

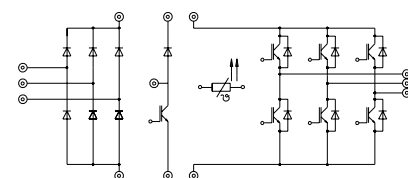
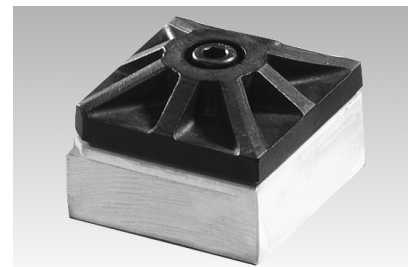
SKiiP 10 NAB 06

Absolute Maximum Ratings			
Symbol	Conditions ¹⁾	Values	Units
Inverter			
V_{CES}		600	V
V_{GES}		± 20	V
I_C	$T_{heatsink} = 25 / 80\text{ °C}$	11 / 8	A
I_{CM}	$t_p < 1\text{ ms}; T_{heatsink} = 25 / 80\text{ °C}$	22 / 16	A
$I_F = -I_C$	$T_{heatsink} = 25 / 80\text{ °C}$	20 / 15	A
$I_{FM} = -I_{CM}$	$t_p < 1\text{ ms}; T_{heatsink} = 25 / 80\text{ °C}$	40 / 30	A
Bridge Rectifier			
V_{RRM}		800	V
I_D	$T_{heatsink} = 80\text{ °C}$	12	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 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}	$I_C = 5\text{ A}, T_j = 25\text{ (125) °C}$	—	2,1(2,2)	2,7(2,8)	V
$t_{d(on)}$	$V_{CC} = 300\text{ V}; V_{GE} = \pm 15\text{ V}$	—	45	90	ns
t_r	$I_C = 5\text{ A}; T_j = 125\text{ °C}$	—	55	110	ns
$t_{d(off)}$	$R_{gon} = R_{goff} = 200\text{ }\Omega$	—	270	400	ns
t_f	inductive load	—	500	750	ns
$E_{on} + E_{off}$		—	0,6	—	mJ
C_{ies}	$V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}, 1\text{ MHz}$	—	0,29	—	nF
R_{thjh}	per IGBT	—	—	3,0	K/W
Diode ²⁾ - Inverter & Chopper					
$V_F = V_{EC}$	$I_F = 10\text{ A}, T_j = 25\text{ (125) °C}$	—	1,45(1,4)	1,7(1,7)	V
V_{TO}	$T_j = 125\text{ °C}$	—	0,85	0,9	V
r_T	$T_j = 125\text{ °C}$	—	55	80	m Ω
I_{RRM}	$I_F = 10\text{ A}, V_R = -300\text{ V}$	—	13	—	A
Q_{rr}	$di_F/dt = -200\text{ A}/\mu\text{s}$	—	1,5	—	μC
E_{off}	$V_{GE} = 0\text{ V}, T_j = 125\text{ °C}$	—	0,45	—	mJ
R_{thjh}	per diode	—	—	2,7	K/W
Diode - Rectifier					
V_F	$I_F = 25\text{ A}, T_j = 25\text{ °C}$	—	1,2	—	V
R_{thjh}	per diode	—	—	2,6	K/W
Temperature Sensor					
R_{TS}	$T = 25 / 100\text{ °C}$		1000 / 1670		Ω
Mechanical Data					
M_1	case to heatsink, SI Units	2	—	2,5	Nm
Case	mechanical outline see page B 16 – 6		M1		

MiniSKiiP 1 SEMIKRON integrated intelligent Power SKiiP 10 NAB 06 3-phase bridge rectifier + braking chopper + 3-phase bridge inverter

Case M1



UL recognized file no. E63532

- specification of temperature sensor see part A
- common characteristics see page B16–3

Options

- also available with single phase rectifier (called 10 NEB 06)
- also available with faster IGBTs (type ... 063), data sheet on request

