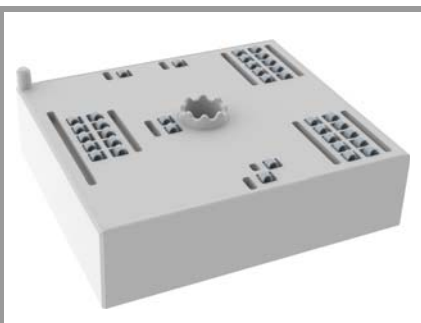


SKiiP 26GB12F4V1



MiniSKiiP® 2 Dual

Half-Bridge

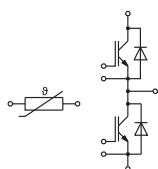
SKiiP 26GB12F4V1

Features*

- Fast Trench 4 IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised: File no. E63532
- NTC T-Sensor

Remarks

- Max. case temperature limited to $T_C = 125^\circ\text{C}$
- Product reliability results valid for $T_j \leq 150^\circ\text{C}$ (recommended $T_{j,op} = -40 \dots +150^\circ\text{C}$)

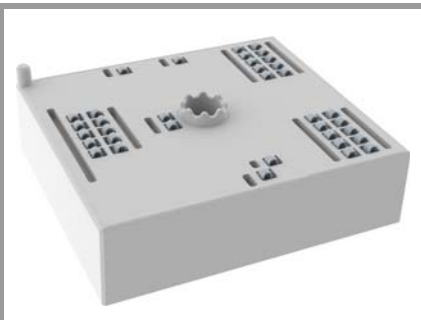


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Absolute Maximum Ratings				
Symbol	Conditions		Values	Unit
Inverter - IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$		1200	V
I_C	$\lambda_{paste}=0.8 \text{ W/(mK)}$	$T_s = 25^\circ\text{C}$	197	A
		$T_j = 175^\circ\text{C}$	158	A
I_C	$\lambda_{paste}=2.5 \text{ W/(mK)}$	$T_s = 25^\circ\text{C}$	257	A
		$T_j = 175^\circ\text{C}$	208	A
I_{Cnom}			200	A
I_{CRM}			400	A
V_{GES}			-20 ... 20	V
t_{psc}	$V_{CC} = 800 \text{ V}$ $V_{GE} \leq 15 \text{ V}$ $V_{CES} \leq 1200 \text{ V}$	$T_j = 150^\circ\text{C}$	10	μs
T_j			-40 ... 175	$^\circ\text{C}$
Inverse - Diode				
I_F	$\lambda_{paste}=0.8 \text{ W/(mK)}$	$T_s = 25^\circ\text{C}$	194	A
		$T_j = 175^\circ\text{C}$	154	A
I_F	$\lambda_{paste}=2.5 \text{ W/(mK)}$	$T_s = 25^\circ\text{C}$	219	A
		$T_j = 175^\circ\text{C}$	174	A
I_{FRM}			400	A
I_{FSM}	10 ms, sin 180°, $T_j = 150^\circ\text{C}$		990	A
T_j			-40 ... 175	$^\circ\text{C}$
Module				
$I_{t(RMS)}$	$T_{terminal} = 80^\circ\text{C}$, 20 A per spring		200	A
T_{stg}	module without TIM		-40 ... 125	$^\circ\text{C}$
V_{isol}	AC sinus 50 Hz, $t = 1 \text{ min}$		2500	V

Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverter - IGBT						
$V_{CE(sat)}$	$I_C = 200 \text{ A}$ $V_{GE} = 15 \text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	2.05	2.42		V
		$T_j = 150^\circ\text{C}$	2.59	2.96		V
V_{CE0}	chipelevel	$T_j = 25^\circ\text{C}$	1.10	1.28		V
		$T_j = 150^\circ\text{C}$	0.95	1.13		V
r_{CE}	$V_{GE} = 15 \text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$	4.8	5.7		$\text{m}\Omega$
		$T_j = 150^\circ\text{C}$	8.2	9.2		$\text{m}\Omega$
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 7.6 \text{ mA}$		5.2	5.8	6.4	V
I_{CES}	$V_{GE} = 0 \text{ V}$, $V_{CE} = 1200 \text{ V}$, $T_j = 25^\circ\text{C}$				2.0	mA
C_{ies}	$V_{CE} = 25 \text{ V}$ $V_{GE} = 0 \text{ V}$	$f = 1 \text{ MHz}$	12.30			nF
C_{oes}		$f = 1 \text{ MHz}$	0.81			nF
C_{res}		$f = 1 \text{ MHz}$	0.69			nF
Q_G	$V_{GE} = -8 \text{ V} \dots +15 \text{ V}$		1134			nC
R_{Gint}	$T_j = 25^\circ\text{C}$		3.8			Ω
$t_{d(on)}$	$V_{CC} = 600 \text{ V}$	$T_j = 150^\circ\text{C}$	167			ns
t_r	$I_C = 200 \text{ A}$ $R_{G on} = 2 \Omega$	$T_j = 150^\circ\text{C}$	52			ns
		$T_j = 150^\circ\text{C}$	16.8			mJ
E_{on}	$R_{G off} = 2 \Omega$	$T_j = 150^\circ\text{C}$	16.8			mJ
$t_{d(off)}$	$di/dt_{on} = 4100 \text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	414			ns
t_f	$di/dt_{off} = 2500 \text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$	52			ns
E_{off}	$V_{GE} = +15/-15 \text{ V}$	$T_j = 150^\circ\text{C}$	16.3			mJ
$R_{th(j-s)}$	per IGBT, $\lambda_{paste}=0.8 \text{ W/(mK)}$		0.25			K/W
$R_{th(j-s)}$	per IGBT, $\lambda_{paste}=2.5 \text{ W/(mK)}$		0.16			K/W

SKiiP 26GB12F4V1



MiniSKiiP® 2 Dual

Half-Bridge

SKiiP 26GB12F4V1

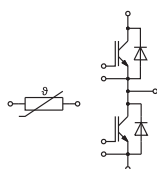
Features*

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- Max. case temperature limited to $T_C=125^\circ\text{C}$
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Characteristics						
Symbol	Conditions		min.	typ.	max.	Unit
Inverse - Diode						
$V_F = V_{EC}$	$I_F = 200 \text{ A}$ $V_{GE} = 0 \text{ V}$ chipelevel	$T_j = 25^\circ\text{C}$		2.20	2.52	V
		$T_j = 150^\circ\text{C}$		2.15	2.47	V
V_{F0}	chipelevel	$T_j = 25^\circ\text{C}$		1.30	1.50	V
		$T_j = 150^\circ\text{C}$		0.90	1.10	V
r_F	chipelevel	$T_j = 25^\circ\text{C}$		4.5	5.1	m Ω
		$T_j = 150^\circ\text{C}$		6.3	6.9	m Ω
I_{RRM}	$I_F = 200 \text{ A}$	$T_j = 150^\circ\text{C}$		189		A
Q_{rr}	$di/dt_{off} = 3840 \text{ A}/\mu\text{s}$	$T_j = 150^\circ\text{C}$		28.7		μC
E_{rr}	$V_{GE} = -15 \text{ V}$ $V_{CC} = 600 \text{ V}$	$T_j = 150^\circ\text{C}$		11.7		mJ
$R_{th(j-s)}$	per Diode, $\lambda_{paste}=0.8 \text{ W}/(\text{mK})$			0.34		K/W
$R_{th(j-s)}$	per Diode, $\lambda_{paste}=2.5 \text{ W}/(\text{mK})$			0.28		K/W
Module						
L_{CE}				20		nH
M_s	to heat sink		2		2.5	Nm
W				50		g
Temperature Sensor						
R_{100}	$T_c=100^\circ\text{C}$ ($R_{25}=5 \text{ k}\Omega$)			$493 \pm 5\%$		Ω
$B_{25/85}$	$R(T)=R_{25} \cdot \exp[B_{25/85} \cdot (1/T-1/298)]$, T[K]			3420		K



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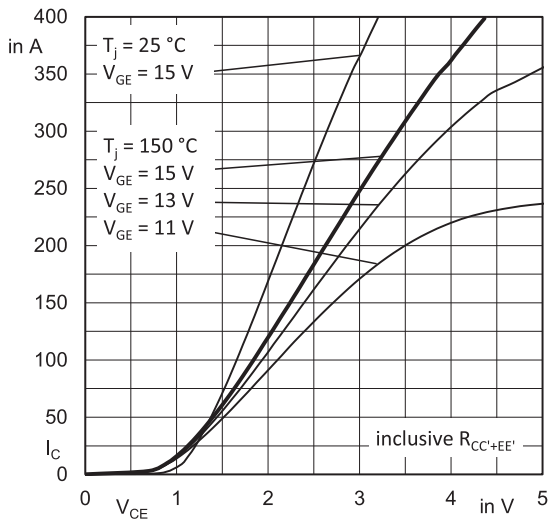


