

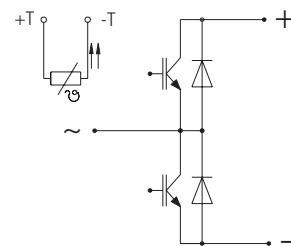
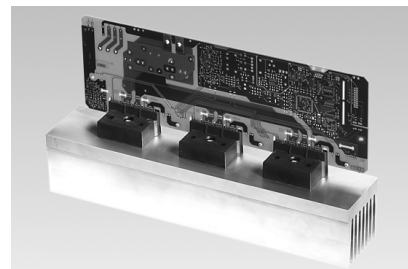
SKiiP 72 GB 12

Absolute Maximum Ratings			
Symbol	Conditions ¹⁾	Values	Units
V_{CES}		1200	V
V_{GES}		± 20	V
I_C	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	95 / 65	A
I_{CM}	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}; t_p = 1 \text{ ms}$	190 / 130	A
Inverse Diode			
$I_F = -I_C$	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}$	80 / 53	A
$I_{FM} = -I_{CM}$	$T_{\text{heatsink}} = 25 / 80 \text{ }^\circ\text{C}; t_p = 1 \text{ ms}$	160 / 106	A
V_{isol}	AC, 1 min.	2500	V~
T_{vj}		$-40 \dots +150$	$^\circ\text{C}$
T_{stg}		$-40 \dots +125$	$^\circ\text{C}$

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
IGBT					
$V_{CE\text{sat}}$	$I_C = 75 \text{ A}$ $V_{GE} = 15 \text{ V}$	–	2.5(3.1)	3.0(3.7)	V
	$I_C = 100 \text{ A}$ $T_j = 25 (125) \text{ }^\circ\text{C}$	–	2.8(3.6)	–	V
C_{CHC}	per IGBT	–	–	300	pF
C_{ies}	$V_{CE} = 25 \text{ V}$	–	5.0	6.6	nF
C_{oes}	$V_{GE} = 0 \text{ V}$	–	0.72	0.9	nF
C_{res}	$f = 1 \text{ MHz}$	–	0.38	0.5	nF
$t_{d(\text{on})}$	$V_{CC} = 600 \text{ V}$	–	35	70	ns
t_r	$V_{GE} = \pm 15 \text{ V},$	–	70	140	ns
$t_{d(\text{off})}$	$I_C = 75 \text{ A}; T_j = 125 \text{ }^\circ\text{C}$	–	450	600	ns
t_f	$R_{gon} = R_{goff} = 15 \text{ } \Omega$	–	70	100	ns
$E_{on} + E_{off}$	inductive load	–	18	–	mJ
R_{thjh}	per IGBT	–	–	0.35	K/W
Diode ²⁾					
$V_F = V_{EC}$	$I_F = 75 \text{ A}$	–	2.0(1.8)	2.5(2.3)	V
	$I_F = 100 \text{ A}$ $T_j = 25 (125) \text{ }^\circ\text{C}$	–	2.25(2.05)	–	V
V_{TO}	$T_j = 125 \text{ }^\circ\text{C}$	–	1.0	1.2	V
r_T	$T_j = 125 \text{ }^\circ\text{C}$	–	11	15	m Ω
I_{RRM}	$I_F = 75 \text{ A}; T_j = 125 \text{ }^\circ\text{C}$	–	45	–	A
Q_{rr}	$V_R = -600 \text{ V}; V_{GE} = 0 \text{ V}$	–	11	–	μC
E_{off}	$di_F/dt = -800 \text{ A}/\mu\text{s}$	–	3.0	–	mJ
R_{thjh}	per diode	–	–	0,8	K/W
Temperature Sensor					
R_{TS}	$T = 25 / 125 \text{ }^\circ\text{C}$		1000 / 1670		Ω
Mechanical Data					
M_1	case to heatsink	2.5	–	3.5	Nm
Case	mechanical outline see page B 16 – 10		M7		

