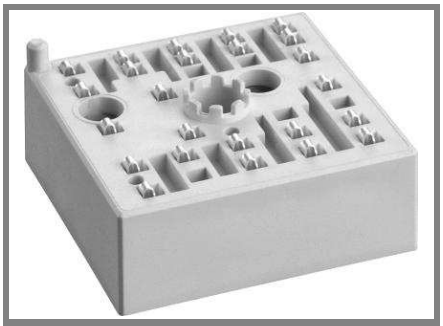
SKiiP 12NAB126V20



MiniSKiiP®1

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter

SKiiP 12NAB126V20

Preliminary Data

Features

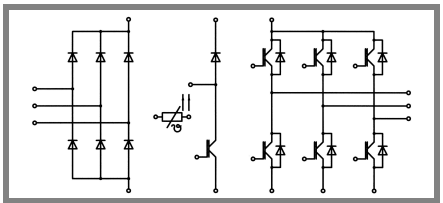
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL reognised file no. E63532

Typical Applications

- Inverter up to 10kVA
- Typical motor power 5,5kW

Remarks

- V_{CEsat}, V_F = chip level value



NAB

Absolute Maximum Ratings		T_S = 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter, Chopper			
V_{CES}		1200	V
I_C	T_s = 27 (70) °C	28 (22)	A
I_{CRM}		30	A
V_{GES}		± 20	V
T_j		-40...+150	°C
Diode - Inverter, Chopper			
I_F	T_s = 25 (70) °C	19 (15)	A
I_{FRM}		30	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
i^2t	t_p = 10 ms, sin 180 °, T_j = 25 °C	240	A^2s
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, Chopper					
V_{CEsat}	I_{Cnom} = 15 A, T_j = 25 (125) °C		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 0,6 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		47 (43)	60 (87)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		1		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		1,15		K/W
$t_{d(on)}$	under following conditions		35		ns
t_r	V_{CC} = 600 V, V_{GE} = ± 15 V		30		ns
$t_{d(off)}$	I_{Cnom} = 15 A, T_j = 125°C		340		ns
t_f	R_{Gon} = R_{Goff} = 30 Ω		65		ns
E_{on}	inductive load		1,5		mJ
E_{off}			1,8		mJ
Diode - Inverter, Chopper					
V_F = V_{EC}	I_{Fnom} = 15 A, T_j = 25 (125) °C		2,3 (2,2)	2,8 (2,7)	V
$V_{(TO)}$	T_j = 25 (125) °C		0,9 (0,6)	1,1 (0,8)	V
r_T	T_j = 25 (125) °C		93 (107)	113 (127)	mΩ
$R_{th(j-s)}$	per diode		1,95		K/W
I_{RRM}	under following conditions		22,5		A
Q_{rr}	I_{Fnom} = 15 A, V_R = 600 V		2,2		µC
E_{rr}	V_{GE} = 0 V, T_j = 125 °C		0,9		mJ
	di_F/dt = 1000 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			35		g
M_s	Mounting torque	2		2,5	Nm

