

MiniSKiiP[®]0

3-phase bridge inverter

SKiiP 02AC066V1

Preliminary Data

Features

- Trench IGBTs
- · Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

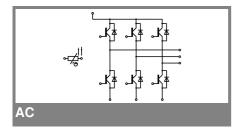
- Inverter up to 5 kVA
- Typical motor power 2,2 kW

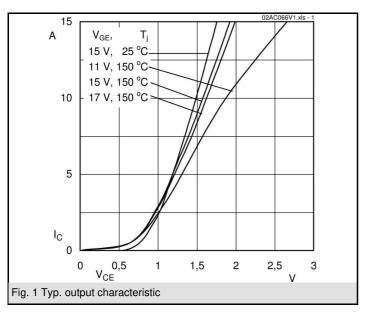
Remarks

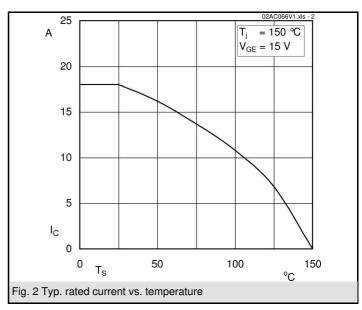
- Case temperature limited to T_C= 125°C max., product reliability results are valid for T_j = 150°C
- SC data: $t_p \le 6$ s; $V_{GE} \le 15$ V; T_j = 150°C; V_{CC} = 360 V V_{CEsat} , V_F = chip level value Temp. Sensor: No basic
- insulation to main circuit, max. potential difference 850V to -DC

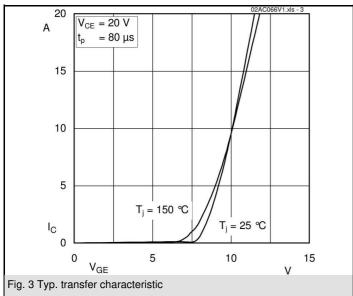
Absolute Maximum Ratings T _S = 25 °C, unless otherwise specifi								
Symbol	Conditions	Values						
IGBT - Inverter								
V_{CES}		600	V					
I _C	T _s = 25 (70) °C ,T _i = 150 °C	17 (14)	Α					
I _C	$T_s = 25 (70) ^{\circ}C , T_i = 175 ^{\circ}C$	20 (16)	Α					
I _{CRM}	t _p = 1 ms	20	Α					
V_{GES}		±20	V					
T_j		-40+175	°C					
Diode - Inverter								
I _F	$T_s = 25 (70) ^{\circ}C$, $T_i = 150 ^{\circ}C$	20 (15)	Α					
I _F	$T_s = 25 (70) ^{\circ}C , T_i = 175 ^{\circ}C$	20 (18)	Α					
I _{FRM}	t _p = 1 ms	20	Α					
T_j		-40+175	°C					
I _{tRMS}	per power terminal (20 A / spring)	20	Α					
T _{stg}	$T_{op} \le T_{stg}$	-40+125	°C					
V _{isol}	AC, 1 min.	2500	V					

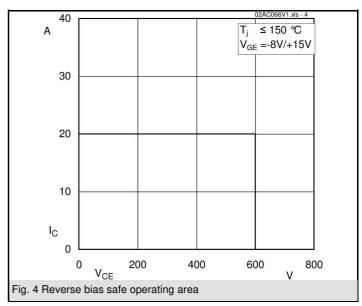
Characteristics T _S = 25 °C, unless otherwise specification								
Symbol	Conditions	min.	typ.	max.	Units			
IGBT - Inverter								
V _{CEsat}	$I_{Cnom} = 10 \text{ A}, T_j = 25 (150) ^{\circ}\text{C}$	1,1	1,45 (1,65)	1,85 (2,05)	V			
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 1 \text{ mA}$		5,8		V			
V _{CE(TO)}	T _j = 25 (150) °C		0,9 (0,7)	1,1 (1)	V			
r _T	$T_{j} = 25 (150) ^{\circ}C$		60 (100)	80 (110)	mΩ			
C _{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,58		nF			
C _{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,12		nF			
C _{res}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,06		nF			
R _{CC'+EE'}	spring contact-chip T _s = 25 (150)°C				mΩ			
$R_{th(j-s)}$	per IGBT		2		K/W			
t _{d(on)}	under following conditions		28		ns			
t _r	$V_{CC} = 300 \text{ V}, V_{GE} = -15 \text{V} + 15 \text{V}$		30		ns			
t _{d(off)}	I _{Cnom} = 10 A, T _j = 150 °C		190		ns			
t _f	$R_{Gon} = R_{Goff} = 39 \Omega$		37		ns			
$E_{on}(E_{off})$	inductive load		0,45 (0,3)		mJ			
Diode - Inverter								
$V_F = V_{EC}$	$I_{Fnom} = 10 \text{ A}, T_i = 25 (150) ^{\circ}\text{C}$		1,3 (1,3)	1,6 (1,6)	V			
V _(TO)	T _i = 25 (150) °C		0,9 (0,8)	1 (0,9)	V			
r _T	T _j = 25 (150) °C		40 (50)	60 (70)	mΩ			
$R_{th(j-s)}$	per diode		2,5		K/W			
I _{RRM}	under following conditions		13,5		Α			
Q_{rr}	I _{Fnom} = 10 A, V _R = 300 V		1,3		С			
E _{rr}	V _{GE} = 0 V, T _i = 150 °C		0,3		mJ			
	$di_{F}/dt = 600 \text{ A/ s}$							
Temperature Sensor								
R _{ts}	3 %, T _r = 25 (100) °C		1000(1670)		Ω			
Mechanical Data								
m			21,5		g			
M_s	Mounting torque	2		2,5	Nm			

