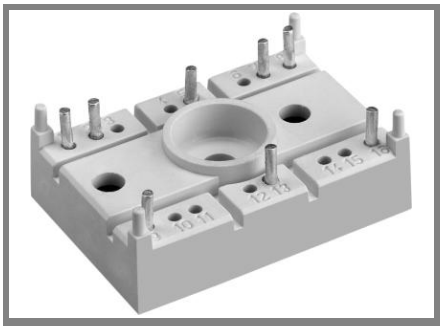
SK 50 GARL 065 F



SEMITOP® 2

IGBT Module

SK 50 GARL 065 F

Preliminary Data

Features

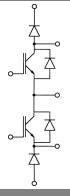
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- Low tail current with low temperature dependence
- Low threshold voltage
- Fast Turbo diode

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;	54 (40)	A
I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	108 (80)	A
T_j		- 40 ... + 150	°C
Freewheeling diode			
I_F	T_s = 25 (80) °C;	82 (50)	A
I_{FM} = - I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	160 (100)	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 = 40 A, T_j = 25 (125) °C		1,7 (2,2)	2 (2,2)	V
$V_{GE(th)}$	V_{CE} = V_{GE}; I_C = 0,0007 A	3	4	5	V
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; 1 MHz		3		nF
$R_{th(j-s)}$	per IGBT			0,85	K/W
	per module				K/W
	under following conditions:				
$t_{d(on)}$	V_{CC} = 300 V , V_{GE} = ± 15 V		47		ns
t_r	I_C = 40 A, T_j = 125 °C		40		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 15 Ω		203		ns
t_f			33		ns
E_{on} + E_{off}	Inductive load		1,84		mJ
Freewheeling diode					
V_F = V_{EC}	I_F = 60 A; T_j = 25 (150) °C		1,1	1,6 (1,25)	V
$V_{(TO)}$	T_j = (150) °C		(0,85)		V
r_T	T_j = (150) °C		(7)		mΩ
$R_{th(j-s)}$				1,1	K/W
	under following conditions:				
I_{RRM}	I_F = 50 A; V_R = 300 V		38		A
Q_{rr}	dI_F/dt = -1000 A/µs		2		µC
E_{off}	V_{GE} = 0 V; T_j = 125 °C		0,45		mJ
Mechanical data					
M1	mounting torque	1,8		2	Nm
w			19		g
Case	SEMITOP® 2		T 31		



