

MiniSKiiP® 2

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 24NAB126V1

Features

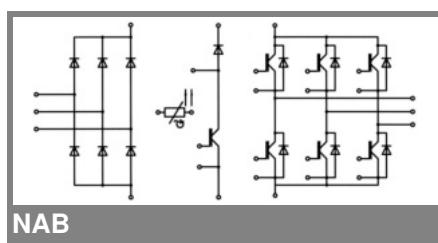
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 19 kVA
- Typical motor power 11 kW

Remarks

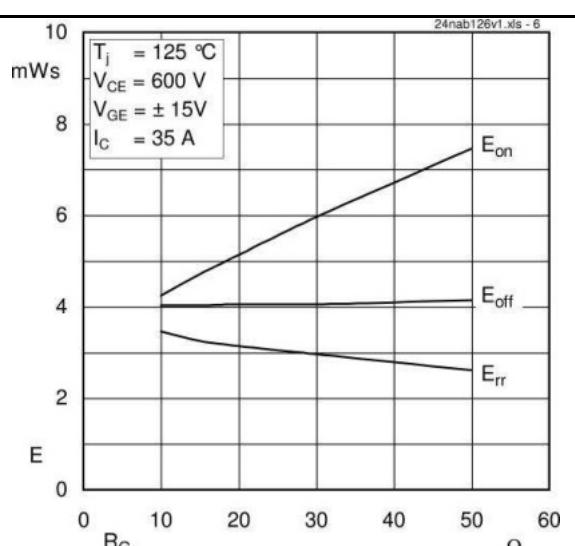
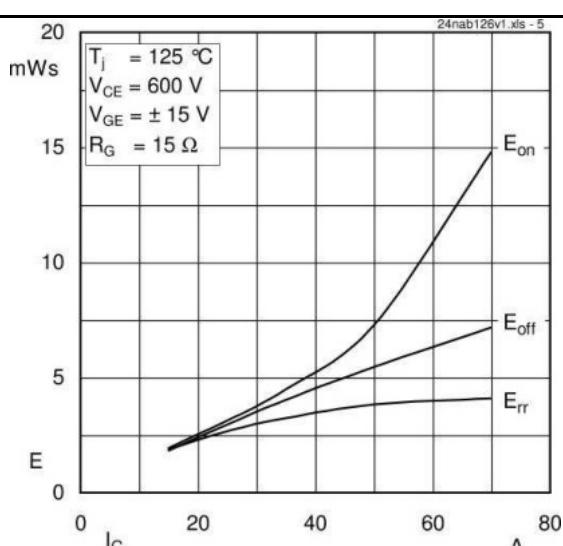
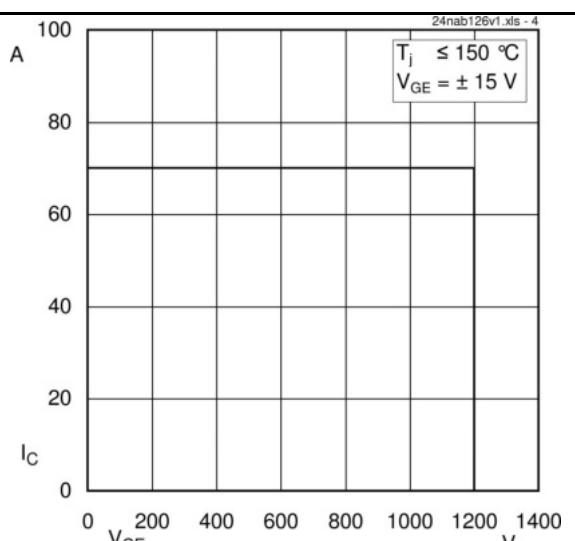
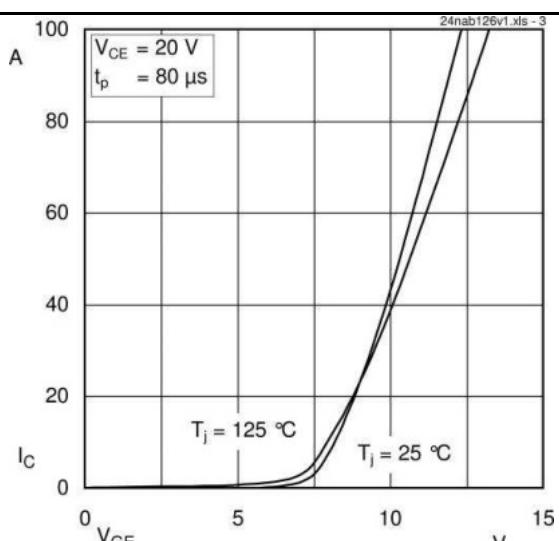
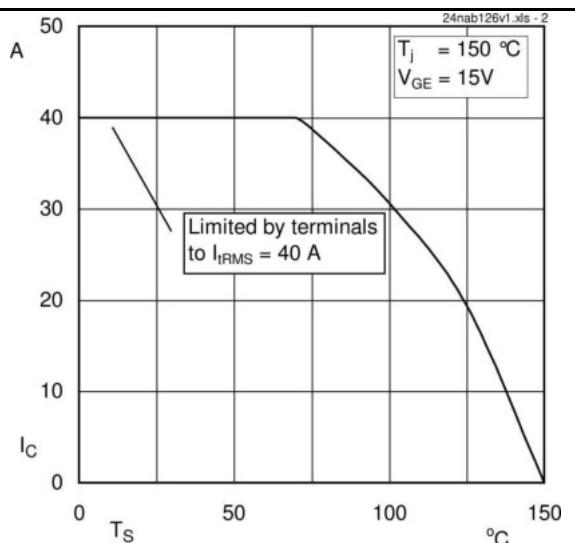
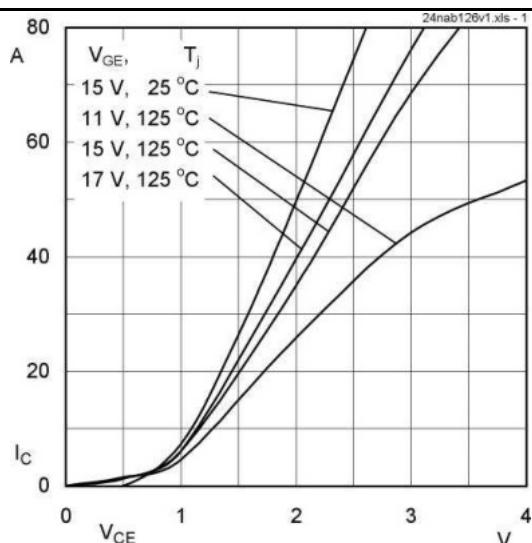
- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT - Inverter, Chopper				
V_{CES}		1200		V
I_C	$T_s = 25 (70)^\circ\text{C}$	52 (40)		A
I_{CRM}		70		A
V_{GES}		± 20		V
T_j		- 40 ... + 150		$^\circ\text{C}$
Diode - Inverter, Chopper				
I_F	$T_s = 25 (70)^\circ\text{C}$	38 (29)		A
I_{FRM}		70		A
T_j		- 40 ... + 150		$^\circ\text{C}$
Diode - Rectifier				
V_{RRM}		1600		V
I_F	$T_s = 70^\circ\text{C}$	46		A
I_{FSM}	$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	370		A
$i_{\bar{t}}$	$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	680		A^2s
T_j		- 40 ... + 150		$^\circ\text{C}$
Module				
I_{tRMS}	per power terminal (20 A / spring)	40		A
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.
IGBT - Inverter, Chopper				
V_{CEsat}	$I_{Cnom} = 35 \text{ A}, T_j = 25 (125)^\circ\text{C}$		1,7 (2)	2,1 (2,4)
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1,5 \text{ mA}$	5	5,8	6,5
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)
