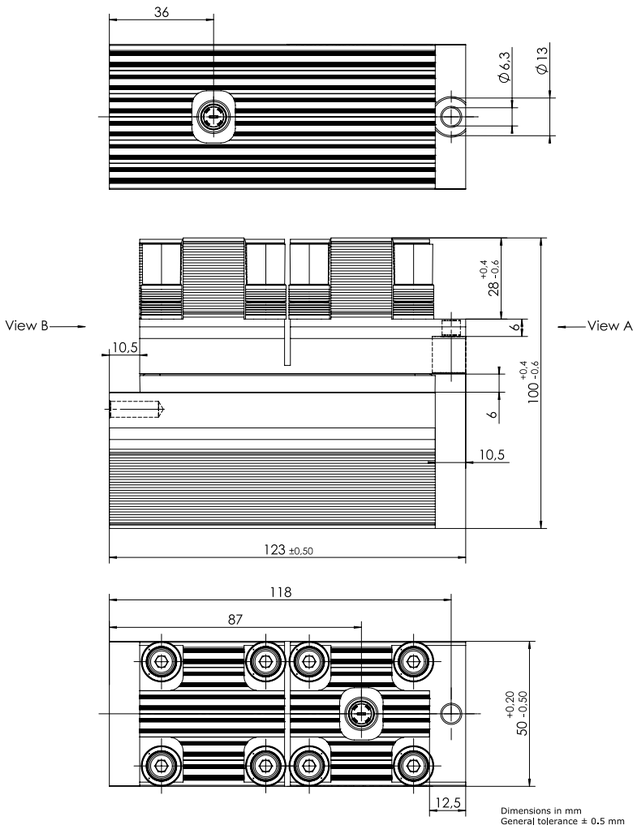


Dimensions in mm

Thyristor Modules / SEMiSTART

Cases

SEMiSTART 2

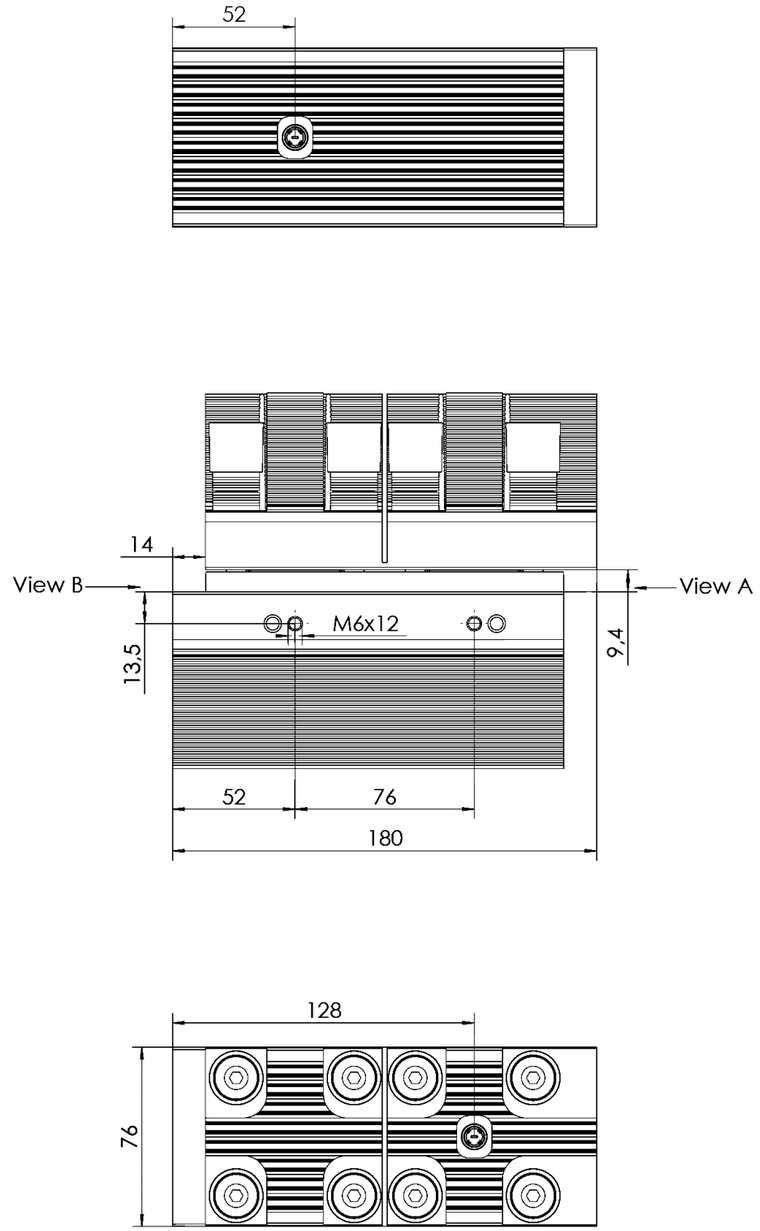


Dimensions in mm

Thyristor Modules / SEMiSTART

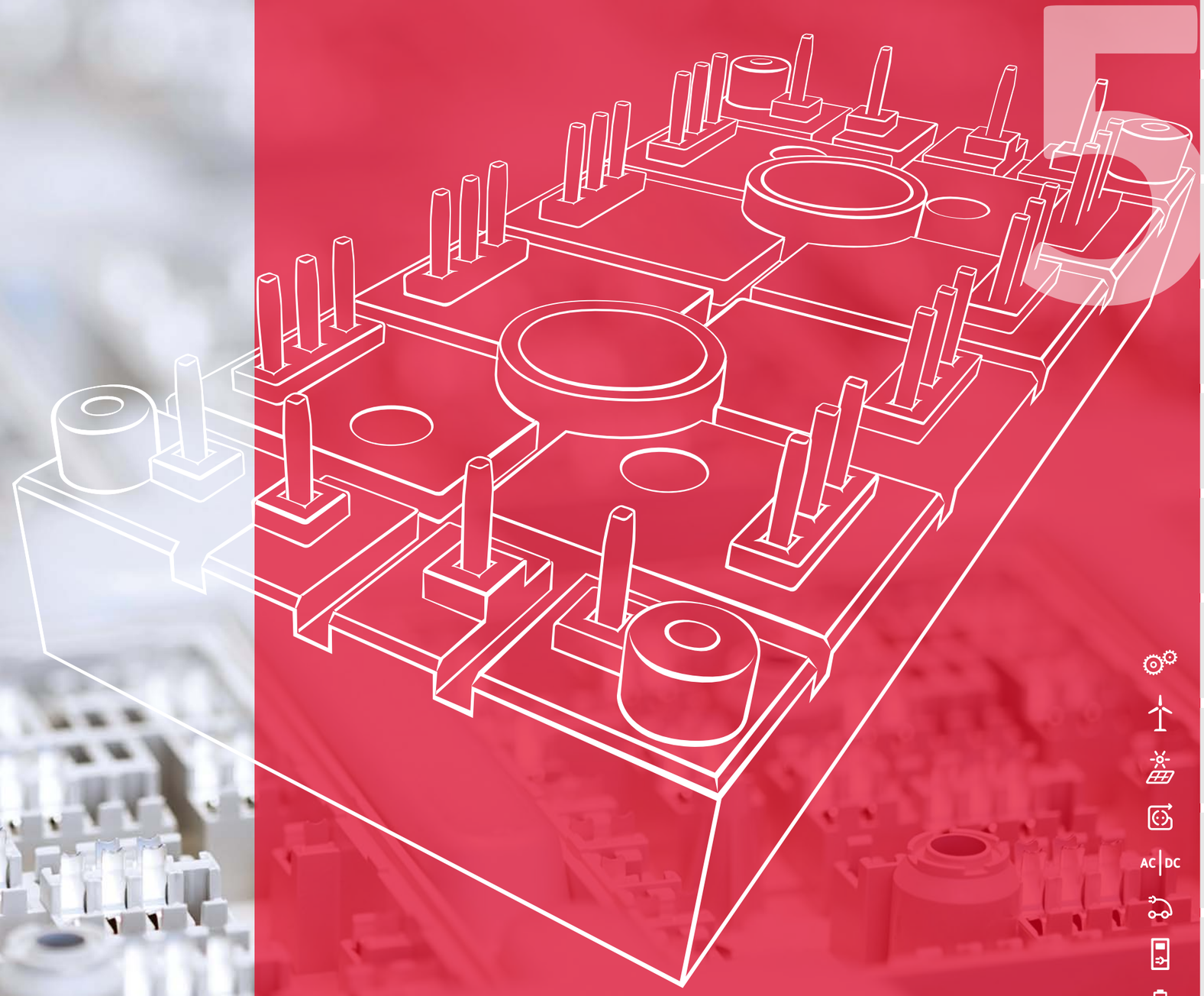
Cases

SEMiSTART 3



Dimensions in mm

Bridge Rectifier Modules



Product Classes

Bridge Rectifier Modules
For Reliable Inverter Designs

Bridge rectifiers include every branch of a rectifier circuit in a single, compact case. Bridge rectifiers exist from a few amps to several hundred amps in different package types.

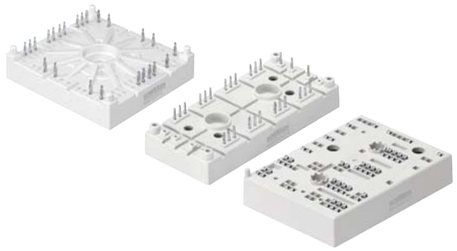
SEMIKRON offers bridge rectifier modules in single phase or 3-phase topology with or without brake chopper. The bridge rectifier modules are available in different packages such as SEMiX, SEMITOP, SEMIPONT, Power Bridge and MiniSKiiP.

For detailed information please refer to data sheets.

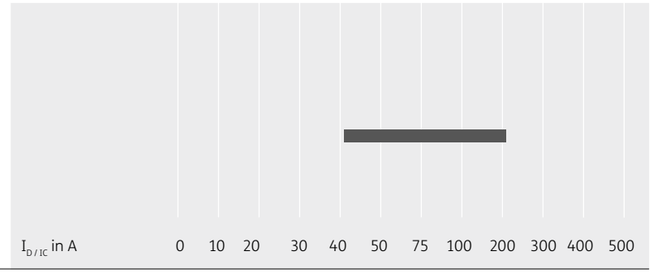
Further information: www.semikron.com/bridge-rectifier-modules

SEMITOP®/SEMIPONT®/MiniSKiiP®

Rectifier with brake chopper

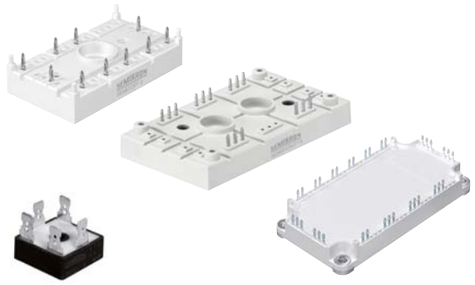


600V up to 1800V

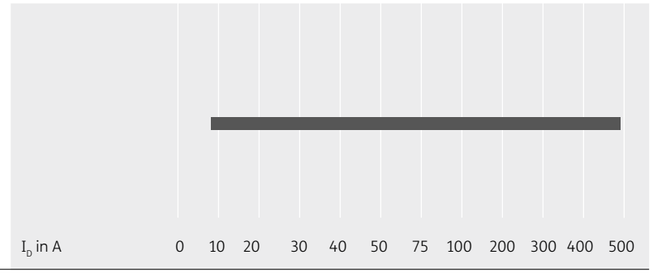


SEMITOP®/SEMIPONT®/SEMiX®/ Power Bridge

three phase

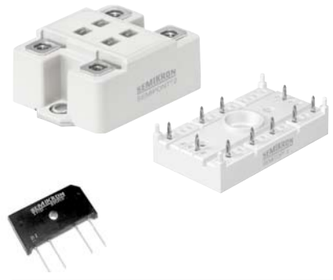


200V up to 2200V

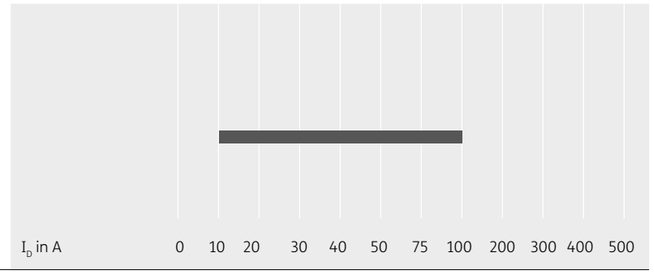


SEMIPONT®/SEMITOP®/ Power Bridge

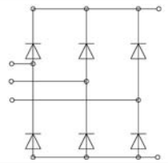
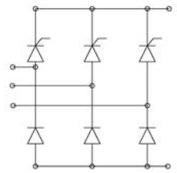
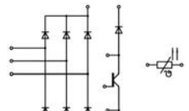
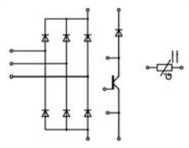
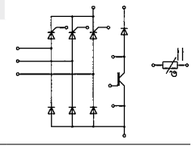
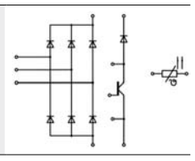
single phase



100V up to 2200V



Bridge Rectifier Modules / MiniSKiiP

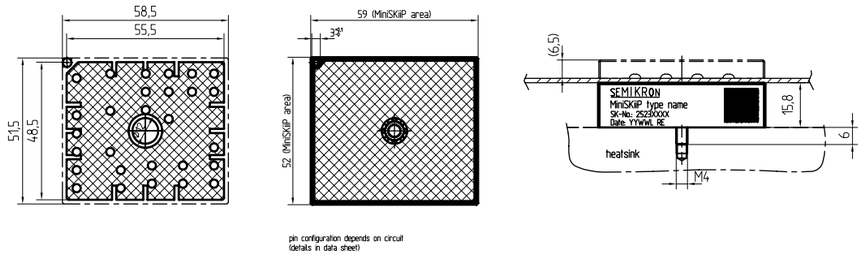
Type	V_{RRM} V_{DRM}	I_F@T_S	T_S	I_{FSM}/I_{TSM}@T_S=25°C	$V_{T(TO)}$	r_T@T_{jmax}	$R_{th(j-s)}$	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
1200V - IGBT3 (Trench)										
SKiiP 39AN16V1 [1]	1600	179	70	3200	0.83	0.00	0.4	... +	II 3	
SKiiP 39AH16V1 [1]	1600	112	70	2900	0.85	2.4	0.4	-40 ... +130	II 3	
SKiiP 28ANB16V1	1600	83	70	1000	0.8	7	0.7	-40 ... +150	II 2	
SKiiP 28ANB16V2	1600	83	70	1000	0.8	7	0.7	-40 ... +150	II 2	
SKiiP 39ANB16V1	1600	124	70	1600	0.8	4	0.5	-40 ... +150	II 3	
SKiiP 28ANB16V10	1600	83	70	1000	0.8	7	0.7	-40 ... +150	II 2	
SKiiP 28AHB16V1	1600	82	70	1000	0.85	7	0.7	-40 ... +125	II 2	
SKiiP 39AHB16V1	1600	121	70	1250	0.85	4	0.5	-40 ... +125	II 3	
1700V - IGBT3 (Trench)										
SKiiP 28ANB18V3 [2]	1800	98	70	1000	0.965	3.4	0.64	-40 ... +150	II 2	

Footnotes: 1) Sample status / 2) In production new

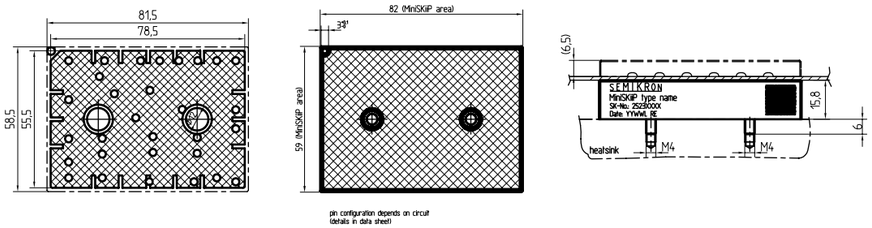
Bridge Rectifier Modules / MiniSKiiP

Cases

MiniSKiiP II 2

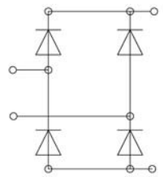
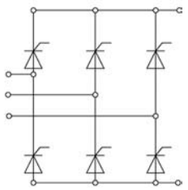
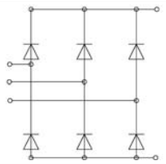
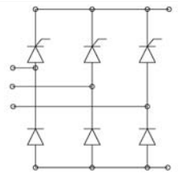
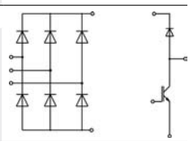
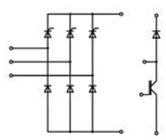
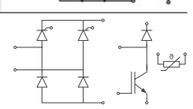


MiniSKiiP II 3



Dimensions in mm

Bridge Rectifier Modules / SEMITOP

Type	V_{RRM} V_{DRM} V	I_D @ T_S A	T_S °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-s)}$ per chip K/W	T_j °C	Case	Circuit
1 and 3 phase										
SK 50 B 06 UF	600	46	80	400	0.80	11.00	0.45	-40 ... +150	2	
SK 50 B	800-1600	51	80	270	0.8	13.00	1.7	-40 ... +150	2	
SK 55 B 06 F	600	54	80	440	0.9	16.00	1.2	-40 ... +150	2	
SK 55 B 12 F	1200	57	80	550	1.20	22.00	0.9	-40 ... +150	2	
SK 70 B	800-1600	68	80	560	0.8	11.00	1.2	-40 ... +150	2	
SK 100 B	800-1600	100	80	890	0.83	3.90	1	-40 ... +150	2	
SK 40 DT	800-1600	42	80	280	1.1	20.00	1.7	-40 ... +125	3	
SK 70 DT	800-1600	68	80	380	1	10.00	1.2	-40 ... +125	3	
SK 55 D	800-1600	55	80	200	0.8	13.00	2.15	-40 ... +150	2	
SK 70 D	800-1600	70	80	270	0.8	13.00	1.7	-40 ... +150	2	
SK 80 D 12F	1200	80	80	550	1.2	22.00	0.9	-40 ... +150	3	
SK 95 D	800-1600	95	80	560	0.8	11.00	1.2	-40 ... +150	2	
SK 95 D 16p [2)]	1600	95	80	560	0.8	11.00	1.2	-40 ... +150	2p	
SK 40 DH	800-1600	42	80	270	1.1	20.00	1.7	-40 ... +150	3	
SK 70 DH	800-1600	68	80	270	1	10.00	1.2	-40 ... +125	3	
SK 55 DGL 126	1200	55	80	370	0.80	13.00	2	-40 ... +150	3	
SK 95 DGL 126	1600	96	80	700	0.8	11.00	1.2	-40 ... +150	3	
SK 170 DHL 126 [1)]	1200	170	70	1000	0.8	7.00	0.51	-40 ... +150	4	
SK 200 DHL 066 [1)]	600	210	70	1250	0.8	4.00	0.52	-40 ... +150	4	
SK 40 BHL 066T [2)]	1600	42	42	280	0.85	20.00	1.7	-40 ... +130	3	

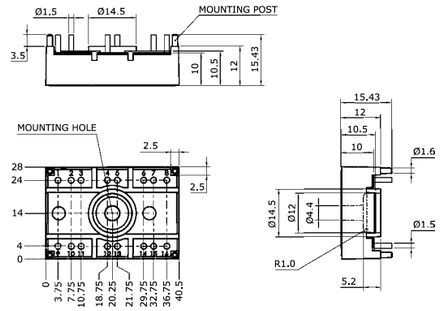
Footnotes: 1) Sample status / 2) In production new

Bridge Rectifier Modules / SEMITOP

Cases

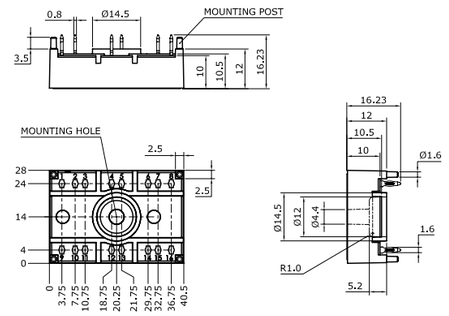
SEMITOP 2

Dimensions: mm
Tolerance system: ISO 2768-m



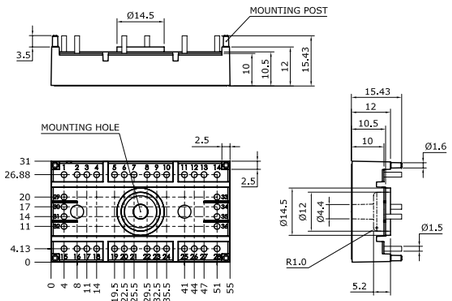
SEMITOP 2 Press-Fit

Dimensions: mm
Tolerance system: ISO 2768-m



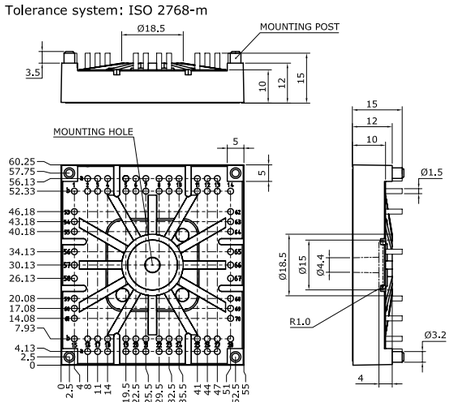
SEMITOP 3

Dimensions: mm
Tolerance system: ISO 2768-m



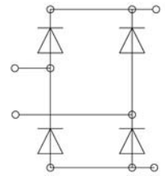
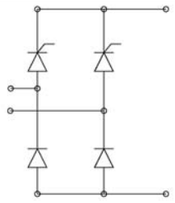
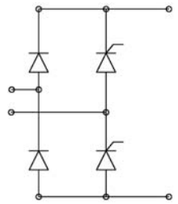
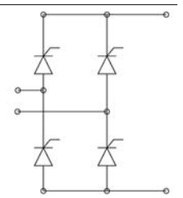
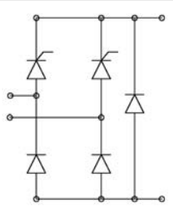
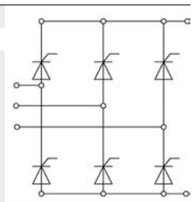
SEMITOP 4

Dimensions: mm
Tolerance system: ISO 2768-m



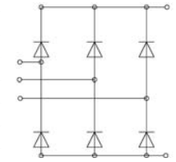
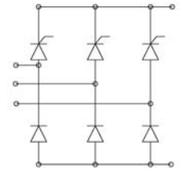
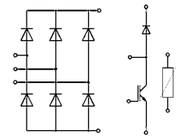
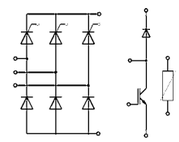
Dimensions in mm

Bridge Rectifier Modules / SEMIPONT

Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	T_j °C	Case	Circuit
1 and 3 phase										
SKB 28	200-1600	28	87	320	0.85	12.0	2	-40 ... +125	1	
SKB 52	400-1800	50	99	425	0.85	8.0	1.5	-40 ... +150	3	
SKB 60	400-1600	60	88	850	0.85	5.0	1	-40 ... +125	2	
SKB 72	400-1800	70	101	640	0.85	5.0	1.1	-40 ... +150	3	
SKBH 28	600-1400	28	89	280	1	16.0	1.8	-40 ... +125	1	
SKBZ 28	400-1400	28	89	280	1	16.0	1.8	-40 ... +125	1	
SKBT 28	600-1400	28	89	280	1	16.0	1.8	-40 ... +125	1	
SKBT 40	800-1400	40	92	400	1	16.0	1	-40 ... +125	2	
SKCH 28	400-1400	28	89	280	1	16.0	1.8	-40 ... +125	1	
SKCH 40	400-1600	40	92	400	1	16.0	1	-40 ... +125	2	
SKDT 60	400-1400	60	86	400	1	16.0	1	-40 ... +125	2	
SKDT 115 [3]	1200-1600	110	80	950	1.1	6.0	0.84	-40 ... +125	5	
SKDT 145	1200-1600	145	80	1250	0.9	5.0	0.6	-40 ... +125	5	

