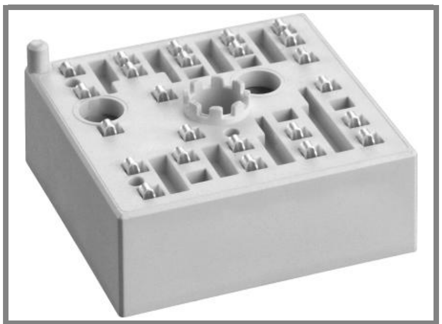


MiniSKiiP®1

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

SKiiP 12NAB066V1

Absolute Maximum Ratings		T_S= 25°C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
IGBT - Inverter, Chopper			
V_{CES}		600	V
I_C	T_s = 25 (70) °C, T_j = 150 °C	19 (14)	A
I_C	T_s = 25 (70) °C, T_j = 175 °C	20 (16)	A
I_{CRM}	t_p = 1 ms	20	A
V_{GES}		± 20	V
Diode - Inverter, Chopper			
I_F	T_s = 25 (70) °C, T_j = 150 °C	20 (15)	A
I_F	T_s = 25 (70) °C, T_j = 175 °C	20 (18)	A
I_{FRM}	t_p = 1 ms	20	A
Diode - Rectifier			
V_{RRM}		800	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	A²s
I_{tRMS}	per power terminal (20 A / spring)	20	A
T_j	IGBT, Diode	-40...+175	°C
T_{stg}		-40...+125	°C
V_{isol}	AC, 1 min.	2500	V

Features

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

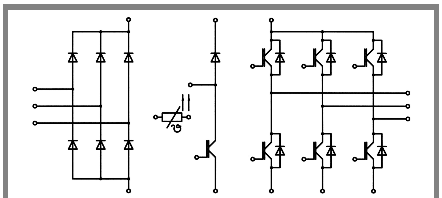
Typical Applications

- Inverter up to 5 kVA
- Typical motor power 2,2 kW

Remarks

- Case temperature limited to T_C= 125°C max.
- Product reliability results are valid for T_j=150°C
- SC data: $t_p \le 6$ µs; $V_{GE} \le 15$ V; T_j = 150°C; V_{CC} = 360 V
- V_{CEsat}, V_F = chip level values

Characteristics			T_S= 25°C, unless otherwise specified		
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT - Inverter, Chopper					
$V_{CE(sat)}$	I_{Cnom} = 10 A, T_j = 25 (150) °C	1,1	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 1 mA		5,8		V
$V_{CE(TO)}$	T_j = 25 (150) °C		0,9 (0,7)	1,1 (1)	V
r_{CE}	T_j = 25 (150) °C		60 (100)	80 (110)	mΩ
C_{ies}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,58		nF
C_{oes}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,12		nF
C_{res}	V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz		0,04		nF
$R_{CC'+EE'}$	spring contact-chip T_s = 25 (150)°C				mΩ
$R_{th(j-s)}$	per IGBT		2		K/W
$t_{d(on)}$	under following conditions		25		ns
t_r	V_{CC} = 300 V, V_{GE} = ±15V		25		ns
$t_{d(off)}$	I_{Cnom} = 10 A, T_j = 150 °C		190		ns
t_f	$R_{Gon} = R_{Goff}$ = 39 Ω		40		ns
E_{on} (E_{off})	inductive load		0,5 (0,3)		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	I_F = 10 A, T_j = 25 (150) °C		1,3 (1,3)	1,6 (1,6)	V
$V_{(TO)}$	T_j = 25 (150) °C		0,9 (0,8)	1 (0,9)	V
r_T	T_j = 25 (150) °C		40 (50)	60 (70)	mΩ
$R_{th(j-s)}$	per diode		2,5		K/W
I_{RRM}	under following conditions		15,8		A
Q_{rr}	I_{Fnom} = 10 A, V_R = 300 V		1,5		µC
E_{rr}	V_{GE} = 0 V, T_j = 150°C		0,5		mJ
	di_F/dt = 810 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



