

MiniSKiiP®1

3-phase bridge inverter

SKiiP 13AC12T4V1

Target Data

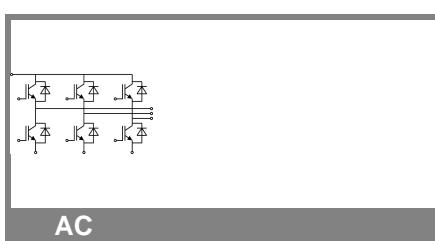
Features

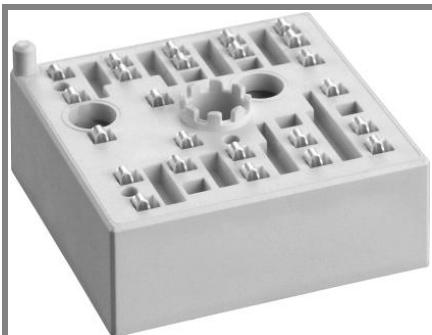
- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications

| 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 | $T_j = 175^\circ\text{C}$ $T_c = 25^\circ\text{C}$ $T_c = 70^\circ\text{C}$ | 44 | A | |
| | | 35 | A | |
| I_{CRM} | $I_{CRM} = 3 \times I_{Cnom}$ | 75 | A | |
| V_{GES} | | ± 20 | V | |
| t_{psc} | $V_{CC} = 600\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 150^\circ\text{C}$ $V_{CES} < 1200\text{ V}$ | 10 | μs | |
| Inverse Diode | | | | |
| I_F | $T_j = 175^\circ\text{C}$ $T_c = 25^\circ\text{C}$ $T_c = 70^\circ\text{C}$ | 30 | A | |
| | | 24 | A | |
| I_{FRM} | $I_{CRM} = 3 \times I_{Cnom}$ | 75 | A | |
| I_{FSM} | $t_p = 10\text{ ms}$; sin. $T_j = 150^\circ\text{C}$ | 100 | A | |
| Module | | | | |
| $I_{t(RMS)}$ | | 40 | 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. |
| IGBT | | | | |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$, $I_C = \text{mA}$ | 5 | 5,8 | 6,5 |
| I_{CES} | $V_{GE} = V$, $V_{CE} = V_{CES}$ | | | |
| V_{CE0} | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 1,1 | 1,3 | V |
| | | 1 | 1,2 | V |
| r_{CE} | $V_{GE} = 15\text{ V}$ | 30 | 30 | $\text{m}\Omega$ |
| | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 50 | 50 | $\text{m}\Omega$ |
| $V_{CE(sat)}$ | $I_{Cnom} = 25\text{ A}$, $V_{GE} = 15\text{ V}$ | 1,85 | 2,05 | V |
| | $T_j = 25^\circ\text{C}_{\text{chiplev.}}$ $T_j = 150^\circ\text{C}_{\text{chiplev.}}$ | 2,25 | 2,45 | V |
| C_{ies} | | | | nF |
| C_{oes} | | | | nF |
| C_{res} | $V_{CE} = \text{V}$, $V_{GE} = \text{V}$ | | | nF |
| R_{Gint} | $T_j = 25^\circ\text{C}$ | 0 | | Ω |
| $t_{d(on)}$ | | | | ns |
| t_r | $R_{Gon} =$ | | | ns |
| E_{on} | | $V_{CC} = 600\text{V}$ | | mJ |
| $t_{d(off)}$ | | $I_{Cnom} = 25\text{A}$ | | ns |
| t_f | | $T_j = 150^\circ\text{C}$ | | ns |
| E_{off} | | $V_{GE} = \pm 15\text{V}$ | | mJ |
| $R_{th(j-s)}$ | per IGBT | 0,96 | | K/W |





