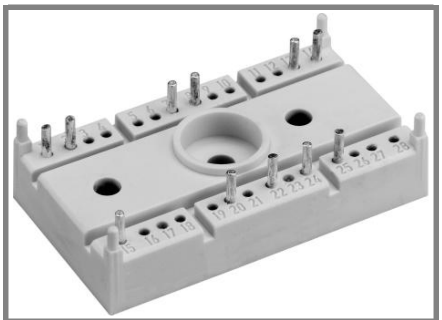
SK 10 GHR 123 I



SEMITOP® 3

IGBT Module

SK 10 GHR 123 I

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-Punch-through IGBT)
- High short circuit capability
- Low tail current with low temperature dependence

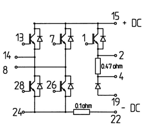
Typical Applications

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

1) SHUNT:

2) R_{CSDC} (± 1%) typ. value = 100 mΩ

3) R_{CSGAR} (± 1%) typ. value = 470 mΩ



GHR - I

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

Characteristics				T_s = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
$V_{CE(sat)}$	I_C = 10 A, T_j = 25 (125) °C		2,7 (3,3)	3,2 (3,9)	V
$V_{GE(th)}$	V_{CE} = V_{GE}; I_C = 0,0004 A	4,5	5,5	6,5	V
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; 1 MHz		0,53		nF
$R_{th(j-s)}$	per IGBT			1,8	K/W
	per module				K/W
	under following conditions:				
$t_{d(on)}$	V_{CC} = 600 V , V_{GE} = ± 15 V		30		ns
t_r	I_C = 10 A, T_j = 125 °C		45		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 50 Ω		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 A; T_j = 25 (125) °C		2 (1,8)	2,5 (2,3)	V
$V_{(TO)}$	T_j = (125) °C		(1)	(1,2)	V
r_T	T_j = (125) °C		(80)	(110)	mΩ
$R_{th(j-s)}$				2,1	K/W
	under following conditions:				
I_{RRM}	I_F = 10 A; V_R = 600 V		12		A
Q_{rr}	dI_F/dt = -300 A/µs		1,8		µC
E_{off}	V_{GE} = 0 V; T_j = 125 °C		0,4		mJ
Mechanical data					
M1	mounting torque			2,5	Nm
w			30		g
Case			T 36		