Footnotes: 2) In production new / 3) Not for new designs

Bridge Rectifier Modules / SEMIPONT

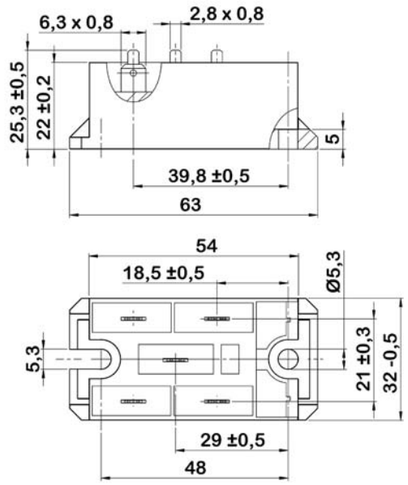
Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	T_j °C	Case	Circuit
1 and 3 phase										
SKD 31	200-1600	31	100	320	0.85	12.0	2	-40 ... +125	1	
SKD 60	400-1600	60	102	850	0.85	5.0	1	-40 ... +125	2	
SKD 62	400-1800	60	110	425	0.85	8.0	1.5	-40 ... +150	3	
SKD 82	400-1800	80	110	640	0.85	5.0	1.1	-40 ... +150	3	
SKD 100	400-1600	100	93	1000	0.85	5.0	0.85	-40 ... +125	2	
SKD 110	800-1800	110	100	1000	0.85	4.0	0.9	-40 ... +150	4	
SKD 115	1200-1800	110	85	1150	0.8	7.0	1	-40 ... +150	5	
SKD 145	1200-1800	145	85	1700	0.8	4.0	0.8	-40 ... +150	5	
SKD 160	800-1800	205	85	1500	0.85	3.0	0.65	-40 ... +150	4	
SKD 210	900-1800	207	99	1600	0.85	3.0	0.5	-40 ... +150	4	
SKDH 100	800-1400	100	84	850	1	4.5	0.85	-40 ... +125	2	
SKDH 115	1200-1600	110	80	950	1.1	6.0	0.84	-40 ... +125	5	
SKDH 145	1200-1600	145	80	1250	0.9	5.0	0.63	-40 ... +125	5	
3 phase with brake chopper										
SKD 116/..-L105 [2]	1200-1600	110	85	1050	0.8	7.0	1	-40 ... +125	6	
SKD 116/..-L140 [2]	1200-1600	110	85	1050	0.8	7.0	1	-40 ... +125	6	
SKD 146/..-L105 [2]	1200-1600	140	85	1250	0.8	4.0	0.8	-40 ... +125	6	
SKD 146/..-L140T4 [2]	1200-1600	140	85	1250	0.8	4.0	0.8	-40 ... +125	6	
SKDH 116/..L105 [2]	1200-1600	110	85	1000	0.8	7.0	1	-40 ... +125	6	
SKDH 116/..L140 [2]	1200-1600	110	85	1000	0.8	7.0	1	-40 ... +125	6	
SKDH 146/..-L105 [2]	1200-1600	140	85	1250	0.8	4.0	0.8	-40 ... +125	6	
SKDH 146/..-L140 [2]	1200-1600	140	85	1250	0.8	4.0	0.8	-40 ... +125	6	

Footnotes: 2) In production new / 3) Not for new designs

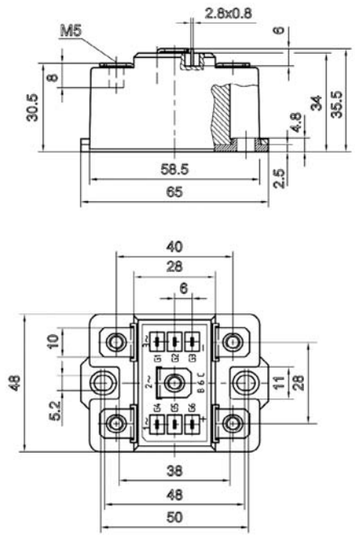
Bridge Rectifier Modules / SEMIPONT

Cases

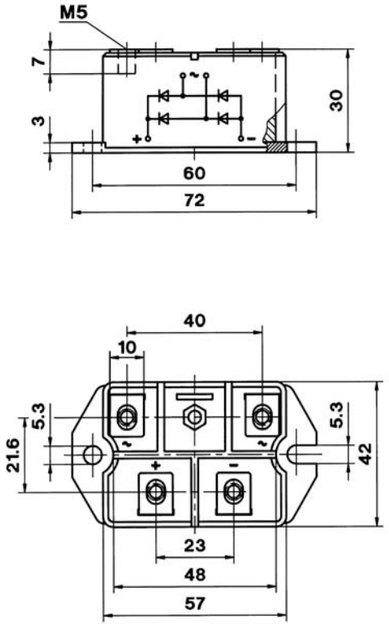
SEMIPONT 1



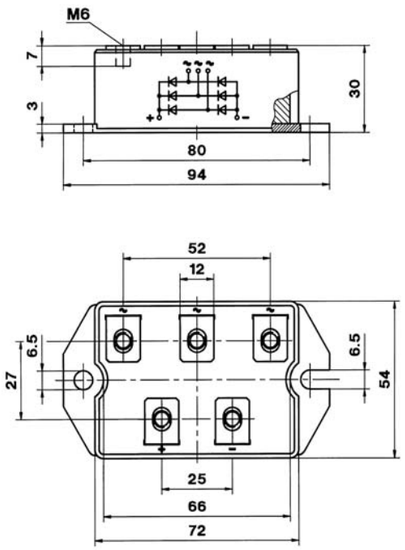
SEMIPONT 2



SEMIPONT 3



SEMIPONT 4

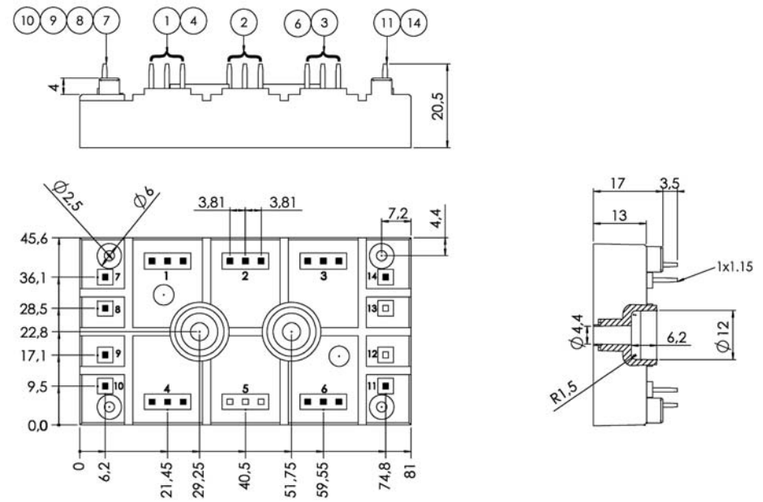


Dimensions in mm

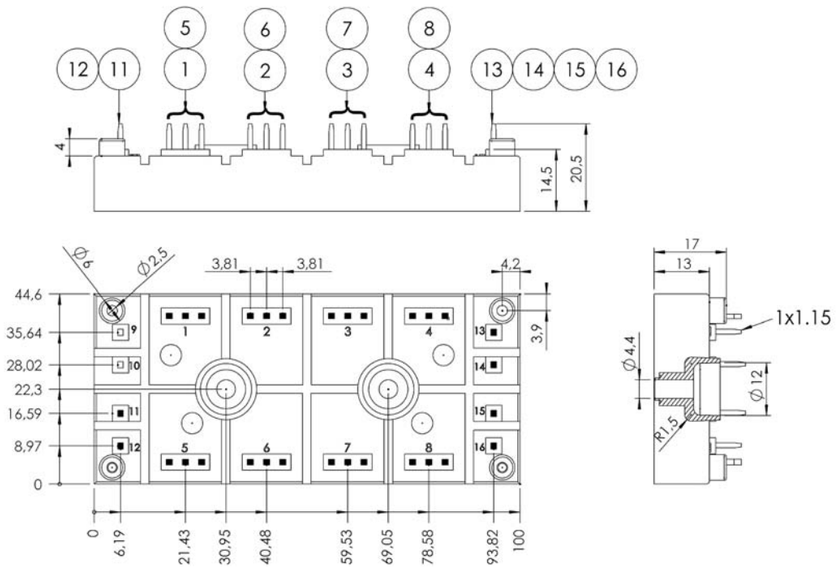
Bridge Rectifier Modules / SEMIPONT

Cases

SEMIPONT 5

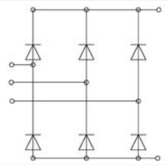
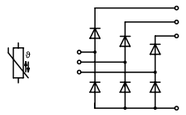
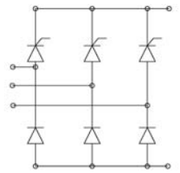
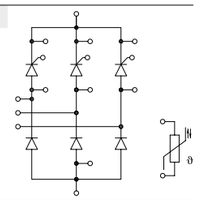


SEMIPONT 6



Dimensions in mm

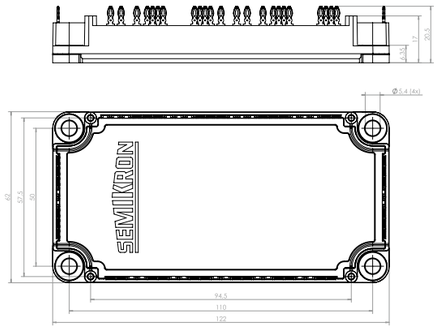
Bridge Rectifier Modules / SEMiX

Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ per chip K/W	$R_{th(c-s)}$ K/W	T_j °C	Case	Circuit
3 phase											
SEMiX251D12Fs	1200	256	85	1330	1.20	7	0.26	0.04	-40 ... +150	13	
SEMiX291D16s	1600	232	85	1380	0.83	4.6	0.45	0.04	-40 ... +150	13	
SEMiX341D16s	1600	348	85	2000	0.9	2.7	0.22	0.04	-40 ... +130	13	
SEMiX501D17Fs	1700	494	85	2140	1.10	2.7	0.165	0.04	-40 ... +150	13	
SEMiX586D16p[1)]	1600	700	85	4200	0.916	1.4	0.147	0.007	-40 ... +175	6p	
SEMiX636D16p[1)]	1600	700	85	5500	0.916	1.3	0.122	0.007	-40 ... +175	6p	
SEMiX526D22p[1)]	2200	650	85	5300	0.834	1.4	0.122	0.006	-40 ... +150	6p	
SEMiX241DH16s	1600	262	100	1800	0.85	3.4	0.24	0.04	-40 ... +130	13	
SEMiX245DH16 [1)]	1600	336	96	1800	0.91	3.0	0.2	0.012	-40 ... +130	5p	
SEMiX365DH16 [1)]	1600	484	96	2750	0.85	2.5	0.14	0.009	-40 ... +130	5p	

Footnotes: 1) Sample status

Cases

SEMiX 6p

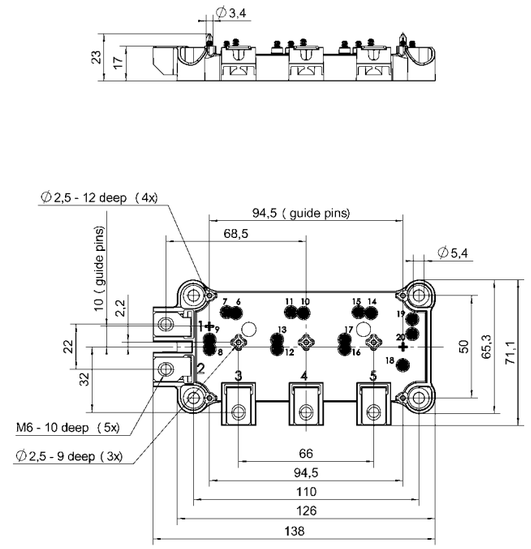


Dimensions in mm

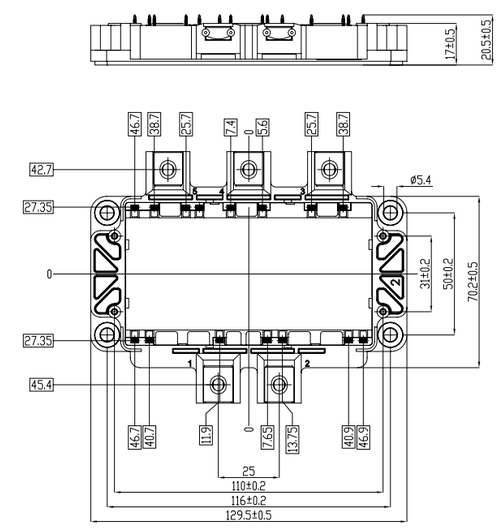
Bridge Rectifier Modules / SEMiX

Cases

SEMiX 13



SEMiX 5p



Dimensions in mm

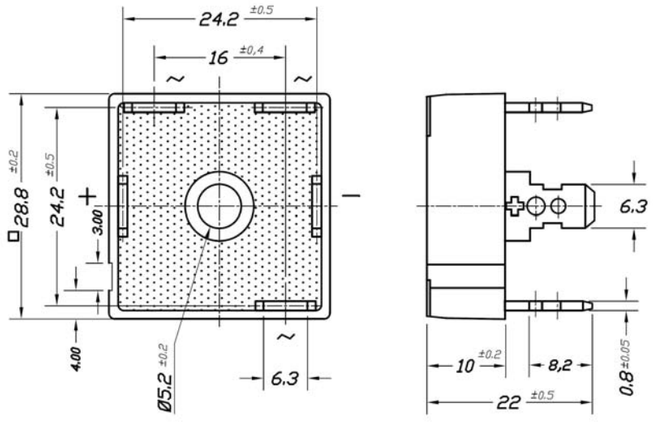
Bridge Rectifier Modules / Power Bridge

Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-s)}$ cont. per chip K/W	T_j °C	Case	Circuit
1 phase										
SKB 25	100-1600	17	75	320	0.85	12.00	8.6	-40 ... +150	G 10b	
SKB 26	200-2000	18	75	320	0.85	12.00	8.2	-40 ... +150	G 50a	
SKB 30	200-1600	30	94	320	0.85	12.00	3.2	-40 ... +150	G 12, G 13	
SKB 35	400-1600	35	29	330	0.85	7.00	6.6	-40 ... +150	G 10b	
BI 6 P [2)]	400-2200	10	102	165	0.8	24.00	9.4	-40 ... +150	BI P	
BI 25 P [2)]	400-2200	25	26	310	0.85	9.00	9.4	-40 ... +150	BI P	
3 phase										
SKD 25	200-1600	20	73	320	0.85	12.00	11.4	-40 ... +150	G 11b	
SKD 26	400-1600	20	73	320	0.85	12.00	11.4	-40 ... +150	G 50b	
SKD 30	200-1600	30	98	320	0.85	12.00	4.8	-40 ... +150	G 12, G 13	
SKD 33	400-1800	33	110	240	0.8	18.00	2.5	-40 ... +150	G55	
SKD 35	400-1600	36	70	320	0.85	7.00	4.6	-40 ... +150	G 11b	
SKD 35 AV	1200-1600	39	70	345	0.9	6.00	4.2	-40 ... +150	G 11b	
SKD 51	400-1800	50	127	700	0.8	8.50	1.2	-40 ... +150	G51	
SKD 53	400-1800	53	100	270	0.8	13.00	1.9	-40 ... +150	G55	
SKD 83	400-1800	83	95	560	0.8	7.50	1.4	-40 ... +150	G55	
DBI 6 P [2)]	400-2200	9	113	165	0.8	24.00	12.9	-40 ... +150	DBI P	
DBI 25 P [2)]	400-2200	27	32	310	0.85	9.00	11.1	-40 ... +150	DBI P	

Footnotes: 2) In production new

Cases

G 10b, G 11b

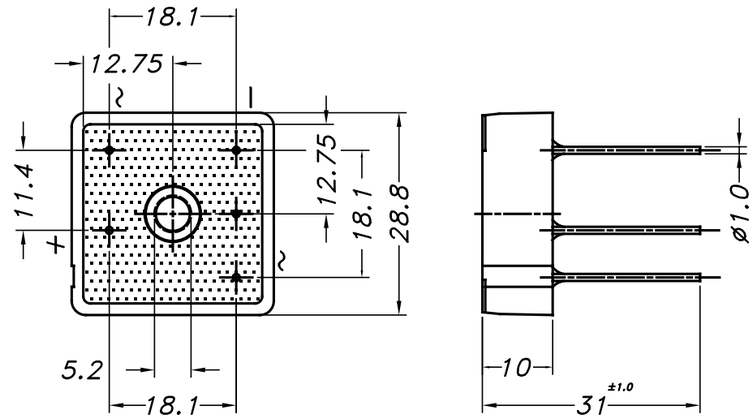


Dimensions in mm

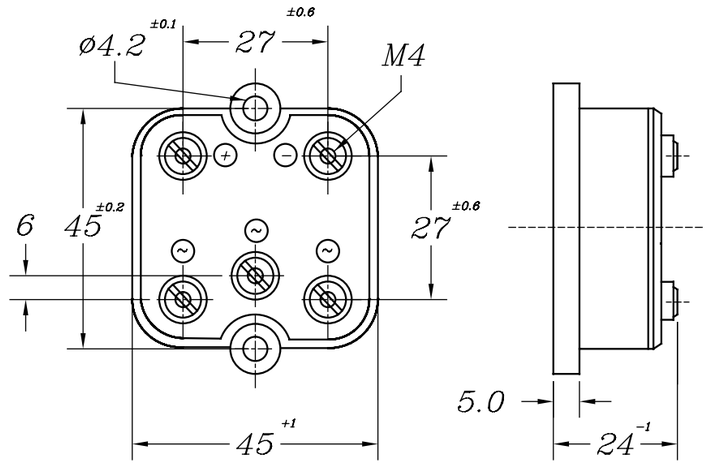
Bridge Rectifier Modules / Power Bridge

Cases

G 50a, G 50b



G 12, G 13

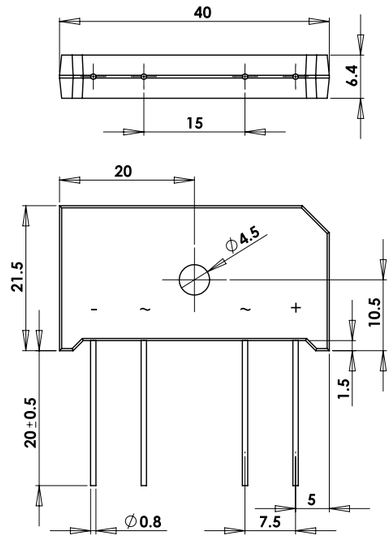


Dimensions in mm

Bridge Rectifier Modules / Power Bridge

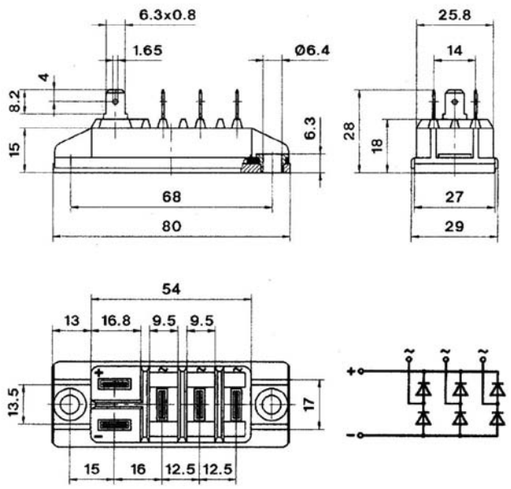
Cases

BI P



Cases

G 51

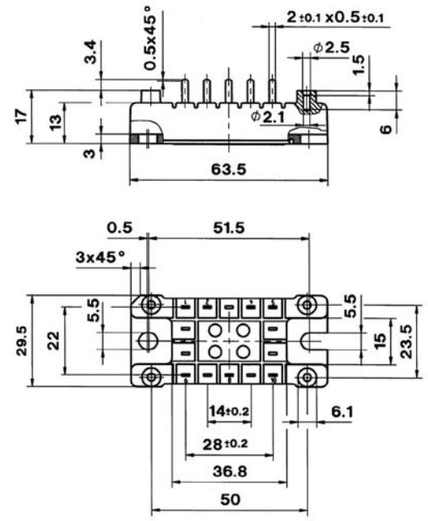


Dimensions in mm

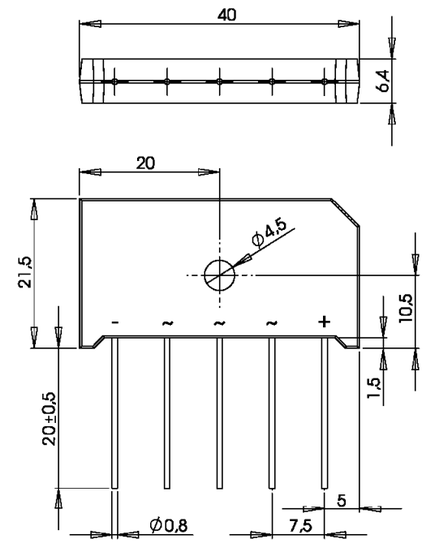
Bridge Rectifier Modules / Power Bridge

Cases

G 55

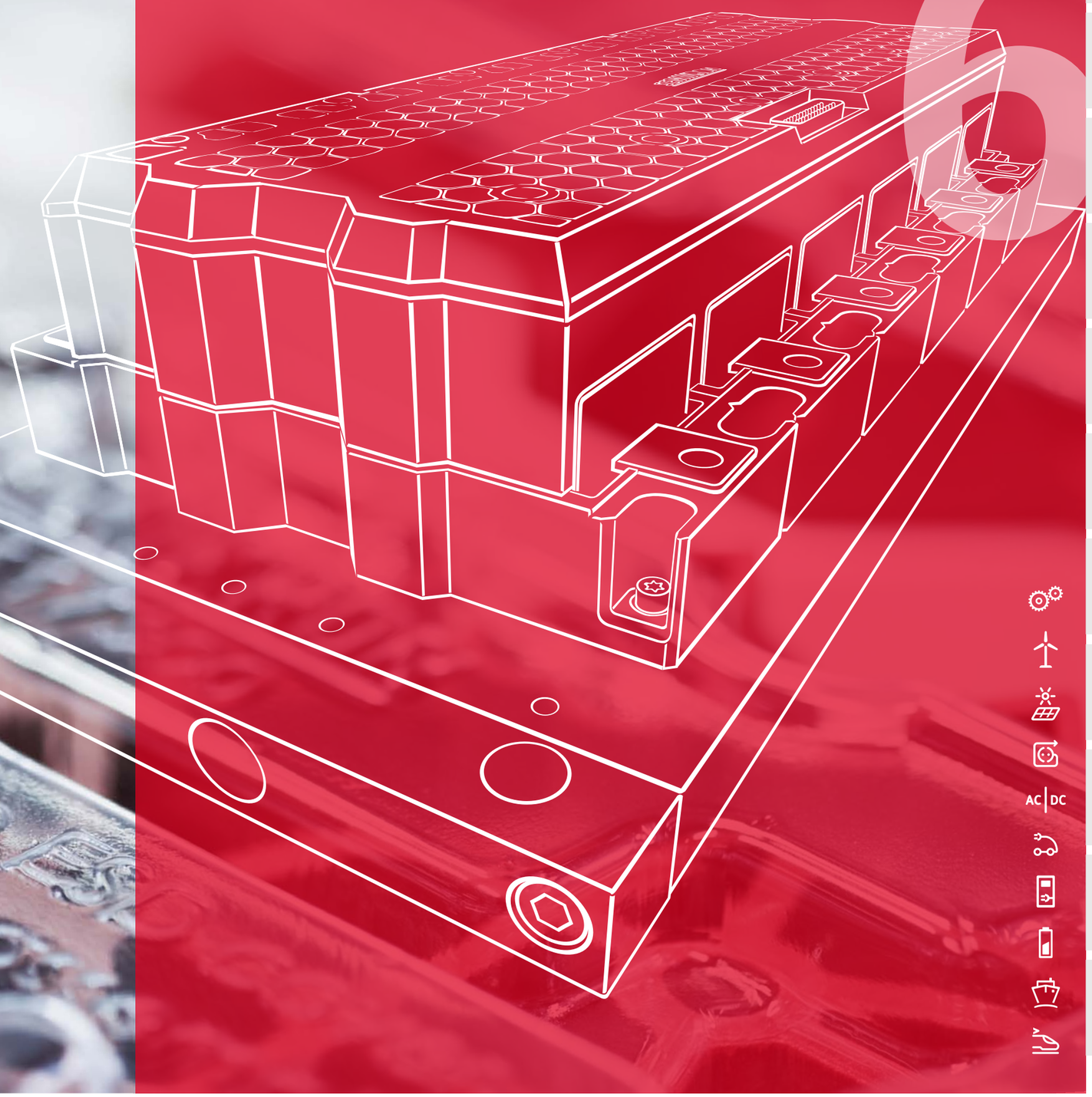


DBI P



Dimensions in mm

Intelligent Power Modules



Product Classes

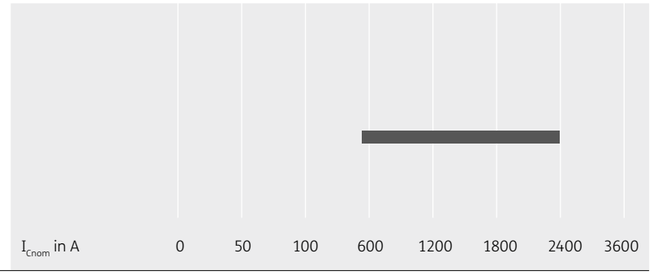
IPM
SEMIKRON Offers Highly Integrated IPMs

The SKiiP IPMs represent the benchmark
for regenerative inverter solutions up to 6MW.

