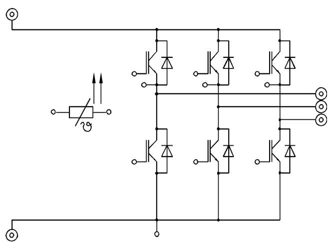
MiniSKiiP 2
SEMIKRON integrated intelligent Power
SKiiP 23 AC 12 T3
3-phase bridge inverter

Case M2

Absolute Maximum Ratings Symbol	Conditions [1]	Values	Units
Inverter			
V_{CES}		1200	V
V_{GES}		± 20	V
I_C	$T_{heatsink}$ = 25 / 80 °C	33 / 22	A
I_{CM}	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	66 / 44	A
$I_F = -I_C$	$T_{heatsink}$ = 25 / 80 °C	38 / 26	A
$I_{FM} = -I_{CM}$	t_p < 1 ms; $T_{heatsink}$ = 25 / 80 °C	76 / 52	A
T_j		– 40 ... + 150	°C
T_{stg}		– 40 ... + 125	°C
V_{isol}	AC, 1 min.	2500	V

Characteristics Symbol	Conditions [1]	min.	typ.	max.	Units
IGBT - Inverter					
V_{CEsat}	I_C = 25 A T_j = 25 (125) °C	–	2,5(3,1)	3,0(3,7)	V
$t_{d(on)}$	V_{CC} = 600 V; V_{GE} = ± 15 V	–	75	150	ns
t_r	I_C = 25 A; T_j = 125 °C	–	65	130	ns
$t_{d(off)}$	$R_{gon} = R_{goff}$ = 47 Ω	–	400	600	ns
t_f	inductive load	–	50	100	ns
$E_{on} + E_{off}$		–	6,2	–	mJ
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V, 1 MHz	–	1,65	–	nF
R_{thjh}	per IGBT	–	–	1,0	K/W
Diode [2] - Inverter					
$V_F = V_{EC}$	I_F = 25 A T_j = 25 (125) °C	–	2,0(1,8)	2,5(2,3)	V
V_{TO}	T_j = 125 °C	–	1,0	1,2	V
r_T	T_j = 125 °C	–	32	44	mΩ
I_{RRM}	I_F = 25 A, V_R = – 600 V	–	25	–	A
Q_{rr}	di_F/dt = – 500 A/µs	–	4,5	–	µC
E_{off}	V_{GE} = 0 V, T_j = 125°C	–	1,0	–	mJ
R_{thjh}	per diode	–	–	1,2	K/W
Temperature Sensor					
R_{TS}	T = 25 / 100 °C		1000 / 1670		Ω
Mechanical Data					
M_1	Mounting torque	2	–	2,5	Nm
Case			M2		



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[1] $T_{heatsink}$ = 25 °C, unless otherwise specified

[2] CAL = Controlled Axial Lifetime Technology (soft and fast recovery)

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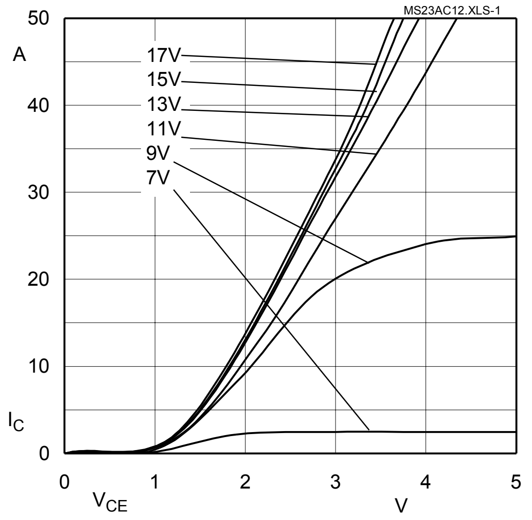


