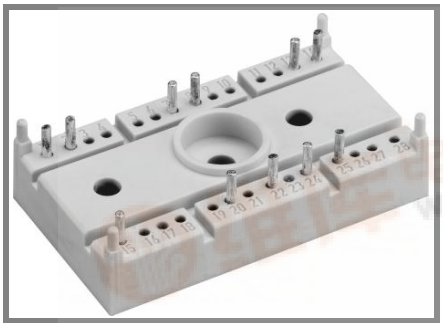
SK 75 GARL 065 E



SEMITOP® 3

IGBT Module

SK 75 GARL 065 E

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

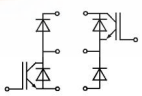
- Switching (not for linear use)
- Switched mode power supplies
- UPS
- Double PFC
- Multilevel Inverter

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;	80 (55)	A
I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	160 (110)	A
T_j		- 40 ... + 150	°C
Freewheeling CAL diode			
I_F	T_s = 25 (80) °C;	103 (69)	A
I_{FM} = - I_{CM}	t_p < 1 ms; T_s = 25 (80) °C;	206 (138)	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 = 60 A, T_j = 25 (125) °C		1,8 (1,9)		V
$V_{GE(th)}$	V_{CE} = V_{GE}; I_C = 0,0021 A	4,5	5,5	6,5	V
C_{ies}	V_{CE} = 25 V; V_{GE} = 0 V; 1 MHz		4,5		nF
$R_{th(j-s)}$	per IGBT			0,6	K/W
	per module				K/W
	under following conditions:				
$t_{d(on)}$	V_{CC} = 300 V , V_{GE} = ±15 V		54		ns
t_r	I_C = 100 A, T_j = 125 °C		58		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 13 Ω		410		ns
t_f			36		ns
E_{on} + E_{off}	Inductive load		5,45		mJ
Freewheeling CAL diode					
V_F = V_{EC}	I_F = 60 A; T_j = 25 (125) °C		1,45 (1,4)		V
$V_{(TO)}$	T_j = 125 °C		0,9		V
r_T	T_j = 125 () °C		5	9	mΩ
$R_{th(j-s)}$				0,6	K/W
	under following conditions:				
I_{RRM}	I_F = 100 A; V_R = 300 V		92		A
Q_{rr}	dI_F/dt = -9200 A/µs		9,1		µC
E_{off}	V_{GE} = 0 V; T_j = 125 °C		1,85		mJ
Mechanical data					
M1	mounting torque			2,5	Nm
w			30		g
Case	SEMITOP® 3		T55		



