

SKM 600GA124D



SEMITRANS™ 4

Trench IGBT Modules

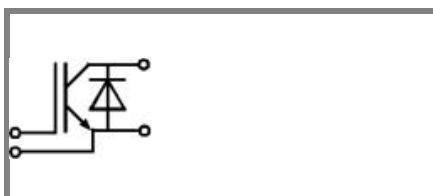
SKM 600GA124D

Features

- N channel, homogeneous Silicon structure (NPT - Non punch-through IGBT)
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Fast and soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (12 mm) and creepage distances (20 mm)

Typical Applications

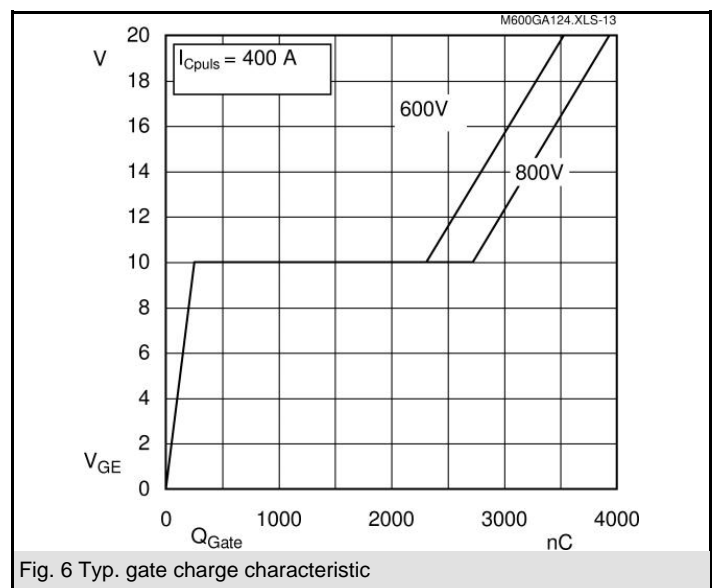
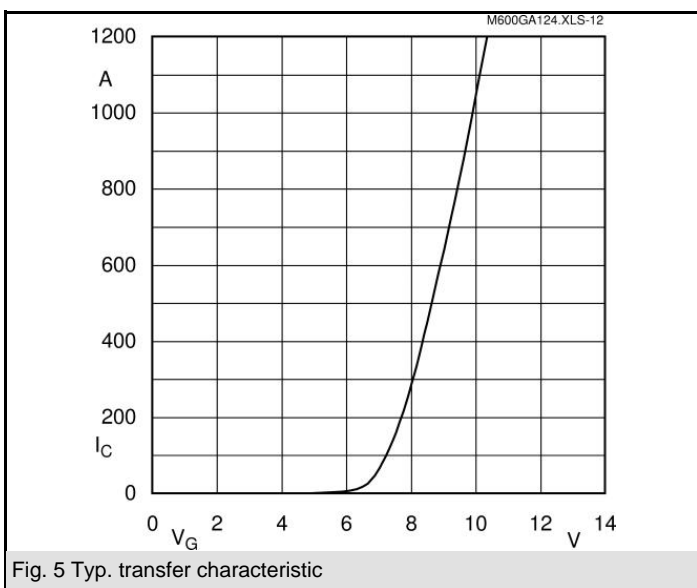
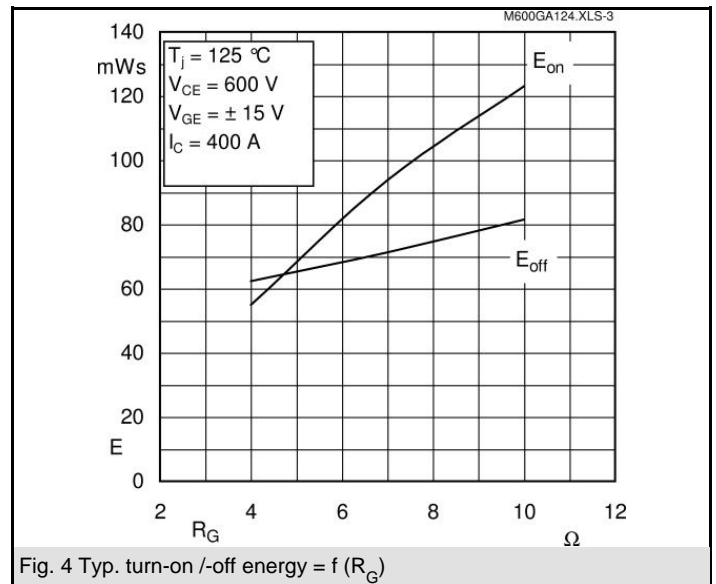
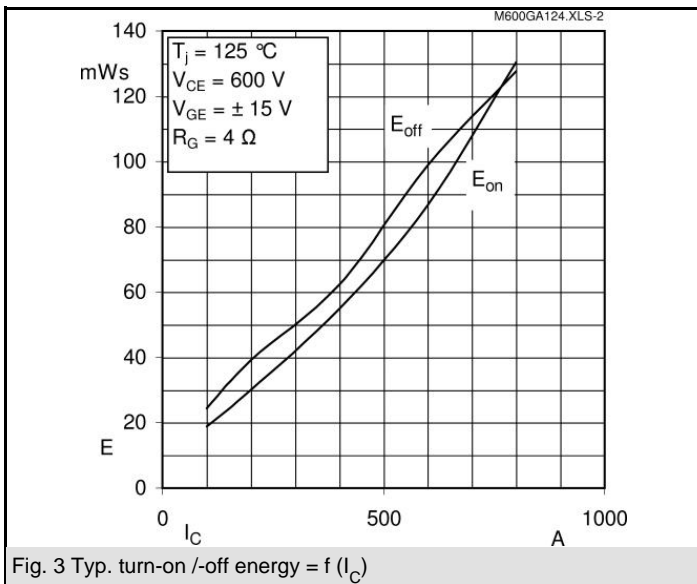
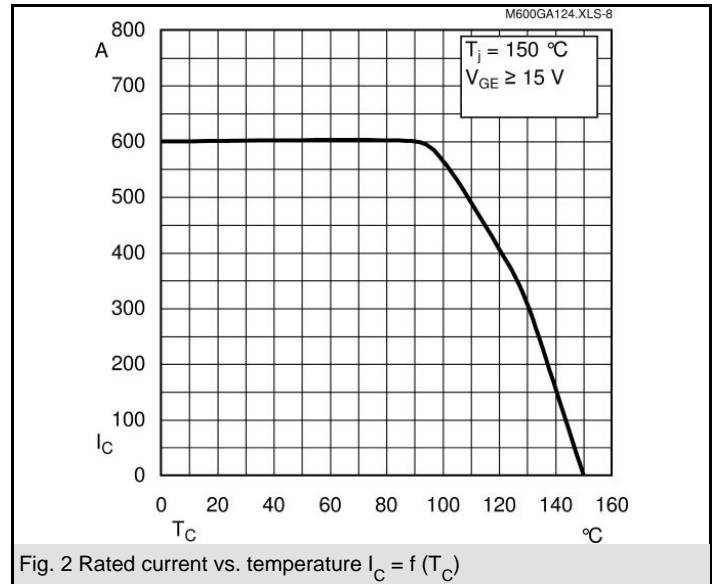
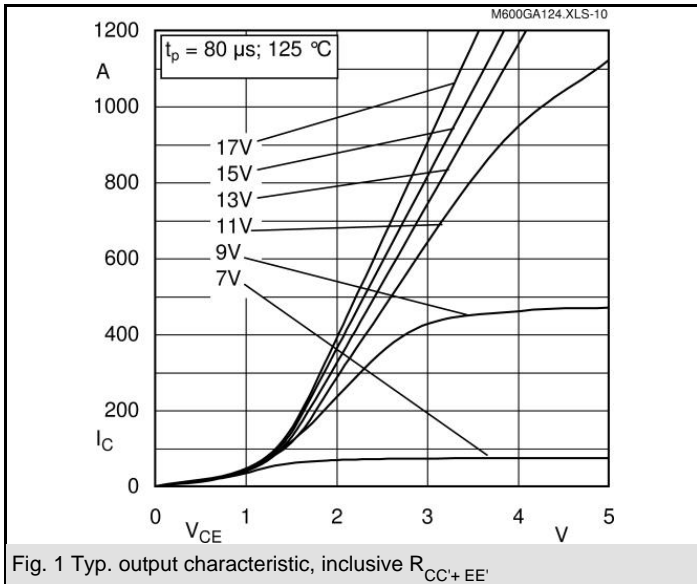
- Switching (not for linear use)
- Wind generators (low loss)
- Inverter drives (low loss)
- UPS (low loss)

