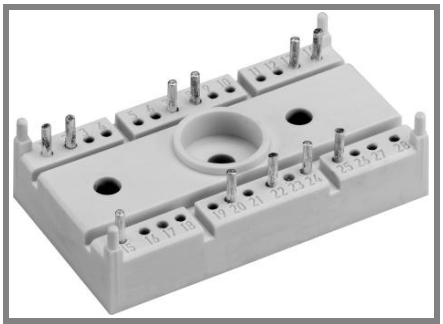
# SK 50 GB 067



**SEMITOP® 3**

## IGBT Module

**SK 50 GAL 067**

**SK 50 GAR 067**

**SK 50 GB 067**

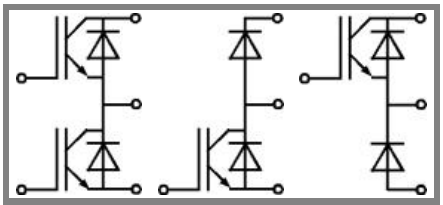
Target Data

### Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonding aluminium oxide ceramic (DBC)
- Hyper fast NPT IGBT
- N-channel homogeneous silicon structure (NPT-Non punch-through IGBT)
- Positive Vcesat temperature coefficient (Easy paralleling)
- Low threshold voltage
- Low tail current with low temperature dependence

### Typical Applications

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



GB GAL GAR

| **Absolute Maximum Ratings** | $T_s$ = 25 °C, unless otherwise specified | | |
|---|---|---|---|
| **Symbol** | **Conditions** | **Values** | **Units** |
| **IGBT** | | | |
| $V_{CES}$ | | 600 | V |
| $V_{GES}$ | | ± 20 | V |
| $I_C$ | $T_s$ = 25 (80) °C; | 83 (54) | A |
| $I_{CM}$ | $t_p$ < 1 ms; $T_s$ = 25 (80) °C; | 166 (108) | A |
| $T_j$ | | - 40 ... + 150 | °C |
| **Inverse / Freewheeling diode** | | | |
| $I_F$ | $T_s$ = 25 (80) °C; | 90 (56) | A |
| $I_{FM}$ = - $I_{CM}$ | $t_p$ < 1 ms; $T_s$ = 25 (80) °C; | 180 (112) | A |
| $T_j$ | | - 40 ... + 150 | °C |
| $T_{stg}$ | | - 40 ... + 125 | °C |
| $T_{sol}$ | Terminals, 10 s | 260 | °C |
| $V_{isol}$ | AC 50 Hz, r.m.s. 1 min. / 1 s | 2500 / 3000 | V |

| **Characteristics** | $T_s$ = 25 °C, unless otherwise specified | | | | |
|---|---|---|---|---|---|
| **Symbol** | **Conditions** | **min.** | **typ.** | **max.** | **Units** |
| **IGBT** | | | | | |
| $V_{CE(sat)}$ | $I_C$ = 120 A, $T_j$ = 25 (125) °C | | 2,8 (3,5) | | V |
| $V_{GE(th)}$ | $V_{CE}$ = $V_{GE}$; $I_C$ = 0,0028 A | 3 | 4 | 5 | V |
| $C_{ies}$ | $V_{CE}$ = 15 V; $V_{GE}$ = 0 V; 1 MHz | | 6 | | nF |
| $R_{th(j-s)}$ | per IGBT | | | 0,45 | K/W |
| | per module | | | | K/W |
| | under following conditions: | | | | |
| $t_{d(on)}$ | $V_{CC}$ = 400 V , $V_{GE}$ = ± 15 V | | 22 | | ns |
| $t_r$ | $I_C$ = 120 A, $T_j$ = 125 °C | | 10 | | ns |
| $t_{d(off)}$ | $R_{Gon}$ = $R_{Goff}$ = 11 Ω | | 280 | | ns |
| $t_f$ | | | 26 | | ns |
| $E_{on}$ + $E_{off}$ | Inductive load | | 6,7 | | mJ |
| **Inverse / Freewheeling diode** | | | | | |
| $V_F$ = $V_{EC}$ | $I_F$ = 120 A; $T_j$ = 25 (150) °C | | (1,25) | | V |
| $V_{(TO)}$ | $T_j$ = (150) °C | | (1) | | V |
| $r_T$ | $T_j$ = (150) °C | | (4) | | mΩ |
| $R_{th(j-s)}$ | | | | 0,8 | K/W |
| | under following conditions: | | | | |
| $I_{RRM}$ | $I_F$ = 120 A; $V_R$ = 600 V | | | | A |
| $Q_{rr}$ | $dI_F/dt$ = -100 A/µs | | | | µC |
| $E_{off}$ | $V_{GE}$ = 0 V; $T_j$ = 125 °C | | | | mJ |
| **Mechanical data** | | | | | |
| M1 | mounting torque | 2,3 | | 2,5 | Nm |
| w | | | 29 | | g |
| Case | SEMITOP® 3 | | T 66 | | |

