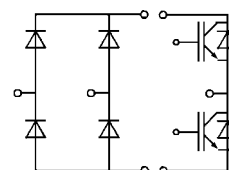
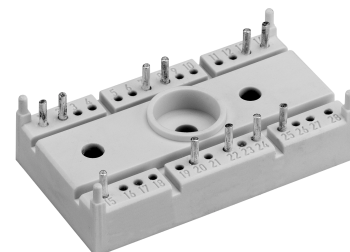


SK 13 BGB 123 F

SEMITOP® 3 IGBT Module

SK 13 BGB 123 F



BGB

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N channel, homogeneous silicon structure (NPT Non-Punch-through IGBT)
- High short circuit capability
- Fast and soft inverse CAL-diodes
- UL recognized, file no. E 63 532

Typical Applications

- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

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

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

³⁾ Thermal resistance junction to heatsink

Absolute Maximum Ratings		Values	Units
Symbol	Conditions ¹⁾		
IGBT			
V_{CES}		1200	V
V_{GES}		± 20	V
I_C	$T_h = 25/80^\circ\text{C}$	33 / 22	A
I_{CM}	$t_p < 1\text{ ms}; T_h = 25/80^\circ\text{C}$	66 / 44	A
$I_F = -I_C$	$T_h = 25/80^\circ\text{C}$	18 / 12	A
$I_{FM} = -I_{CM}$	$t_p < 1\text{ ms}; T_h = 25/80^\circ\text{C}$	36 / 24	A
Bridge Rectifier			
V_{RRM}		1200	V
I_D		16	A
I_{FSM}		100	A
i^2t		500	A ² s
T_j		$-40 \dots +150$	$^\circ\text{C}$
T_{stg}		$-40 \dots +125$	$^\circ\text{C}$
T_{sol}	Terminals, 10 s	260	$^\circ\text{C}$
V_{isol}	AC, 1 min	2500	V

Characteristics		min.	typ.	max.	Units
Symbol	Conditions ¹⁾				
V_{CEsat}	$I_C = 25\text{ A}; T_j = 25\text{ (125)}^\circ\text{C}$	—	2,5(3,1)	3,0(3,7)	V
$t_{d(on)}$	$V_{CC} = 600\text{ V}; V_{GE} = \pm 15\text{ V}$	—	65	—	ns
t_r	$I_C = 25\text{ A}; T_j = 125^\circ\text{C}$	—	100	—	ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 25\ \Omega$	—	430	—	ns
t_f	inductive load	—	35	—	ns
$E_{on} + E_{off}$		—	7	—	mJ
C_{ies}	$V_{CE} = 25\text{ V}; V_{GE} = 0\text{ V}, 1\text{ MHz}$	—	1,65	—	nF
R_{thjh} ³⁾	per IGBT	—	—	1,0	K/W
Inverse Diode ²⁾ & Rectifier diode					
$V_F = V_{EC}$	$I_F = 10\text{ A}; T_j = 25\text{ (125)}^\circ\text{C}$	—	2,0(1,8)	2,5(2,3)	V
V_{TO}	$T_j = 125^\circ\text{C}$	—	1,0	1,2	V
r_T	$T_j = 125^\circ\text{C}$	—	80	110	m Ω
I_{RRM}	$I_F = 10\text{ A}; V_R = 600\text{ V}$	—	12	—	A
Q_{rr}	$di_F/dt = -300\text{ A}/\mu\text{s}$	—	1,8	—	μC
E_{off}	$V_{GE} = 0\text{ V}; T_j = 125^\circ\text{C}$	—	0,4	—	mJ
R_{thjh} ³⁾	per Diode	—	—	2,1	K/W
Mechanical Data					
M_1	mounting torque	—	—	2,5	Nm
w		—	30	—	g
Case			T 23		

