

SKM 300GB128D



SEMITRANS™ 3

SPT IGBT Module

SKM 300GB128D

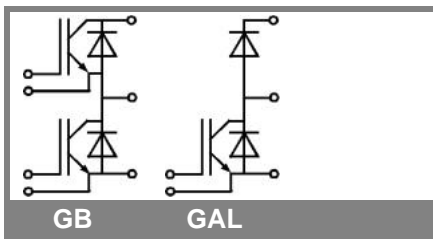
SKM 300GAL128D

Features

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

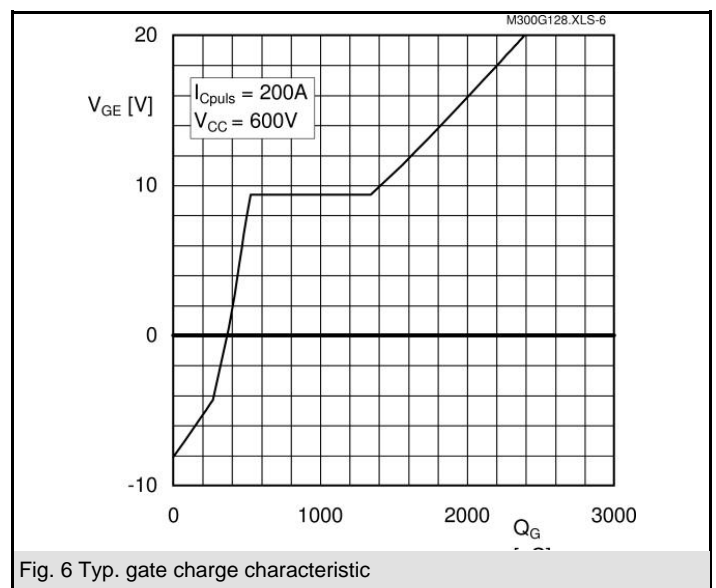
