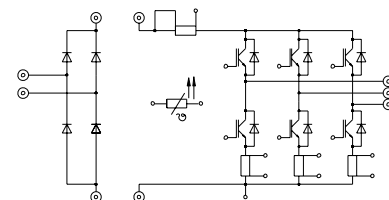


Absolute Maximum Ratings			
Symbol	Conditions ¹⁾	Values	Units
Inverter			
V _{CES}		600	V
V _{GES}		± 20	V
I _C	T _{heatsink} = 25 / 80 °C	17 / 12	A
I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	34 / 24	A
I _F = -I _C	T _{heatsink} = 25 / 80 °C	20 / 15	A
I _{FM} = -I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	40 / 30	A
Bridge Rectifier			
V _{R_{RM}}		800	V
I _D	T _{heatsink} = 80 °C	12 ⁵⁾	A
I _{FSM}	t _p = 10 ms; sin. 180 °, T _j = 25 °C	370	A
I ² t	t _p = 10 ms; sin. 180 °, T _j = 25 °C	680	A ² s
T _j		- 40 ... + 150	°C
T _{stg}		- 40 ... + 125	°C
V _{isol}	AC, 1 min.	2500	V

MiniSKiiP 1 SEMIKRON integrated intelligent Power SKiiP 11 NEC 063 T1 SKiiP 11 NEC 063 I T1 ³⁾ 1-phase bridge rectifier + 3-phase bridge inverter

Case M1



UL recognized file no. E63532

- fast NPT IGBTs

Characteristics					
Symbol	Conditions ¹⁾	min.	typ.	max.	Units
IGBT - Inverter					
V _{CESat}	I _C = 10 A T _j = 25 (125) °C	-	2,1(2,4)	2,6(2,9)	V
t _{d(on)}	V _{CC} = 300 V; V _{GE} = ± 15 V	-	55	-	ns
t _r	I _C = 10 A; T _j = 125 °C	-	40	-	ns
t _{d(off)}	R _{gon} = R _{goff} = 100 Ω	-	270	-	ns
t _f	inductive load	-	25	-	ns
E _{on} + E _{off}		-	1,0	-	mJ
C _{ies}	V _{CE} = 25 V; V _{GE} = 0 V, 1 MHz	-	0,57	-	nF
R _{thjh}	per IGBT	-	-	2,3	K/W
Diode ²⁾ - Inverter					
V _F = V _{EC}	I _F = 10 A T _j = 25 (125) °C	-	1,45(1,4)	1,7(1,7)	V
V _{TO}	T _j = 125 °C	-	0,85	0,9	V
r _T	T _j = 125 °C	-	55	80	mΩ
I _{R_{RM}}	I _F = 10 A, V _R = - 300 V	-	6,5	-	A
Q _{rr}	di _F /dt = - 200 A/μs	-	1	-	μC
E _{off}	V _{GE} = 0 V, T _j = 125 °C	-	0,1	-	mJ
R _{thjh}	per diode	-	-	2,7	K/W
Diode - Rectifier					
V _F	I _F = 25 A T _j = 25 °C	-	1,2	-	V
R _{thjh}	per diode	-	-	1,7	K/W
Temperature Sensor					
R _{TS}	T = 25 / 100 °C		1000 / 1670		Ω
Shunts (SKiiP 11 NEC 063 I T1)					
R _{cs(dc)}	5 % ⁴⁾		47		mΩ
R _{cs(ac)}	1 %		22		mΩ
Mechanical Data					
M ₁	Mounting torque	2	-	2,5	Nm
Case			M1		

¹⁾ T_{heatsink} = 25 °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.