Fig. 1 Typ. output characteristic, t_p = 80 µs; 25 °C

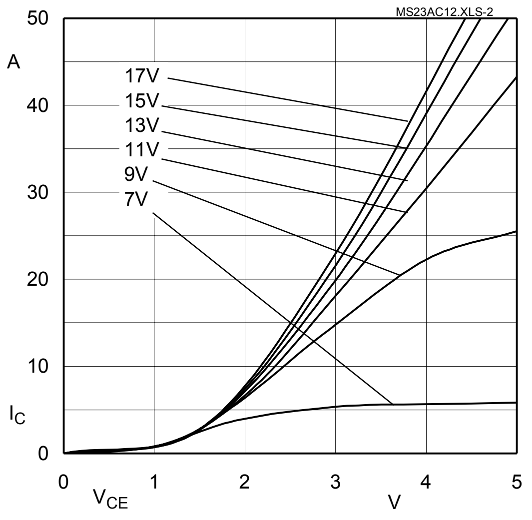
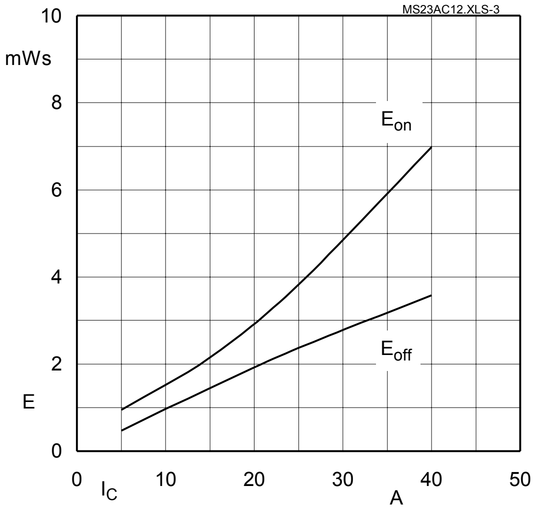
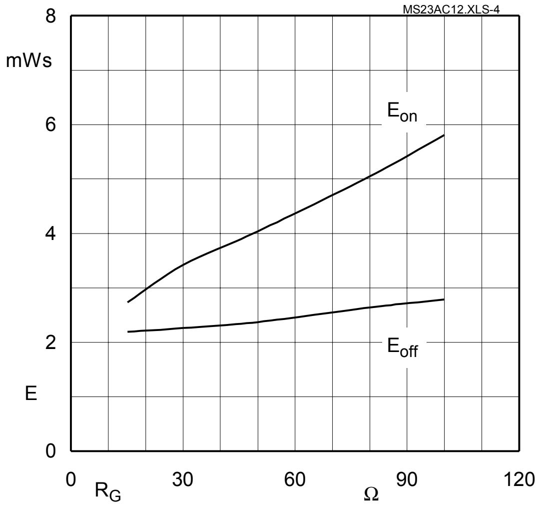


Fig. 2 Typ. output characteristic, t_p = 80 µs; 125 °C



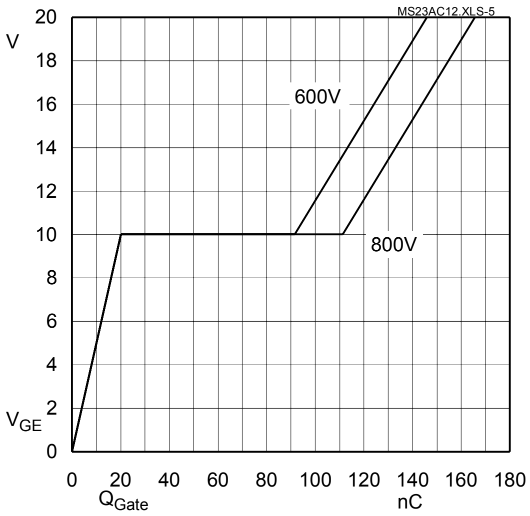
T_j = 125 °C
V_{CE} = 600 V
V_{GE} = ± 15 V
R_G = 47 Ω

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



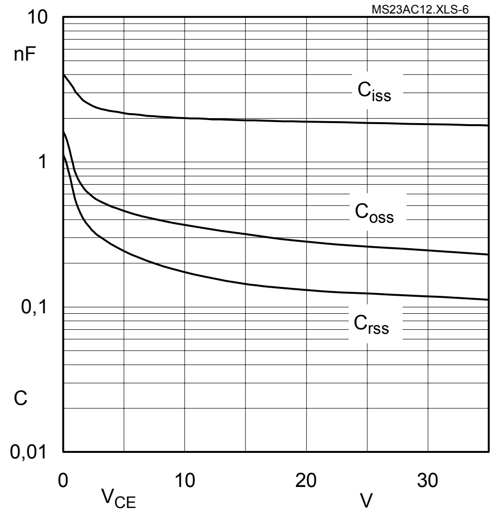
T_j = 125 °C
V_{CE} = 600 V
V_{GE} = ± 15 V
I_C = 25 A

