

MiniSKiiP® 3

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 38NAB065V1

Features

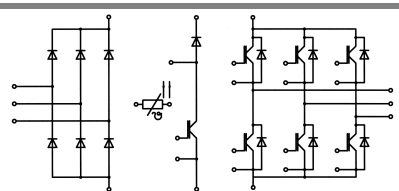
- Ultrafast NPT IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

- Inverter up to 22 kVA
- Typical motor power 11 kW

Remarks

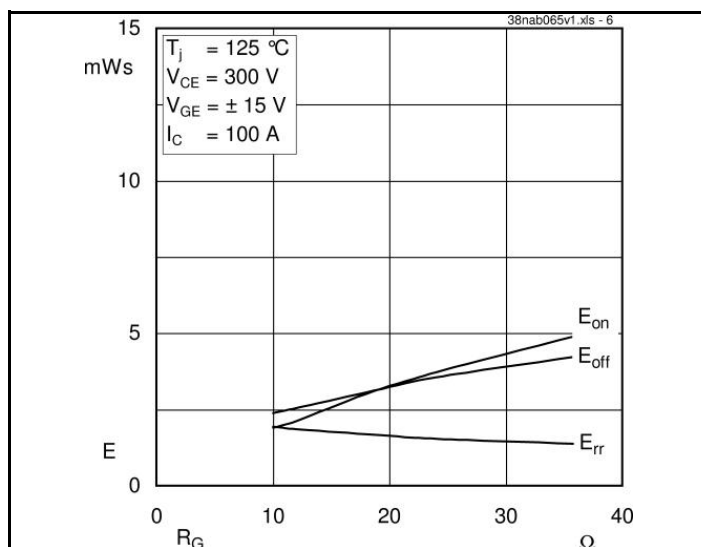
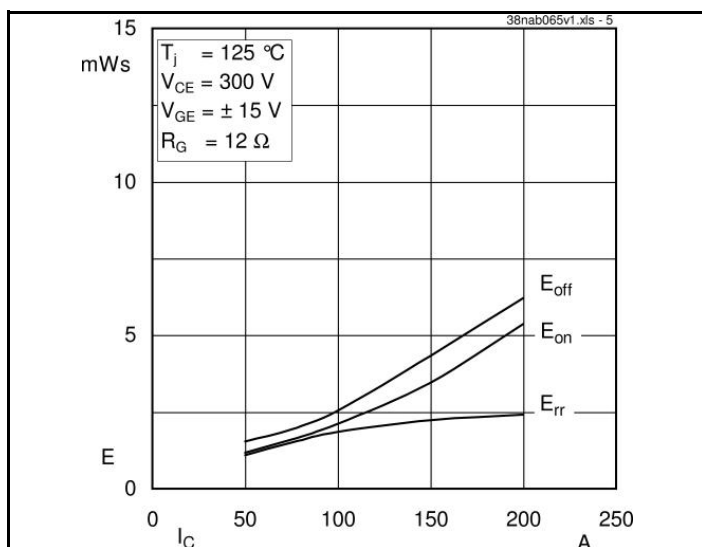
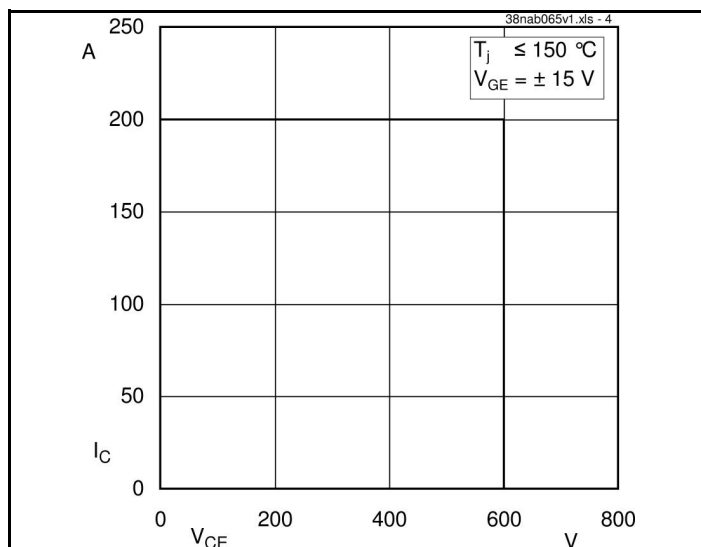
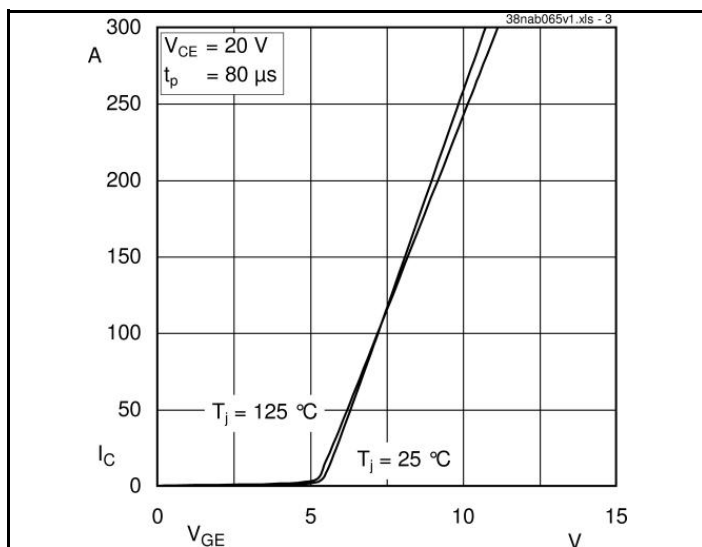
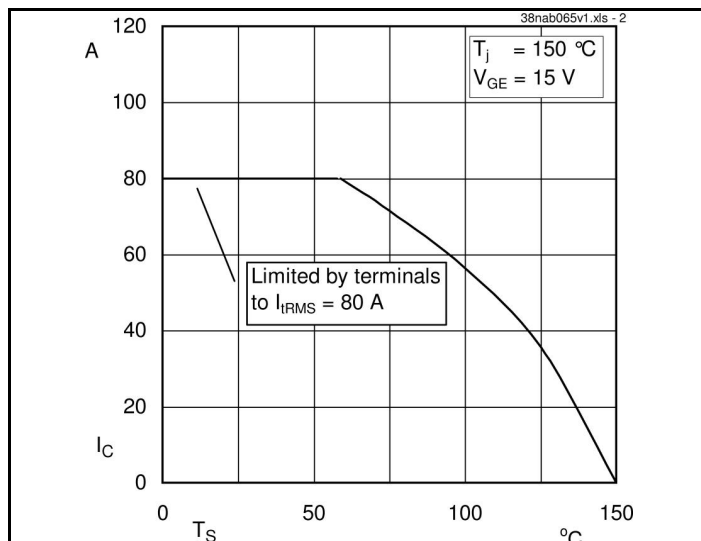
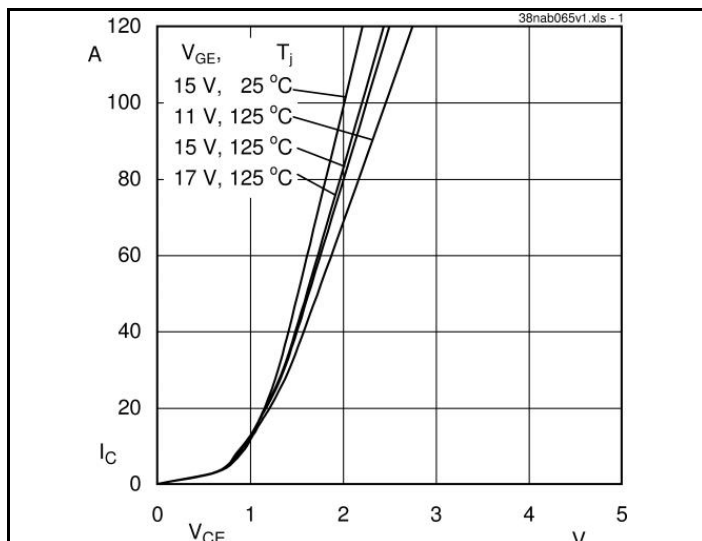
- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		T _s = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter, Chopper			
V _{CES}	T _s = 25 (70) °C t _p ≤ 1 ms	600	V
I _C		94 (70)	A
I _{CRM}		200	A
V _{GES}		± 15	V
T _j		- 40 ... + 150	°C
Diode - Inverter, Chopper			
I _F	T _s = 25 (70) °C t _p ≤ 1 ms	96 (71)	A
I _{FRM}		200	A
T _j		- 40 ... + 150	°C
Diode - Rectifier			
