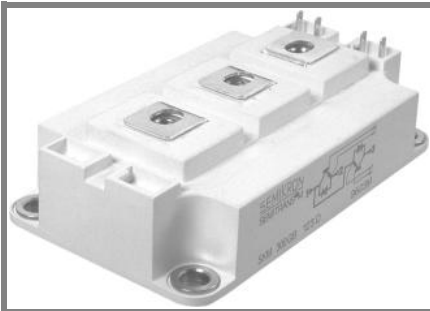


SKM 300GB066D



SEMITRANS® 3

Trench IGBT Modules

SKM 300GB066D

Features

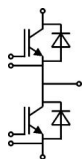
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Remarks

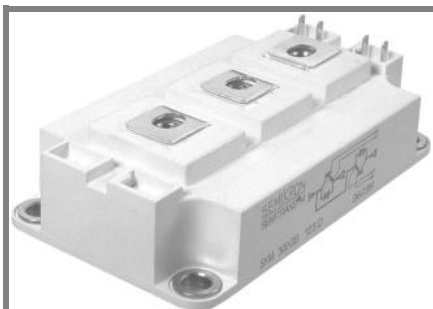
- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{CC} \leq 360\text{V}$, use of soft R_G necessary!
- Take care of over-voltage caused by stray inductances



GB

| Absolute Maximum Ratings | | $T_{case} = 25^\circ\text{C}$, unless otherwise specified | | |
|--------------------------|--|--|------------------|---|
| Symbol | Conditions | Values | Units | |
| IGBT | | | | |
| V_{CES} | $T_j = 25^\circ\text{C}$ | 600 | V | |
| I_C | $T_j = 175^\circ\text{C}$ | $T_c = 25^\circ\text{C}$ | 390 | A |
| | | $T_c = 80^\circ\text{C}$ | 300 | A |
| I_{CRM} | $I_{CRM} = 2 \times I_{Cnom}$ | 600 | A | |
| V_{GES} | | ± 20 | V | |
| t_{psc} | $V_{CC} = 360\text{V}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$ $V_{CES} < 600\text{V}$ | 6 | μs | |
| Inverse Diode | | | | |
| I_F | $T_j = 175^\circ\text{C}$ | $T_c = 25^\circ\text{C}$ | 350 | A |
| | | $T_c = 80^\circ\text{C}$ | 250 | A |
| I_{FRM} | $I_{FRM} = 2 \times I_{Fnom}$ | 600 | A | |
| I_{FSM} | $t_p = 10\text{ms}$; sin. | $T_j = 175^\circ\text{C}$ | 1760 | A |
| Module | | | | |
| $I_{t(RMS)}$ | | 500 | A | |
| T_{vj} | | -40 ... +175 | $^\circ\text{C}$ | |
| T_{stg} | | -40 ... +125 | $^\circ\text{C}$ | |
| V_{isol} | AC, 1 min. | 4000 | V | |

| Characteristics | | $T_{case} = 25^\circ\text{C}$, unless otherwise specified | | | |
|-----------------|--|--|------|------|------------------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT | | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CES}$, $I_C = 4,8\text{mA}$ | 5 | 5,8 | 6,5 | V |
| I_{CES} | $V_{GE} = 0\text{V}$, $V_{CE} = V_{CES}$ | $T_j = 25^\circ\text{C}$ | 0,15 | 0,45 | mA |
| | | $T_j = 150^\circ\text{C}$ | 0,85 | 0,9 | V |
| V_{CE0} | | | | | |
| r_{CE} | $V_{GE} = 15\text{V}$ | $T_j = 25^\circ\text{C}$ | 1,8 | 3 | $\text{m}\Omega$ |
| | | $T_j = 150^\circ\text{C}$ | 2,7 | 3,8 | $\text{m}\Omega$ |
| $V_{CE(sat)}$ | $I_{Cnom} = 300\text{A}$, $V_{GE} = 15\text{V}$ | $T_j = 25^\circ\text{C}_{chiplev.}$ | 1,45 | 1,9 | V |
| | | $T_j = 150^\circ\text{C}_{chiplev.}$ | 1,7 | 2,1 | V |
| C_{res} | $V_{CE} = 25$, $V_{GE} = 0\text{V}$ | $f = 1\text{MHz}$ | 18,5 | | nF |
| C_{oes} | | | 1,2 | | nF |
| C_{res} | | | 0,55 | | nF |
| Q_G | $V_{GE} = -8\text{V} \dots +15\text{V}$ | | 2400 | | nC |
| R_{Gint} | $T_j = ^\circ\text{C}$ | | 1 | | Ω |
| $t_{d(on)}$ | $R_{Gon} = 2,4\ \Omega$ | $V_{CC} = 300\text{V}$ $I_C = 300\text{A}$ | 150 | | ns |
| t_r | | | 48 | | ns |
| E_{on} | $R_{Goff} = 2,4\ \Omega$ | $T_j = 150^\circ\text{C}$ $V_{GE} = -8\text{V}/+15\text{V}$ | 7,5 | | mJ |
| $t_{d(off)}$ | | | 540 | | ns |
| t_f | | | 53 | | ns |
| E_{off} | | | 11,5 | | mJ |
| $R_{th(j-c)}$ | per IGBT | | | 0,15 | K/W |



