

# SKiiP 23NAB12T4V1



## MiniSKiiP<sup>®</sup> 2

3-phase bridge rectifier +  
brake chopper + 3-phase  
bridge inverter  
**SKiiP 23NAB12T4V1**

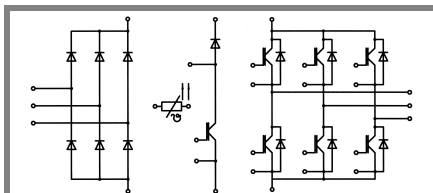
Target Data

### Features

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

### Remarks

- $V_{CEsat}$ ,  $V_F$  = chip level value

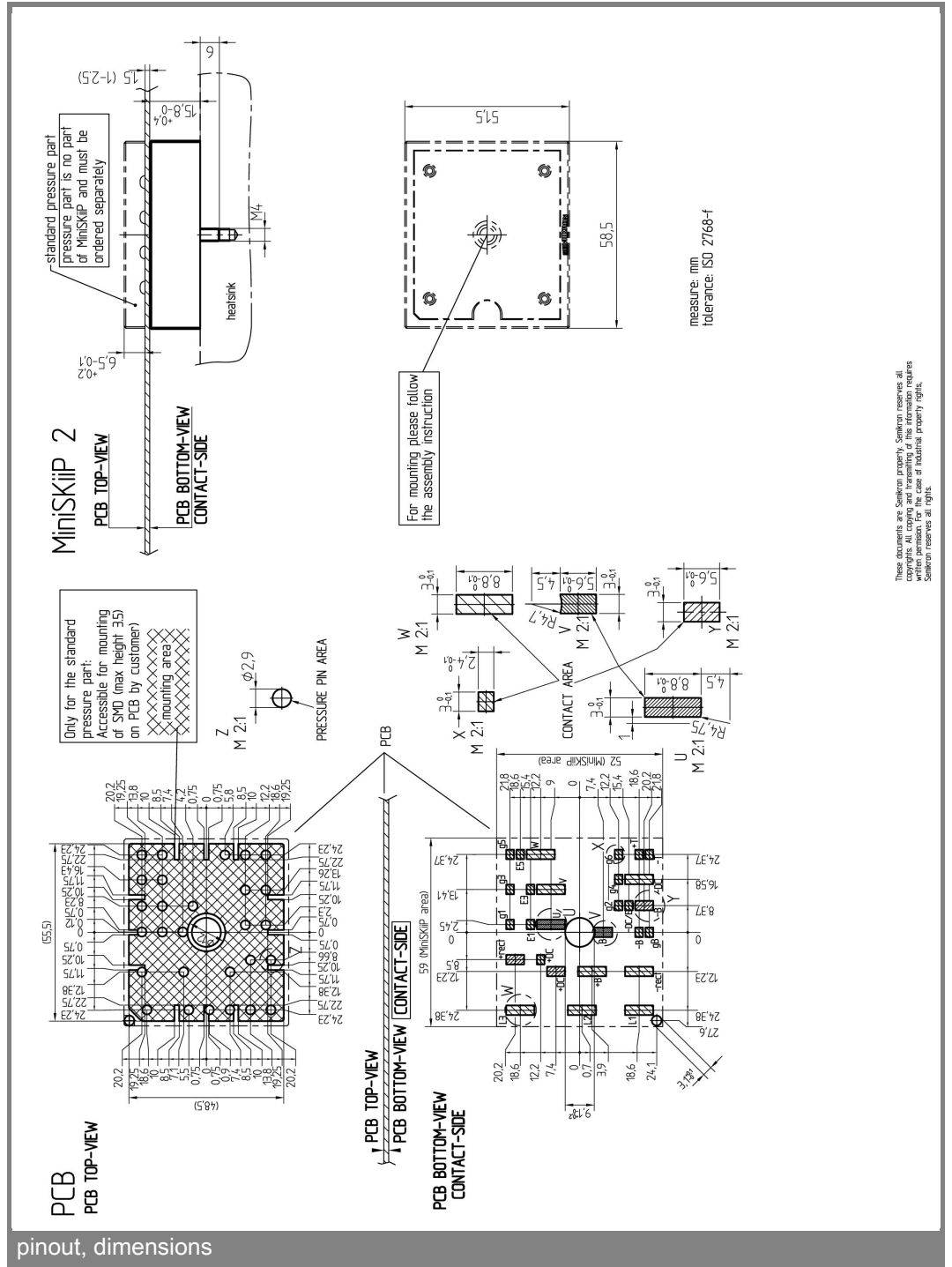
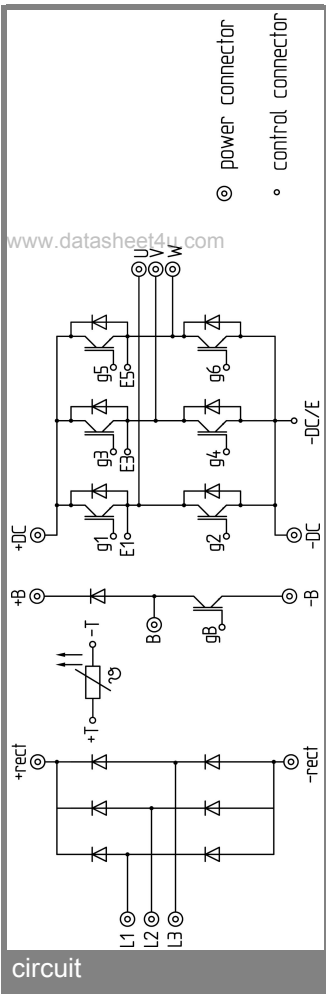


