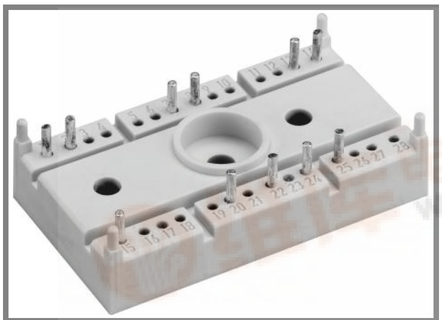
SK 13 GD 063



SEMITOP® 3

IGBT Module

SK 13 GD 063

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 punchtrough IGBT)
- High short circuit capability
- Low tail current with low temperature dependence
- UL recognized, file no. E 63532

Typical Applications

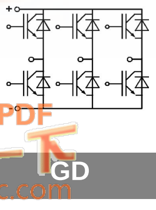
- Switching (not for linear use)
- Inverter
- Switched mode power supplies
- UPS

Absolute Maximum Ratings T_s = 25 °C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
V_{GES}		± 20	V
I_C	T_s = 25 (80) °C;	18 (13)	A
I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	36 (26)	A
T_j		- 40 ... + 150	°C
Inverse/Freewheeling CAL diode			
I_F	T_s = 25 (80) °C;	22 (15)	A
I_{FM} = - I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	44 (30)	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		2,1 (2,4)	2,5 (2,8)	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		0,57		nF
$R_{th(j-s)}$	per IGBT			2	K/W
	per module				K/W
	under following conditions:				
$t_{d(on)}$	V_{CC} = 300 V , V_{GE} = ± 15 V		45		ns
t_r	I_C = 10 A, T_j = 125 °C		45		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 100 Ω		250		ns
t_f			20		ns
E_{on} + E_{off}	Inductive load		1		mJ
Inverse/Freewheeling CAL diode					
V_F = V_{EC}	I_F = 10 A; T_j = 25 (125) °C		1,45 (1,4)	1,7 (1,7)	V
$V_{(TO)}$	T_j = (125) °C		(0,85)	(0,9)	V
r_T	T_j = (125) °C		(55)	(80)	mΩ
$R_{th(j-s)}$				2,3	K/W
	under following conditions:				
I_{RRM}	I_F = 10 A; V_R = -300 V		6,5		A
Q_{rr}	dI_F/dt = -200 A/µs		1		µC
E_{off}	V_{GE} = 0 V; T_j = 125 °C		0,1		mJ
Mechanical data					
M1	mounting torque			2,5	Nm
w			30		g
Case	SEMITOP® 3		T 12		