SEMITRANS® 3

Trench IGBT Modules

SKM 300GB066D

Features

- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{CC} \leq 360\text{V}$, use of soft R_G necessary !
- Take care of over-voltage caused by stray inductances



GB

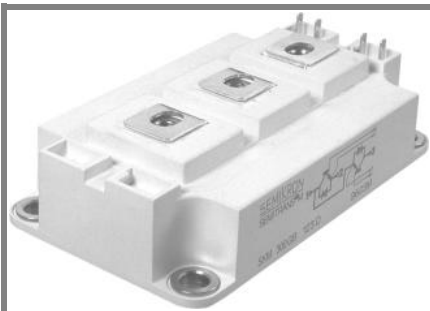
Characteristics

| Symbol | Conditions | min. | typ. | max. | Units |
|----------------------|---|------|------|-------|-------|
| Inverse Diode | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 300\text{ A}$; $V_{GE} = 0\text{ V}$ $T_j = 25^\circ\text{C}_{chiplev.}$ | | 1,4 | 1,6 | V |
| V_{F0} | $T_j = 25^\circ\text{C}$ | | 0,95 | 1 | V |
| r_F | $T_j = 25^\circ\text{C}$ | | 1,5 | 2 | mΩ |
| I_{RRM} | $I_F = 300\text{ A}$ $T_j = 150^\circ\text{C}$ | | 340 | | A |
| Q_{rr} | $di/dt = 7000\text{ A}/\mu\text{s}$ | | 47 | | μC |
| E_{rr} | $V_{GE} = -8\text{ V}$; $V_{CC} = 300\text{ V}$ | | 10,5 | | mJ |
| $R_{th(j-c)D}$ | per diode | | | 0,25 | K/W |
| Module | | | | | |
| L_{CE} | | | 15 | 20 | nH |
| R_{CC+EE} | res., terminal-chip $T_{case} = 25^\circ\text{C}$ | | 0,35 | | mΩ |
| | $T_{case} = 125^\circ\text{C}$ | | 0,5 | | mΩ |
| $R_{th(c-s)}$ | per module | | | 0,038 | K/W |
| M_s | to heat sink M6 | 3 | | 5 | Nm |
| M_t | to terminals M6 | 2,5 | | 5 | Nm |
| w | | | | 325 | 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.

SKM 300GB066D



SEMITRANS® 3

Trench IGBT Modules

SKM 300GB066D

Features

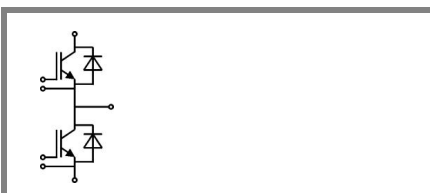
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

