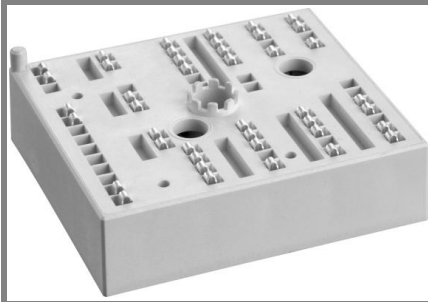


SKiiP 23AC12T4V1



MiniSKiiP[®]2

3-phase bridge inverter

SKiiP 23AC12T4V1

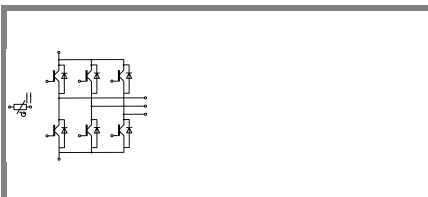
Features

- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

Remarks

- V_{CEsat} , V_F = chip level value
- Case temp. limited to $T_C = 125^\circ\text{C}$ max. (for baseplateless modules $T_C = T_S$)
- product rel. results valid for $T_j \leq 150$ (recomm. $T_{op} = -40 \dots +150^\circ\text{C}$)

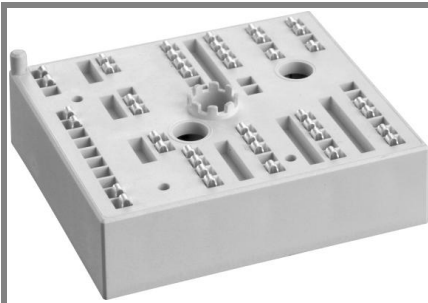


AC

| Absolute Maximum Ratings | | $T_C = 25^\circ\text{C}$, unless otherwise specified | | |
|--------------------------|--|---|-----|------------------|
| Symbol | Conditions | Values | | Units |
| IGBT | | | | |
| V_{CES} | $T_j = 25^\circ\text{C}$ | 1200 | | V |
| I_C | $T_j = 175^\circ\text{C}$ | $T_C = 25^\circ\text{C}$ | 41 | A |
| | | $T_C = 70^\circ\text{C}$ | 34 | A |
| I_{CRM} | $I_{CRM} = 3 \times I_{Cnom}$ | 75 | | A |
| V_{GES} | | ± 20 | | V |
| t_{psc} | $V_{CC} = 800\text{ V}; V_{GE} \leq 15\text{ V}; T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$ | 10 | | μs |
| Inverse Diode | | | | |
| I_F | $T_j = 175^\circ\text{C}$ | $T_C = 25^\circ\text{C}$ | 30 | A |
| | | $T_C = 70^\circ\text{C}$ | 26 | A |
| I_{FRM} | $I_{CRM} = 3 \times I_{Cnom}$ | 75 | | A |
| I_{FSM} | $t_p = 10\text{ ms}; \text{sin.}$ | $T_j = 150^\circ\text{C}$ | 100 | A |
| Module | | | | |
| $I_t(\text{RMS})$ | | 100 | | A |
| T_{vj} | | -40...+175 | | $^\circ\text{C}$ |
| T_{stg} | | -40...+125 | | $^\circ\text{C}$ |
| V_{isol} | AC, 1 min. | 2500 | | V |