Fig. 1: Typ. output characteristic

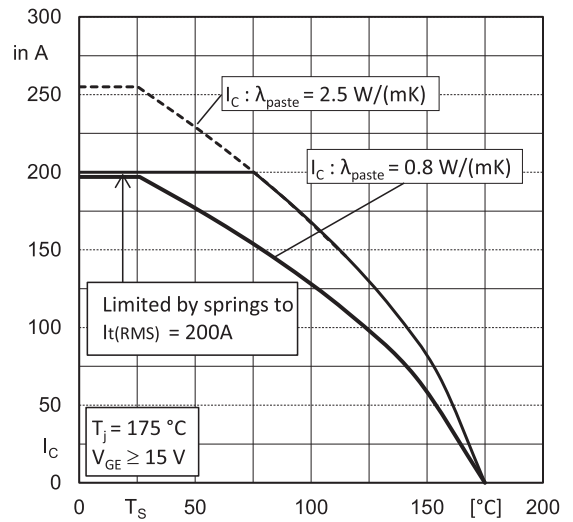


Fig. 2: Rated current vs. temperature $I_C = f(T_S)$

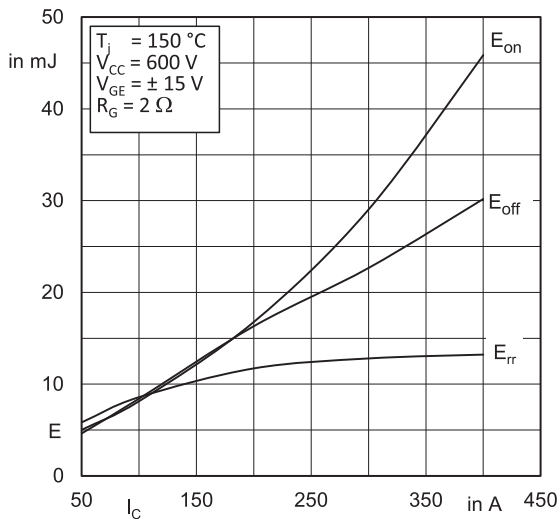


Fig. 3: Typ. turn-on /-off energy = $f(I_C)$