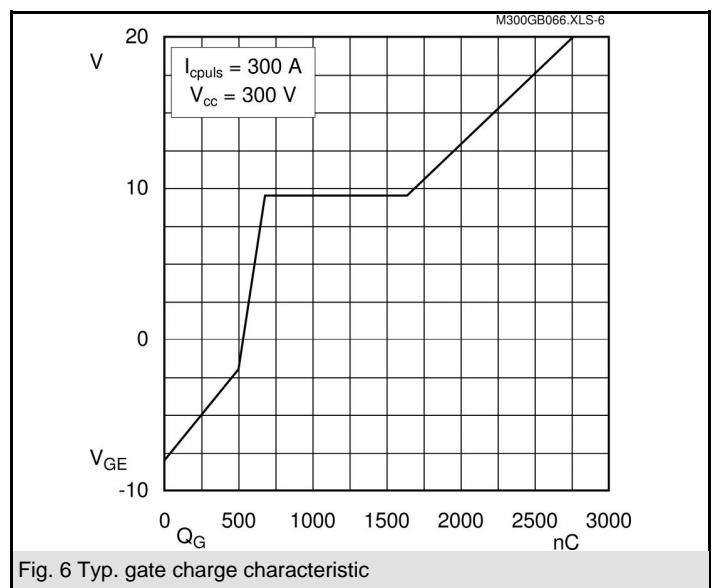
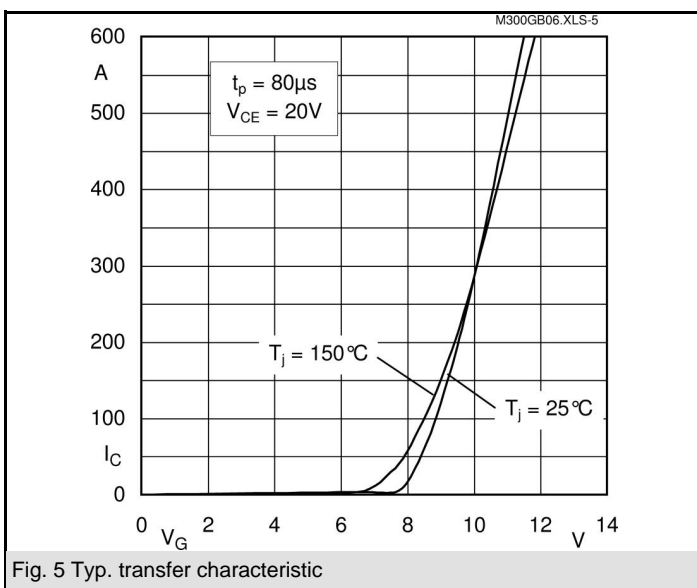
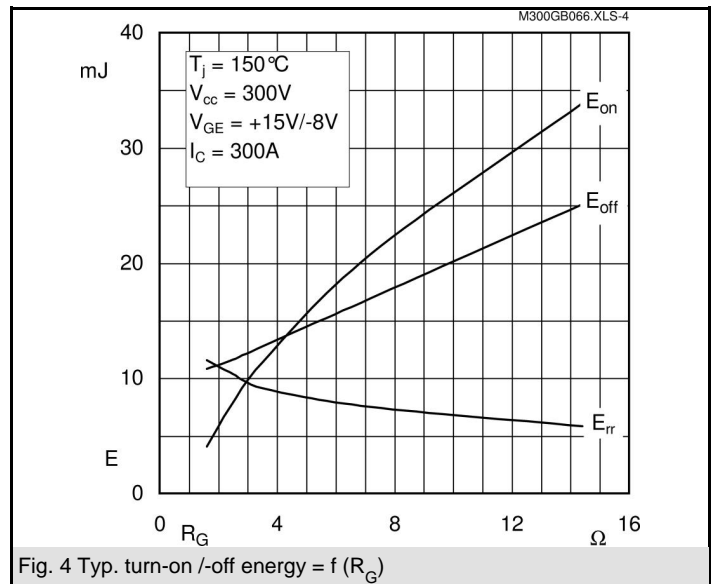