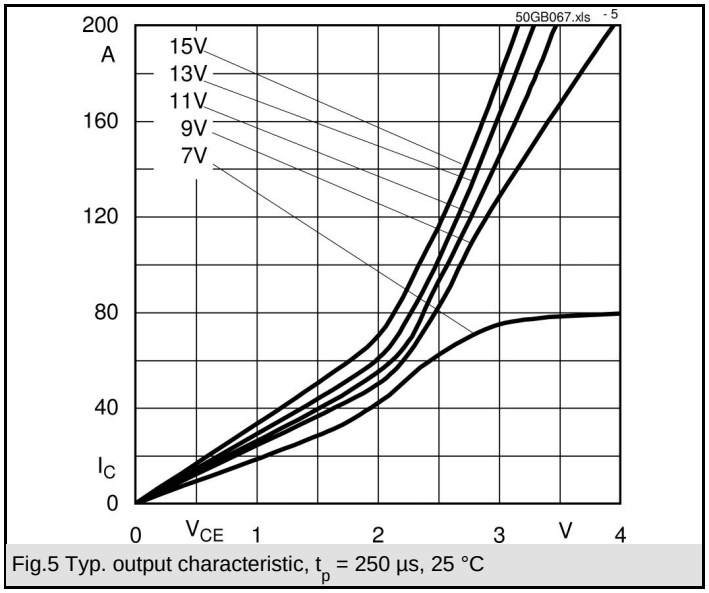



Fig.5 Typ. output characteristic, $t_p$ = 250 µs, 25 °C

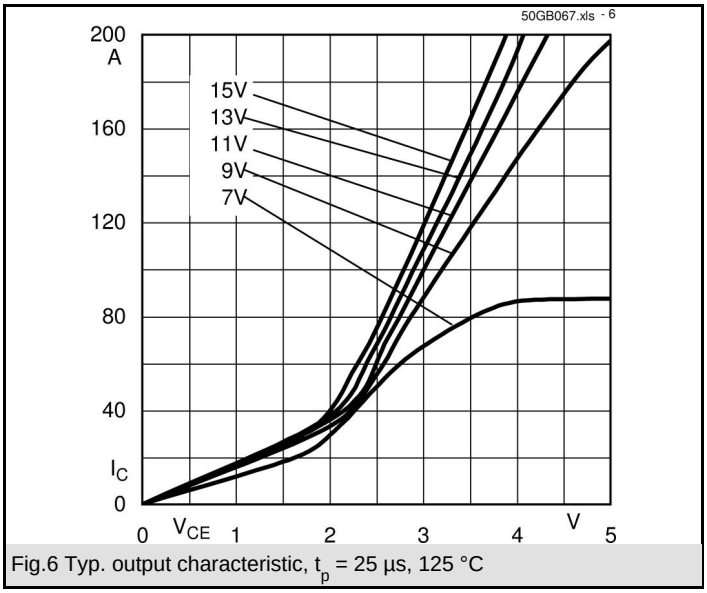



Fig.6 Typ. output characteristic, $t_p$ = 25 µs, 125 °C