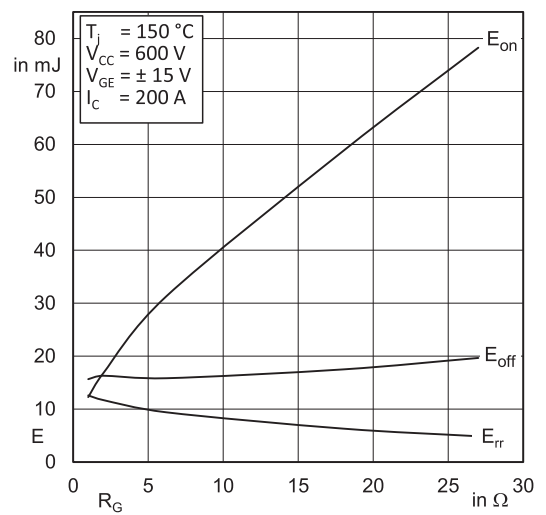


Fig. 4: Typ. turn-on /-off energy = $f(R_G)$

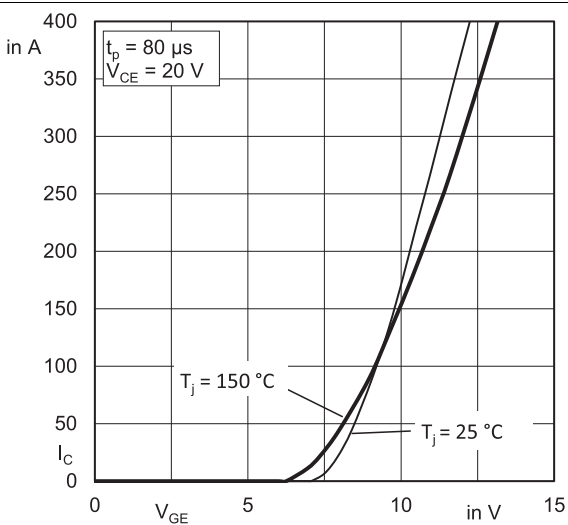


Fig. 5: Typ. transfer characteristic

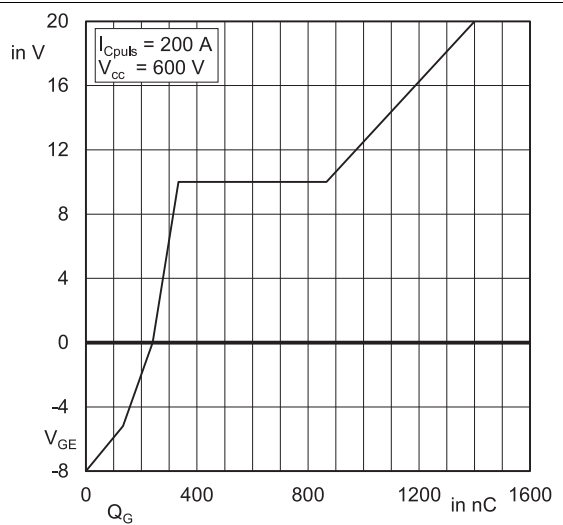
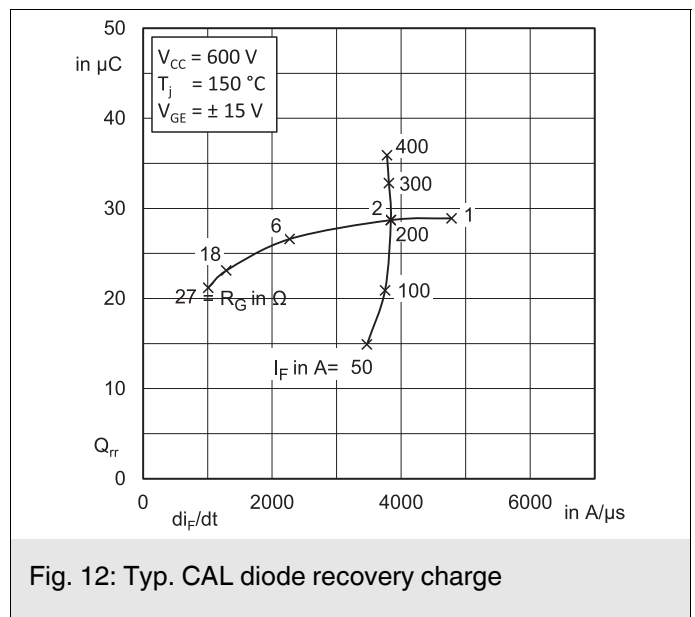
