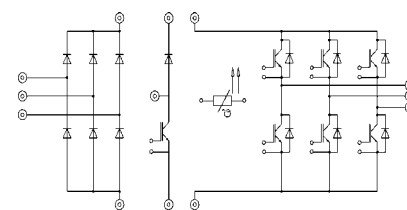


Absolute Maximum Ratings			
Symbol	Conditions ¹⁾	Values	Units
Inverter			
V _{CES}		600	V
V _{GES}		± 20	V
I _C	T _{heatsink} = 25 / 80 °C	45 / 32	A
I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	90 / 64	A
I _F = -I _C	T _{heatsink} = 25 / 80 °C	57 / 38	A
I _{FM} = -I _{CM}	t _p < 1 ms; T _{heatsink} = 25 / 80 °C	114 / 76	A
Bridge Rectifier			
V _{RRM}		800	V
I _D	T _{heatsink} = 80 °C	35	A
I _{FSM}	t _p = 10 ms; sin. 180 °, T _j = 25 °C	700	A
I ² t	t _p = 10 ms; sin. 180 °, T _j = 25 °C	2400	A ² s
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 & Chopper					
V _{CEsat}	I _C = 50 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 I _C = 30 A; T _j = 125 °C R _{gon} = R _{goff} = 22 Ω inductive load	—	45	—	ns
t _r		—	35	—	ns
t _{d(off)}		—	250	—	ns
t _f		—	25	—	ns
E _{on} + E _{off}		—	2,65	—	mJ
C _{ies}	V _{CE} = 25 V; V _{GE} = 0 V, 1 MHz	—	2,8	—	nF
R _{thjh}	per IGBT	—	—	1,0	K/W
Diode ²⁾ - Inverter & Chopper					
V _F = V _{EC}	I _F = 50 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	—	11	16	mΩ
I _{RRM}	} I _F = 50 A, V _R = − 300 V di _F /dt = − 800 A/μs V _{GE} = 0 V, T _j = 125 °C	—	31	—	A
Q _{rr}		—	3,3	—	μC
E _{off}		—	0,36	—	mJ
R _{thjh}		per diode	—	—	1,2
Diode - Rectifier					
V _F	I _F = 35 A T _j = 25 °C	—	1,2	—	V
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			M3		

MiniSKiiP 3
SEMIKRON integrated
intelligent Power
SKiiP 31 NAB 063 T1
3-phase bridge rectifier +
braking chopper +
3-phase bridge inverter