GARL - E

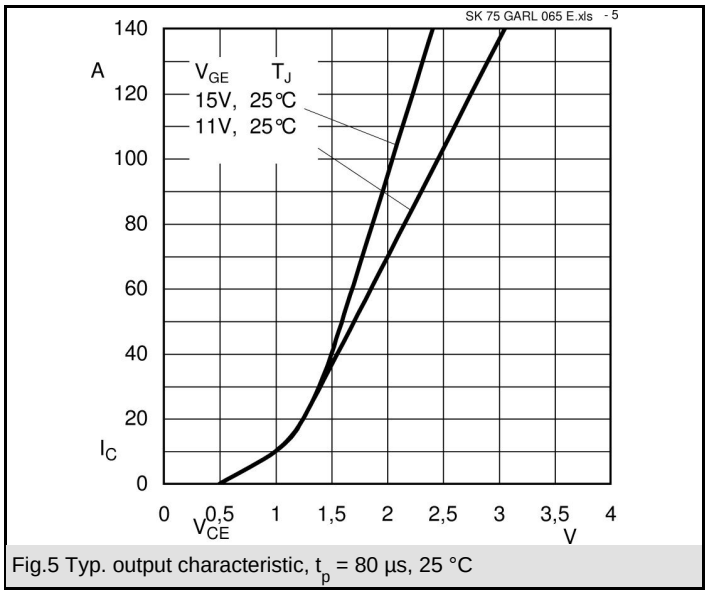


Fig.5 Typ. output characteristic, t_p = 80 µs, 25 °C

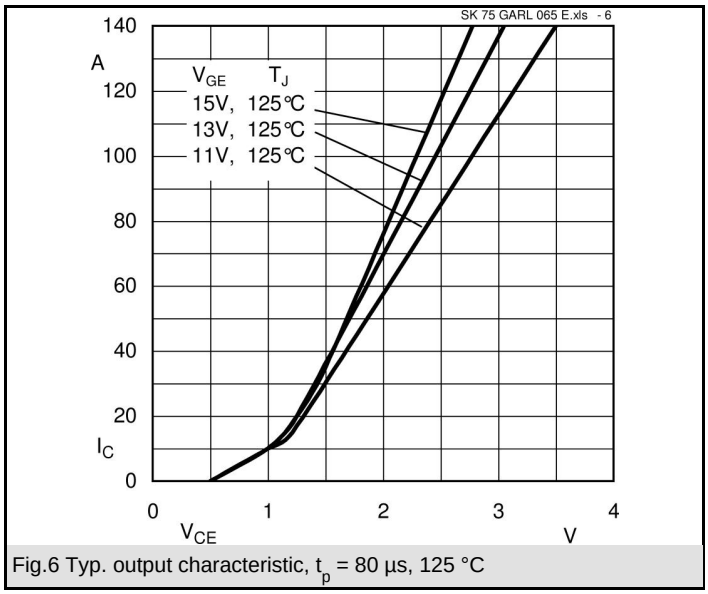


Fig.6 Typ. output characteristic, t_p = 80 µs, 125 °C

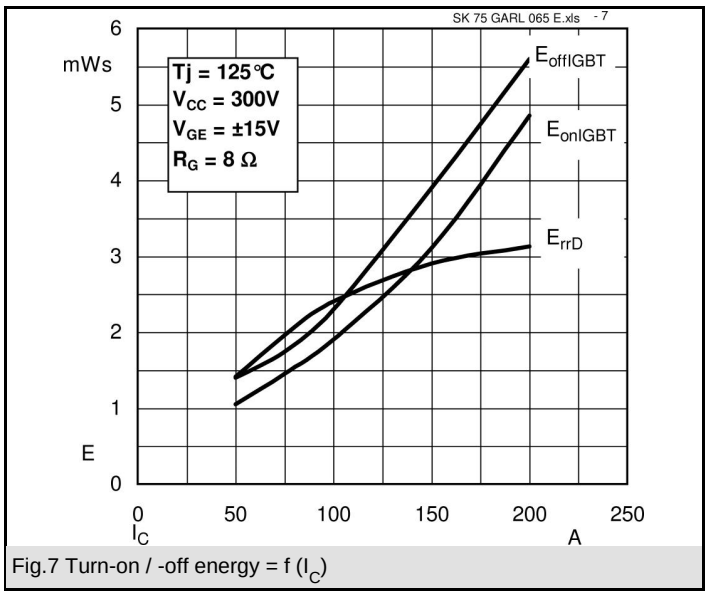


Fig.7 Turn-on / -off energy = f (I_C)

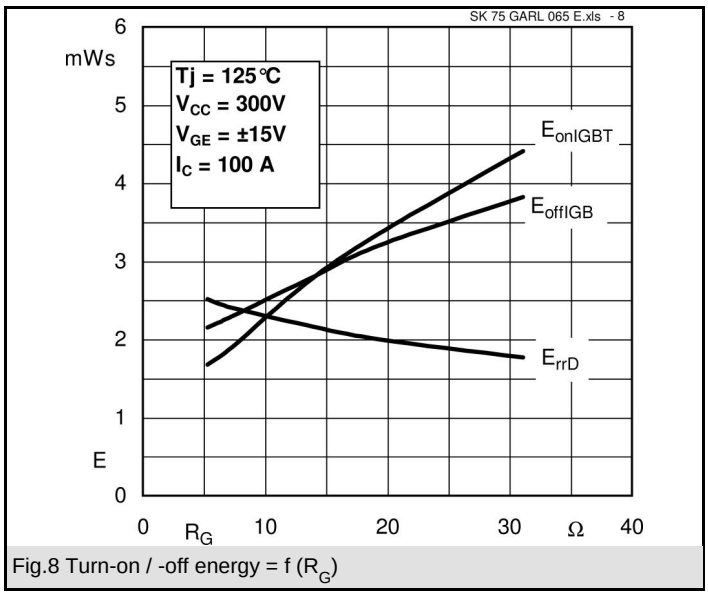


Fig.8 Turn-on / -off energy = f (R_G)