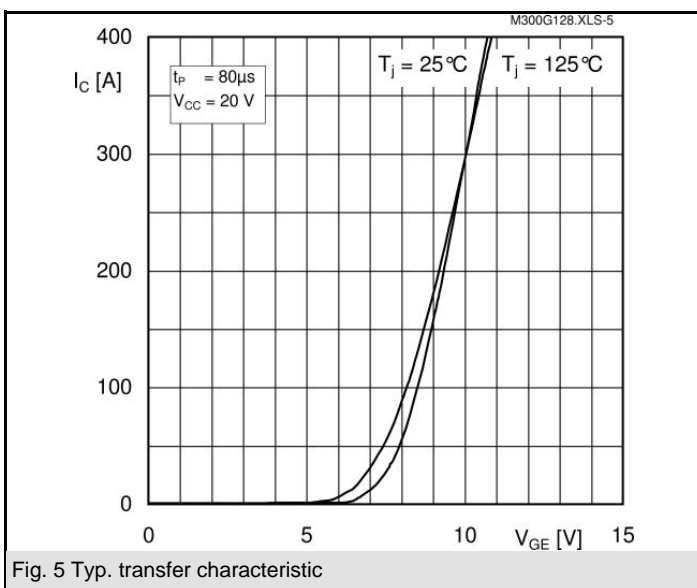
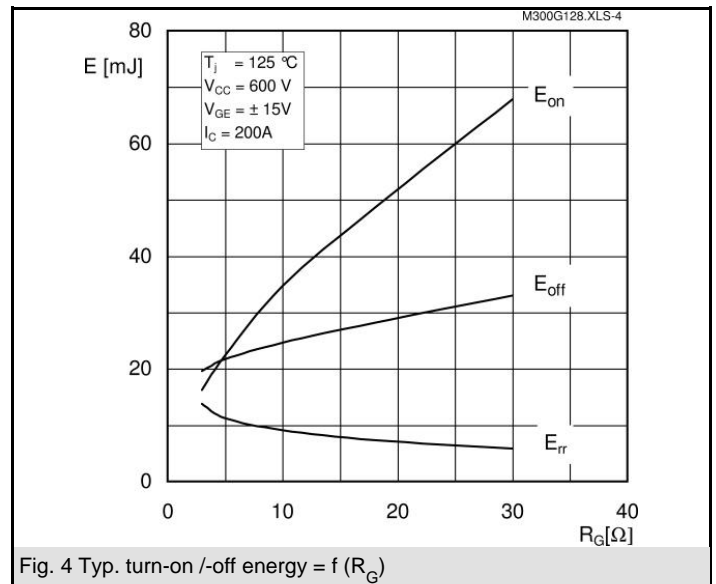
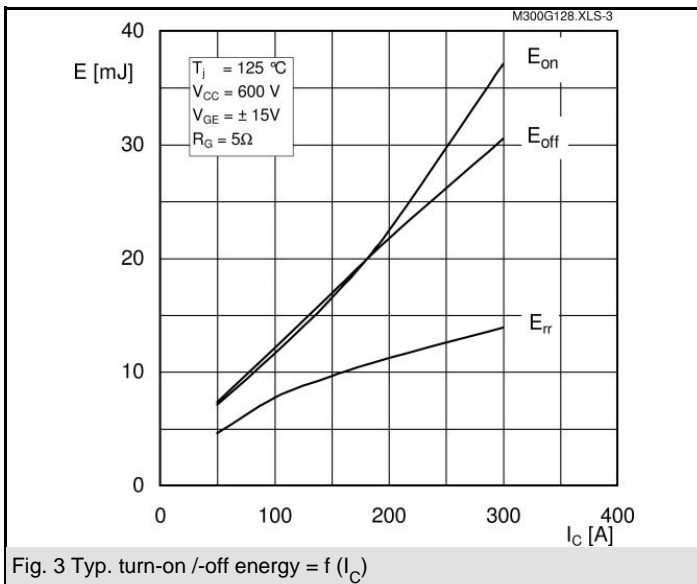
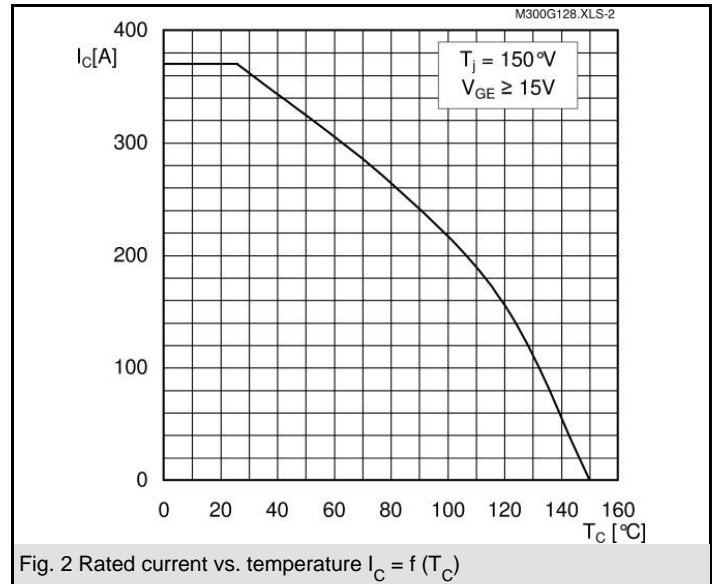
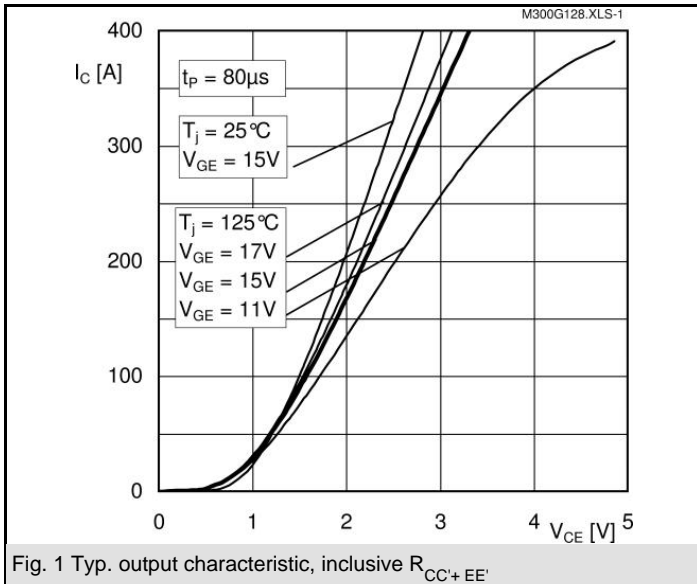
Typical Applications

