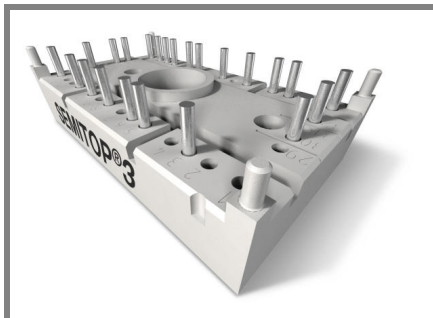


SK40GARL067E



SEMITOP® 3

IGBT Module

SK40GARL067E

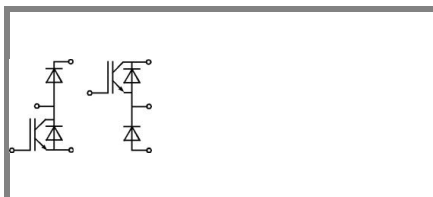
Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Hyperfast NPT technology IGBT
- N-channel homogeneous silicon structure (NPT Non-Punch-Through IGBT)
- Positive $V_{ce,sat}$ temperature coefficient (Easy paralleling)
- Low tail current with low temperature dependence
- Low threshold voltage

Typical Applications*

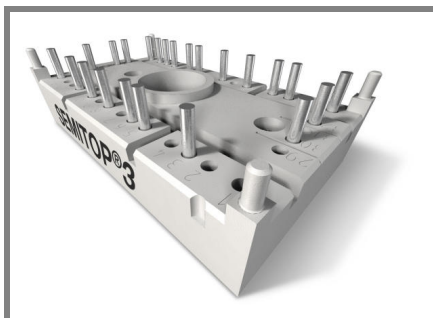
- Switching (not for linear use)
- High Frequencies Applications
- Welding generator
- Switched mode power supplies
- UPS



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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	$T_j = 125\text{ °C}$	$T_s = 25\text{ °C}$	62	A
		$T_s = 80\text{ °C}$	41	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	180		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	$T_j = 150\text{ °C}$	$T_s = 25\text{ °C}$	62	A
		$T_s = 80\text{ °C}$	38	A
I_{FRM}				A
I_{FSM}	$t_p = 10\text{ ms}$; sinusoidal	$T_j = \text{ °C}$	180	A
Freewheeling Diode				
I_F	$T_j = 125\text{ °C}$	$T_{case} = 25\text{ °C}$	45	A
		$T_{case} = 80\text{ °C}$	30	A
I_{FRM}				A
I_{FSM}	$t_p = 10\text{ ms}$; sinusoidal	$T_j = \text{ °C}$	90	A
Module				
$I_{t(RMS)}$				A
T_{vj}		-40 ... +150		°C
T_{stg}		-40 ... +125		°C
V_{isol}	AC, 1 min.	2500		V

Characteristics		$T_s = 25\text{ °C}$, unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0,9\text{ mA}$	3	4	5	V	
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}, T_j = 25\text{ °C}$			0,006	mA	
I_{GES}	$V_{CE} = 0\text{ V}, V_{GE} = 20\text{ V}, T_j = 25\text{ °C}$			360	nA	
V_{CE0}	$T_j = 150\text{ °C}$			2	V	
r_{CE}	$V_{GE} = 15\text{ V}, T_j = 150\text{ °C}$			17	mΩ	
$V_{CE(sat)}$	$I_{Cnom} = 90\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2,8	3,15	V	
		$T_j = 125\text{ °C}_{chiplev.}$	3,5	4	V	
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$			4,5	nF	
C_{oes}				0,45	nF	
C_{res}				0,27	nF	
$t_{d(on)}$	$R_{Gon} = 11\text{ Ω}$	$V_{CC} = 400\text{ V}$ $I_C = 90\text{ A}$			22	ns
t_r					10	ns
E_{on}	$R_{Goff} = 11\text{ Ω}$	$T_j = 125\text{ °C}$			2,8	mJ
$t_{d(off)}$				270	ns	
t_f				28	ns	
E_{off}					2,1	mJ
$R_{th(j-s)}$	per IGBT			0,6	K/W	



