

MiniSKiiP®3

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

Target Data

Features

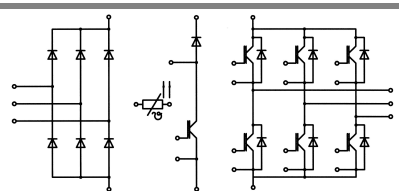
- Trench IGBT
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

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

Remarks

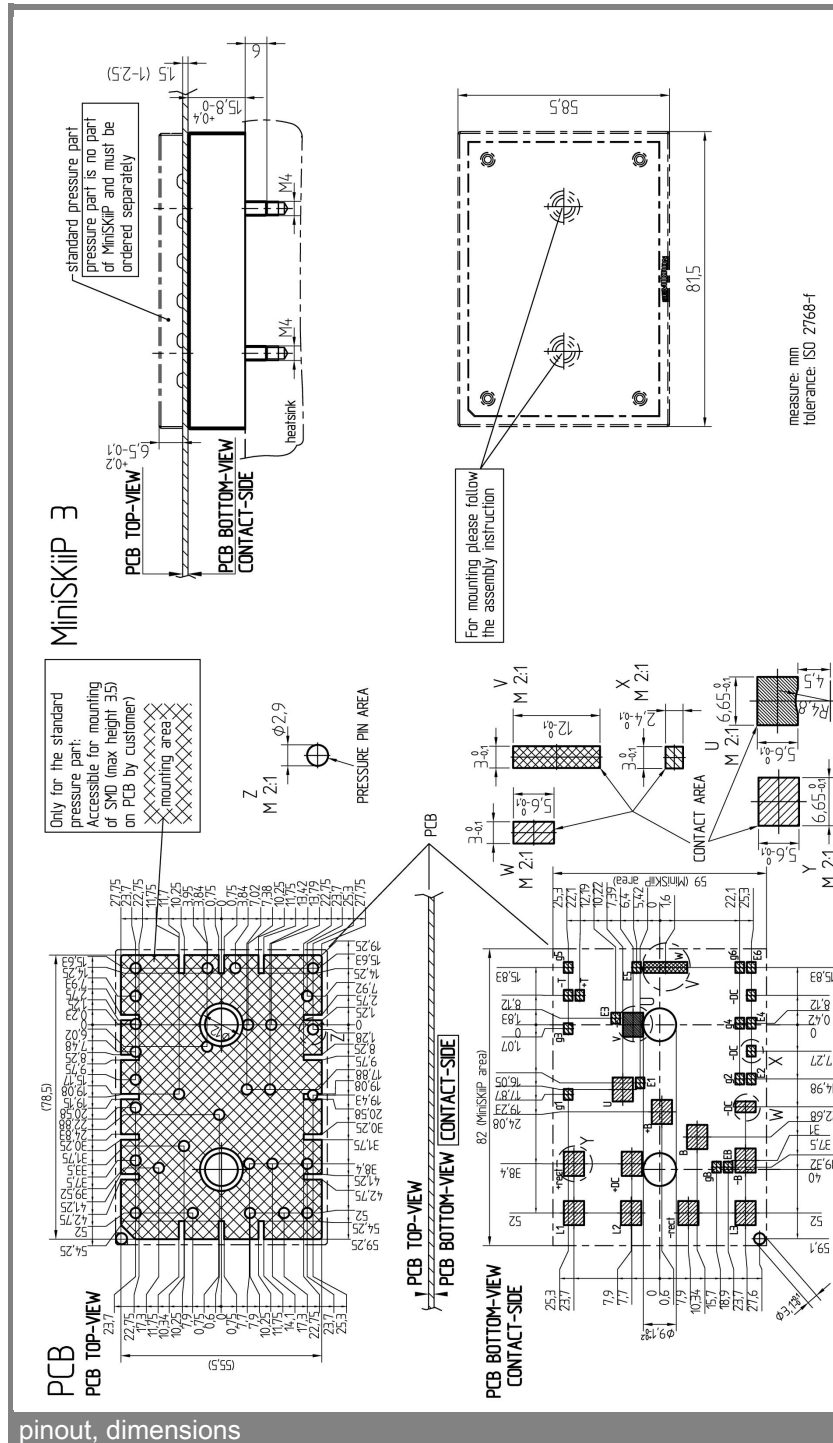
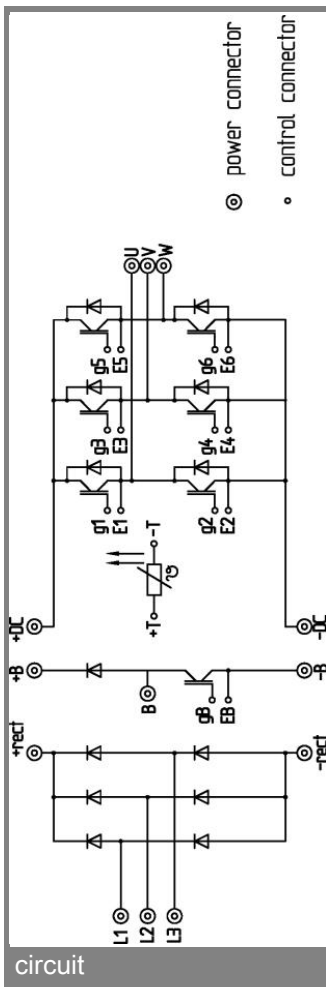
- Case temperature limited to $T_C = 125^\circ\text{C}$
- Product reliability results are valid for $T_j = 150^\circ\text{C}$
- SC data: $t_p \leq 6 \mu\text{s}$; $V_{GE} \leq 15 \text{ V}$; $T_j = 150^\circ\text{C}$, $V_{CC} = 360 \text{ V}$
- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT - Inverter			
V_{CES}		600	V
I_C	$T_s = 25 (70)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	79 (53)	A
I_C	$T_s = 25 (70)^\circ\text{C}$, $T_j = 175^\circ\text{C}$	88 (65)	A
I_{CRM}	$t_p = 1 \text{ ms}$	150	A
V_{GES}		± 20	V
Diode - Inverter			
I_F	$T_s = 25 (70)^\circ\text{C}$, $T_j = 150^\circ\text{C}$	65 (42)	A
I_F	$T_s = 25 (70)^\circ\text{C}$, $T_j = 175^\circ\text{C}$	77 (56)	A
I_{FRM}	$t_p = 1 \text{ ms}$	150	A
Diode - Rectifier			
V_{RRM}		800	V
I_F	$T_s = 70^\circ\text{C}$	61	A
I_{FSM}	$t_p = 10 \text{ ms}$, $\sin 180^\circ$, $T_j = 25^\circ\text{C}$	700	A
i^2t	$t_p = 10 \text{ ms}$, $\sin 180^\circ$, $T_j = 25^\circ\text{C}$	2400	A ² s
I_{tRMS}	per power terminal (20 A / spring)	80	A
T_j	IGBT, Diode	-40...+175	$^\circ\text{C}$
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.	Units
IGBT - Inverter					
$V_{CE(sat)}$	$I_{Cnom} = 75 \text{ A}$, $T_j = 25 (150)^\circ\text{C}$	1,05	1,45 (1,65)	1,85 (2,05)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 1 \text{ mA}$		5,8		V