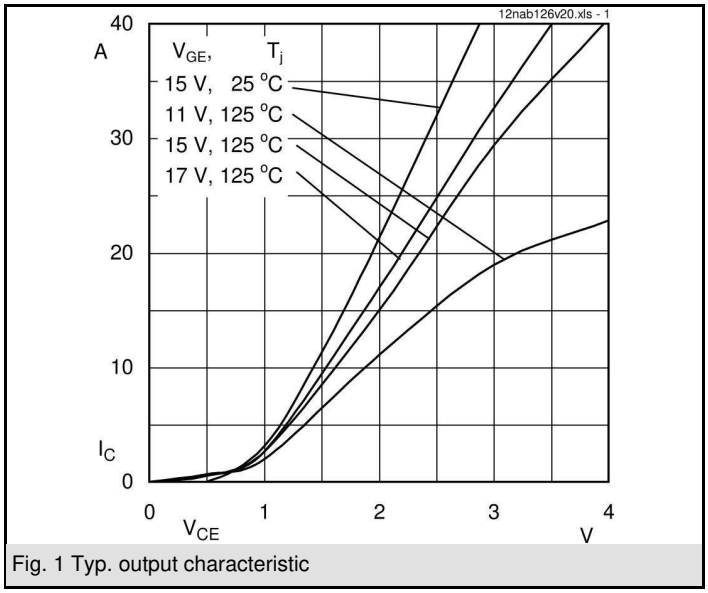


Fig. 1 Typ. output characteristic

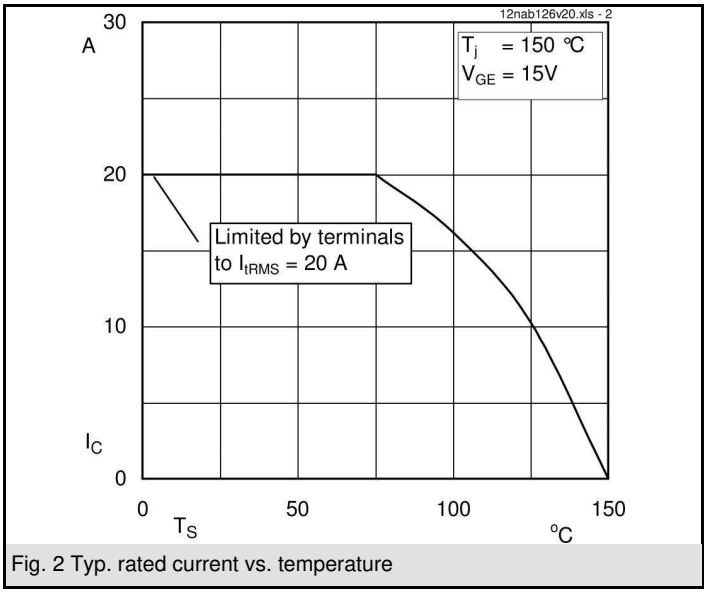


Fig. 2 Typ. rated current vs. temperature

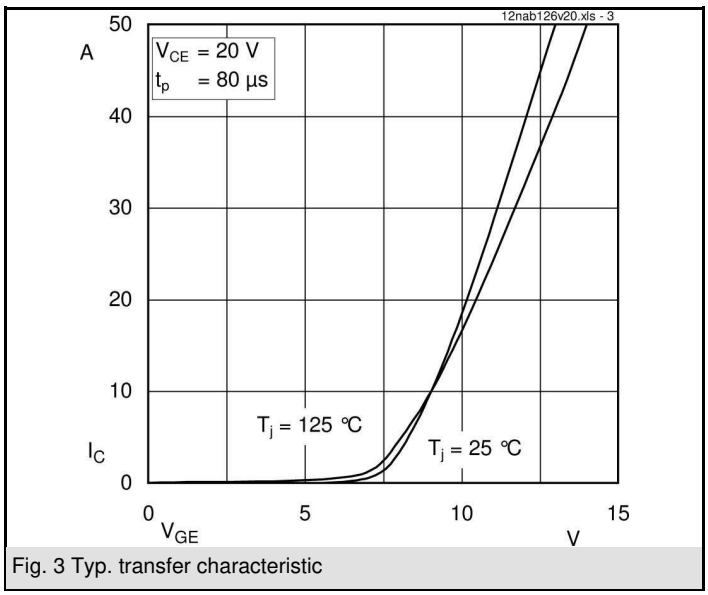


Fig. 3 Typ. transfer characteristic