SKiiP®3

6-pack
half-bridge

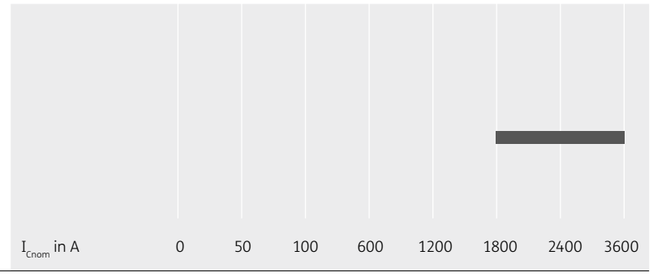
1200V up to 1700V



SKiiP®4

half-bridge

1200V up to 1700V



For detailed information please refer to data sheets.

Further information: www.semikron.com/ipm

IPM / SKiiP

Type	IGBT				Diode			Module		
	I_C @ T_S = 25°C	I_{nom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on} + E_{off}	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	Options F=F-Option U=U-Option S=SKiFace Adapter		Circuit
	A	A	V	mJ	A	V	mJ			
1200V - IGBT 3 (Trench) - SKiiP3										
SKiiP 603 GD123-3DUL V3	627	600	1.7	195	508	1.50	28	-	S33	
SKiiP 603 GD123-3DUW V3	627	600	1.7	195	508	1.50	28	-	S33	
SKiiP 613 GD123-3DUL V3	577	600	1.7	195	466	1.50	28	-	S33	
SKiiP 613 GD123-3DUW V3	577	600	1.7	195	466	1.50	28	-	S33	
SKiiP 1213 GB123-2DL V3	1145	1200	1.7	390	925	1.50	56	F	S23	
SKiiP 1213 GB123-2DW V3	1145	1200	1.7	390	925	1.50	56	F	S23	
SKiiP 1813 GB123-3DL V3	1695	1800	1.7	585	1411	1.50	84	F,U	S33	
SKiiP 1813 GB123-3DW V3	1695	1800	1.7	585	1411	1.50	84	F,U	S33	
SKiiP 1813 GB123-3DUL V3	1695	1800	1.7	585	1411	1.50	84	F,U	S33	
SKiiP 2413 GB123-4DUL V3	2280	2400	1.7	780	1807	1.50	112	F,U	S43	
SKiiP 2413 GB123-4DL V3	2280	2400	1.7	780	1807	1.50	112	F,U	S43	
SKiiP 2413 GB123-4DW V3	2280	2400	1.7	780	1807	1.50	112	F,U	S43	
1200V - IGBT 4 (Trench) - SKiiP4										
SKiiP 1814 GB12E4-3DUL	2345	1800	2.01	1260	1776	2.33	150	F,S	S34	
SKiiP 1814 GB12E4-3DUW	2345	1800	2.01	1260	1776	2.33	150	F,S	S34	
SKiiP 1814 GB12E4-3DUSL	2345	1800	2.01	1260	1776	2.33	150	F,S	S34	
SKiiP 2414 GB12E4-4DUL	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 2414 GB12E4-4DUW	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 2414 GB12E4-4DUSL	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 2414 GB12E4-4DUL	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 2414 GB12E4-4DULR	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 3614 GB12E4-6DUL	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DUW	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DULR	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DUSL	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DUL	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
1700V - IGBT 3 (Trench) - SKiiP3										
SKiiP 513 GD172-3DUL V3	540	500	1.9	288	438	2.00	43	-	S33	
SKiiP 513 GD172-3DUW V3	540	500	1.9	288	438	2.00	43	-	S33	
SKiiP 603 GD172-3DUL V3	587	570	1.9	288	476	2.00	43	-	S33	
SKiiP 603 GD172-3DUW V3	570	570	1.9	288	476	2.00	43	-	S33	

Footnotes: 2) In production new

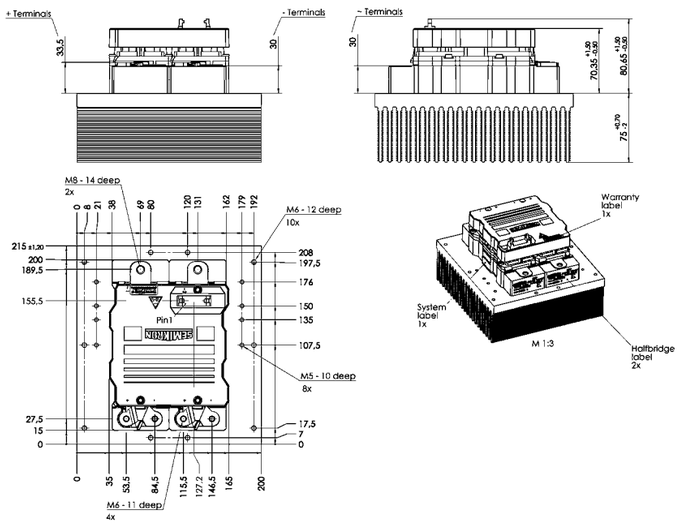
IPM / SKiiP

Type	IGBT				Diode			Module		
	I_C @ T_S = 25°C	I_{nom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on} + E_{off}	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	Options F=F-Option U=U-Option S=SKiFace Adapter		Circuit
	A	A	V	mJ	A	V	mJ			
1700V - IGBT 3 (Trench) - SKiiP3										
SKiiP 1013 GB172-2DL V3	1072	1000	1.9	575	879	2.00	86	F	S23	
SKiiP 1013 GB172-2DW V3	1072	1000	1.9	575	879	2.00	86	F	S23	
SKiiP 1203 GB172-2DL V3	1159	1200	1.9	575	961	2.00	86	F	S23	
SKiiP 1203 GB172-2DW V3	1159	1200	1.9	575	961	2.00	86	F	S23	
SKiiP 1513 GB172-3DL V3	1589	1500	1.9	863	1336	2.00	128	F,U	S33	
SKiiP 1513 GB172-3DW V3	1589	1500	1.9	863	1336	2.00	128	F,U	S33	
SKiiP 1513 GB172-3DFL V3	1589	1500	1.9	863	1336	2.00	128	F,U	S33	
SKiiP 1803 GB172-3DL V3	1744	1800	1.9	863	1454	2.00	128	F,U	S33	
SKiiP 1803 GB172-3DW V3	1744	1800	1.9	863	1454	2.00	128	F,U	S33	
SKiiP 2013 GB172-4DL V3	2102	2000	1.9	1150	1758	2.00	171	F,U	S43	
SKiiP 2013 GB172-4DW V3	2102	2000	1.9	1150	1758	2.00	171	F,U	S43	
SKiiP 2013 GB172-4DFL V3	2102	2000	1.9	1150	1758	2.00	171	F,U	S43	
SKiiP 2403 GB172-4DL V3	2282	2400	1.9	1150	1921	2.00	171	F,U	S43	
SKiiP 2403 GB172-4DW V3	2282	2400	1.9	1150	1921	2.00	171	F,U	S43	
1700V - IGBT 4 (Trench) - SKiiP4										
SKiiP 1814 GB17E4-3DUL V2	2547	1800	2.12	2130	1771	2.02	498	F,S	S34	
SKiiP 1814 GB17E4-3DUW V2	2547	1800	2.12	2130	1771	2.02	498	F,S	S34	
SKiiP 2414 GB17E4-4DUL V2	3385	2400	2.12	2840	2362	2.02	664	F,S	S44	
SKiiP 2414 GB17E4-4DUW V2	3385	2400	2.12	2840	2362	2.02	664	F,S	S44	
SKiiP 2414 GB17E4-4DPVL [2]	3385	2400	2.12	2840	2362	2.02	664	F,S	S44	
SKiiP 2414 GB17E4-4DPVW [2]	3385	2400	2.12	2840	2362	2.02	664	F,S	S44	
SKiiP 3614 GB17E4-6DUL V2	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DUW V2	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DULR V2	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DPVLR [2]	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DPVL [2]	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	