| Characteristics | | $T_C = 25^\circ\text{C}$, unless otherwise specified | | | |
|-----------------|---|---|------|----------|------------------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT | | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}, I_C = 1\text{ mA}$ | 5 | 5,8 | 6,5 | V |
| I_{CES} | $V_{GE} = V, V_{CE} = V_{CES}$ | $T_j = 25^\circ\text{C}$ | | | mA |
| | | $T_j = 150^\circ\text{C}$ | 0,8 | 0,9 | V |
| V_{CE0} | | | 0,7 | 0,8 | V |
| r_{CE} | $V_{GE} = 15\text{ V}$ | $T_j = 25^\circ\text{C}$ | 42 | 46 | $\text{m}\Omega$ |
| | | $T_j = 150^\circ\text{C}$ | 62 | 66 | $\text{m}\Omega$ |
| $V_{CE(sat)}$ | $I_{Cnom} = 25\text{ A}, V_{GE} = 15\text{ V}$ | $T_j = 25^\circ\text{C}_{chiplev.}$ | 1,85 | 2,05 | V |
| | | $T_j = 150^\circ\text{C}_{chiplev.}$ | 2,25 | 2,45 | V |
| C_{ies} | $V_{CE} = 25, V_{GE} = 0\text{ V}$ | $f = 1\text{ MHz}$ | 1,43 | | nF |
| C_{oes} | | | 0,12 | | nF |
| C_{res} | | | 0,09 | | nF |
| Q_G | $V_{GE} = -8 \dots +15\text{ V}$ | 140 | | nC | |
| R_{Gint} | $T_j = 25^\circ\text{C}$ | 0 | | Ω | |
| $t_{d(on)}$ | $R_{Gon} = 39\ \Omega$ $di/dt = 465\text{ A}/\mu\text{s}$ | $V_{CC} = 600\text{ V}$ $I_C = 25\text{ A}$ | 44 | | ns |
| t_r | | | 46 | | ns |
| E_{on} | | | 3,7 | mJ | |
| $t_{d(off)}$ | $R_{Goff} = 39\ \Omega$ $di/dt = 350\text{ A}/\mu\text{s}$ | $T_j = 150^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$ | 330 | | ns |
| t_f | | | 62 | | ns |
| E_{off} | | | 2,4 | | mJ |
| $R_{th(j-s)}$ | per IGBT | 1 | | K/W | |