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

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

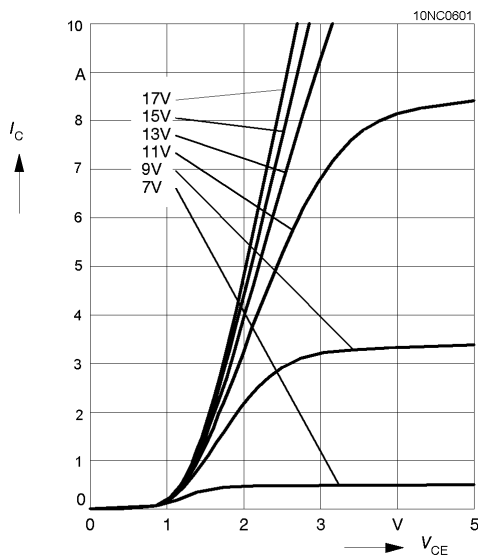


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25^\circ C$

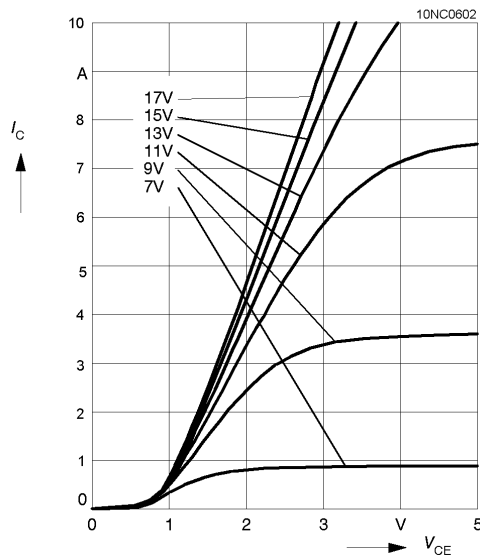


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125^\circ C$

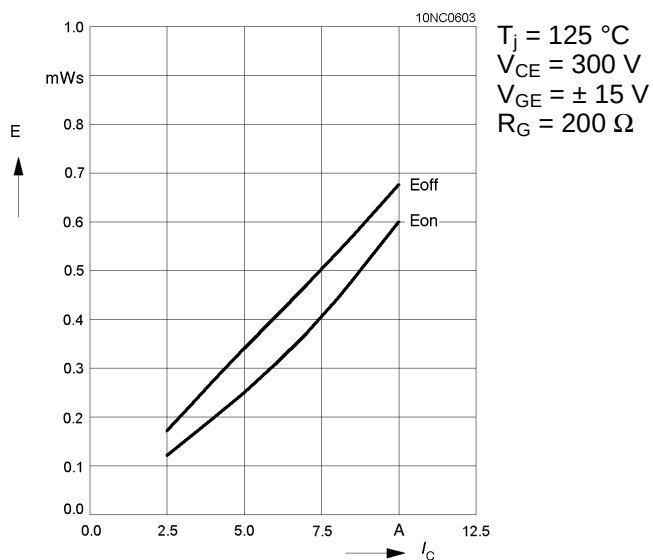


Fig. 3 Turn-on /off energy = $f(I_C)$

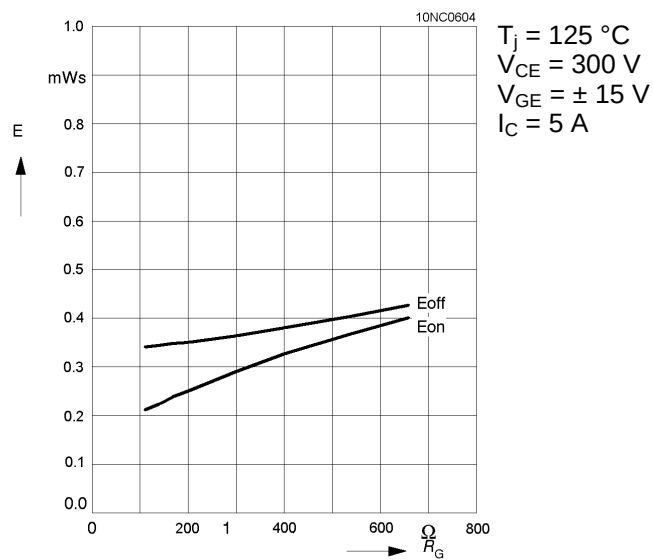