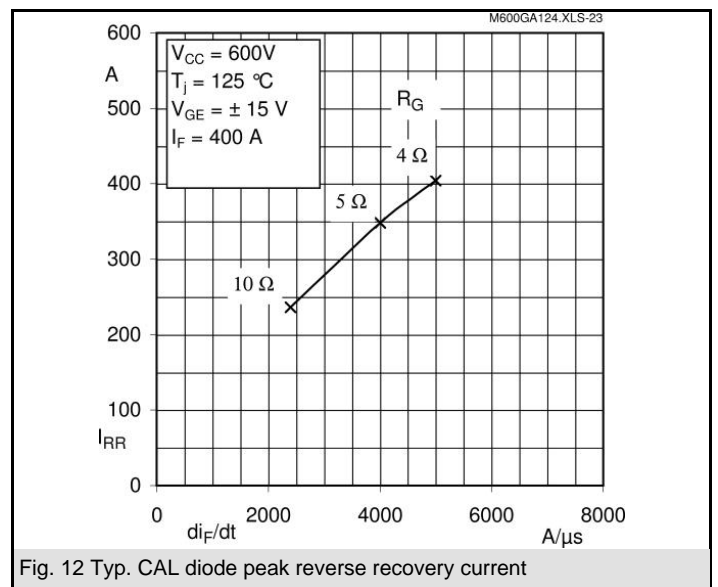
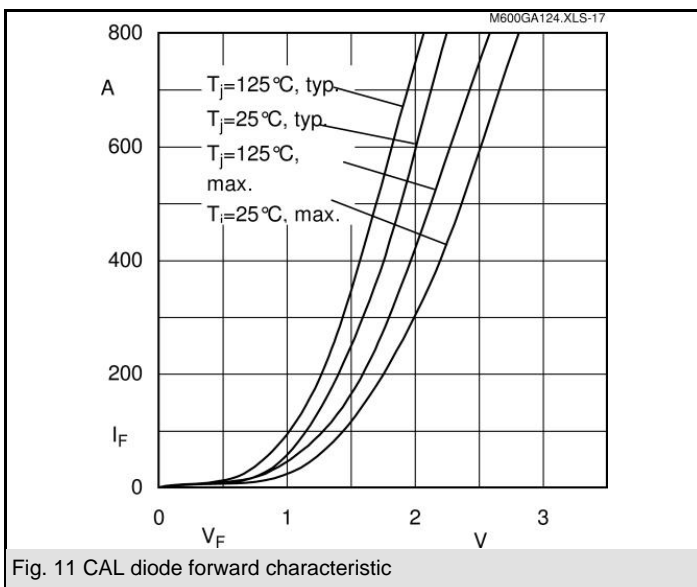
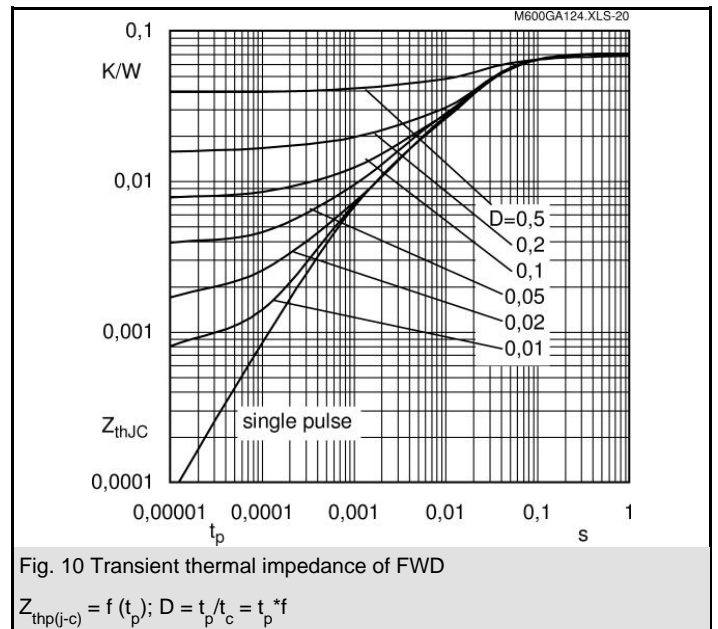
