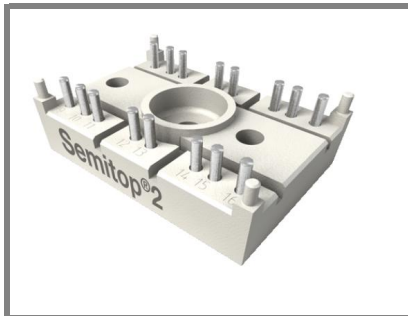


SK50GARL065



SEMITOP[®] 2

IGBT Module

SK50GARL065

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



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Absolute Maximum Ratings		$T_s = 25\text{ }^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values		Units
IGBT				
V_{CES}	$T_j = 25\text{ }^\circ\text{C}$	600		V
I_C	$T_j = 125\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	54	A
		$T_s = 80\text{ }^\circ\text{C}$	40	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	120		A
V_{GES}		± 20		V
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10		μs
Inverse Diode				
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	25	A
		$T_s = 80\text{ }^\circ\text{C}$	17	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave}$	$T_j = 150\text{ }^\circ\text{C}$	100	A
Freewheeling Diode				
I_F	$T_j = 150\text{ }^\circ\text{C}$	$T_s = 25\text{ }^\circ\text{C}$	64	A
		$T_s = 80\text{ }^\circ\text{C}$	48	A
I_{FRM}				A
I_{FSM}	$t_p = 10\text{ ms}; \text{half sine wave}$	$T_j = 150\text{ }^\circ\text{C}$	400	A
Module				
$I_{l(RMS)}$				A
T_{vj}		-40 ... +150		$^\circ\text{C}$
T_{stg}		-40 ... +125		$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_s = 25\text{ }^\circ\text{C}$, unless otherwise specified					
Symbol	Conditions	min.	typ.	max.	Units		
IGBT							
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,7\text{ mA}$	3	4	5	V		
I_{CES}	$V_{GE} = 600\text{ V}, V_{CE} = V_{CES}, T_j = 25\text{ }^\circ\text{C}$			0,0022	mA		
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}, T_j = 25\text{ }^\circ\text{C}$			120	nA		
V_{CE0}		$T_j = 25\text{ }^\circ\text{C}$	1,2	1,3	V		
		$T_j = 125\text{ }^\circ\text{C}$	1,1	1,2	V		
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$			12	$\text{m}\Omega$	
		$T_j = 125\text{ }^\circ\text{C}$			22	$\text{m}\Omega$	
$V_{CE(sat)}$	$I_{Cnom} = 60\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,7	2	V		
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,2	2,2	V		
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$			3,2	nF	
C_{oes}					0,3	nF	
C_{res}					0,18	nF	
Q_G	$V_{GE} = 0 \dots 20\text{ V}$			375	nC		
$t_{d(on)}$	$R_{Gon} = 15\text{ }\Omega$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 40\text{ A}$			47	ns	
t_r					60	80	ns
E_{on}	$R_{Goff} = 16\text{ }\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$			1,07	1,4	mJ
$t_{d(off)}$					220	280	ns
t_f					20	26	ns
E_{off}					0,76	1	mJ
$R_{th(j-s)}$	per IGBT			0,85	K/W		

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IGBT Module

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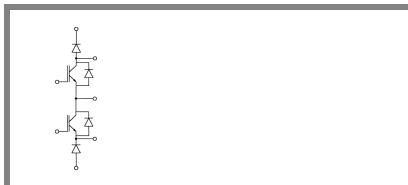
Preliminary Data