Case M3



UL recognized file no. E63532

- fast NPT IGBTs

¹⁾ $T_{heatsink} = 25 \text{ }^\circ\text{C}$, unless otherwise specified

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

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

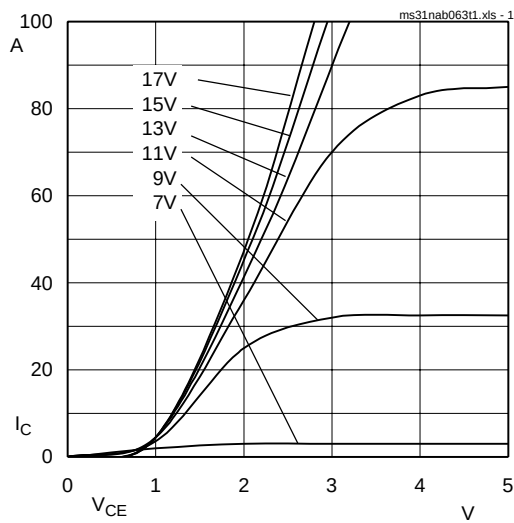


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25^\circ C$

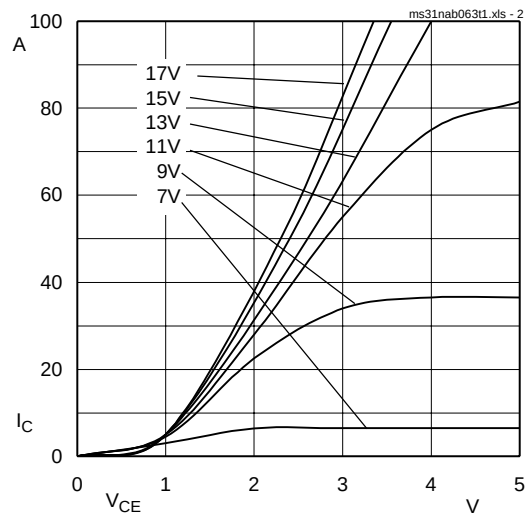