V _{RRM}	T _s = 70 °C t _p = 10 ms, sin 180 °, T _j = 25 °C t _p = 10 ms, sin 180 °, T _j = 25 °C	800	V
I _F		61	A
I _{FSM}		700	A
i ² t		2400	A ² s
T _j		- 40 ... + 150	°C
I _{tRMS}	per power terminal (20 A / spring)	80	A
T _{stg}	T _{op} ≤ T _{stg}	- 40 ... + 125	°C
V _{isol}	AC, 1 min.	2500	V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter, Chopper					
V_{CEsat}	$I_{Cnom} = 100\text{ A, } T_j = 25\text{ (125) °C}$		2 (2,2)	2,5 (2,7)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 2\text{ mA}$	3	4	5	V
$V_{CE(TO)}$	$T_j = 25\text{ (125) °C}$		1,2 (1,1)	1,3 (1,2)	V
r_T	$T_j = 25\text{ (125) °C}$		8 (11)	12 (15)	mΩ
C_{ies}	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		5,4		nF
C_{oes}	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		1,1		nF
C_{res}	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		1,3		nF
$R_{th(j-s)}$	per IGBT		0,5		K/W
$t_{d(on)}$	under following conditions		42		ns
t_r	$V_{CC} = 300\text{ V, } V_{GE} = \pm 15\text{ V}$		46		ns