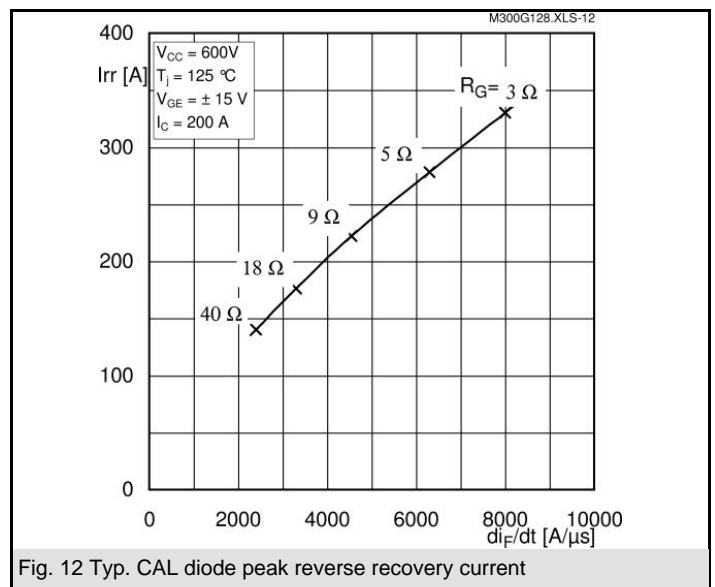
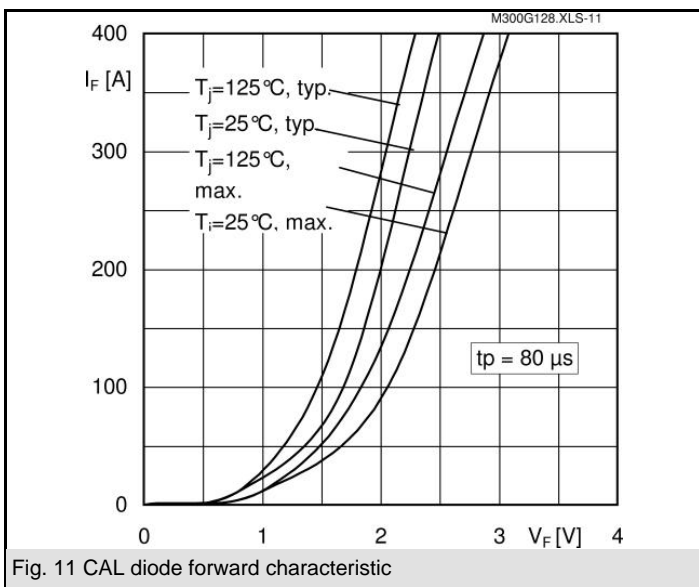
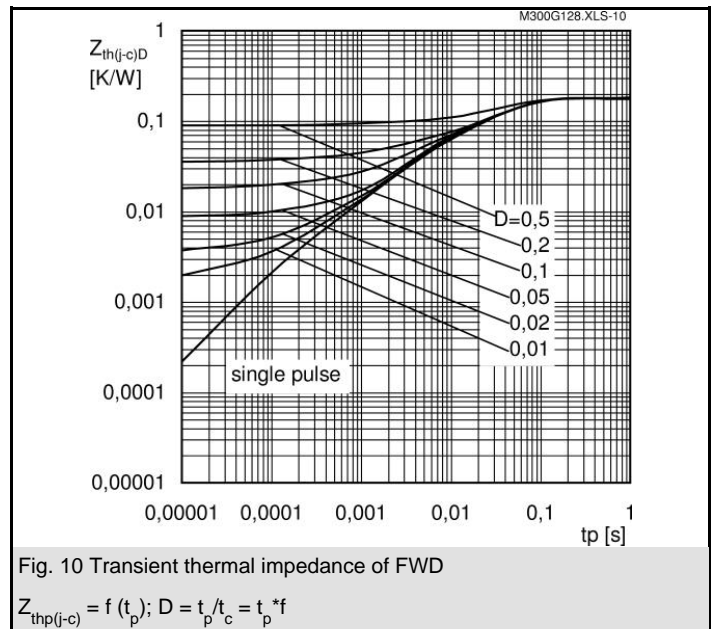
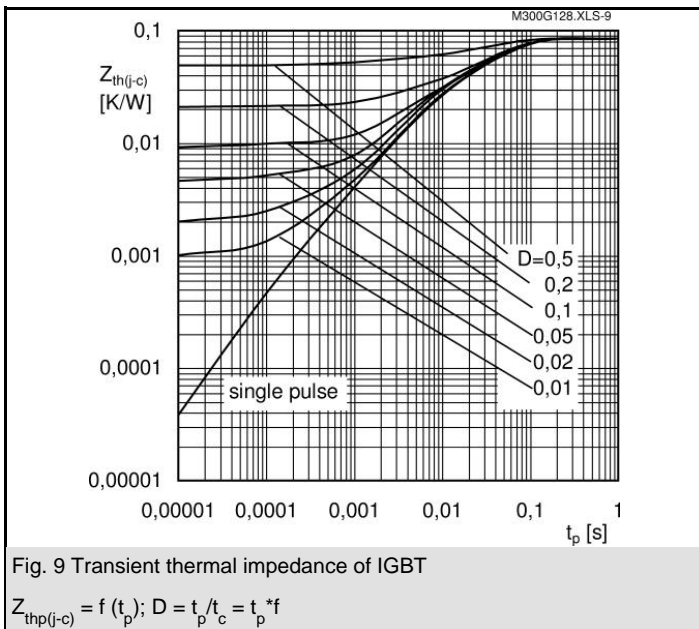