NAB

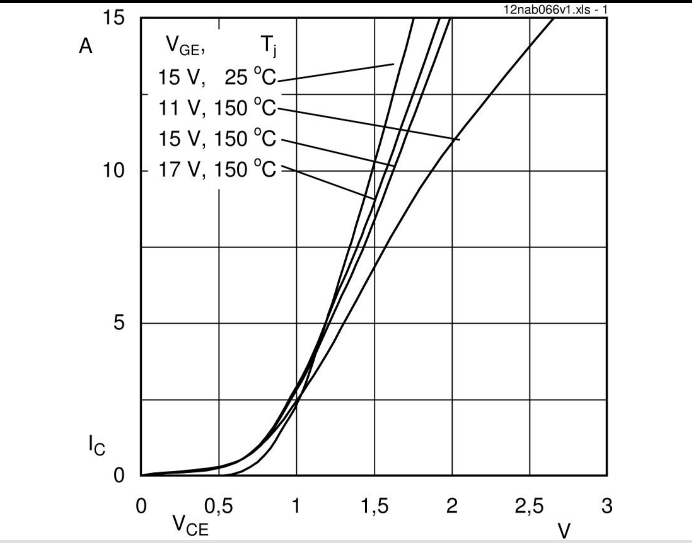


Fig. 1 Typ. output characteristics

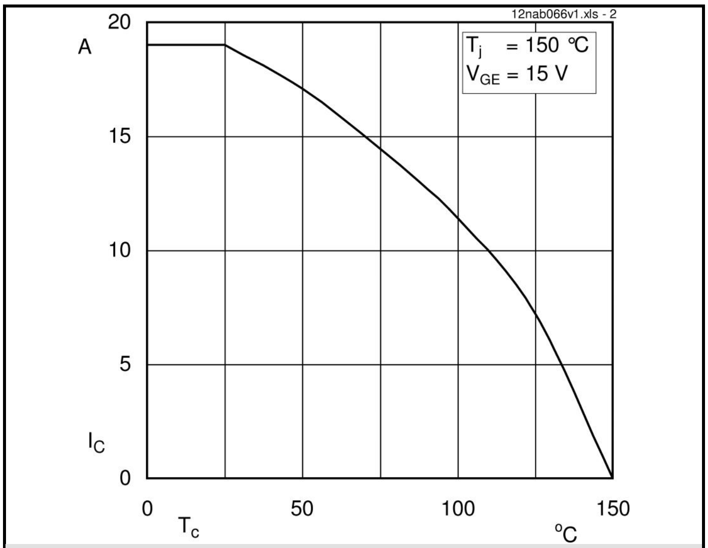


Fig. 2 Typ. rated current vs. temperature

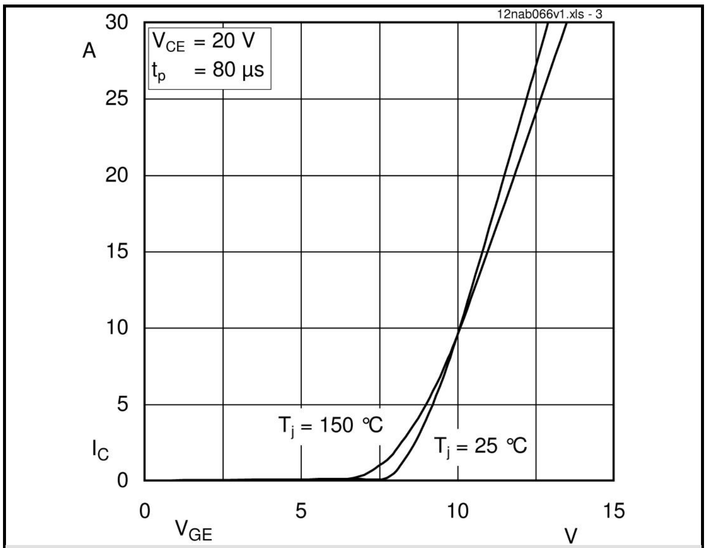


Fig. 3 Typ. transfer characteristic