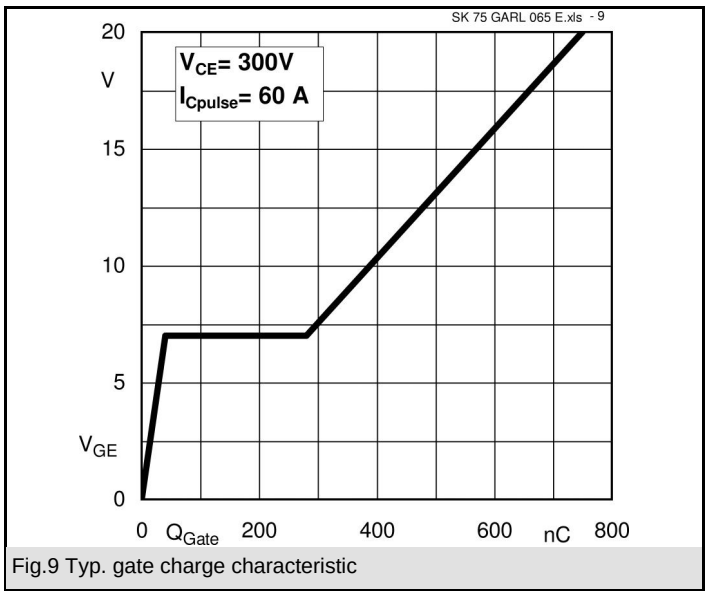


Fig.9 Typ. gate charge characteristic

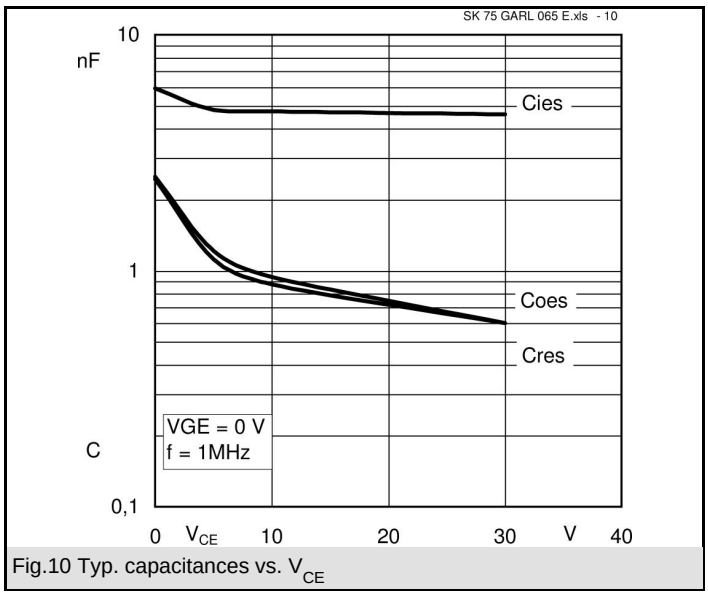


Fig.10 Typ. capacitances vs. V_{CE}

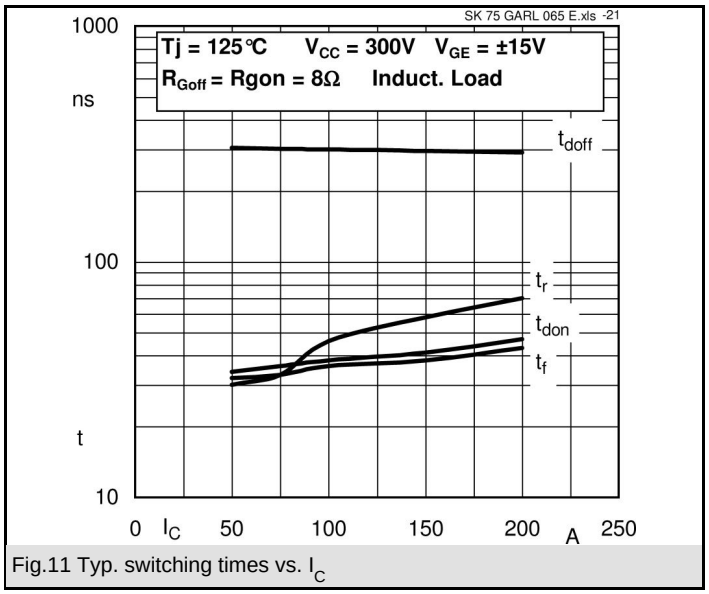


Fig.11 Typ. switching times vs. I_C

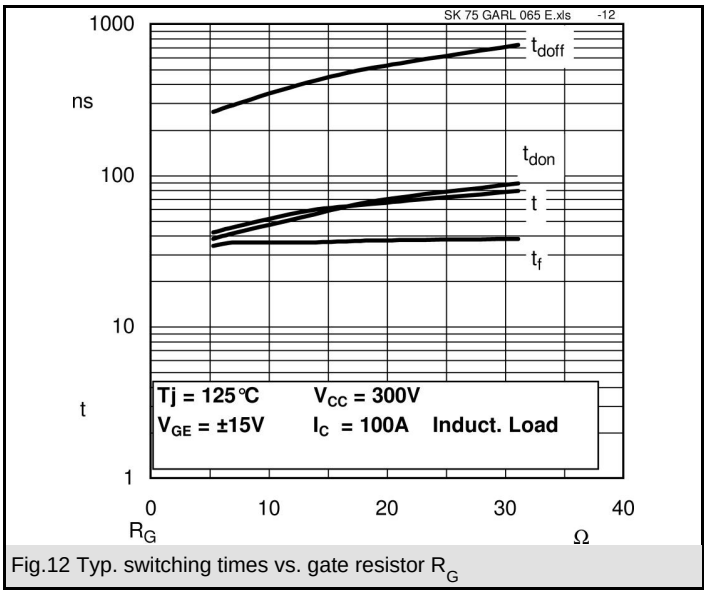


Fig.12 Typ. switching times vs. gate resistor R_G

