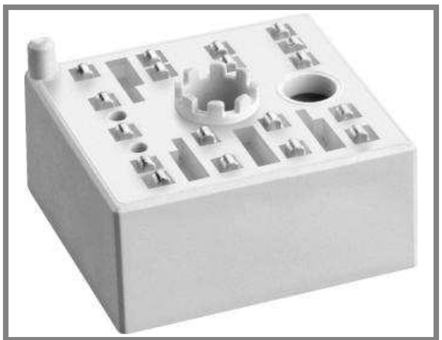
SKiiP 03NAC126V1 CONVERTER, INVERTER, BRAKE



MiniSKiiP®0

3-phase bridge rectifier + 3-phase bridge inverter

SKiiP 03NAC126V1

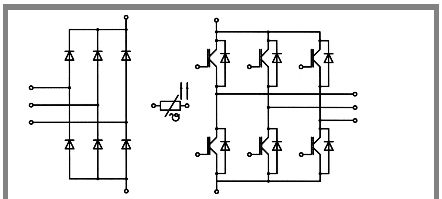
Preliminary Data

Features

- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections

Remarks

- V_{CEsat}, V_F = chip level value
- The Temp. Sensor has no basic insulation to the main circuit. The existing functional insulation allows a maximum potential difference of 850V to -DC.



NAC

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	16 (15)	A
I_{CRM}		16	A
V_{GES}		± 20	V
T_j		-40...+150	°C
Diode - Inverter			
I_F	T_s = 25 (70) °C	14 (11)	A
I_{FRM}		16	A
T_j		-40...+150	°C
Diode - Rectifier			
V_{RRM}		1600	V
I_F	T_s = 70 °C	35	A
I_{FSM}	t_p = 10 ms, sin 180 °, T_j = 25 °C	220	A
i²t	t_p = 10 ms, sin 180 °, T_j = 25 °C	240	A²s
T_j		-40...+150	°C
Module			
I_{tRMS}	per power terminal (20 A / spring)	20	A
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} = 8 A, T_j = 25 (125) °C		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,3 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		87 (138)	113 (162)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,7		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,1		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,1		nF
$R_{th(j-s)}$	per IGBT		1,5		K/W
$t_{d(on)}$	under following conditions		40		ns
t_r	V_{CC} = 600 V, V_{GE} = ± 15 V		25		ns
$t_{d(off)}$	I_{Cnom} = 8 A, T_j = 125°C		370		ns
t_f	R_{Gon} = R_{Goff} = 82 Ω		85		ns
E_{on}	inductive load		0,9		mJ
E_{off}			0,9		mJ
Diode - Inverter					
V_F = V_{EC}	I_{Fnom} = 8 A, T_j = 25 (125) °C		1,9 (2)	2,2 (2,4)	V
$V_{(TO)}$	T_j = 25 (125) °C		1 (0,8)	1,1 (0,9)	V
r_T	T_j = 25 (125) °C		112 (150)	138 (187)	mΩ
$R_{th(j-s)}$	per diode		2,5		K/W
I_{RRM}	under following conditions		13		A
Q_{rr}	I_{Fnom} = 8 A, V_R = 600 V		1,6		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		0,7		mJ
	di_F/dt = 480 A/µs				
Diode - Rectifier					
V_F	I_{Fnom} = 15 A, T_j = 25 °C		1,1		V
$V_{(TO)}$	T_j = 150 °C		0,8		V
r_T	T_j = 150 °C		20		mΩ
$R_{th(j-s)}$	per diode		1,5		K/W
Temperature Sensor					
R_{ts}	3 %, T_r = 25 (100) °C		1000(1670)		Ω
Mechanical Data					
w			21,5		g
M_s	Mounting torque	2		2,5	Nm

