SK50GAL065

SEMITOP® 2

IGBT Module

SK50GAL065
SK50GAR065

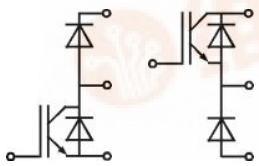
Preliminary Data

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 treshold voltage

Typical Applications

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



GAL GAR

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

Symbol	Conditions		Values	Units
IGBT				
V_{CES}	T_j = 25 °C		600	V
I_C	T_j = 125 °C	T_s = 25 °C	54	A
		T_s = 80 °C	40	A
I_{CRM}	I_{CRM}= 2 x I_{Cnom}		60	A
V_{GES}			± 20	V
t_{psc}	V_{CC} = 300 V; $V_{GE} \leq$ 20 V; V_{CES} < 600 V	T_j = 125 °C	10	µs
Inverse Diode				
I_F	T_j = 150 °C	T_s = 25 °C	57	A
		T_s = 80 °C	38	A
I_{FRM}	I_{FRM}= 2 x I_{Fnom}		100	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	440	A
Freewheeling Diode				
I_F	T_j = 150 °C	T_s = 25 °C	57	A
		T_s = 80 °C	38	A
I_{FRM}			100	A
I_{FSM}	t_p = 10 ms; half sine wave	T_j = 150 °C	440	A
Module				
$I_{t(RMS)}$				A
T_{vj}			-40 ... +150	°C
T_{stg}			-40 ... +125	°C
V_{isol}	AC, 1 min.		2500	V

Characteristics T_s = 25 °C, unless otherwise specified

Symbol	Conditions		min.	typ.	max.	Units
IGBT						
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C = 1,4 mA		3	4	5	V
I_{CES}	V_{GE} = 0 V, V_{CE} = V_{CES}	T_j = 25 °C			0,0044	mA
I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V	T_j = 25 °C			240	nA
V_{CE0}		T_j = 25 °C		1,1		V
		T_j = 125 °C		1,1		V
r_{CE}	V_{GE} = 15 V	T_j = 25°C		15		mΩ
		T_j = 125°C		19		mΩ
$V_{CE(sat)}$	I_{Cnom} = 60 A, V_{GE} = 15 V	T_j = 25°C$_{chiplev.}$		2	2,5	V
		T_j = 125°C$_{chiplev.}$		2,2		V
C_{ies}	V_{CE} = 25, V_{GE} = 0 V	f = 1 MHz		3,2		nF
C_{oes}				0,3		nF
C_{res}				0,18		nF
$t_{d(on)}$	R_{Gon} = 16 Ω	V_{CC} = 300V		60	80	ns
t_r		I_{Cnom}= 40A		30	40	ns
E_{on}		T_j = 125 °C		1,1	1,4	mJ
$t_{d(off)}$	R_{Goff} = 16 Ω	V_{GE}=±15V		220	280	ns
t_f				20	26	ns
E_{off}				0,7	0,9	mJ
$R_{th(j-s)}$	per IGBT				0,85	K/W

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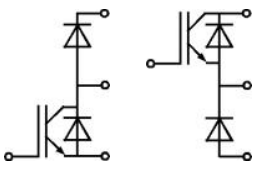

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Characteristics

Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
$V_F = V_{EC}$	I_{Fnom} = 30 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,3	1,5	V
		T_j = 150 °C$_{chiplev.}$		1,2	1,45	V
V_{F0}		T_j = 25 °C				V
		T_j = 125 °C		0,85	0,9	V
r_F		T_j = 25 °C				mΩ
		T_j = 125 °C		9	16	mΩ
I_{RRM}	I_{Fnom} = 30 A	T_j = 125 °C		22		A
Q_{rr}	di/dt = -500 A/µs			2,2		µC
E_{rr}	V_{CC}= 300V			0,2		mJ
$R_{th(j-s)D}$	per diode				1,2	K/W
Freewheeling Diode						
$V_F = V_{EC}$	I_{Fnom} = 30 A; V_{GE} = 0 V	T_j = 25 °C$_{chiplev.}$		1,3	1,5	V
		T_j = 125 °C$_{chiplev.}$		1,2	1,45	V
V_{F0}		T_j = 125 °C		0,85	0,9	V
r_F		T_j = 125 °C		9	16	V
I_{RRM}	I_{Fnom} = 30 A	T_j = 125 °C		22		A
Q_{rr}	di/dt = -500 A/µs			2,2		µC
E_{rr}	V_R=300V			0,2		mJ
$R_{th(j-s)FD}$	per diode				1,2	K/W
M_s	to heat sink				2	Nm
w				19		g