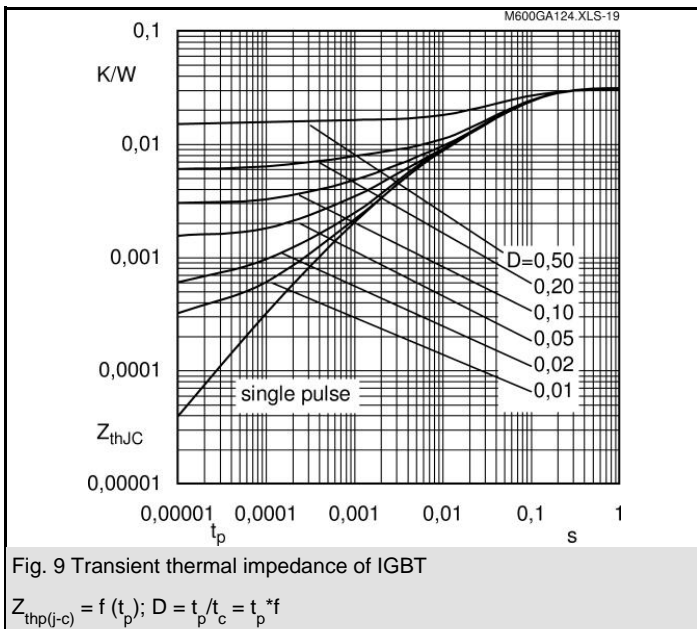
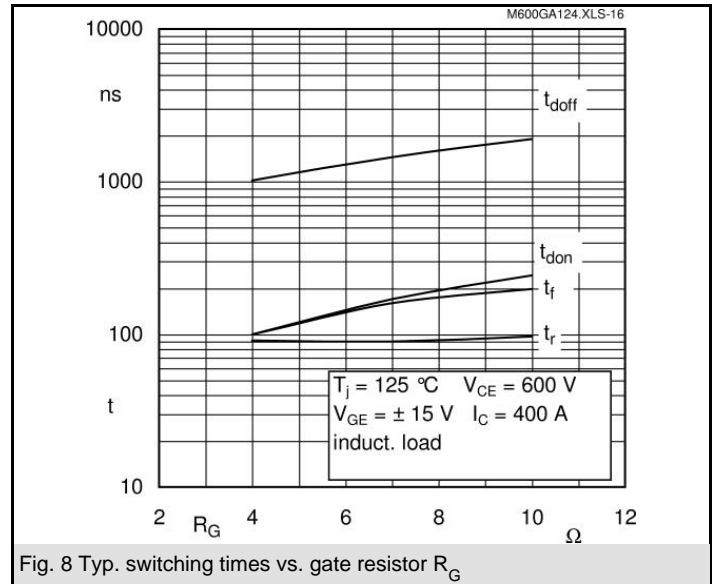
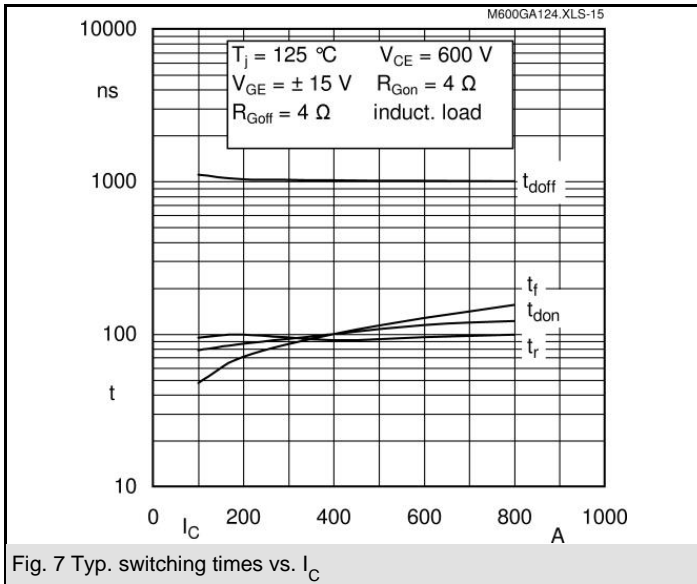