Fig. 4 Turn-on /off energy = $f(R_G)$

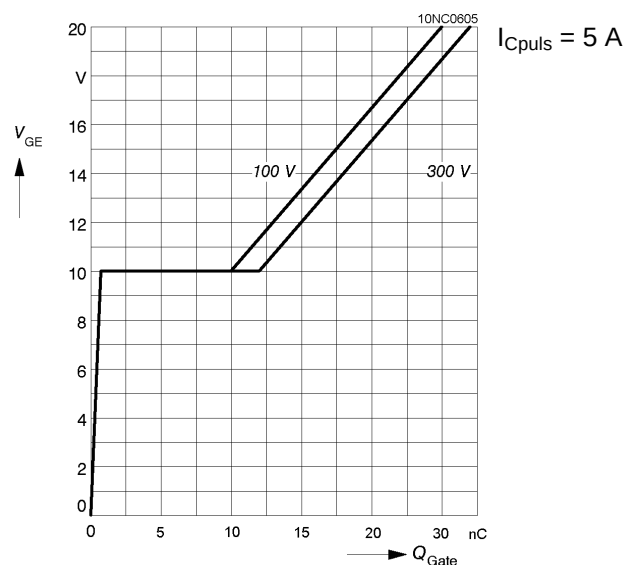


Fig. 5 Typ. gate charge characteristic

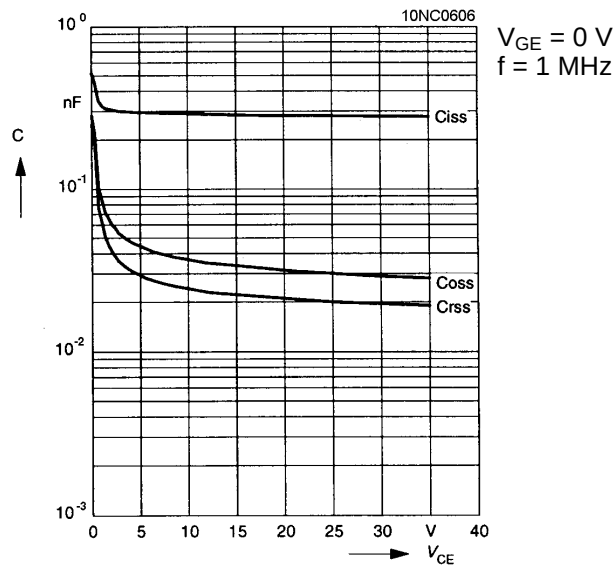


Fig. 6 Typ. capacitances vs. V_{CE}

2. Common characteristics of MiniSKiiP

MiniSKiiP 600 V

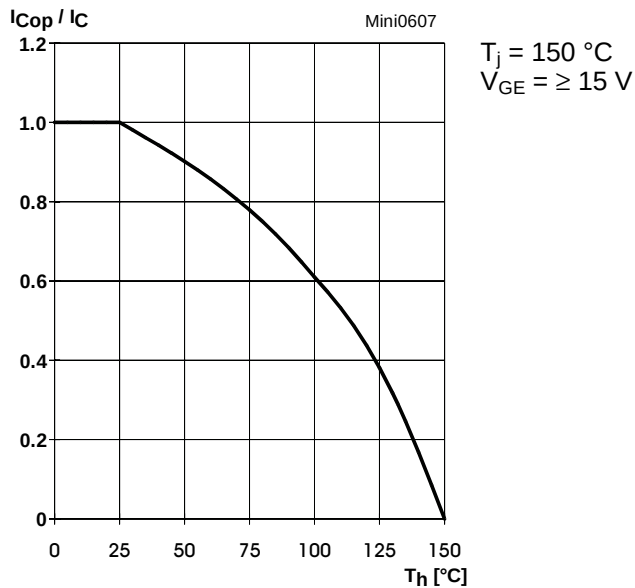


Fig. 7 Rated current of the IGBT $I_{Cop} / I_C = f(T_h)$

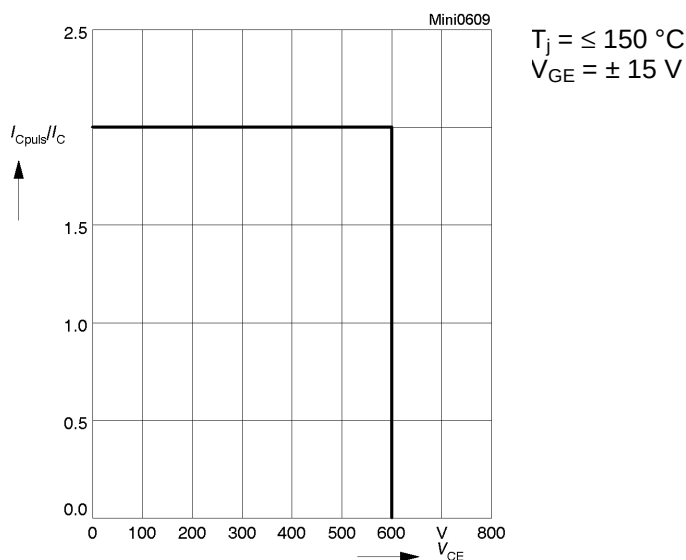