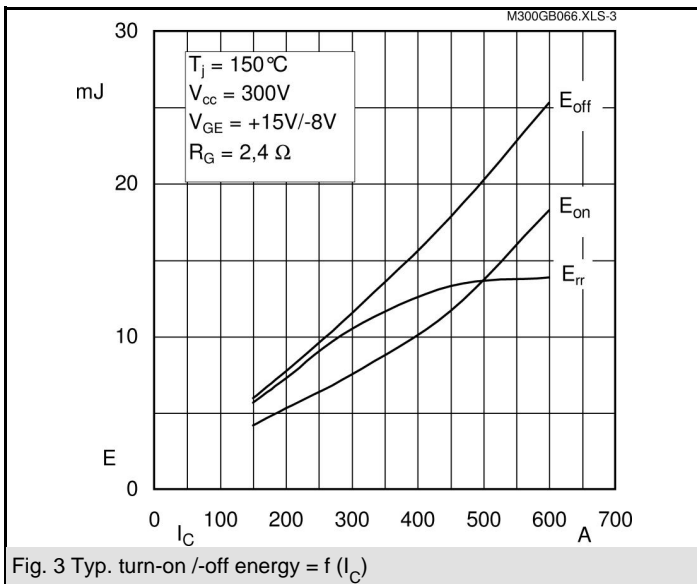
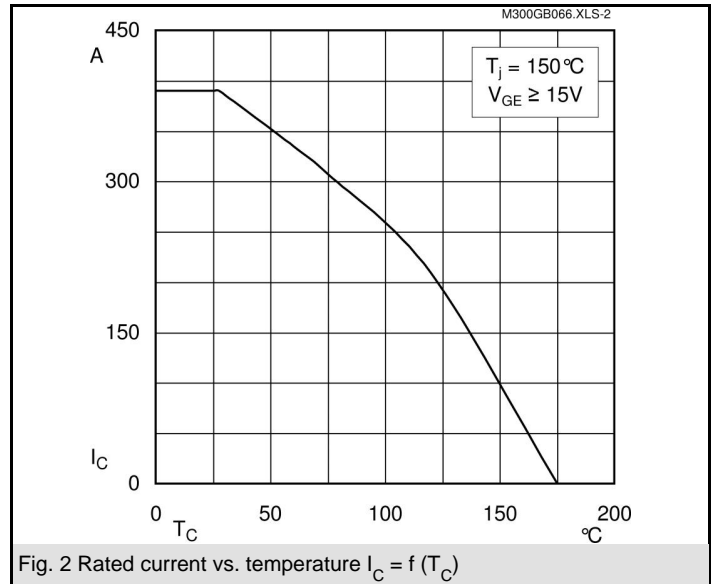
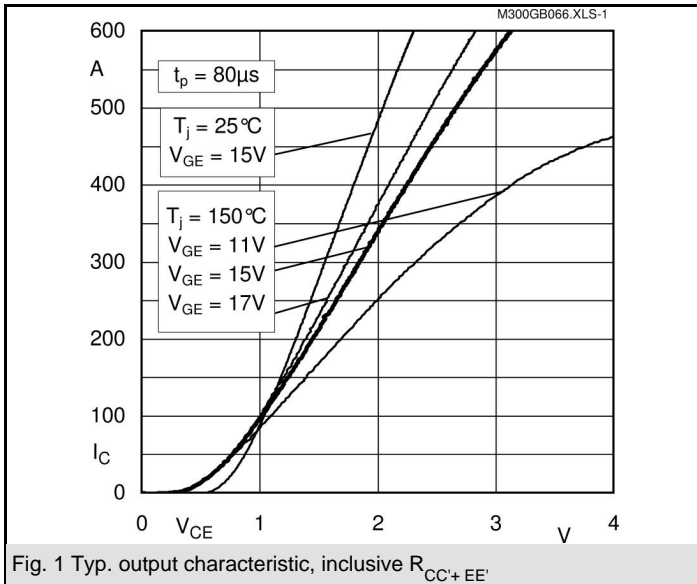
Remarks