Footnotes: 2) In production new

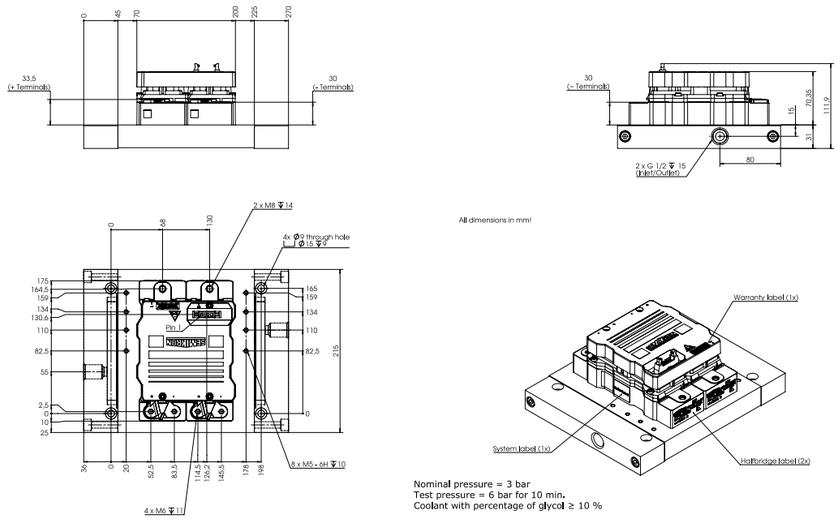
SKiiP 3

Case S 23 mounted on P3016 heat sink



Weight without heat sink:	1,7 kg
P3016:	4,4 kg

Case S 23 mounted on liquid cooled heat sink NWK 40



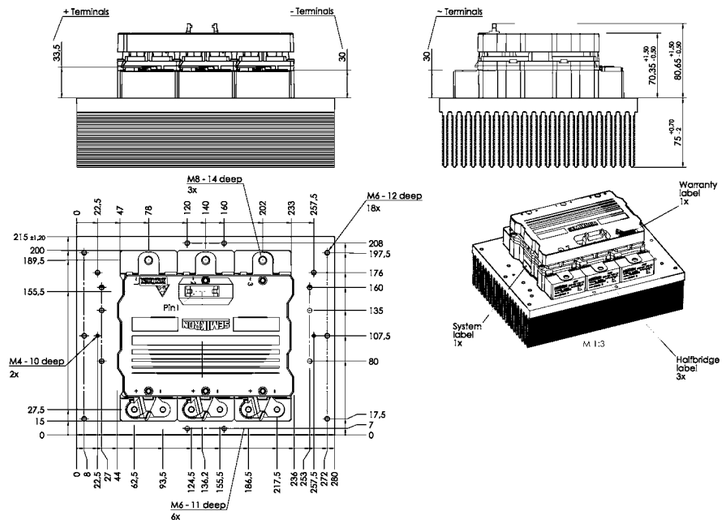
NWK 40:	2,8 kg

Dimensions in mm

IPM / SKiiP

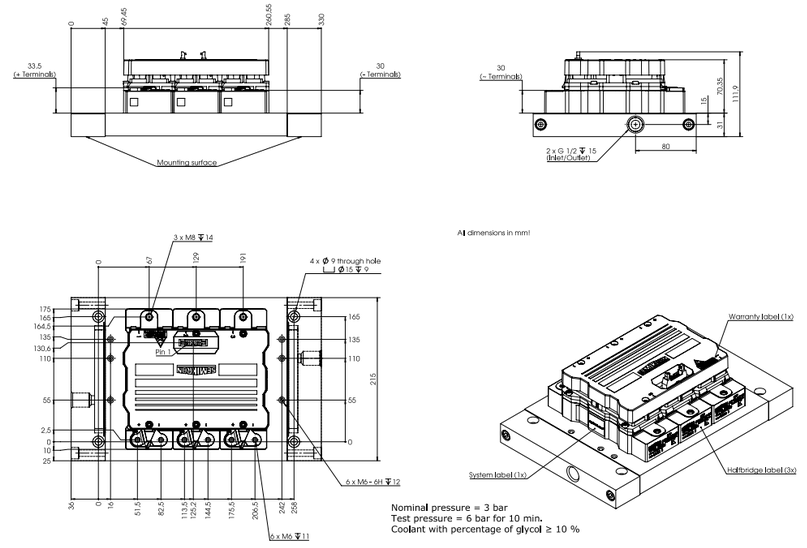
SKiiP 3

Case S 33 mounted on P3016 heat sink



Weight without heat sink:	2,4 kg
P3016:	6,2 kg

Case S 33 mounted on liquid cooled heat sink NWK 40

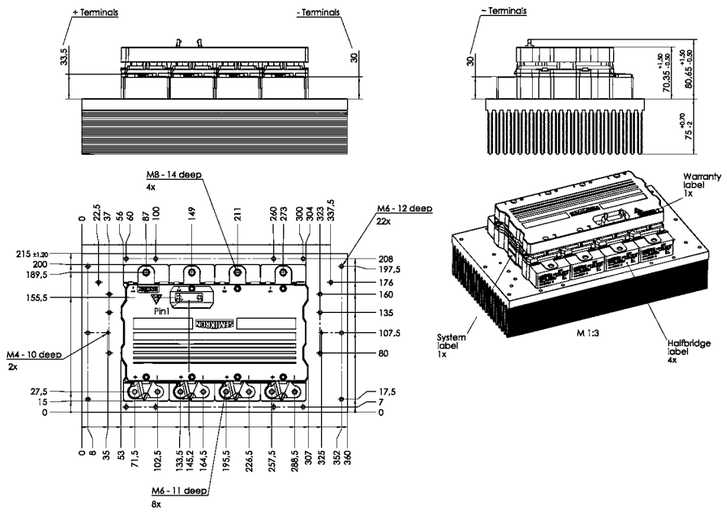


NWK 40:	5,2 kg

Dimensions in mm

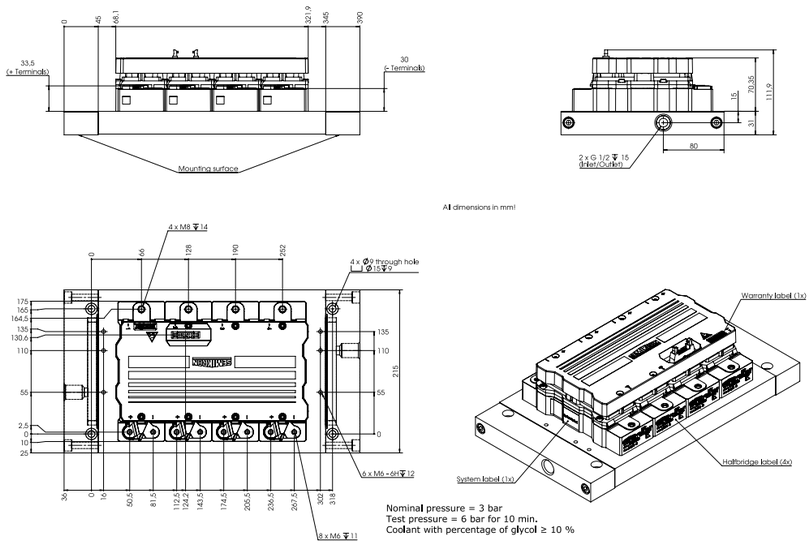
SKiiP 3

Case S 43 mounted on P3016 heat sink



Weight without heat sink:	3,1 kg
P3016:	8,0 kg

Case S 43 mounted on liquid cooled heat sink NWK 40

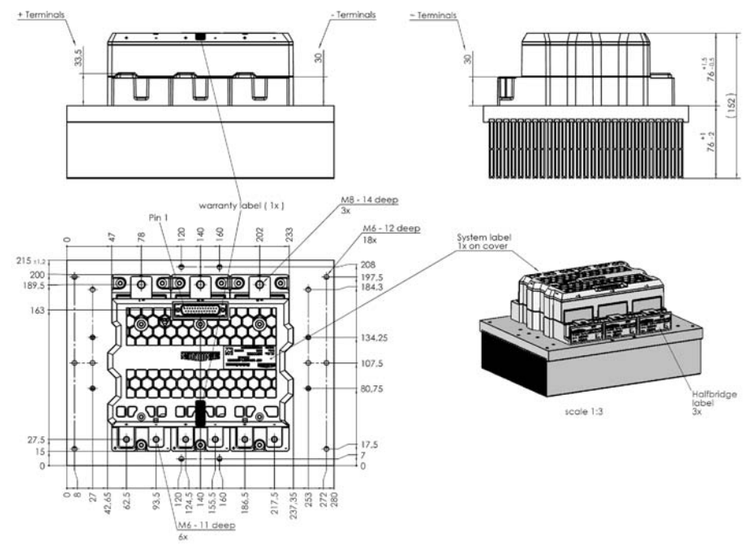


NWK 40:	6,2 kg

Dimensions in mm

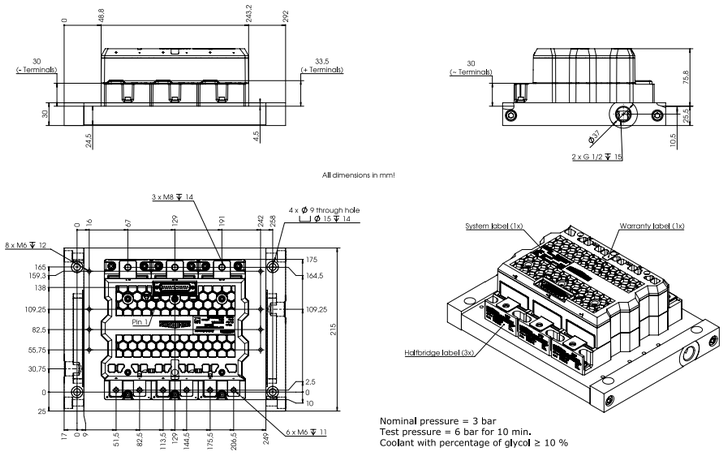
SKiiP 4

Case S 34 mounted on P4016 heat sink



Weight without heat sink:	2,48 kg
P4016:	5,9 kg

Case S 34 mounted on liquid cooled heat sink NHC

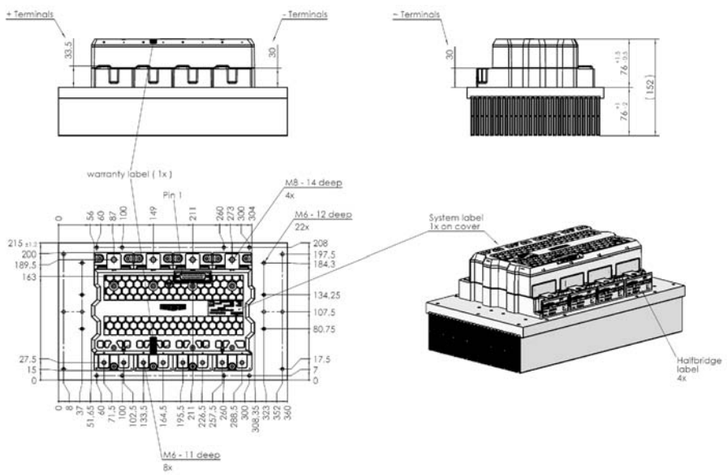


NHC:	3,49 kg

Dimensions in mm

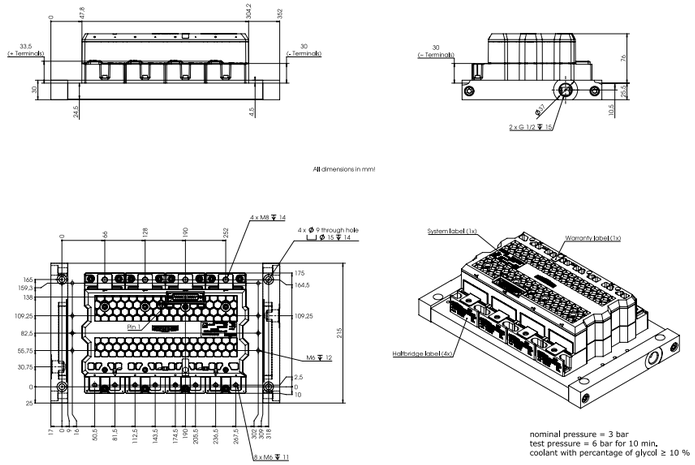
SKiiP 4

Case S 44 mounted on P4016 heat sink



Weight without heat sink:	3,22 kg
P4016:	7,55 kg

Case S 44 mounted on liquid cooled heat sink NHC

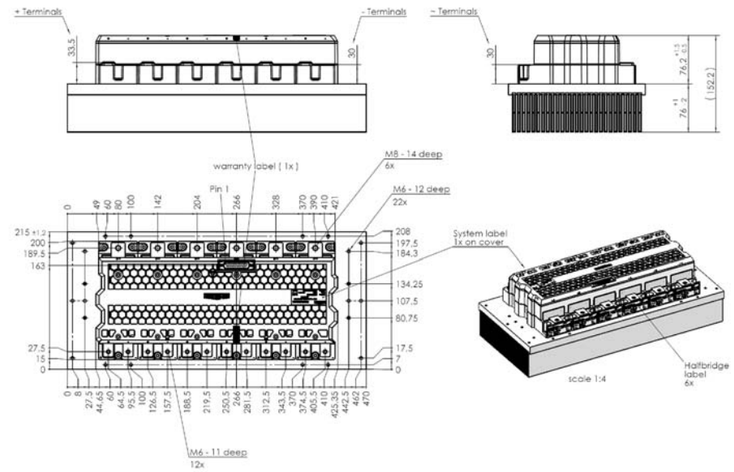


NHC:	4,25 kg

Dimensions in mm

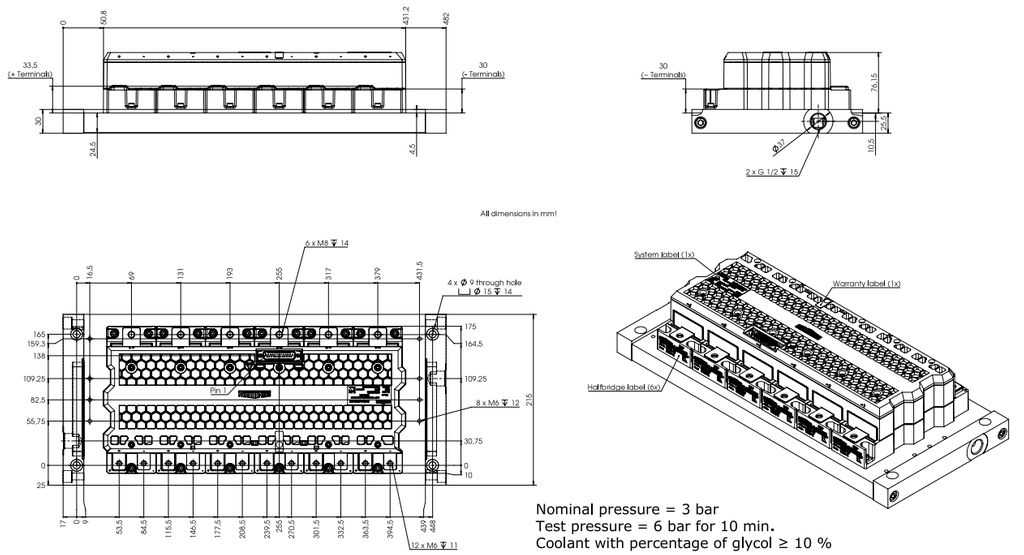
SKiiP 4

Case S 64 mounted on P4016 heat sink



Weight without heat sink:	4,84 kg
P4016:	9,9 kg

Case S 64 mounted on liquid cooled heat sink NHC



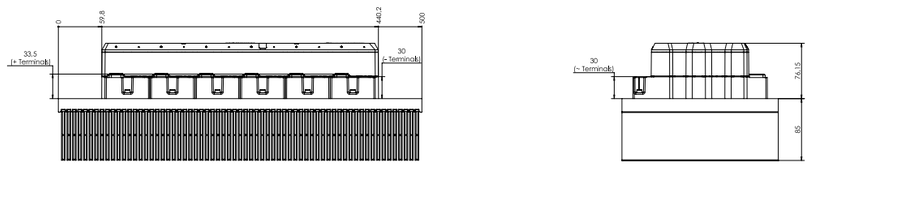
NHC:	5,77 kg

Dimensions in mm

IPM / SKiiP

SKiiP 4

Case S 64 mounted on P4016 heat sink with 90° rotated fins



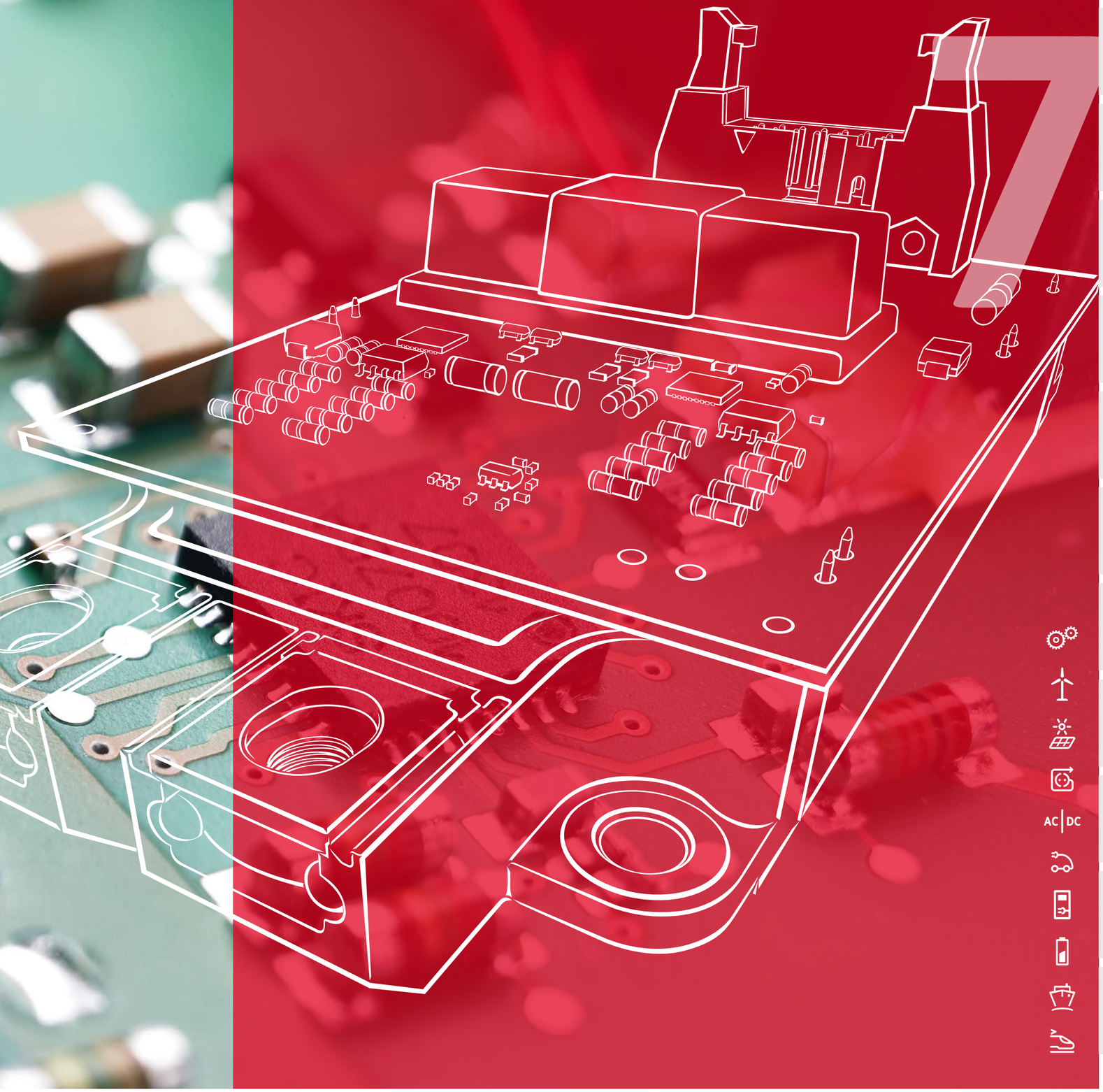
Weight without heat sink:	4,84 kg
P4016:	9,9 kg

Dimensions in mm

IPM / SKiiP Accessories

Type	
F-Option SKiiP3	
SKiiP3 F-Option	Fiber optic control board for SKiiP3
F-Option SKiiP4	
SKiiP4 F-Option	Fiber optic control board for SKiiP4
SKiiP4 F-Option with D-Sub connector	Fiber optic control board for SKiiP4
SKiiP3 Parallel Board	
SKiiP3 Parallel Board 4-fold	Board for paralleling of 4 SKiiP3, F-Option usage possible
SKiiP3 Parallel Board 3-fold	Board for paralleling of 3 SKiiP3, F-Option usage possible
SKiiP3 Parallel Board 2-fold	Board for paralleling of 2 SKiiP3, F-Option usage possible
SKiiP4 Parallel Board	
SKiiP4 Parallel Board 4-fold without F-Option	Board for paralleling of 4 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 4-fold F-Option	Board for paralleling of 4 SKiiP4, F-Option usage possible
SKiiP4 Parallel Board 3-fold without F-Option	Board for paralleling of 3 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 3-fold F-Option	Board for paralleling of 3 SKiiP4, F-Option usage possible
SKiiP4 Parallel Board 2-fold without F-Option	Board for paralleling of 2 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 2-fold F-Option	Board for paralleling of 2 SKiiP4, F-Option usage possible
SKiFace Adapter Board	
SKiiP4 SKiFace Adapter UZK	Adapter board to connect SKiiP4 to SKiiP3 controller with DC-Link voltage measurement function
SKiiP4 SKiFace Adapter Temp	Adapter board to connect SKiiP4 to SKiiP3 controller with temperatur measurement function

IGBT Drivers



Product Classes

IGBT Driver
SEMIKRON IGBT Driver Family

SEMIKRON offers two different IGBT driver families for any application. Driver cores from the SKHI and SKYPER family can be optimized using adapter boards for each module type. Drivers such as the SKYPER Prime offer a fully qualified plug & play solution, saving time and costs in application. The SKYPER family with 1W to 10W output power per channel covers the whole range of inverters from 30kW to 2MW. The high integration level of SEMIKRON's new ASIC chipset ensures safe IGBT gate control throughout the entire lifecycle. Short circuits are managed very fast by separate error channels.

SoftOff and over voltage feedback avoid dangerous over voltages. The mixed signal ASICs guarantee minimum tolerances over the full temperature range. MLI or paralleled IGBT topologies are managed thanks to adjustable error management. With an optimized interface and adjustable filter settings, the SKYPER family operates safely in noisy environments. The SEMIKRON adapter boards enable a wide range of inverter platforms to be built using various types of IGBT modules.

The latest highlights are the SKYPER 12 driver core and the plug & play driver SKYPER Prime that features electrical and optical interfaces. SKYPER 12 is the latest driver core which delivers 20A output but is smaller than a matchbox. Thanks to its features and robustness, this driver is the perfect solution for anything from simple drives to ambitious interleaved applications. The SKYPER Prime offers integrated insulated DC link and temperature measurement and can help the customer reduce system costs significantly.

SKYPER & SKHI 174

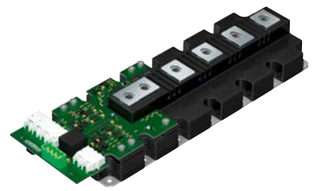
For detailed information please refer to data sheets.

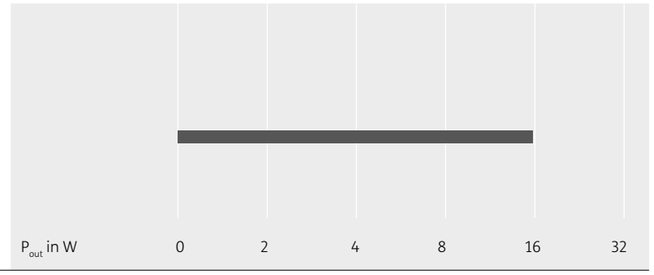
Further information: www.semikron.com/igbt-driver

SKYPER®

Plug & play driver

600V up to 1700V

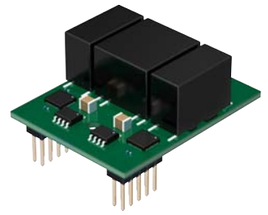


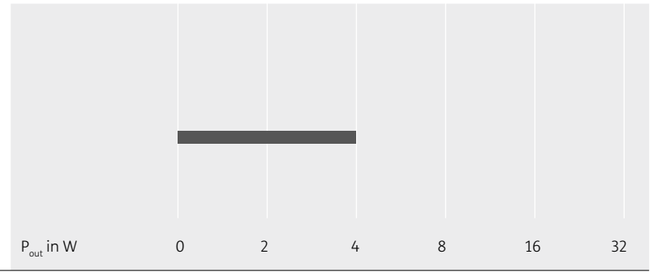


SKYPER® & SKHI

Driver cores

900V up to 1700V

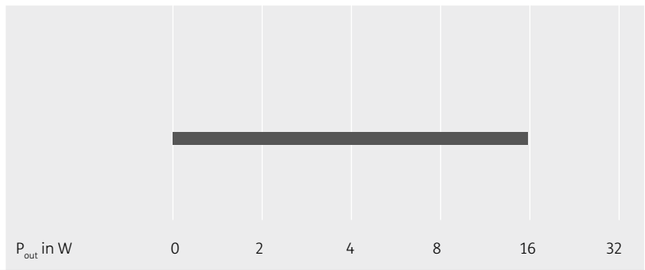




SKYPER® & SKHI

Adapter boards

Up to 1700V

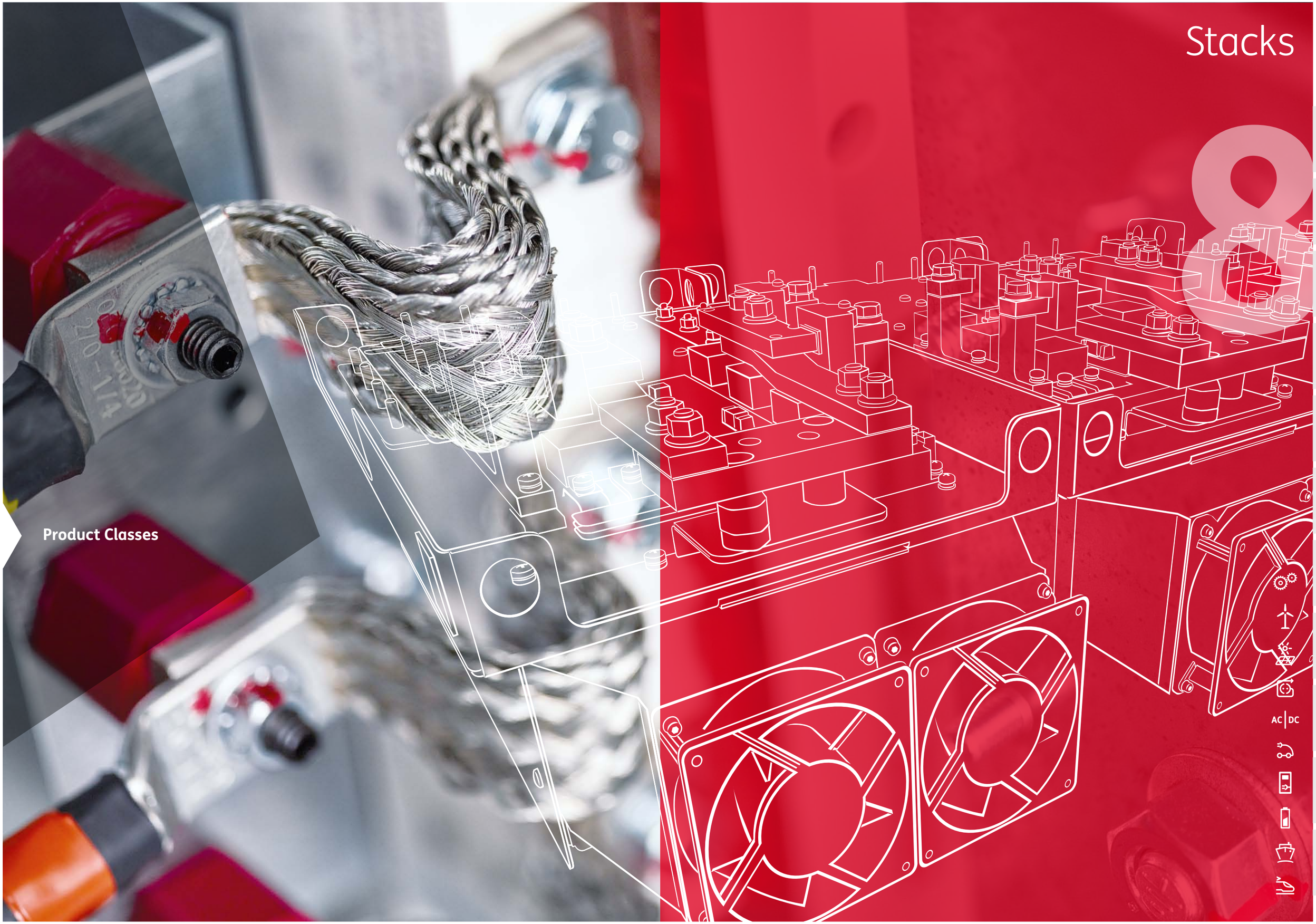


IGBT Driver

Type	Channels	V_{CE} V	$V_{G(on)}$ V	$V_{G(off)}$ V	$I_{outPEAK}$ A	$Q_{out/pulse}$ µC	f_{max} kHz	VisoIO kV	dv/dt kV/µs
Driver									
SKHI 10/12 R	1	1200	15	-8	8	9.6	100	2500	75
SKHI 10/17 R	1	1700	15	-8	8	9.6	100	4000	75
SKHI 23/12 R	2	1200	15	-8	8	4.8	100	2500	75
SKHI 23/17 R	2	1700	15	-8	8	4.8	100	4000	75
SKHIT 01 R [7]	3	528	-	-	-	-	10	2500	-
SKYPER 12 press-fit 300A	2	1200	15	-8	15	8	20	4000	50
SKYPER 12 press-fit 450A	2	1200	15	-8	15	8	13	4000	50
SKYPER 12 press-fit 600A	2	1200	15	-8	15	8	10	4000	50
SKYPER 12 press-fit C 300A	2	1200	15	-8	15	8	20	4000	50
SKYPER 12 press-fit C 450A	2	1200	15	-8	15	8	13	4000	50
SKYPER 12 press-fit C 600A	2	1200	15	-8	15	8	10	4000	50
SKYPER 12 press-fit 450A 1700V [2]	2	1700	15	-8	15	8	9	4000	50
SKYPER 12 press-fit 600A 1700V [2]	2	1700	15	-8	15	8	7	4000	50
SKYPER 12 press-fit C 450A 1700V [2]	2	1700	15	-8	15	8	9	4000	50
SKYPER 12 press-fit C 600A 1700V [2]	2	1700	15	-8	15	8	7	4000	50
SKYPER PRIME 1000A / 1700V PP [2]	2	1700	15	-8	15	10	10	5000	50
SKYPER PRIME 1000A / 1700V ST10 [2]	2	1700	15	-8	15	7	10	5000	50
SKYPER PRIME 1400A / 1700V PP [2]	2	1700	15	-8	15	13.5	7	5000	50
SKYPER PRIME 1400A / 1700V ST10 [2]	2	1700	15	-8	15	10	10	5000	50
SKYPER PRIME 1400A / 1200V PP [2]	2	1200	15	-8	15	10	10	5000	50
SKYPER PRIME 1400A / 1200V ST10 [2]	2	1200	15	-8	15	7.5	10	5000	50
SKYPER PRIME O 1400A / 1200V PP [2]	2	1200	15	-8	15	10	10	5000	50
SKYPER PRIME O 1400A / 1200V ST10 [2]	2	1200	15	-8	15	7.5	10	5000	50
SKYPER PRIME O 1400A / 1700V PP [2]	2	1700	15	-8	15	13.5	7.4	5000	50
SKYPER PRIME O 1400A / 1700V ST10 [2]	2	1700	15	-8	15	10	10	5000	50
Driver Core									
SKHI 21A R [8]	2	1200	15	0	8	4	50	2500	50
SKHI 22 A/B H4 R	2	1700	15	-7	8	4	50	4000	50
SKHI 22 A/B R	2	1200	15	-7	8	4	50	2500	50
SKHI 24 R	2	1700	15	-8	15	5	50	4000	50
SKHI 61 R [4]	6	900	15	-7	2	1	50	2500	15
SKHI 71 R [4]	7	900	15	-7	2	1	50	2500	15
SKYPER 12 R [2]	2	1700	15	-9	20	20	50	5000	50
SKYPER 12 PV R [1]	2	1700	15	-9	20	20	50	5000	50
SKYPER 32 R	2	1700	15	-7	15	2.5	50	4000	50
SKYPER 32 PRO R	2	1700	15	-7	15	6.3	50	4000	50
SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
SKYPER 42 No T_D	2	1700	15	-8	30	50	100	4000	100
SKYPER 42 R/02 (Coated type) [2]	2	1700	15	-8	30	50	100	4000	100
SKYPER 42 LJ R	2	1700	15	-8	25	20	100	4000	100
SKYPER 42 LJ R (coated) [2]	2	1700	15	-8	25	20	100	4000	100
Adapter Board									
Board 1 SKYPER 32 R	2	1700	15	-7	15	2.5	50	4000	50
Board 1 SKYPER 32PRO R	2	1700	15	-7	15	6.3	50	4000	50
Board 2 // 4S SKYPER 42 R	2	1200	15	-8	30	50	100	4000	100
Board 2 generic SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 2//3S SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 2S SKYPER 32 PRO R Gold	2	1700	15	-7	15	6.3	50	4000	50
Board 2S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 3S SKYPER 32 PRO R Gold [2]	2	1700	15	-7	15	6.3	50	4000	50
Board 3S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 4S SKYPER 32 PRO R Gold	2	1700	15	-7	15	6.3	50	4000	50
Board 4S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 63 GB SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 93 GB SKYPER 42 R [2]	2	1700	15	-8	30	50	100	4000	100

Footnotes: 1) Sample status / 2) In production new / 4) Discontinued / 7) Thyristor Driver / 8) MOSFET Driver

Stacks



Product Classes

Stack Platforms – Fully Qualified Inverter Assemblies Tailored to Your Specific Needs

In addition to standard semiconductor components, SEMIKRON has developed a full range of power converter assemblies. Stack center application engineers are available to offer specific power solutions by adapting existing platforms or designing customized converters.

For detailed information please refer to data sheets.