SKiiP 23AC12T4V1



MiniSKiiP[®]2

3-phase bridge inverter

SKiiP 23AC12T4V1

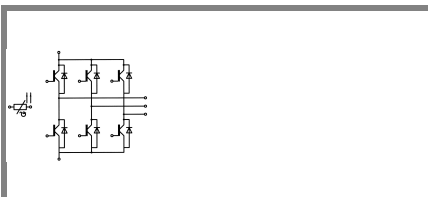
Features

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Typical Applications*

Remarks

- V_{CEsat} , V_F = chip level value
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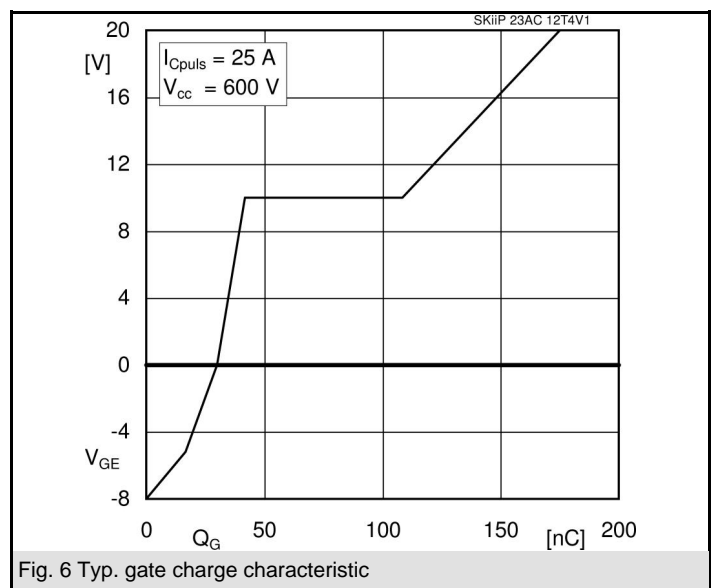
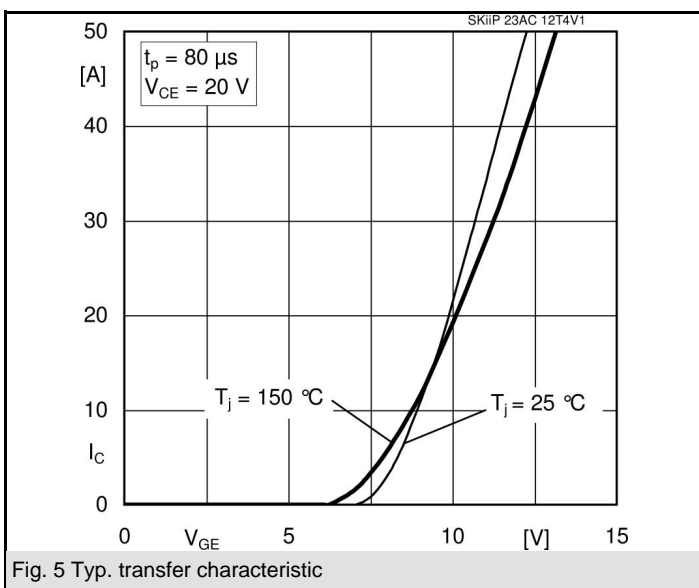
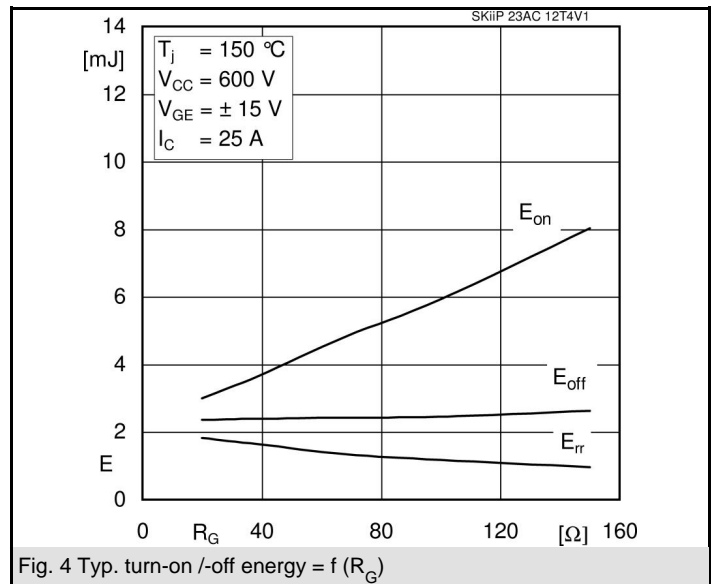
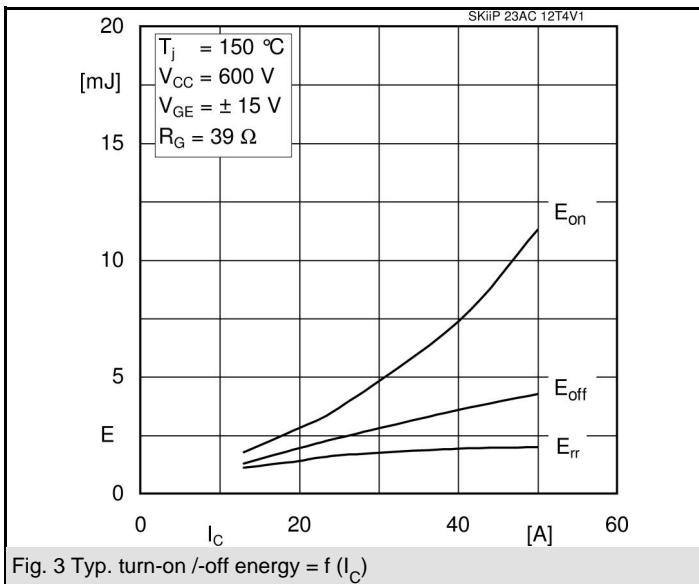
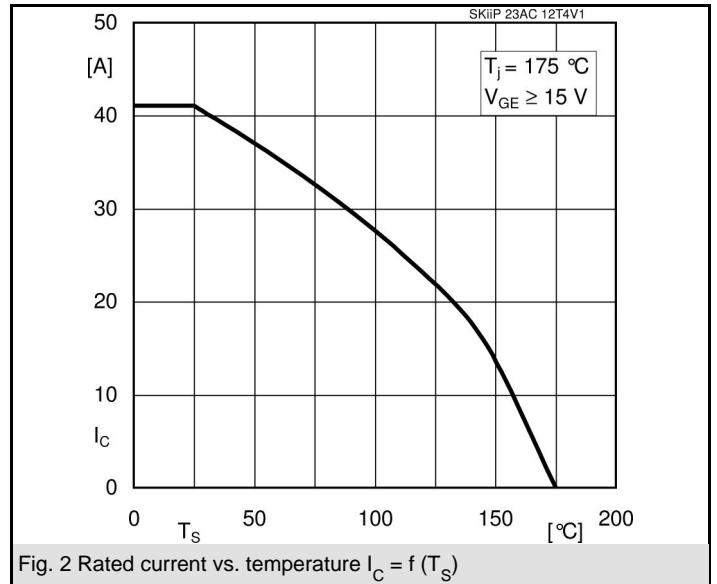
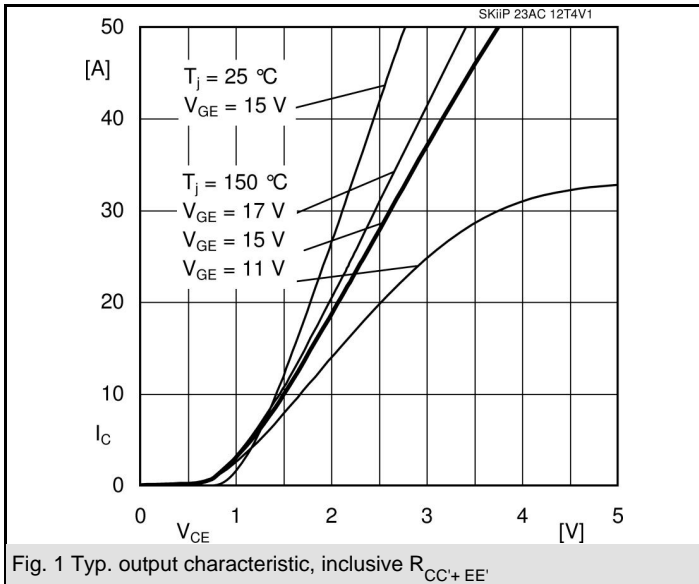