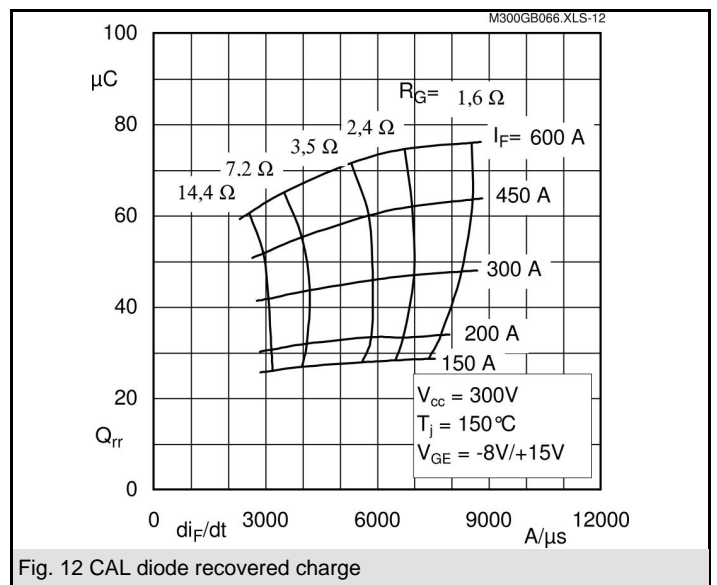
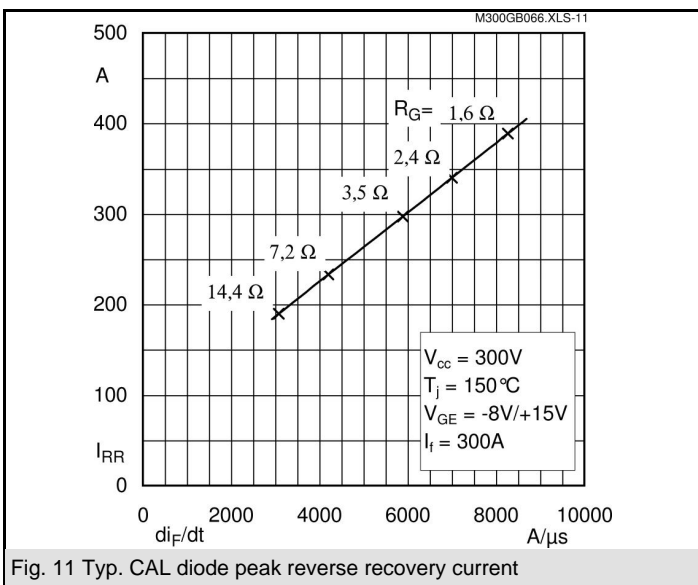
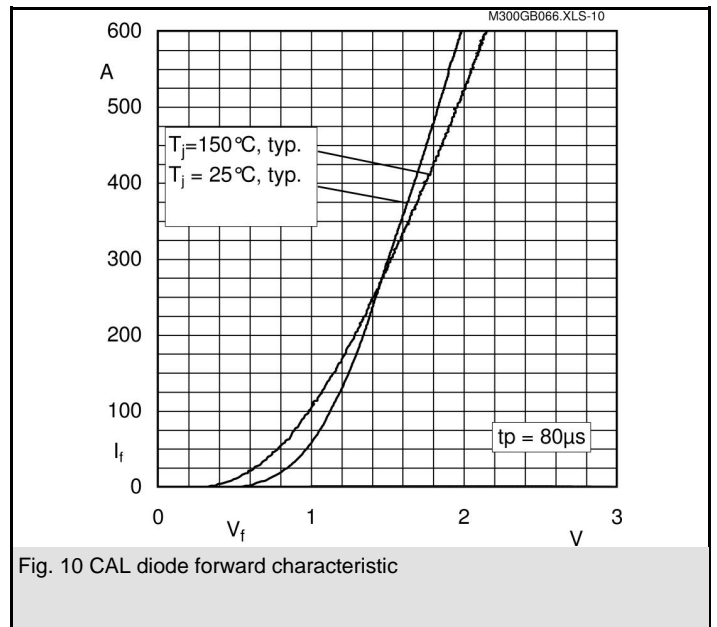
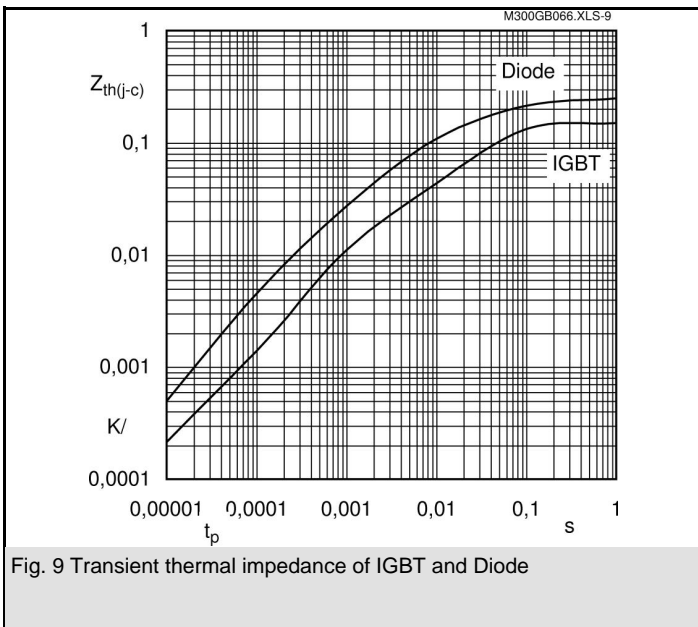
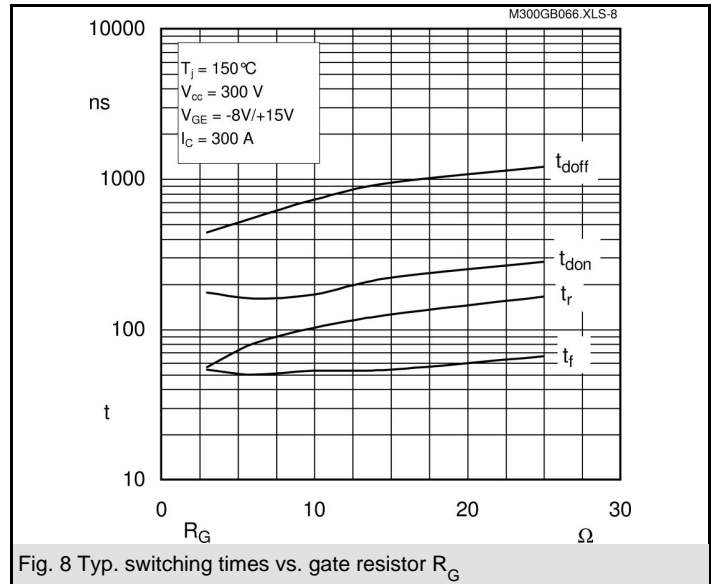