⁵⁾ Limited by spring contact

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

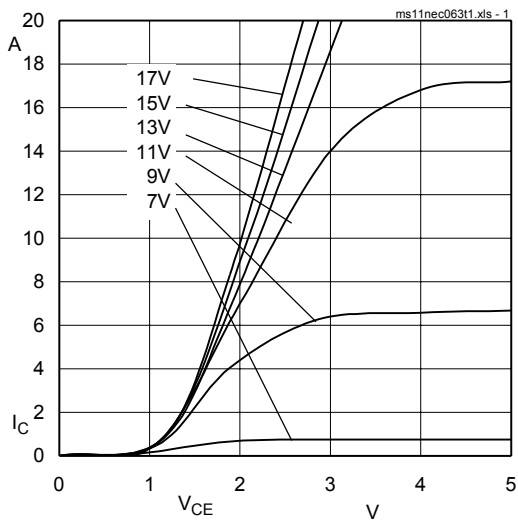


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25 \text{ }^\circ\text{C}$

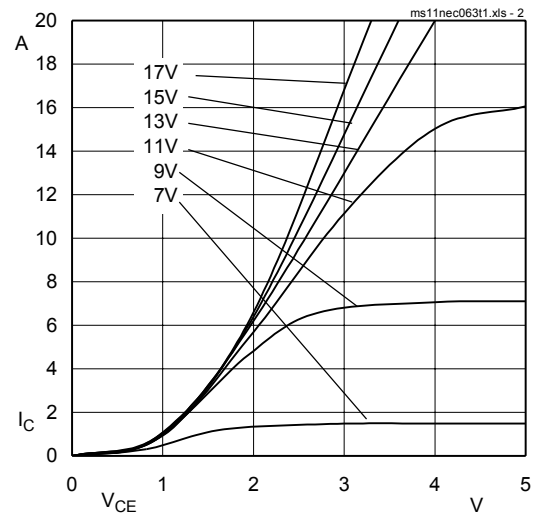