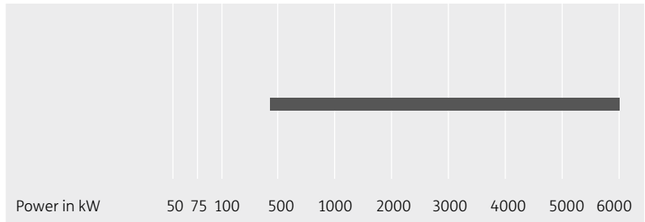
Further information: www.semikron.com/stacks

Water-cooled IGBT

SEMISTACK® RE

Synchronus wind generators

Double-fed wind generators
Solar inverters

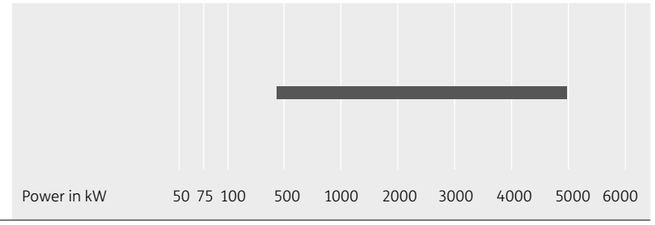


SKiiPRACK®

Synchronus wind generators

Double-fed wind generators

High power AC drives

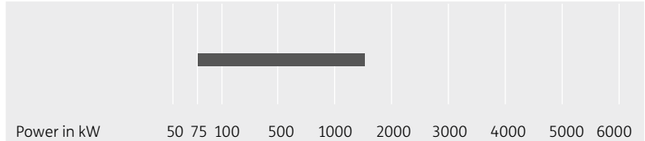


Air-cooled IGBT

SEMIKUBE®

Solar inverters

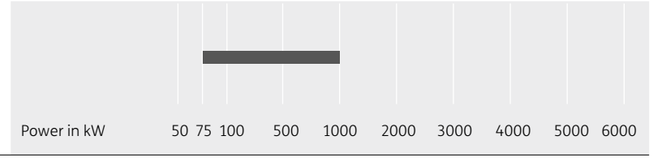
Pump and compressor drives



SEMIKUBE® SlimLine

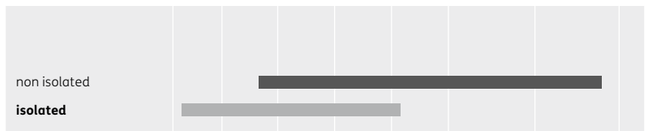
Solar inverters

AC drives and servos



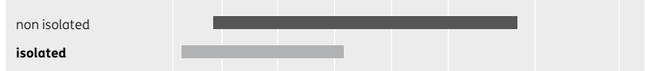
Diode/Thyristor

SEMISTACK® CLASSICS

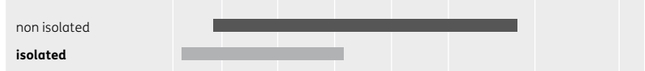


B6U
3-phase uncontrolled rectifier

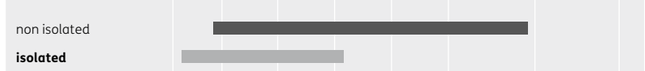
B6HK
3-phase half controlled rectifier



B6C
3-phase fully controlled rectifier

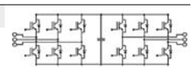
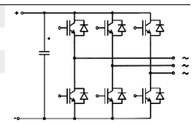


W3C
3-phase reverse parallel thyristor converter



Stacks / SEMISTACK RE

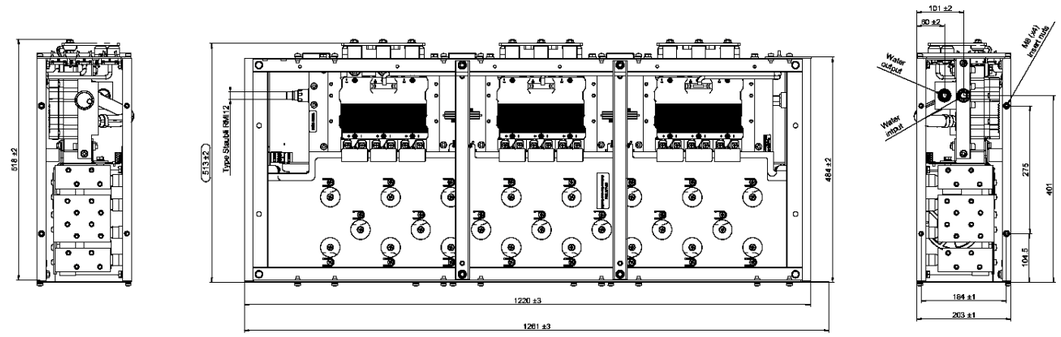
Type

	V_{AC}	V_{DC}	Current	Component Family	Cooling	Heatsink profile	Isolated	Circuit
	V	V	A					
4-Quadrant converter								
SKS B2 120 GDD 69/11 - A11 MA PB	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS B2 140 GDD 69/12 U - A11 MA PB	690	1250	1400	SKiiP 4	Water/Glycol	-	yes	
3-phase inverter								
SKS B1 090 GD 69/11 - MA PB	690	1100	900	SKiiP 3	Water/Glycol	-	yes	
SKS B2 100 GD 69/11 - MA PB	690	1100	1000	SKiiP 3	Water/Glycol	-	yes	
SKS B2 120 GD 69/11 - MA PB	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS B2 140 GD 69/12 U - MA PB	690	1250	1400	SKiiP 4	Water/Glycol	-	yes	

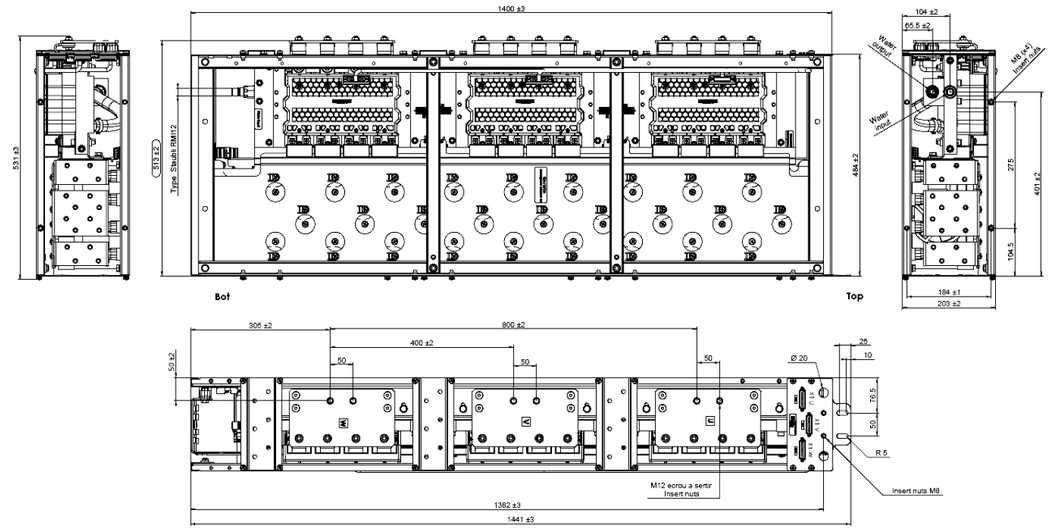
Stacks / SEMISTACK RE

Cases

SKS B1 090 GD 69/11 - MA PB

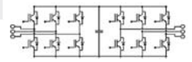


SKS B2 100 GD 69/11 - MA PB, SKS B2 120 GD 69/11 - MA PB, and SKS B2 140 GD 69/12 - MA PB



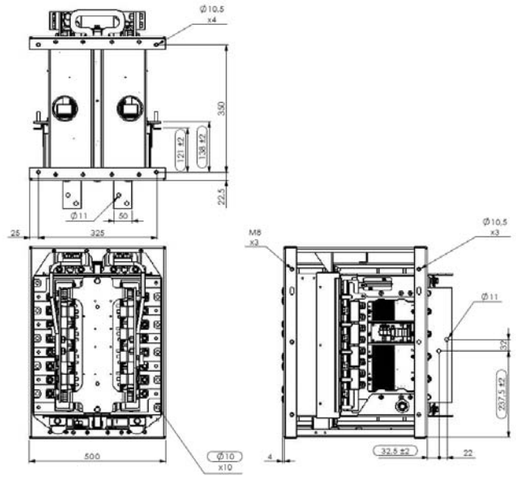
Dimensions in mm

Stacks / SKiiPRACK

Type	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
4-Quadrant converter								
SKS C 120 GDD 69/11 - A3A WA B1B	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS C 240 GDD 69/11 - A6A MA B1C	690	1100	2400	SKiiP 3	Water/Glycol	-	yes	

Cases

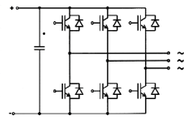
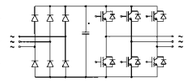
SKiiPRACK basic stack element, the CELL



3-Cell vertical integration

Dimensions in mm

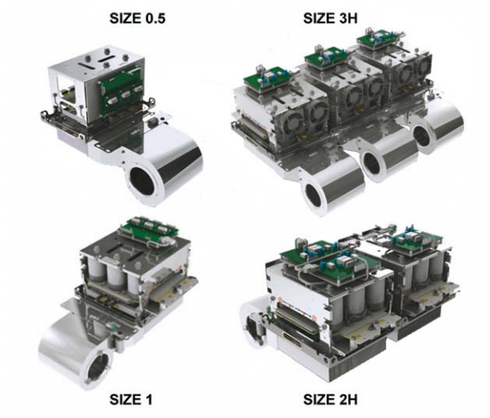
Stacks / SEMIKUBE

Type	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase inverter								
IGD-1-424-P1N4-DL-FA	460	900	200	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-2-424-P1N6-DH-FA	460	900	350	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-4-424-P1F7-BL-FA	460	900	750	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-326-E1F12-BH-FA	460	750	1230	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-426-E1F12-BH-FA	460	750	1470	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-424-P1F9-BH-FA	460	900	1470	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-474-P2F9-BI-FA 2)	690	1250	1300	SEMITRANS	Forced-air cooled	PX 308	yes	
3-phase rectifier and inverter								
IGDD6-1-326-D1616-E1N6-DL-FA	460	750	150	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-1-426-D1616-E1N6-DL-FA	460	750	180	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-2-326-D1616-E1F12-DH-FA	460	750	280	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-2-426-D1616-E1F12-DH-FA	460	750	330	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-4-326-D3816-E1F12-BL-FA	460	750	570	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-4-426-D3816-E1F12-BL-FA	460	750	680	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	

Footnotes: 2) In production new

Cases

Frames



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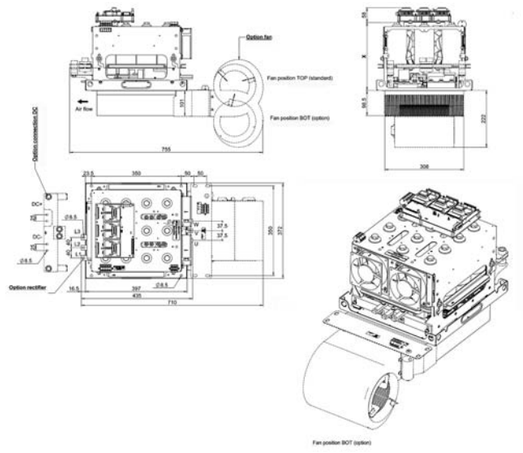
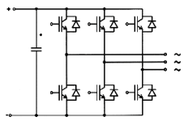


Dimensions in mm

Stacks / SEMIKUBE SlimLine

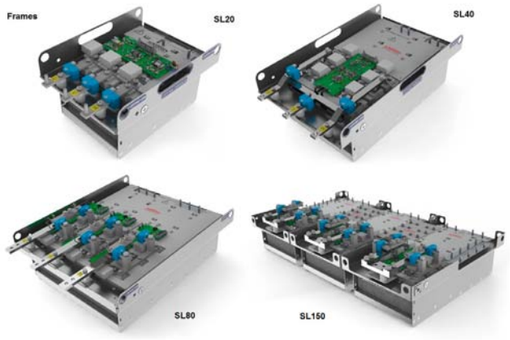
Type	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Frame	Isolated	Circuit
3-phase inverter								
SKS SL 20 GD 50/10 - E4 P1 G [2]	500	1000	230	SEMITRANS	Forced-air cooled	SL20	-	
SKS SL 40 GD 50/10 - E4 P1 G [2]	500	1000	440	SEMITRANS	Forced-air cooled	SL40	-	
SKS SL 80 GD 50/10 - E4 P1 G [2]	500	1000	750	SEMITRANS	Forced-air cooled	SL80	-	
SKS SL 150 GD 50/10 - E4 P1 G [2]	500	1000	1500	SEMITRANS	Forced-air cooled	SL150	-	
SKS SL 20 GD 50/10 - E4 P1 AF [2]	500	1000	230	SEMITRANS	Forced-air cooled	SL20	-	
SKS SL 40 GD 50/10 - E4 P1 AF [2]	500	1000	440	SEMITRANS	Forced-air cooled	SL40	-	
SKS SL 80 GD 50/10 - E4 P1 AF [2]	500	1000	750	SEMITRANS	Forced-air cooled	SL80	-	
SKS SL 150 GD 50/10 - E4 P1 AF [2]	500	1000	1500	SEMITRANS	Forced-air cooled	SL150	-	



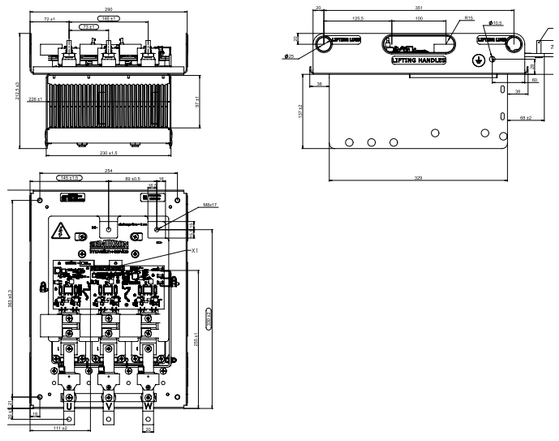
Footnotes: 2) In production new

Cases

Semikube SlimLine



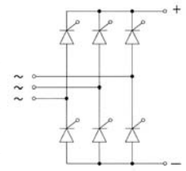
SL 20



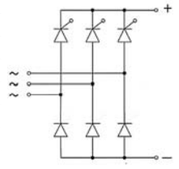
Dimensions in mm

Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase fully-controlled thyristor bridge rectifier								
SKS 88N B6C 60 V16	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 88N B6C 60 V16 SU	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 180F B6C 120 V16	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 180F B6C 120 V16 SU	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 215N B6C 145 V16	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 215N B6C 145 V16 SU	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 250F B6C 170 V16	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 250F B6C 170 V16 SU	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 355N B6C 240 V16	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 355N B6C 240 V16 SU	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 365F B6C 245 V16	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 365F B6C 245 V16 SU	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 570F B6C 380 V16	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 570F B6C 380 V16 SU	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6C 430 V16	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6C 430 V16 SU	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 700N B6C 470 V16	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 700N B6C 470 V16 SU	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 845N B6C 570 V16	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 845N B6C 570 V16 SU	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 970F B6C 650 V16	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 970F B6C 650 V16 SU	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1000N B6C 670 V16	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1000N B6C 670 V16 SU	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1200F B6C 800 V16	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1200F B6C 800 V16 SU	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6C 1010 V16	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6C 1010 V16 SU	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1890F B6C 1270 V16	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 1890F B6C 1270 V16 ZU	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 2580F B6C 1730 V16	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
SKS 2580F B6C 1730 V16 ZU	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
SKSE 2580F B6C 1730 V16 [2]	500	670	2580	Capsules	Forced-air cooled	Z5/120	no	
SKSE 2580F B6C 1730 V16 ZU [2]	500	670	2580	Capsules	Forced-air cooled	Z5/120	no	
SKSE 1890F B6C 1270 V16 ZU [2]	500	670	1890	Capsules	Forced-air cooled	Z5/90	no	
SKSE 1890F B6C 1270 V16 [2]	500	670	1890	Capsules	Forced-air cooled	Z5/90	no	
SKSE 1500F B6C 1010 V16 SU [2]	500	670	1500	Capsules	Forced-air cooled	Z5/60	no	
SKSE 1500F B6C 1010 V16 [2]	500	670	1500	Capsules	Forced-air cooled	Z5/60	no	
SKSE 1200F B6C 800 V16 SU [2]	500	670	1200	Capsules	Forced-air cooled	Z5/60	no	
SKSE 1200F B6C 800 V16 [2]	500	670	1200	Capsules	Forced-air cooled	Z5/60	no	



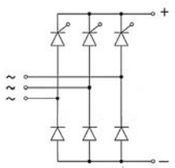
3-phase half-controlled bridge rectifier								
SKS 88N B6HK 60 V16	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 88N B6HK 60 V16 SU	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 180F B6HK 120 V16	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 180F B6HK 120 V16 SU	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 215N B6HK 145 V16	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 215N B6HK 145 V16 SU	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 250F B6HK 170 V16	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 250F B6HK 170 V16 SU	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 355N B6HK 240 V16	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 355N B6HK 240 V16 SU	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 365F B6HK 245 V16	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 365F B6HK 245 V16 SU	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 570F B6HK 380 V16	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 570F B6HK 380 V16 SU	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	

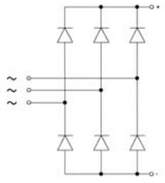


Footnotes: 2) In production new

Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase half-controlled bridge rectifier								
SKS 640F B6HK 430 V16	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6HK 430 V16 SU	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 700N B6HK 470 V16	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 700N B6HK 470 V16 SU	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 845N B6HK 570 V16	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 845N B6HK 570 V16 SU	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 970F B6HK 650 V16	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 970F B6HK 650 V16 SU	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1000N B6HK 670 V16	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1000N B6HK 670 V16 SU	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1200F B6HK 800 V16	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1200F B6HK 800 V16 SU	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6HK 1010 V16	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6HK 1010 V16 SU	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1890F B6HK 1270 V16	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 1890F B6HK 1270 V16 ZU	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 2580F B6HK 1730 V16	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
SKS 2580F B6HK 1730 V16 ZU	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
3-phase uncontrolled bridge rectifier								
SKS 91N B6U 60 V16	500	670	91	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 91N B6U 60 V16 SU	500	670	91	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 185F B6U 125 V16	500	670	185	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 185F B6U 125 V16 SU	500	670	185	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 290F B6U 195 V16	500	670	290	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 290F B6U 195 V16 SU	500	670	290	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 425N B6U 285 V16	500	670	425	Stud devices	Natural cooled	P1/150	no	
SKS 425N B6U 285 V16 SU	500	670	425	Stud devices	Natural cooled	P1/150	no	
SKS 430F B6U 290 V16	500	670	430	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 430F B6U 290 V16 SU	500	670	430	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 535N B6U 360 V16	500	670	535	Stud devices	Natural cooled	P1/200	no	
SKS 535N B6U 360 V16 SU	500	670	535	Stud devices	Natural cooled	P1/200	no	
SKS 660F B6U 440 V16	500	670	660	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 660F B6U 440 V16 SU	500	670	660	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 850F B6U 570 V16	500	670	850	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 850F B6U 570 V16 SU	500	670	850	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 1185N B6U 795 V16	500	670	1185	Capsules	Natural cooled	P11/415	no	
SKS 1185N B6U 795 V16 SU	500	670	1185	Capsules	Natural cooled	P11/415	no	
SKS 1220F B6U 820 V16	500	670	1220	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1220F B6U 820 V16 SU	500	670	1220	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1630N B6U 1090 V16	500	670	1630	Capsules	Natural cooled	U3/515	no	
SKS 1630N B6U 1090 V16 ZU	500	670	1630	Capsules	Natural cooled	U3/515	no	
SKS 1910N B6U 1280 V16	500	670	1910	Capsules	Natural cooled	U3/515	no	
SKS 1910N B6U 1280 V16 ZU	500	670	1910	Capsules	Natural cooled	U3/515	no	
SKS 1950F B6U 1305 V16	500	670	1950	Capsules	Forced-air cooled	P17/130	no	
SKS 1950F B6U 1305 V16 ZU	500	670	1950	Capsules	Forced-air cooled	P17/130	no	
SKS 2300F B6U 1540 V16	500	670	2300	Capsules	Forced-air cooled	P18/180	no	
SKS 2300F B6U 1540 V16 ZU	500	670	2300	Capsules	Forced-air cooled	P18/180	no	
SKS 4015F B6U 2690 V16	500	670	4015	Capsules	Forced-air cooled	N4/250	no	
SKSE 2300F B6U 1540 V16 ZU [2)]	500	670	2300	Capsules	Forced-air cooled	Z5/120	no	
SKSE 2300F B6U 1540 V16 [2)]	500	670	2300	Capsules	Forced-air cooled	Z5/120	no	
SKSE 1950F B6U 1305 V16 ZU [2)]	500	670	1950	Capsules	Forced-air cooled	Z5/90	no	
SKSE 1950F B6U 1305 V16 [2)]	500	670	1950	Capsules	Forced-air cooled	Z5/90	no	

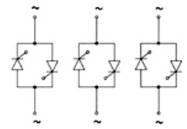




Footnotes: 2) In production new

Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase reverse parallel thyristor converter								
SKS 67N W3C 60 V16	500	-	67	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 67N W3C 60 V16 SU	500	-	67	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 140F W3C 120 V16	500	-	140	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 140F W3C 120 V16 SU	500	-	140	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 170N W3C 150 V16	500	-	170	Stud devices	Natural cooled	P1/150	no	
SKS 170N W3C 150 V16 SU	500	-	170	Stud devices	Natural cooled	P1/150	no	
SKS 195F W3C 170 V16	500	-	195	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 195F W3C 170 V16 SU	500	-	195	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 275N W3C 240 V16	500	-	275	Stud devices	Natural cooled	P1/200	no	
SKS 275N W3C 240 V16 SU	500	-	275	Stud devices	Natural cooled	P1/200	no	
SKS 290F W3C 250 V16	500	-	290	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 290F W3C 250 V16 SU	500	-	290	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 450F W3C 390 V16	500	-	450	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 450F W3C 390 V16 SU	500	-	450	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 520F W3C 450 V16	500	-	520	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 520F W3C 450 V16 SU	500	-	520	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 545N W3C 470 V16	500	-	545	Capsules	Natural cooled	P11/415	no	
SKS 545N W3C 470 V16 SU	500	-	545	Capsules	Natural cooled	P11/415	no	
SKS 650N W3C 560 V16	500	-	650	Capsules	Natural cooled	U3/515	no	
SKS 650N W3C 560 V16 SU	500	-	650	Capsules	Natural cooled	U3/515	no	
SKS 760F W3C 660 V16	500	-	760	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 760F W3C 660 V16 SU	500	-	760	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 780N W3C 675 V16	500	-	780	Capsules	Natural cooled	U3/515	no	
SKS 780N W3C 675 V16 SU	500	-	780	Capsules	Natural cooled	U3/515	no	
SKS 950F W3C 825 V16	500	-	950	Capsules	Forced-air cooled	P17/130	no	
SKS 950F W3C 825 V16 SU	500	-	950	Capsules	Forced-air cooled	P17/130	no	
SKS 1180F W3C 1020 V16	500	-	1180	Capsules	Forced-air cooled	P17/130	no	
SKS 1180F W3C 1020 V16 SU	500	-	1180	Capsules	Forced-air cooled	P17/130	no	
SKS 1540F W3C 1335 V16	500	-	1540	Capsules	Forced-air cooled	P18/180	no	
SKS 1540F W3C 1335 V16 SU	500	-	1540	Capsules	Forced-air cooled	P18/180	no	
SKS 2150F W3C 1860 V16	500	-	2150	Capsules	Forced-air cooled	N4/250	no	
SKS 2150F W3C 1860 V16 ZU	500	-	2150	Capsules	Forced-air cooled	N4/250	no	

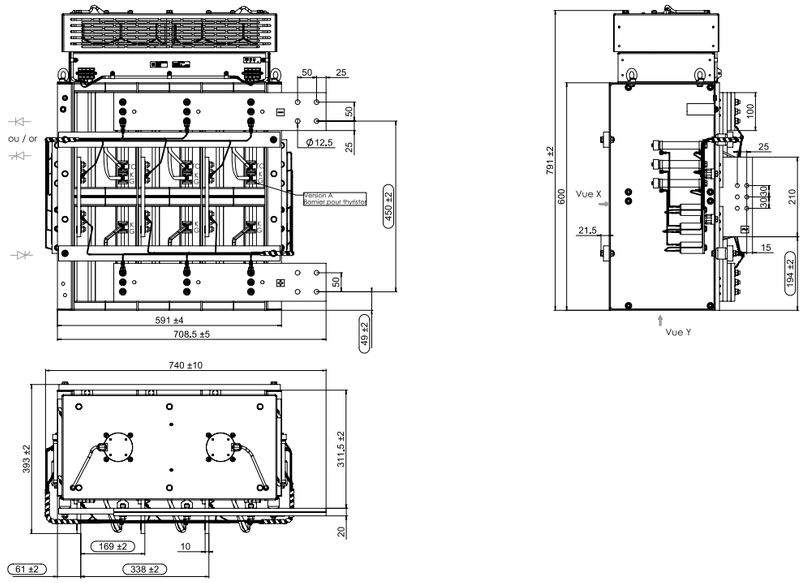


Footnotes: 2) In production new

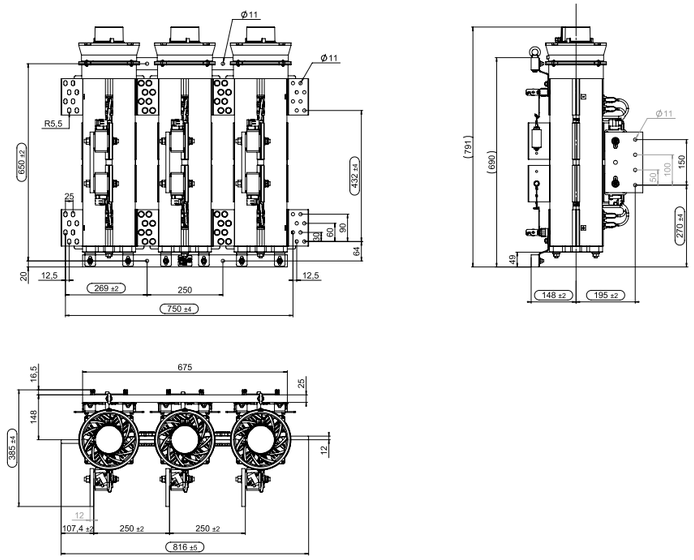
Stacks / SEMISTACK CLASSICS

Cases

SKS



SKSE



Dimensions in mm

Systems

9

Product Classes

Systems – Most Compact
Power Electronics System for Utility Vehicles

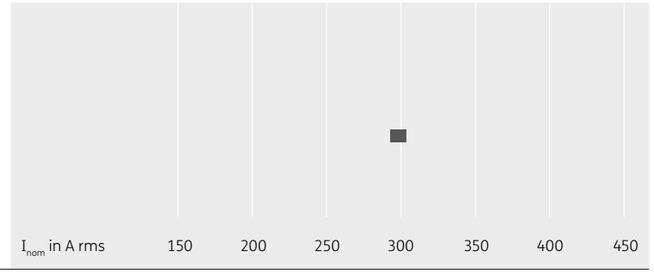
SEMIKRON's motor controllers are already fully equipped with current sensors, IGBT drivers, DC link capacitors and a fast processor (DSP). The systems are designed to operate with supply voltages of 24V up to 800V and with output power ratings of up to 300kVA.

