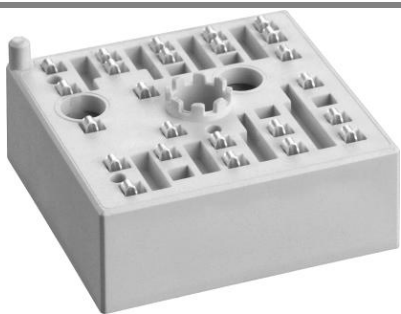




MiniSKiiP®1

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 12NAB126V20

Preliminary Data

Features

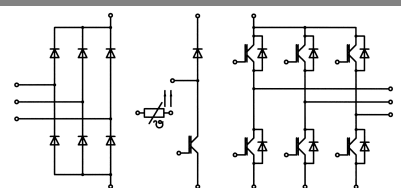
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

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}	T _s = 27 (70) °C	1200	V
I _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}	T _s = 70 °C	1600	V
I _F		35	A
I _{FSM}		220	A
i ² t		240	A²s
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		$T_S = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter, Chopper					
V_{CEsat}	$I_{Cnom} = 15\text{ A}$, $T_j = 25 (125)^\circ\text{C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 0,6\text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		47 (43)	60 (87)	$\text{m}\Omega$
C_{ies}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		1		nF
C_{oes}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		0,1		nF
C_{res}	$V_{CE} = 25\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 1\text{ MHz}$		0,1		nF
$R_{th(j-s)}$	per IGBT		1,15		K/W
$t_{d(on)}$	under following conditions		35		ns
t_r	$V_{CC} = 600\text{ V}$, $V_{GE} = \pm 15\text{ V}$		30		ns
$t_{d(off)}$	$I_{Cnom} = 15\text{ A}$, $T_j = 125^\circ\text{C}$		340		ns
t_f	$R_{Gon} = R_{Goff} = 30\ \Omega$		65		ns
E_{on}	inductive load		1,5		mJ
E_{off}			1,8		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 15\text{ A}$, $T_j = 25 (125)^\circ\text{C}$		2,3 (2,2)	2,8 (2,7)	V
$V_{(TO)}$	$T_j = 25 (125)^\circ\text{C}$		0,9 (0,6)	1,1 (0,8)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		93 (107)	113 (127)	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,95		K/W
I_{RRM}	under following conditions		22,5		A
Q_{rr}	$I_{Fnom} = 15\text{ A}$, $V_R = 600\text{ V}$		2,2		μC
E_{rr}	$V_{GE} = 0\text{ V}$, $T_j = 125^\circ\text{C}$		0,9		mJ
	$di_F/dt = 1000\text{ A}/\mu\text{s}$				
Diode - Rectifier					
V_F	$I_{Fnom} = 15\text{ A}$, $T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
r_T	$T_j = 150^\circ\text{C}$		20		$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,5		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
w			35		g
M_s	Mounting torque	2		2,5	Nm