r_T	$T_j = 25 (125)^\circ\text{C}$		20 (31)	26 (37)
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		2,4	nF
C_{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,5	nF
C_{res}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,3	nF
$R_{th(j-s)}$	per IGBT		0,75	K/W
$t_{d(on)}$	under following conditions		80	ns
t_r	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		30	ns
$t_{d(off)}$	$I_{Cnom} = 35 \text{ A}, T_j = 125^\circ\text{C}$		410	ns
t_f	$R_{Gon} = R_{Goff} = 15 \Omega$		120	ns
E_{on}	inductive load		4,6	mJ
E_{off}			4	mJ
Diode - Inverter, Chopper				
$V_F = V_{EC}$	$I_{Fnom} = 35 \text{ A}, T_j = 25 (125)^\circ\text{C}$		1,8 (1,8)	2,1 (2,2)
$V_{(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,8)	1,1 (0,9)
r_T	$T_j = 25 (125)^\circ\text{C}$		23 (31)	29 (37)
$R_{th(j-s)}$	per diode		1,5	K/W
I_{RRM}	under following conditions		43	A
Q_{rr}	$I_{Fnom} = 35 \text{ A}, V_R = 600 \text{ V}$		7	μC
E_{rr}	$V_{GE} = 0 \text{ V}, T_j = 125^\circ\text{C}$ $di_F/dt = 1450 \text{ A}/\mu\text{s}$		3,3	mJ
Diode - Rectifier				
V_F	$I_{Fnom} = 25 \text{ A}, T_j = 25^\circ\text{C}$		1,1	V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8	V
r_T	$T_j = 150^\circ\text{C}$		13	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,25	K/W
Temperature Sensor				
R_{ts}	$3\%, T_r = 25 (100)^\circ\text{C}$		1000(1670)	Ω
Mechanical Data				
W		65		g
M_s	Mounting torque	2	2,5	Nm