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



I_{Cpuls} = 25 A

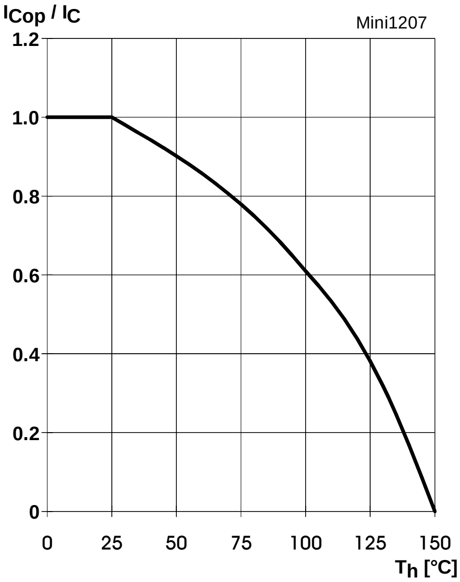
Fig. 5 Typ. gate charge characteristic



V_{GE} = 0 V
f = 1 MHz

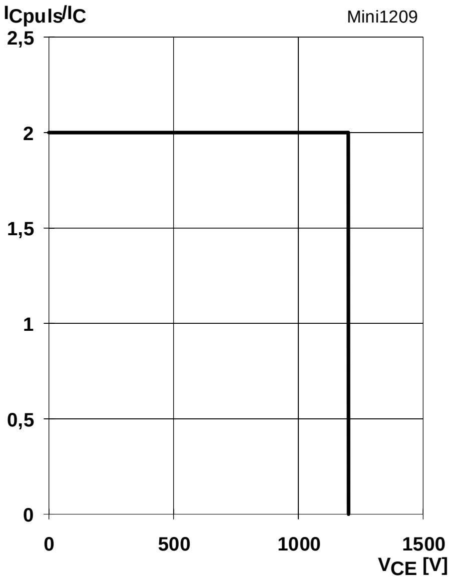
Fig. 6 Typ. capacitances vs. V_{CE}

MiniSKiiP 1200 V



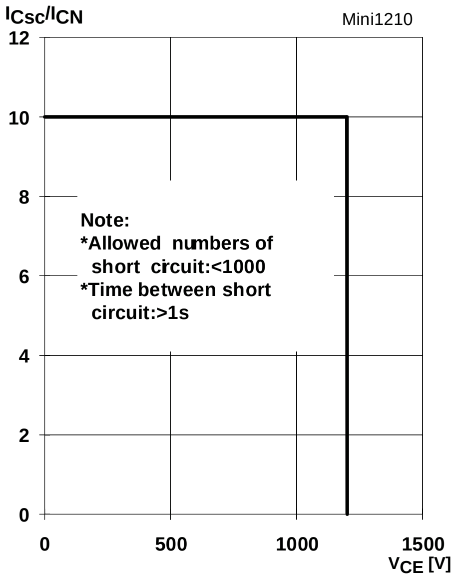
T_j = 150 °C
V_{GE} = ≥ 15 V

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



T_j = ≤ 150 °C
V_{GE} = ± 15 V

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



Note:
***Allowed numbers of short circuit:<1000**
***Time between short circuit:>1s**