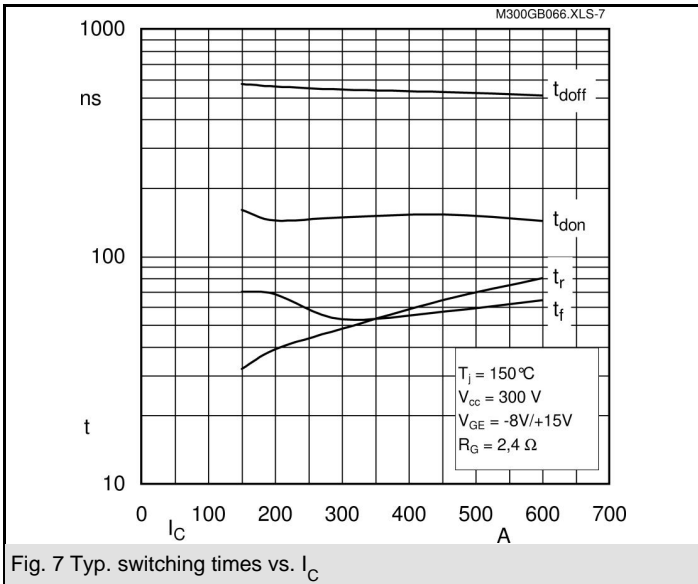
- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{CC} \leq 360\text{V}$, use of soft R_G necessary !
- Take care of over-voltage caused by stray inductances



