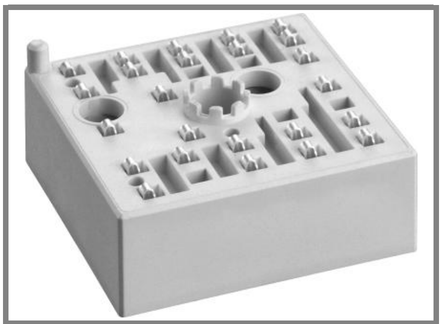
SKiiP 13AC126V1



MiniSKiiP® 1

3-phase bridge inverter

SKiiP 13AC126V1

Features

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

Typical Applications*

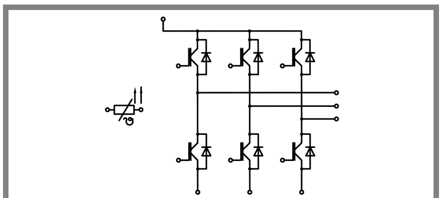
- Inverter up to 16 kVA
- Typical motor power 7.5 kW

Remarks

- V_{CEsat} , V_F= chip level value

Absolute Maximum Ratings		T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter			
V_{CES}		1200	V
I_C	T_s = 25 (70) °C	41 (31)	A
I_{CRM}	$t_p \leq$ 1 ms	50	A
V_{GES}		± 20	V
T_j		- 40 ... + 150	°C
Diode - Inverter			
I_F	T_s = 25 (70) °C	30 (22)	A
I_{FRM}	$t_p \leq$ 1 ms	50	A
T_j		- 40 ... + 150	°C
I_{tRMS}	per power terminal (20 A / spring)	40	A
T_{stg}	$T_{op} \leq T_{stg}$	- 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics			T_s = 25 °C, unless otherwise specified		
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter					
V_{CEsat}	I_{Cnom} = 25 A, T_j = 25 (125) °C		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 1 mA	5	5,8	6,5	V
$V_{CE(TO)}$	T_j = 25 (125) °C		1 (0,9)	1,2 (1,1)	V
r_T	T_j = 25 (125) °C		28 (44)	36 (52)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1,8		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,3		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,2		nF
$R_{th(j-s)}$	per IGBT		0,9		K/W
$t_{d(on)}$	under following conditions		95		ns
t_r	V_{CC} = 600 V, V_{GE} = ± 15 V		35		ns
$t_{d(off)}$	I_{Cnom} = 25 A, T_j = 125 °C		455		ns
t_f	$R_{Gon} = R_{Goff}$ = 30 Ω		85		ns
E_{on}	inductive load		4,1		mJ
E_{off}			3,1		mJ
Diode - Inverter					
$V_F = V_{EC}$	I_{Fnom} = 25 A, T_j = 25 (125) °C		1,8 (1,8)	2,1 (2,2)	V
$V_{(TO)}$	T_j = 25 (125) °C		1 (0,8)	1,1 (0,9)	V
r_T	T_j = 25 (125) °C		32 (40)	40 (52)	mΩ
$R_{th(j-s)}$	per diode		1,7		K/W
I_{RRM}	under following conditions		25		A
Q_{rr}	I_{Fnom} = 25 A, V_R = 600 V		5,3		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		2,2		mJ
	di_F/dt = 1140 A/µs				
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
m			35		g
M_s	Mounting torque	2		2,5	Nm



AC

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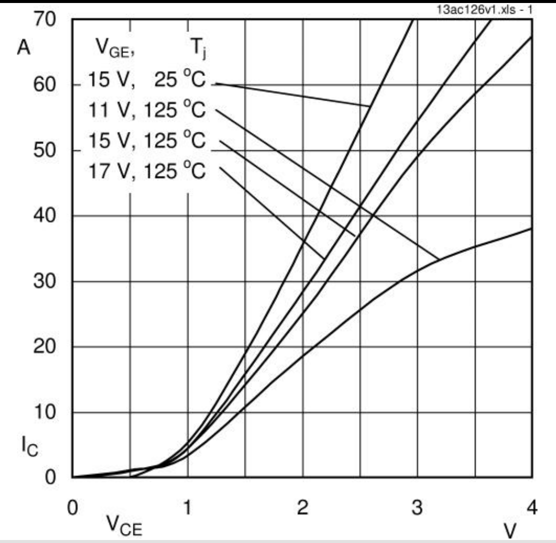