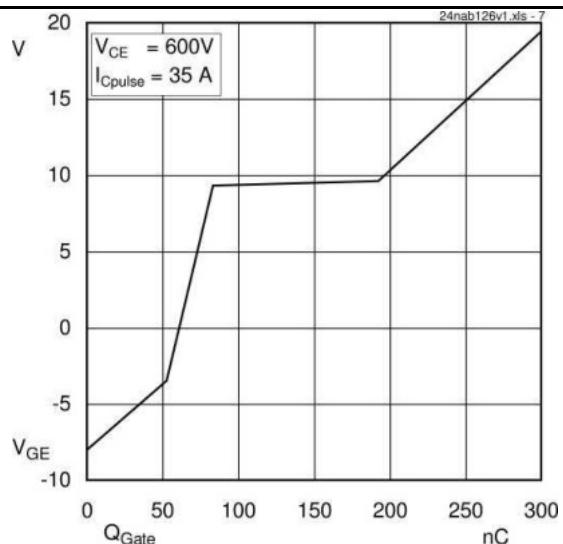


Fig. 7 Typ. gate charge characteristic

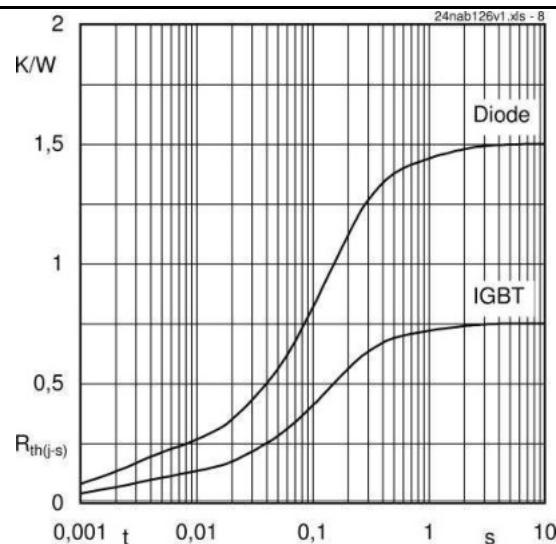


Fig. 8 Typ. thermal impedance

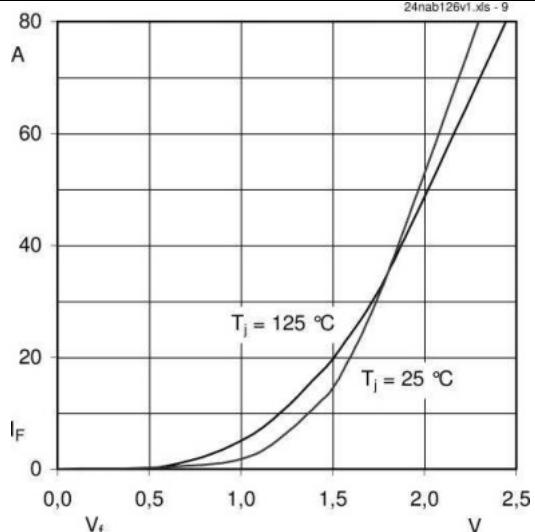


Fig. 9 Typ. freewheeling diode forward characteristic