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125 \text{ }^\circ\text{C}$

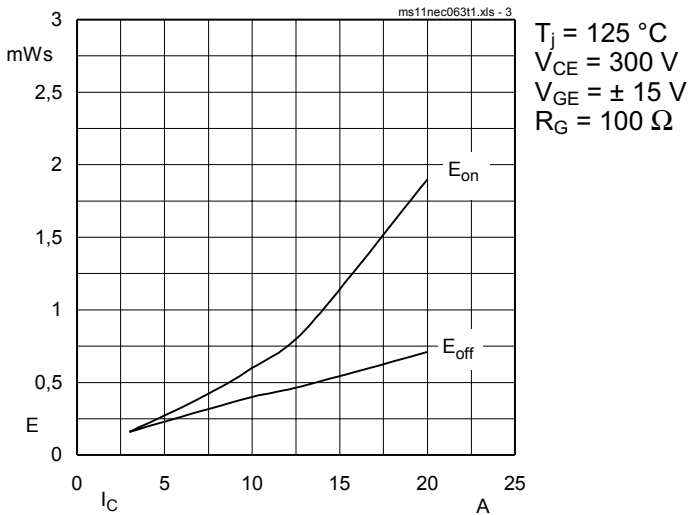


Fig. 3 Turn-on /-off energy = $f(I_c)$

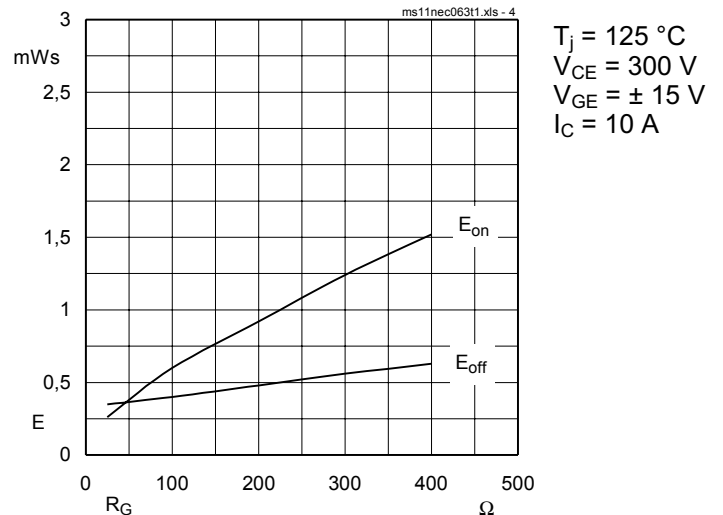


Fig. 4 Turn-on /-off energy = $f(R_G)$

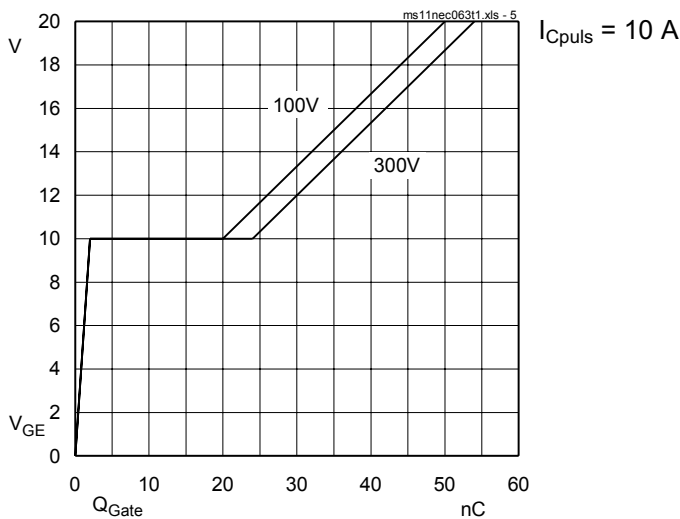


