

SEMITOP® 2

IGBT Module

SK 10 GH 123

Preliminary Data

Features

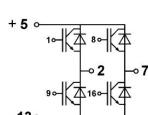
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N channel, homogeneous Silicon structure (NPT-Non punchthrough IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E 63532

Typical Applications

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

Absolute Maximum Ratings		$T_s = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}		1200		V
V_{GES}		± 20		V
I_C	$T_s = 25 \text{ (80)}^\circ\text{C};$	16 (11)	A	A
I_{CM}	$t_p < 1 \text{ ms}; T_s = 25 \text{ (80)}^\circ\text{C};$	32 (22)	A	A
T_j		- 40 ... + 150		$^\circ\text{C}$
Inverse / Freewheeling CAL diode				
I_F	$T_s = 25 \text{ (80)}^\circ\text{C};$	18 (12)	A	A
$I_{FM} = - I_{CM}$	$t_p < 1 \text{ ms}; T_s = 25 \text{ (80)}^\circ\text{C};$	36 (24)	A	$^\circ\text{C}$
T_j		- 40 ... + 150		
T_{stg}		- 40 ... + 125		$^\circ\text{C}$
T_{sol}	Terminals, 10 s	260		$^\circ\text{C}$
V_{isol}	AC 50 Hz, r.m.s. 1 min. / 1 s	2500 / 3000		V

Characteristics		$T_s = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
IGBT				
$V_{CE(\text{sat})}$	$I_C = 10 \text{ A}, T_j = 25 \text{ (125)}^\circ\text{C}$		2,7 (3,3)	3,2 (3,9)
$V_{GE(\text{th})}$	$V_{CE} = V_{GE}; I_C = 0,0004 \text{ A}$	4,5	5,5	6,5
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; 1 \text{ MHz}$		0,53	nF
$R_{th(j-s)}$	per IGBT			1,8
	per module			K/W
$t_{d(on)}$	under following conditions: $V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		30	ns
t_r	$I_C = 10 \text{ A}, T_j = 125^\circ\text{C}$		45	ns
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 50 \Omega$		200	ns
t_f			35	ns
$E_{on} + E_{off}$	Inductive load		2,3	mJ
Inverse / Freewheeling CAL diode				
$V_F = V_{EC}$	$I_F = 10 \text{ A}; T_j = 25 \text{ (125)}^\circ\text{C}$		2 (1,8)	2,5 (2,3)
$V_{(TO)}$	$T_j = (125)^\circ\text{C}$		(1)	(1,2)
r_T	$T_j = (125)^\circ\text{C}$		(80)	(110)
$R_{th(j-s)}$				2,1
Mechanical data				
M1	mounting torque		2	Nm
w			21	g
Case	SEMITOP® 2		T 5	