$t_{d(off)}$	$I_{Cnom} = 100\text{ A, } T_j = 125\text{ °C}$		333		ns
t_f	$R_{Gon} = R_{Goff} = 12\text{ Ω}$		40		ns
E_{on}	inductive load		2,1		mJ
E_{off}			2,6		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 100\text{ A, } T_j = 25\text{ (125) °C}$		1,6 (1,6)	1,9 (1,9)	V
$V_{(TO)}$	$T_j = 25\text{ (125) °C}$		1 (0,9)	1,1 (1)	V
r_T	$T_j = 25\text{ (125) °C}$		6 (7)	8 (9)	mΩ
$R_{th(j-s)}$	per diode		0,7		K/W
I_{RRM}	under following conditions		92		A
Q_{rr}	$I_{Fnom} = 100\text{ A, } V_R = 300\text{ V}$		9,1		μC
E_{rr}	$V_{GE} = 0\text{ V, } T_j = 125\text{ °C}$ $di_F/dt = 2350\text{ A/μs}$		1,8		mJ
Diode - Rectifier					
V_F	$I_{Fnom} = 35\text{ A, } T_j = 25\text{ °C}$		1,1		V
$V_{(TO)}$	$T_j = 150\text{ °C}$		0,8		V
r_T	$T_j = 150\text{ °C}$		11		mΩ
$R_{th(j-s)}$	per diode		0,9		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25\text{ (100) °C}$		1000(1670)		Ω
Mechanical Data					
w			95		g
M_s	Mounting torque	2		2,5	Nm