Fig. 5 Typ. gate charge characteristic

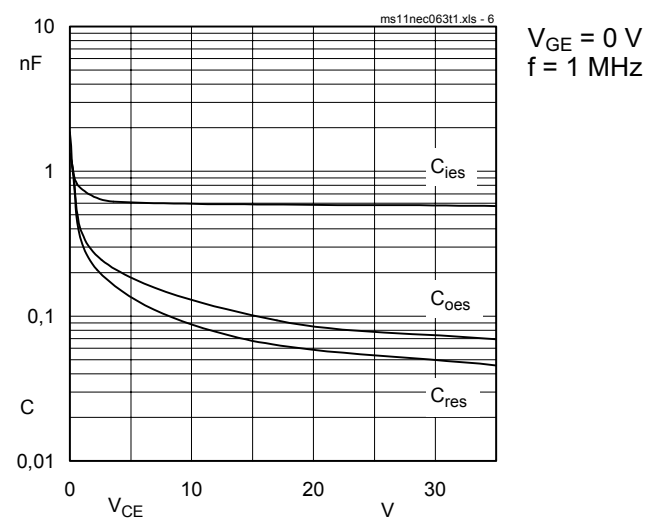


Fig. 6 Typ. capacitances vs. V_{CE}

2. Common characteristics of MiniSKiiP

MiniSKiiP 600 V

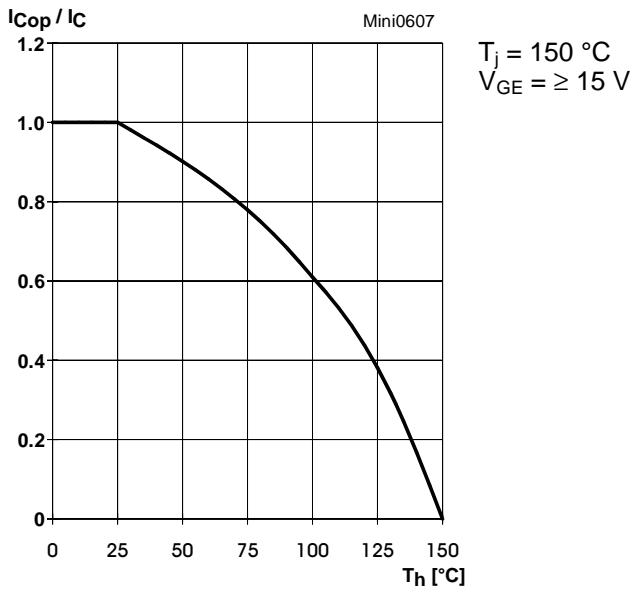


Fig. 7 Rated current of the IGBT $I_{COP} / I_C = f(T_h)$