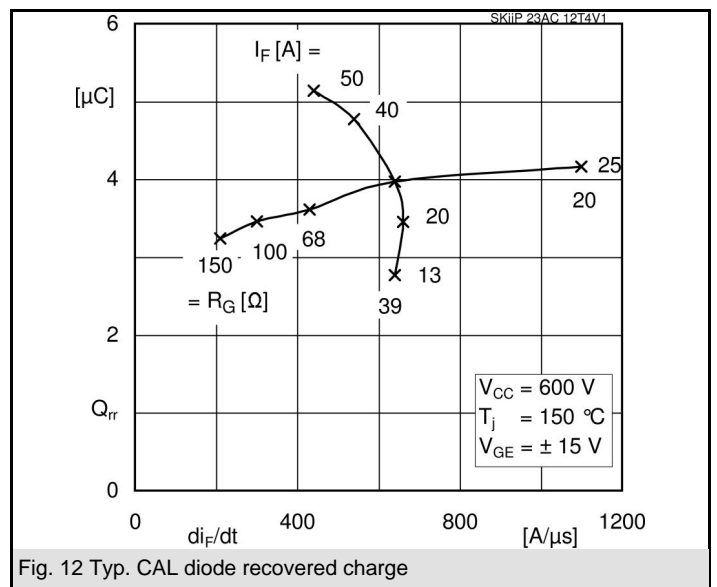
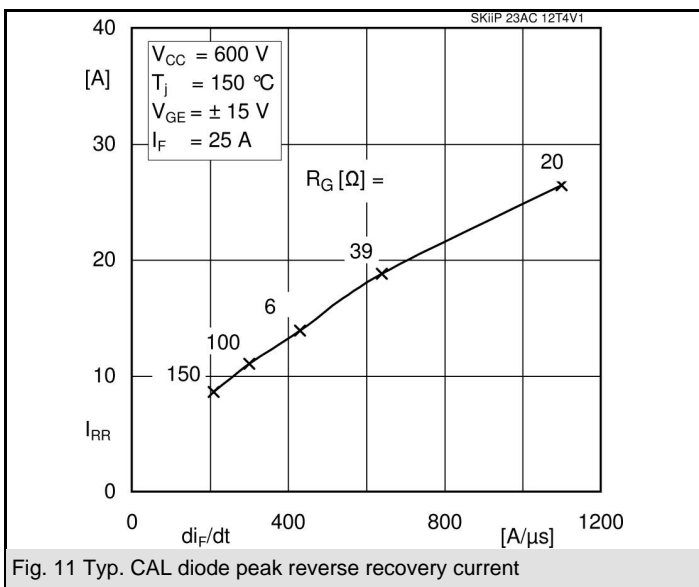
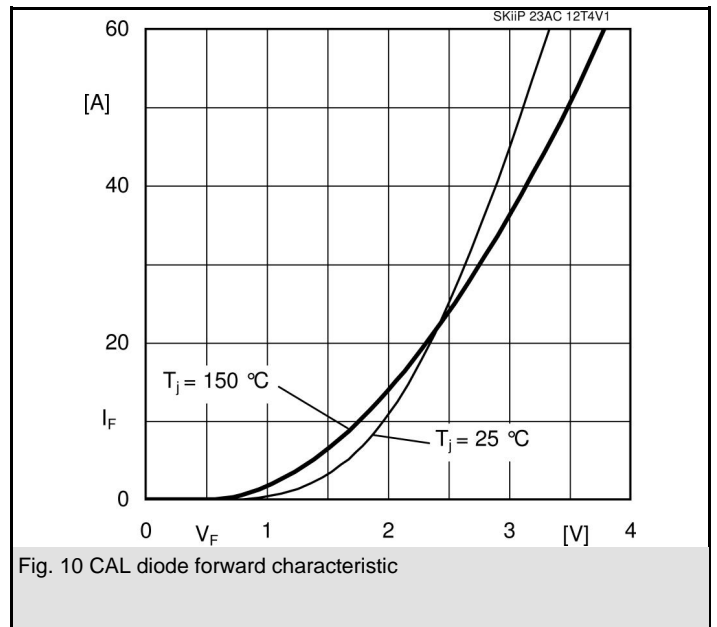
