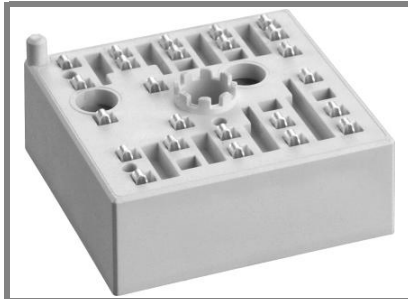


SKiiP 13AC126V1



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*

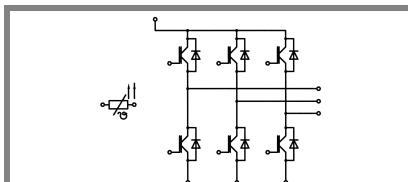
- Inverter up to 16 kVA
- Typical motor power 7.5 kW

Remarks

- V_{CEsat} , V_F = chip level value

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

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



AC

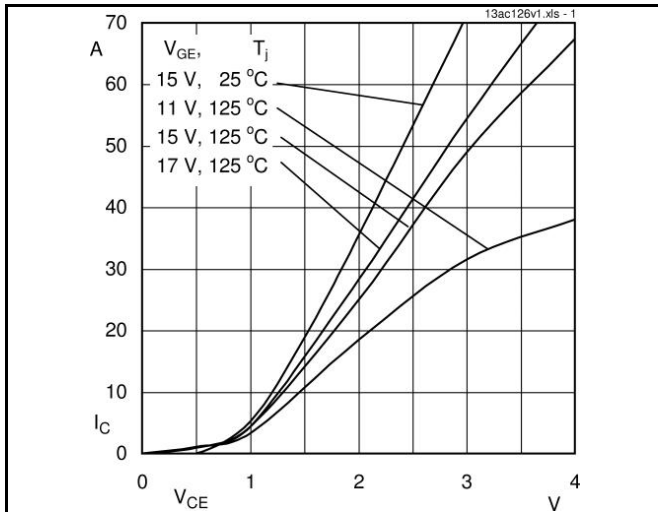


Fig. 1 Typ. output characteristic

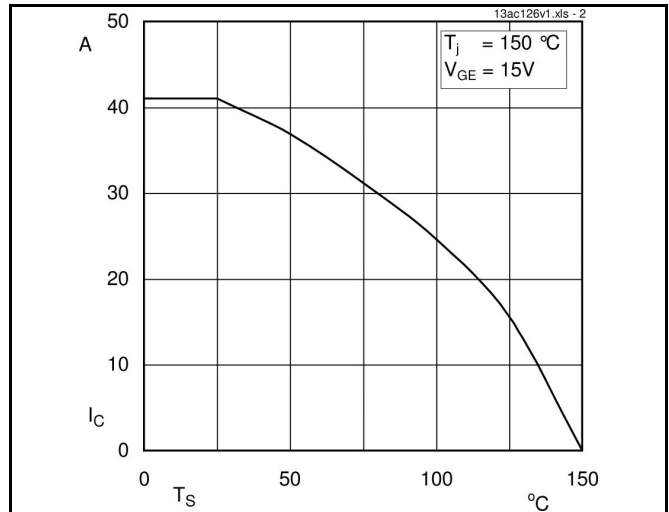


Fig. 2 Typ. rated current vs. temperature

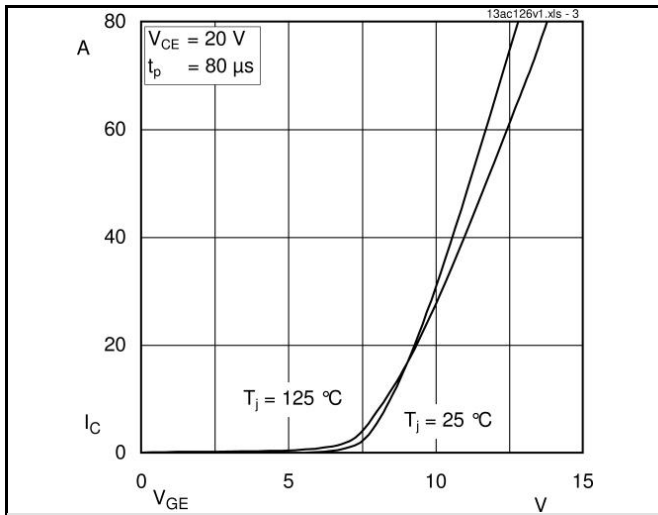


Fig. 3 Typ. transfer characteristic

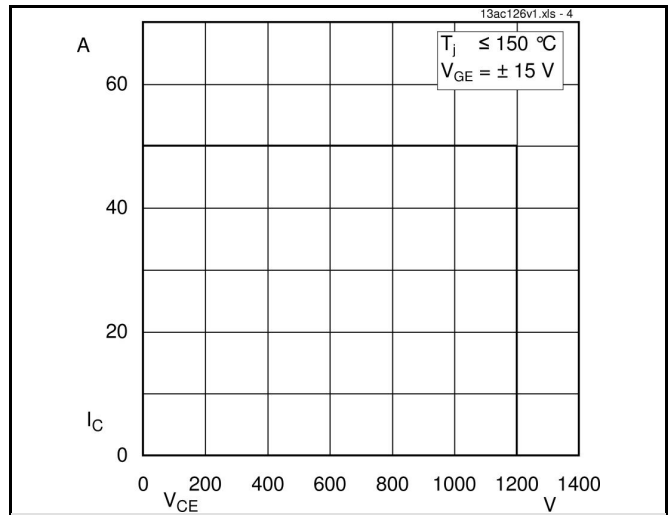