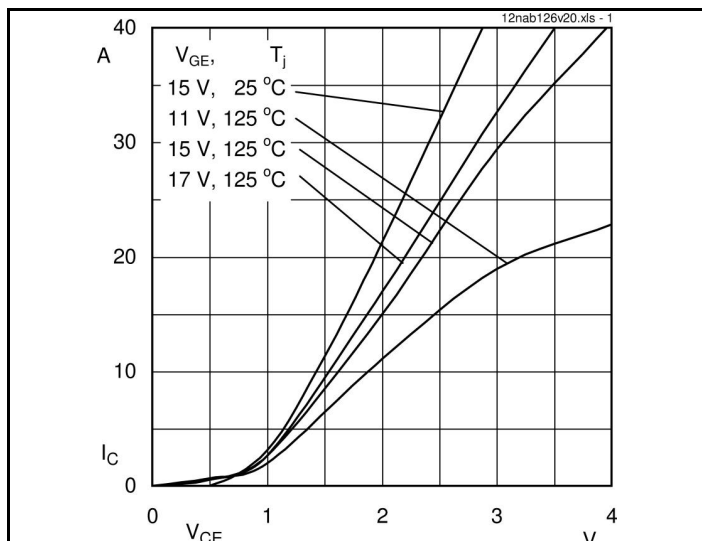


Fig. 1 Typ. output characteristic

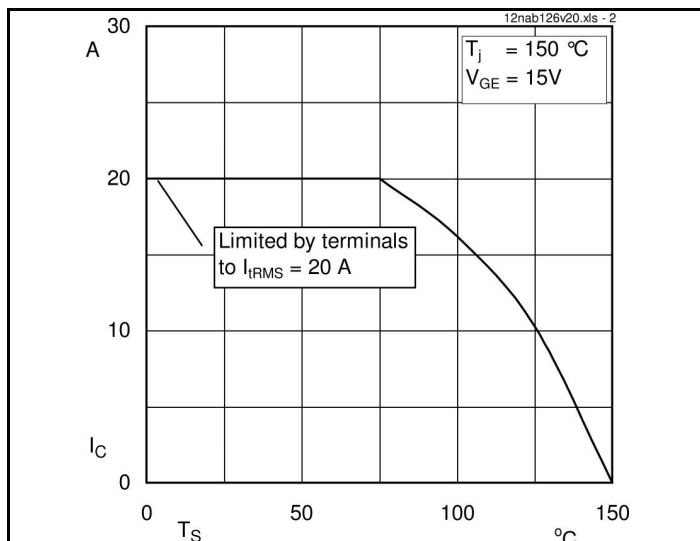


Fig. 2 Typ. rated current vs. temperature

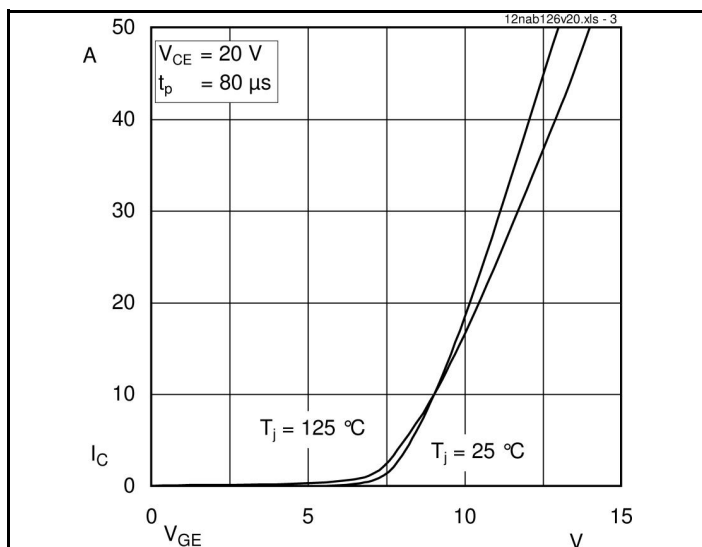


