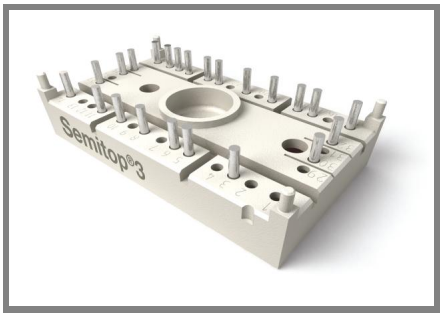
# SK30GARL067E




**SEMITOP® 3**

## IGBT Module

**SK30GARL067E**

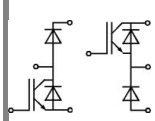
Target Data

### 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 treshold voltage

### Typical Applications

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



**GARL-E**

| **Absolute Maximum Ratings** | | | $T_s$ = 25 °C, unless otherwise specified | |
|---|---|---|---|---|
| **Symbol** | **Conditions** | | **Values** | **Units** |
| **IGBT** | | | | |
| $V_{CES}$ | $T_j$ = 25 °C | | 600 | V |
| $I_C$ | $T_j$ = 125 °C | $T_s$ = 25 °C | 62 | A |
| | | $T_s$ = 80 °C | 41 | A |
| $I_{CRM}$ | $I_{CRM}$= 2 x $I_{Cnom}$ | | 180 | A |
| $V_{GES}$ | | | ± 20 | V |
| $t_{psc}$ | $V_{CC}$ = 300 V; $V_{GE} \leq$ 20 V; $V_{CES}$ < 600 V | $T_j$ = 125 °C | 10 | µs |
| **Inverse Diode** | | | | |
| $I_F$ | $T_j$ = 150 °C | $T_s$ = 25 °C | 45 | A |
| | | $T_s$ = 80 °C | 30 | A |
| $I_{FRM}$ | | | | A |
| $I_{FSM}$ | $t_p$ = 10 ms; sinusoidal | $T_j$ = °C | 90 | A |
| **Freewheeling Diode** | | | | |
| $I_F$ | $T_j$ = 125 °C | $T_{case}$ = 25 °C | 45 | A |
| | | $T_{case}$ = 80 °C | 30 | A |
| $I_{FRM}$ | | | | A |
| $I_{FSM}$ | $t_p$ = 10 ms; sinusoidal | $T_j$ = °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 °C, unless otherwise specified | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Conditions** | | **min.** | **typ.** | **max.** | **Units** |
| **IGBT** | | | | | | |
| $V_{GE(th)}$ | $V_{GE}$ = $V_{CE}$, $I_C$ = 0,6 mA | | 3 | 4 | 5 | V |
| $I_{CES}$ | $V_{GE}$ = 0 V, $V_{CE}$ = $V_{CES}$ | $T_j$ = 25 °C | | | 0,004 | mA |
| $I_{GES}$ | $V_{CE}$ = 0 V, $V_{GE}$ = 20 V | $T_j$ = 25 °C | | | 240 | nA |
| $V_{CE0}$ | | $T_j$ = 150 °C | | | 2 | V |
| $r_{CE}$ | $V_{GE}$ = 15 V | $T_j$ = 150°C | | 25 | | mΩ |
| $V_{CE(sat)}$ | $I_{Cnom}$ = 60 A, $V_{GE}$ = 15 V | $T_j$ = 25°$C_{chiplev.}$ | | 2,8 | 3,15 | V |
| | | $T_j$ = 125°$C_{chiplev.}$ | | 3,5 | 4 | V |
| $C_{ies}$ | $V_{CE}$ = 25, $V_{GE}$ = 0 V | f = 1 MHz | | 3 | | nF |
| $C_{oes}$ | | | | 0,3 | | nF |
| $C_{res}$ | | | | 0,18 | | nF |
| $t_{d(on)}$ | $R_{Gon}$ = 11 Ω | $V_{CC}$ = 400V, $I_{Cnom}$ = 60A, $T_j$ = 125 °C, $V_{GE}$=±15V | | 32 | | ns |
| $t_r$ | | | | 20 | | ns |
| $E_{on}$ | | | | 1,8 | | mJ |
| $t_{d(off)}$ | $R_{Goff}$ = 11 Ω | | | 340 | | ns |
| $t_f$ | | | | 30 | | ns |
| $E_{off}$ | | | | 1,6 | | mJ |
| $R_{th(j-s)}$ | per IGBT | | | | 0,85 | K/W |

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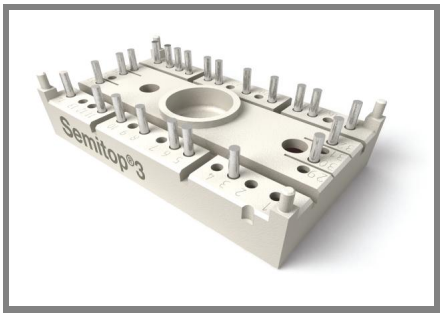


