

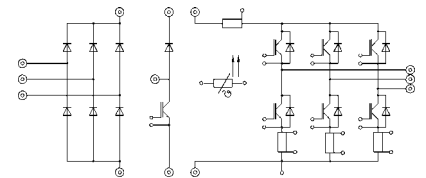
SKiiP 21 NAB 063 T1, SKiiP 21 NAB 063 I T1

Absolute Maximum Ratings			
Symbol	Conditions ¹⁾	Values	Units
Inverter			
V_{CES}		600	V
V_{GES}		± 20	V
I_C	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	24 / 17	A
I_{CM}	$t_p < 1 \text{ ms}; T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	48 / 34	A
$I_F = -I_C$	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	36 / 24	A
$I_{FM} = -I_{CM}$	$t_p < 1 \text{ ms}; T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	72 / 48	A
Bridge Rectifier			
V_{RRM}		800	V
I_D	$T_{\text{heatsink}} = 80 \text{ }^\circ\text{C}$	25	A
I_{FSM}	$t_p = 10 \text{ ms}; \sin. 180^\circ; T_j = 25 \text{ }^\circ\text{C}$	370	A
I^2t	$t_p = 10 \text{ ms}; \sin. 180^\circ; T_j = 25 \text{ }^\circ\text{C}$	680	A ² s
T_j		-40 ... +150	$^\circ\text{C}$
T_{stg}		-40 ... +125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V

Characteristics					
Symbol	Conditions ¹⁾	min.	typ.	max.	Units
IGBT - Inverter & Chopper					
V_{CEsat}	$I_C = 20 \text{ A}; T_j = 25 (125) \text{ }^\circ\text{C}$	-	2,1(2,4)	2,6(2,9)	V
$t_{d(on)}$	$V_{CC} = 300 \text{ V}; V_{GE} = \pm 15 \text{ V}$	-	30	-	ns
t_r	$I_C = 20 \text{ A}; T_j = 125 \text{ }^\circ\text{C}$	-	35	-	ns
$t_{d(off)}$	$R_{gon} = R_{goff} = 47 \text{ }^\circ\Omega$	-	200	-	ns
t_f	inductive load	-	25	-	ns
$E_{on} + E_{off}$		-	1,7	-	mJ
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; 1 \text{ MHz}$	-	1,1	-	nF
R_{thjh}	per IGBT	-	-	1,7	K/W
Diode ²⁾ - Inverter & Chopper					
$V_F = V_{EC}$	$I_F = 25 \text{ A}; T_j = 25 (125) \text{ }^\circ\text{C}$	-	1,45(1,4)	1,7(1,75)	V
V_{TO}	$T_j = 125 \text{ }^\circ\text{C}$	-	0,85	0,9	V
r_T	$T_j = 125 \text{ }^\circ\text{C}$	-	22	32	m Ω
I_{RRM}	$I_F = 25 \text{ A}; V_R = -300 \text{ V}$	-	16	-	A
Q_{rr}	$di_F/dt = -500 \text{ A}/\mu\text{s}$	-	2	-	μC
E_{off}	$V_{GE} = 0 \text{ V}; T_j = 125 \text{ }^\circ\text{C}$	-	0,25	-	mJ
R_{thjh}	per diode	-	-	1,7	K/W
Diode - Rectifier					
V_F	$I_F = 25 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$	-	1,2	-	V
R_{thjh}	per diode	-	-	1,7	K/W
Temperature Sensor					
R_{TS}	$T = 25 / 100 \text{ }^\circ\text{C}$		1000 / 1670		Ω
Shunts (SKiiP 21 NAB 063 I T1)					
$R_{cs(dc)}$	5 % ⁴⁾		16,5		m Ω
$R_{cs(ac)}$	1 %		10		m Ω
Mechanical Data					
M_1	Mounting torque	2	-	2,5	Nm
Case			M2		