$V_{CE(TO)}$	$T_j = 25 (150)^\circ\text{C}$		0,85 (0,7)	1,1 (1)	V
r_{CE}	$T_j = 25 (150)^\circ\text{C}$		8 (12,7)	10 (14)	m Ω
C_{ies}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		4,4		nF
C_{oes}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,78		nF
C_{res}	$V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$		0,66		nF
$R_{CC'+EE'}$	spring contact-chip $T_s = 25 (150)^\circ\text{C}$				m Ω
$R_{th(j-s)}$	per IGBT		0,75		K/W
$t_{d(on)}$	under following conditions		115		ns
t_r	$V_{CC} = 300 \text{ V}$, $V_{GE} = -8\text{V}/+15\text{V}$		45		ns
$t_{d(off)}$	$I_{Cnom} = 75 \text{ A}$, $T_j = 150^\circ\text{C}$		475		ns
t_f	$R_{Gon} = R_{Goff} = 8,2 \Omega$		60		ns
$E_{on} (E_{off})$	inductive load		2,7 (3)		mJ
Diode - Inverter					
$V_F = V_{EC}$	$I_F = 75 \text{ A}$, $T_j = 25 (150)^\circ\text{C}$		1,5 (1,5)	1,7 (1,7)	V
$V_{(TO)}$	$T_j = 25 (150)^\circ\text{C}$		1 (0,9)	1,1 (1)	V
r_T	$T_j = 25 (150)^\circ\text{C}$		6,7 (8)	8 (9,3)	m Ω
$R_{th(j-s)}$	per diode		1,2		K/W
I_{RRM}	under following conditions		52		A
Q_{rr}	$I_{Fnom} = 75 \text{ A}$, $V_R = 300 \text{ V}$		8		μC
E_{rr}	$V_{GE} = 0 \text{ V}$, $T_j = 150^\circ\text{C}$		1,8		mJ
	$di_F/dt = 1480 \text{ A}/\mu\text{s}$				
Diode - Rectifier					
V_F	$I_{Fnom} = 35 \text{ A}$, $T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
r_T	$T_j = 150^\circ\text{C}$		11		m Ω
$R_{th(j-s)}$	per diode		0,9		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
w			97		g
M_s	Mounting torque	2		2,5	Nm



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

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