GARL

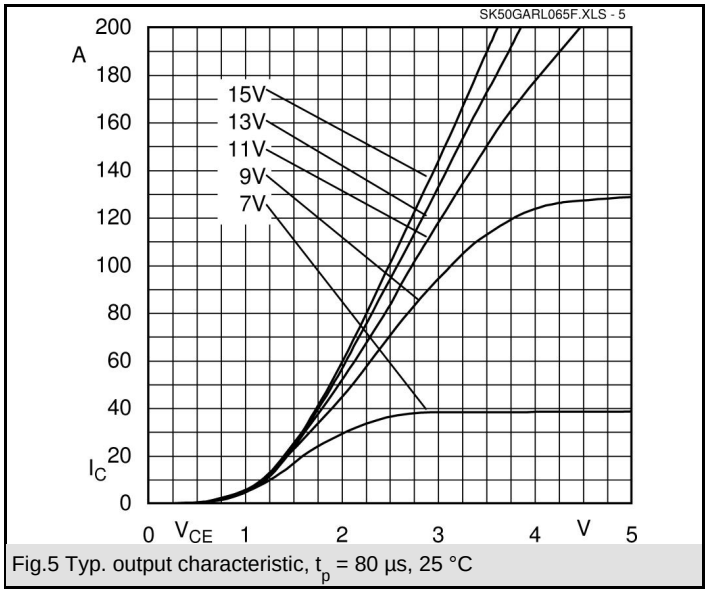


Fig.5 Typ. output characteristic, t_p = 80 µs, 25 °C

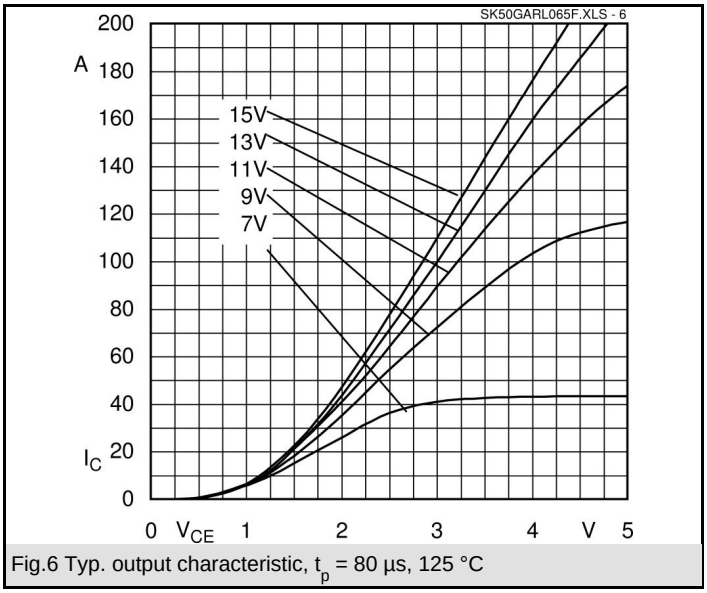


Fig.6 Typ. output characteristic, t_p = 80 µs, 125 °C

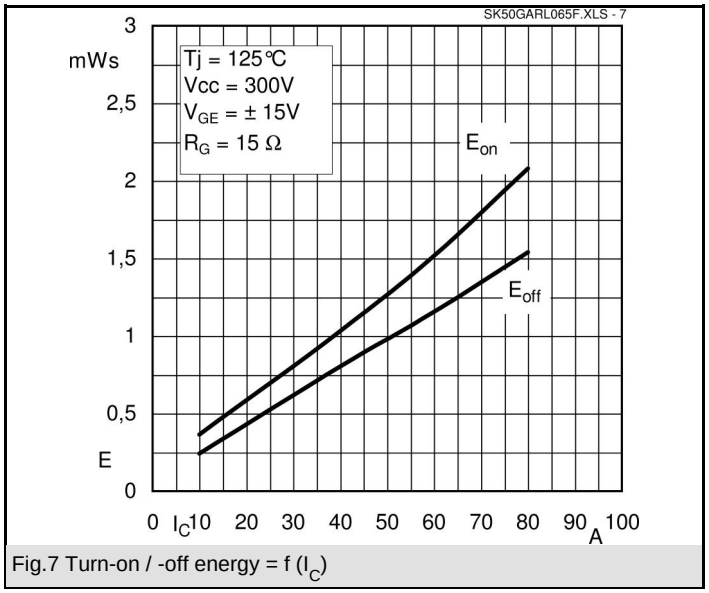


Fig.7 Turn-on / -off energy = f (I_C)

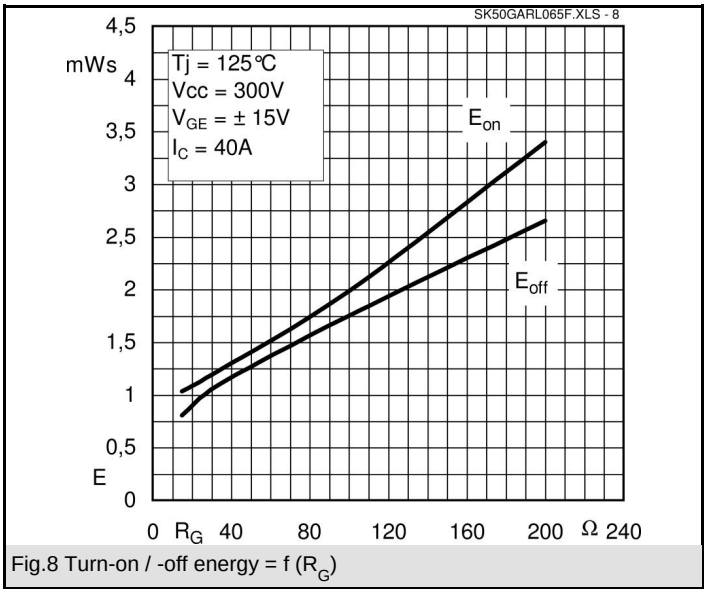


Fig.8 Turn-on / -off energy = f (R_G)