Fig. 3 Typ. transfer characteristic

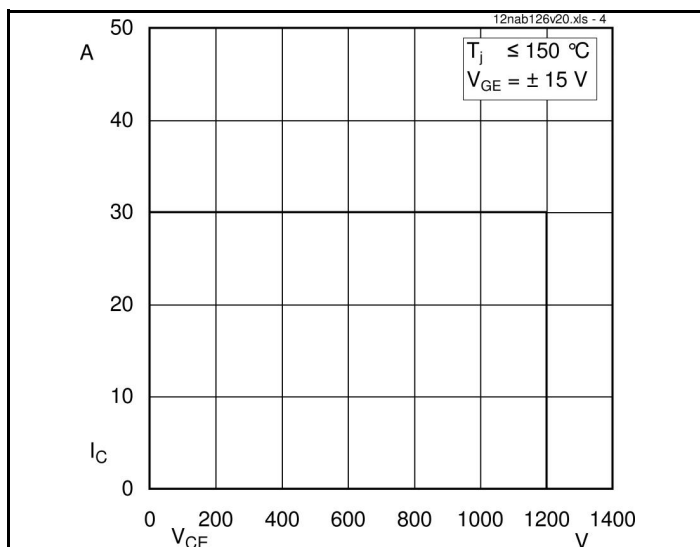


Fig. 4 Reverse bias safe operating area

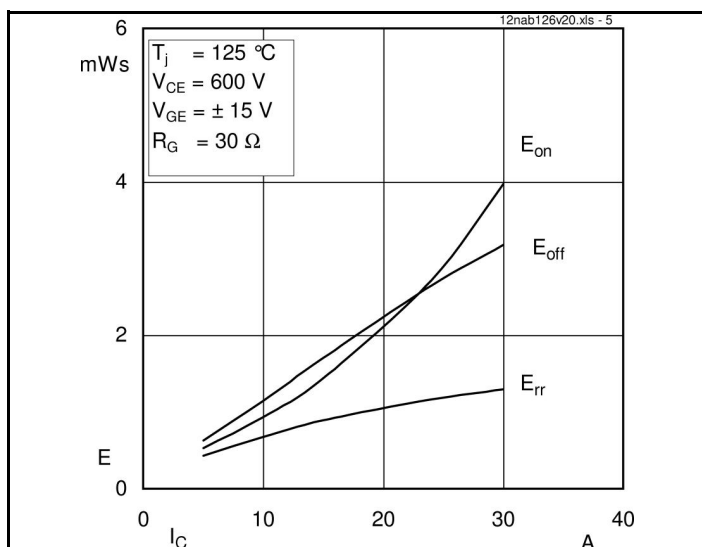


Fig. 5 Typ. Turn-on /-off energy = $f(I_C)$

