

**SEMITOP® 3**

## IGBT Module

**SK40GB067**

**SK40GAL067**

**SK40GAR067**

Target Data

## Features

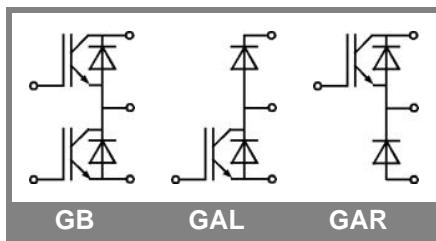
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Hyperfast NPT technology IGBT
- N-channel homogeneous silicon structure (NPT Non-Punch-Through IGBT)
- Positive  $V_{ce,sat}$  temperature coefficient (Easy paralleling)
-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

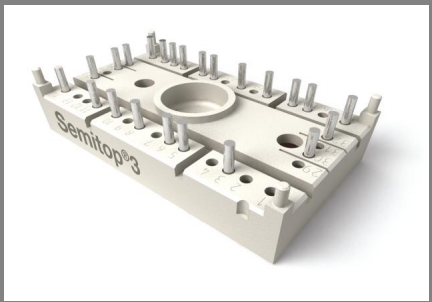
## Typical Applications

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

Absolute Maximum Ratings		T <sub>s</sub> = 25 °C, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V <sub>CES</sub>	T <sub>j</sub> = 25 °C	600	V	
I <sub>C</sub>	T <sub>j</sub> = 125 °C	T <sub>s</sub> = 25 °C	62	A
		T <sub>s</sub> = 80 °C	41	A
I <sub>CRM</sub>	I <sub>CRM</sub> = 2 x I <sub>Cnom</sub>	180	A	
V <sub>GES</sub>		± 20	V	
t <sub>psc</sub>	V <sub>CC</sub> = 300 V; V <sub>GE</sub> ≤ 20 V; T <sub>j</sub> = 125 °C V <sub>CES</sub> < 600 V	10	µs	
Inverse Diode				
I <sub>F</sub>	T <sub>j</sub> = 150 °C	T <sub>s</sub> = 25 °C	62	A
		T <sub>s</sub> = 80 °C	38	A
I <sub>FRM</sub>	I <sub>FRM</sub> = 2 x I <sub>Fnom</sub>		A	
I <sub>FSM</sub>	t <sub>p</sub> = 10 ms; sinusoidal	T <sub>j</sub> = °C	270	A
Module				
I <sub>t(RMS)</sub>			A	
T <sub>vj</sub>		-40 ... +150	°C	
T <sub>stg</sub>		-40 ... +125	°C	
V <sub>isol</sub>	AC, 1 min.	2500	V	

Characteristics		T <sub>s</sub> = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V <sub>GE(th)</sub>	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 0,9 mA	3	4	5	V
I <sub>CES</sub>	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = V <sub>CES</sub> T <sub>j</sub> = 25 °C			0,006	mA
I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = 20 V T <sub>j</sub> = 25 °C			360	nA
V <sub>CE0</sub>	T <sub>j</sub> = 150 °C			2	V
r <sub>CE</sub>	V <sub>GE</sub> = 15 V T <sub>j</sub> = 150 °C		17		mΩ
V <sub>CE(sat)</sub>	I <sub>Cnom</sub> = 90 A, V <sub>GE</sub> = 15 V T <sub>j</sub> = 25 °C <sub>chiplev.</sub> T <sub>j</sub> = 125 °C <sub>chiplev.</sub>		2,8	3,15	V
			3,5	4	V
C <sub>ies</sub>	V <sub>CE</sub> = 25, V <sub>GE</sub> = 0 V f = 1 MHz		4,5		nF
C <sub>oes</sub>			0,45		nF
C <sub>res</sub>			0,27		nF
t <sub>d(on)</sub>	R <sub>Gon</sub> = 11 Ω	V <sub>CC</sub> = 400V I <sub>Cnom</sub> = 90A T <sub>j</sub> = 125 °C V <sub>GE</sub> = ±15V	20		ns
t <sub>r</sub>			10		ns
E <sub>on</sub>	2,8			mJ	
t <sub>d(off)</sub>	R <sub>Goff</sub> = 11 Ω		270		ns
t <sub>f</sub>			28		ns
E <sub>off</sub>			2,1		mJ
R <sub>th(i-s)</sub>	per IGBT			0,6	K/W





