



SEMITOP® 2

IGBT Module

SK50GAL065

SK50GAR065

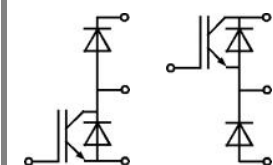
Preliminary Data

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 threshold voltage

Typical Applications

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



GAL

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Absolute Maximum Ratings				$T_s = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions			Values	Units
IGBT					
V_{CES}	$T_j = 25\text{ °C}$			600	V
I_C	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$		54	A
		$T_s = 80\text{ °C}$		40	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$			60	A
V_{GES}				± 20	V
t_{psc}	$V_{CC} = 300\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 125\text{ °C}$ $V_{CES} < 600\text{ V}$			10	μs
Inverse Diode					
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$		57	A
		$T_s = 80\text{ °C}$		38	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			100	A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150\text{ °C}$			440	A
Freewheeling Diode					
I_F	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$		57	A
		$T_s = 80\text{ °C}$		38	A
I_{FRM}				100	A
I_{FSM}	$t_p = 10\text{ ms}$; half sine wave $T_j = 150\text{ °C}$			440	A
Module					
$I_{t(RMS)}$					A
T_{vj}				-40 ... +150	$^{\circ}\text{C}$
T_{stg}				-40 ... +125	$^{\circ}\text{C}$
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 I _C = 40A	60			80	ns
t _r			30			40	ns
E _{on}	R _{Goff} = 16 Ω	T _j = 125 °C V _{GE} =±15V	1,1			1,4	mJ
t _{d(off)}			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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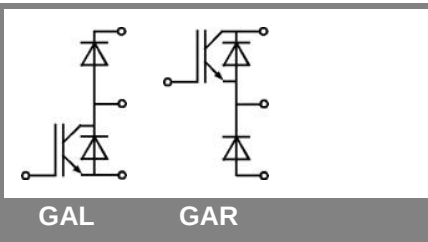
Typical Applications

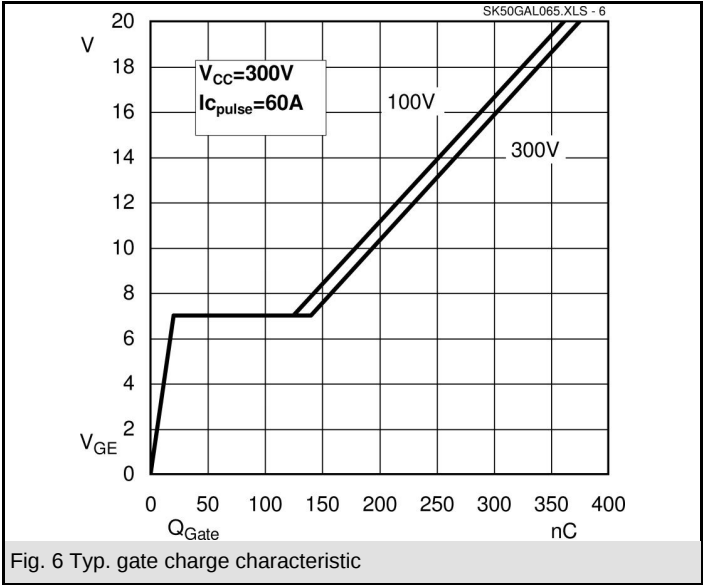
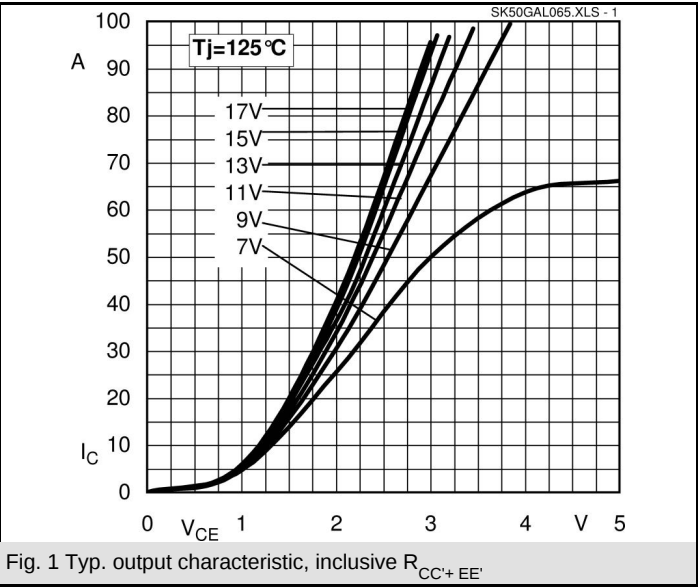
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- Inverter
- Switched mode power supplies
- UPS