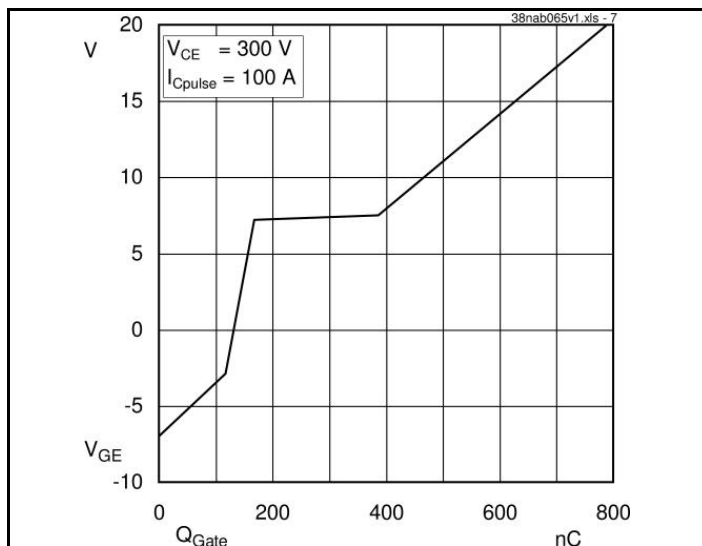


Fig. 7 Typ. gate charge characteristic

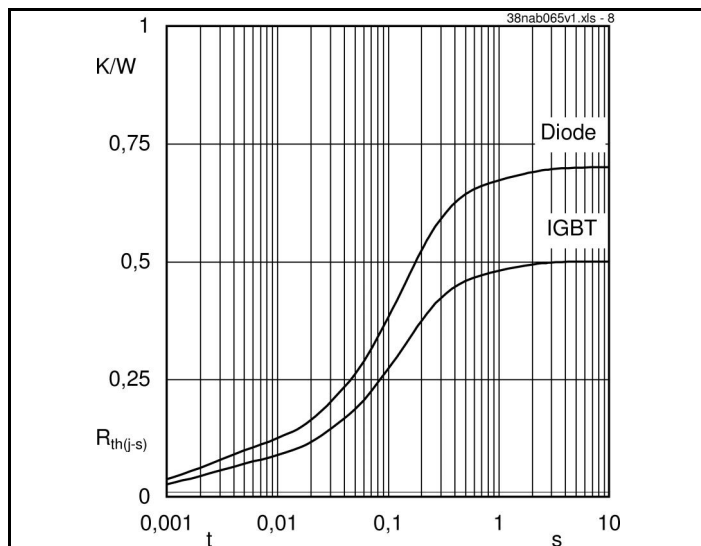


Fig. 8 Typ. thermal impedance

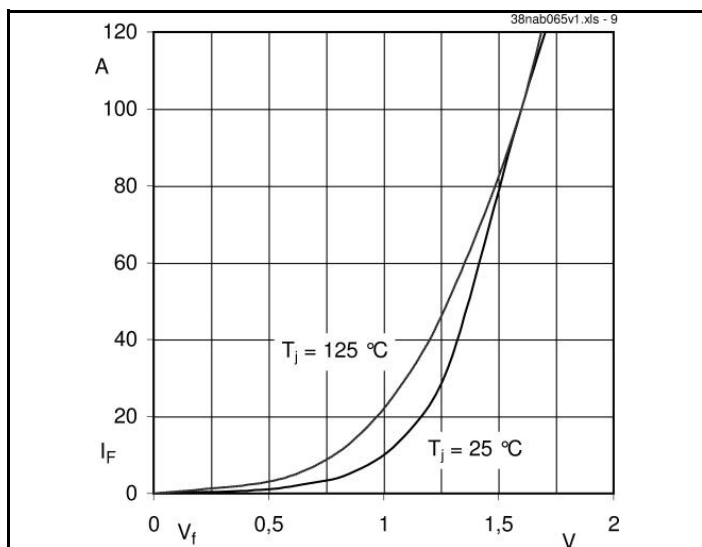


Fig. 9 Typ. freewheeling diode forward characteristic

