

MiniSKiiP®3

3-phase bridge rectifier + brake chopper + 3-phase bridge inverter **SKiiP 37NAB066V1**

Preliminary Data

Features

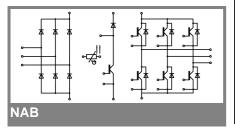
- Trench IGBT
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 18 kVA
- Typical motor power 7,5 kW

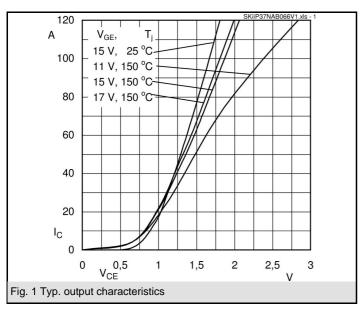
Remarks

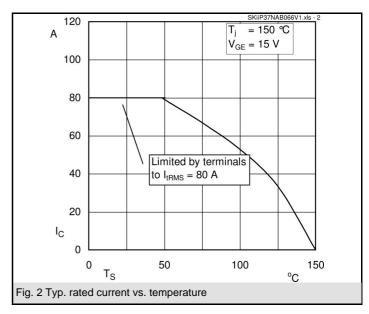
- Case temperature limited to T_C =
- · Product reliability results are valid for $T_i = 150$ °C
- SC data: $t_p \le 6 \ \mu s; \ V_{GE} \le 15 \ V; \ T_j = 150 ^{\circ} C, \ V_{CC} = 360 \ V$ $V_{CEsat}, \ V_F = chip \ level \ value$

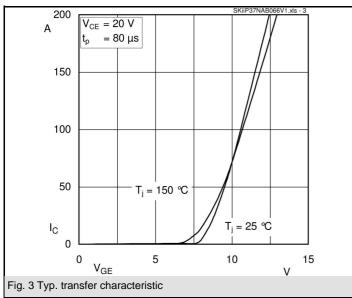


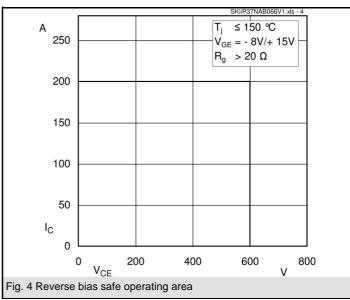
Absolute Maximum Ratings $T_S = 25 ^{\circ}\text{C}$, unless otherwise specified								
Symbol	Conditions	Values	Units					
IGBT - Inverter								
V_{CES}		600	V					
I _C	$T_s = 25 (70) ^{\circ}C, T_j = 150 ^{\circ}C$	79 (53)	Α					
I _C	$T_s = 25 (70) ^{\circ}C, T_j = 175 ^{\circ}C$	88 (65)	Α					
I _{CRM}	t _p = 1 ms	150	Α					
V_{GES}		± 20	V					
Diode - Inverter								
I _F	$T_s = 25 (70) ^{\circ}C, T_i = 150 ^{\circ}C$	65 (42)	Α					
I _F	$T_s = 25 (70) ^{\circ}\text{C}, T_j = 175 ^{\circ}\text{C}$	77 (56)	Α					
I _{FRM}	t _p = 1 ms	150	Α					
Diode - Rectifier								
V_{RRM}		800	V					
I _F	T _s = 70 °C	61	Α					
I _{FSM}	$t_p = 10 \text{ ms, sin } 180 ^\circ, T_j = 25 ^\circ\text{C}$	700	Α					
i²t	$t_p = 10 \text{ ms, sin } 180 ^\circ, T_j = 25 ^\circ\text{C}$	2400	A²s					
I _{tRMS}	per power terminal (20 A / spring)	80	Α					
T _i	IGBT, Diode	-40+175	°C					
T _{stg}		-40+125	°C					
V _{isol}	AC, 1 min.	2500	V					