Fig. 1 Typ. output characteristic

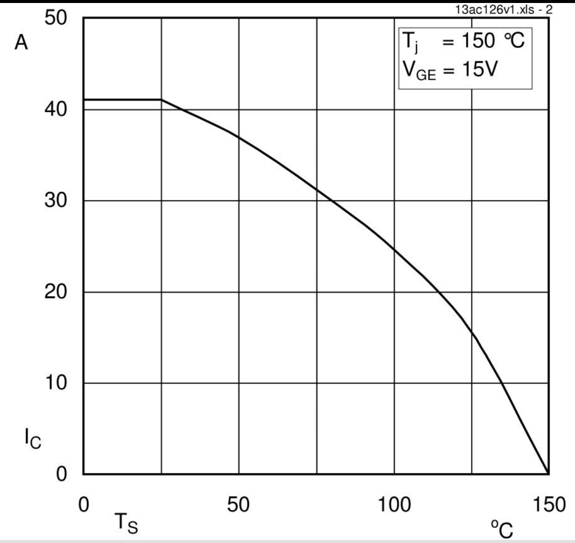

Fig. 2 Typ. rated current vs. temperature

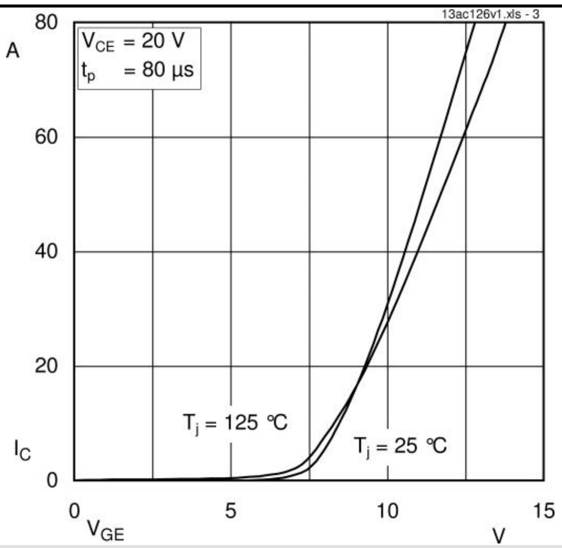

Fig. 3 Typ. transfer characteristic

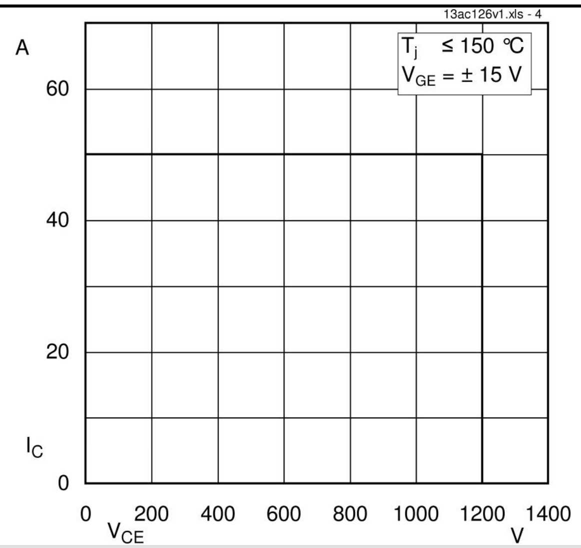

Fig. 4 Reverse bias safe operating area

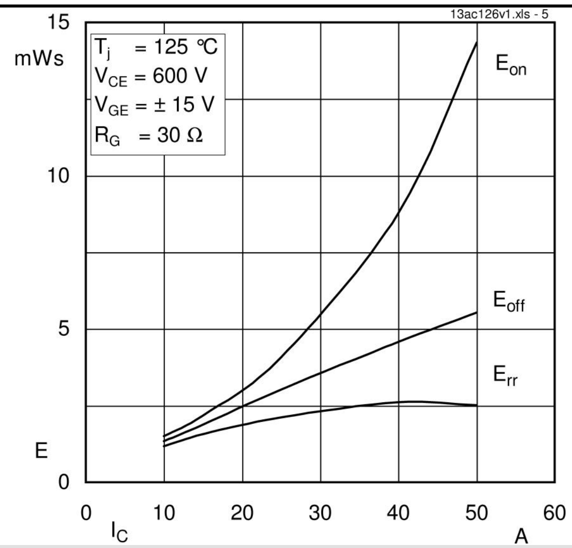

Fig. 5 Typ. Turn-on /-off energy = f (I_C)

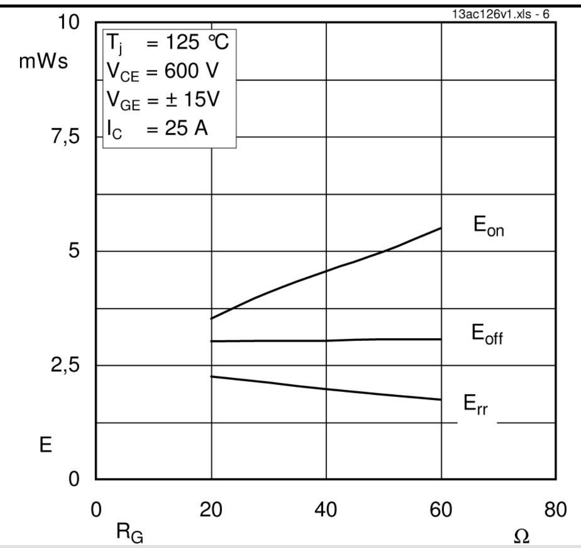

Fig. 6 Typ. Turn-on /-off energy = f (R_G)