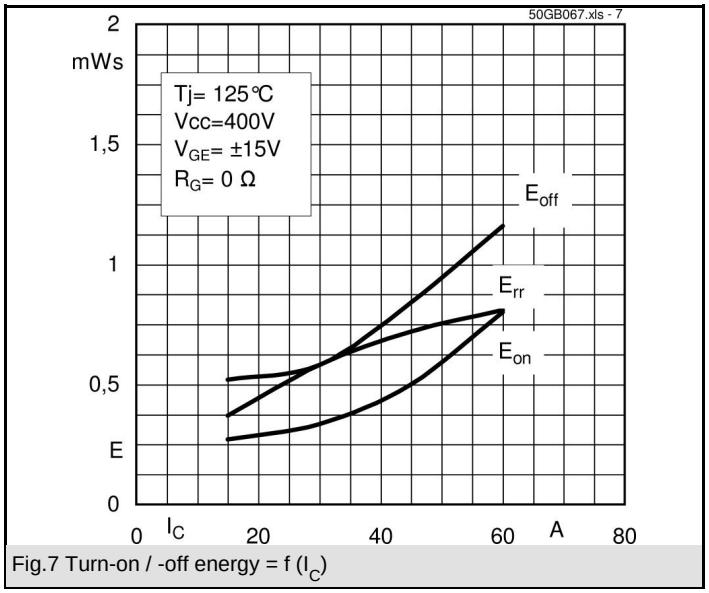



Fig.7 Turn-on / -off energy = f ($I_C$)

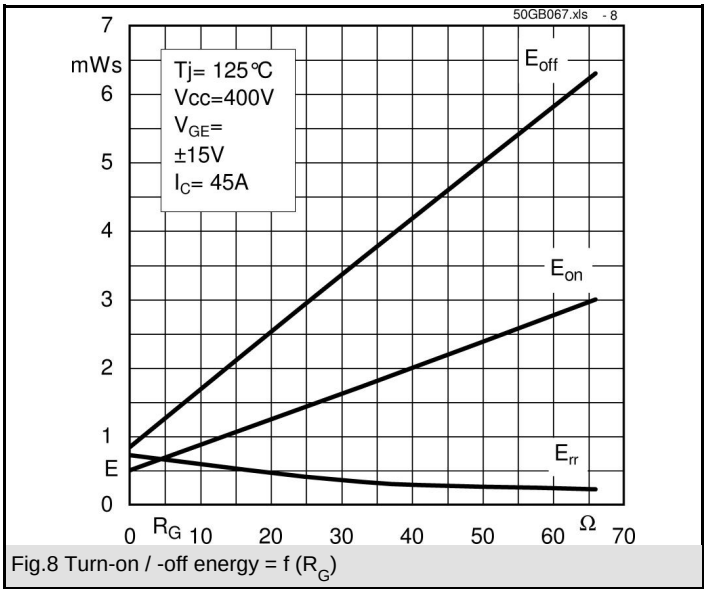



Fig.8 Turn-on / -off energy = f ($R_G$)