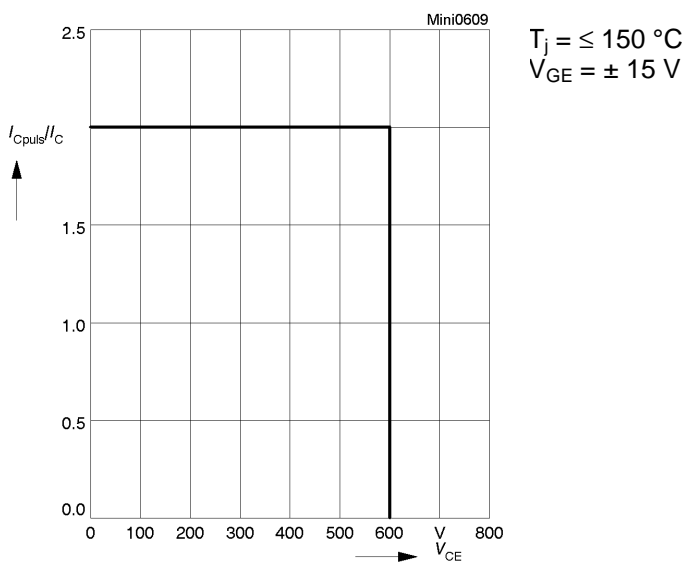


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

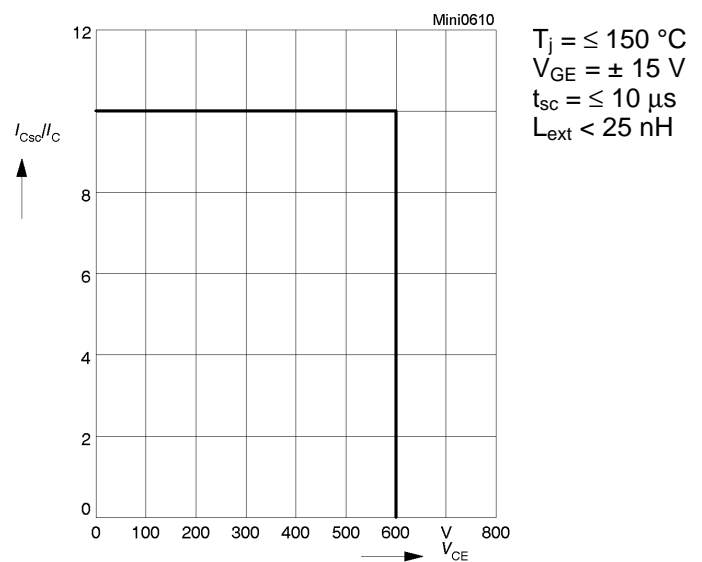


Fig. 10 Safe operating area at short circuit of the IGBT

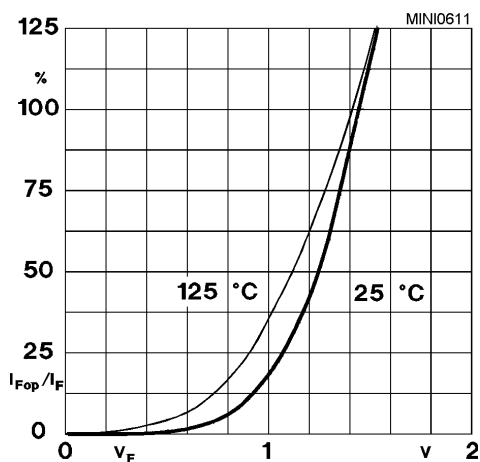