MiniSKiiP 7 SEMIKRON integrated intelligent Power SKiiP 72 GB 12 IGBT Half bridge

Case M7



UL recognized file no. E63532

- specification of temperature sensor see part A
- plug-in-mounting of the customer PCB without soldering
- common characteristics see page B 16 – 4

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

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

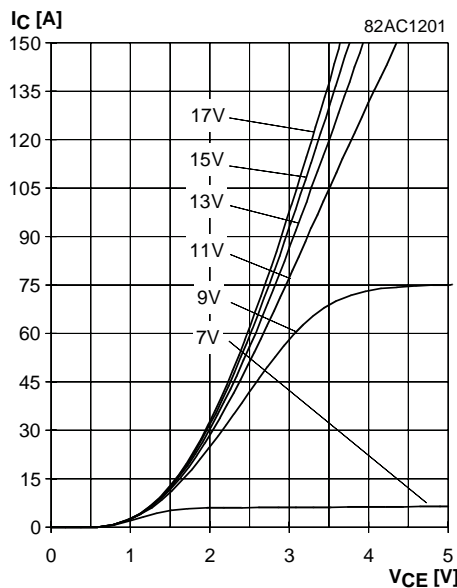


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25^\circ C$

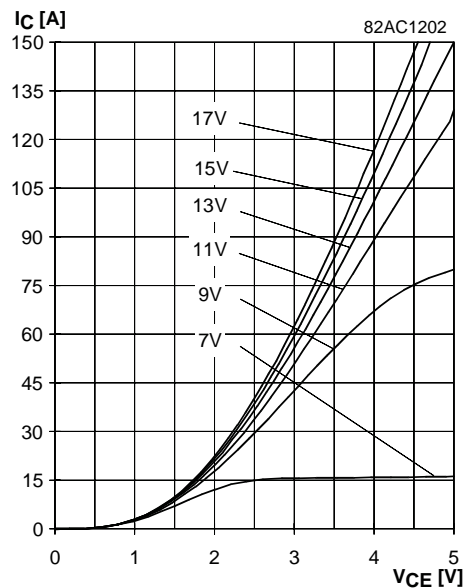