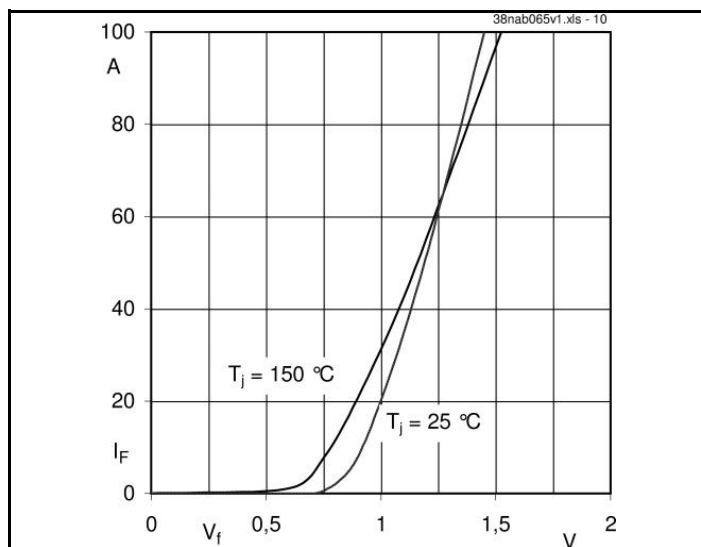
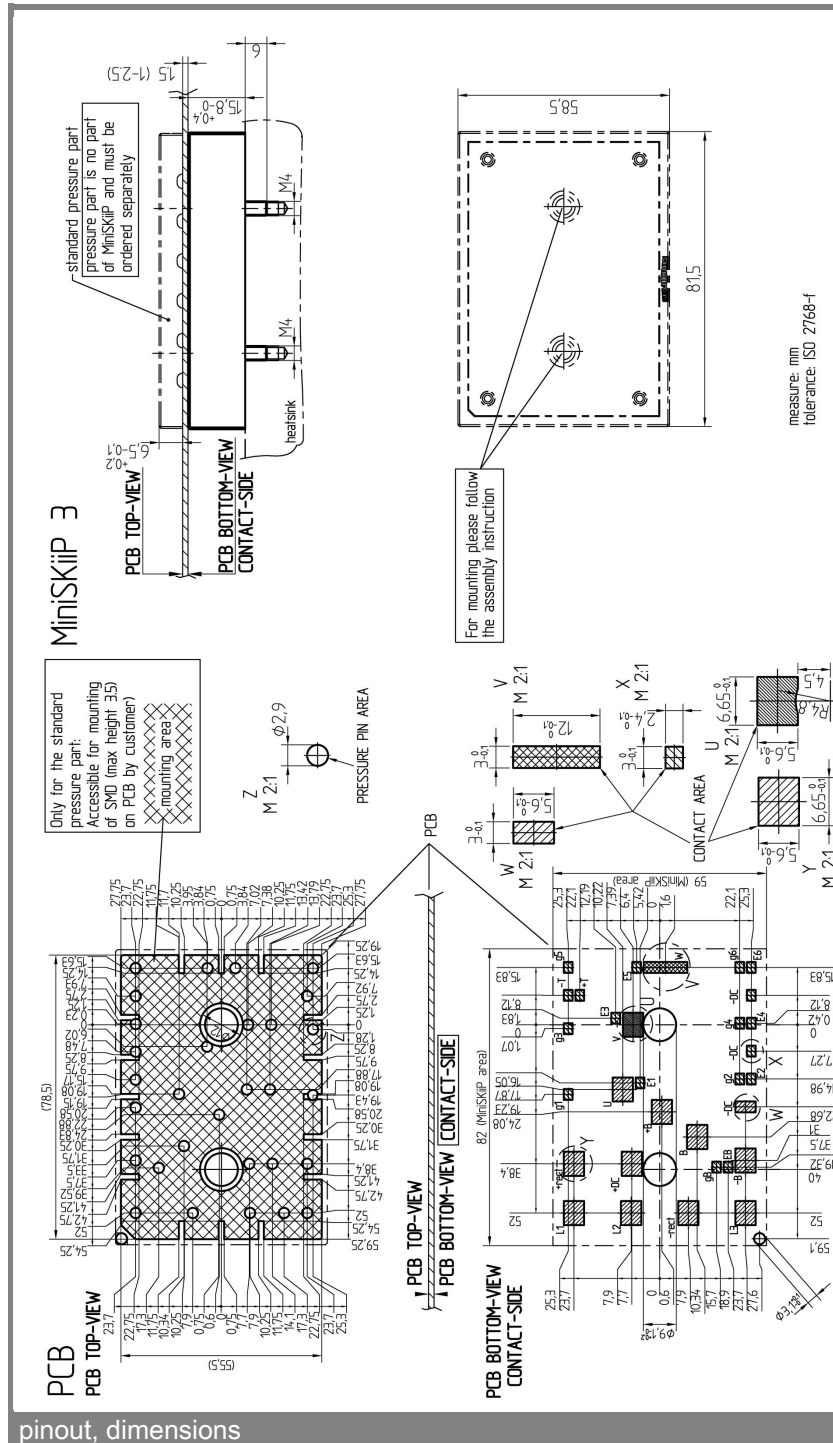
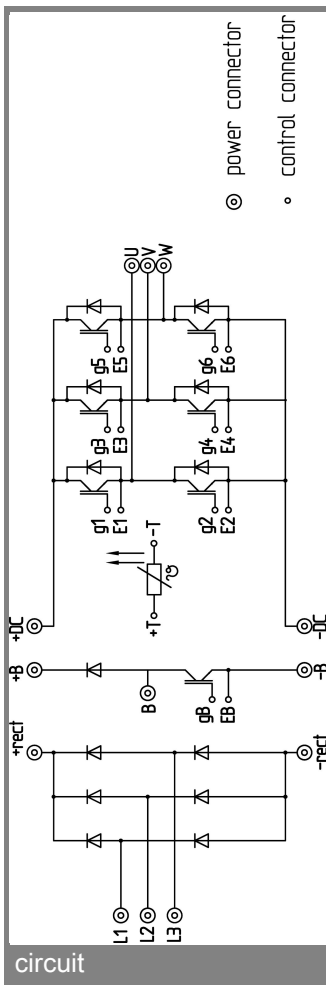


Fig. 10 Typ. input bridge forward characteristic



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