MiniSKiiP 2
SEMIKRON integrated intelligent Power
SKiiP 21 NAB 063 T1
SKiiP 21 NAB 063 I T1 ³⁾
3-phase bridge rectifier + braking chopper + 3-phase bridge inverter

Case M2



UL recognized file no. E63532

- fast NPT IGBTs

- ¹⁾ $T_{\text{heatsink}} = 25 \text{ }^\circ\text{C}$, unless otherwise specified
- ²⁾ CAL = Controlled Axial Lifetime Technology (soft and fast recovery)
- ³⁾ With integrated DC and AC shunts
- ⁴⁾ accuracy of pure shunt, please note that for DC shunt no separate sensing contact is used.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

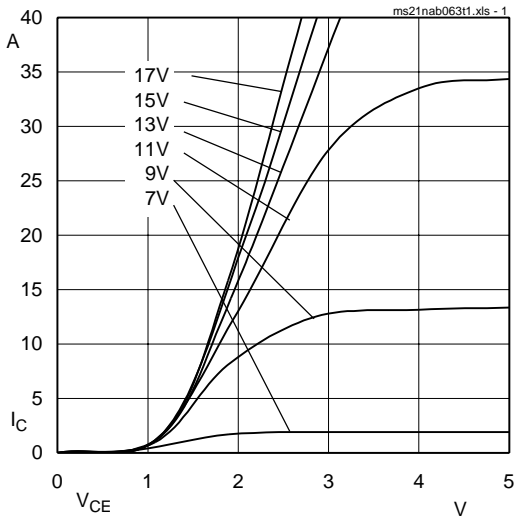


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25 \text{ }^\circ\text{C}$