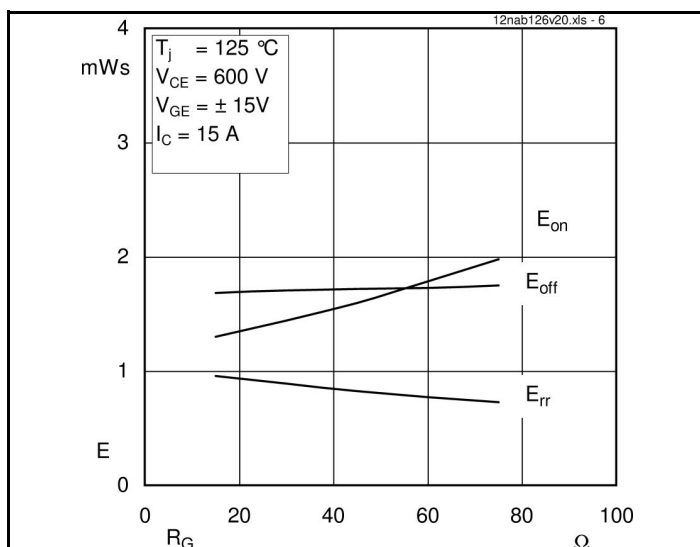
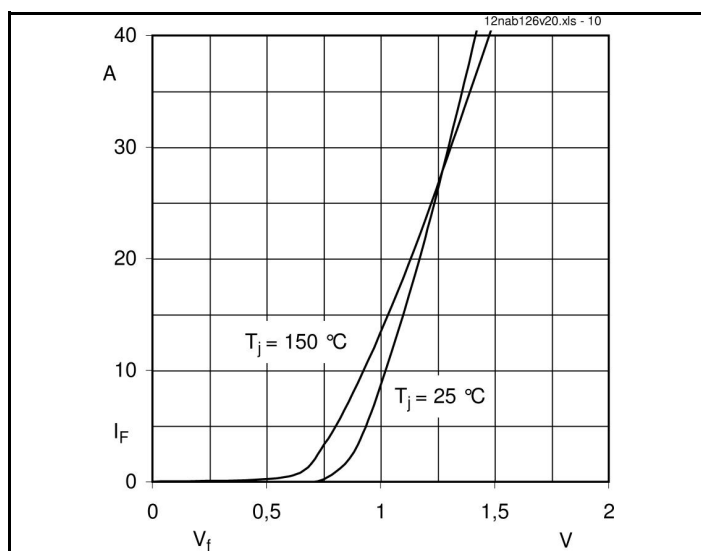
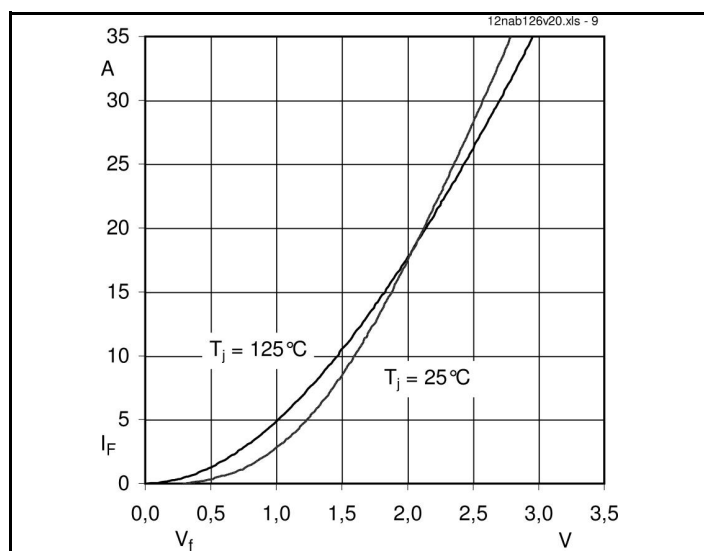
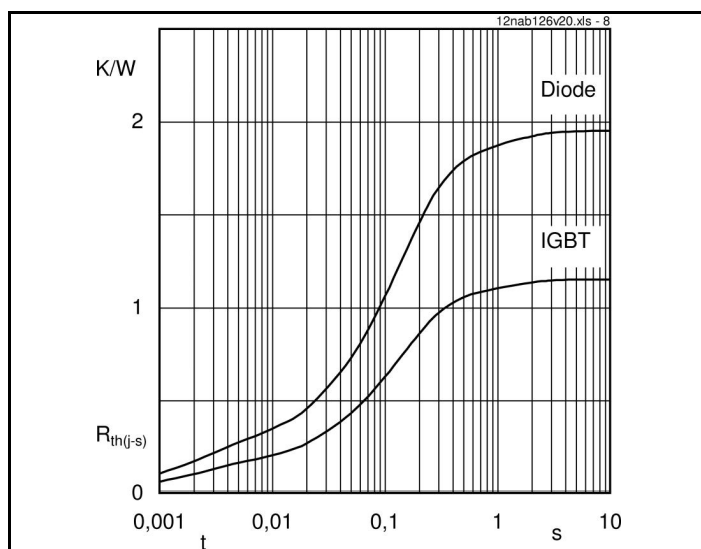
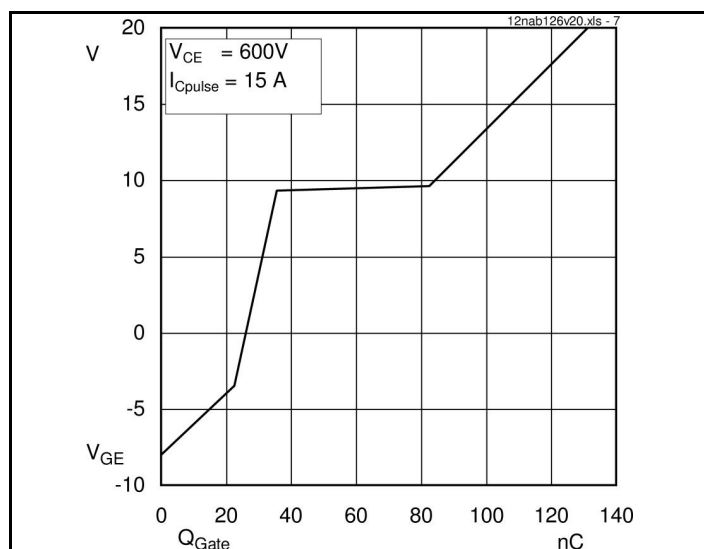