T_j = ≤ 150 °C
V_{GE} = ± 15 V
t_{sc} = ≤ 10 µs
L_{ext} < 25 nH

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

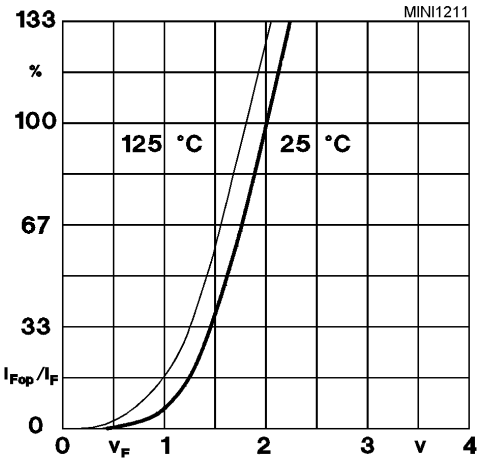


Fig. 11 Typ. freewheeling diode forward characteristic

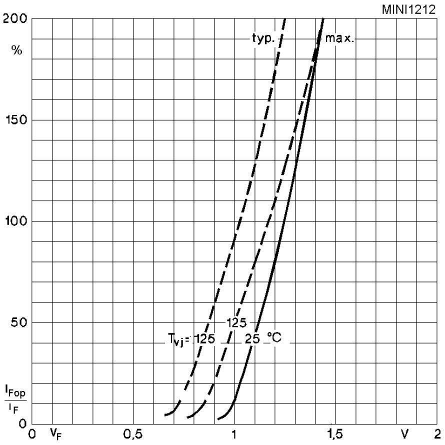


Fig. 12 Forward characteristic of the input bridge diode

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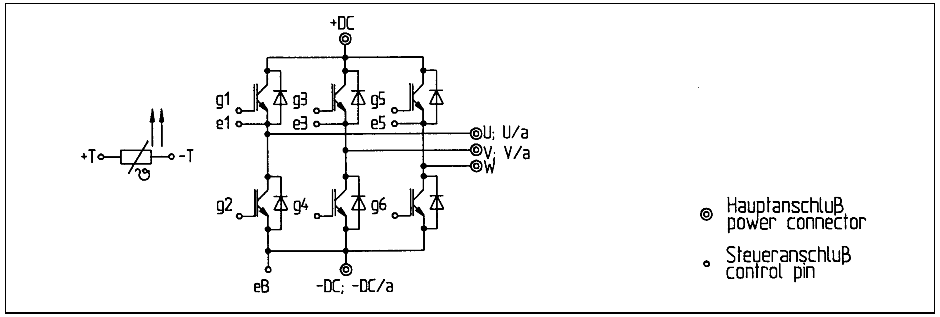
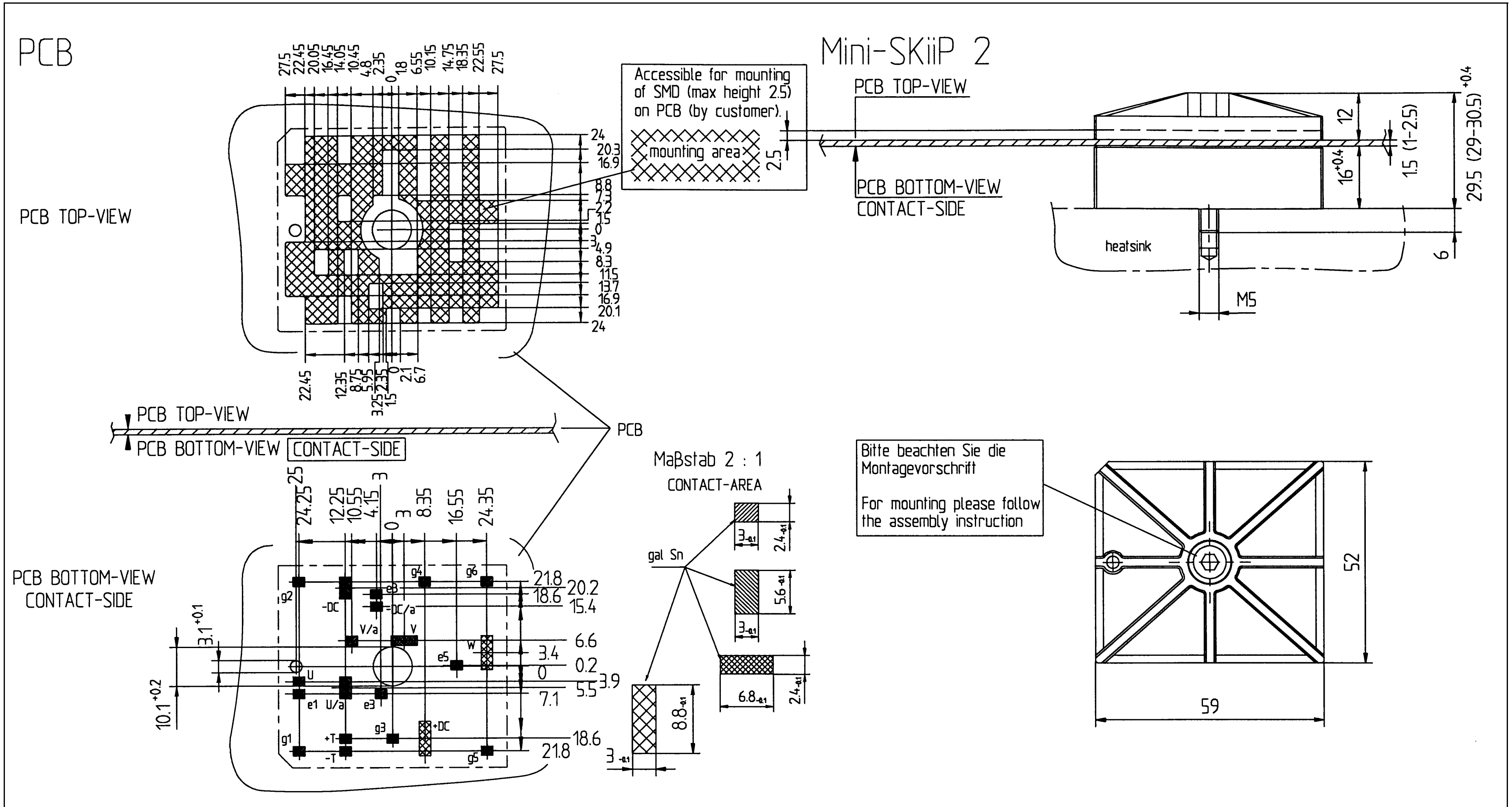
SKiiP 23 AC 12 T3
SKiiP 25 AC 12 T2





Accessible for mounting of SMD (max height 2.5) on PCB (by customer).

Bitte beachten Sie die Montagevorschrift

For mounting please follow the assembly instruction

Tolerance: ISO 2768-f