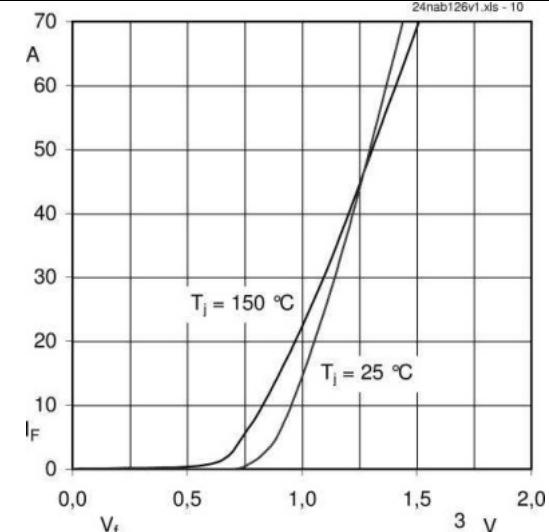
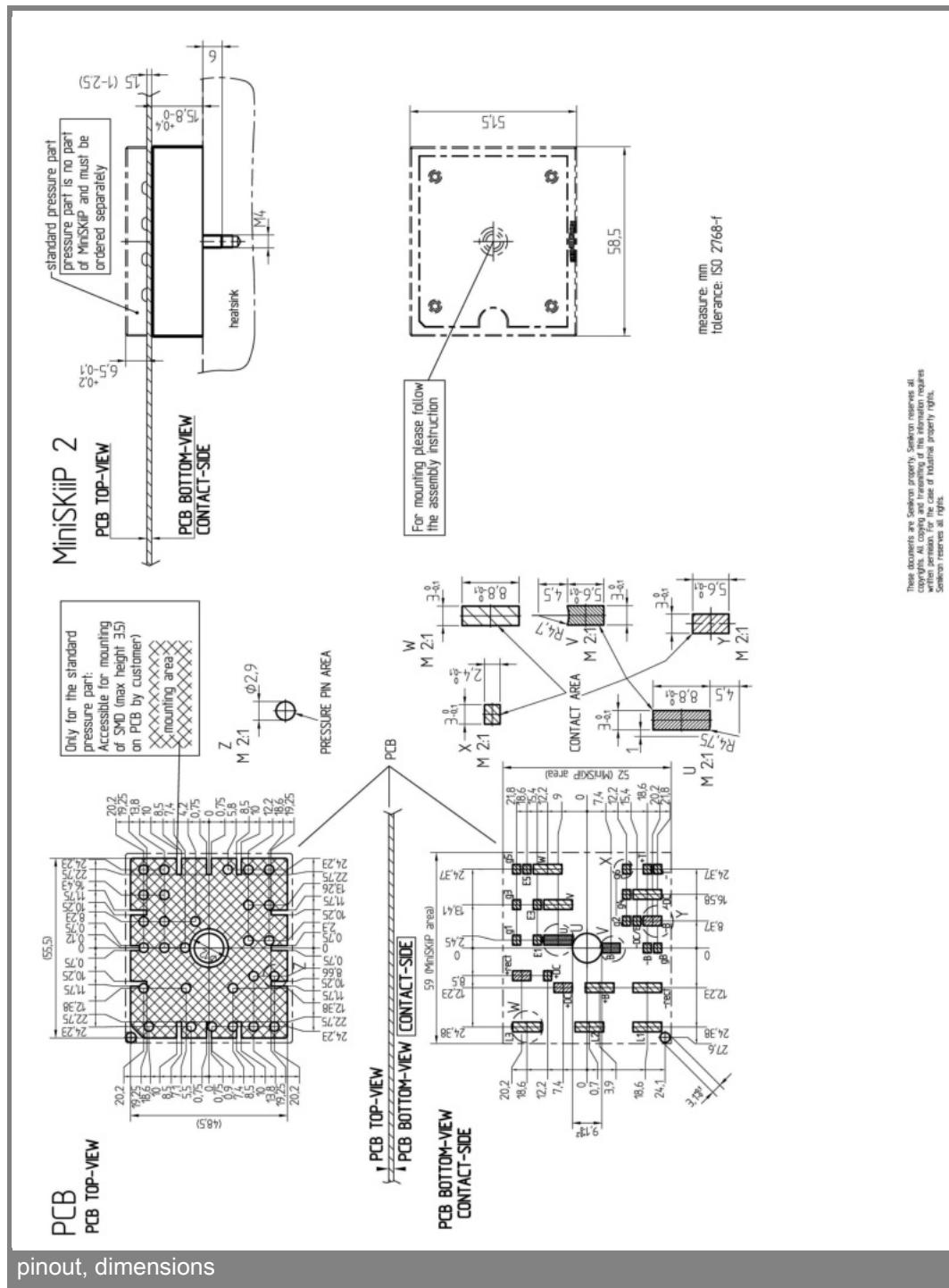
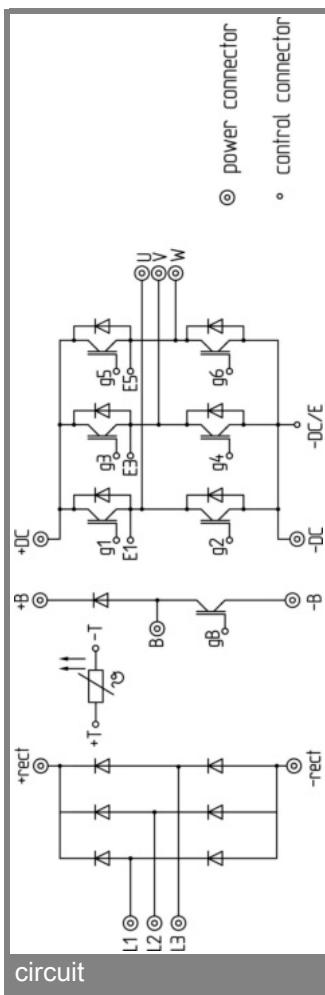


Fig. 10 Typ. input bridge forward characteristic



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.