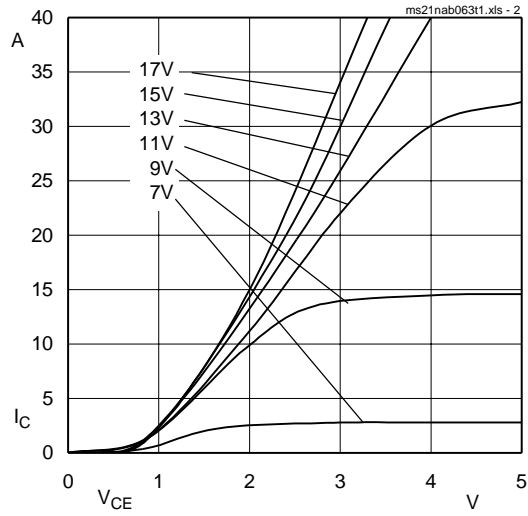


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125 \text{ }^\circ\text{C}$

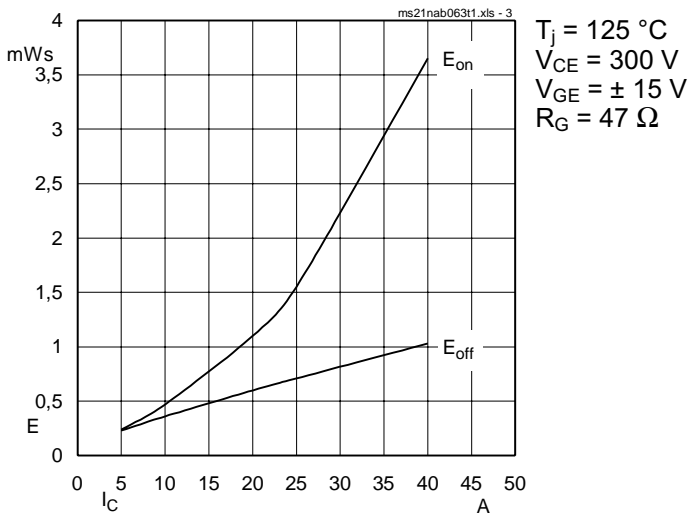


Fig. 3 Turn-on /-off energy = $f(I_c)$

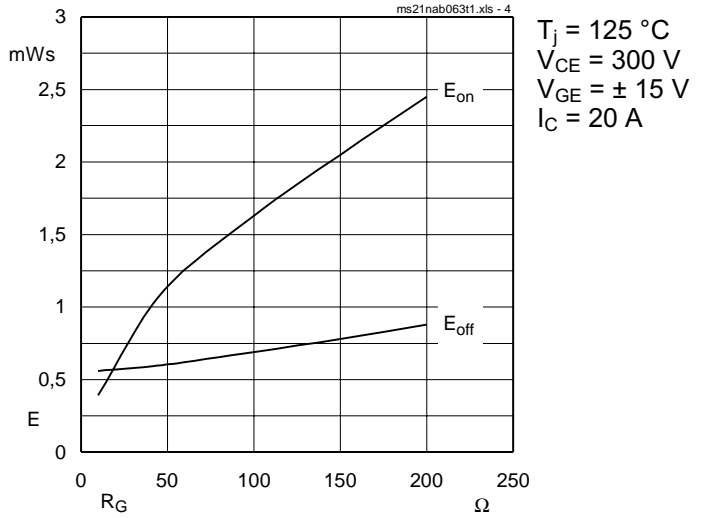


Fig. 4 Turn-on /-off energy = $f(R_G)$

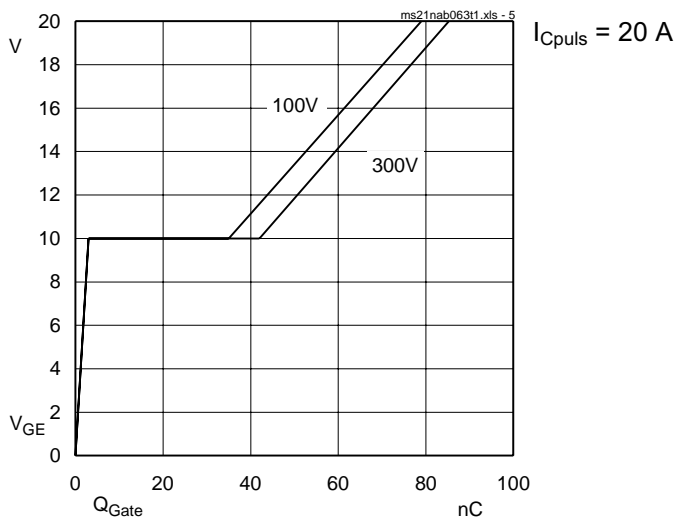