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

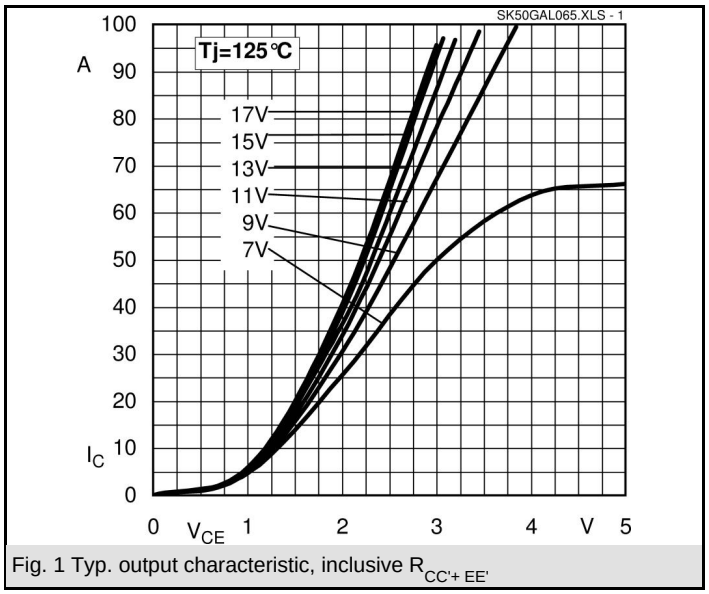

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

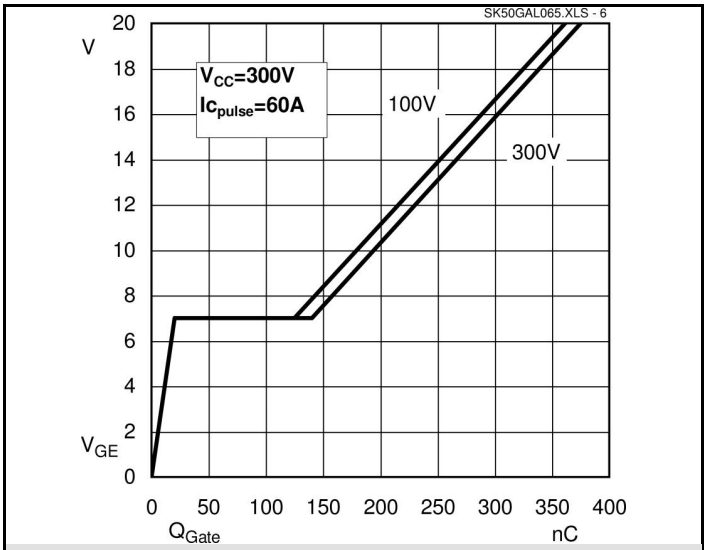

Fig. 6 Typ. gate charge characteristic