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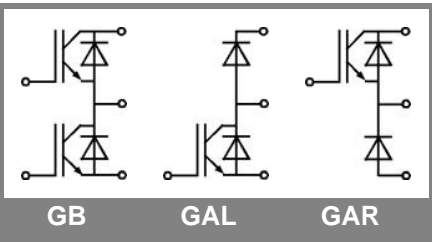
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Typical Applications

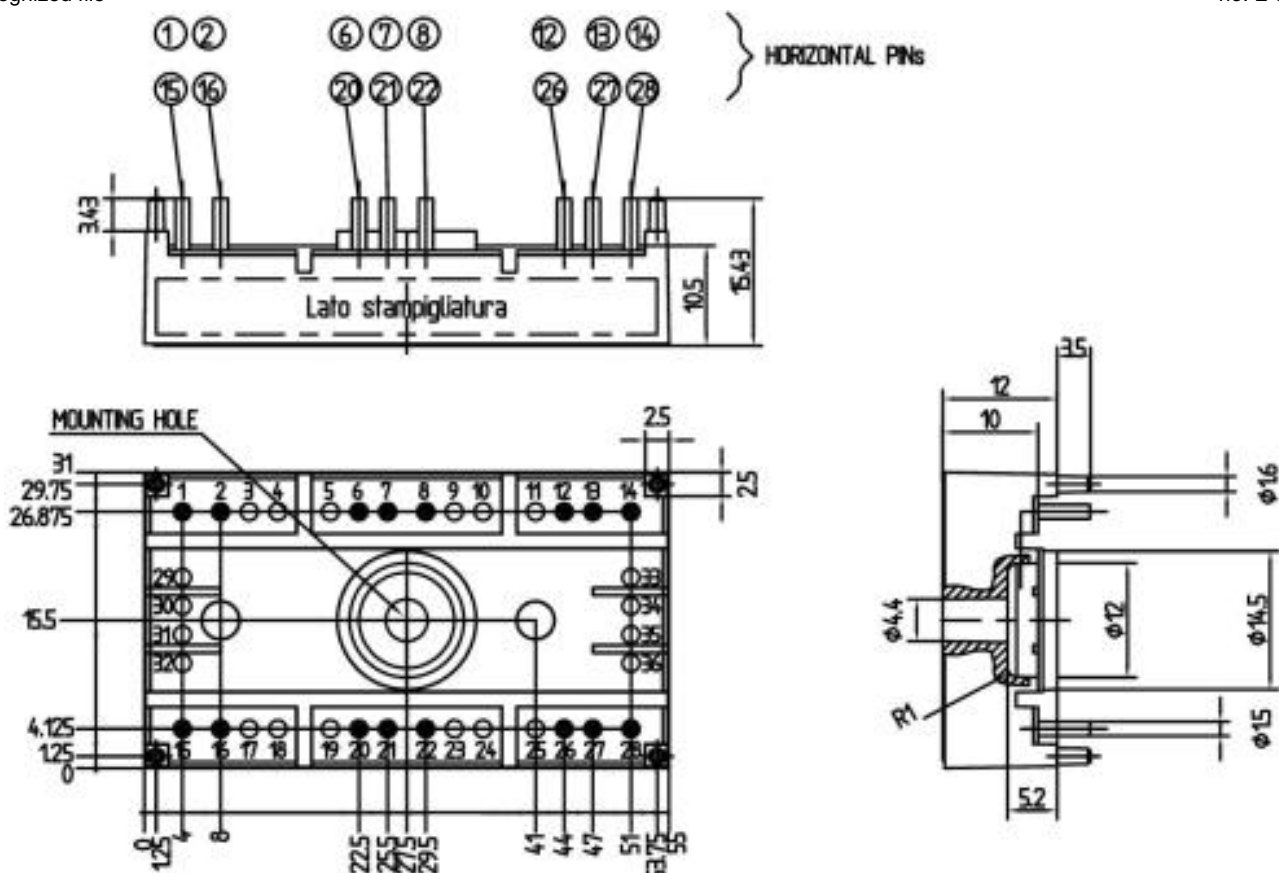
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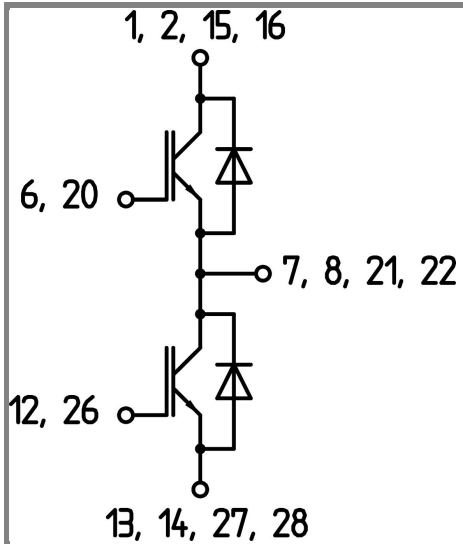
Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V <sub>F</sub> = V <sub>EC</sub>	I <sub>Fnom</sub> = 90 A; V <sub>GE</sub> = 0 V	T <sub>j</sub> = 25 °C <sub>chiplev.</sub> T <sub>j</sub> = 150 °C <sub>chiplev.</sub>		1,25	2	V V
V <sub>F0</sub>		T <sub>j</sub> = 25 °C T <sub>j</sub> = 150 °C		1		V V
r <sub>F</sub>		T <sub>j</sub> = 25 °C T <sub>j</sub> = 150 °C		5,5		mΩ mΩ
I <sub>RRM</sub> Q <sub>rr</sub> E <sub>rr</sub>	I <sub>Fnom</sub> = 90 A di/dt = -100 A/μs V <sub>CC</sub> = 400V	T <sub>j</sub> = 125 °C				A μC mJ
R <sub>th(j-s)D</sub>	per diode				1,2	K/W
M <sub>s</sub>	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.