Fig. 5 Typ. gate charge characteristic

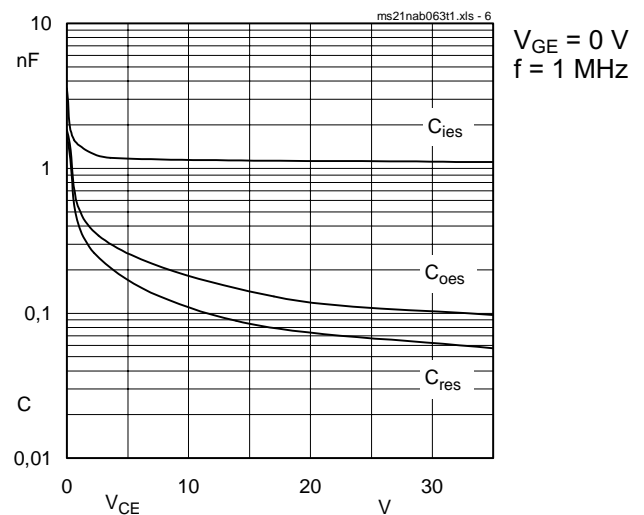


Fig. 6 Typ. capacitances vs. V_{CE}

2. Common characteristics of MiniSKiiP

MiniSKiiP 600 V

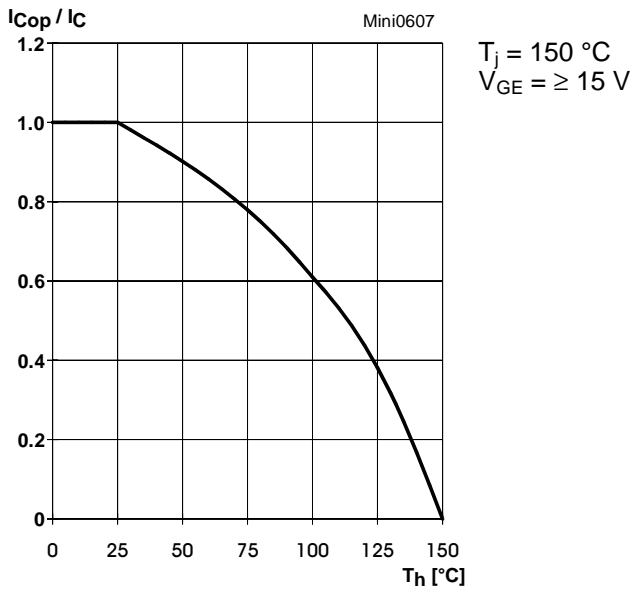


Fig. 7 Rated current of the IGBT $I_{COP}/I_C = f(T_h)$

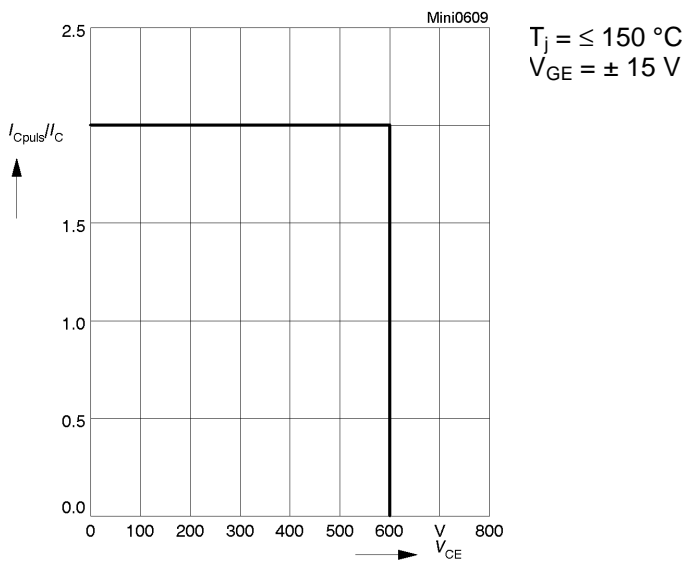


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