GA

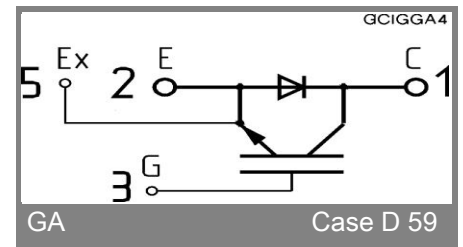
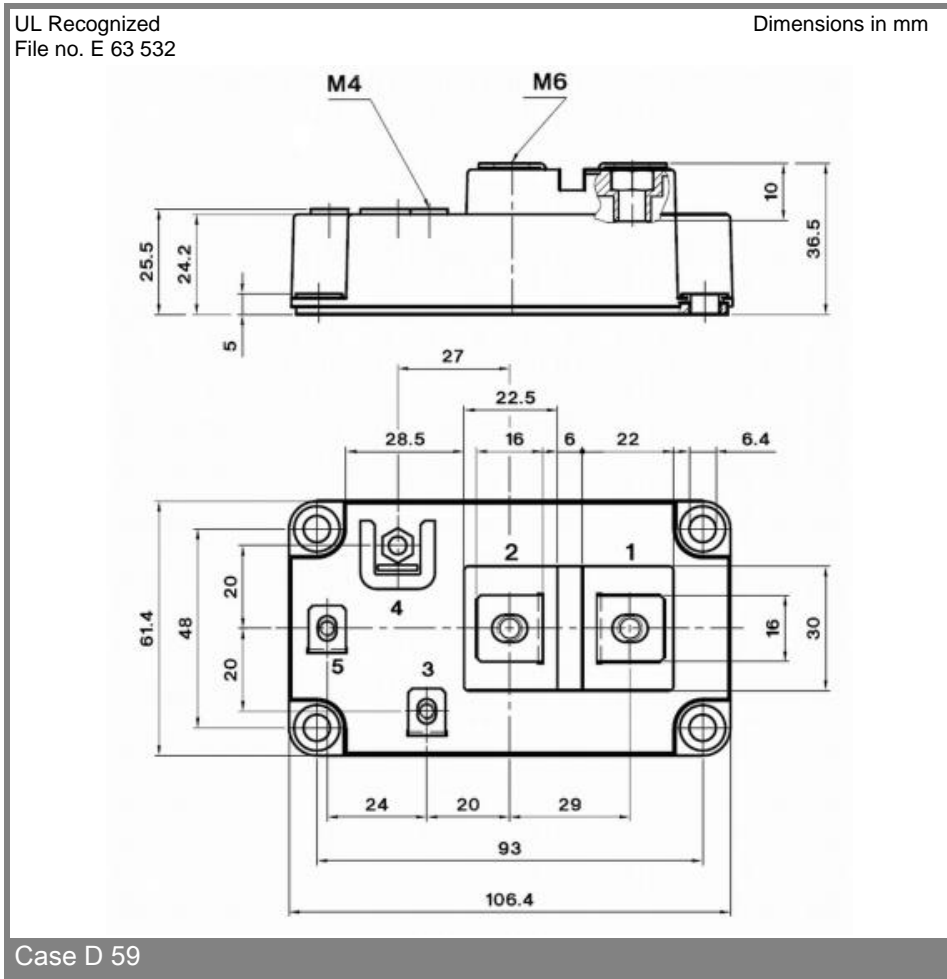
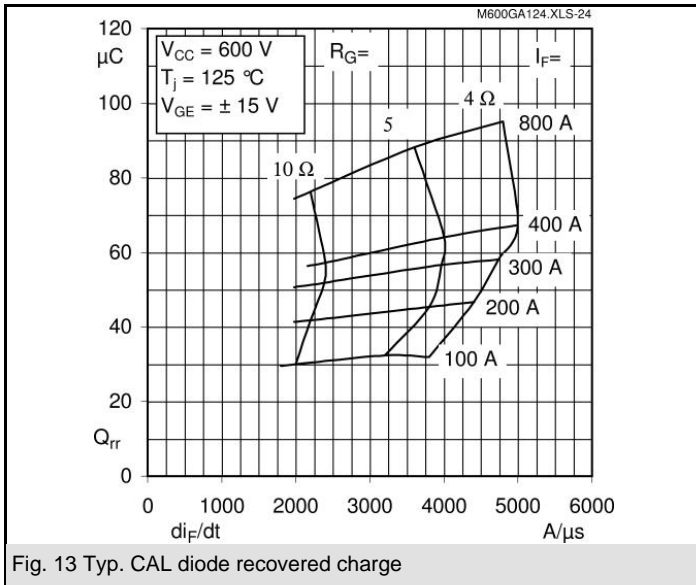
| Absolute Maximum Ratings | | $T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified | |
|--------------------------|--|---|------------------|
| Symbol | Conditions | Values | Units |
| IGBT | | | |
| V_{CES} | | 1200 | V |
| I_C | $T_c = 25\text{ (80) }^\circ\text{C}$ | 700 (600) | A |
| I_{CRM} | $t_p = 1\text{ ms}$ | 800 | 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. | 2500 | V |
| Inverse diode | | | |
| I_F | $T_c = 25\text{ (80) }^\circ\text{C}$ | 700 (500) | A |
| I_{FRM} | $t_p = 1\text{ ms}$ | 800 | A |
| I_{FSM} | $t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$ | 5000 | A |