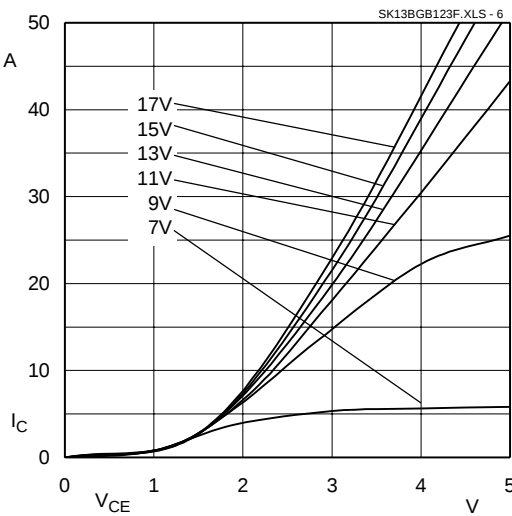
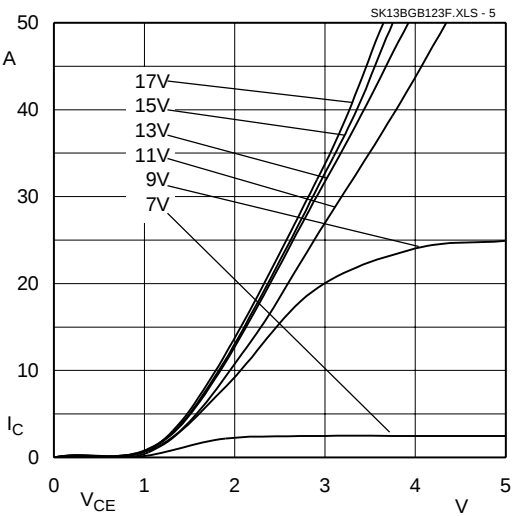