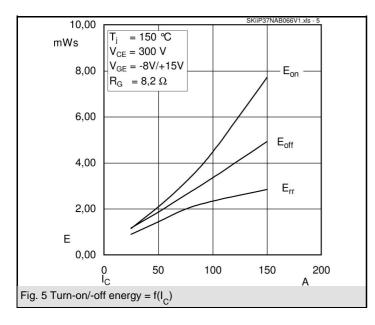
Characteristics			S = 25 °C, unless otherwise specified						
Symbol	Conditions		min.	typ.	max.	Units			
IGBT - Inverter									
$V_{CE(sat)}$ $V_{GE(th)}$ $V_{CE(TO)}$	$I_{Cnom} = 75 \text{ A}, T_j = 25 (150) ^{\circ}\text{C}$ $V_{GE} = V_{CE}, I_C = 1 \text{ mA}$ $T_j = 25 (150) ^{\circ}\text{C}$ $T_i = 25 (150) ^{\circ}\text{C}$		1,05	1,45 (1,65) 5,8 0,85 (0,7) 8 (12,7)	1,85 (2,05) 1,1 (1) 10 (14)	V V V mΩ			
$ \begin{aligned} & & r_{\text{CE}} \\ & & c_{\text{ies}} \\ & & c_{\text{oes}} \\ & c_{\text{res}} \\ & R_{\text{CC'+EE'}} \end{aligned} $	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$ spring contact-chip $T_s = 25 \text{ (150)}^{\circ}\text{C}$			4,4 0,78 0,66	10 (14)	nF nF nF mΩ			
$R_{th(j-s)}$	per IGBT			0,75		K/W			
$\begin{aligned} & \overset{t_{d(on)}}{t_r} \\ & \overset{t_{d(off)}}{t_r} \\ & \overset{t_{d(off)}}{t_f} \\ & \overset{E_{on}}{E_{on}} \left(\overset{E_{off}}{E_{off}} \right) \\ & \overset{Diode - In}{V_F = V_{EC}} \\ & V_{(TO)} \\ & \overset{r_T}{r_T} \\ & \overset{R_{th(j-s)}}{R_{RRM}} \\ & \overset{Q_{rr}}{Q_{rr}} \end{aligned}$	under following conditions $V_{CC} = 300 \text{ V}, V_{GE} = -8\text{V}/+15\text{V}$ $I_{Cnom} = 75 \text{ A}, T_j = 150 \text{ °C}$ $R_{Gon} = R_{Goff} = 8,2 \Omega$ inductive load verter $I_F = 75 \text{ A}, T_j = 25 (150) \text{ °C}$ $T_j = 25 (150) \text{ °C}$ $T_j = 25 (150) \text{ °C}$ per diode $Under following conditions$ $I_{Fnom} = 75 \text{ A}, V_R = 300 \text{ V}$			115 45 475 60 2,7 (3) 1,5 (1,5) 1 (0,9) 6,7 (8) 1,2 52 8	1,7 (1,7) 1,1 (1) 8 (9,3)	ns ns ns ns mJ V V mΩ K/W			
E _{rr}	$V_{GE} = 0 \text{ V, T}_{j} = 150^{\circ}\text{C}$ $di_{F}/dt = 1480 \text{ A/}\mu\text{s}$			1,8		mJ			
Diode - Re						,			
V _F V _(TO) r _T	$I_{Fnom} = 35 \text{ A}, T_j = 25 ^{\circ}\text{C}$ $T_j = 150 ^{\circ}\text{C}$ $T_j = 150 ^{\circ}\text{C}$			1,1 0,8 11		V V mΩ			
R _{th(j-s)}	per diode			0,9		K/W			
Temperat	ure Sensor 3 %, T _r = 25 (100) °C			1000(1670)		Ω			
Mechanical Data									
w M _s	Mounting torque		2	97	2,5	g Nm			

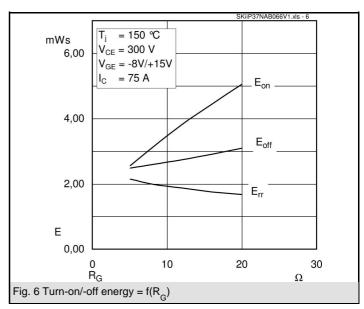


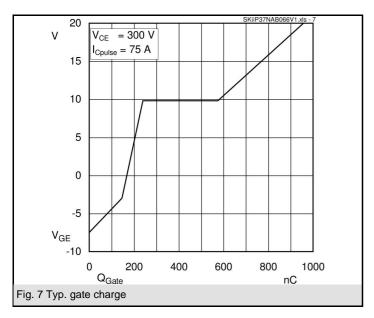


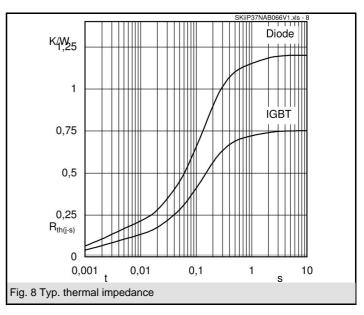


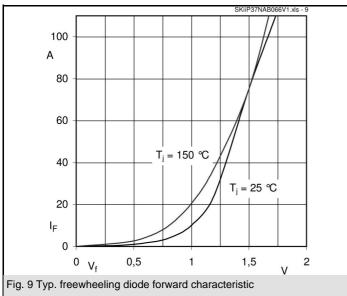


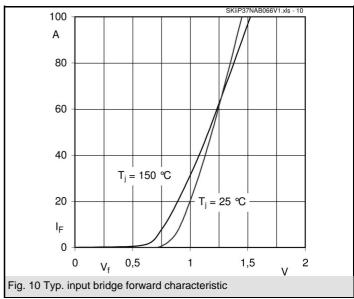


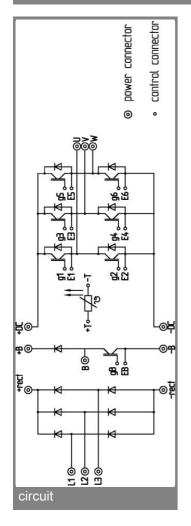


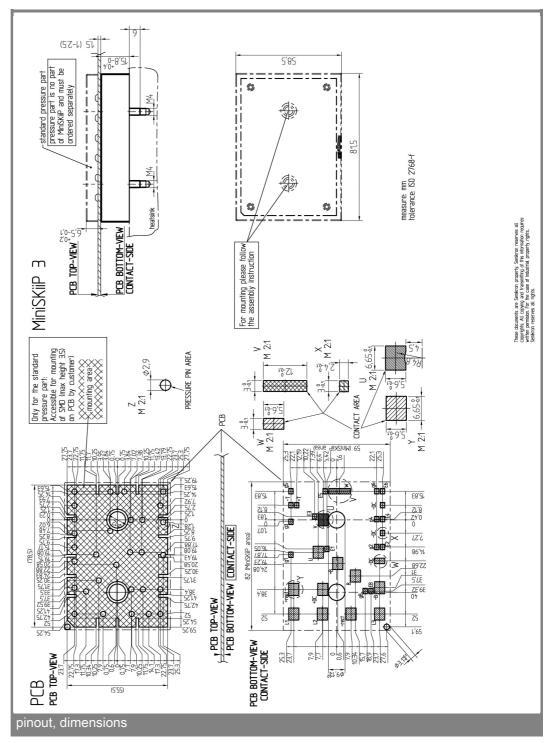












This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

^{*} 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.