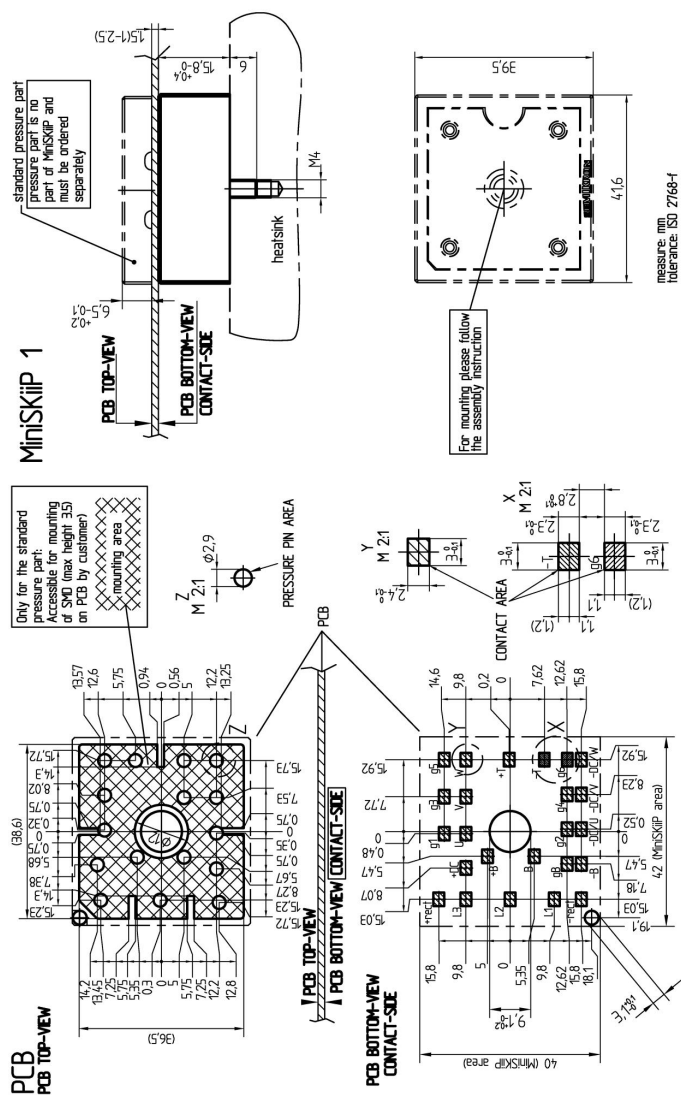
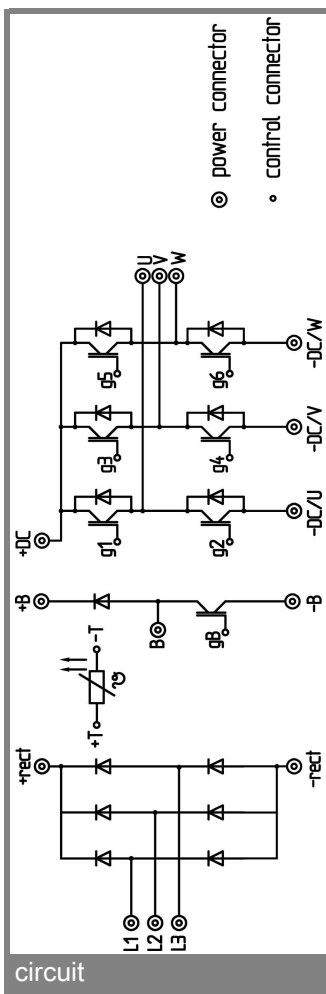


Fig. 6 Typ Turn-on /-off energy = $f(R_G)$





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