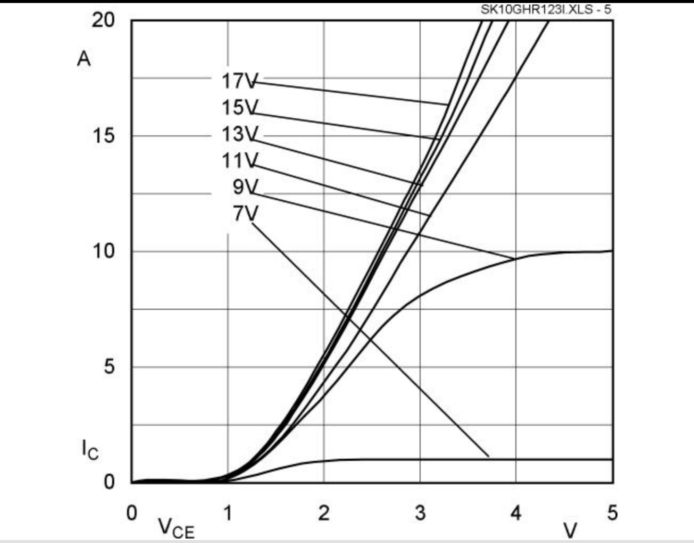


Fig.5 Typ. output characteristic, t_p = 80 µs, 25 °C

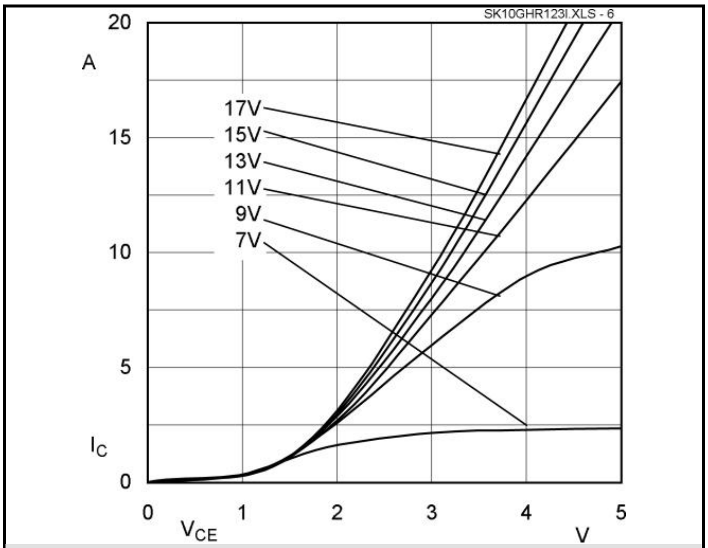


Fig. 6 Typ. output characteristic, t_p = 80 µs, 125 °C

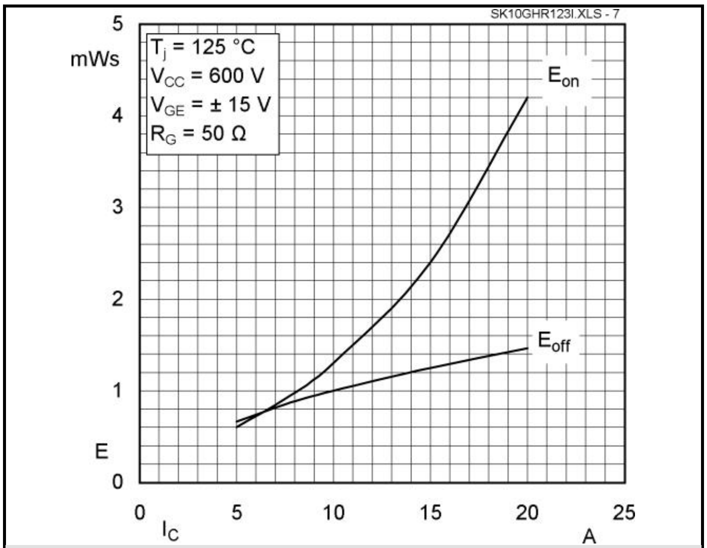


Fig. 7 Turn-on / -off energy = f (I_C)

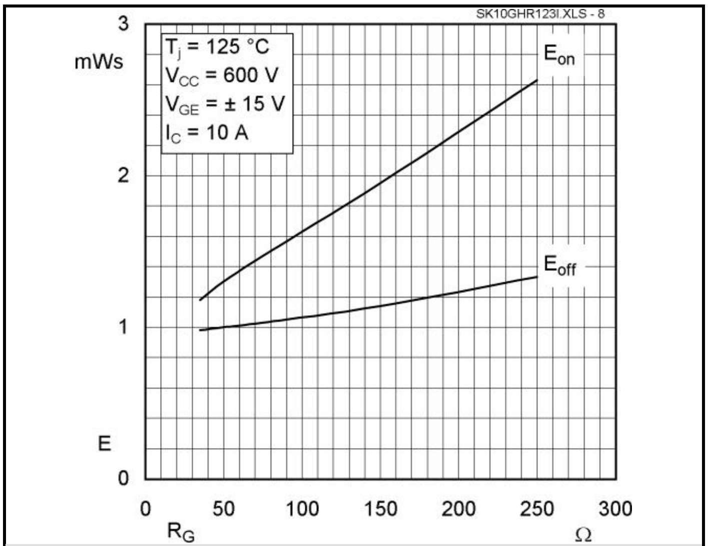


Fig. 8 Turn-on / -off energy = f (R_G)