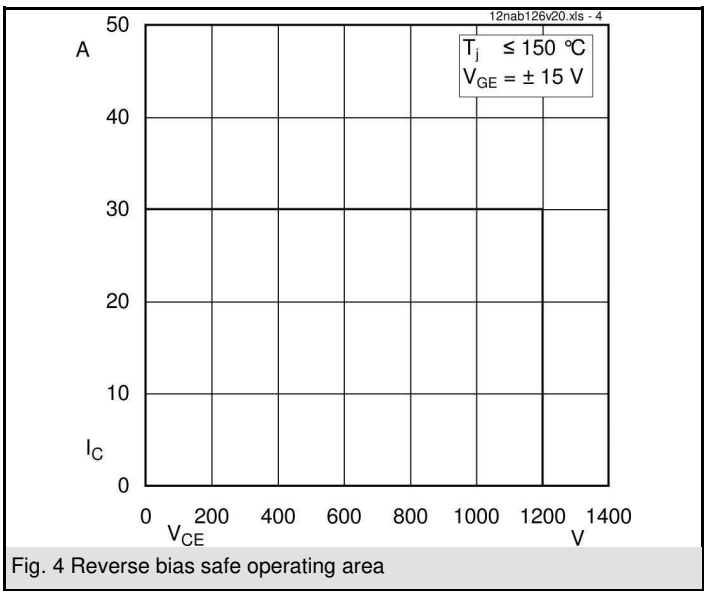


Fig. 4 Reverse bias safe operating area

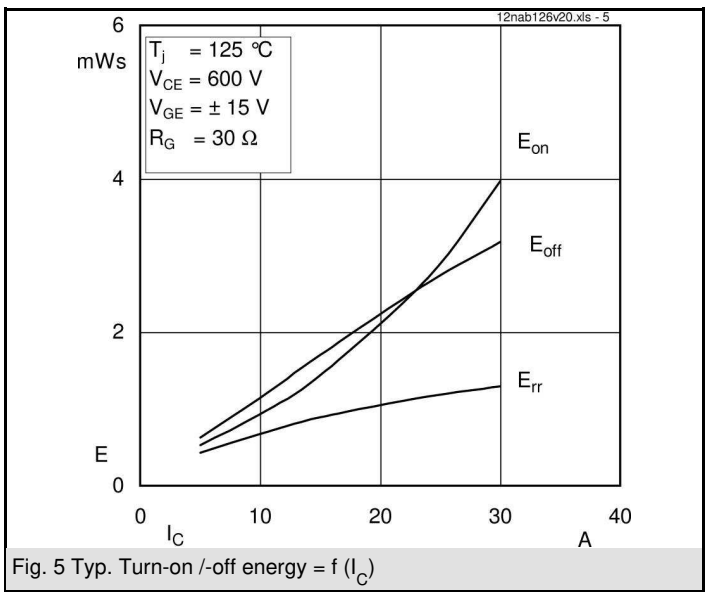


Fig. 5 Typ. Turn-on /-off energy = f (I_C)

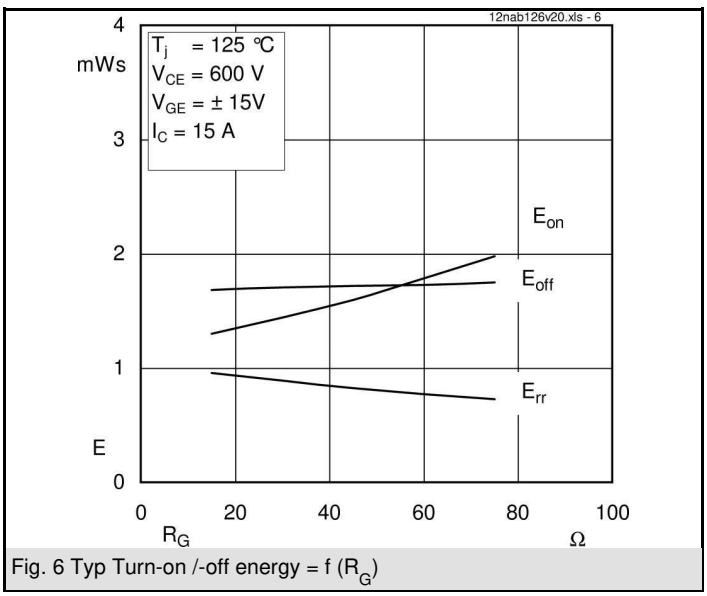


Fig. 6 Typ Turn-on /-off energy = f (R_G)