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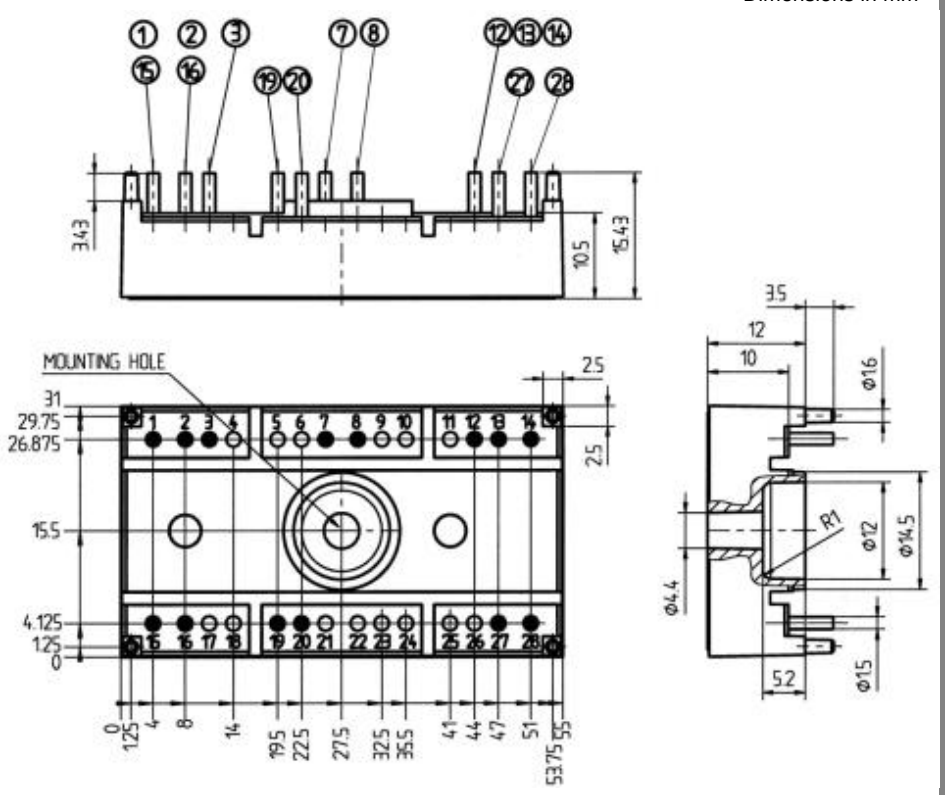
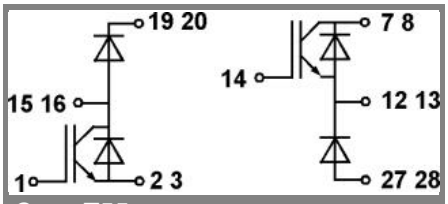
Dimensions in mm



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

Case T55



Case T55

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

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