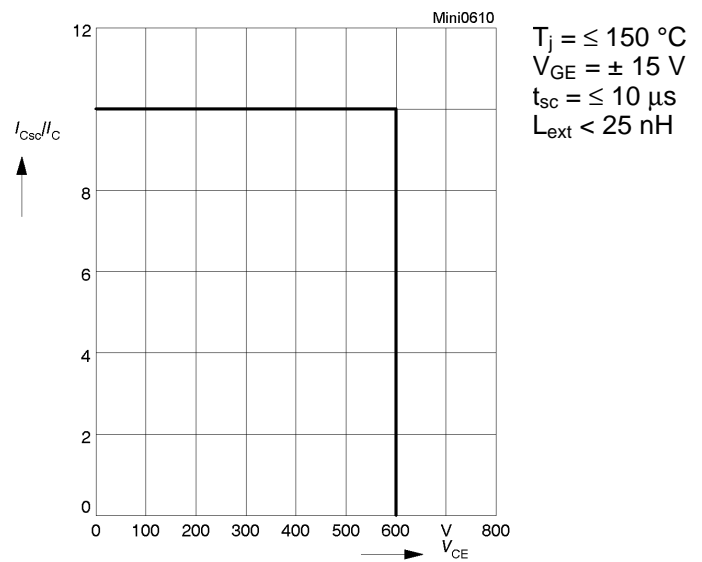


Fig. 10 Safe operating area at short circuit of the IGBT

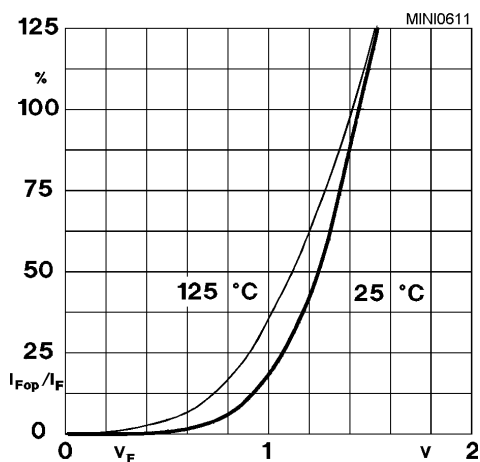


Fig. 11 Typ. freewheeling diode forward characteristic

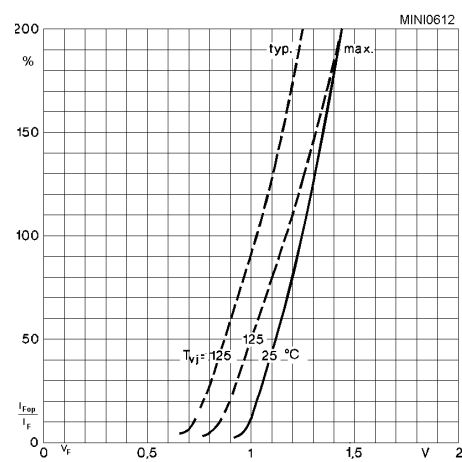
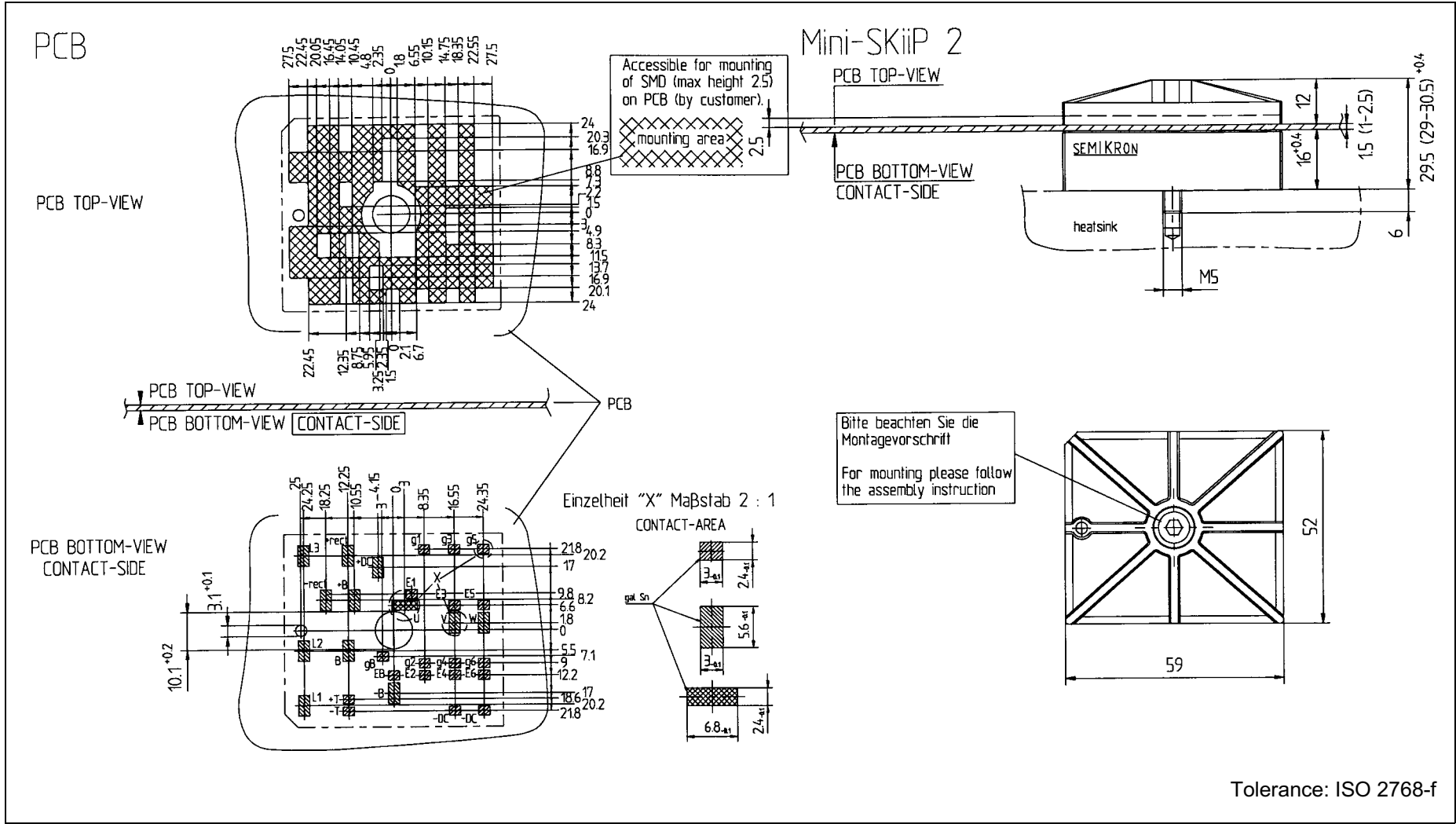
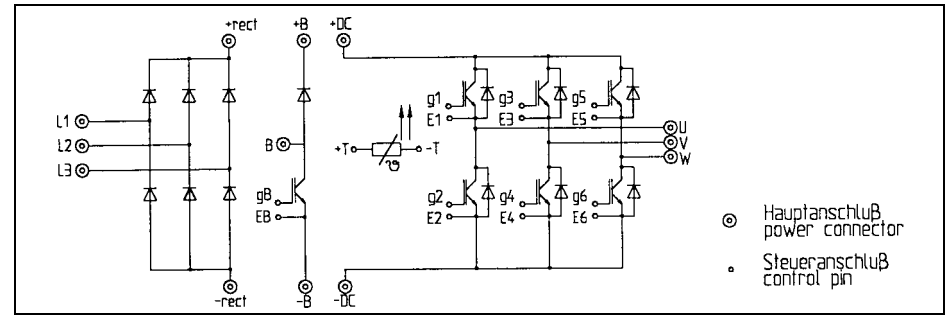