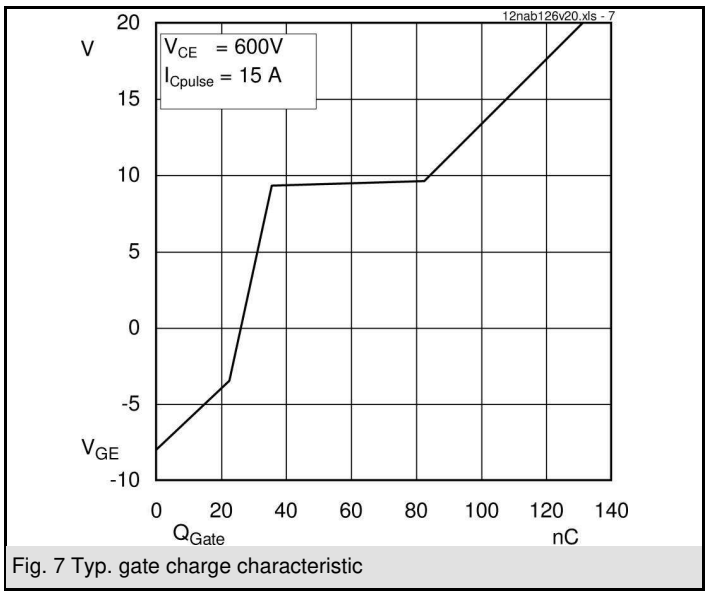


Fig. 7 Typ. gate charge characteristic

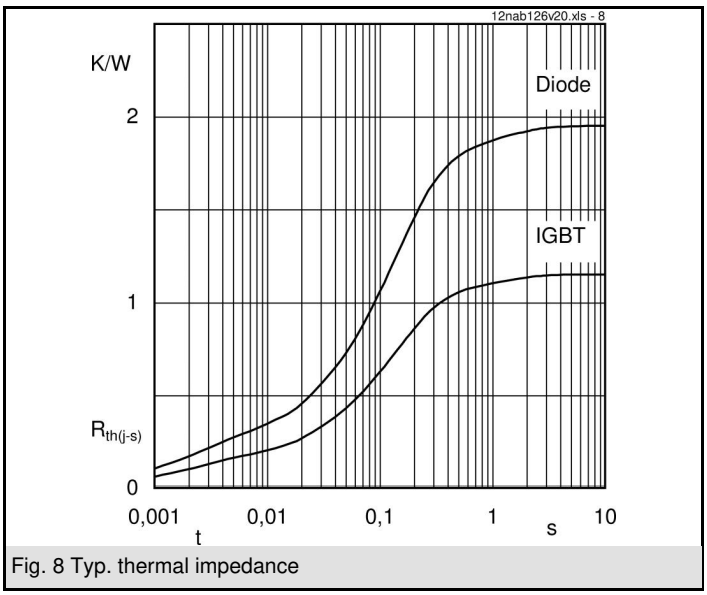


Fig. 8 Typ. thermal impedance

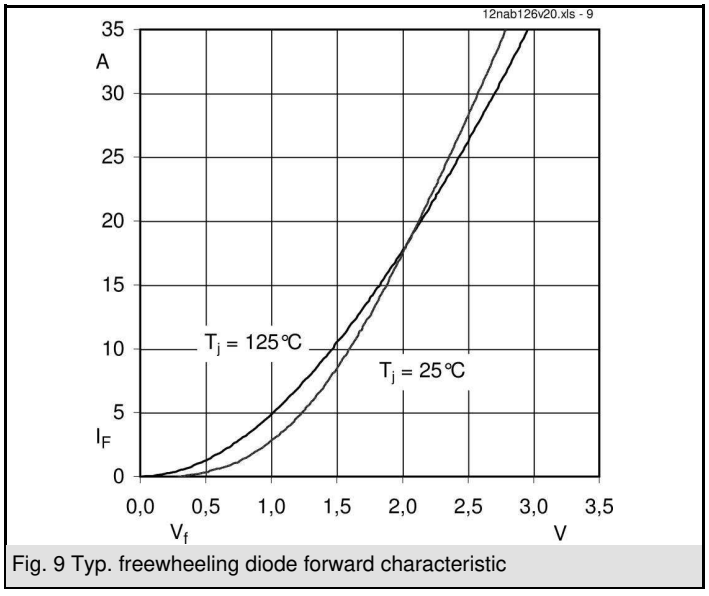


Fig. 9 Typ. freewheeling diode forward characteristic

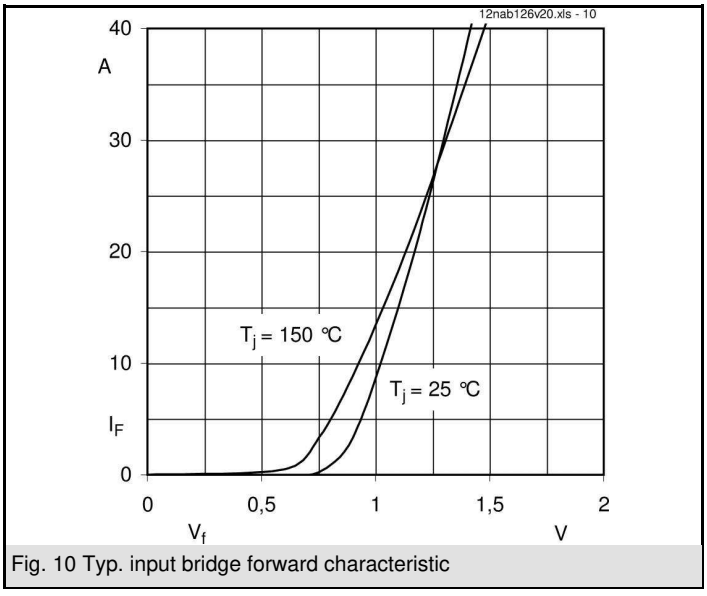