Features

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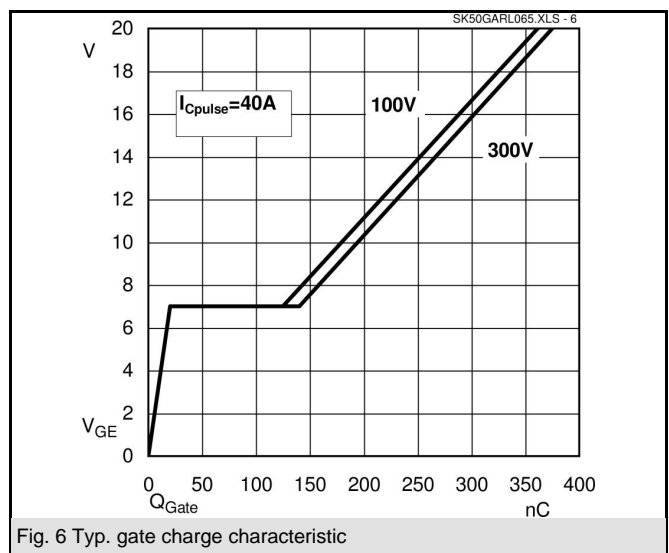
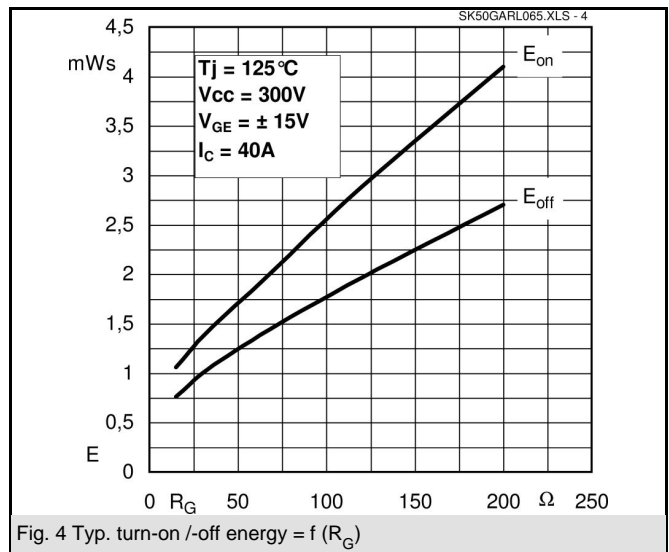
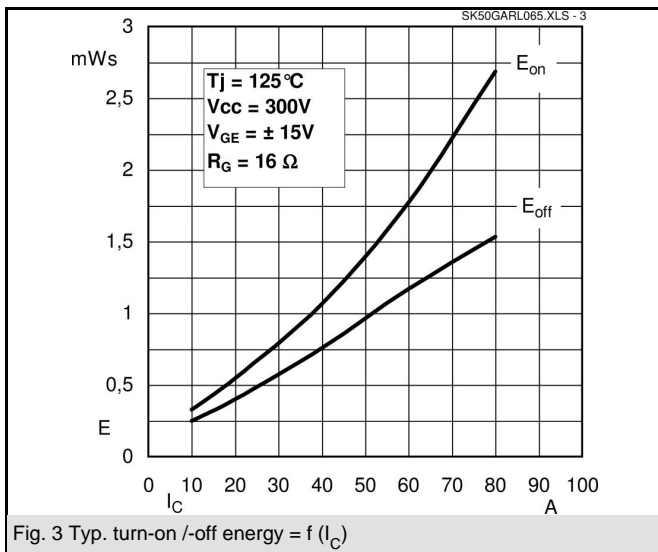
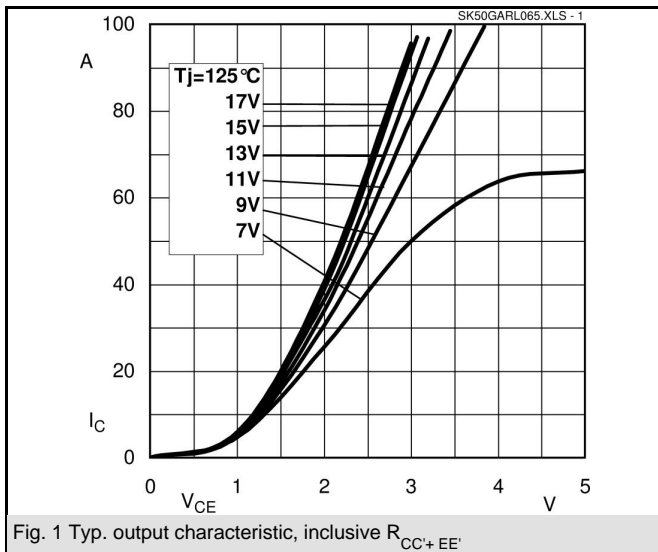