For detailed information please refer to data sheets.

Further information: www.semikron.com/systems

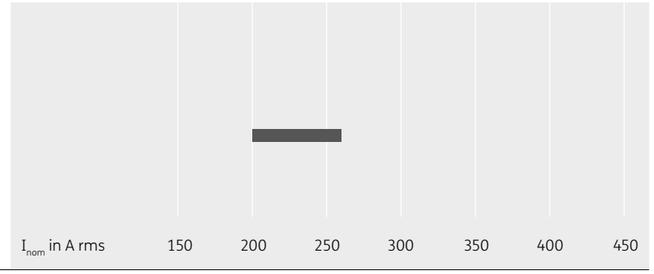
SKAI®2 IGBT Motor Controller

115V up to 800V



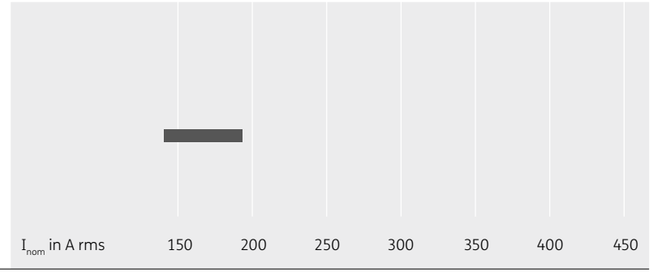
SKAI®2 MOSFET Single Motor Controller

24V up to 115V

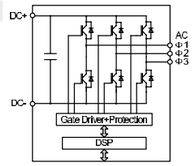
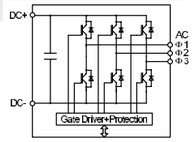
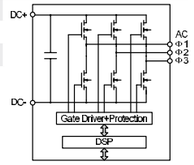


SKAI®2 MOSFET Dual Motor Controller

24V up to 115V



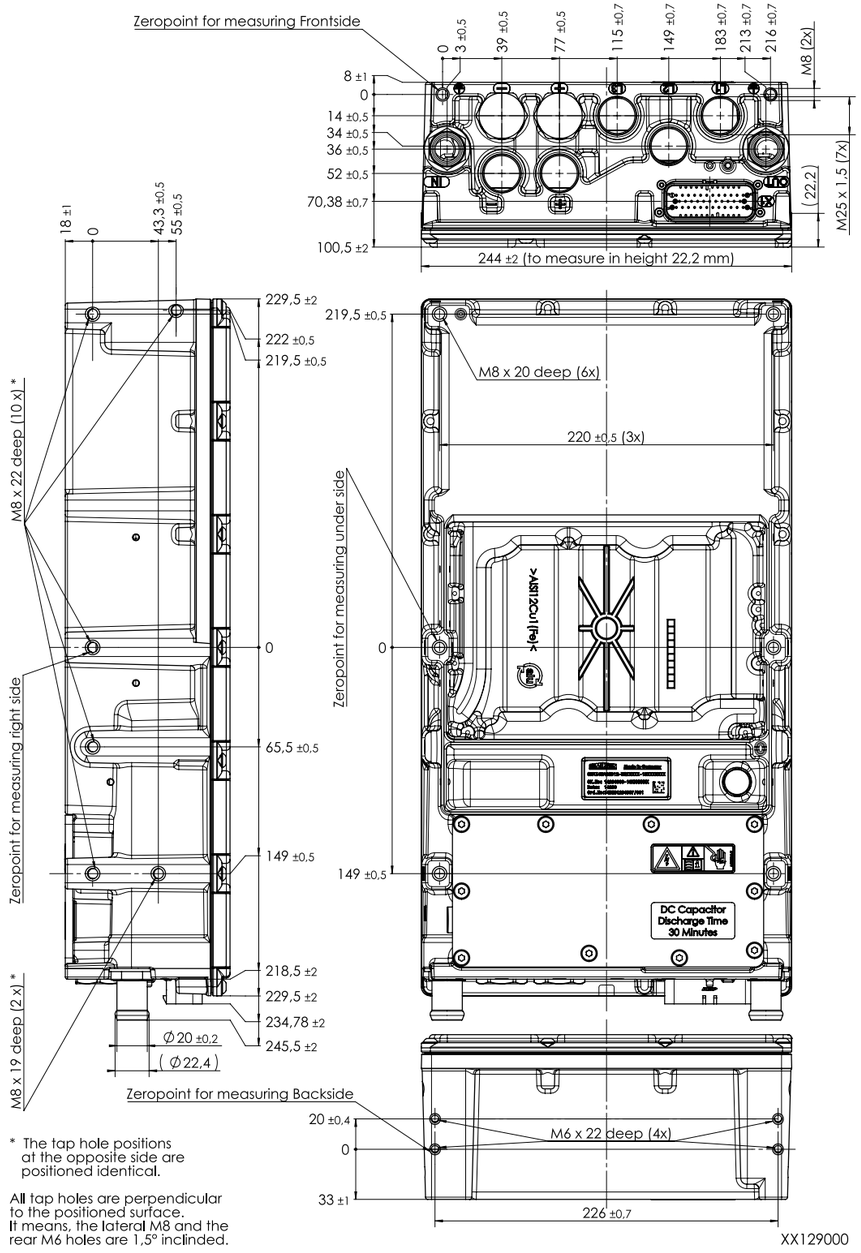
Systems / SKAI2

Type	$V_{battery\ (max)}$ V	I_{nom} A_{rms}	Topology	Cooling	DSP	Case	Circuit
IGBT - Motor Controller							
SKAI 90 A2 GD06-WCI [2)]	450	300	3-Phase	Liquid	Yes	7	
SKAI 45 A2 GD12-WCI [2)]	800	300	3-Phase	Liquid	Yes	7	
SKAI 90 A2 GD06-WDI [2)]	450	300	3-Phase	Liquid	No	7	
SKAI 45 A2 GD12-WDI [2)]	800	300	3-Phase	Liquid	No	7	
MOSFET - Motor Controller							
SKAI 60 A2 MD10-L [2)]	72	260	3-Phase	Forced Air	Yes	1	
SKAI 60 A2 MD10-P [2)]	72	260	3-Phase	Baseplate	Yes	3	
SKAI 70 A2 MD15-L [2)]	115	200	3-Phase	Forced Air	Yes	1	
SKAI 70 A2 MD15-P [2)]	115	200	3-Phase	Baseplate	Yes	3	
SKAI 60 A2 MM10-L [2)]	72	190	Dual 3-Phase	Forced Air	Yes	4	
SKAI 60 A2 MM10-P [2)]	72	190	Dual 3-Phase	Baseplate	Yes	6	
SKAI 70 A2 MM15-L [2)]	115	140	Dual 3-Phase	Forced Air	Yes	4	
SKAI 70 A2 MM15-P [2)]	115	140	Dual 3-Phase	Baseplate	Yes	6	

Footnotes: 2) In production new

Cases

Case 7

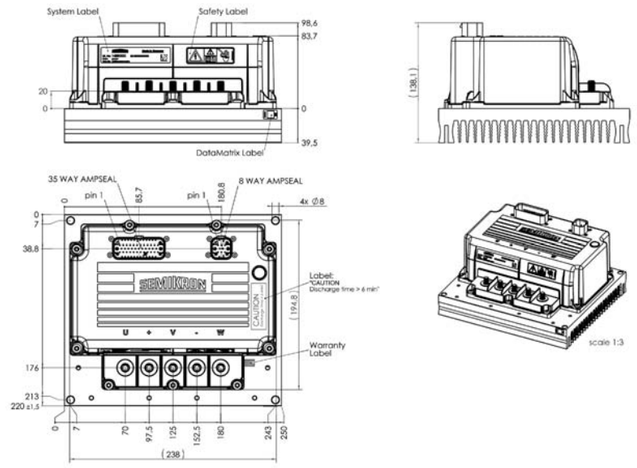


Dimensions in mm

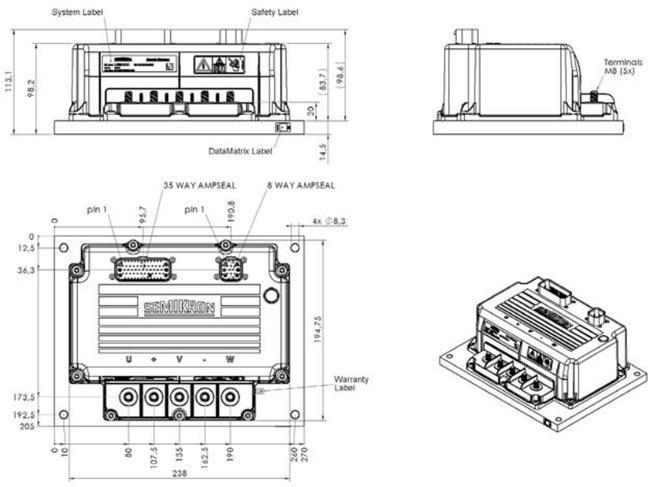
Systems / SKAI2

Cases

Case 1



Case 3

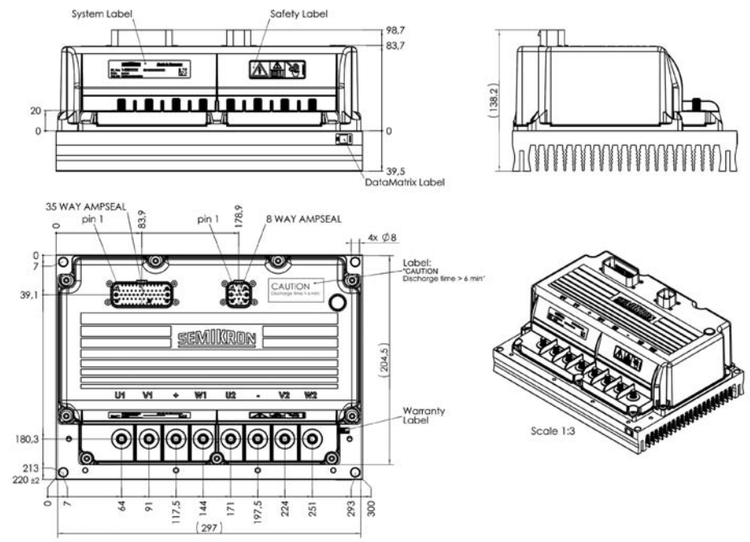


Dimensions in mm

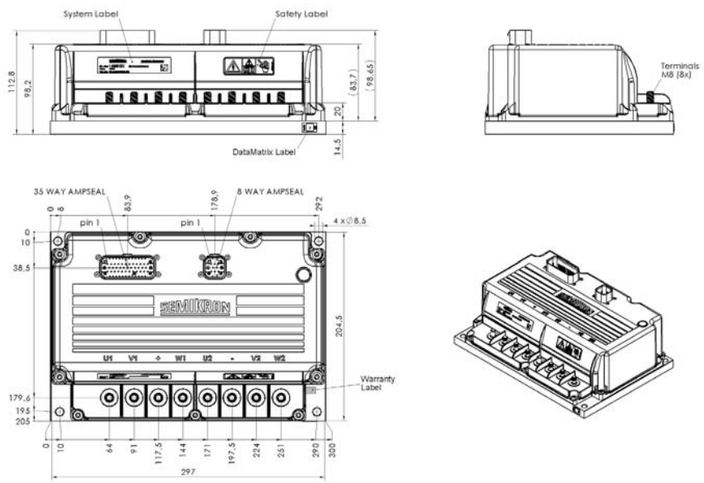
Systems / SKAI2

Cases

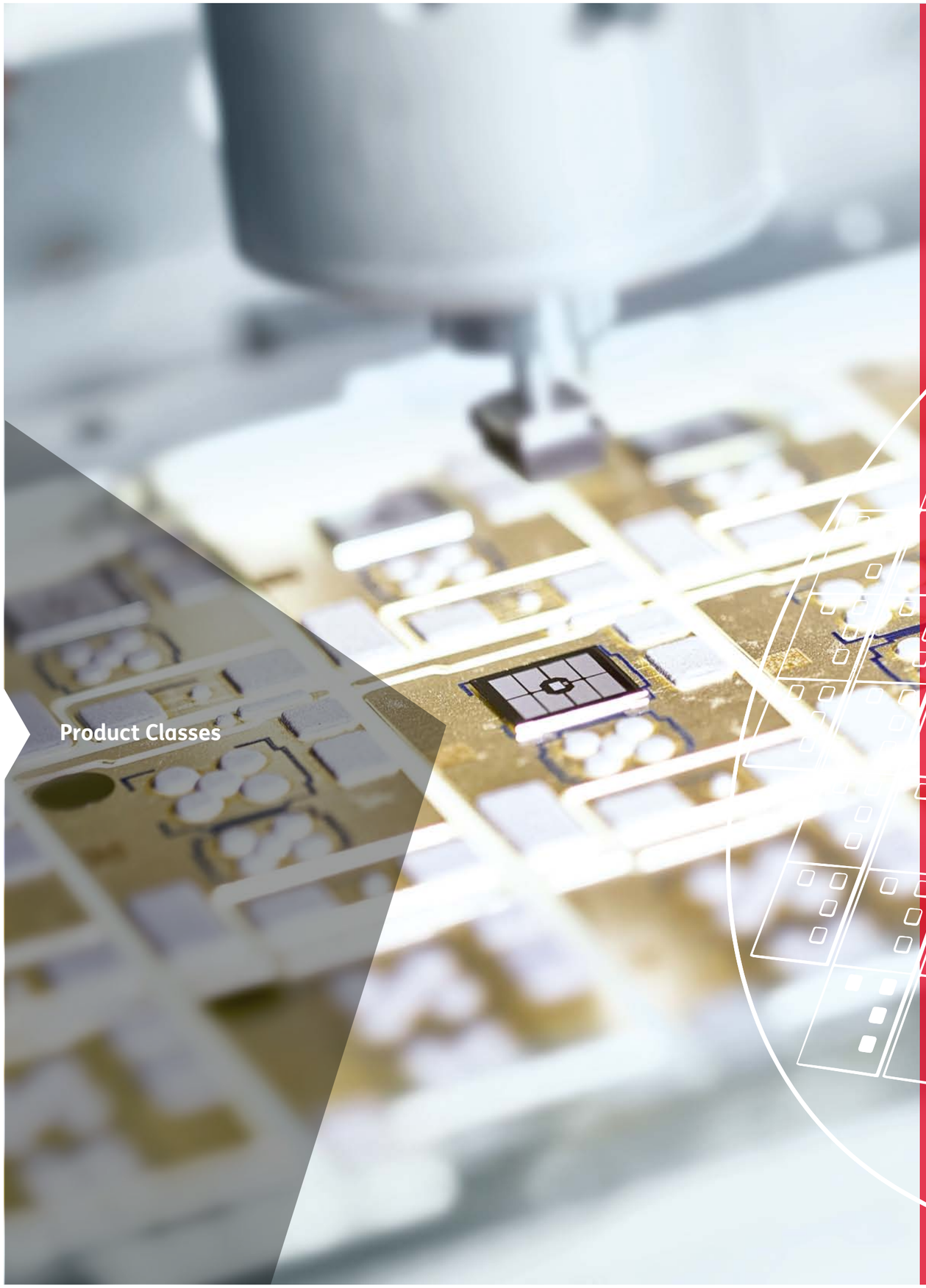
Case 4



Case 6



Dimensions in mm



Discretes / Chips

Product Classes

Discretes / Chips

Chips – CAL (Controlled Axial Lifetime) freewheeling diodes are available in 600V / 650V, 1200V, and 1700V voltage classes with current ratings up to 200A. Depending on the frequency of the target application, custom designed switching properties are also available.

Rectifier diodes and thyristors are designed for the 1600V voltage class, covering a wide range of current ratings up to 770A, equivalent to a die size of more than 500mm2. Variable configurations of the thyristor gate (corner vs. center gate) enable an optimized bond layout in the respective target design on the customer side. All the chips cover SEMIKRON's extensive module and system range, which means a proven history of outstanding performance and reliability. They are compatible with various connection and assembly technologies. Customers can benefit from the wealth and depth of application knowledge that the SEMIKRON engineering team has.

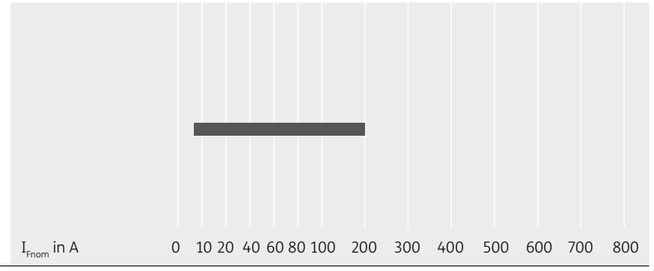
For detailed information please refer to data sheets.

Further information: www.semikron.com/chips

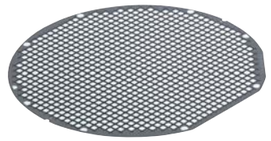
Chips SEMICELL

Freewheling Diode CAL

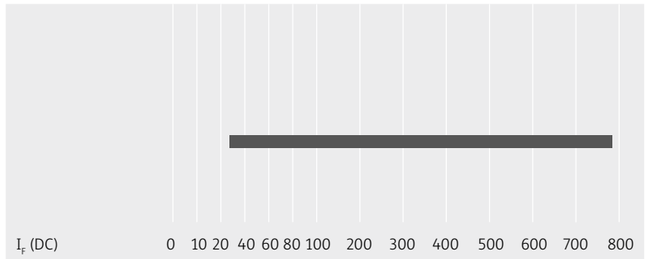
600V up to 1700V



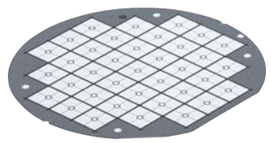
Rectifier Diode



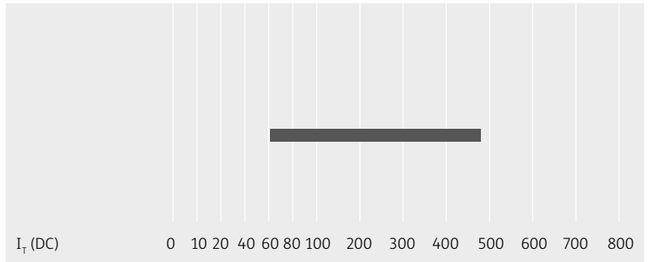
1600V



Thyristor



1600V



Discretes / Chips / SEMICELL

Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
600V - Freewheeling Diodes CAL I3 Fast						
SKCD 06 C 060 I3	600	15	80	1.35	8	1
SKCD 09 C 060 I3	600	20	100	1.35	13	1.46
SKCD 18 C 060 I3	600	30	200	1.35	25	1.98
SKCD 31 C 060 I3	600	50	440	1.35	50	3.3
SKCD 47 C 060 I3	600	80	720	1.35	85	6.2
SKCD 61 C 060 I3	600	100	1000	1.35	110	8.7
SKCD 81 C 060 I3	600	150	1260	1.35	155	11.5
SKCD 121 C 060 I3	600	210	2100	1.35	245	18

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=150°C µC
600V - Freewheeling Diodes CAL High Density						
SKCD 04 C 060 I HD	600	10	65	1.23	4.7	1.3
SKCD 06 C 060 I HD	600	20	95	1.23	8	1.42
SKCD 09 C 060 I HD	600	30	160	1.23	13	2.4
SKCD 16 C 060 I HD	600	50	320	1.23	25	3.87
SKCD 24 C 060 I HD	600	75	395	1.23	41	6
SKCD 42 C 060 I HD	600	100	810	1.23	75	11.1
SKCD 61 C 060 I HD	600	150	1080	1.23	112	15.75
SKCD 81 C 060 I HD	600	200	1310	1.23	152	19.69

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
650V - Freewheeling Diodes CAL I4 Fast						
SKCD 24 C 065 I4F	650	50	460	1.30	39	1.1
SKCD 42 C 065 I4F	650	100	680	1.30	73	2.2
SKCD 61 C 065 I4F	650	150	1100	1.30	109	3.8
SKCD 81 C 065 I4F	650	200	1290	1.30	148	5.8

Discretes / Chips / SEMICELL

Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
1200V - Freewheeling Diodes CAL I3 Fast						
SKCD 11 C 120 I3	1200	15	130	2.00	10	1.6
SKCD 18 C 120 I3	1200	25	200	2.00	15	3
SKCD 23 C 120 I3R	1200	30	270	2.00	25	3.8
SKCD 31 C 120 I3	1200	40	370	2.00	35	5.3
SKCD 47 C 120 I3	1200	55	600	2.00	55	7.5
SKCD 61 C 120 I3	1200	75	800	2.00	70	11
SKCD 81 C 120 I3	1200	100	1100	2.00	100	16.5
SKCD 121 C 120 I3	1200	150	1600	2.00	155	24
1200V - Freewheeling Diodes CAL High Density						
SKCD 06 C 120 I HD	1200	6	60	1.50	5	1.24
SKCD 11 C 120 I HD	1200	15	140	1.50	12	2.9
SKCD 14 C 120 I HD	1200	20	170	1.50	15	4
SKCD 18 C 120 I HD	1200	25	200	1.50	20	5
SKCD 31 C 120 I HD	1200	55	480	1.50	45	11
SKCD 47 C 120 I HD	1200	85	700	1.50	70	17.4
SKCD 61 C 120 I HD	1200	115	900	1.50	90	24.5
SKCD 81 C 120 I HD	1200	160	1150	1.50	130	34.4