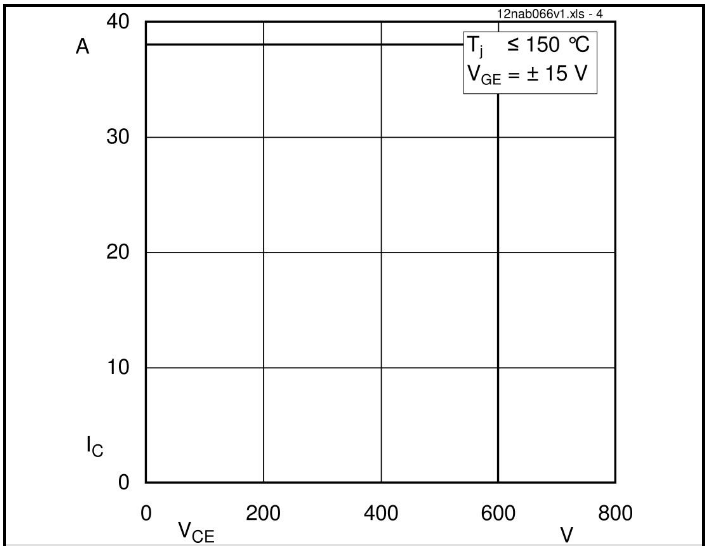


Fig. 4 Reverse bias safe operating area

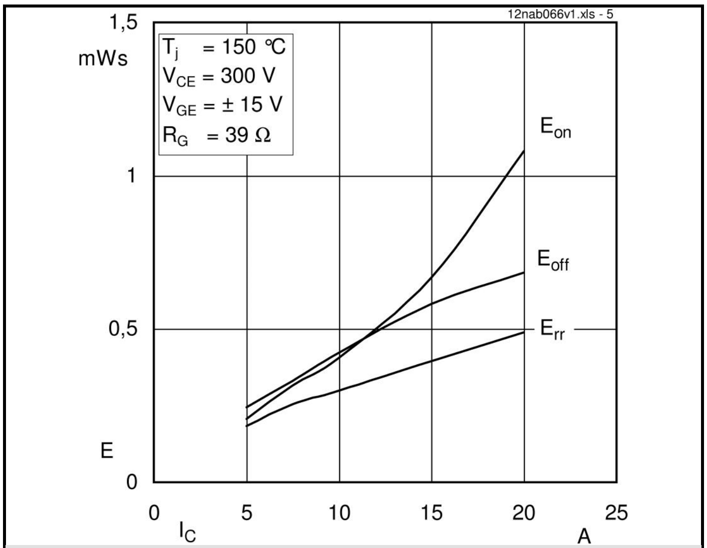


Fig. 5 Typ Turn-on /-off energy = f (I_c)

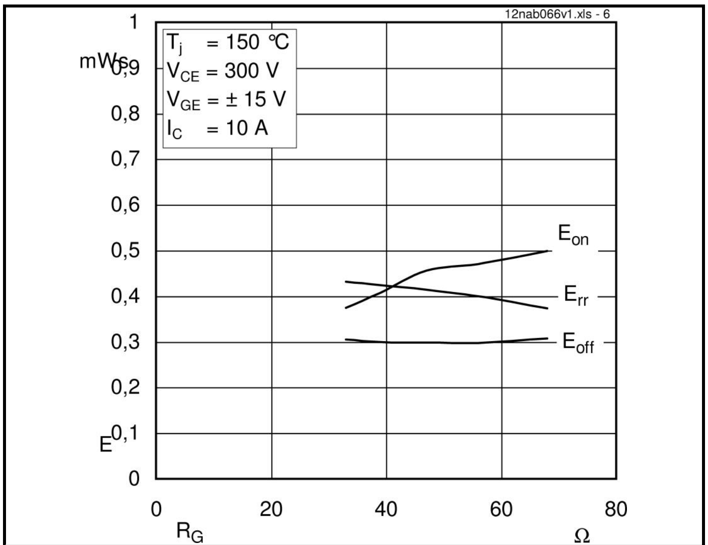


Fig. 6 Typ. Turn-on /-off energy = f (R_G)