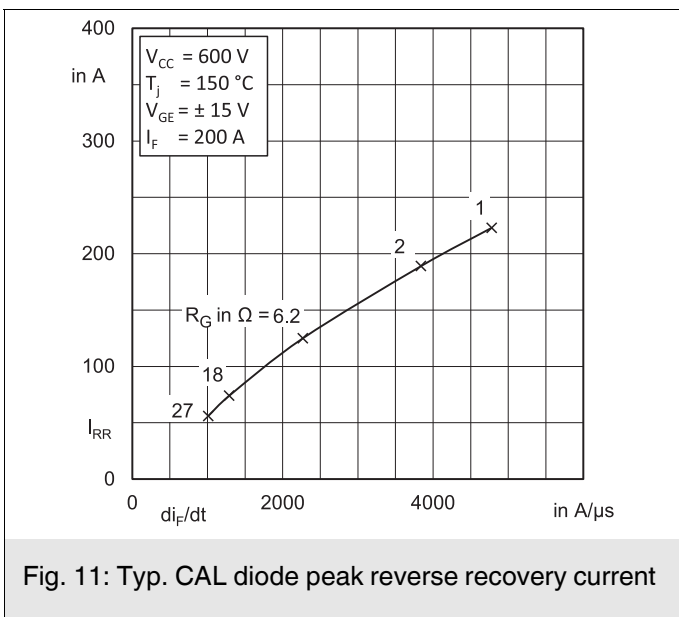
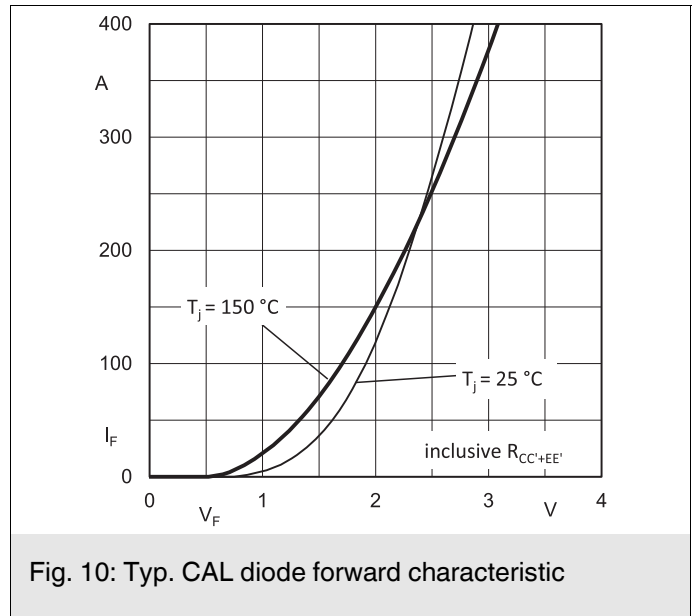
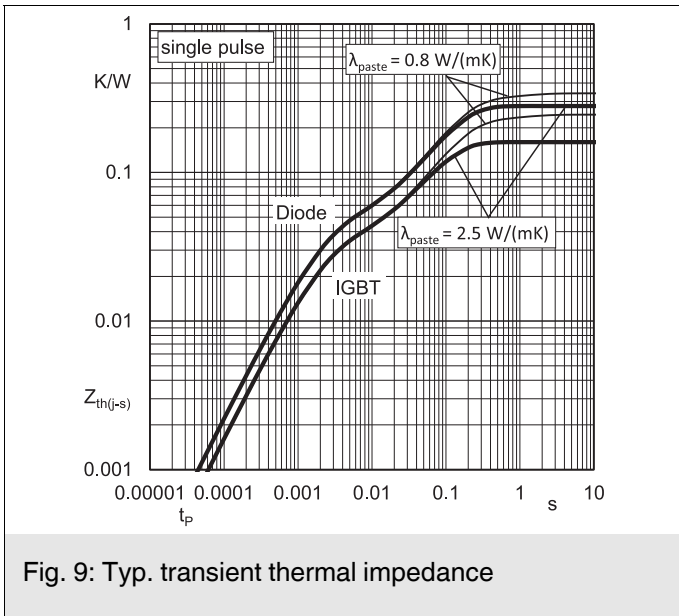
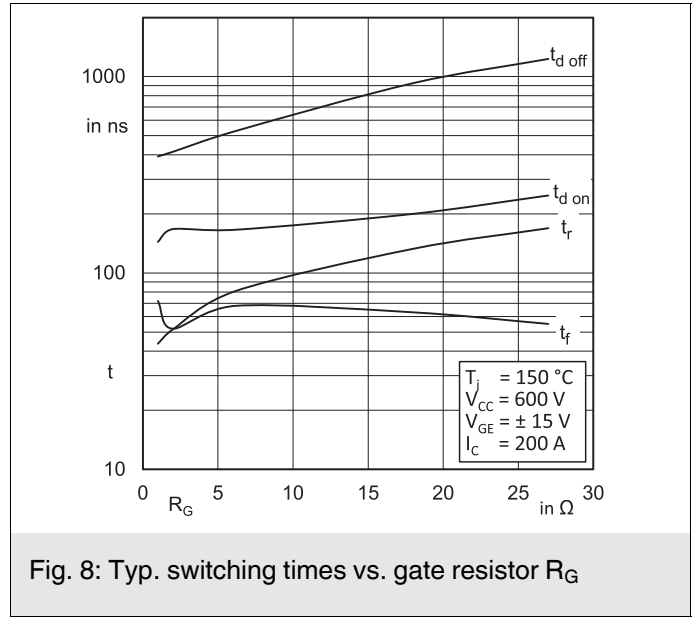
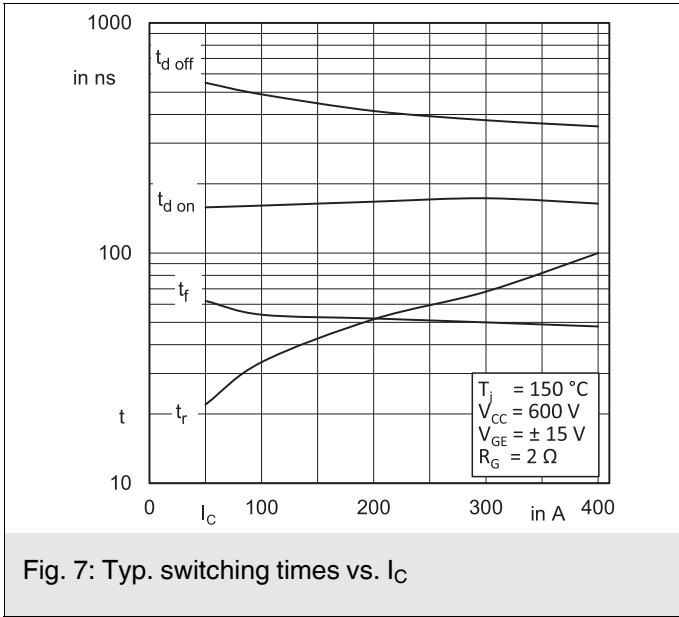
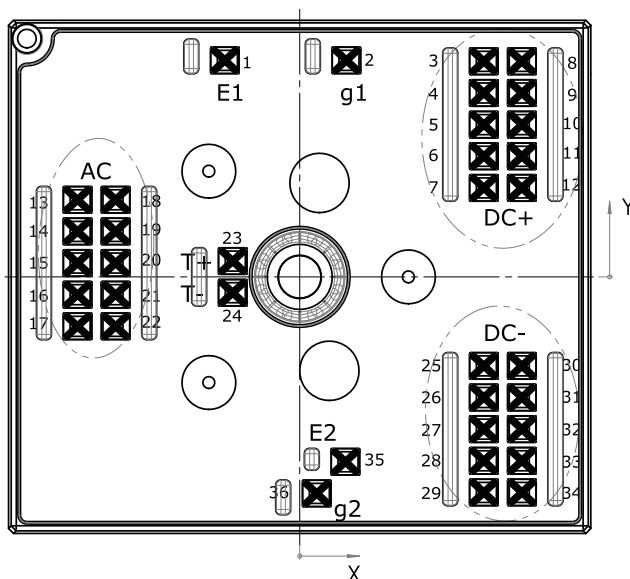