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

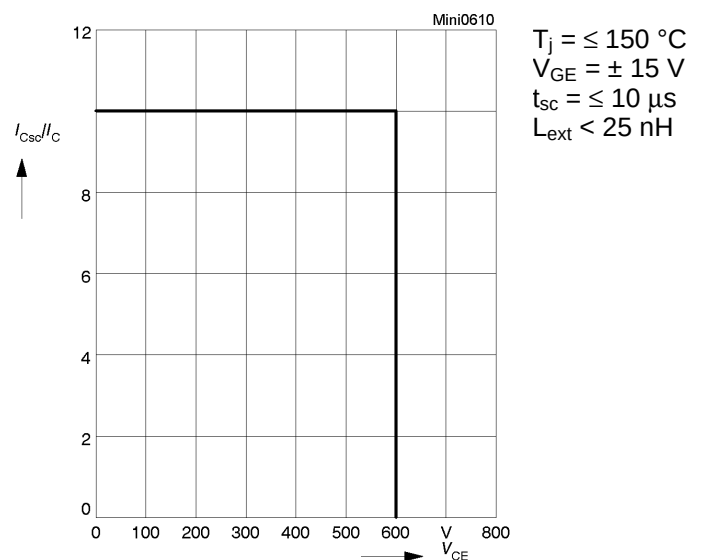


Fig. 10 Safe operating area at short circuit of the IGBT

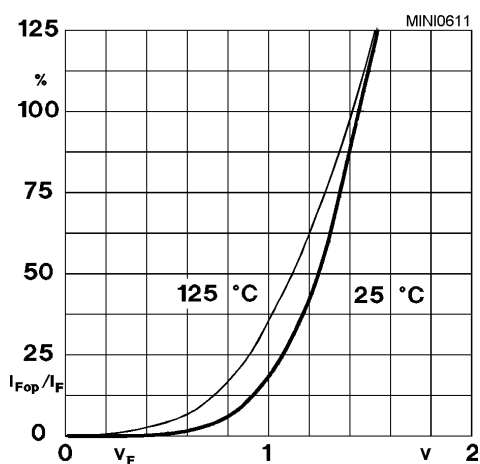


Fig. 11 Typ. freewheeling diode forward characteristic

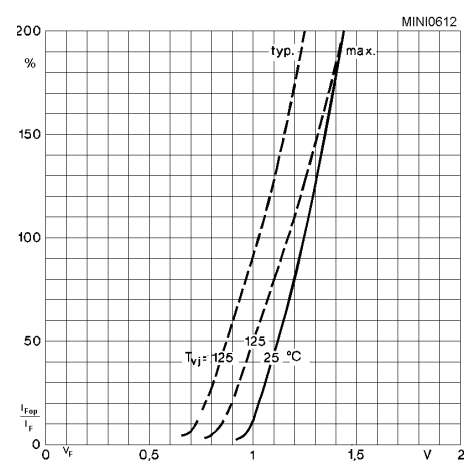


Fig. 12 Forward characteristic of the input bridge diode

SKiïP 10 NAB 06
SKiïP 11 NAB 06

Circuit
Case M1
Layout and connections for the
customer's printed circuit board