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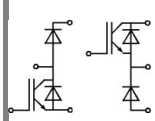


**GARL-E**

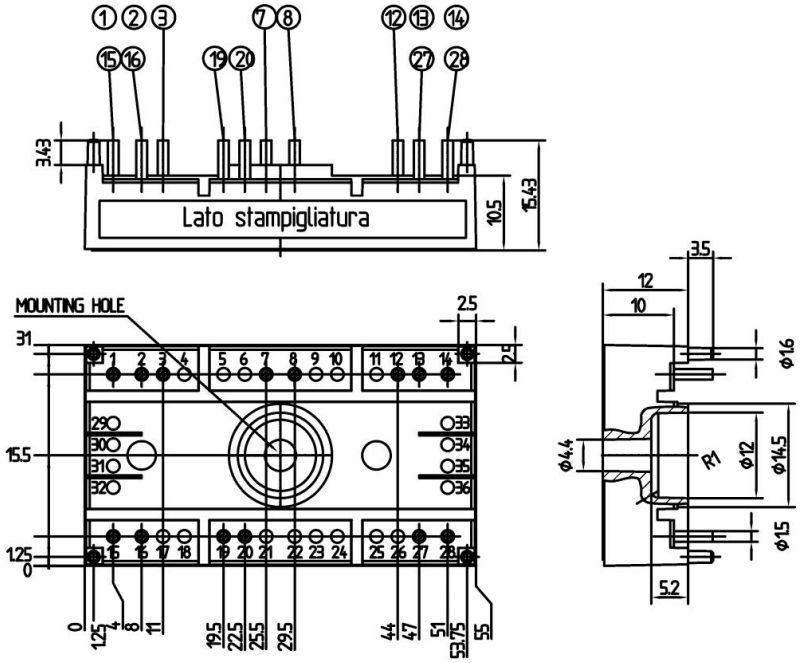
| Characteristics | | | | | | |
|---|---|---|---|---|---|---|
| **Symbol** | **Conditions** | | **min.** | **typ.** | **max.** | **Units** |
| **Inverse Diode** | | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom}$ = 30 A; $V_{GE}$ = 0 V | $T_j$ = 25 °$C_{chiplev.}$ | | | 2 | V |
| | | $T_j$ = 150 °$C_{chiplev.}$ | | 1,25 | | V |
| $V_{F0}$ | | $T_j$ = 25 °C | | | | V |
| | | $T_j$ = 150 °C | | 1 | | V |
| $r_F$ | | $T_j$ = 25 °C | | | | mΩ |
| | | $T_j$ = 150 °C | | 18 | | mΩ |
| $I_{RRM}$ | $I_{Fnom}$ = 30 A | $T_j$ = 125 °C | | 9 | | A |
| $Q_{rr}$ | di/dt = -100 A/µs | | | 1,5 | | µC |
| $E_{rr}$ | $V_R$=400V | | | | | mJ |
| $R_{th(j-s)D}$ | per diode | | | | 1,6 | K/W |
| **Freewheeling Diode** | | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom}$ = 30 A; $V_{GE}$ = 0 V | $T_j$ = 25 °$C_{chiplev.}$ | | | 2 | V |
| | | $T_j$ = 125 °$C_{chiplev.}$ | | 1,25 | | V |
| $V_{F0}$ | | $T_j$ = 25 °C | | | | V |
| | | $T_j$ = 150 °C | | 1 | | V |
| $r_F$ | | $T_j$ = 25 °C | | | | V |
| | | $T_j$ = 150 °C | | 9 | | V |
| $I_{RRM}$ | $I_{Fnom}$ = 30 A | $T_j$ = 125 °C | | 18 | | A |
| $Q_{rr}$ | di/dt = -100 A/µs | | | 1,5 | | µC |
| $E_{rr}$ | $V_R$=600V | | | | | mJ |
| $R_{th(j-s)FD}$ | per diode | | | | 1,6 | 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.

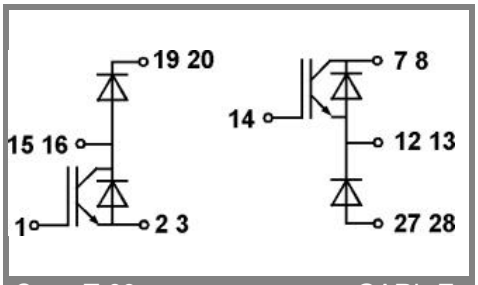
This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

UL recognized file no. E 63 532




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




Case T 69 GARL-E