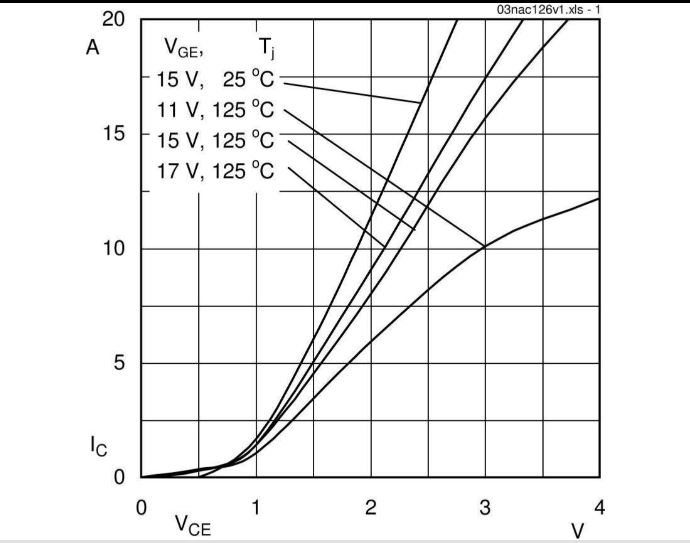


Fig. 1 Typ. output characteristic

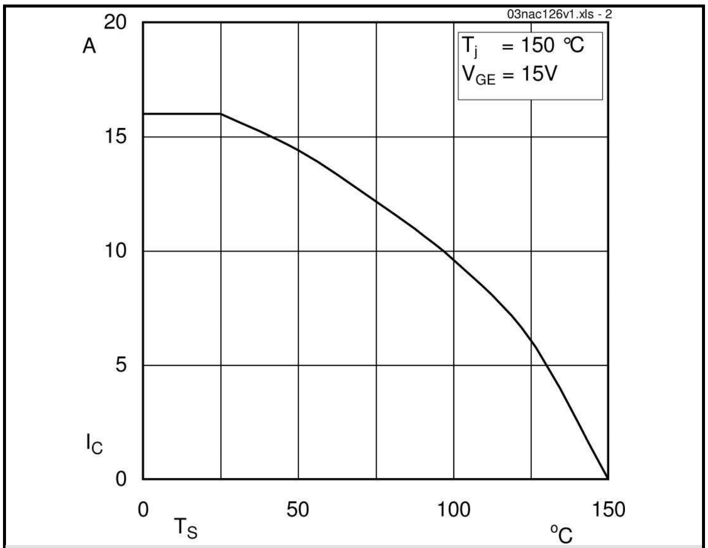


Fig. 2 Typ. rated output current vs. temperature

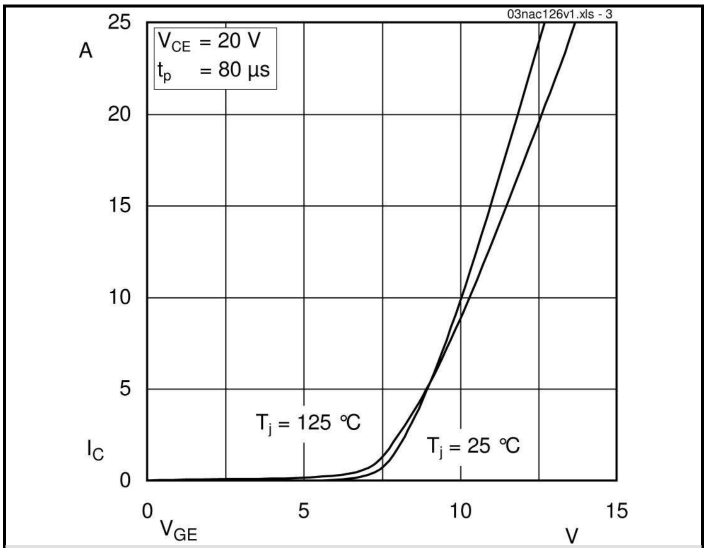


Fig. 3 Typ. transfer characteristic