NAB

Absolute Maximum Ratings		$T_s = 25\text{ °C}$ , unless otherwise specified	
Symbol	Conditions	Values	Units
<b>IGBT - Inverter, Chopper</b>			
$V_{CES}$		1200	V
$I_C$	$T_s = 25\text{ (70) °C}$	44 (35)	A
$I_{CRM}$	$t_p \leq 1\text{ ms}$	75	A
$V_{GES}$		$\pm 20$	V
$T_j$		- 40 ... + 175	°C
<b>Diode - Inverter, Chopper</b>			
$I_F$	$T_s = 25\text{ (70) °C}$	30 (24)	A
$I_{FRM}$	$t_p \leq 1\text{ ms}$	75	A
$T_j$		- 40 ... + 175	°C
<b>Diode - Rectifier</b>			
$V_{RRM}$		1600	V
$I_F$	$T_s = 70\text{ °C}$	46	A
$I_{FSM}$	$t_p = 10\text{ ms, sin } 180\text{ °, } T_j = 25\text{ °C}$	370	A
$i^2t$	$t_p = 10\text{ ms, sin } 180\text{ °, } T_j = 25\text{ °C}$	680	A <sup>2</sup> s
$T_j$		- 40 ... + 150	°C
$I_{tRMS}$	per power terminal (20 A / spring)	40	A
$T_{stg}$	$T_{op} \leq T_{stg}$	- 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
<b>IGBT - Inverter, Chopper</b>					
$V_{CEsat}$	$I_{Cnom} = 25\text{ A, } T_j = 25\text{ (150) °C}$		1,85 (2,25)	2,05 (2,45)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1\text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25\text{ (150) °C}$		1,1 (1)	1,3 (1,2)	V
$r_T$	$T_j = 25\text{ (150) °C}$		30 (50)	30 (50)	mΩ
$C_{ies}$	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		-	-	nF
$C_{oes}$	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		-	-	nF
$C_{res}$	$V_{CE} = 25\text{ V, } V_{GE} = 0\text{ V, } f = 1\text{ MHz}$		-	-	nF
$R_{th(j-s)}$	per IGBT		0,96		K/W
$t_{d(on)}$	under following conditions		-	-	ns
$t_r$	$V_{CC} = 600\text{ V, } V_{GE} = \pm 15\text{ V}$		-	-	ns
$t_{d(off)}$	$I_{Cnom} = 25\text{ A, } T_j = 150\text{ °C}$		-	-	ns
$t_f$	$R_{Gon} = R_{Goff} = 24\text{ Ω}$		-	-	ns
$E_{on}$	inductive load		2,65		mJ
$E_{off}$			2,4		mJ
<b>Diode - Inverter, Chopper</b>					
$V_F = V_{EC}$	$I_{Fnom} = 25\text{ A, } T_j = 25\text{ (150) °C}$		2,4 (2,45)	2,75 (2,8)	V
$V_{(TO)}$	$T_j = 25\text{ (150) °C}$		1,3 (0,9)	1,5 (1,1)	V
$r_T$	$T_j = 25\text{ (150) °C}$		44 (62)	50 (68)	mΩ
$R_{th(j-s)}$	per diode		1,7		K/W
$I_{RRM}$	under following conditions		24,6		A
$Q_{rr}$	$I_{Fnom} = 25\text{ A, } V_R = 600\text{ V}$		3,7		μC
$E_{rr}$	$V_{GE} = 0\text{ V, } T_j = 150\text{ °C}$		1,6		mJ
	$di_F/dt = 1000\text{ A/μs}$				
<b>Diode - Rectifier</b>					
$V_F$	$I_{Fnom} = 25\text{ A, } T_j = 25\text{ °C}$		1,1		V
$V_{(TO)}$	$T_j = 150\text{ °C}$		0,8		V
$r_T$	$T_j = 150\text{ °C}$		13		mΩ
$R_{th(j-s)}$	per diode		1,25		K/W
<b>Temperature Sensor</b>					
$R_{ts}$	3 %, $T_r = 25\text{ (100) °C}$		1000(1670)		Ω
<b>Mechanical Data</b>					
w			65		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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