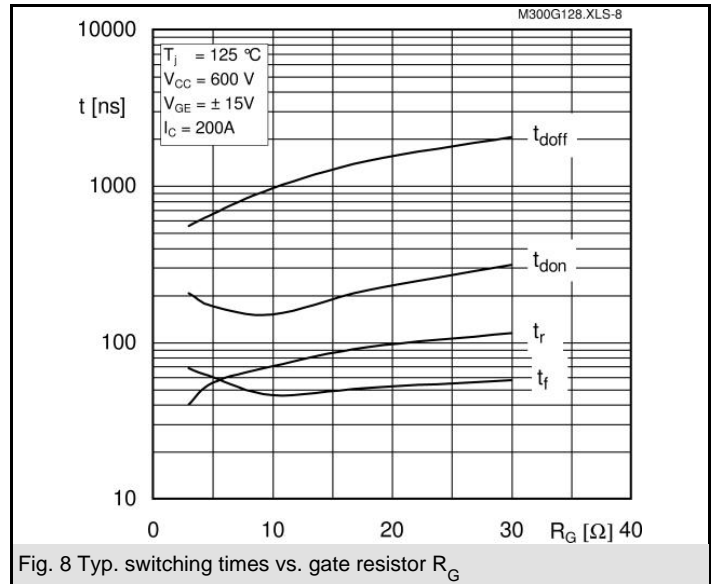
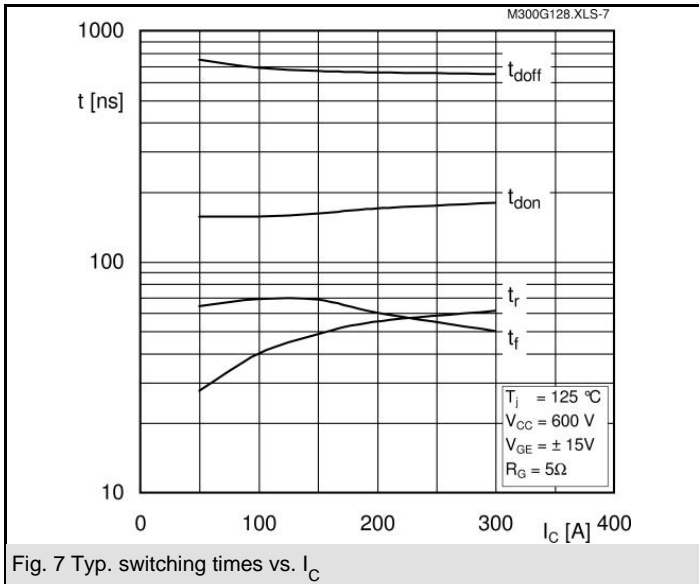
- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz