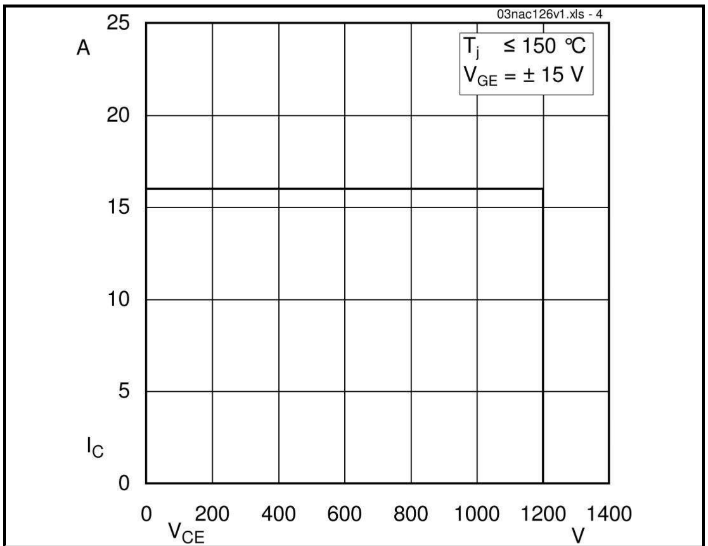


Fig. 4 Reverse bias safe operating area

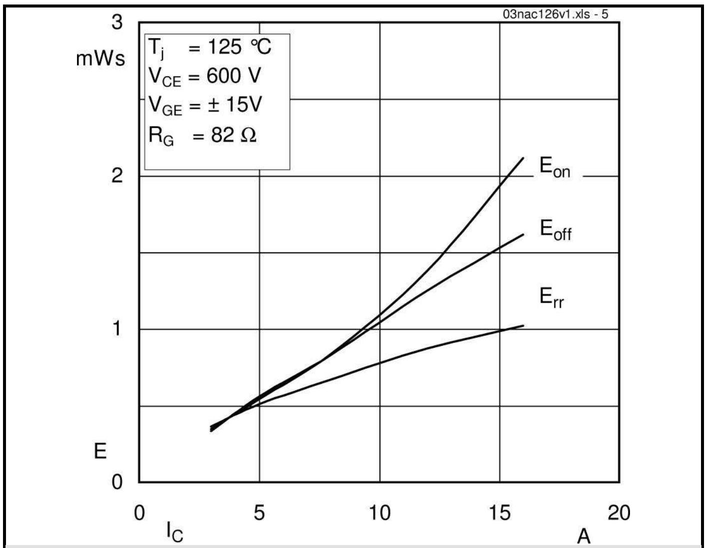


Fig. 5 Typ. Turn-on /-off energy = f (I_C)

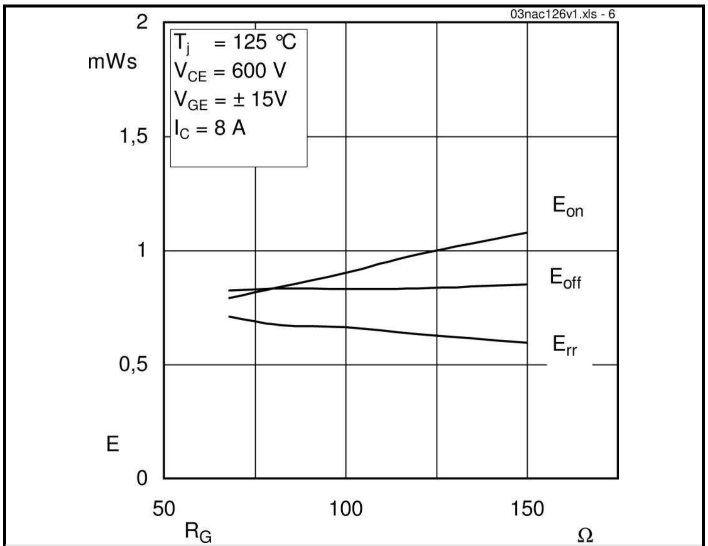


Fig. 6 Typ. Turn-on /-off energy = f (R_G)