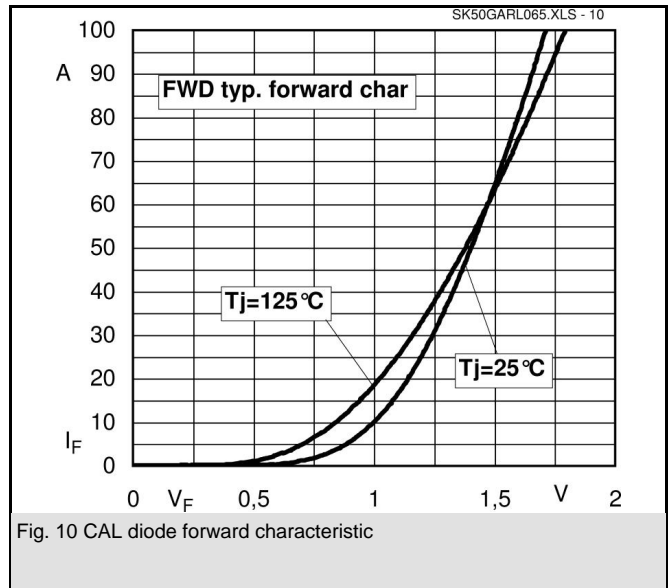
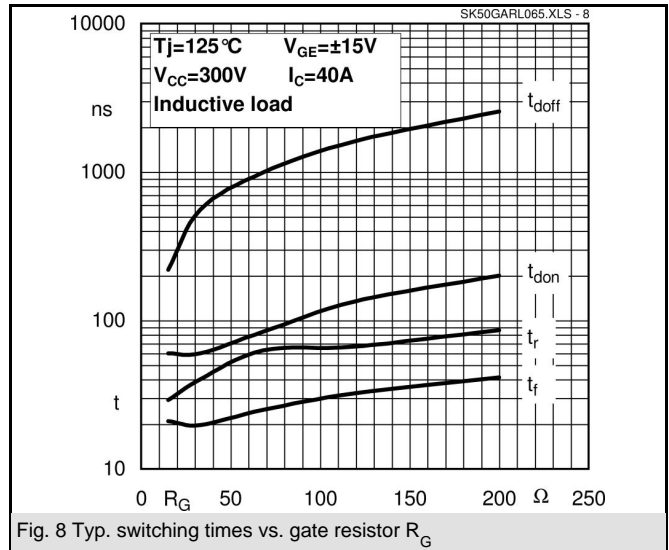
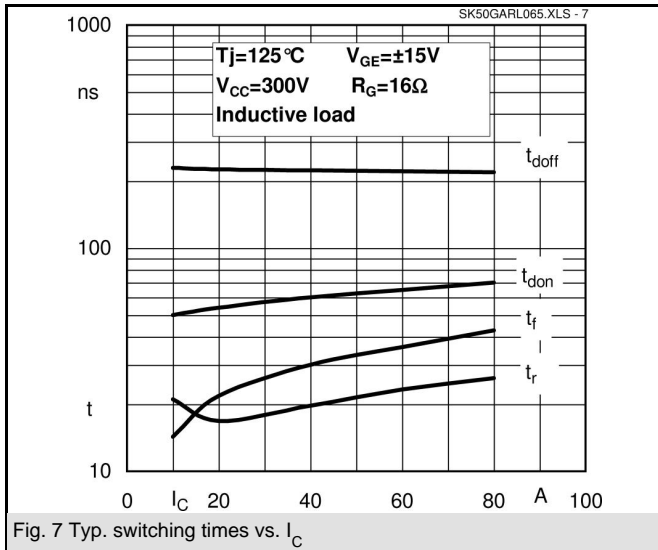
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Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 15 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,7	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,7	V
V_{F0}			0,9	1	V
r_F			33	47	mΩ
I_{RRM}	$I_{Fnom} = 30 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$			A
Q_{rr}	$di/dt = 500 \text{ A}/\mu\text{s}$				μC
E_{rr}	$V_{CC} = 300 \text{ V}$				mJ
$R_{th(j-s)D}$	per diode			2,3	K/W
Freewheeling diode					
$V_F = V_{EC}$	$I_{Fnom} = 60 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,45	1,7	V
		$T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$	1,4	1,75	V
V_{F0}		$T_j = 125 \text{ }^\circ\text{C}$	0,85	0,9	V
r_F		$T_j = 125 \text{ }^\circ\text{C}$	11	16	V
I_{RRM}	$I_{Fnom} = 50 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	40		A
Q_{rr}	$di/dt = -1000 \text{ A}/\mu\text{s}$		3,6		μC
E_{rr}	$V_R = 300 \text{ V}$		0,55		mJ
$R_{th(j-s)D}$	per diode			1,1	K/W
M_s	to heat sink		1,8	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.