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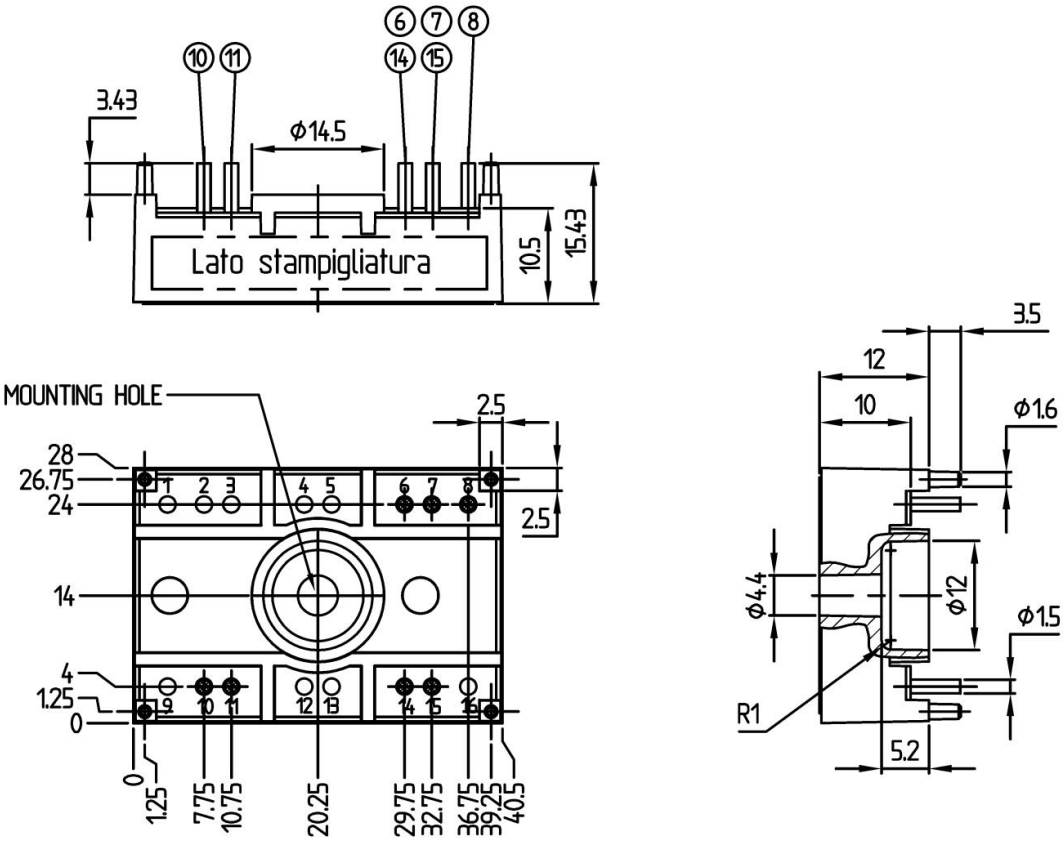
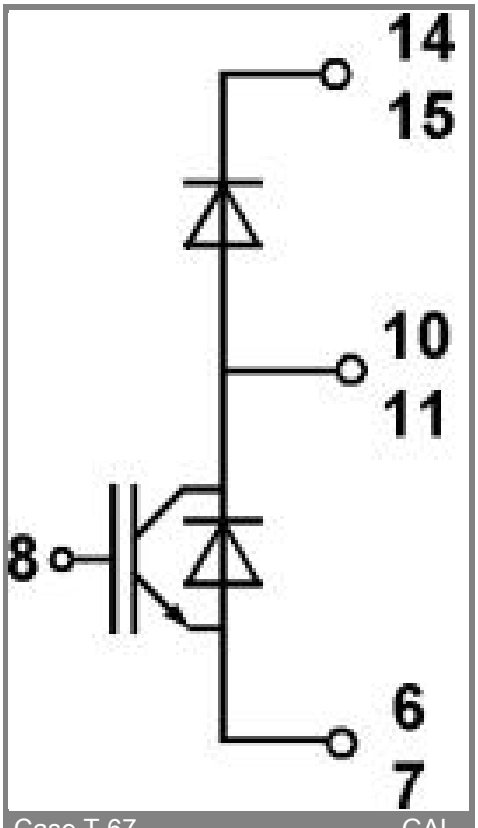
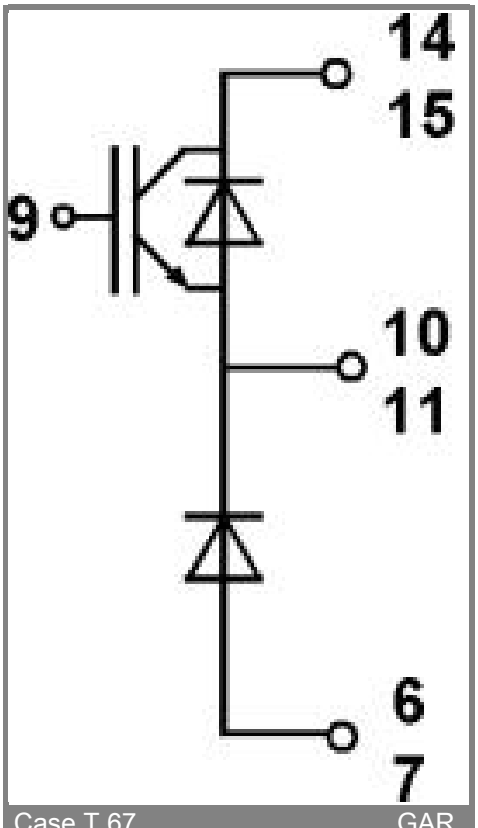
UL recognized file no. E 63 532



Case T67 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 67 GAL



Case T 67 GAR