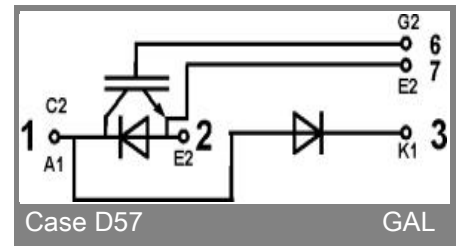
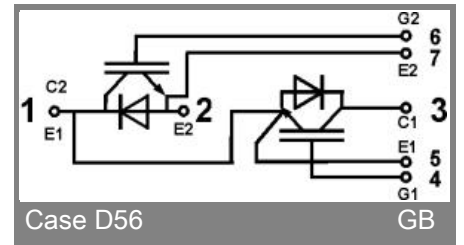
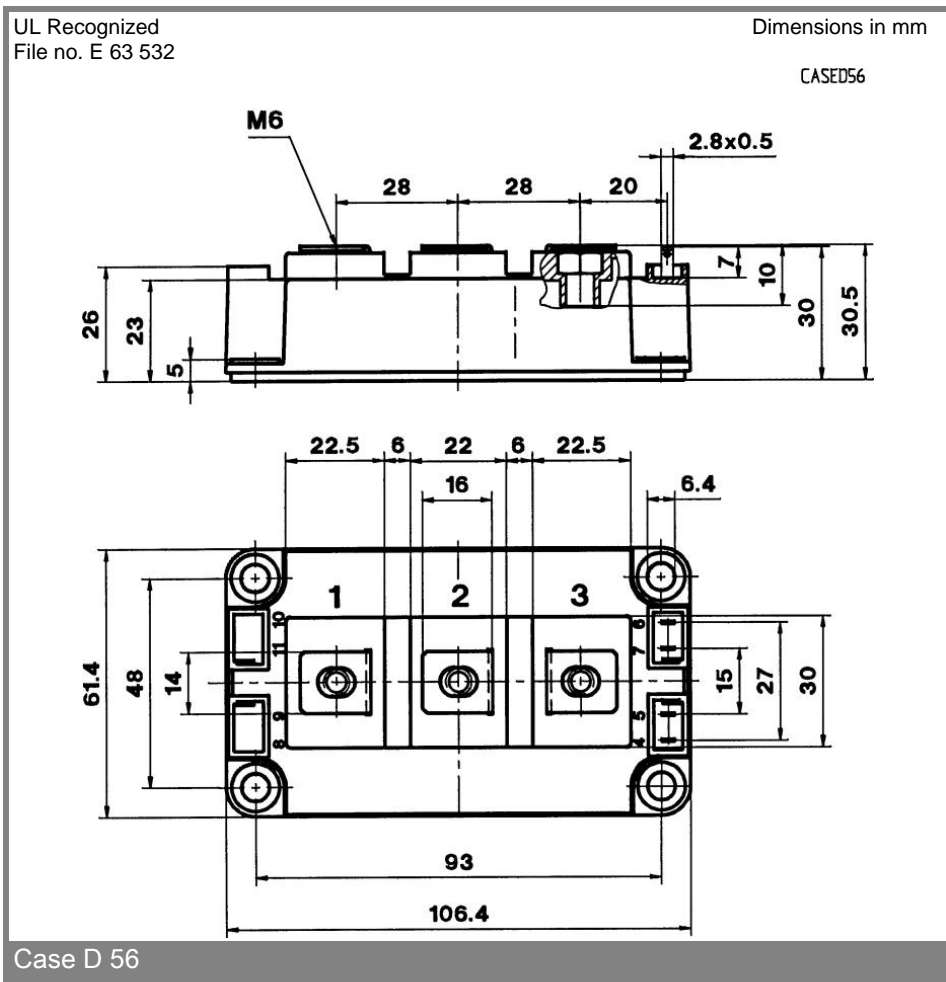
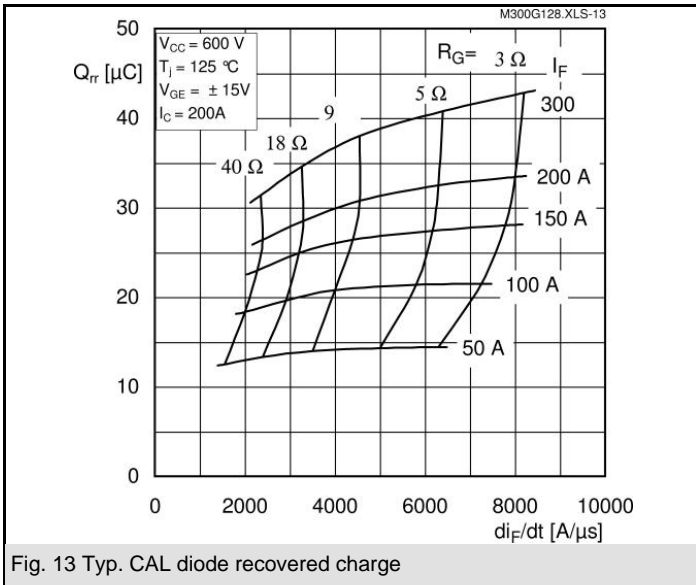
| Absolute Maximum Ratings | | $T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified | |
|---------------------------|--|---|------------------|
| Symbol | Conditions | Values | Units |
| IGBT | | | |
| V_{CES} | | 1200 | V |
| I_C | $T_c = 25\text{ (80) }^\circ\text{C}$ | 370 (265) | A |
| I_{CRM} | $t_p = 1\text{ ms}$ | 400 | A |
| V_{GES} | | ± 20 | V |
| T_{vj} (T_{stg}) | $T_{OPERATION} \leq T_{stg}$ | - 40 ... + 150 (125) | $^\circ\text{C}$ |
| V_{isol} | AC, 1 min. | 4000 | V |
| Inverse diode | | | |
| I_F | $T_c = 25\text{ (80) }^\circ\text{C}$ | 260 (180) | A |
| I_{FRM} | $t_p = 1\text{ ms}$ | 400 | A |
| I_{FSM} | $t_p = 10\text{ ms; sin.; } T_j = 150\text{ }^\circ\text{C}$ | 1800 | A |
| Freewheeling diode | | | |
| I_F | $T_c = 25\text{ (80) }^\circ\text{C}$ | 260 (180) | A |
| I_{FRM} | $t_p = 1\text{ ms}$ | 400 | A |
| I_{FSM} | $t_p = 10\text{ ms; sin.; } T_j = 150\text{ }^\circ\text{C}$ | 1800 | A |