Fig. 4 Reverse bias safe operating area

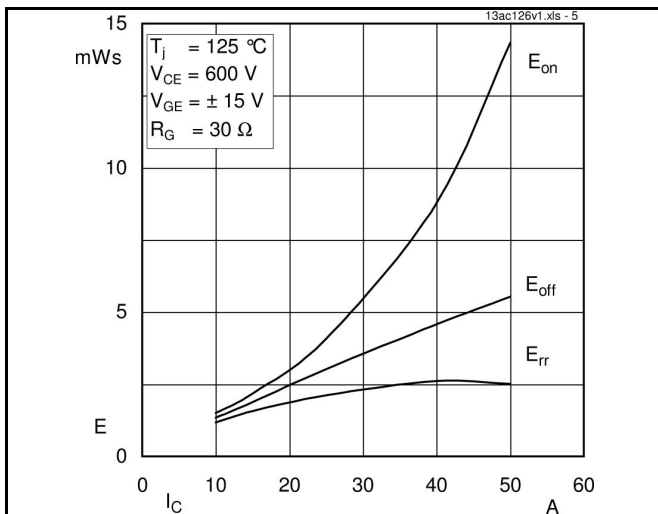


Fig. 5 Typ. Turn-on /-off energy = $f(I_C)$

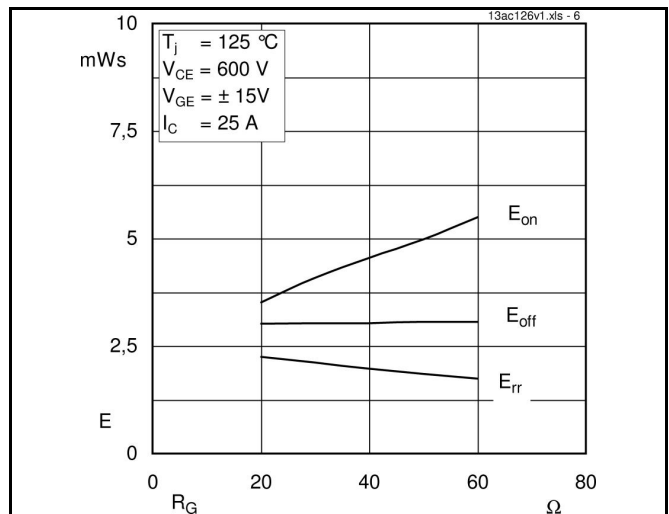


Fig. 6 Typ. Turn-on /-off energy = $f(R_G)$

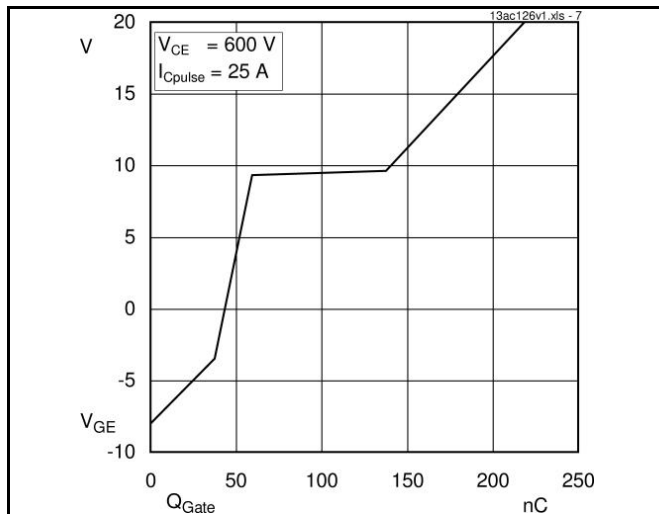


Fig. 7 Typ. gate charge characteristic

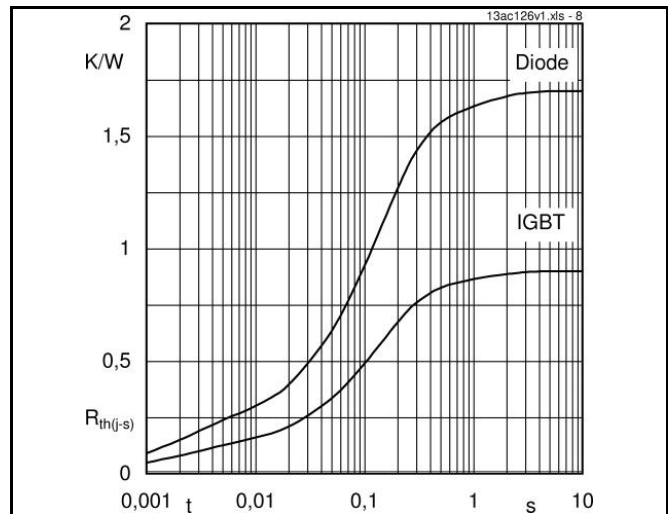