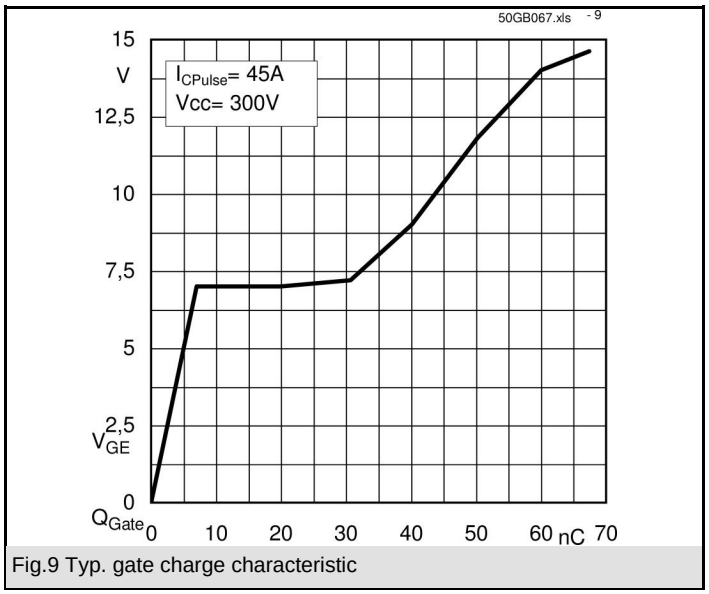



Fig.9 Typ. gate charge characteristic

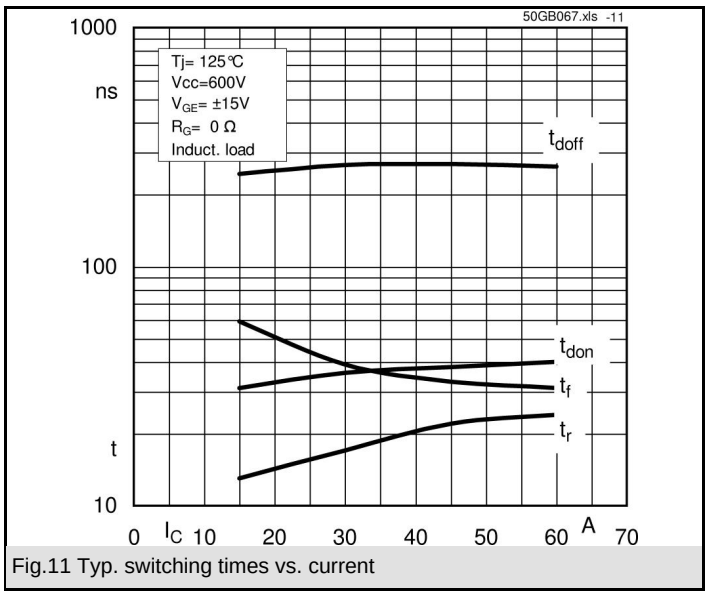



Fig.11 Typ. switching times vs. current

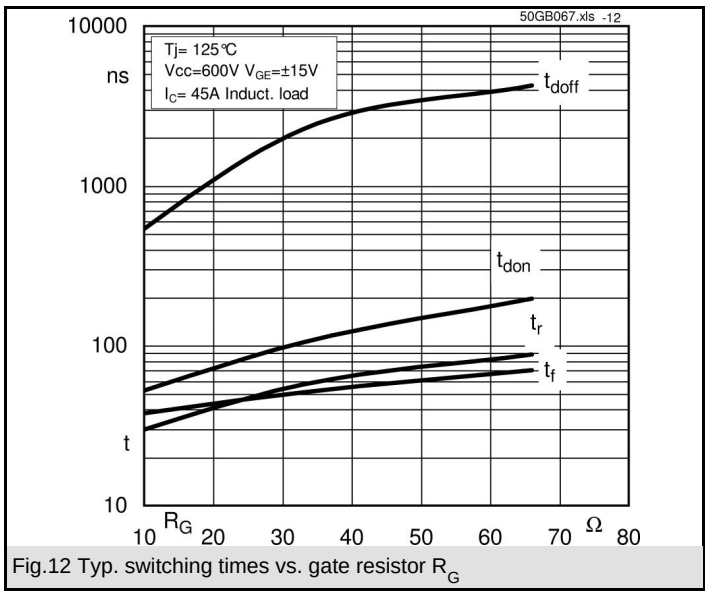



Fig.12 Typ. switching times vs. gate resistor $R_G$

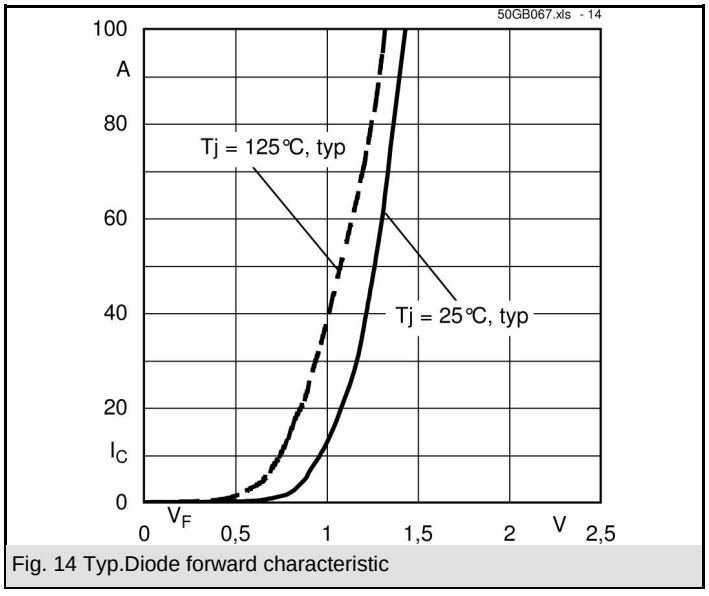


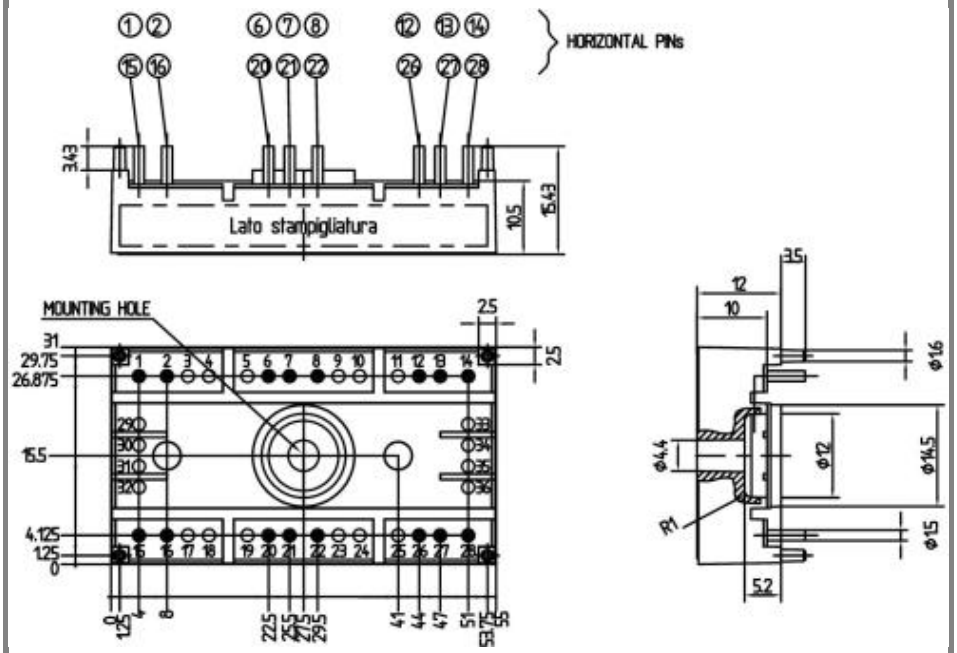

Fig. 14 Typ.Diode forward characteristic