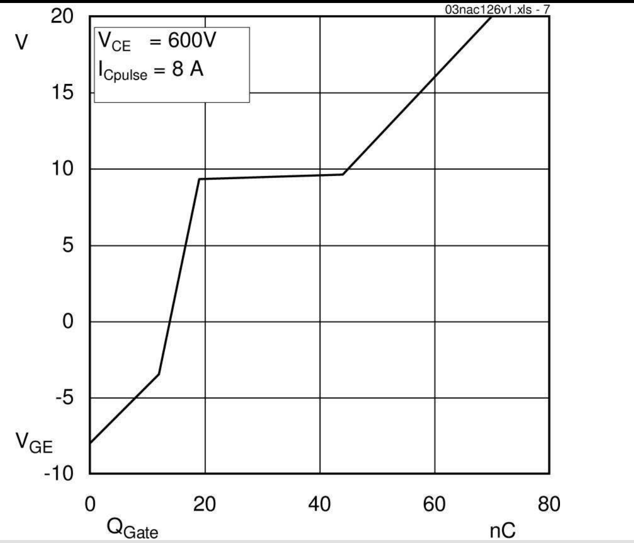


Fig. 7 Typ. gate charge characteristic

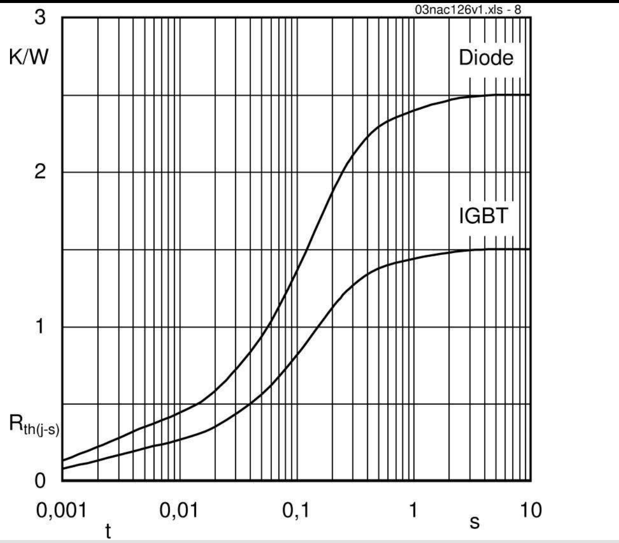


Fig. 8 Typ. thermal impedance

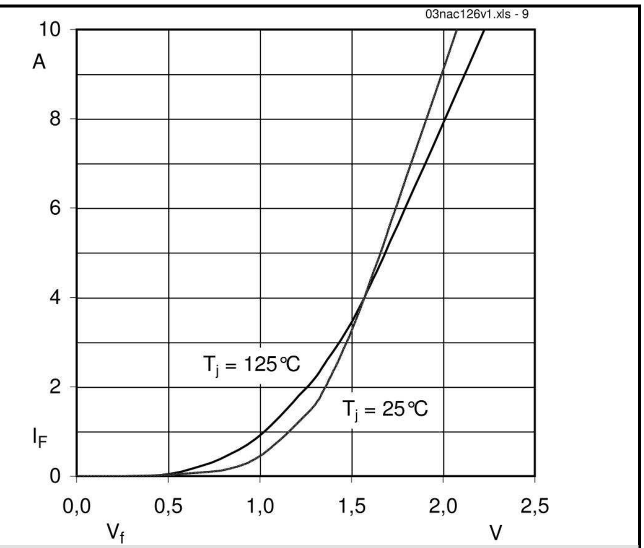


Fig. 9 Typ. freewheeling diode forward characteristic

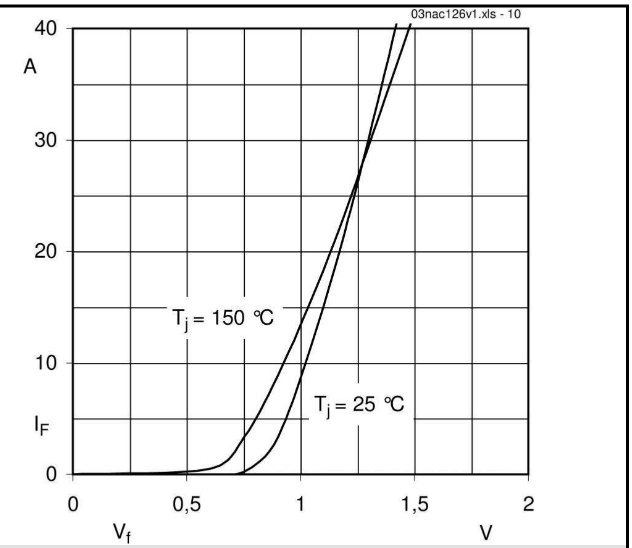