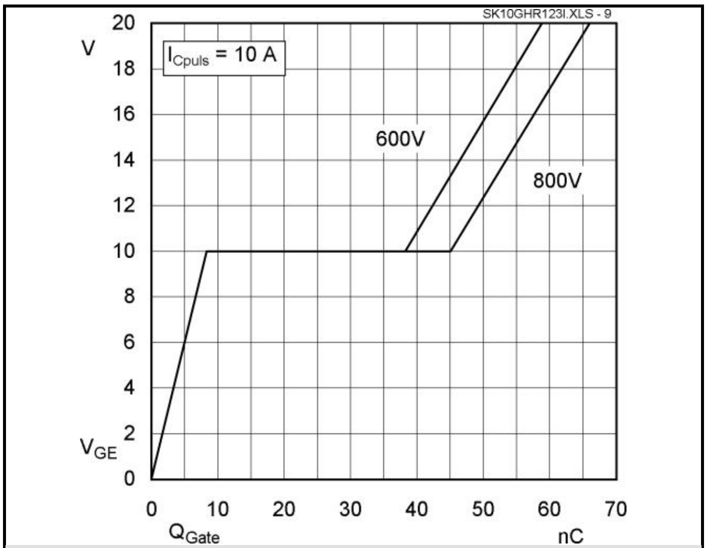


Fig. 9 Typ. gate charge characteristic

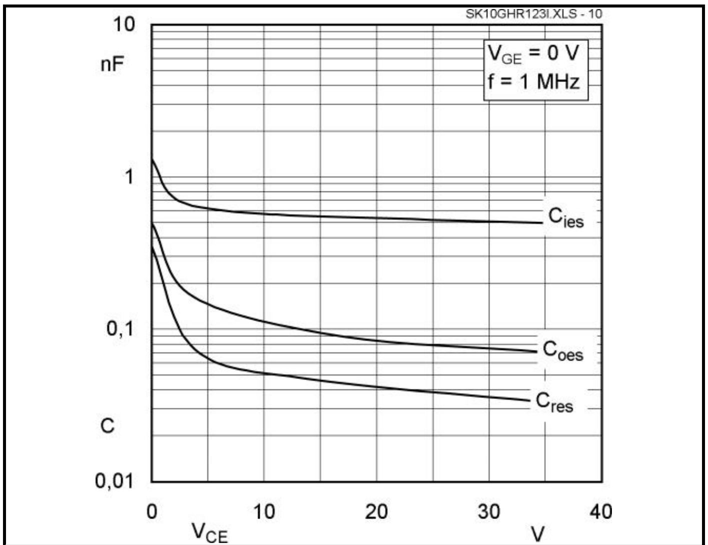


Fig. 10 Typ. capacitances vs. V_{CE}

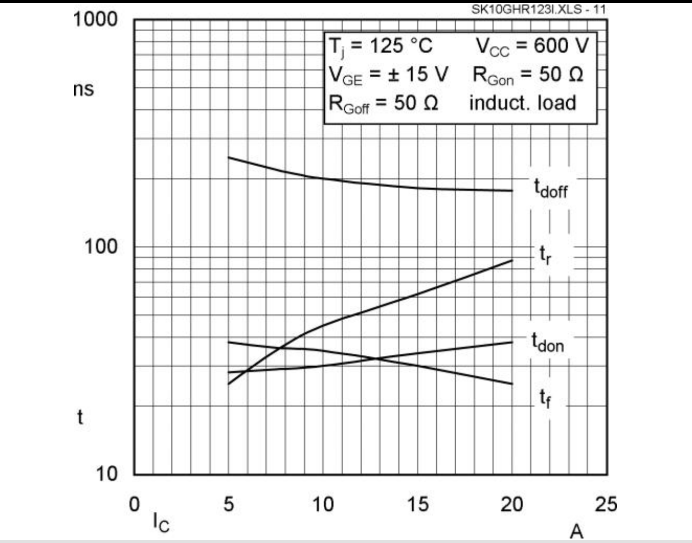


Fig. 11 Typ. switching times vs. I_C

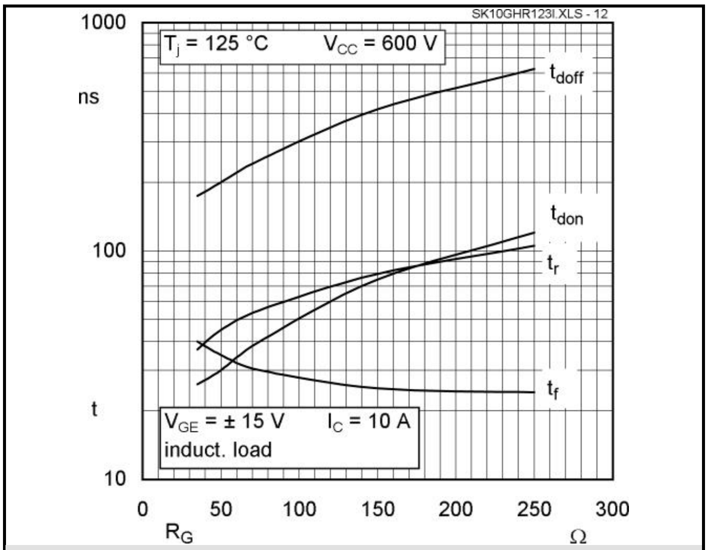


Fig. 12 Typ. switching times vs. gate resistor R_G

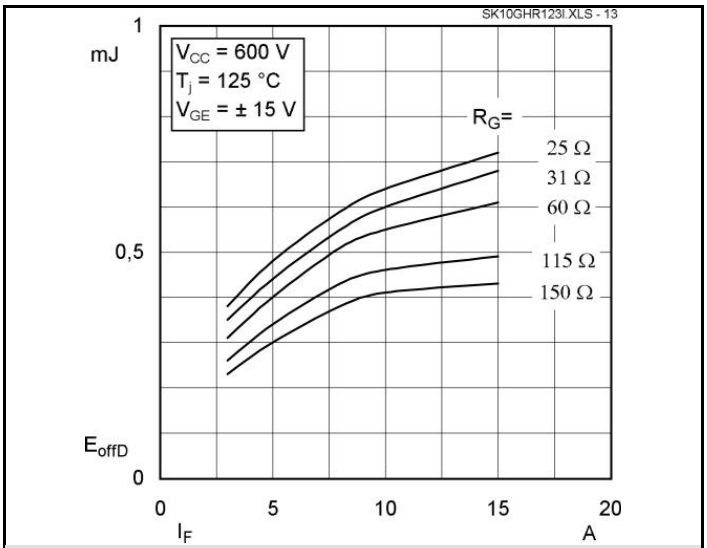