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125^\circ C$

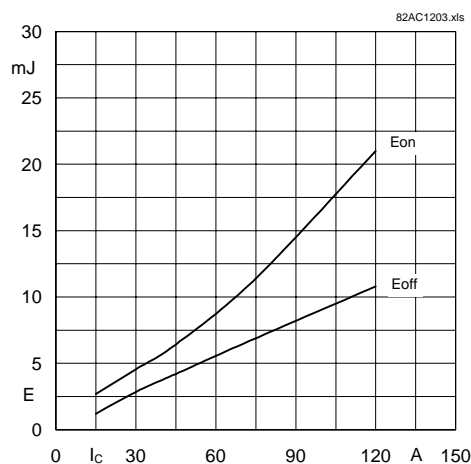


Fig. 3 Turn-on /off energy = $f(I_C)$

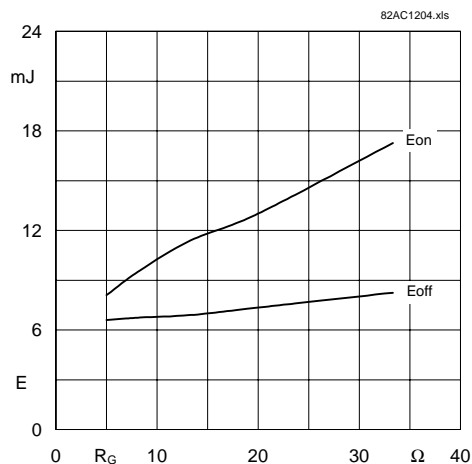


Fig. 4 Turn-on /off energy = $f(R_G)$

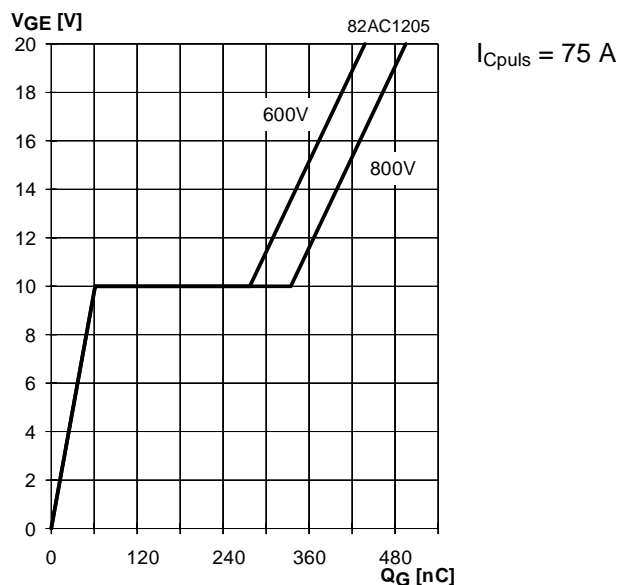


Fig. 5 Typ. gate charge characteristic

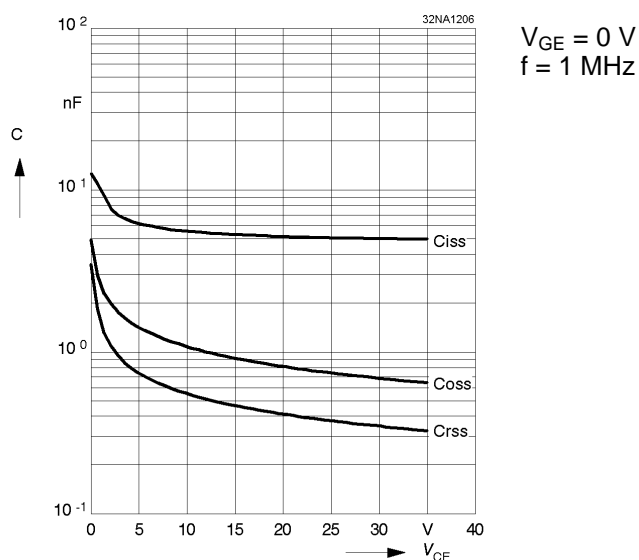


Fig. 6 Typ. capacitances vs. V_{CE}

MiniSKiiP 1200 V

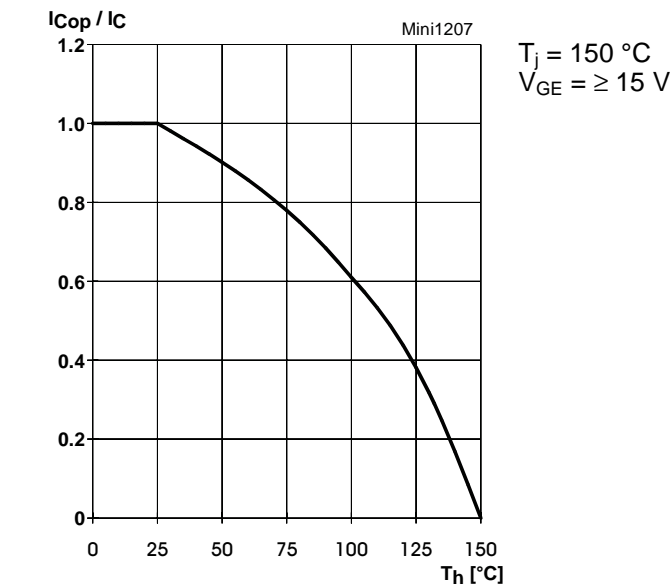


Fig. 7 Rated current of the IGBT $I_{COP} / I_C = f(T_h)$