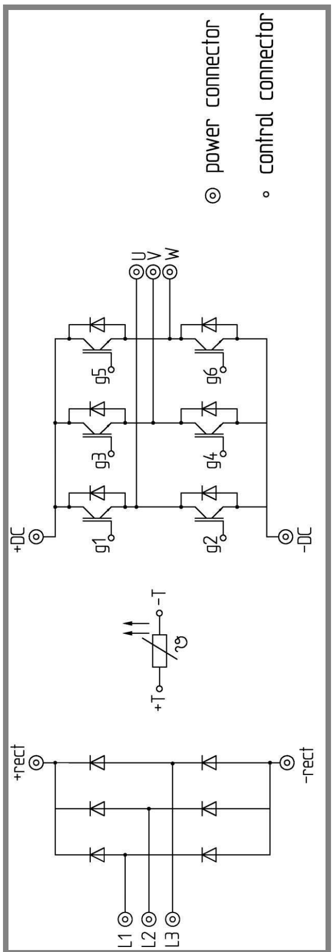
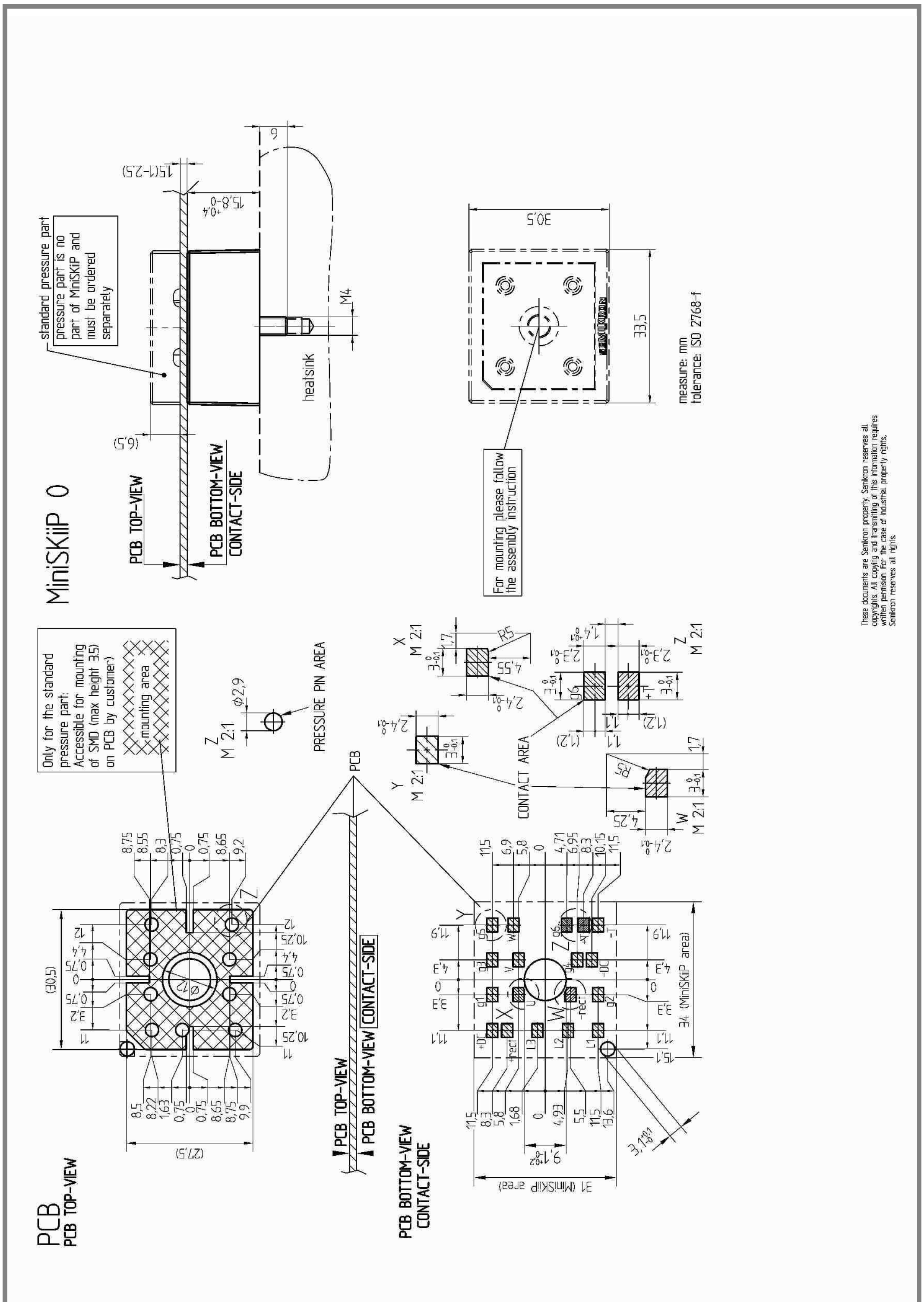


Fig. 10 Typ. input bridge forward characteristic



circuit



pinout, dimensions

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

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