GH

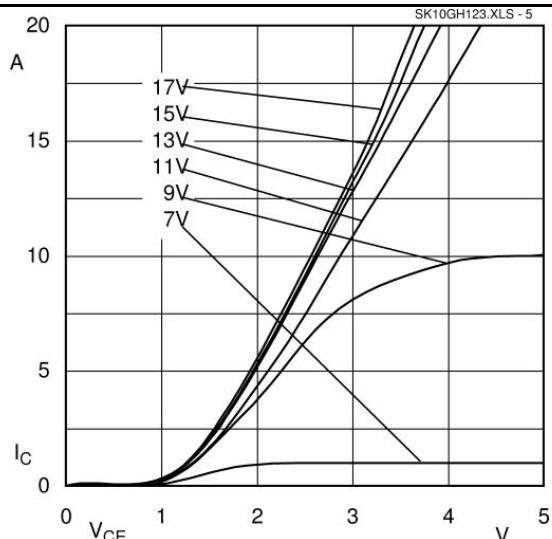


Fig.5 Typ. output characteristic, $t_p = 80 \mu\text{s}$, 25 °C

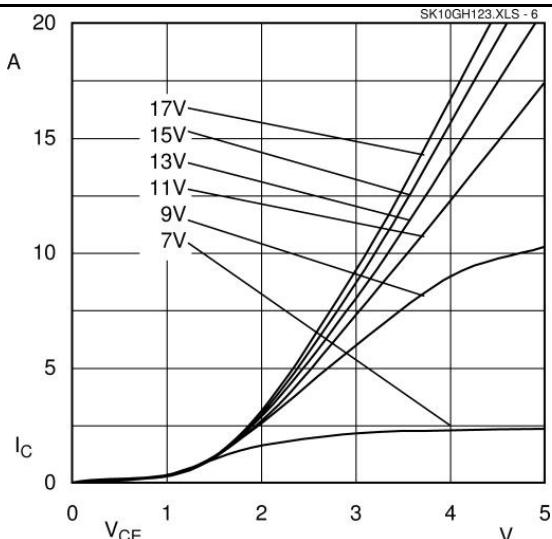


Fig.6 Typ. output characteristic, $t_p = 80 \mu\text{s}$, 125 °C

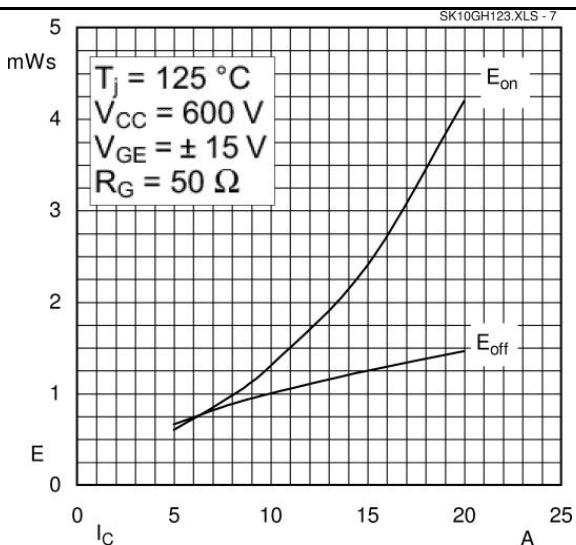


Fig.7 Turn-on / -off energy = f (I_C)

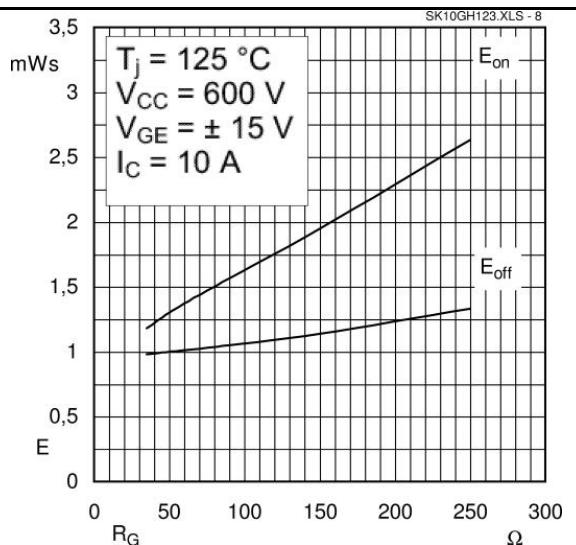


Fig.8 Turn-on / -off energy = f (R_G)