# SK 50 GB 067

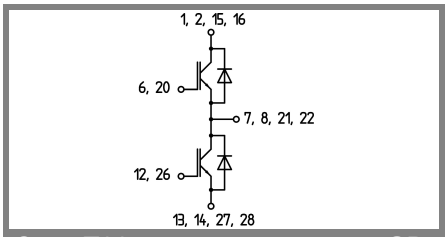
UL Recognized
File no. E 63532

Dimensions in mm

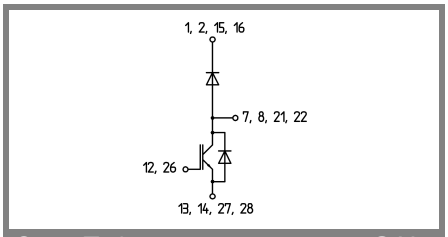



SUGGESTED HOLEDIAMETER FOR THE SOLDER PINS AND THE MOUNTING PINS IN THE PCB: 2 mm

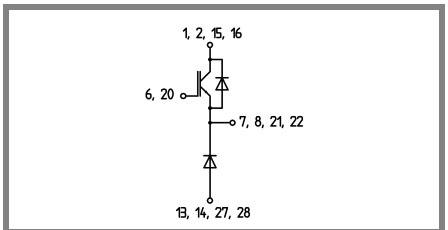
Case T66




Case T66 GB




Case T70 GAL




Case T71 GAR

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

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