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125^\circ C$

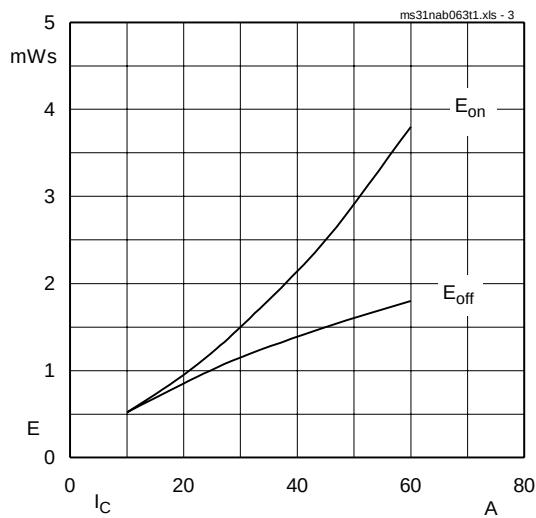


Fig. 3 Turn-on /-off energy = $f(I_C)$

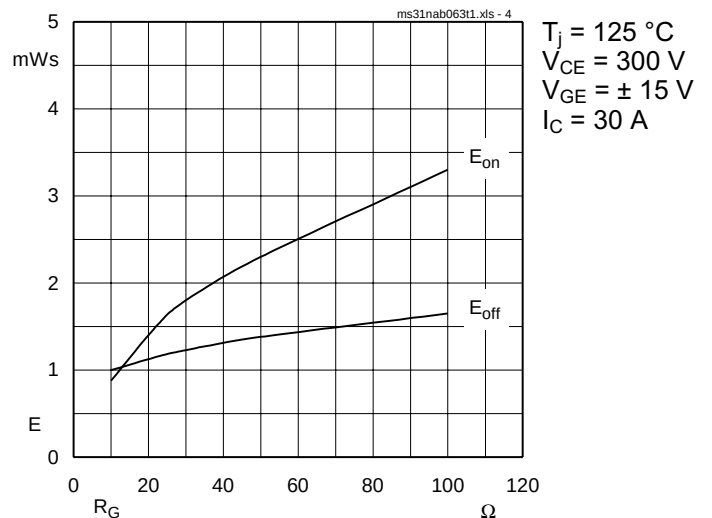


Fig. 4 Turn-on /-off energy = $f(R_G)$

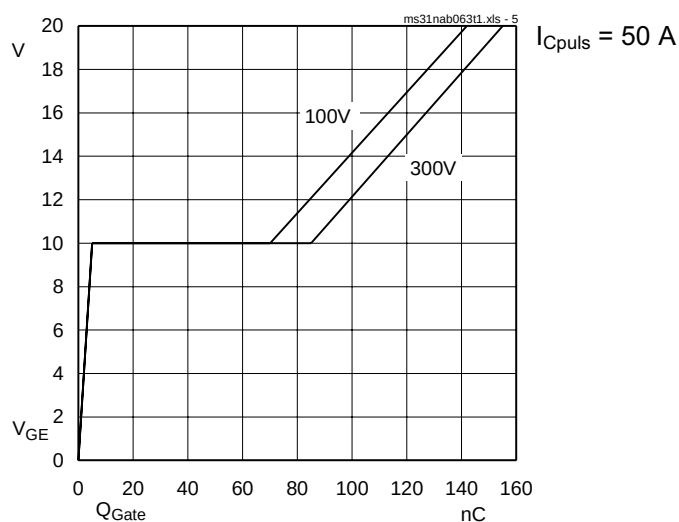


Fig. 5 Typ. gate charge characteristic

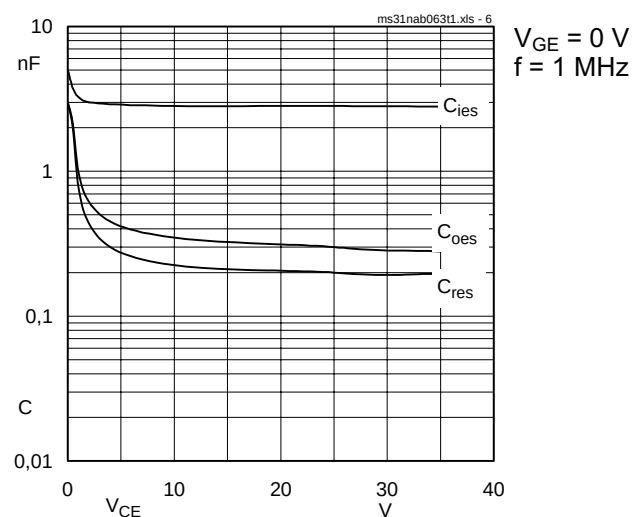


Fig. 6 Typ. capacitances vs. V_{CE}

2. Common characteristics of MiniSKiiP