| Characteristics | | $T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified | | | |
|--------------------------------|--|---|------------|-------------|---------------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT | | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}, I_C = 8\text{ mA}$ | 4,5 | 5,5 | 6,5 | V |
| I_{CES} | $V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25\text{ () }^\circ\text{C}$ | | 0,2 | 0,6 | mA |
| $V_{CE(TO)}$ | $T_j = 25\text{ () }^\circ\text{C}$ | | 1 (0,9) | 1,15 (1,05) | V |
| r_{CE} | $V_{GE} = 15\text{ V}, T_j = 25\text{ (125) }^\circ\text{C}$ | | 4,5 (6) | 6 (7,5) | m Ω |
| $V_{CE(sat)}$ | $I_{Cnom} = 200\text{ A}, V_{GE} = 15\text{ V}$, chip level | | 1,9 (2,1) | 2,35 (2,55) | V |
| C_{ies} | under following conditions | | 17 | | nF |
| C_{oes} | $V_{GE} = 0, V_{CE} = 25\text{ V}, f = 1\text{ MHz}$ | | 2 | | nF |
| C_{res} | | | 1,9 | | nF |
| L_{CE} | | | | 20 | nH |
| $R_{CC'+EE'}$ | res., terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$ | | 0,35 (0,5) | | m Ω |
| $t_{d(on)}$ | $V_{CC} = 600\text{ V}, I_{Cnom} = 200\text{ A}$ | | 170 | | ns |
| t_r | $R_{Gon} = R_{Goff} = 5\text{ }^\circ\Omega, T_j = 125\text{ }^\circ\text{C}$ | | 55 | | ns |
| $t_{d(off)}$ | $V_{GE} = \pm 15\text{ V}$ | | 660 | | ns |
| t_f | | | 60 | | ns |
| $E_{on} (E_{off})$ | | | 22 (22) | | mJ |
| Inverse diode | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 200\text{ A}; V_{GE} = 0\text{ V}; T_j = 25\text{ (125) }^\circ\text{C}$ | | 2 (1,8) | 2,5 | V |
| $V_{(TO)}$ | $T_j = 25\text{ (125) }^\circ\text{C}$ | | 1,1 | 1,2 | V |
| r_T | $T_j = 25\text{ (125) }^\circ\text{C}$ | | 4,5 | 6,5 | m Ω |
| I_{RRM} | $I_{Fnom} = 200\text{ A}; T_j = 125\text{ () }^\circ\text{C}$ | | 280 | | A |
| Q_{rr} | $di/dt = 6300\text{ A}/\mu\text{s}$ | | 33 | | μC |
| E_{rr} | $V_{GE} = 0\text{ V}$ | | 11 | | mJ |
| FWD | | | | | |
| $V_F = V_{EC}$ | $I_F = 200\text{ A}; V_{GE} = 0\text{ V}, T_j = 25\text{ (125) }^\circ\text{C}$ | | 2 (1,8) | 2,5 | V |
| $V_{(TO)}$ | $T_j = 25\text{ (125) }^\circ\text{C}$ | | 1,1 | 1,2 | V |
| r_T | $T_j = 25\text{ (125) }^\circ\text{C}$ | | 4,5 | 6,5 | m Ω |
| I_{RRM} | $I_F = 200\text{ A}; T_j = 25\text{ (125) }^\circ\text{C}$ | | 280 | | A |
| Q_{rr} | $di/dt = 0\text{ A}/\mu\text{s}$ | | 33 | | μC |
| E_{rr} | $V_{GE} = 0\text{ V}$ | | 11 | | mJ |
| Thermal characteristics | | | | | |
| $R_{th(j-c)}$ | per IGBT | | | 0,085 | K/W |
| $R_{th(j-c)D}$ | per Inverse Diode | | | 0,18 | K/W |
| $R_{th(j-c)FD}$ | per FWD | | | 0,18 | K/W |
| $R_{th(c-s)}$ | per module | | | 0,038 | K/W |
| Mechanical data | | | | | |
| M_s | to heatsink M6 | 3 | | 5 | Nm |
| M_t | to terminals M6 | 2,5 | | 5 | Nm |
| w | | | | 325 | g |





SKM 300GB128D



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.