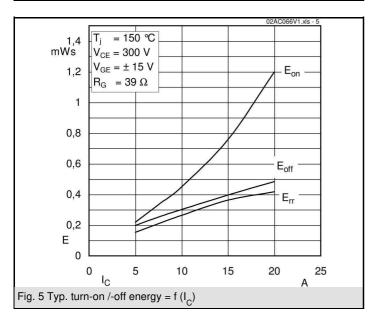


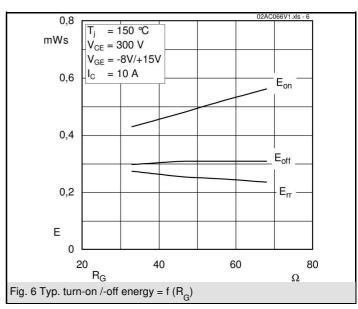


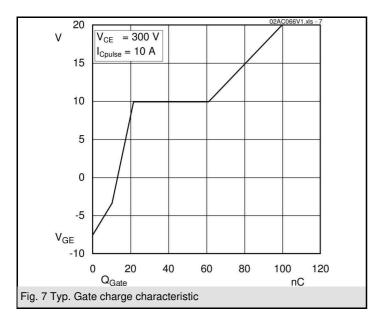


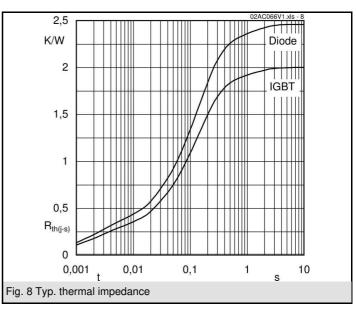


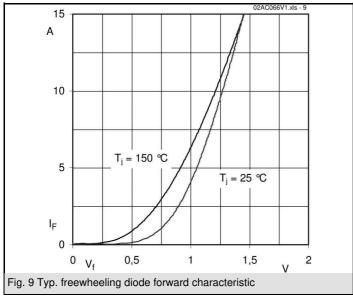


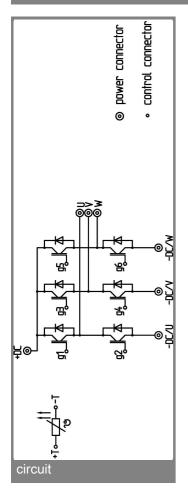


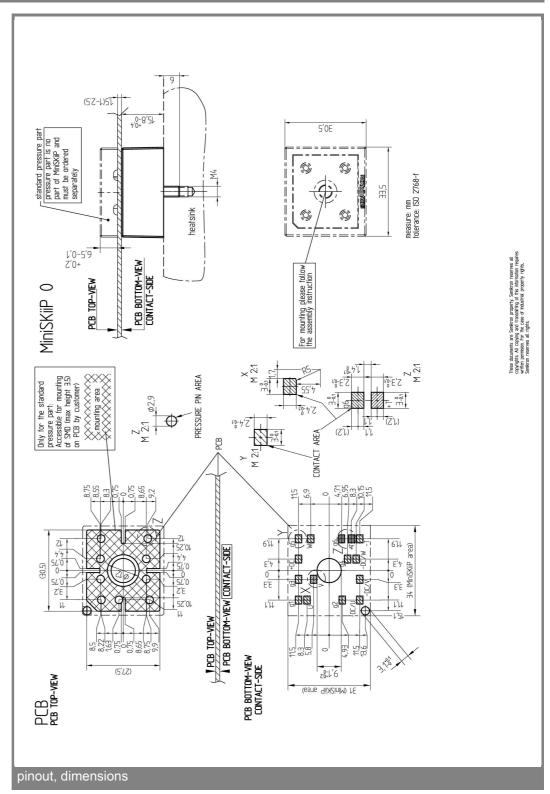












This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.