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
1200V - Freewheeling Diodes CAL I4 Fast						
SKCD 08 C 120 I4F	1200	8	36	2.33	8	0.4
SKCD 11 C 120 I4F	1200	15	65	2.38	15	0.6
SKCD 16 C 120 I4F	1200	25	100	2.41	25	1
SKCD 22 C 120 I4F	1200	35	170	2.30	35	1.6
SKCD 31 C 120 I4F	1200	50	270	2.22	50	2.6
SKCD 31 C 120 I4F R	1200	50	270	2.22	50	4.38
SKCD 46 C 120 I4F	1200	75	430	2.17	75	4.2
SKCD 46 C 120 I4F R	1200	75	430	2.17	75	4.2
SKCD 53 C 120 I4F	1200	100	550	2.20	100	5.4
SKCD 81 C 120 I4F	1200	150	900	2.14	150	8.7

Discretes / Chips / SEMICELL

Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
1700V - Freewheeling Diodes CAL Fast						
SKCD 47 C 170 I	1700	55	550	2.05	55	15
SKCD 61 C 170 I	1700	75	720	2.05	75	24
1700V - Freewheeling Diodes CAL High Density						
SKCD 47 C 170 I HD	1700	75	650	1.73	75	25
SKCD 61 C 170 I HD	1700	100	710	1.73	100	35
SKCD 81 C 170 I HD	1700	150	1070	1.73	150	53.5

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
1700V - Freewheeling Diodes CAL I4 Fast						
SKCD 28 C 170 I4F	1700	40	280	1.71	23	12
SKCD 46 C 170 I4F	1700	75	450	1.71	43	17
SKCD 56 C 170 I4F	1700	100	580	1.71	57	22.2
SKCD 81 C 170 I4F	1700	150	860	1.71	89	31.5

Discretes / Chips / SEMICELL

Type	V_{RRM} V	$T_{j\,max}$ °C	$I_{F(DC)}$ @$T_{j\,max}$ A	$I_{F(AV)}$ @$T_{j\,max}$ A	I_{FSM} @T_j=150°C A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A
1600V - Rectifier - Standard							
SKR 3,5 Qu bond[6)]	1600	150	25	18	200	1.00	8
SKR 4,2 Qu bond[6)]	1600	150	35	28	270	1.00	13
SKR 4,8 Qu bond[6)]	1600	150	45	35	350	1.00	18
SKR 5,6 Qu bond[6)]	1600	150	50	40	490	1.00	25
SKR 6,2 Qu bond[6)]	1600	150	65	50	600	1.00	33
SKR 7,0 Qu bond[6)]	1600	150	75	60	890	1.00	45
SKR 8,9 Qu bond[6)]	1600	150	140	110	1380	1.00	77
SKR 10,3 Qu bond[6)]	1600	150	170	135	1650	1.00	106
SKR 12,4 Qu bond[6)]	1600	150	235	190	2300	1.00	160
SKR 15,2 Qu bond[6)]	1600	150	330	270	3800	1.00	245
SKR 16,3 x 18,2 Qu bond[6)]	1600	150	365	305	5100	1.00	320
SKN 18,2 Qu bond[6)]	1600	150	380	318	5500	1.00	360
SKN 22,4 Qu bond[6)]	1600	150	770	634	9450	1.00	550
1600V - Rectifier - PEP							
SKR012XP16B1F	1600	175	35	26	200	0.97	8
SKR018XP16B1F	1600	175	50	38	270	0.97	13
SKR023XP16B1F	1600	175	63	48	350	0.97	18
SKR031XP16B1F	1600	175	85	64	490	0.97	26
SKR106XP16B1F	1600	175	290	220	1650	0.97	103
SKR231XP16B1T	1600	175	665	510	4200	0.97	238
SKR297XP16B1T	1600	175	840	640	5100	0.97	310

Footnotes: 6) solderable top metallization on request

Type	V_{RRM}, V_{DRM} V	$I_{T(DC)}$ @ T_j=130°C A	I_{TSM} @T_j=130°C A	V_{GT} @T_j=25°C V	I_{GT} @T_j=25°C A	t_q @T_j=130°C µs
1600V - Thyristor Central Gate						
SKT 8,9 Qu ZG bond[6)]	1600	105	1000	1.65	100	150
SKT 10,3 Qu ZG bond[6)]	1600	125	1250	1.65	100	150
SKT 12,4 Qu ZG bond[6)]	1600	165	1800	1.65	100	150
SKT 13,5 Qu ZG bond[6)]	1600	185	2300	1.65	100	135
SKT 15,2 Qu ZG bond[6)]	1600	215	3200	1.65	100	150
SKT 18,2 Qu ZG bond[6)]	1600	250	5000	1.65	100	150
SKT 24,3 Qu ZG bond SG [6)]	1600	480	8200	1.65	150	150
1600V - Thyristor Corner Gate						
SKT 5,6 Qu RG bond[6)]	1600	60	280	1.65	100	150
SKT 7,0 Qu RG bond[6)]	1600	75	450	1.65	100	150
SKT 8,9 Qu RG bond[6)]	1600	105	1000	1.65	100	150
SKT 10,3 Qu RG bond[6)]	1600	125	1250	1.65	100	150
SKT 12,4 Qu RG bond[6)]	1600	165	1800	1.65	100	150

Footnotes: 6) solderable top metallization on request

Discretes

Discrete diodes – SEMIKRON offers discrete diodes in three major packaging styles; axial epoxy diodes for PCB mounting, stud screw-fit diodes that are suitable for applications such as welding, rotating rectifiers in brushless generators thanks to their robustness and easy assembly, as well as capsule (disc) diodes for high-power applications.

The line includes standard rectifiers with current ratings up to 6000A, fast rectifiers up to 140A, and avalanche rectifiers that allow for high voltage rectification of up to 8000V with single diodes and much more when connected in series. Typical applications: all-purpose rectifiers, battery chargers, welding equipment, rotating rectifiers for brushless generators, electroplating, free-wheeling diodes, high-voltage rectifiers, electrostatic filters, blocking diodes and others.

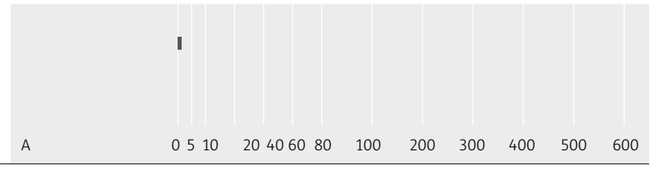
Discrete thyristors – SEMIKRON's discrete thyristors are available as stud screw-fit types that are suitable for applications which require robustness and easy assembly, plus capsule (disc) types for high-power applications. The line also has phase control types for current ratings of up to 1200A, with blocking and reverse voltages of up to 1800V, covering the major market applications. Typical applications are soft-starters, resistance heating, static switches, battery chargers, welding equipment, static excitation and others.

For detailed information please refer to data sheets.

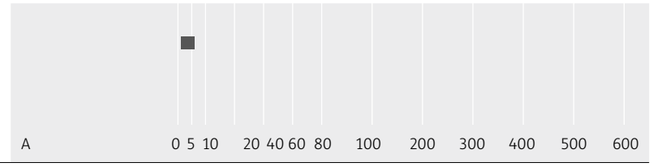
Further information
www.semikron.com/discrete-diodes
www.semikron.com/discrete-thyristors

Discrete Diodes

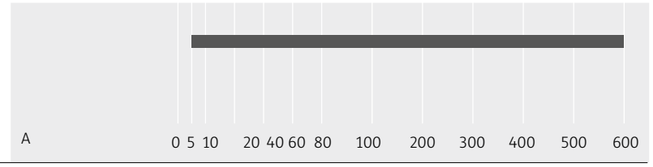
HV axial screw — **4800V up to 8000V**



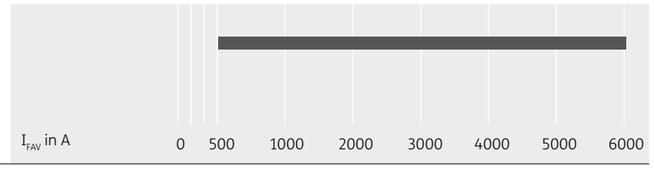
Leaded — **100V up to 2000V**



Stud screw-fit — **400V up to 5000V**

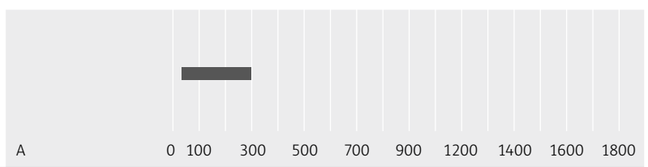


Capsules — **200V up to 2200V**

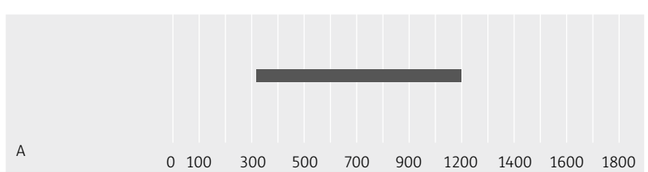


Discrete Thyristors

Stud screw-fit — **400V up to 1800V**



Capsules — **400V up to 1800V**

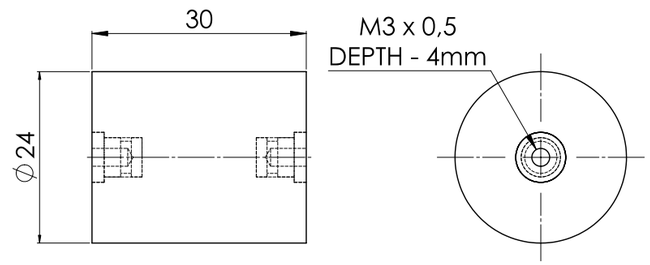


Discretes / Diodes / HV Screw Axial

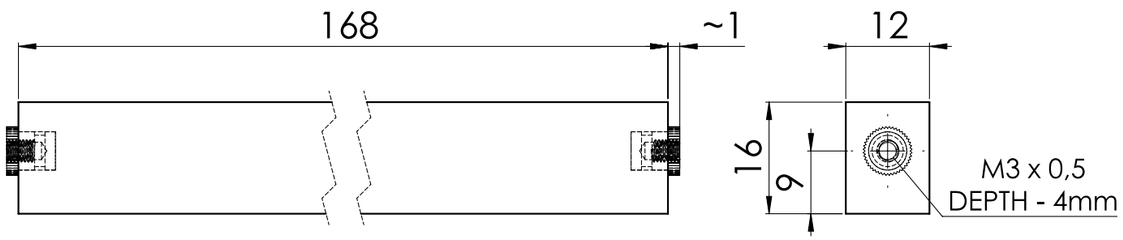
Type	Voltage (V)	I_{FAV} @ T_{oil}	T_{oil}	I_{FSM}@T_j=25°C	V_F	$R_{th(j-s)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	K/W	°C		
SKHE 2000/900-1,2	4800	1.5	75	135	3.60	21	-40 ... +150	SKHE 1	
SKHE 3500/1550-2,0	8000	2.5	75	270	6.70	8	-40 ... +150	SKHE 2	

Cases

SKHE 1



SKHE 2



Dimensions in mm

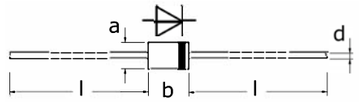
Discretes / Diodes / Leaded

Type	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	K/W	°C		
Standard recovery									
SK 1	1000-1600	1.45	85	60	1.50	85	-40 ... +150	E33	
SKN 2,5 [2]	400-1600	2.5	173	180	1.20	55	-40 ... +180	E5	
SK 3	400-1600	3	92	180	1.20	60	-40 ... +150	E34	
SKN 5 [2]	200-1600	5	169	190	1.25	25	-40 ... +180	E6	
SK 6 [2]	400-1600	6	46	375	1.10	55	-40 ... +150	SK6	
Avalanche									
SKa1	1300-1700	1	85	60	1.50	85	-40 ... +150	E33	
SKNa2 [2]	1300-1700	2	175	180	1.20	2.5	-40 ... +150	E5	
SKa3	1300-1700	3	92	180	1.20	60	-40 ... +150	E34	
SKNa4 [2]	1300-1700	4	171	190	1.20	25	-40 ... +150	E6	
SKa 6 [2]	1300-2000	6	46	375	1.10	55	-40 ... +150	SK6	

Footnotes: 2) In production new

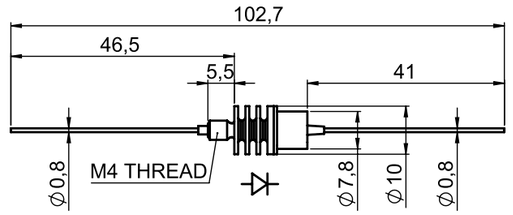
Cases

E33 / E34 / SK6

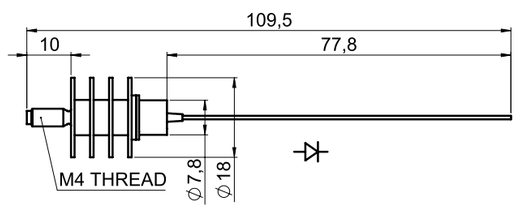


Cases	a	b	l	d
E 33	4,5	7	28	0,75
E 34	6	9	27	1,18
SK6	7,5	9	27	1,28

E5



E6



Dimensions in mm

Discretes / Diodes / Stud Screw Fit

Type	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	K/W	°C		
Standard recovery									
SKN 20	400-1600	20	125	375	1.55	2	-40 ... +180	E9	
SKN 26	400-1600	25	100	375	1.55	2	-40 ... +180	E8	
SKN 45	400-1600	45	125	700	1.60	0.85	-40 ... +180	E12	
SKN 70	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E12	
SKN 71	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E11	
SKN 94	200-1200	96	141	2000	1.20	0.35	-40 ... +180	E12	
SKN 96	200-1200	96	141	2000	1.20	0.35	-40 ... +180	E10	
SKN 100	400-1800	100	120	1750	1.55	0.45	-40 ... +180	E13	
SKN 130	400-1800	130	125	2500	1.50	0.35	-40 ... +180	E14	
SKN 152	200-1200	152	139	4500	1.40	0.22	-40 ... +180	DO-8	
SKN 240	400-1800	240	125	6000	1.40	0.2	-40 ... +180	E15	
SKN 262	2000-2800	262	115	6000	1.40	0.2	-40 ... +180	E45	
SKN 300	400-1600	300	124	6500	1.40	0.15	-40 ... +180	E15	
SKN 320	400-1600	320	125	9000	1.35	0.16	-40 ... +180	E16	
SKN 390	400-1600	390	117	9000	1.35	0.13	-40 ... +180	E15	
SKN 400	1800-3600	400	100	9000	1.45	0.11	-40 ... +160	E17	
SKN 600 [2]	400-1600	600	105	14000	1.33	0.1	-40 ... +180	E16	
SKR 20	400-1600	20	125	375	1.55	2	-40 ... +180	E9	
SKR 26	400-1600	25	100	375	1.55	2	-40 ... +180	E8	
SKR 45	400-1600	45	125	700	1.60	0.85	-40 ... +180	E12	
SKR 70	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E12	
SKR 71	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E11	
SKR 94	200-1200	96	141	2000	1.20	0.35	-40 ... +180	E12	
SKR 96	200-1200	96	141	2000	1.20	0.35	-40 ... +180	E10	
SKR 100	400-1800	100	120	1750	1.55	0.45	-40 ... +180	E13	
SKR 130	400-1800	130	125	2500	1.50	0.35	-40 ... +180	E14	
SKR 152	200-1200	152	139	4500	1.40	0.22	-40 ... +180	DO-8	
SKR 240	400-1800	240	125	6000	1.40	0.2	-40 ... +180	E15	
SKR 262	2000-2800	262	115	6000	1.40	0.2	-40 ... +180	E45	
SKR 300	400-1600	300	124	6500	1.40	0.15	-40 ... +180	E15	
SKR 320	400-1600	320	125	9000	1.35	0.16	-40 ... +180	E16	
SKR 390	400-1600	390	117	9000	1.35	0.13	-40 ... +180	E15	
SKR 400	1800-3600	400	100	9000	1.45	0.11	-40 ... +160	E17	
SKR 600 [2]	400-1600	600	105	14000	1.33	0.1	-40 ... +180	E16	
Fast recovery									
SKN 2F17	400-1000	17	113	450	2.15	1.2	-40 ... +150	E7	
SKN 3F20	800-1200	20	104	375	2.15	1.2	-40 ... +150	E7	
SKN 2F50	400-1000	50	105	1100	1.80	0.5	-40 ... +150	E10	
SKN 60F	1200-1700	60	100	1400	1.75	0.5	-40 ... +150	E10	
SKN 135F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E14	
SKN 136F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E31	
SKN 140F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E14	
SKN 141F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E31	
SKR 2F17	400-1000	17	113	450	2.15	1.2	-40 ... +150	E7	
SKR 3F20	800-1200	20	104	375	2.15	1.2	-40 ... +150	E7	
SKR 2F50	400-1000	50	95	1100	1.80	0.5	-40 ... +150	E10	
SKR 60F	1200-1700	60	100	1400	1.75	0.5	-40 ... +150	E10	
SKR 135F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E14	
SKR 136F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E31	
SKR 140F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E14	
SKR 141F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E31	

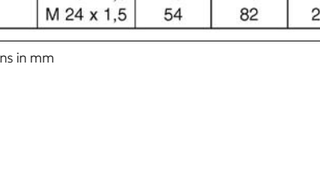
Footnotes: 2) In production new

Discretes / Diodes / Stud Screw Fit

Type	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	K/W	°C		
Avalanche									
SKNa 20	1300-1700	20	93	375	1.55	2	-40 ... +150	E9	
SKNa 22	3600-5000	25	104	450	1.95	1	-40 ... +160	E42	
SKNa 46, SKRa 46	1800	46	124	700	1.60	0.85	-40 ... +180	E11	
SKNa 47	3600-5000	45	106	700	1.80	0.6	-40 ... +160	E43	
SKNa 102	3600-5000	125	80	1900	1.90	0.3	-40 ... +160	E44	
SKNa 202	3600-5000	200	80	3800	1.95	0.2	-40 ... +160	E45	
SKNa 402	3600-5000	400	88	7800	1.85	0.1	-40 ... +160	E46	

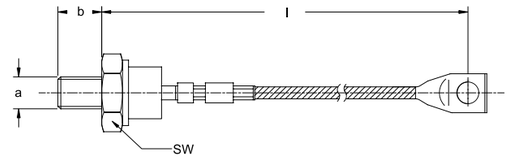
Cases

E7 / E8 / E10 / E11 / E31



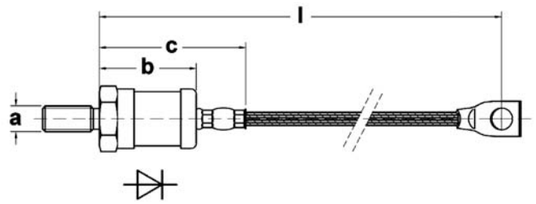
Cases	a	b	d	l	sw
E 7	M 5	11	2,7	22	11
E 8	M 6	11	2,7	21,5	11
E 10	M 6	11	4	25	17
E 11	M 8	11	4	25,5	17
E 31	M 12	18	8,4	55	24

E9 / E12 ... E17 / DO-8



Cases	a	b	l	SW
E9	M6	11	130	11
E12	M8	11	135	17
E13	M12	18	165	24
E14	M12	18	165	24
E15	M16 x 1.5	20	190	32
E16, E17	M24 x 1.5	20	230	41
DO-8	3/8 - 24 UNF 2A	16	112	27

E 42 / E 43 / E 44 / E 45 / E 46



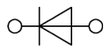
Cases	a	b	c	l
E 42	M 6	28.5	45	150
E 43	M 8	32	54	160
E 44	M 12	38	57	185
E 45	M 16 x 1,5	48	70	205
E 46	M 24 x 1,5	54	82	250

Dimensions in mm

Discretes / Diodes / Capsules

Type

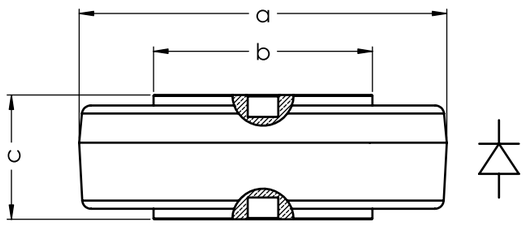
	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	K/W	°C		
SKN 503 SG [1]	400-2200	503	120	7000	1.50	0.075	-40 ... +180	E25	
SKN 1503 SG [1]	400-2200	1503	91	19000	1.50	0.033	-40 ... +175	E26	
SKN 1603 [1]	400-2200	1603	91	19000	1.50	0.03	-40 ... +175	E27	
SKN 6000	200-600	6000	85	60000	1.30	0.012	-40 ... +180	E35	



Footnotes: 1) Sample status

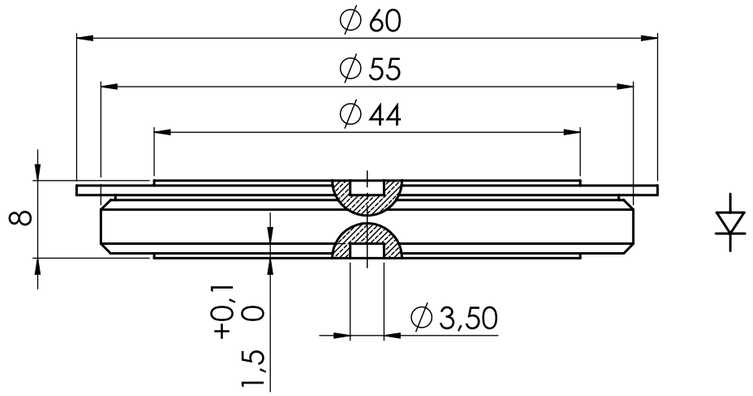
Cases

E25, E26, E27



Cases	a	b	c
E25	42	25	14,5
E26	58	36	26,5
E27	50	32	14,5

E35

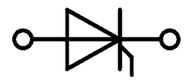


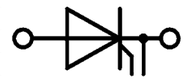
Dimensions in mm

Discretes / Thyristors / Stud Screw Fit

Type

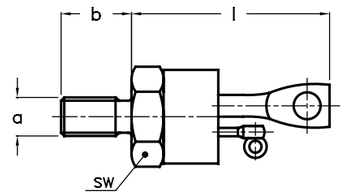
	Voltage (V)	Current (A)	T_C	I_{TSM}@T_j=25°C	V_T @ I_T, T_j=25°C	I_T@V_T	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	A	K/W	°C		
SKT 10	600-1200	10	111	250	1.6	30	1.3	-40 ... +130	B1	
SKT 16	400-1800	16	104	370	2.4	75	0.9	-40 ... +130	B2	
SKT 24	400-1800	24	95	450	1.9	75	0.9	-40 ... +130	B2	
SKT 40	400-1800	40	80	700	1.95	120	0.66	-40 ... +130	B3	
SKT 50	600-1800	50	78	1050	1.8	120	0.6	-40 ... +130	B3	
SKT 55	400-1800	55	92	1300	1.8	200	0.47	-40 ... +130	B5	
SKT 80	600-1800	80	85	1700	2.25	300	0.28	-40 ... +130	B5	
SKT 100	400-1800	100	85	2000	1.75	300	0.28	-40 ... +130	B5	
SKT 130	400-1600	130	85	3500	2.25	500	0.18	-40 ... +130	B6	
SKT 160	400-1600	160	84	4300	1.75	500	0.18	-40 ... +130	B6	
SKT 250	400-1600	250	85	7000	1.65	800	0.123	-40 ... +130	B7	
SKT 300	400-1600	300	93	11000	1.45	800	0.096	-40 ... +130	B7	





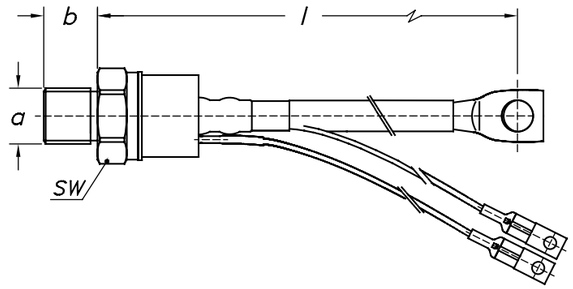
Cases

B1 ... B3



Cases	a	b	l	SW
B1	M5	11	20,3	11
B2	M6	11	30	14
B3	M8	11	33,5	17

B5 ... B7



Cases	*a*	*b*	*l*	*SW*
B5	*M12*	*18*	*160*	*24*
B6	*M16 x 1,5*	*20*	*190*	*32*
B7	*M24 x 1,5*	*20*	*230*	*41*

Dimensions in mm

Discretes / Thyristors / Capsules

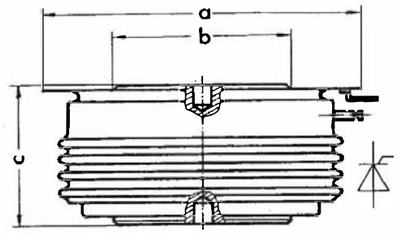
Type

	Voltage (V)	Current (A)	T_C	I_{TSM}@T_j=25°C	V_T @ I_F, T_j=25°C	I_T@V_T	$R_{th(j-c)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	A	K/W	°C		
SKT 340	1200-1800	340	82	5700	1.9	1000	0.072	-40 ... +125	B8	
SKT 551	1200-1800	550	85	9000	1.65	1500	0.047	-40 ... +125	B11	
SKT 553 SG [1)]	400-1800	554	85	9000	1.65	1500	0.045	-40 ... +125	B11b	
SKT 760	1200-1800	760	80	15000	1.65	2400	0.04	-40 ... +125	B10	
SKT 813 [1)]	400-1800	855	85	15000	1.65	2400	0.03	-40 ... +125	B21	
SKT 883 [1)]	400-1800	890	85	19000	1.46	2400	0.032	-40 ... +125	B23	
SKT 1200	1200-1800	1200	85	30000	1.65	3600	0.021	-40 ... +125	B14	

Footnotes: 1) Sample status

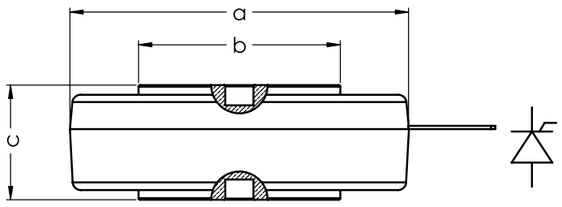
Cases

B8 ... B14



Cases	a	b	c
B 8	41	19	14
B 10	57,3	34	26
B 11	41	25	14
B 14	73	47	26

B11b, B21, B23



Cases	a	b	c
B11b	42	25	14,5
B21	50	32	14,5
B23	58	36	26,5

Dimensions in mm

Product Classes

Accessories

Thermal Interface Materials
Heatsinks / Fans

11

Accessories
Thermal Interface Materials

SEMIKRON was the first power module manufacturer on the market to offer power modules with pre-applied thermal interface material. With more than two decades of field experience and more than twelve million pre-printed modules in the field, benchmarks are being set. The modules with pre-applied TIM are printed in a clean environment on an automated and SPC controlled silk screen and stencil printing line.