Fig. 11 Typ. freewheeling diode forward characteristic

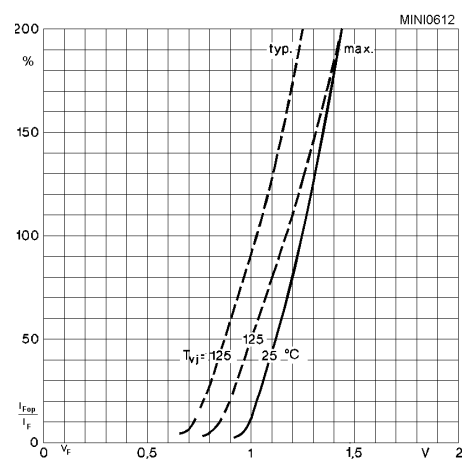
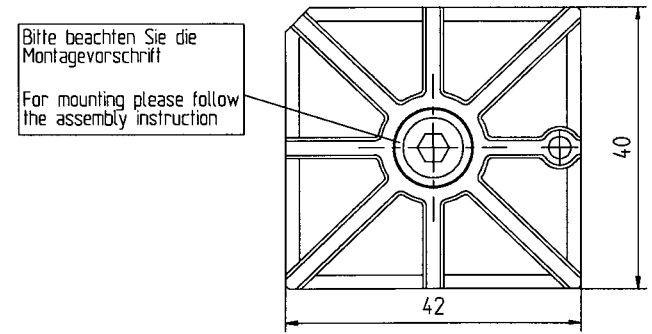
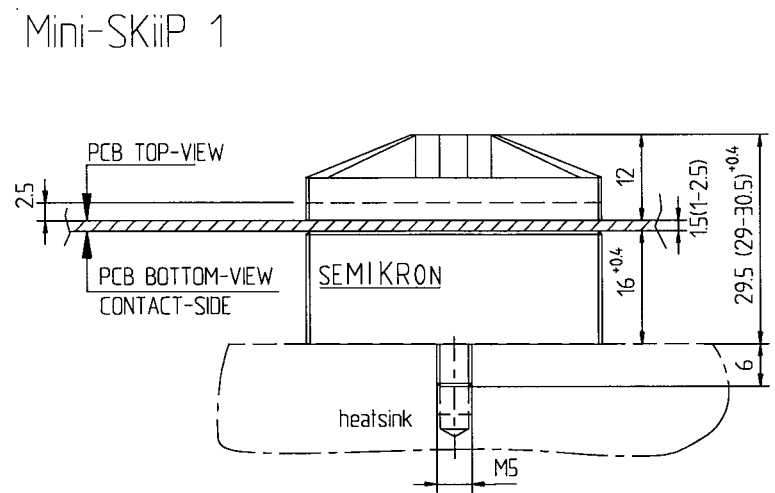
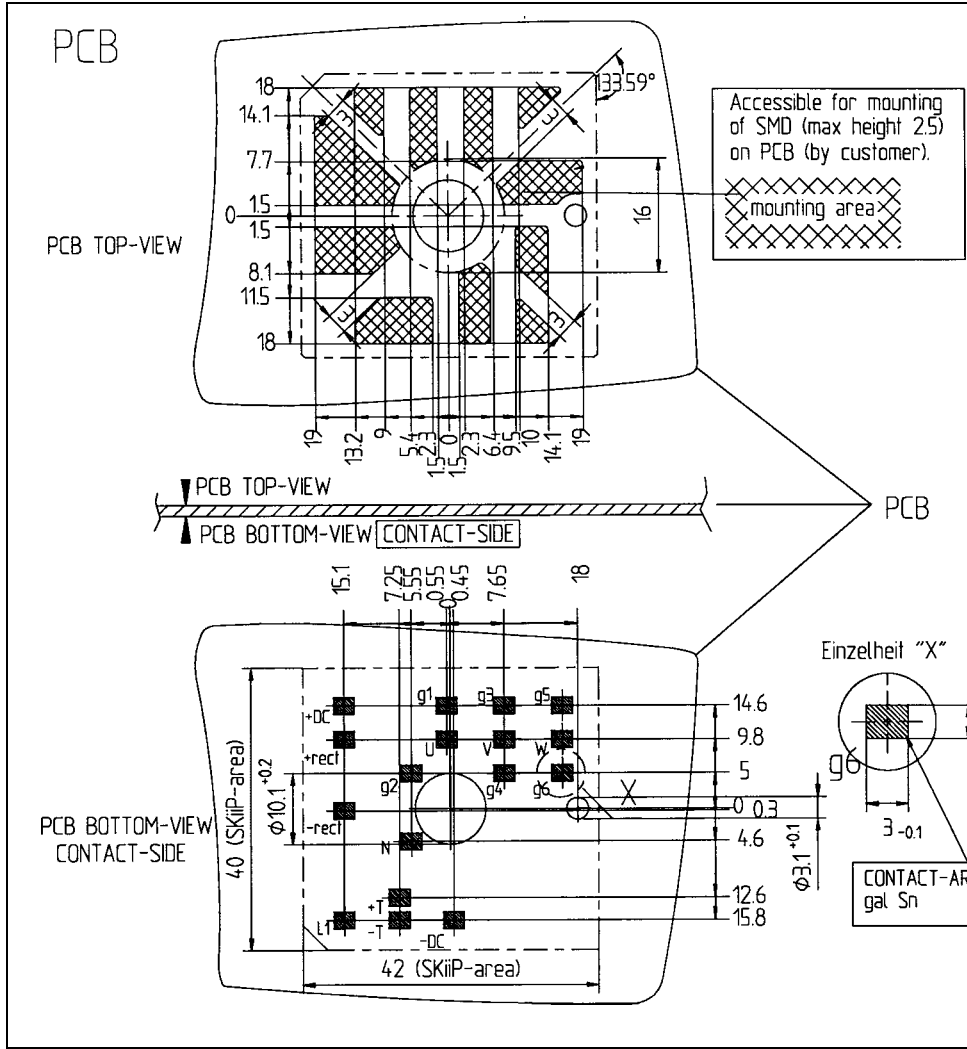
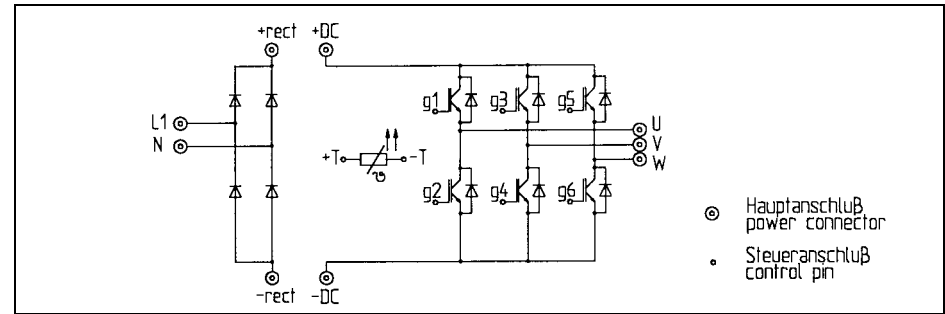