MiniSKiiP 600 V

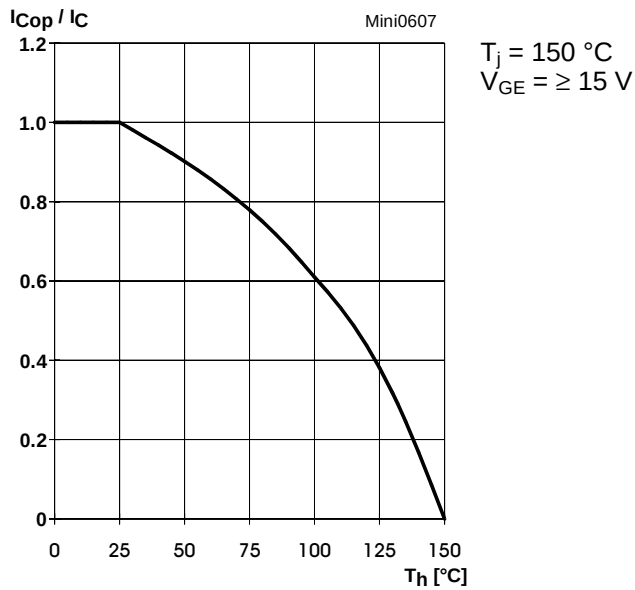


Fig. 7 Rated current of the IGBT $I_{C_{op}} / I_C = f(T_h)$

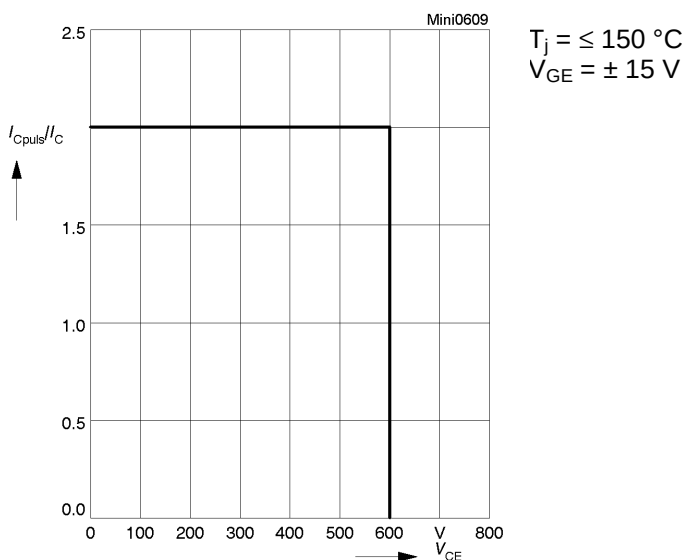


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

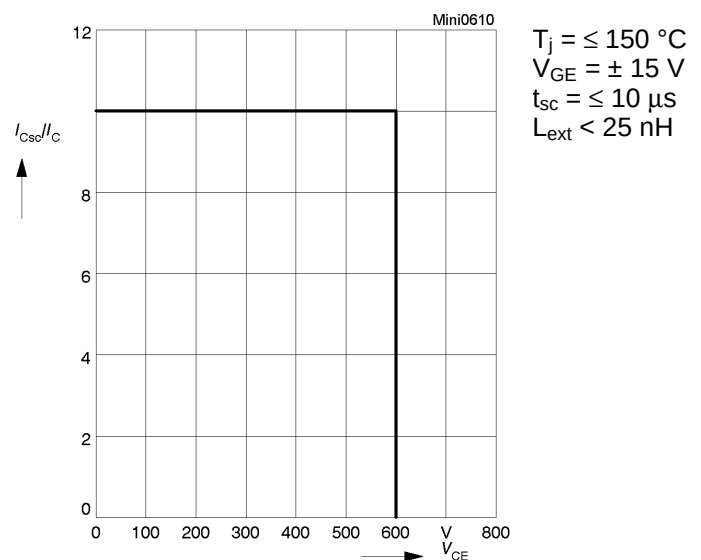


Fig. 10 Safe operating area at short circuit of the IGBT

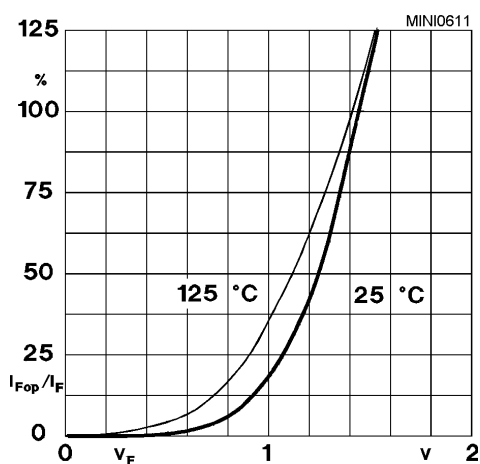