GB

| Z_{th} | | Conditions | Values | Units |
|----------------|---------|------------|--------|-------|
| Symbol | | | | |
| $Z_{th(j-c)I}$ | | | | |
| R_f | $i = 1$ | | 107 | mk/W |
| R_f | $i = 2$ | | 30 | mk/W |
| R_f | $i = 3$ | | 11,6 | mk/W |
| R_f | $i = 4$ | | 1,4 | mk/W |
| τ_{u_i} | $i = 1$ | | 0,054 | s |
| τ_{u_i} | $i = 2$ | | 0,0144 | s |
| τ_{u_i} | $i = 3$ | | 0,0007 | s |
| τ_{u_i} | $i = 4$ | | 0,0004 | s |
| Symbol | | | | |
| $Z_{th(j-c)D}$ | | | | |
| R_f | $i = 1$ | | 140 | mk/W |
| R_f | $i = 2$ | | 82 | mk/W |
| R_f | $i = 3$ | | 23,5 | mk/W |
| R_f | $i = 4$ | | 4,5 | mk/W |
| τ_{u_i} | $i = 1$ | | 0,054 | s |
| τ_{u_i} | $i = 2$ | | 0,01 | s |
| τ_{u_i} | $i = 3$ | | 0,0015 | s |
| τ_{u_i} | $i = 4$ | | 0,0002 | s |

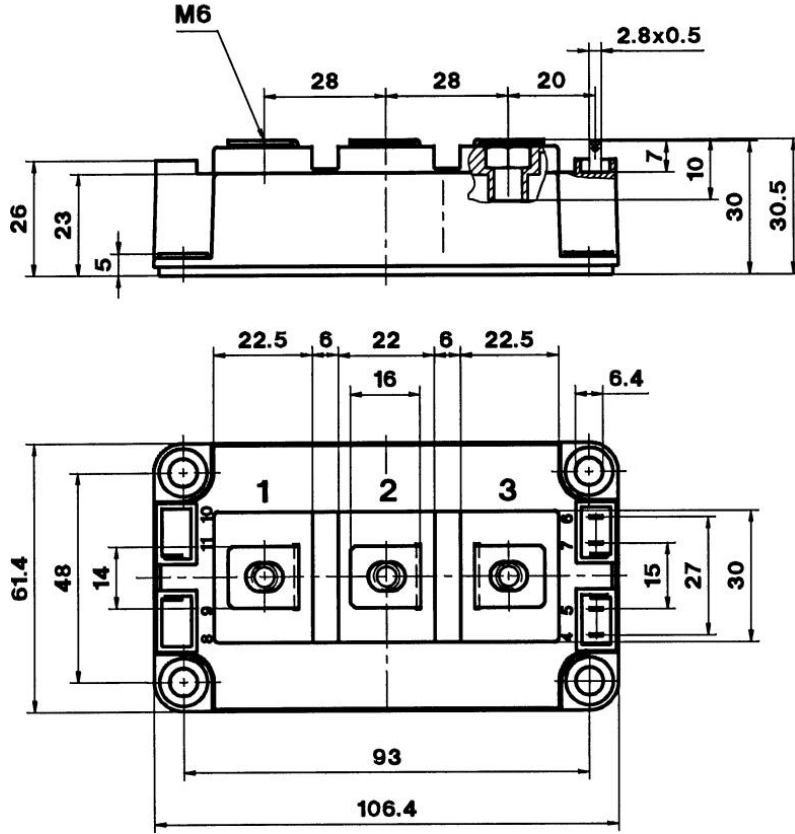




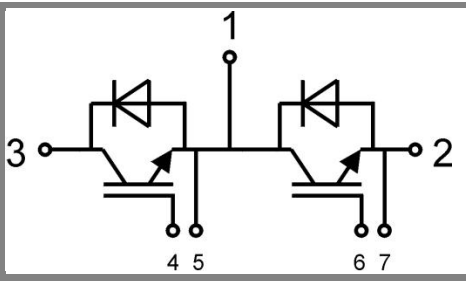
SKM 300GB066D

UL recognized, file no. E 63 532

CASED56



Case D 56



GB

Case D56