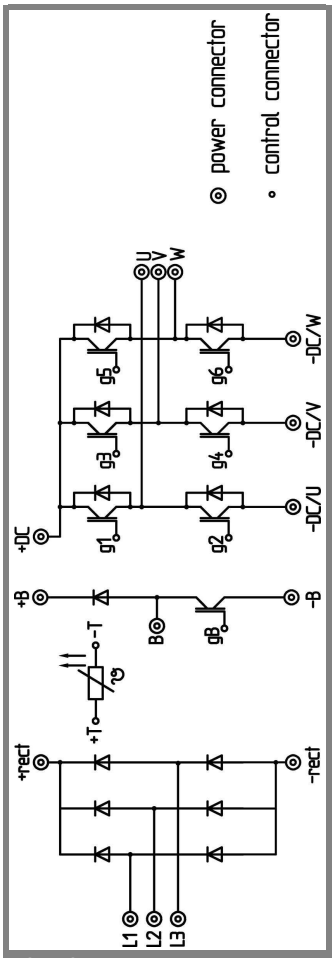
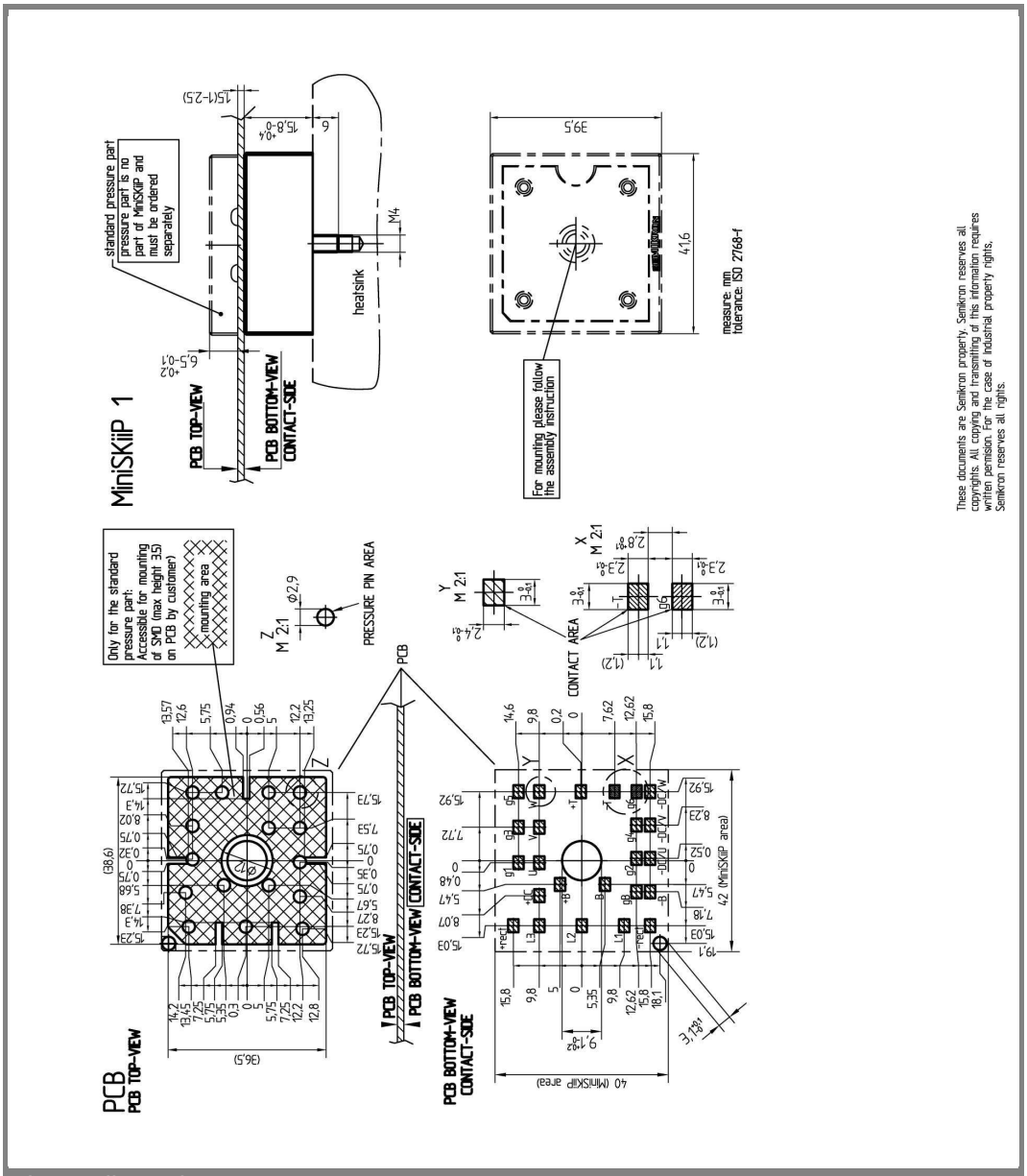


Fig. 10 Typ. input bridge forward characteristic



circuit



pinout, dimensions

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

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