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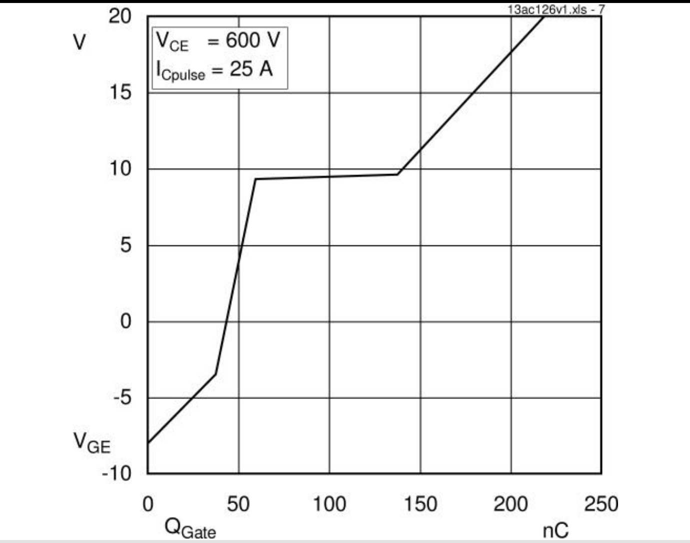

Fig. 7 Typ. gate charge characteristic

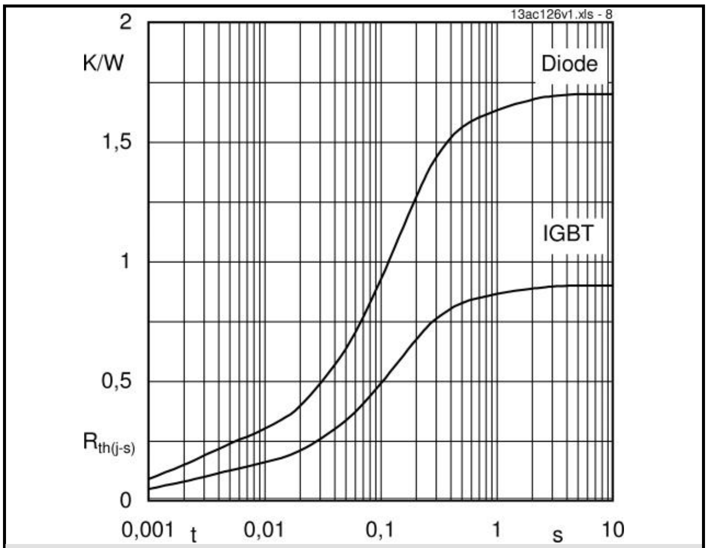

Fig. 8 Typ. thermal impedance

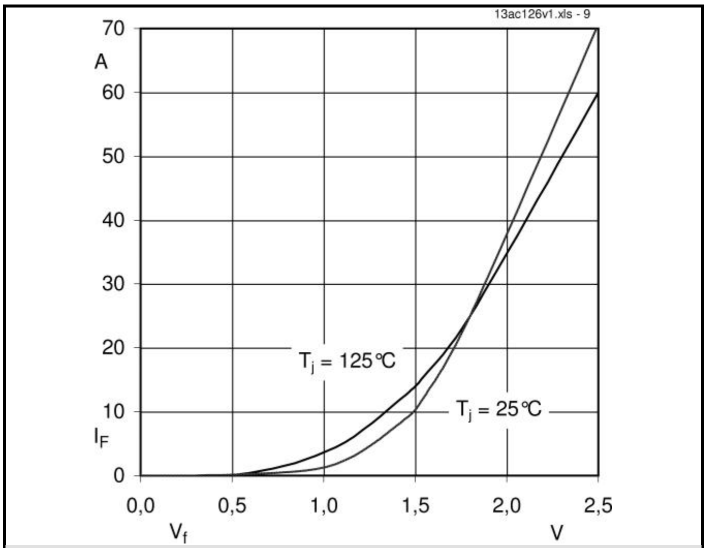