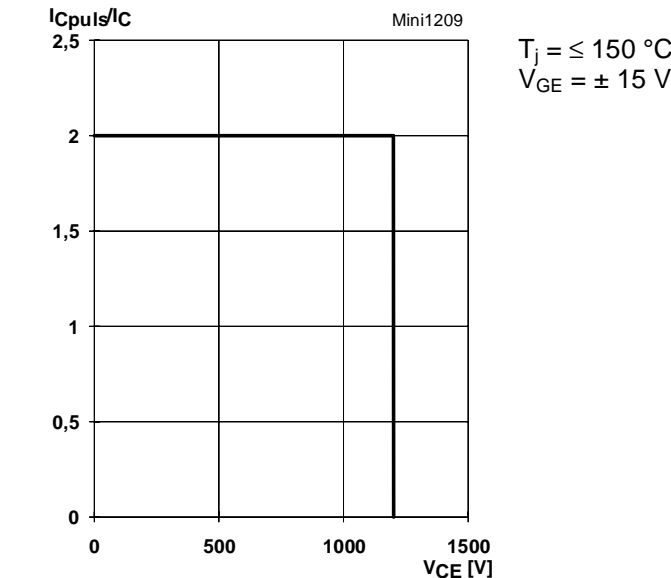


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT

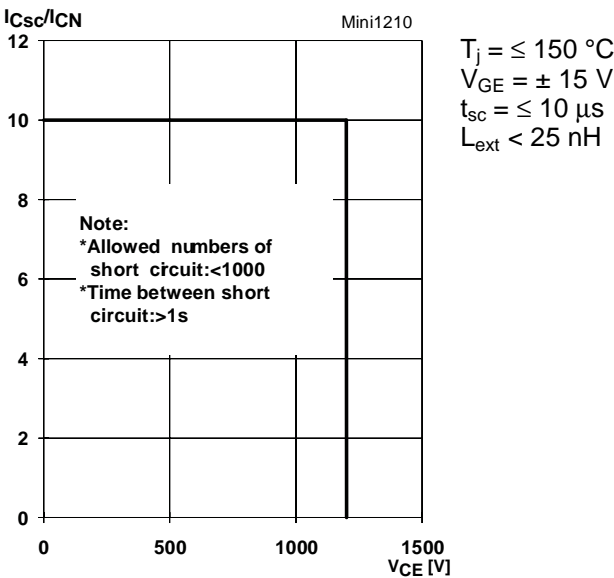


Fig. 10 Safe operating area at short circuit of the IGBT

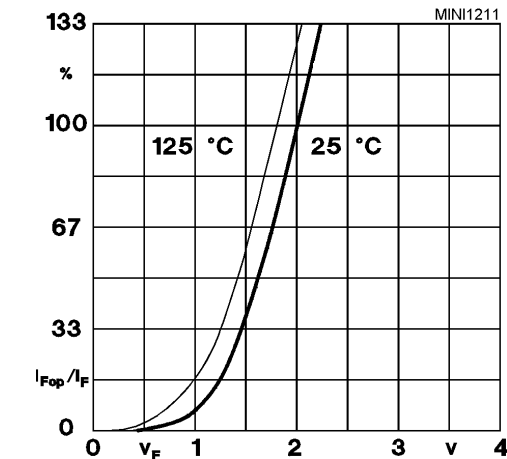


Fig. 11 Typ. freewheeling diode forward characteristic

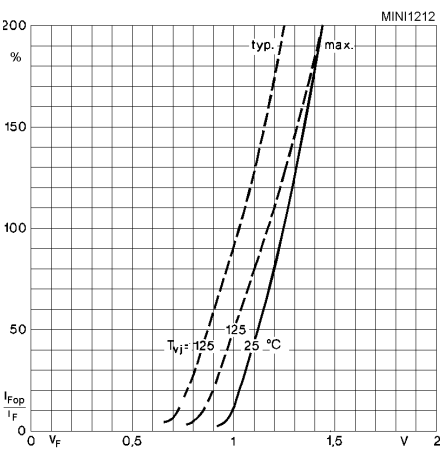


Fig. 12 Forward characteristic of the input bridge diode

MiniSKiiP 7

SKiiP 71 GB 06
SKiiP 72 GB 12

Circuit
Case M7
Layout and connections for the
customer's printed circuit board