Fig. 11 Typ. freewheeling diode forward characteristic

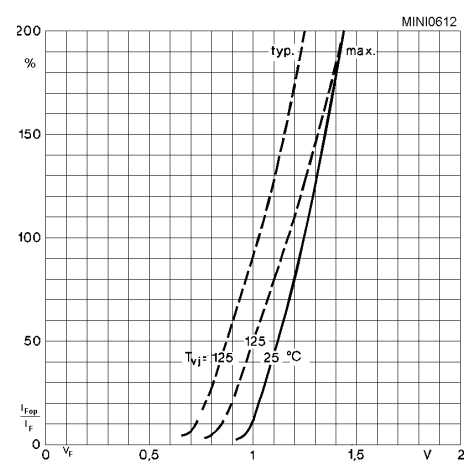
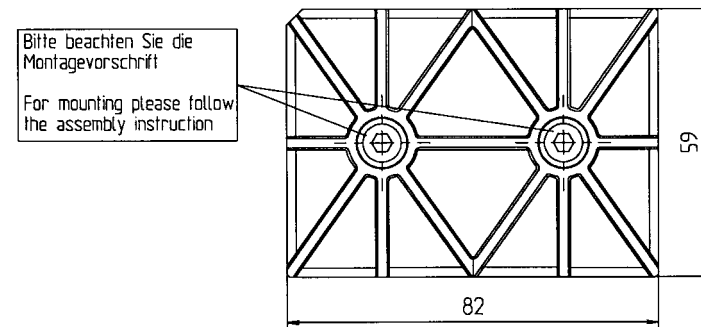
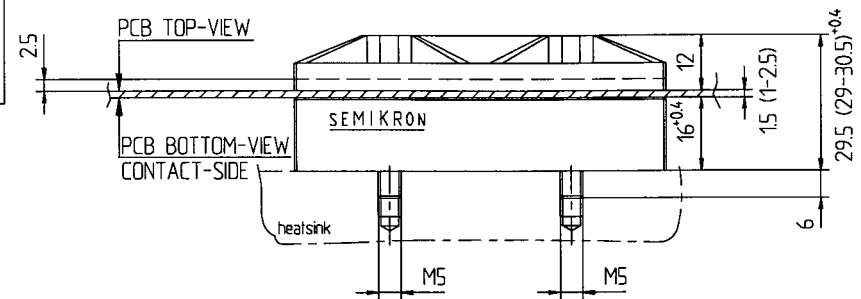
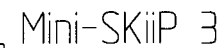
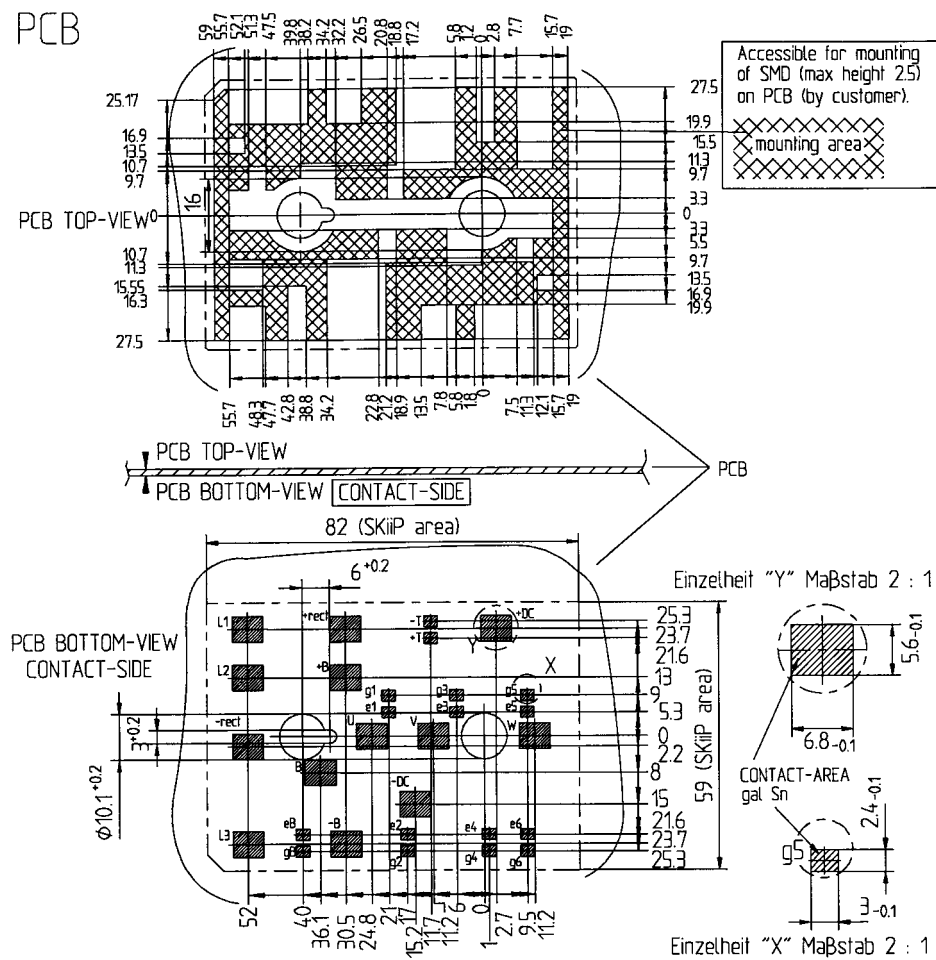
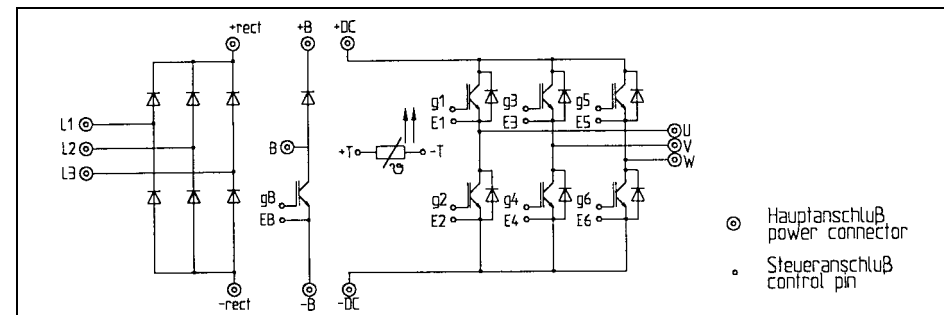


Fig. 12 Forward characteristic of the input bridge diode

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Tolerance: ISO 2768-f