Fig. 5 Typ. output characteristic, $t_p = 80 \mu s$; $25^\circ C$

Fig. 6 Typ. output characteristic, $t_p = 80 \mu s$; $125^\circ C$

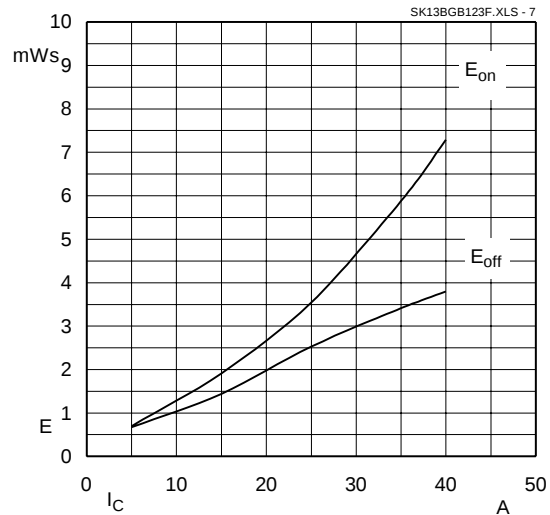


Fig. 7 Turn-on /-off energy = $f(I_c)$

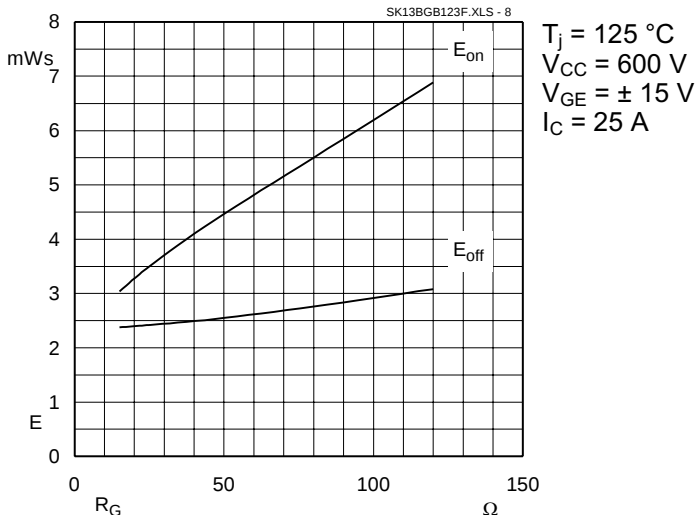


Fig. 8 Turn-on /-off energy = $f(R_G)$

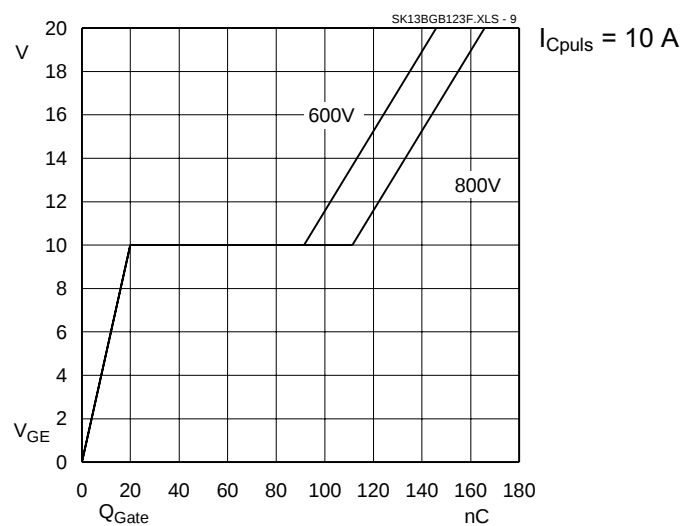


Fig. 9 Typ. gate charge characteristic