GD

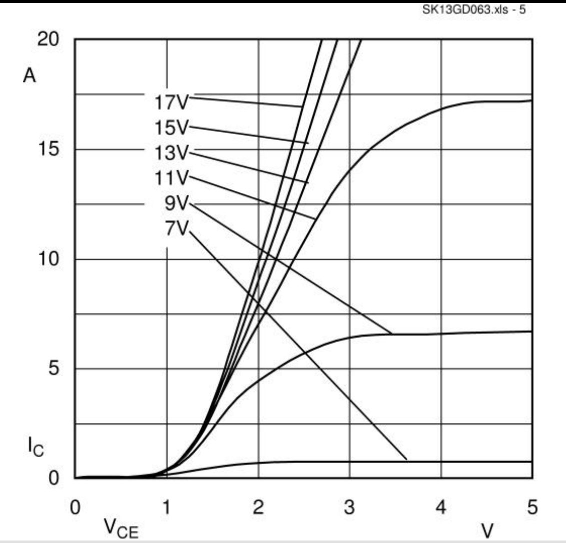


Fig.5 Typ. output characteristic, t_p = 80 µs, 25 °C

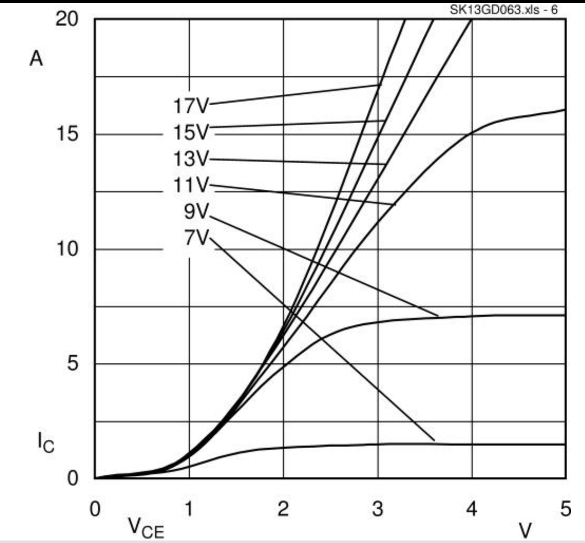


Fig.6 Typ. output characteristic, t_p = 80 µs, 125 °C

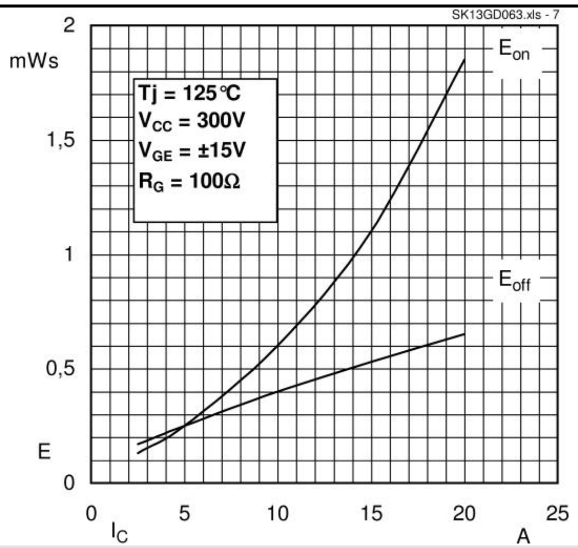


Fig.7 Turn-on / -off energy = f (I_C)

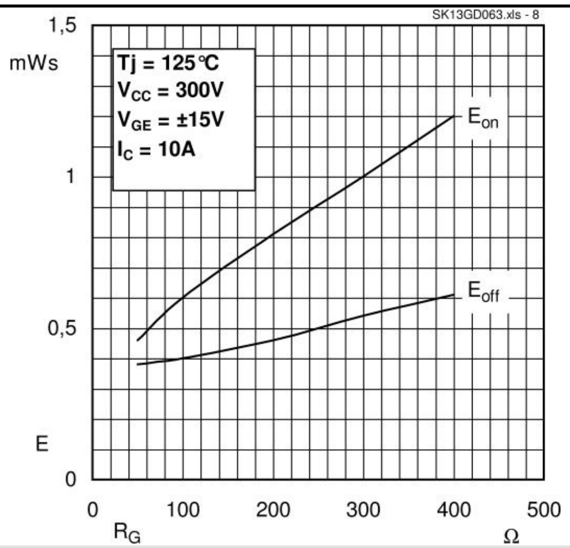


Fig.8 Turn-on / -off energy = f (R_G)