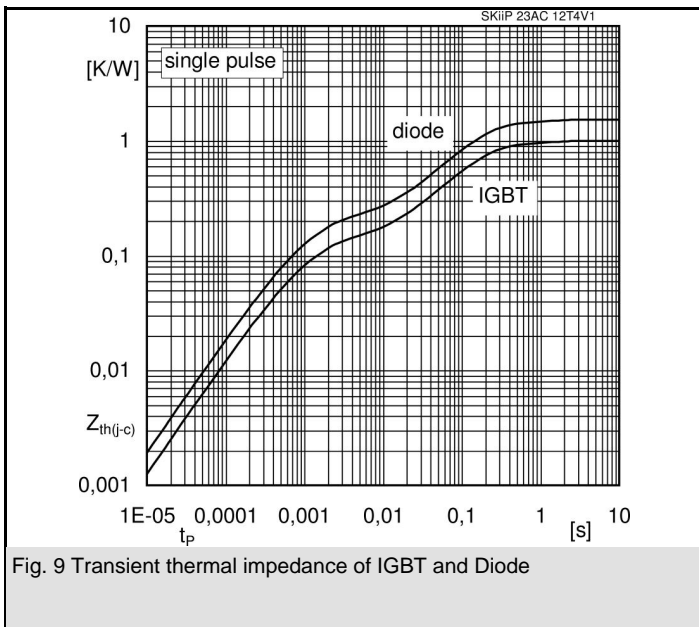
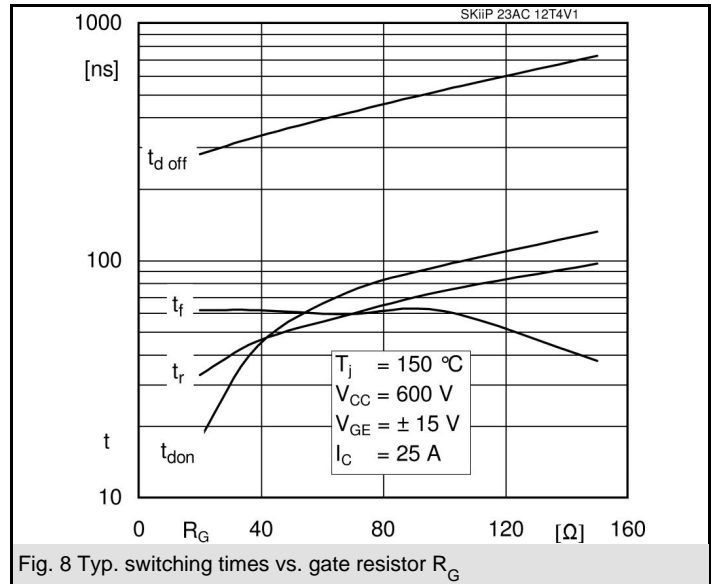
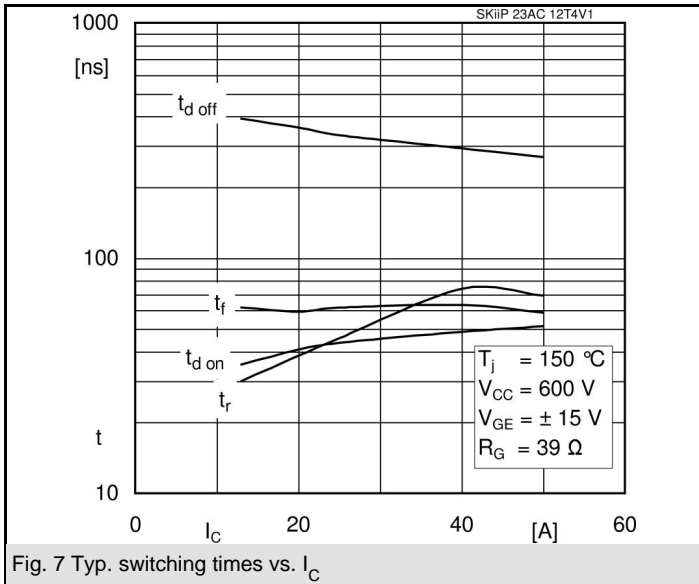
AC