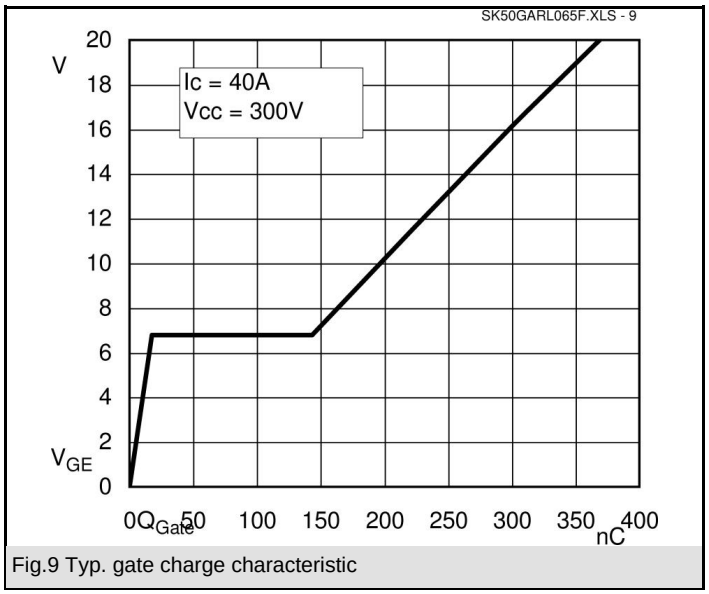


Fig.9 Typ. gate charge characteristic

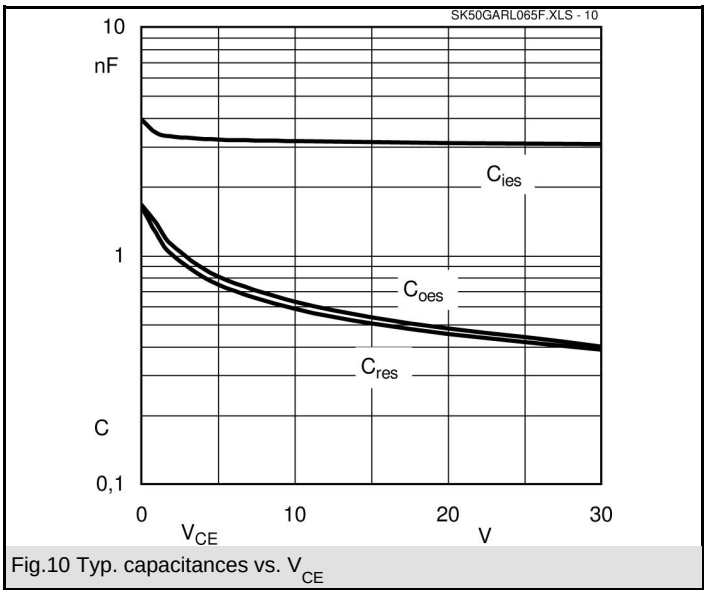


Fig.10 Typ. capacitances vs. V_{CE}

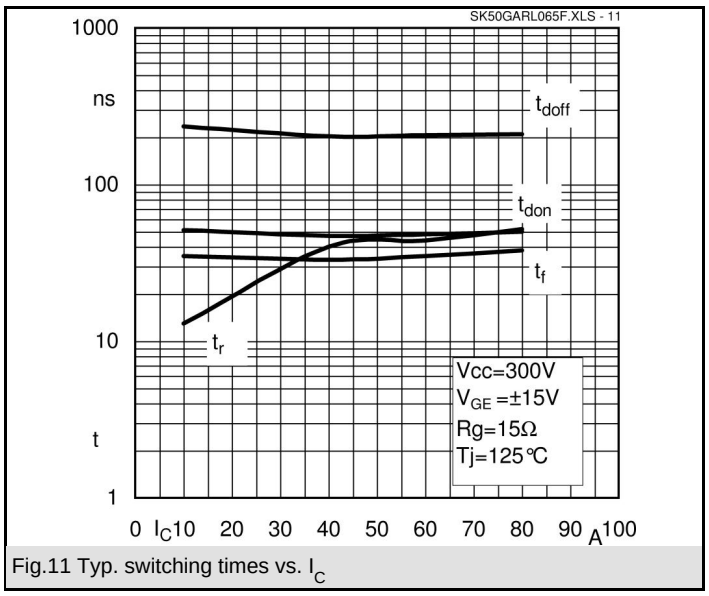


Fig.11 Typ. switching times vs. I_C

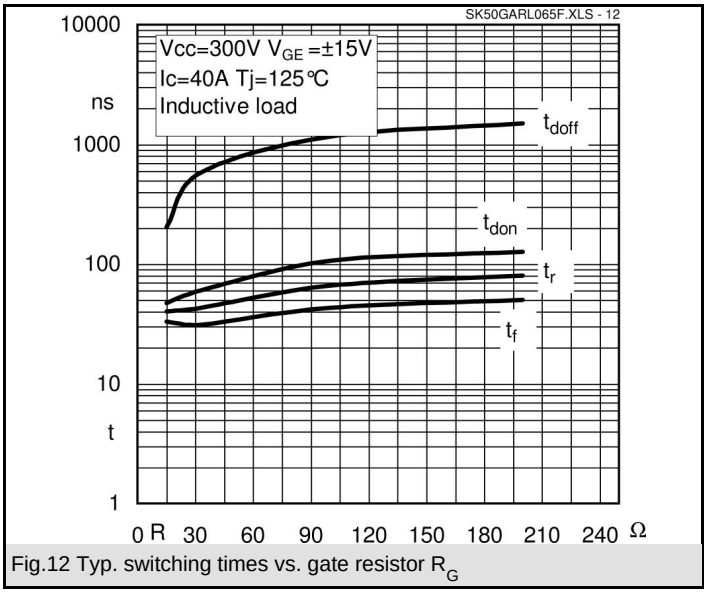