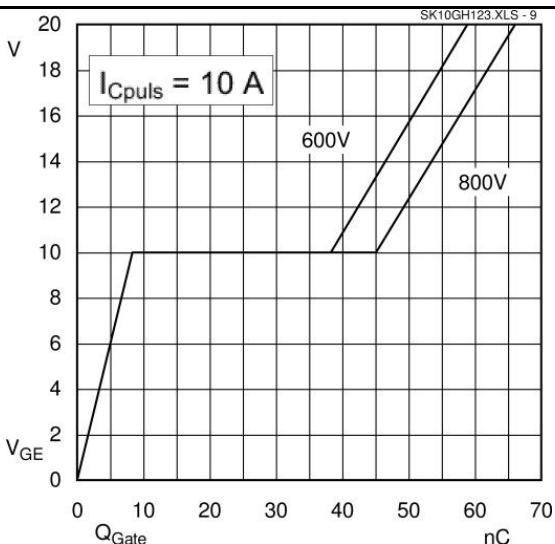


Fig.9 Typ. gate charge characteristic

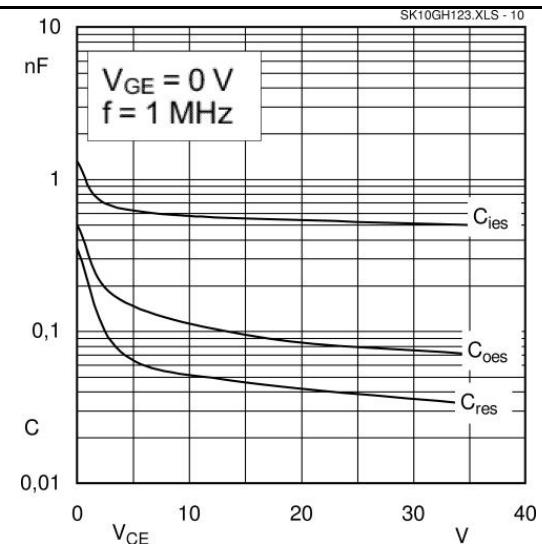


Fig.10 Typ. capacitances vs. V_CE

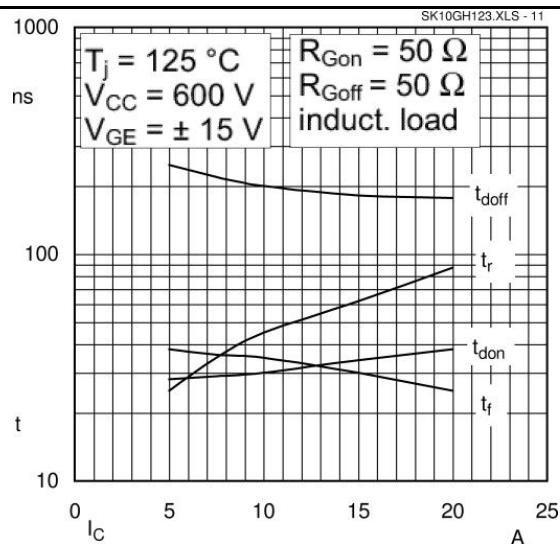


Fig.11 Typ. switching times vs. I_C

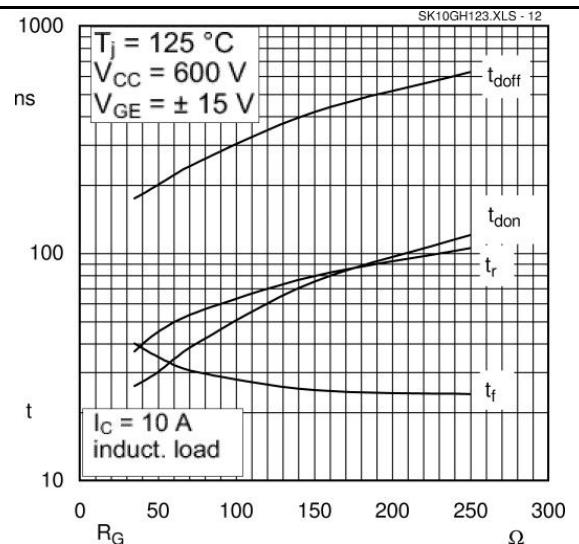


Fig.12 Typ. switching times vs. gate resistor R_G

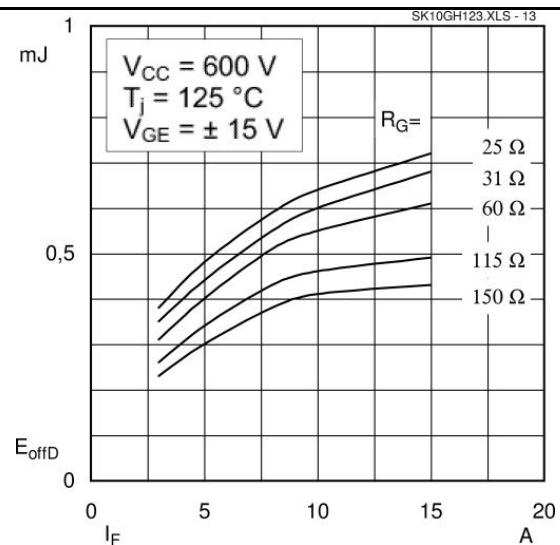


Fig.13 Diode turn-off energy dissipation per pulse

UL Recognized
File no. E 63532

Dimensions in mm