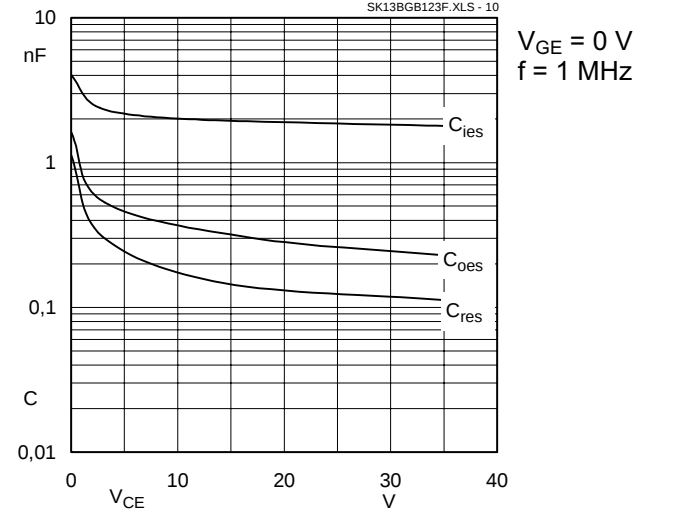


Fig. 10 Typ. capacitances vs. V_{CE}

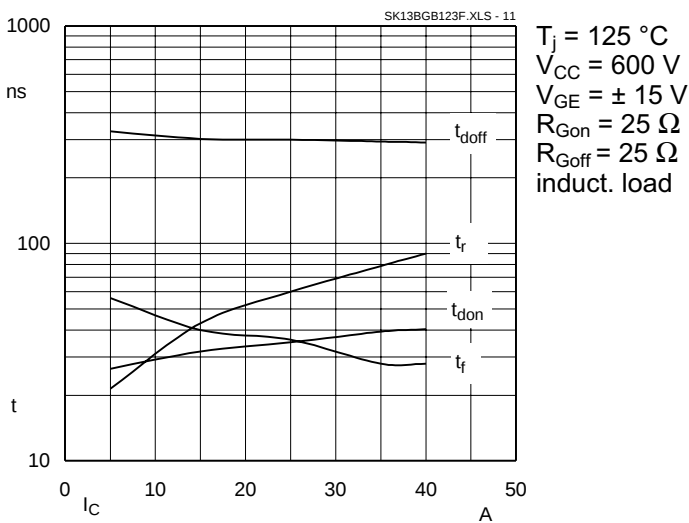


Fig. 11 Typ. switching times vs. I_C

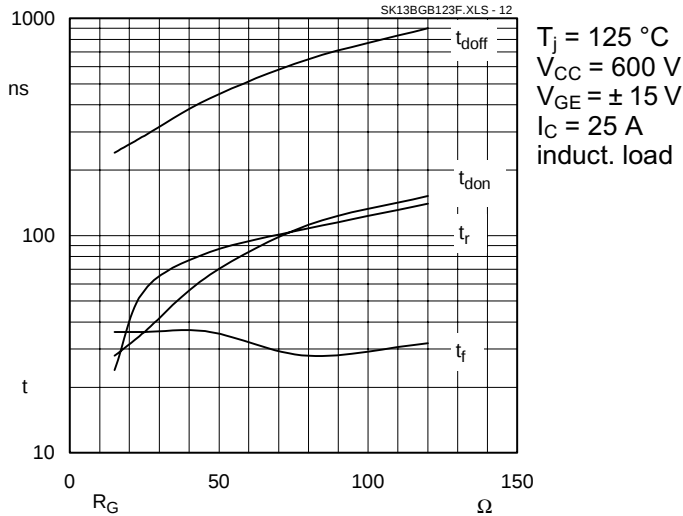
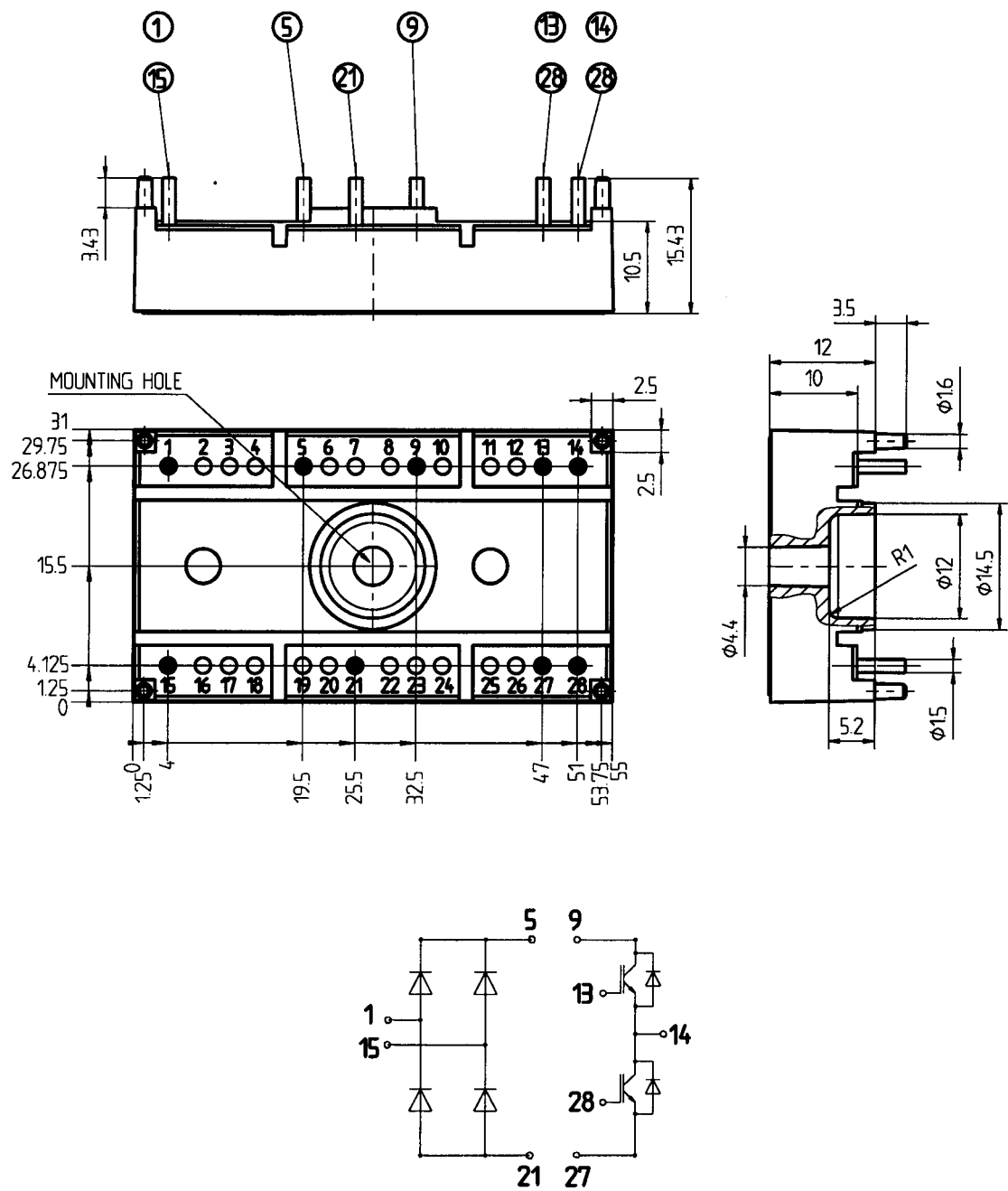


Fig. 12 Typ. switching times vs. gate resistor R_G

SEMITOP® 3
SK 13 BGB 123 F

Case T 23



Dimensions in mm

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