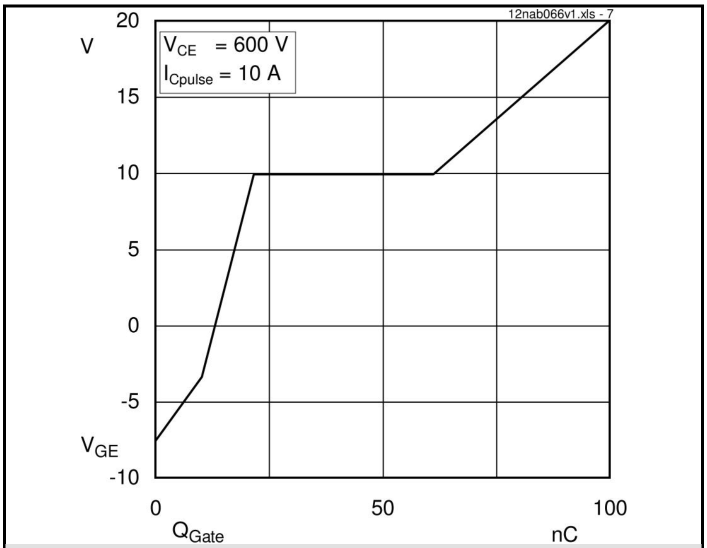


Fig. 7 Typ. gate charge characteristic

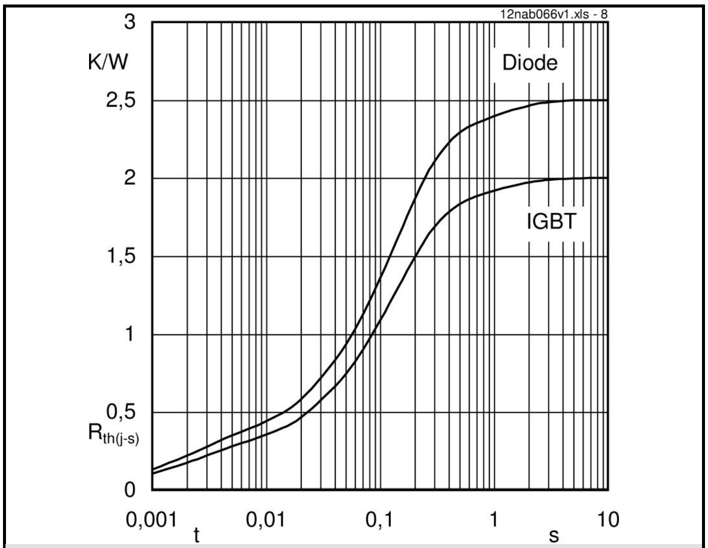


Fig. 8 Typ. thermal impedance

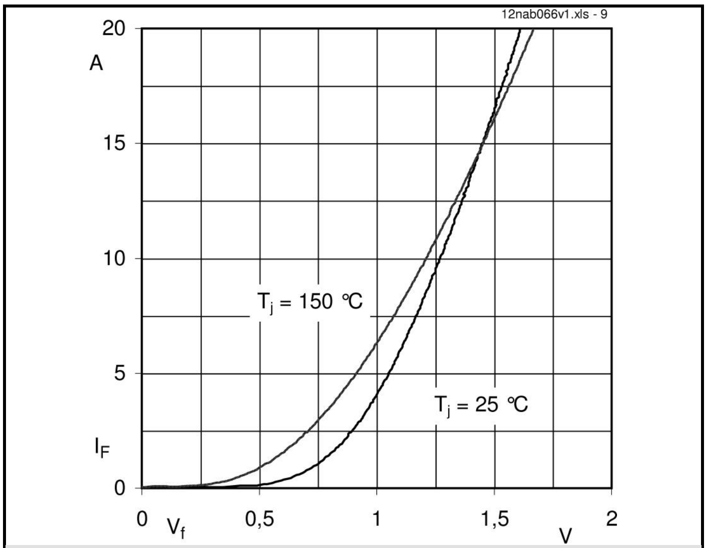


Fig. 9 Typ. freewheeling diode forward characteristic

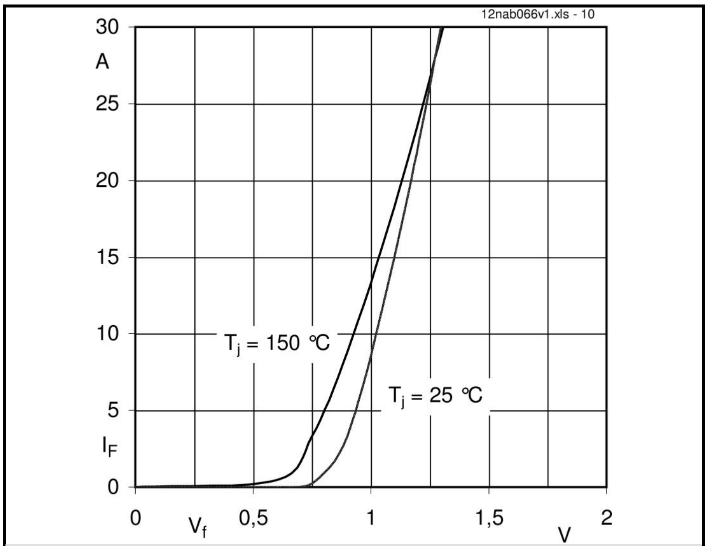