Fig. 6: Typ. gate charge characteristic

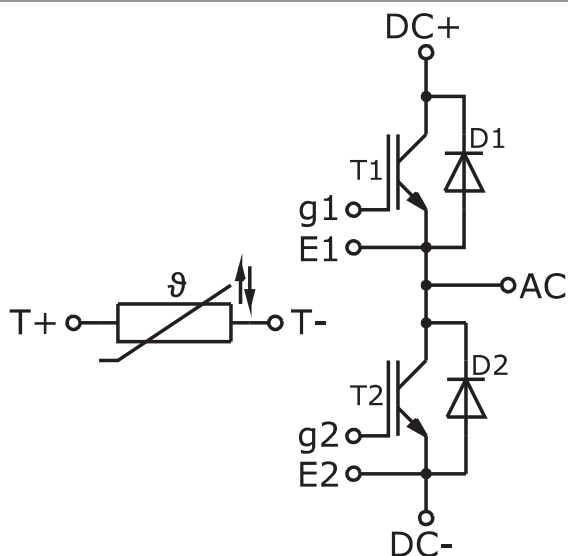


Pin out							
Pin	X	Y	Function	Pin	X	Y	Function
1	-7,58	21,9	E1	19	-18,63	4,6	AC
2	4,73	21,9	g1	20	-18,63	1,4	AC
3	18,63	21,8	DC+	21	-18,63	-1,8	AC
4	18,63	18,6	DC+	22	-18,63	-5	AC
5	18,63	15,4	DC+	23	-6,78	1,6	T+
6	18,63	12,2	DC+	24	-6,78	-1,6	T-
7	18,63	9	DC+	25	18,63	-9	DC-
8	22,48	21,8	DC+	26	18,63	-12,2	DC-
9	22,48	18,6	DC+	27	18,63	-15,4	DC-
10	22,48	15,4	DC+	28	18,63	-18,6	DC-
11	22,48	12,2	DC+	29	18,63	-21,8	DC-
12	22,48	9	DC+	30	22,48	-9	DC-
13	-22,48	7,8	AC	31	22,48	-12,2	DC-
14	-22,48	4,6	AC	32	22,48	-15,4	DC-
15	-22,48	1,4	AC	33	22,48	-18,6	DC-
16	-22,48	-1,8	AC	34	22,48	-21,8	DC-
17	-22,48	-5	AC	35	4,63	-18,7	E2
18	-18,63	7,8	AC	36	1,73	-21,9	g2

all values in [mm]



Pinout and Dimensions



Pinout

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.

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