Fig. 12 Forward characteristic of the input bridge diode

MiniSKiiP 2

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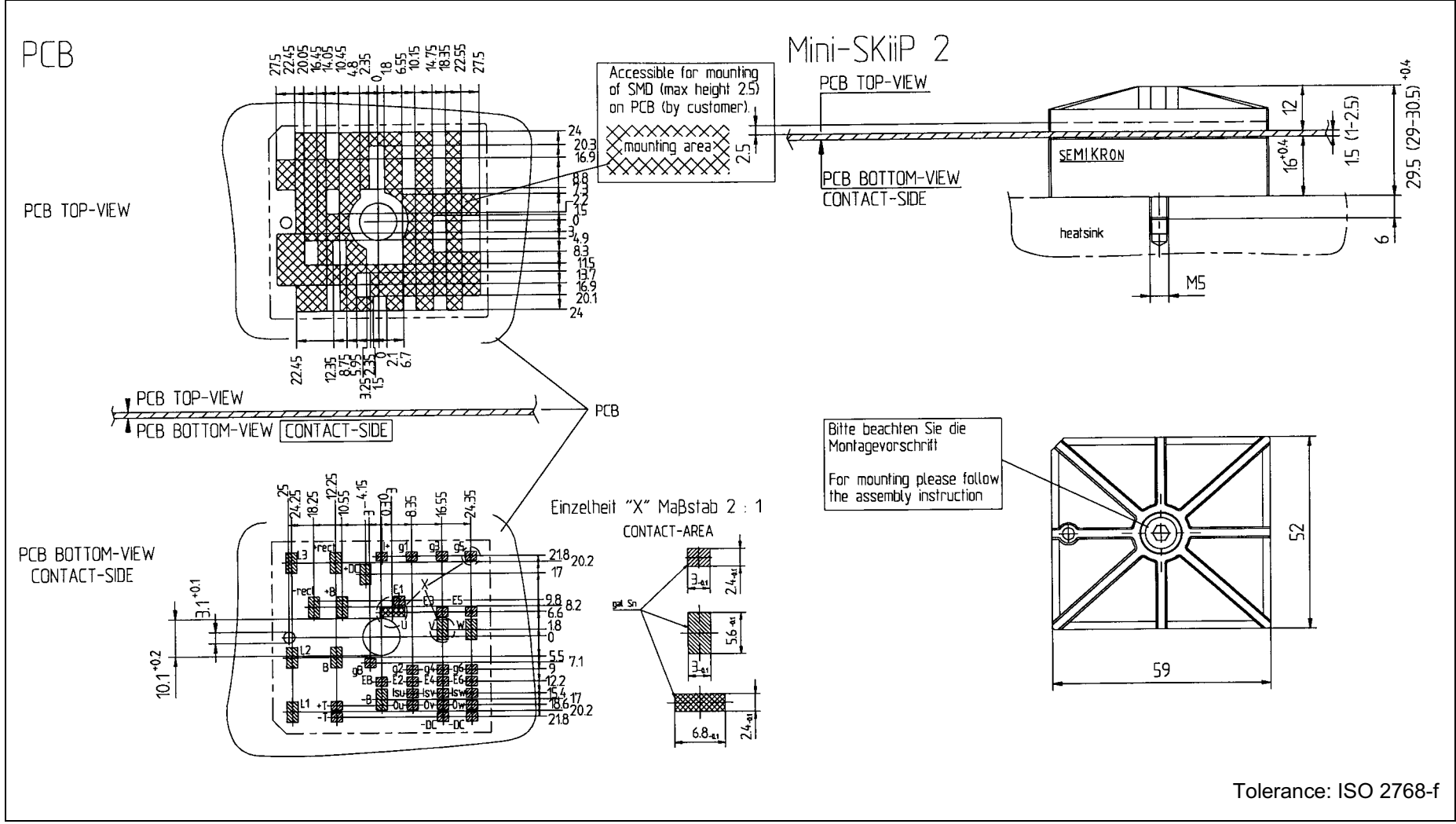
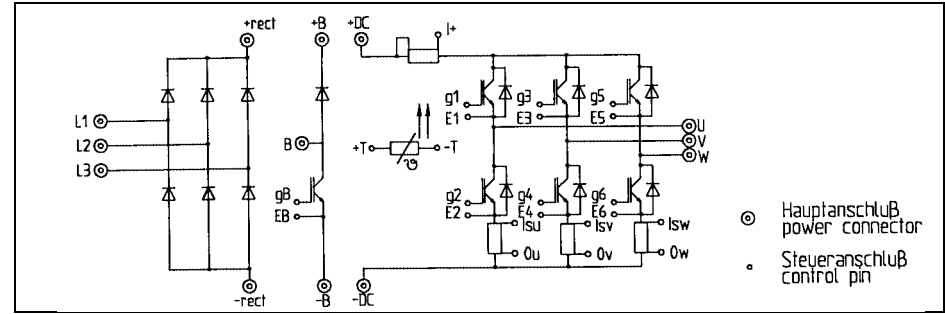
Tolerance: ISO 2768-f

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MiniSKiiP 2

SKiiP 21 NAB 063 I T1



Tolerance: ISO 2768-f