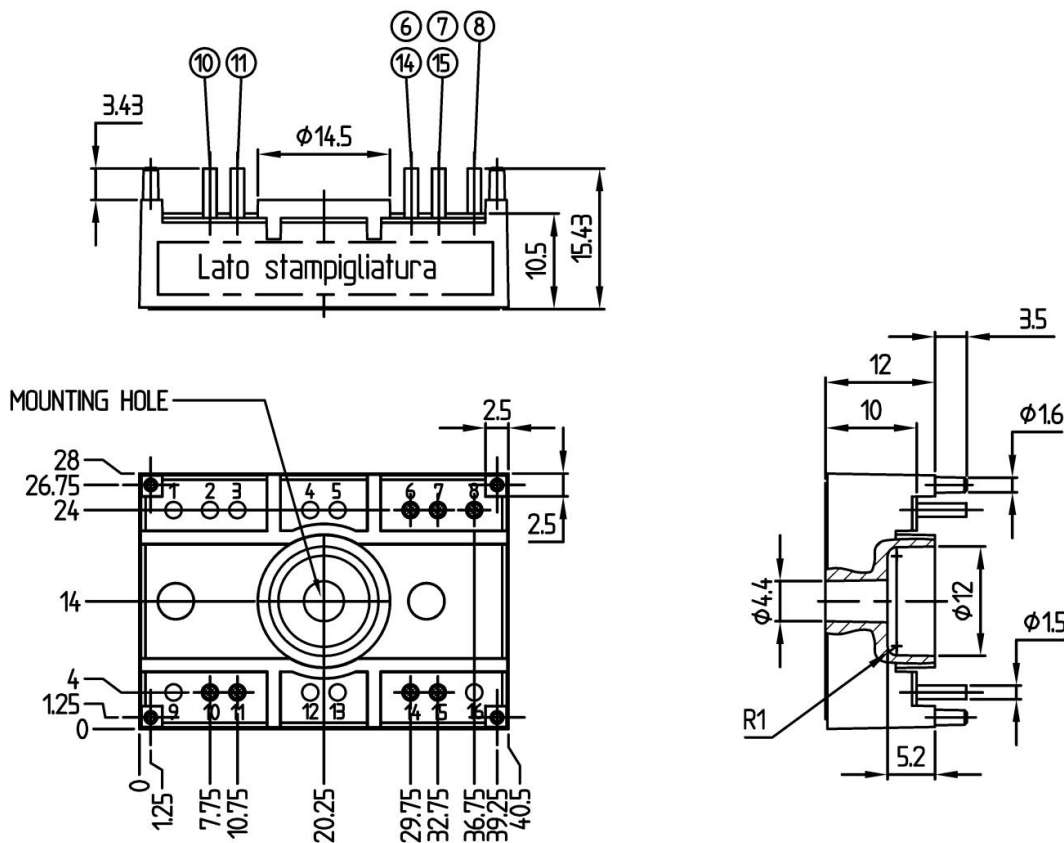
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30\text{ A}; V_{GE} = 0\text{ V}$		$T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$	1,3	1,5
			$T_j = 150\text{ }^{\circ}\text{C}_{chiplev.}$	1,2	1,45
V_{F0}			$T_j = 25\text{ }^{\circ}\text{C}$		V
			$T_j = 125\text{ }^{\circ}\text{C}$	0,85	0,9
r_F			$T_j = 25\text{ }^{\circ}\text{C}$		mΩ
			$T_j = 125\text{ }^{\circ}\text{C}$	9	16
I_{RRM}	$I_F = 30\text{ A}$		$T_j = 125\text{ }^{\circ}\text{C}$	22	A
Q_{rr}	$di/dt = -500\text{ A/}\mu\text{s}$			2,2	μC
E_{rr}	$V_{CC} = 300\text{ V}$			0,2	mJ
$R_{th(j-s)D}$	per diode			1,2	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 30\text{ A}; V_{GE} = 0\text{ V}$		$T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$	1,3	1,5
			$T_j = 125\text{ }^{\circ}\text{C}_{chiplev.}$	1,2	1,45
V_{F0}			$T_j = 125\text{ }^{\circ}\text{C}$	0,85	0,9
r_F			$T_j = 125\text{ }^{\circ}\text{C}$	9	16
I_{RRM}	$I_F = 30\text{ A}$		$T_j = 125\text{ }^{\circ}\text{C}$	22	A
Q_{rr}	$di/dt = -500\text{ A/}\mu\text{s}$			2,2	μC
E_{rr}	$V_R = 300\text{ V}$			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.