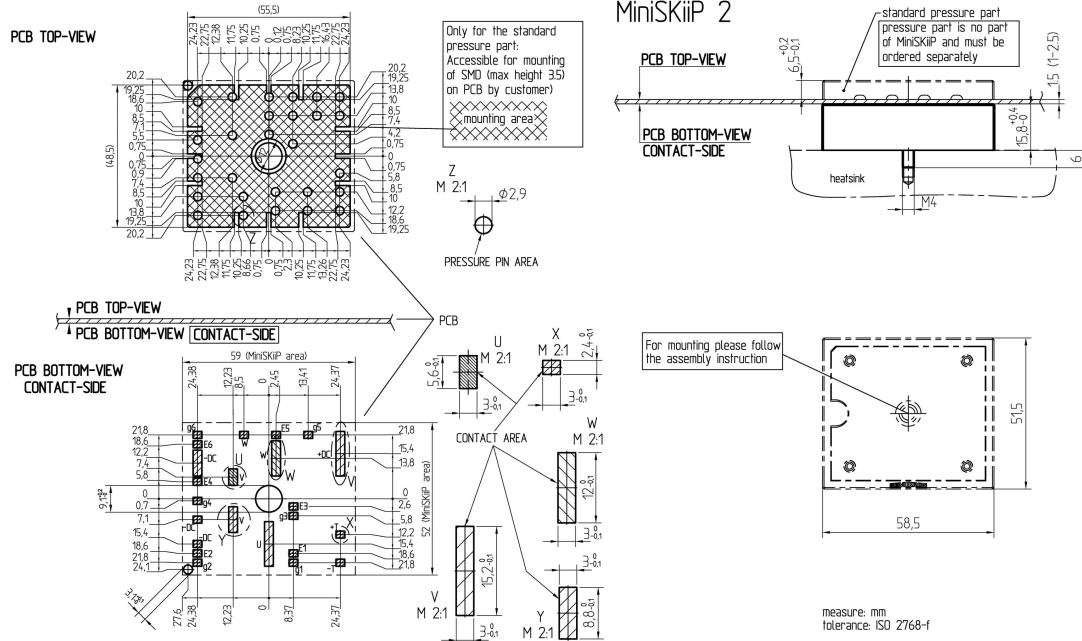
| Characteristics | | | | | | |
|---------------------------|---|---------------------------|---|------|-------|----|
| Symbol | Conditions | min. | typ. | max. | Units | |
| Inverse Diode | | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$ | | $T_j = 25^\circ\text{C}_{\text{chiplev.}}$ | 2,4 | 2,75 | V |
| | | | $T_j = 150^\circ\text{C}_{\text{chiplev.}}$ | 2,45 | 2,8 | V |
| V_{F0} | | | $T_j = 25^\circ\text{C}$ | 1,3 | 1,5 | V |
| | | | $T_j = 150^\circ\text{C}$ | 0,9 | 1,1 | V |
| r_F | | | $T_j = 25^\circ\text{C}$ | 44 | 50 | mΩ |
| | | | $T_j = 150^\circ\text{C}$ | 62 | 68 | mΩ |
| I_{RRM} | $I_F = 25 \text{ A}$ | $T_j = 150^\circ\text{C}$ | | 19 | A | |
| Q_{rr} | $di/dt = 640 \text{ A}/\mu\text{s}$ | | | 4 | μC | |
| E_{rr} | $V_{GE} = \pm 15 \text{ V}$ | | | 1,64 | mJ | |
| $R_{th(j-s)}$ | per diode | | | 1,52 | K/W | |
| M_s | to heat sink | | | 2 | 2,5 | Nm |
| w | | | | 65 | | g |
| Temperature sensor | | | | | | |
| R_{ts} | 3%, $T_r = 25^\circ\text{C}$ | | | 1000 | | Ω |
| R_{ts} | 3%, $T_r = 100^\circ\text{C}$ | | | 1670 | | Ω |

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

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

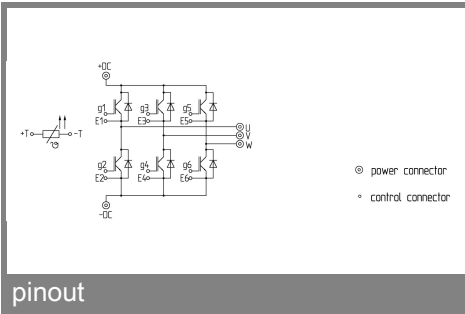






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case



pinout