| Characteristics | | $T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified | | | |
|--------------------------------|--|---|-------------|-------------|---------------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT | | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$; $I_C = 24\text{ mA}$ | 4,5 | 5,5 | 6,5 | V |
| I_{CES} | $V_{GE} = 0$; $V_{CE} = V_{CES}$; $T_j = 25\text{ (125) }^\circ\text{C}$ | | 0,2 | 0,6 | mA |
| $V_{CE(TO)}$ | $T_j = 25\text{ (125) }^\circ\text{C}$ | | 1,1 (1,1) | 1,25 (1,25) | V |
| r_{CE} | $V_{GE} = 15\text{ V}$; $T_j = 25\text{ (125) }^\circ\text{C}$ | | 2,25 (2,75) | 2,25 (2,75) | m Ω |
| $V_{CE(sat)}$ | $I_{Cnom} = 400\text{ A}$; $V_{GE} = 15\text{ V}$; chip level | | 2 (2,2) | 2,15 (2,35) | V |
| C_{ies} | under following conditions | | 44 | 60 | nF |
| C_{oes} | $V_{GE} = 0$; $V_{CE} = 25\text{ V}$; $f = 1\text{ MHz}$ | | 6,6 | 8 | nF |
| C_{res} | | | 2,4 | 3,2 | nF |
| L_{CE} | | | | 20 | nH |
| $R_{CC'+EE'}$ | res.; terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$ | | 0,18 (0,22) | | m Ω |
| $t_{d(on)}$ | $V_{CC} = 600\text{ V}$; $I_{Cnom} = 400\text{ A}$ | | 100 | | ns |
| t_r | $R_{Gon} = R_{Goff} = 4\text{ }^\circ\Omega$; $T_j = 125\text{ }^\circ\text{C}$ | | 100 | | ns |
| $t_{d(off)}$ | $V_{GE} = \pm 15\text{ V}$ | | 1020 | | ns |
| t_f | | | 90 | | ns |
| $E_{on} (E_{off})$ | | | 55 (63) | | mJ |
| Inverse diode | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 400\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) }^\circ\text{C}$ | | 2 (1,7) | 2,2 (2) | V |
| $V_{(TO)}$ | $T_j = 125\text{ () }^\circ\text{C}$ | | | 1,2 | V |
| r_T | $T_j = 125\text{ () }^\circ\text{C}$ | | 1,5 | 2 | m Ω |
| I_{RRM} | $I_{Fnom} = 400\text{ A}$; $T_j = 125\text{ () }^\circ\text{C}$ | | 400 | | A |
| Q_{rr} | $di/dt = 4000\text{ A}/\mu\text{s}$ | | 58 | | μC |
| E_{rr} | $V_{GE} = 0\text{ V}$ | | 22 | | mJ |
| Thermal characteristics | | | | | |
| $R_{th(j-c)}$ | per IGBT | | | 0,03 | K/W |
| $R_{th(j-c)D}$ | per Inverse Diode | | | 0,07 | 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(M4) | | 2,5 (1,1) | 5 (2) | Nm |
| w | | | | 330 | g |





SKM 600GA124D



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.