SEMITOP[®] 3

IGBT Module

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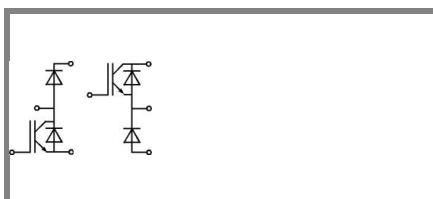
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Typical Applications*

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- Welding generator
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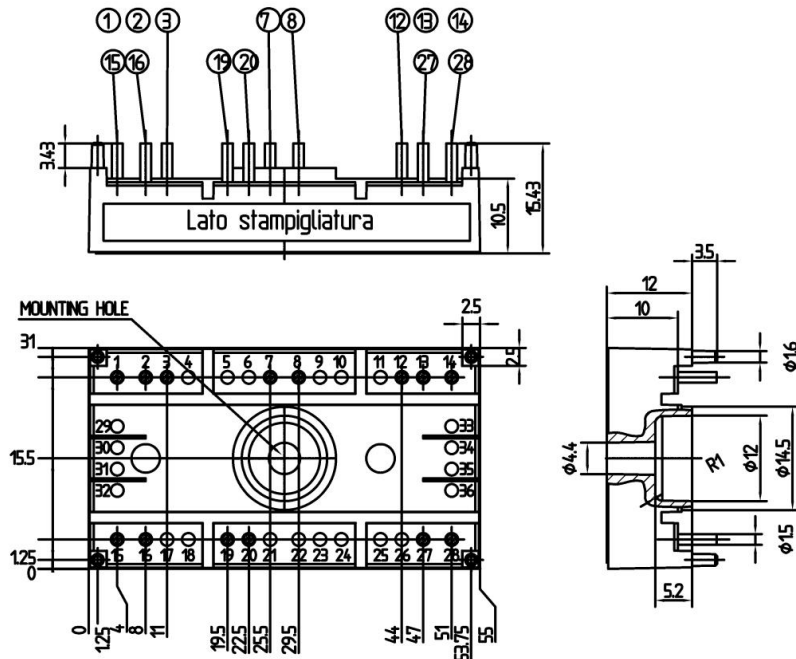


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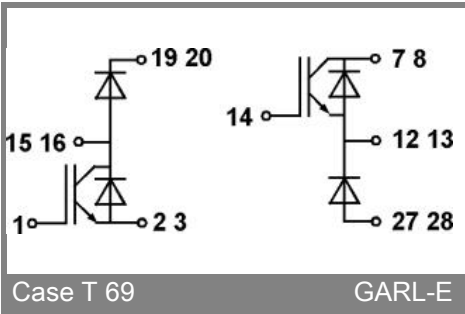
Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
Inverse Diode							
$V_F = V_{EC}$	$I_{Fnom} = 60 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$ $T_j = 150 \text{ }^\circ\text{C}_{chiplev.}$				2	V
				1,25			V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$			1		V
r_F		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$				5,5	mΩ
I_{RRM}	$I_F = 30 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$			18		A
Q_{rr}	$di/dt = -100 \text{ A}/\mu\text{s}$				1,5		μC
E_{rr}	$V_R = 400 \text{ V}$						mJ
$R_{th(j-s)D}$	per diode					1,2	K/W
Freewheeling Diode							
$V_F = V_{EC}$	$I_{Fnom} = 30 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$ $T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$				2	V
				1,25			V
V_{F0}		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$			1		V
r_F		$T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$				9	V
I_{RRM}	$I_F = 30 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$			18		A
Q_{rr}	$di/dt = -100 \text{ A}/\mu\text{s}$				1,5		μC
E_{rr}	$V_R = 600 \text{ V}$						mJ
$R_{th(j-s)FD}$	per diode					1,8	K/W
M_s	to heat sink			2,25		2,5	Nm
w					29		g

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

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.



Case T69 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



Case T 69

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