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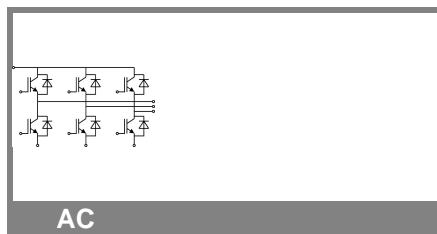
- Trench 4 IGBT's
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
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Typical Applications

| Characteristics | | min. | typ. | max. | Units |
|-----------------------------------|--|------------------------------------|-------------|-------------|--------------------------------------|
| Symbol | Conditions | | | | |
| Inverse Diode | | | | | |
| $V_F = V_{EC}$ | $I_{Fnom} = 25 \text{ A}; V_{GE} = 0 \text{ V}$ $T_j = 25 \text{ }^\circ\text{C}_{\text{chiplev.}}$ $T_j = 150 \text{ }^\circ\text{C}_{\text{chiplev.}}$ | | 2,4 2,45 | 2,75 2,8 | V V |
| V_{F0} | $T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$ | | 1,3 0,9 | 1,5 1,1 | V V |
| r_F | $T_j = 25 \text{ }^\circ\text{C}$ $T_j = 150 \text{ }^\circ\text{C}$ | | 44 62 | 50 68 | $\text{m}\Omega$ $\text{m}\Omega$ |
| I_{RRM} Q_{rr} E_{rr} | $I_{Fnom} = A$ $V_{GE} = \pm 15 \text{ V}$ | $T_j = 150 \text{ }^\circ\text{C}$ | | 1,88 | A μC mJ |
| $R_{th(j-s)}$ | per diode | | | 1,7 | K/W |
| M_s | to heat sink | | 2 | 2,5 | Nm |
| w | | | | 35 | 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.

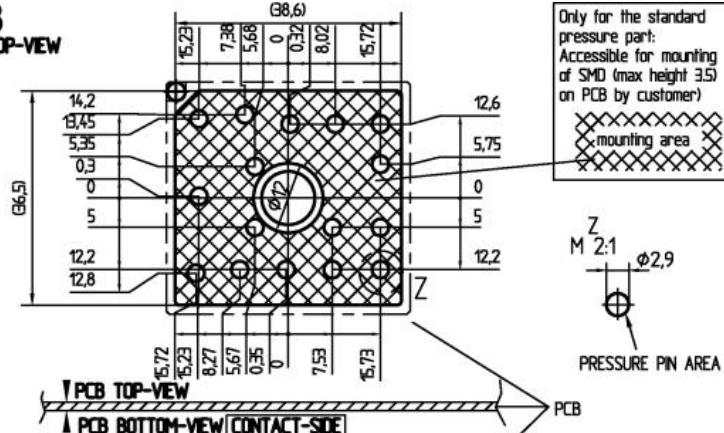
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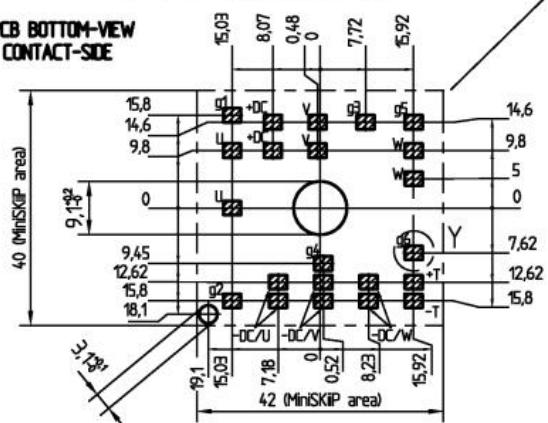
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UL recognized file

PCB
PCB TOP-VIEW

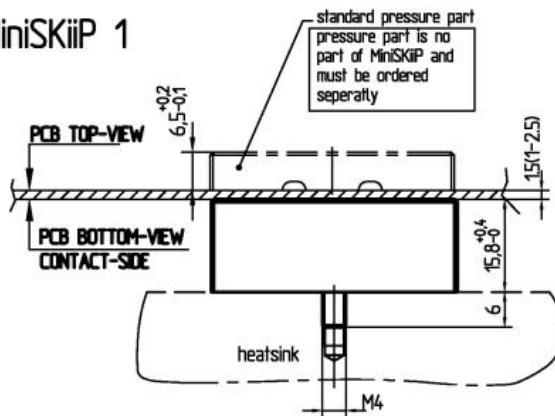


PCB BOTTOM-VIEW
CONTACT-SIDE



MiniSKiiP 1

no. E 63 532



case