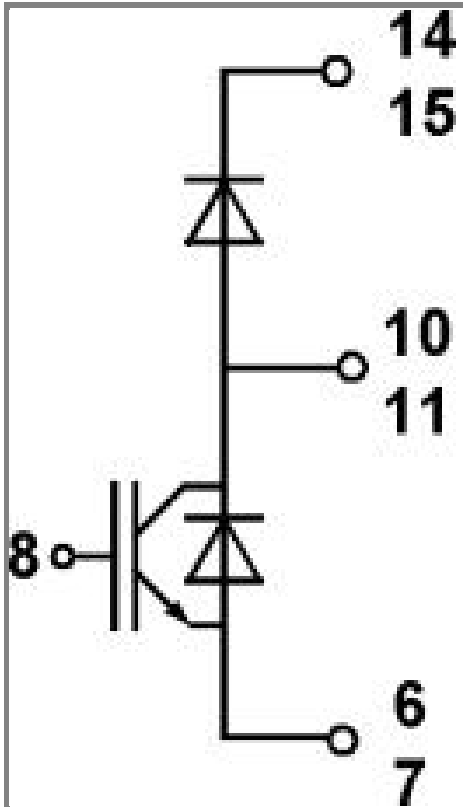
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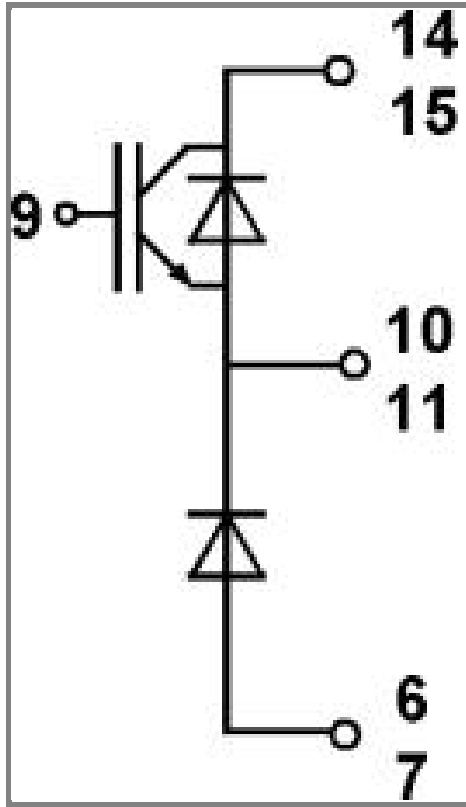


Case T67 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 67

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Case T 67

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