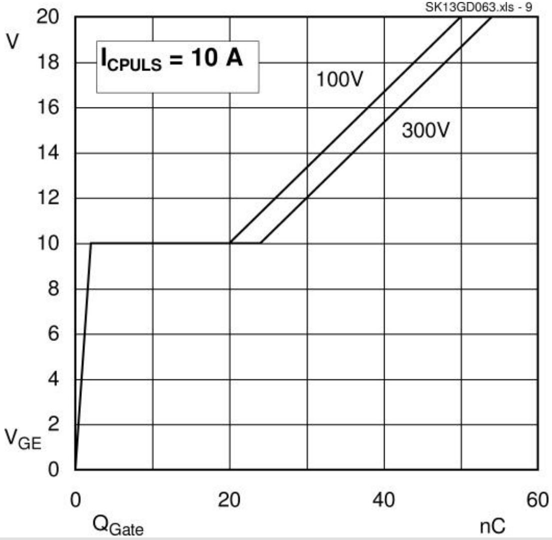


Fig.9 Typ. gate charge characteristic

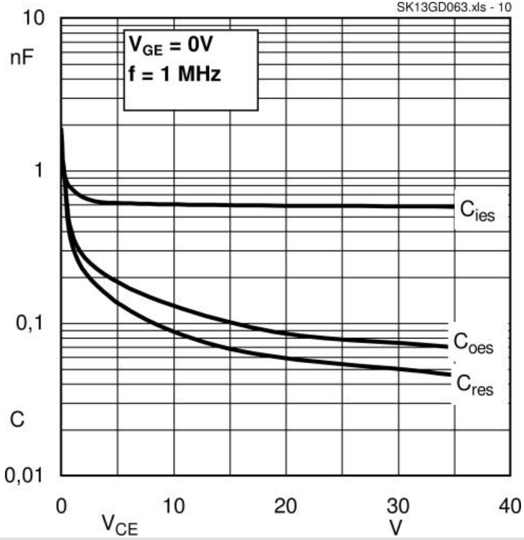


Fig.10 Typ. capacitances vs. V_{CE}

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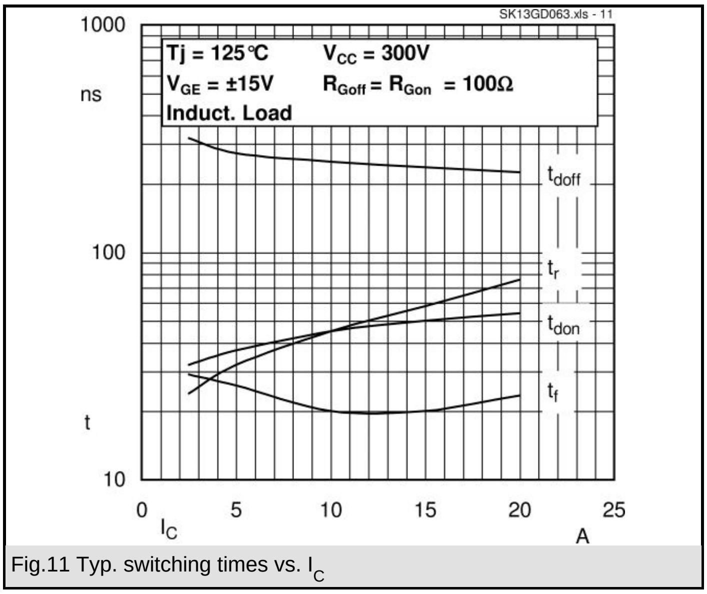