For each requirement SEMIKRON offers the right choice of material. In addition to the standard silicone thermal grease, a phase change material and high performance thermal paste with improved thermal performance are also available.

A thermal grease or a phase change material is recommended for the given customer needs for handling and module performance as well as for module type (with baseplate, baseplate-less).

Phase change materials with a rigid consistency at room temperatures can fully exploit the advantages that a non-smearing TIM layer offers on modules without any other drawbacks. Modules with no baseplate, on the other hand, usually require a lower-viscosity material to help improve robustness during assembly. Here, thermal grease is the preferred solution.

For detailed information please refer to data sheets.

Further information: www.semikron.com/tim

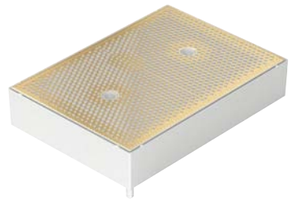
Thermal Interface Materials

Without baseplate

High Performance Thermal Paste

Standard Grease
Silicone-based

Phase Change Material



e.g. MiniSKiiP

Baseplate

Phase Change Material

e.g. SEMiX Press-Fit

Accessories / Thermal Interface Materials

Type	Case	TiM material	Thermal conductance W/m*K
High Performance Thermal Paste			
TP(HPTP)Mini0	0 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini1II.Gen	1 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini2II.Gen	2 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini3II.Gen	3 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini2GB	2 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini3GB	3 II	High Performance Thermal Paste	2.5
TP(HPTP)Mini8AxB	8 I	High Performance Thermal Paste	2.5
TP(HPTP)Mini8AC	8 I	High Performance Thermal Paste	2.5
TP(HPTP)SEMITOP3 [2)]	3	High Performance Thermal Paste	2.5
TP(HPTP)SEMITOP4 [2)]	4	High Performance Thermal Paste	2.5
TP(HPTP)SEMITOP_E2 [1)]	E2	High Performance Thermal Paste	2.5
TP(HPTP)SKiM4	4	High Performance Thermal Paste	2.5
TP(HPTP)SKiM5	5	High Performance Thermal Paste	2.5
TP(HPTP)SKiM63	63	High Performance Thermal Paste	2.5
TP(HPTP)SKiM93	93	High Performance Thermal Paste	2.5
Standard Grease silicone based			
TP(P12)Mini0	0 II	Wacker P12	0.8
TP(P12)Mini1II.Gen	1 II	Wacker P12	0.8
TP(P12)Mini2I.Gen	2 I	Wacker P12	0.8
TP(P12)Mini2II. Gen	2 II	Wacker P12	0.8
TP(P12)Mini3I.Gen	3 I	Wacker P12	0.8
TP(P12)Mini3II.Gen	3 II	Wacker P12	0.8
TP(P12)Mini2 GB	2 II	Wacker P12	0.8
TP(P12)Mini3 GB	3 II	Wacker P12	0.8
TP(P12)Mini8AC	8 I AC	Wacker P12	0.8
TP(P12)Mini8AxB	8 I AB	Wacker P12	0.8
TP(P12)SEMITOP2	2	Wacker P12	0.8
TP(P12)SEMITOP3	3	Wacker P12	0.8
TP(P12)SEMITOP4	4	Wacker P12	0.8
TP(P12)SKiM4	4	Wacker P12	0.8
TP(P12)SKiM63	63	Wacker P12	0.8
TP(P12)SKiM93	93	Wacker P12	0.8
Phase Change Material			
TP(HALA P8) SEMiX 2s [2)]	2	HALA TPC-Z-PC-P8	3.4
TP(HALA P8) SEMiX 13	13	HALA TPC-Z-PC-P8	3.4
TP(HALA P8) SEMiX 3s	3s	HALA TPC-Z-PC-P8	3.4
TP(HALA P8) SEMiX 3p	3p	HALA TPC-Z-PC-P8	3.4
TP(HALA HT) SEMiX 3p [2)]	3p	HALA TPC-V-PC-P-HT	3.0
TP(HALA HT) SEMiX 4s [2)]	4	HALA TPC-V-PC-P-HT	3.0
TP(HALA P8) SEMiX 5p	5p	HALA TPC-Z-PC-P8	3.4
TP(HALA P8) SEMiX 33 [2)]	33	HALA TPC-Z-PC-P8	3.4
TP(HALA HT) SEMITRANS 2 [2)]	10	HALA TPC-V-PC-P-HT	3.0
TP(HALA P8) SEMITRANS 3	3	HALA TPC-Z-PC-P8	3.4
TP(HALA HT) SEMITRANS 10	10	HALA TPC-V-PC-P-HT	3.0
TP(HALA HT) SEMIPACK 2 [2)]	2	HALA TPC-V-PC-P-HT	3.0

Footnotes: 1) Sample status / 2) In production new

Accessories
Heatsinks / Fans

Heatsinks – SEMIKRON offers a wide range of heat sinks including forced and natural air cooling. The heatsinks are available for capsules, insulated base modules or IPMs.

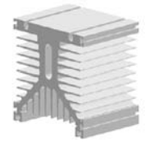
Fans – SEMIKRON offers a broad range of axial, centrifugal and radial fans for different inverter designs.

For detailed information please refer to data sheets.

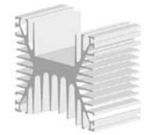
Further information
www.semikron.com/heatsinks
www.semikron.com/fans

Heatsinks

Forced air-cooled



Natural cooled



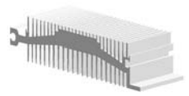
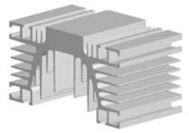
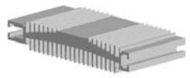
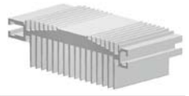
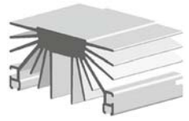
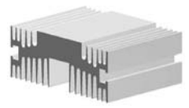
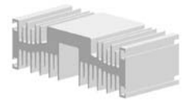
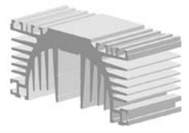
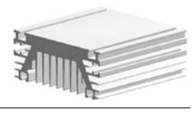
Fans

Axial

Centrifugal

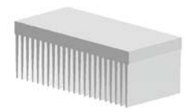
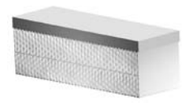
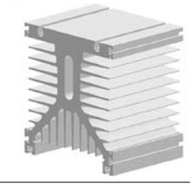
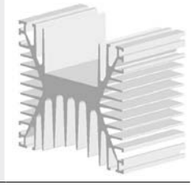
Radial

Accessories / Heatsinks

Type	Suitable for	R_{thsa} natural cooling K/W	R_{thsa} forced air cooling K/W	Weight kg	Weight kg/m	Produkt Picture
Forced-air cooled						
N 4	Capsules	-	0.04	6.3	25.1	
P 11	Capsules	0.2	0.05	3.8	15	
P 17	Capsules	0.45	0.12	1.5	10.6	
P 18	Capsules	0.37	0.08	1.6	12.2	
P 8[9)]	Capsules	0.35	0.07	1.7	9.6	
P 8,5[9)]	Capsules	0.3	0.08	1.5	9.5	
P 9[9)]	Capsules	0.21	0.06	4.1	17.8	
U 3	Capsules	0.14	0.06	7.1	23.7	
P 21[9)]	Isolated base modules	-	0.02	4.1	40.8	
R 4A	Isolated base modules	1.4	0.38	0.6	-	

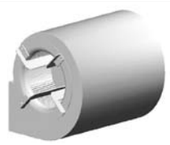
Footnotes: 9) Non standard item, available on request only, typical minimum batch quantities of 60 pieces will apply

Accessories / Heatsinks

Type	Suitable for	R_{thsa} natural cooling K/W	R_{thsa} forced air cooling K/W	Weight kg	Weight kg/m	Produkt Picture
Forced-air cooled						
P 16	SKiiP or modules	-	0.06	1.3	23.5	
Px 308[9)]	SKiiP or modules	-	0.013	2	12.2	
P 1	Studs or modules	0.7	0.4	0.8	11.3	
P 3	Isolated base modules	0.45	0.14	0.7	17.6	
Natural cooled						
P 4[9)]	Stud device	0.27	-	4.1	20.6	

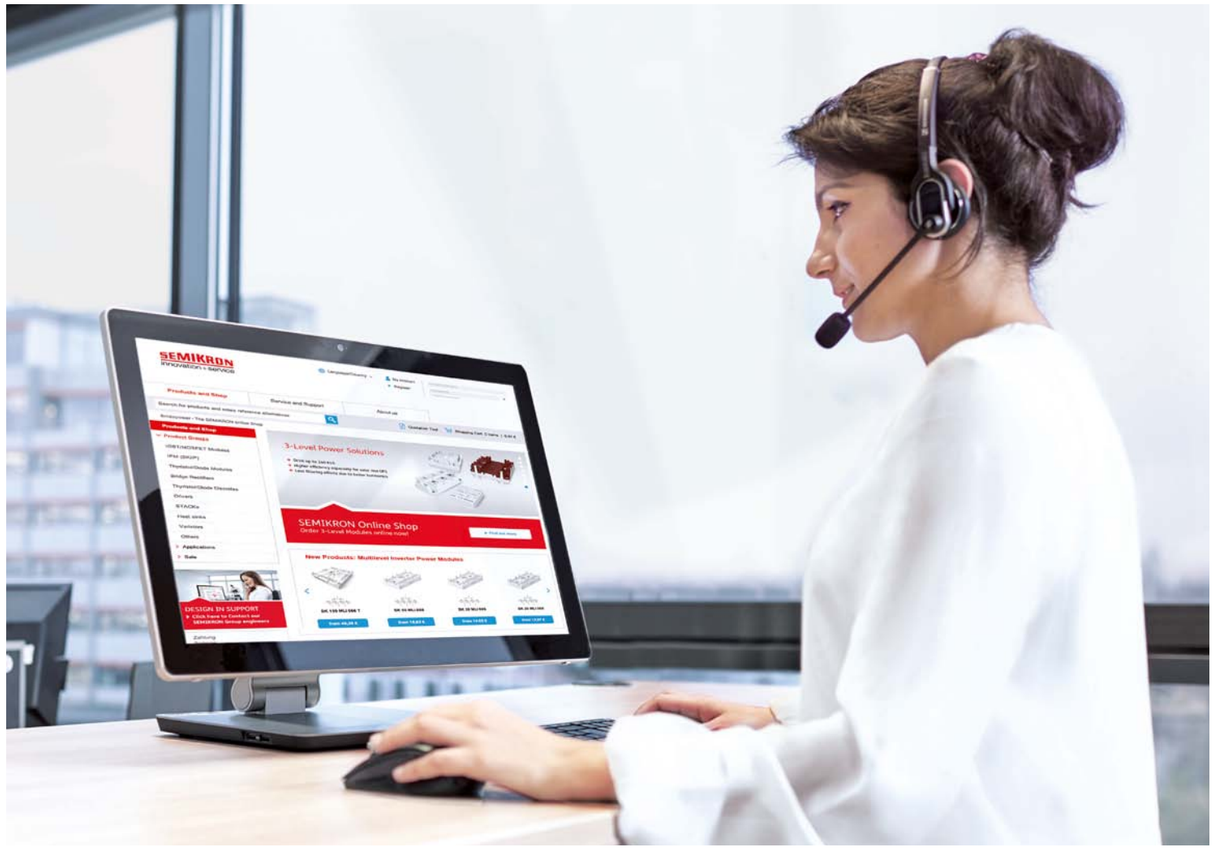
Footnotes: 9) Non standard item, available on request only, typical minimum batch quantities of 60 pieces will apply

Accessories / Fans

Type	V_{in}	f	V_{air}/t	P_{max}	T_{Amax}	Weight	Noise	Produkt Picture
	V	Hz	m³/h	W	°C	kg	dB	
Axial Fans								
SKF 3-230-01	230	50 / 60	150 / 174	15 / 14	70	0.55	37 / 41	
SKF RE-024-01	24	-	500	90	75	0.43	76	
SKF SR-024-01	24	-	56	3.6	70	0.085	43	
SKF 9-230-01	230	50 / 60	375 / 440	24 / 26	70	1	54 / 60	
SKF 8-230-01	230	50 / 60	325 / 380	45 / 39	50 / 70	1.1	49 / 53	
Centrifugal Fans								
SKF 17A-230-11	230	50 / 60	850 / 930	110 / 120	70	2	74	
SKF 17B-230-12	230	50 / 60	1175 / 1300	230	70	6.1	73 / 76	
Radial Fans								
SKF 16A-230-01	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	
SKF 16P-230-01	230	50 / 60	1125	165	60	3.9	-	
SKF 16B-230-01	230	50 / 60	640 / 580	167 / 191	70 / 50	3.75	58 / 57	
SKF 16A-230-11	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	

Services

Contact



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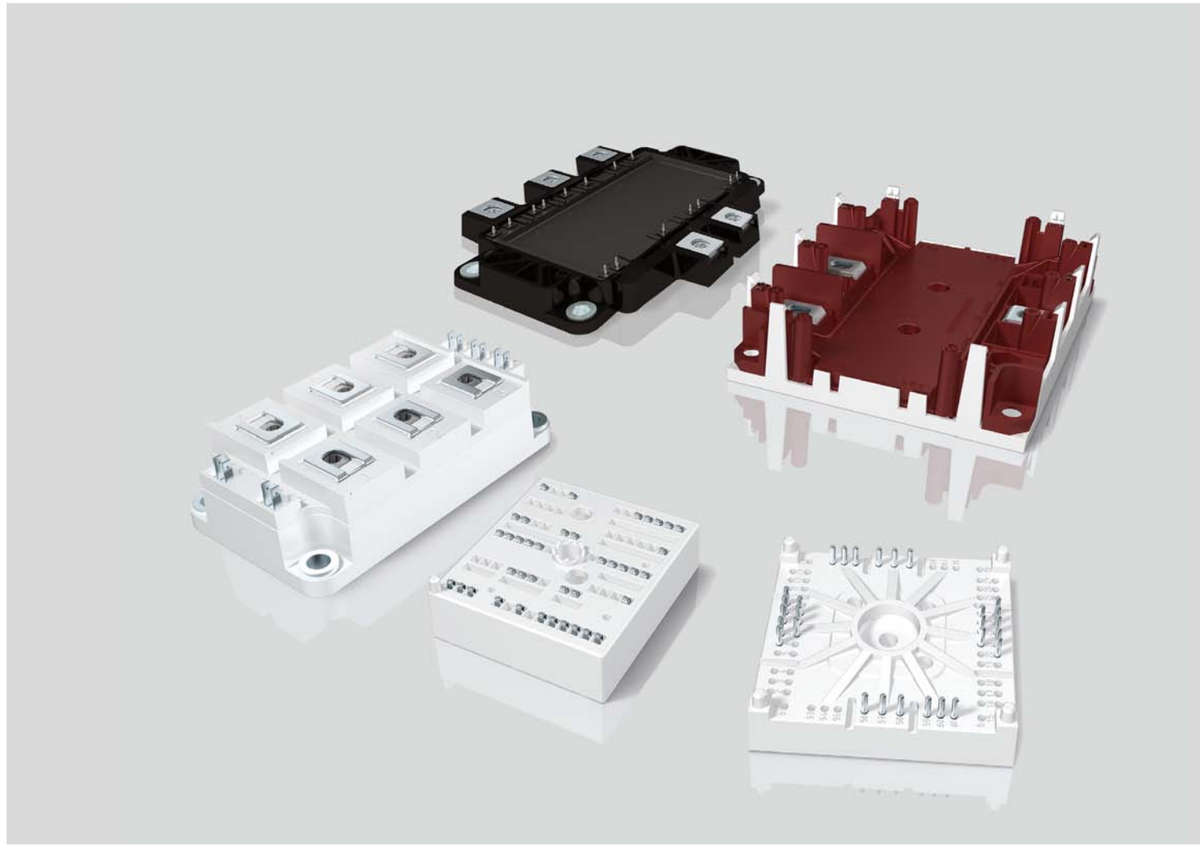

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SEMIKRON develops innovative power electronics products for space saving, energy efficient electronic systems. Our power modules are the heart of modern, energy efficient motor drives and industrial automation systems. Also in the areas of power supplies, the production of renewable energy and electric commercial vehicles our products pave the way for the reduction of global energy consumption. Our success is based on close cooperation and technical dialogue between our application engineers, product managers and our customers.

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SemiSel Simulation
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Applications

SemiSel is the SEMIKRON online calculation and simulation tool for losses, temperatures and optimal choice of power electronic components (www.semikron.com). The days when a module was purchased solely on the basis of its nominal current are over. Today, increased product diversity in the field of power semiconductors calls for comparisons beyond the information contained in data sheets. Only a comparison under application-oriented conditions, such as voltage level, switching frequency or cooling conditions, can demonstrate differences in the performance of the devices available. Miniaturisation combined with higher power densities makes it essential to get information about device losses and temperatures to specify requirements for a cooling system at an early stage of product development.

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Converters for all types of electric motors utilized in industry. SEMIKRON power semiconductors help to maximize efficiency in any 2 or 4-quadrant drive or servo.

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Available in German, English, Chinese and Japanese

Application Manual Power Semiconductors

IGBTs and MOSFETs integrated in power modules are the key components of power electronic circuits today and are continuously finding their way into new fields of application. This goes hand in hand with the ever increasing call for line rectifier diodes and thyristors as a cost effective way of connecting the circuits to the power grid. The aim of the application manual is to provide users with support in selecting and using such devices.

The manual contains basic background knowledge on semiconductors in order to enable a better understanding of application possibilities and limits. More in-depth explanations are given on packaging and assembly technologies, because of the major influence they have on module properties and limitations in field applications. The manual also includes statements on reliability data, life cycle analyses and key test processes.

The Application Manual also explains the structure of datasheets and provides notes to help users better understand datasheet parameters. The Application Manual contains detailed application-related information on electrical configuration under important operating conditions, driver and protection elements for semiconductors, thermal dimensioning and cooling, tips on parallel and series connection, assembly tips for optimized power layouts with regard to parasitic elements and the requirements arising from specific ambient conditions.

This book is written for users and provides help with component selection and design-in work. It couples a vast wealth of experience with detailed practical knowledge, the result being a vast pool of information which up till now has been spread across various individual articles or in the minds of experts only. The second revised edition was published in 2015.

Abbreviations

Acronym	English
E_{off}	Energy dissipation during turn-off
E_{on}	Energy dissipation during turn-on
E_{rr}	Energy dissipation during reverse recovery (diode)
f	Operating frequency
f_{max}	Maximum frequency
I_C	Continuous collector current
I_{Cnom}	Nominal collector current
I_D	Direct output current (of a rectifier connection)
I_D	Continuous drain current (MOSFET)
I_F	Forward current (actual value)
I_{FAV}	Mean forward current
I_{FSM}	Surge forward current
I_{GT}	Minimum guaranteed gate trigger current
$I_{outPEAK}$	Output peak current (driver)
$I_{overload}$	Overload current for a specified time
i_T	On-State current (instantaneous value)
I_{TAV}	Mean on-state current
I_{TSM}	Surge on-state curren
$Q_{out/pulse}$	Output charge per pulse (Driver)
Q_{rr}	Reverse recovery charge
$R_{DS(on)}$	Drain-source on-resistance (MOSFET)
r_T	On-state slope resistance, forward slope resistance (Thyristor)

Acronym	English
$R_{th(c-s)}$	Thermal resistance case to heat sink
$R_{th(j-a)}$	Thermal resistance junction to ambient
$R_{th(j-c)}$	Thermal resistance junction to case
$R_{th(j-s)}$	Thermal resistance junction to sink
$R_{th(s-a)}$	Thermal resistance heat sink to ambient
T_c	Case temperature
T_j	Junction temperature
t_q	Circuit commutated turn-off time (thyristor)
T_s	Heatsink temperature
V_{air}/t	Air flow
V_{CE}	Collector-emitter voltage
V_{CEsat}	Collector-emitter saturation voltage
V_{DRM}	Repetitive peak off-state voltage
V_{DS}	Drain-source voltage
V_F	Forward voltage
$V_{G(off)}$	Turn-off gate voltage level (driver)
$V_{G(on)}$	Turn-on gate voltage level (driver)
V_{GT}	Gate trigger voltage
V_{in}	Input voltage
$V_{isol(IO)}$	Isolation test voltage (r.m.s. /1 min.) input-output (driver)
V_{RRM}	Repetitive peak reverse voltage
V_T	On-state voltage (Thyristor)
W	Weight

465 Pages of
Acquired Knowledge

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