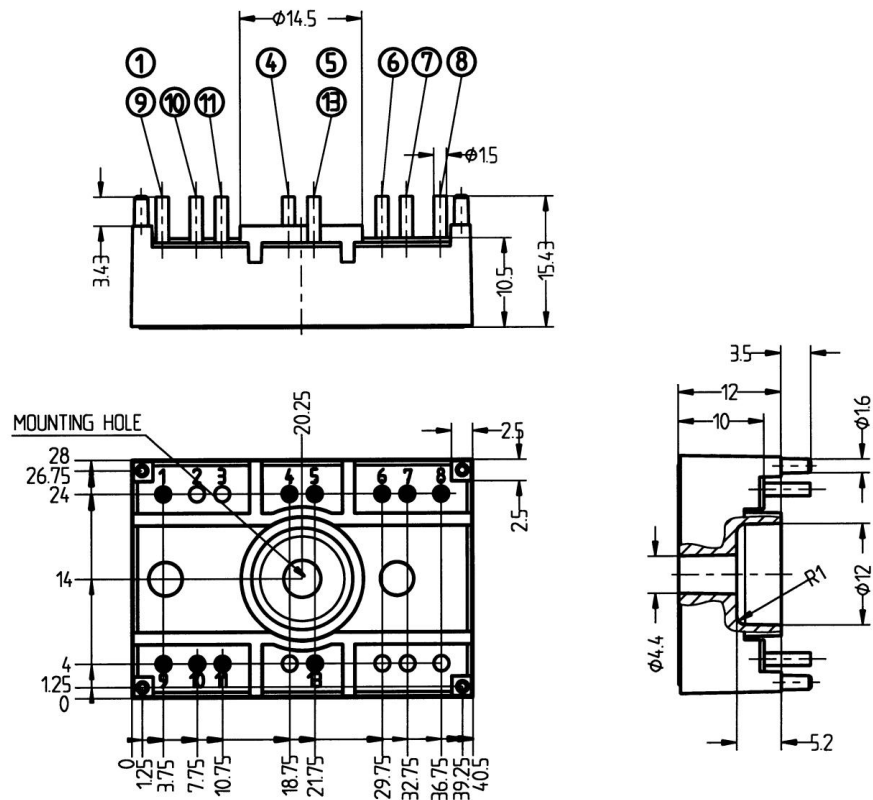




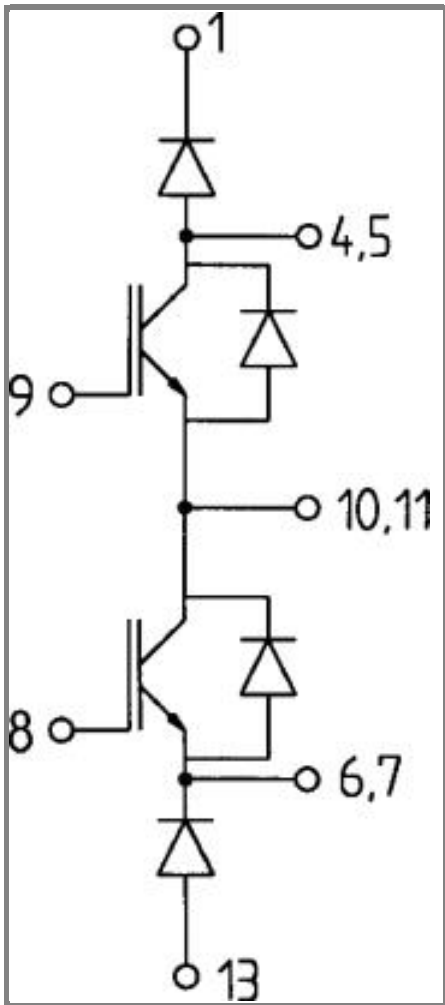
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UL recognized file

no. E 63 532



Case T31 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T31

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