Fig.11 Typ. switching times vs. I_C

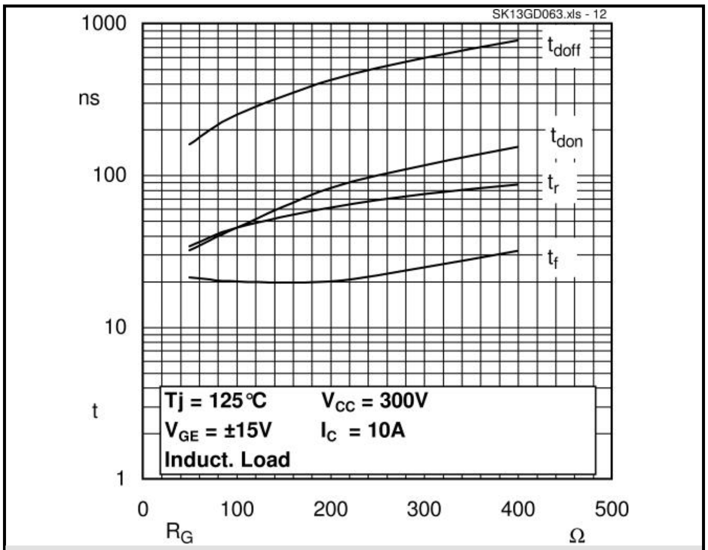

Fig.12 Typ. switching times vs. gate resistor R_G

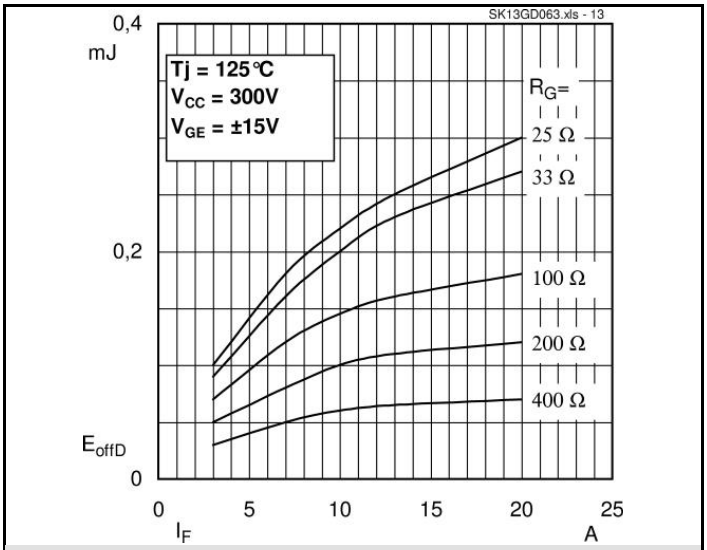

Fig.13 Diode turn-off energy dissipation per pulse

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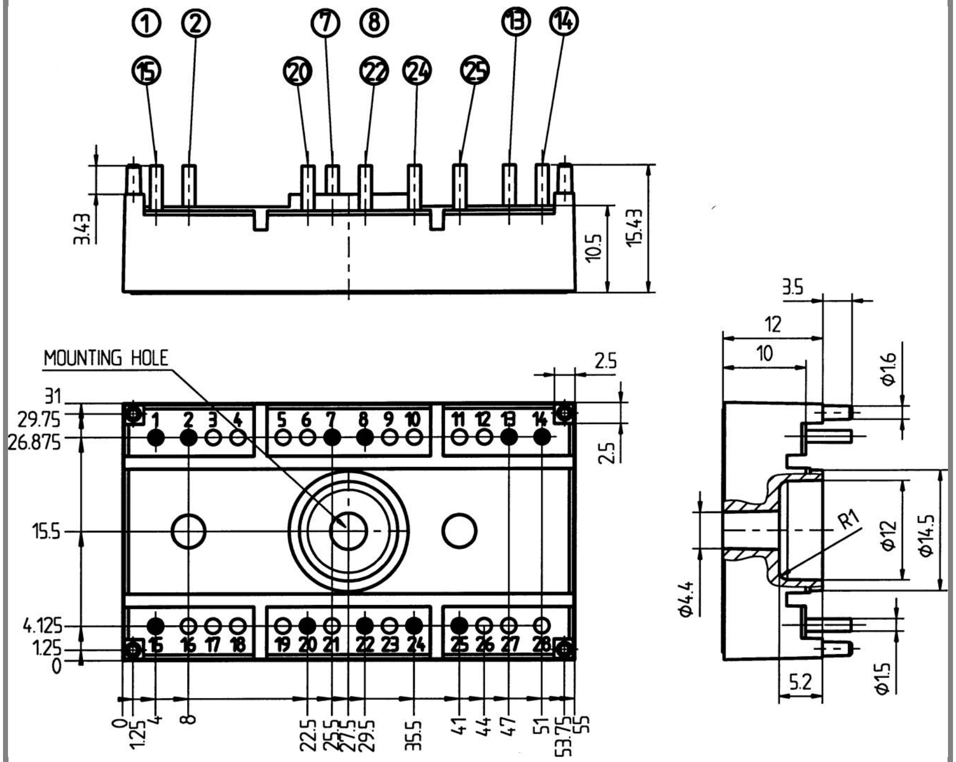
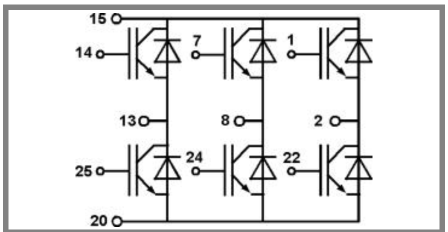
UL Recognized
File no. E 63532

Dimensions in mm



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

Case T12



Case T 12 GD

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

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