Fig. 9 Typ. freewheeling diode forward characteristic

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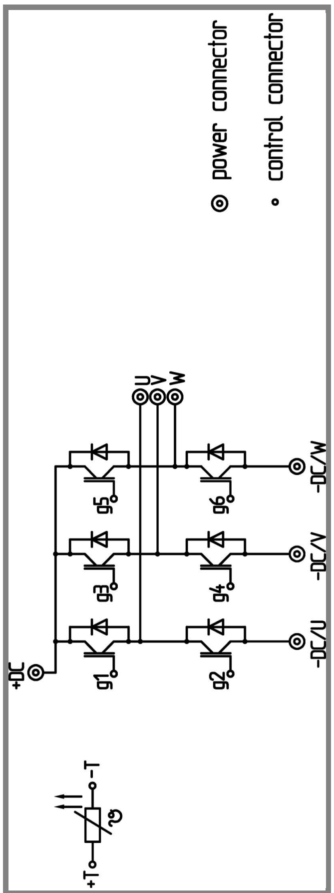
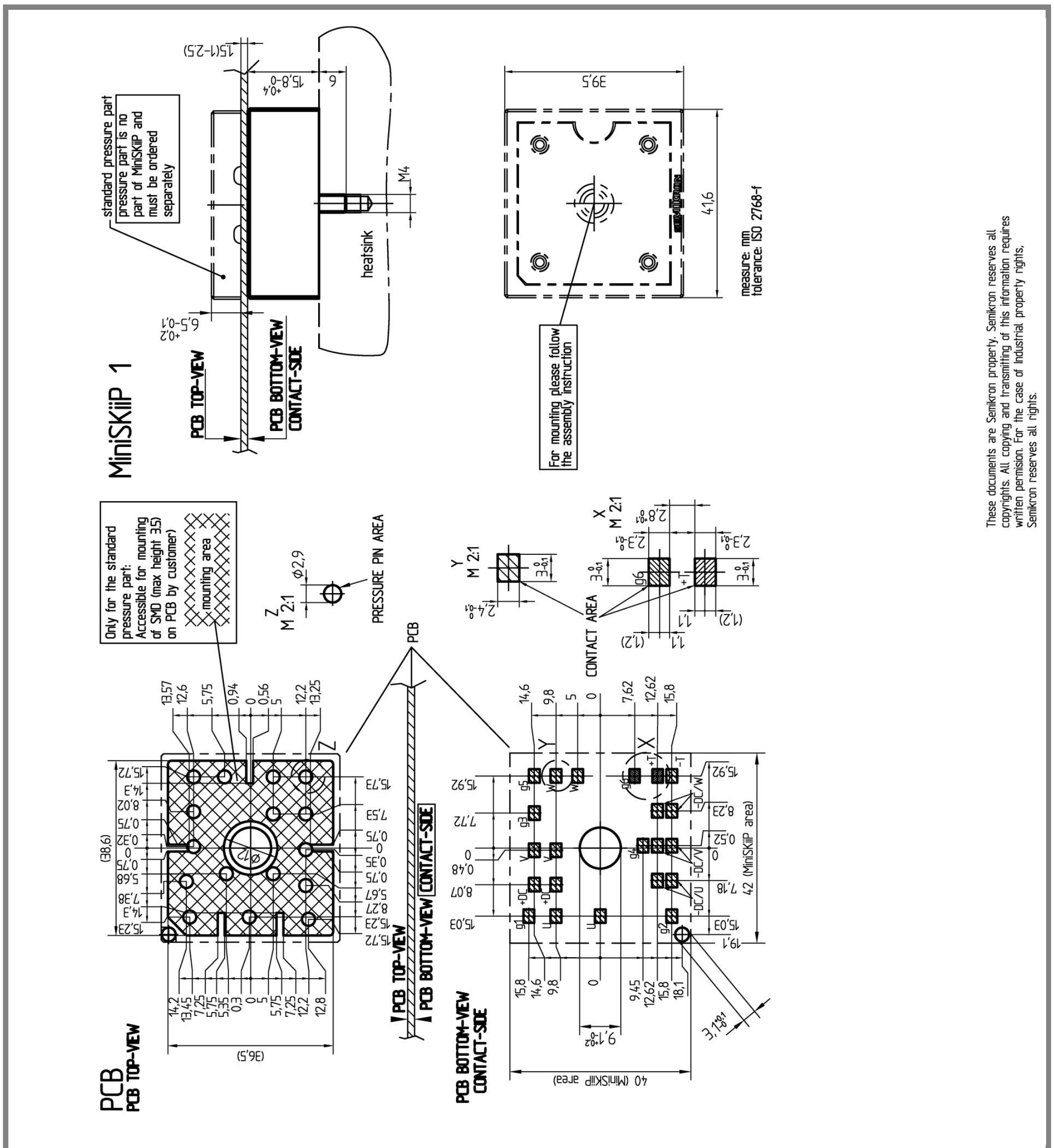


circuit



pinout, dimensions

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.