Fig.12 Typ. switching times vs. gate resistor R_G

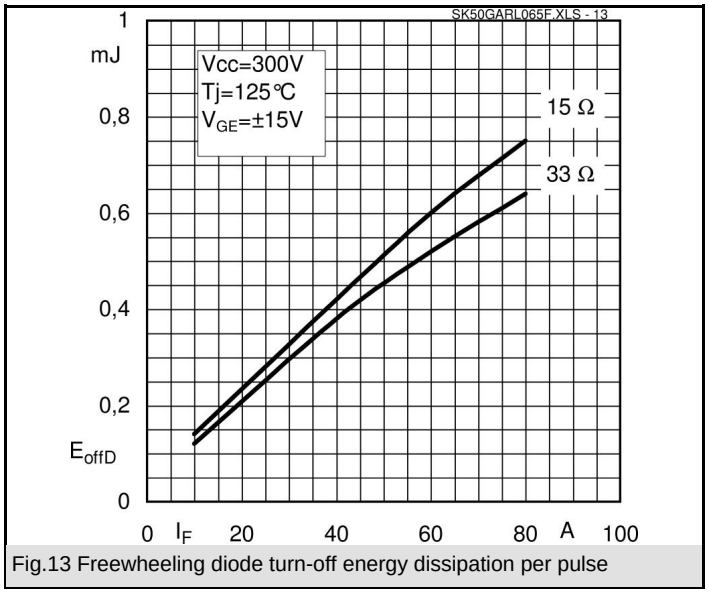


Fig.13 Freewheeling diode turn-off energy dissipation per pulse

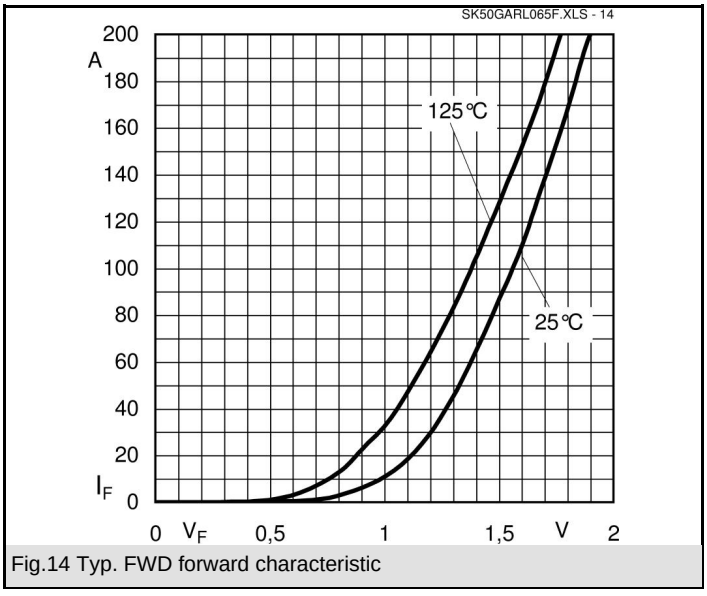


Fig.14 Typ. FWD forward characteristic

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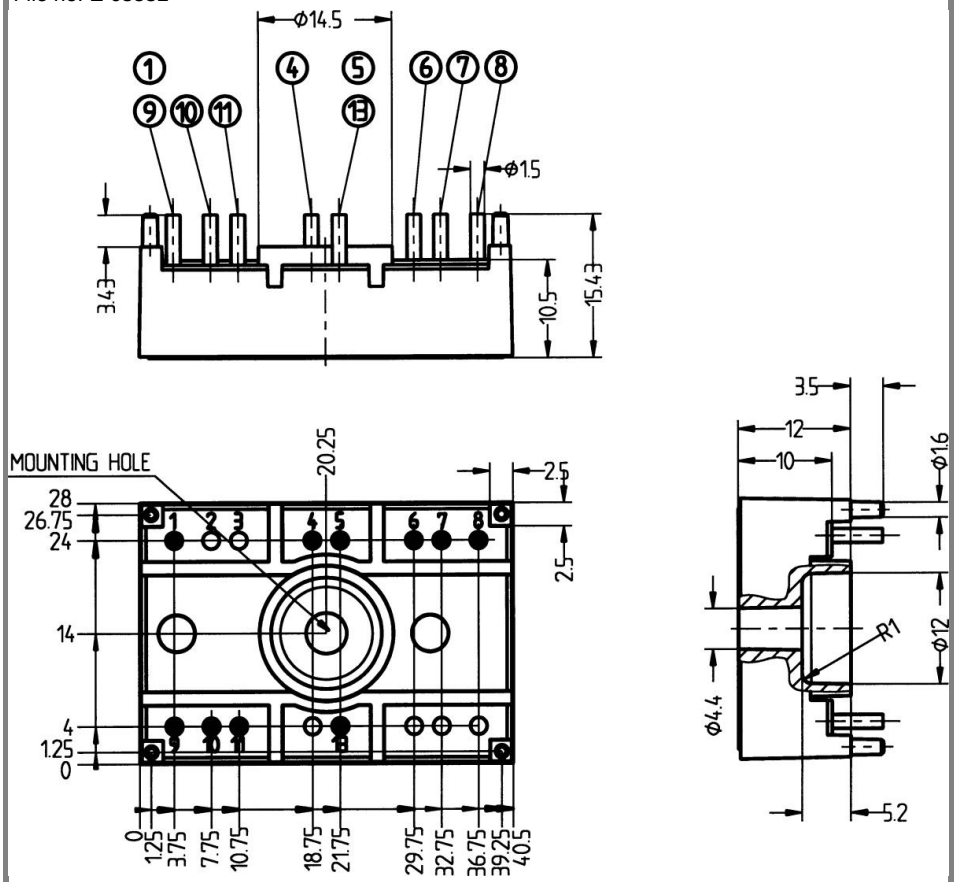
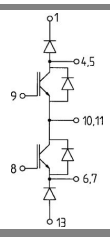
UL Recognized
File no. E 63532

Dimensions in mm



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

Case T31



Case T31 GARL

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

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