



SEMITEP® 3

3-phase bridge inverter

SK 35 GD 065 ET

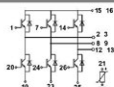
Target Data

Features

- Compact design
- One screw mounting
- Heat transfer and isolation through direct copper bonded aluminum oxide ceramic (DCB)
- Ultrafast NPT technology IGBT
- CAL Technology FWD
- Integrated NTC temperature sensor

Typical Applications

- Inverter



GD - ET

| Absolute Maximum Ratings | | $T_s = 25^\circ\text{C}$, unless otherwise specified | | |
|----------------------------------|---|---|------------------|--|
| Symbol | Conditions | Values | Units | |
| IGBT - Inverter, Chopper | | | | |
| V_{CES} | | 600 | V | |
| I_C | $T_s = 25 (80)^\circ\text{C}$ | 45 (33) | A | |
| I_{CM} | $T_s = 25 (80)^\circ\text{C}$, $t_p \leq 1 \text{ ms}$ | 90 (66) | A | |
| V_{GES} | | ± 20 | V | |
| T_j | | -40 ... +150 | $^\circ\text{C}$ | |
| Diode - Inverter, Chopper | | | | |
| I_F | $T_s = 25 (80)^\circ\text{C}$ | 36 (24) | A | |
| $I_{FM} = -I_{CM}$ | $T_s = 25 (70)^\circ\text{C}$, $t_p \leq 1 \text{ ms}$ | 80 (56) | A | |
| T_j | | -40 ... +150 | $^\circ\text{C}$ | |
| Rectifier | | | | |
| V_{RRM} | | | V | |
| I_{FAV} / I_{TAV} | $T_s = ^\circ\text{C}$ | | A | |
| I_{FSM} / I_{TSM} | $t_p = \text{ms}$, \sin^2 , $T_j = ^\circ\text{C}$ | | A | |
| I_T^2 | $t_p = \text{ms}$, \sin^2 , $T_j = ^\circ\text{C}$ | | A ² s | |
| T_j | | | $^\circ\text{C}$ | |
| T_{sol} | Terminals, 10s | 260 | $^\circ\text{C}$ | |
| T_{stg} | | -40 ... +125 | $^\circ\text{C}$ | |
| V_{fwd} | AC, 1 min. / 1 s | 2500 / 3000 | V | |

| Characteristics | | $T_s = 25^\circ\text{C}$, unless otherwise specified | | | |
|----------------------------------|--|---|-----------|-----------|---------------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT - Inverter, Chopper | | | | | |
| V_{CEsat} | $I_C = 50 \text{ A}$, $T_j = 25 (125)^\circ\text{C}$ | | 2 (2,2) | 2,5 (2,7) | V |
| $V_{GE(th)}$ | $V_{GE} = V_{CE}$, $I_C = 2 \text{ mA}$ | 3 | 4 | 5 | V |
| $V_{CE(TO)}$ | $T_j = 25^\circ\text{C}$ (125) $^\circ\text{C}$ | | 1,2 (1,1) | 1,3 (1,2) | V |
| r_T | $T_j = 25^\circ\text{C}$ (125) $^\circ\text{C}$ | | 16 (22) | 24 (30) | m Ω |
| C_{ies} | $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 2,7 | | nF |
| C_{oes} | $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 0,8 | | nF |
| C_{ms} | $V_{CE} = 25 \text{ V}$, $V_{GE} = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 0,6 | | nF |
| $R_{\theta(j-s)}$ | per IGBT | | | 1 | K/W |
| $t_{(on)}$ | under following conditions | | 35 | | ns |
| t_r | $V_{CC} = 300 \text{ V}$, $V_{GE} = \pm 15 \text{ V}$ | | 35 | | ns |
| $t_{(off)}$ | $I_C = 50 \text{ A}$, $T_j = 125^\circ\text{C}$ | | 240 | | ns |
| t_f | $R_{Gon} = R_{Goff} = 15 \Omega$ | | 25 | | ns |
| E_{on} | inductive load | | 1,3 | | mJ |
| E_{off} | | | 0,6 | | mJ |
| Diode - Inverter, Chopper | | | | | |
| $V_F = V_{EC}$ | $I_F = 50 \text{ A}$, $T_j = 25 (125)^\circ\text{C}$ | | 1,9 (1,9) | 2,3 (2,4) | V |
| $V_{(TO)}$ | $T_j = 25^\circ\text{C}$ (125) $^\circ\text{C}$ | | 1 (0,9) | 1,1 | V |
| r_T | $T_j = 25^\circ\text{C}$ (125) $^\circ\text{C}$ | | 18 (20) | 24 (28) | m Ω |
| $R_{\theta(j-s)}$ | per diode | | | 1,7 | K/W |
| I_{RRM} | under following conditions | | 57 | | A |
| O_{rr} | $I_F = 50 \text{ A}$, $V_R = 300 \text{ V}$ | | 4,6 | | μC |
| E_{rr} | $V_{GE} = 0 \text{ V}$, $T_j = 125^\circ\text{C}$ | | 0,9 | | mJ |
| | $di_{F,th} = 2400 \text{ A}/\mu\text{s}$ | | | | |
| Diode rectifier | | | | | |
| V_F | $I_F = \text{A}$, $T_j = 25^\circ\text{C}$ | | | | V |
| $V_{(TO)}$ | $T_j = ^\circ\text{C}$ | | | | V |
| r_T | $T_j = ^\circ\text{C}$ | | | | m Ω |
| $R_{\theta(j-s)}$ | per diode | | | | K/W |
| Temperature sensor | | | | | |
| R_{ts} | 5 %, $T_s = 25 (100)^\circ\text{C}$ | | 5000(493) | | Ω |
| Mechanical data | | | | | |
| w | | | 30 | | g |
| M_s | Mounting torque | | | 2,5 | Nm |

