

SEMITOP® 3

## IGBT Module

### SK 30 GARL 067 E

#### Target Data

#### Features

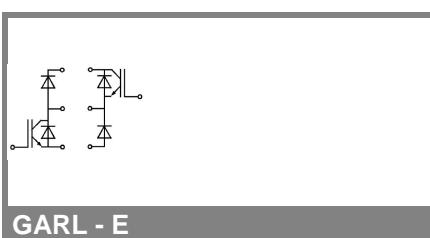
- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminium oxide ceramic (DCB)
- Hyperfast NPT IGBT
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- Positive Vcesat temperature coefficient (Easy paralleling)
- Low tail current with 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		$T_s = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values		Units
<b>IGBT</b>				
$V_{CES}$		600		V
$V_{GES}$		$\pm 20$		V
$I_C$	$T_s = 25 (80)^\circ\text{C};$	45 (30)	A	A
$I_{CM}$	$t_p < 1 \text{ ms}; T_s = 25 (80)^\circ\text{C};$	90 (60)	A	A
$T_j$		- 40 ... + 150		$^\circ\text{C}$
<b>Freewheeling Diode</b>				
$I_F$	$T_s = 25 (80)^\circ\text{C};$	45 (30)	A	A
$I_{FM} = - I_{CM}$	$t_p < 1 \text{ ms}; T_s = 25 (80)^\circ\text{C};$	90 (60)	A	$^\circ\text{C}$
$T_j$		- 40 ... + 150		
$T_{stg}$		- 40 ... + 125		$^\circ\text{C}$
$T_{sol}$	Terminals, 10 s	260		$^\circ\text{C}$
$V_{isol}$	AC 50 Hz, r.m.s. 1 min. / 1 s	2500 / 3000		V

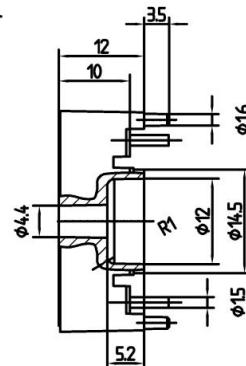
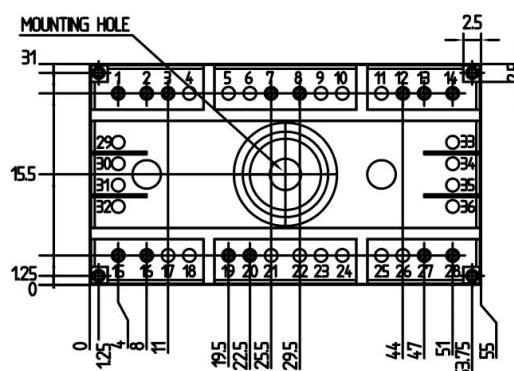
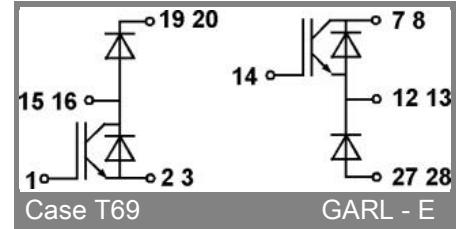
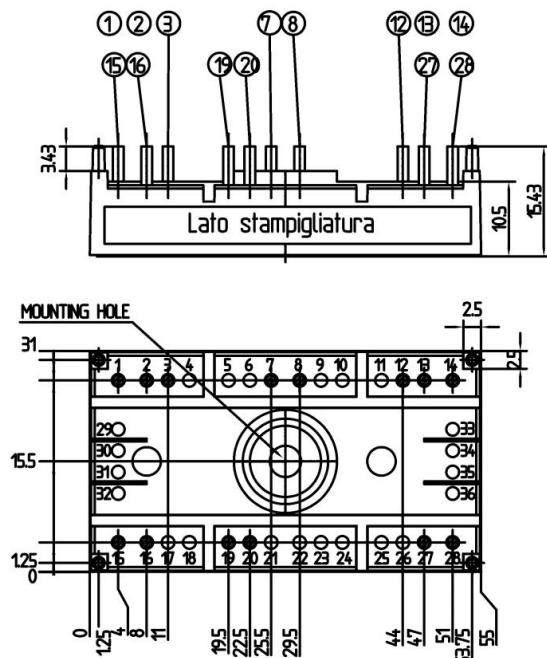
Characteristics		$T_s = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	min.	typ.	max.
<b>IGBT</b>				
$V_{CE(\text{sat})}$	$I_C = 60 \text{ A}, T_j = 25 (125)^\circ\text{C}$		2,8 (3,5)	
$V_{GE(\text{th})}$	$V_{CE} = V_{GE}; I_C = 0,0014 \text{ A}$	3	4	5
$C_{ies}$	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; 1 \text{ MHz}$		3	
$R_{th(j-s)}$	per IGBT			0,85
	per module			
$t_{d(on)}$	under following conditions: $V_{CC} = 400 \text{ V}, V_{GE} = \pm 15 \text{ V}$		32	
$t_r$	$I_C = 60 \text{ A}, T_j = 125^\circ\text{C}$		20	
$t_{d(off)}$	$R_{Gon} = R_{Goff} = 11 \Omega$		340	
$t_f$			30	
$E_{on} + E_{off}$	Inductive load		3,4	mJ
<b>Freewheeling Diode</b>				
$V_F = V_{EC}$	$I_F = 60 \text{ A}; T_j = 25 (150)^\circ\text{C}$		(1,25)	2
$V_{(TO)}$	$T_j = (150)^\circ\text{C}$		(1)	V
$r_T$	$T_j = (150)^\circ\text{C}$		(9)	$\text{m}\Omega$
$R_{th(j-s)}$				K/W
				1,6
$I_{RRM}$	under following conditions: $I_F = 30 \text{ A}; V_R = 400 \text{ V}$		18	A
$Q_{rr}$	$dl_F/dt = -100 \text{ A}/\mu\text{s}$		1,5	$\mu\text{C}$
$E_{off}$	$V_{GE} = 0 \text{ V}; T_j = 125^\circ\text{C}$			mJ
<b>Mechanical data</b>				
M1	mounting torque	2,3	2,5	Nm
w		30		g
Case	SEMITOP® 3	T 69		



GARL - E

UL Recognized  
File no. E 63 532

Dimensions in mm



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE  
PCB: 2 mm

Suggested hole diameter for the solder pins and the mounting pins in the PCB:  
2mm

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

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