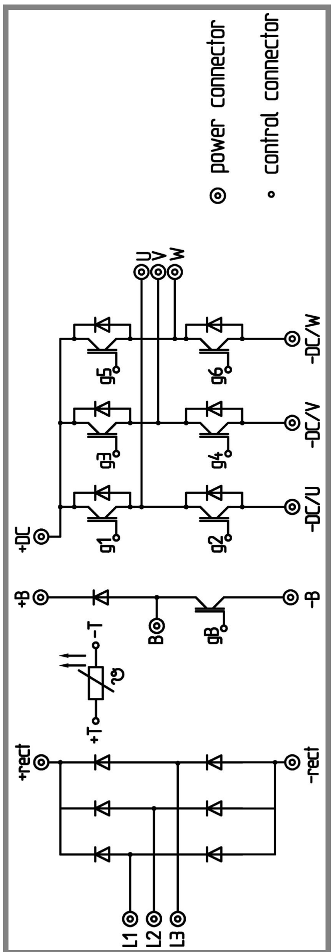
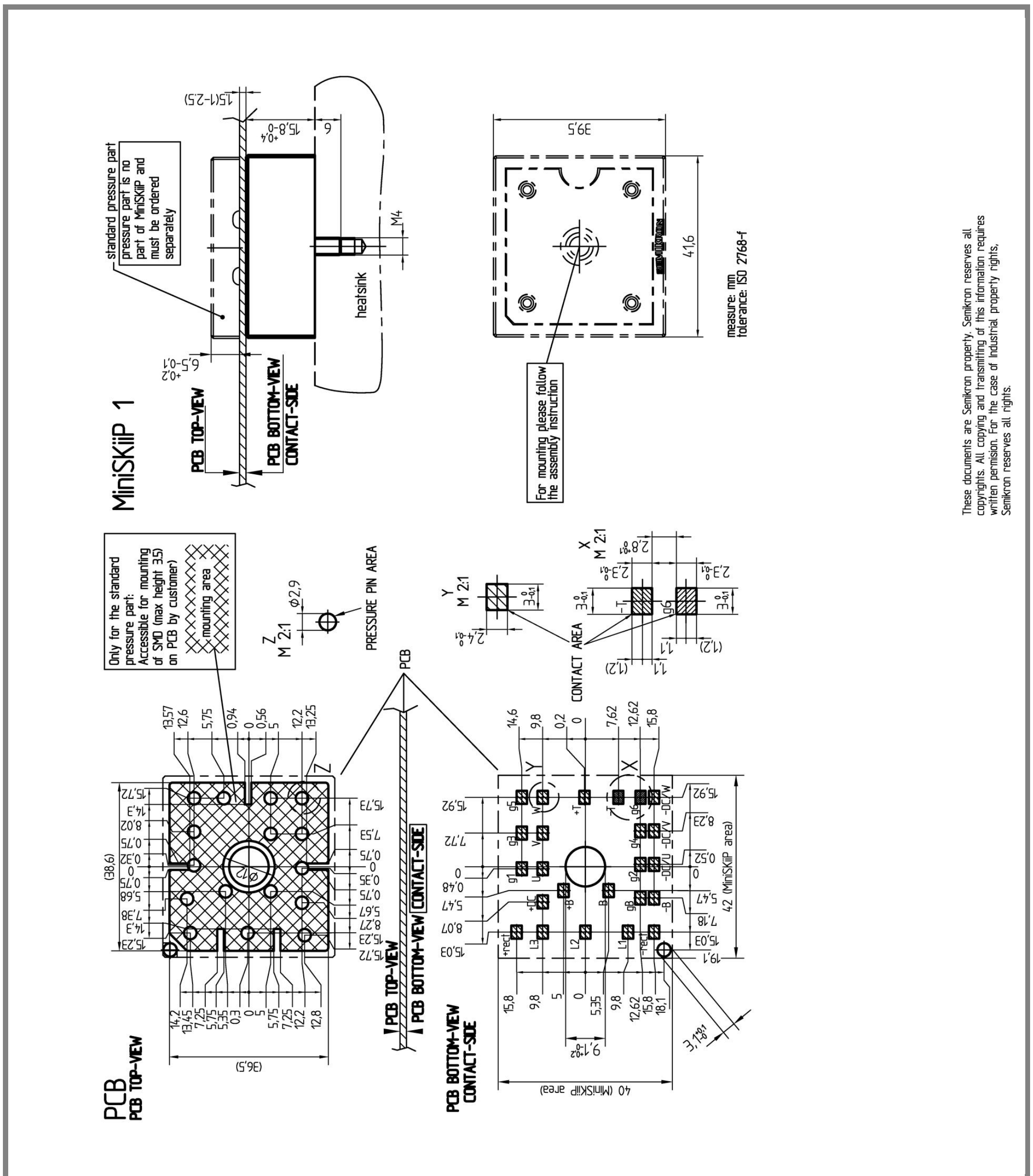


Fig. 10 Typ. input bridge forward characteristic



circuit



pinout, dimensions

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

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