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

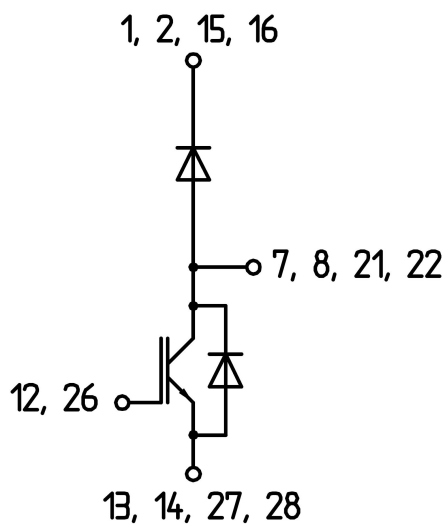


Case T66 (Suggested hole diameter, in the PCB, for solder pins and plastic mounting pins: 2mm)



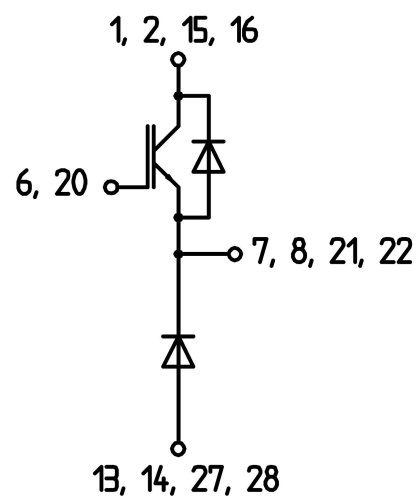
Case T 32

GB



## Case T 70

GAL



Case T 71

GAR