Fig. 8 Typ. thermal impedance

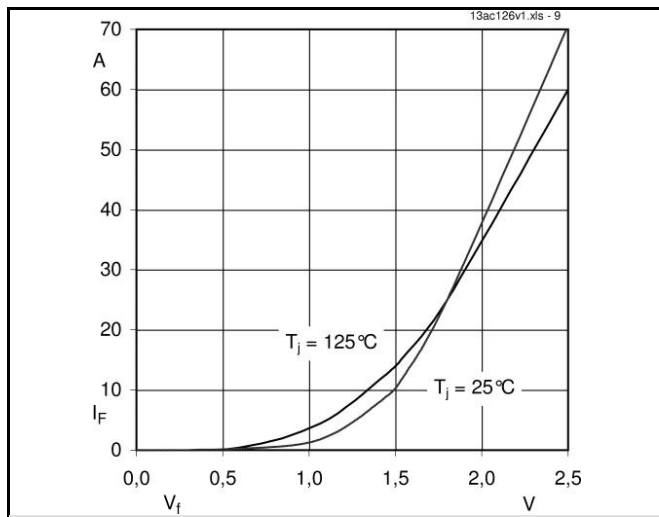
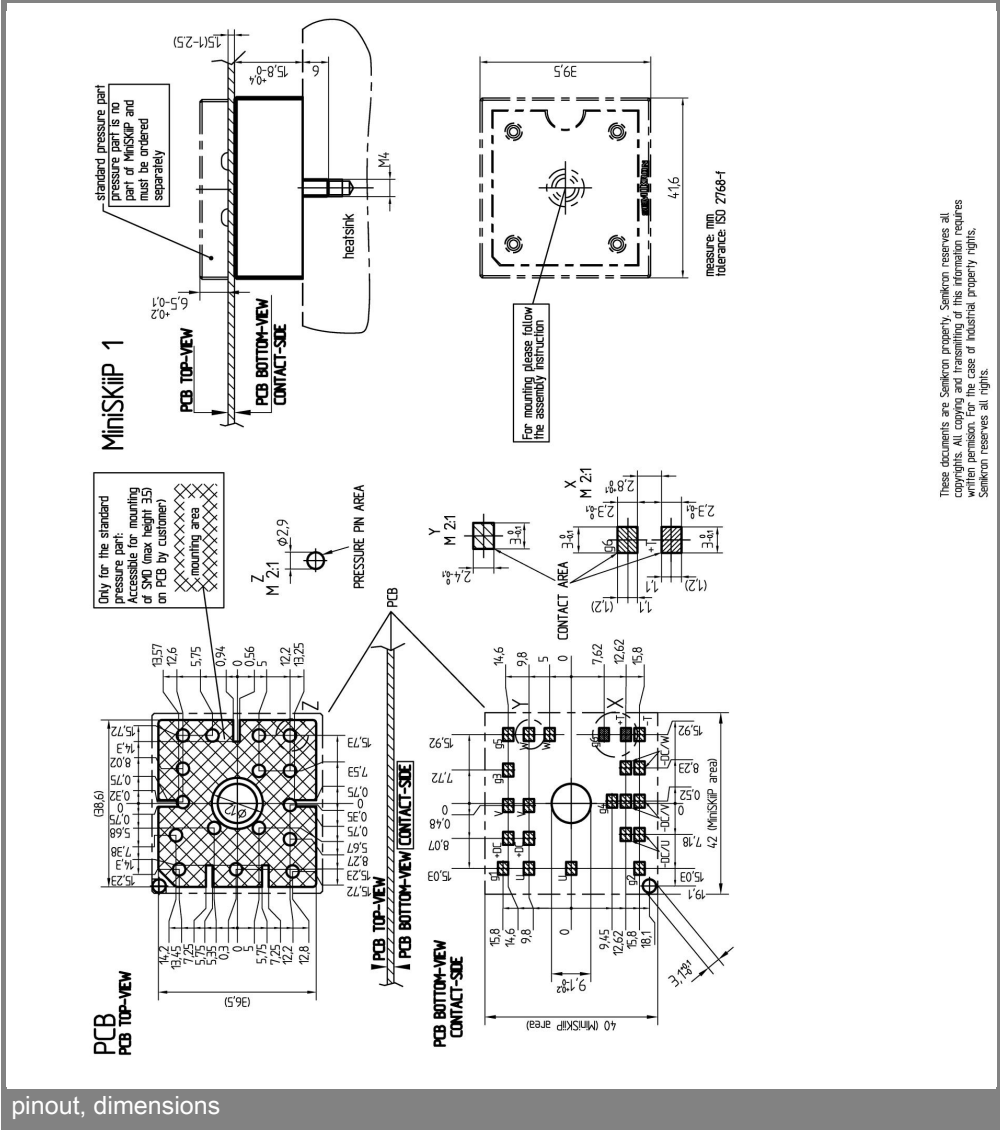
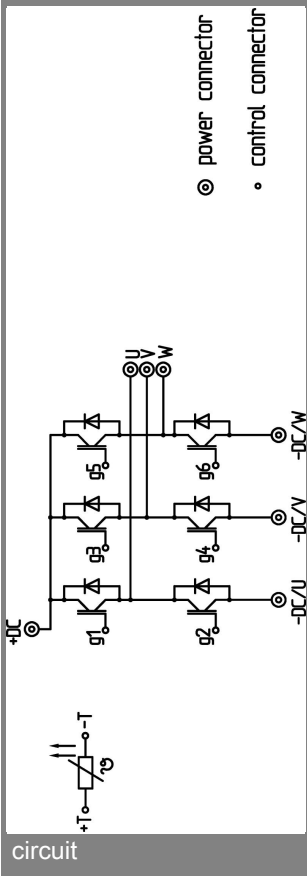


Fig. 9 Typ. freewheeling diode forward characteristic



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

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