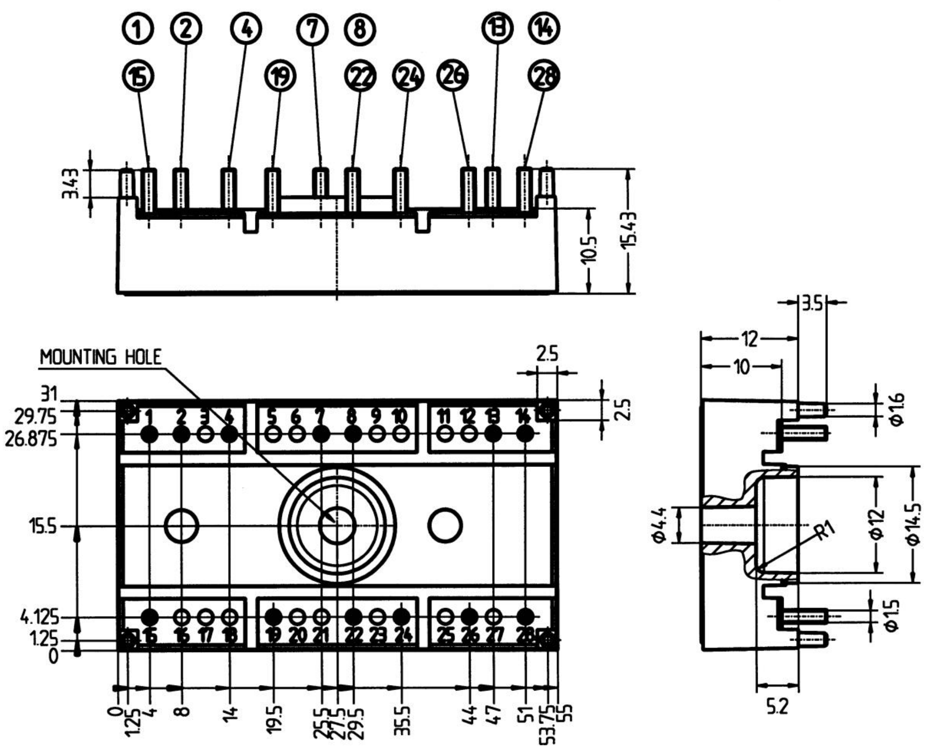


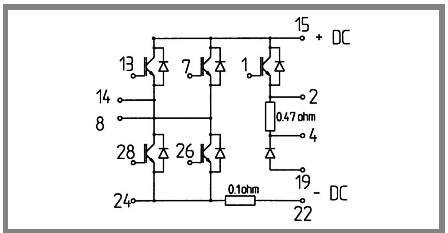
Fig.13 Diode turn-off energy dissipation per pulse

Dimensions in mm



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE PCB: 2 mm

Case T 36



Case T36 GHR - I

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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