Fig. 12 Forward characteristic of the input bridge diode

MiniSKiiP 1

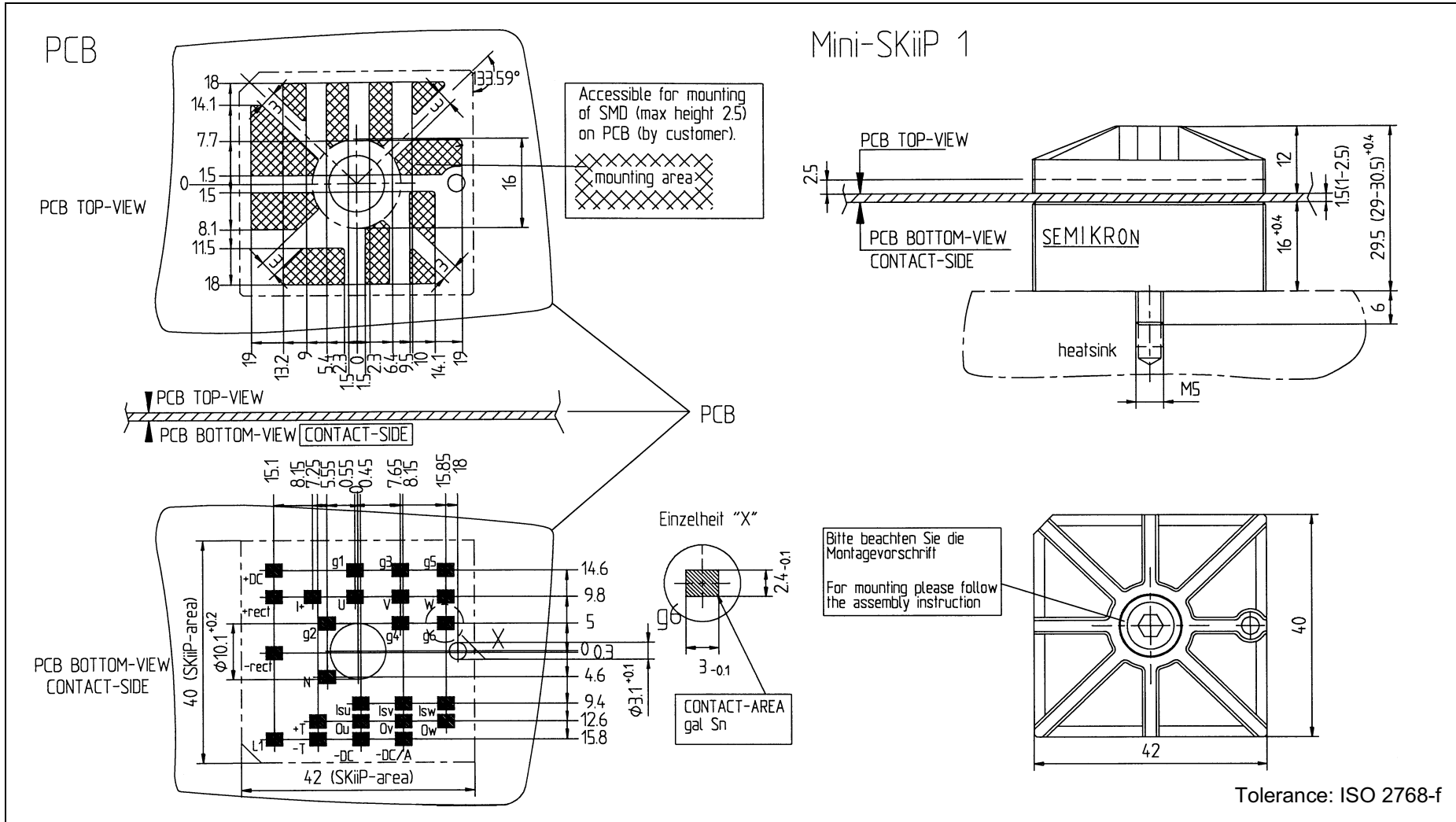
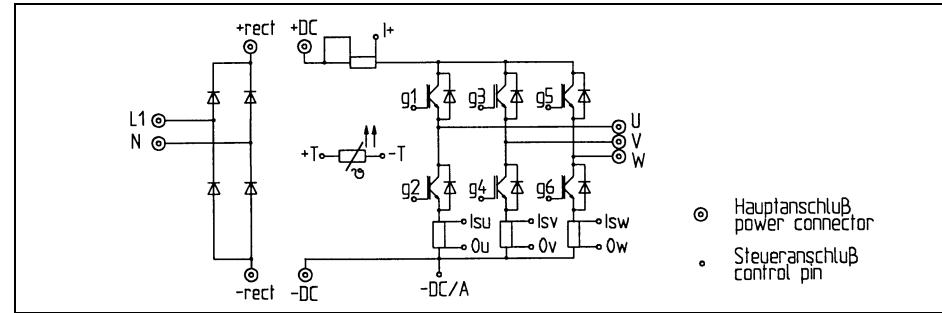
SKiiP 10 NEC 063 T1
SKiiP 11 NEC 063 T1



Tolerance: ISO 2768-f

MiniSKiiP 1

SKiiP 10 NEC 063 I T1
SKiiP 11 NEC 063 I T1



Tolerance: ISO 2768-f