



SEMITRANS® 2N

SiC Rectifier Diode Module

SKKD80S12

Features*

- SiC Schottky diode
- Low inductance case
- Heat transfer through aluminium oxide ceramic insulated metal baseplate
- UL recognized, file no. E63532

Typical Applications

- Uncontrollable rectifiers for DC/DC converters
- High frequency rectifier applications

Remarks

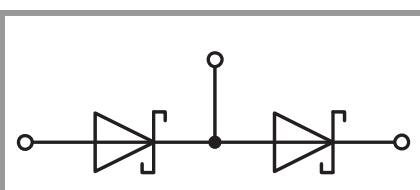
Recommended $T_{j,op} = -40 \dots +150^{\circ}\text{C}$

Absolute Maximum Ratings

| Symbol | Conditions | | Values | Unit |
|-------------------|--|-------------------------|-------------|------------------|
| Diode | | | | |
| I _{FAV} | T _j = 175 °C | T _c = 85 °C | 68 | A |
| | | T _c = 100 °C | 61 | A |
| I _{FRM} | | | 168 | A |
| I _{FM} | PW = 10μs, square, T _j = 25°C | | 1116 | A |
| I _{FSM} | t _p = 10 ms | T _j = 25 °C | 370 | A |
| | | T _j = 150 °C | 258 | A |
| i ² t | t _p = 10 ms | T _j = 25 °C | 684 | A ² s |
| | | T _j = 150 °C | 333 | A ² s |
| V _{RSM} | T _j = 25°C | | 1200 | V |
| V _{RRM} | T _j = 25°C | | 1200 | V |
| T _j | | | -40 ... 175 | °C |
| Module | | | | |
| T _{stg} | | | -40 ... 125 | °C |
| V _{isol} | a.c.; 50 Hz; r.m.s. | 1 min | 4000 | V |
| | | 1 s | 4800 | V |

Characteristics

| Symbol | Conditions | min. | typ. | max. | Unit |
|---------------|--|-----------------------------|-------|----------|------------------|
| Diode | | | | | |
| V_F | $I_F = 80\text{ A}$ | | | | |
| | chipelevel | | | 1.60 | V |
| | | | | 2.10 | V |
| V_{F0} | chipelevel | | | 1.05 | V |
| | | | | 0.90 | V |
| r_F | chipelevel | | | 6.9 | $\text{m}\Omega$ |
| | | | | 15 | $\text{m}\Omega$ |
| I_R | $V_R = V_{RRM}$, $T_j = 25^{\circ}\text{C}$ | | | 1.8 | mA |
| C_j | $f = 1\text{ MHz}$, $V_R = 800\text{ V}$, $T_j = 25^{\circ}\text{C}$ | | 0.340 | | nF |
| Q_c | $V_R = 800\text{ V}$, $di/dt = 500\text{ A}/\mu\text{s}$, $T_j = 25^{\circ}\text{C}$ | | 0.26 | | μC |
| $R_{th(j-c)}$ | per diode | | | 0.36 | K/W |
| | per module | | | 0.18 | K/W |
| Module | | | | | |
| L_{CE} | | | 20 | | nH |
| $R_{th(c-s)}$ | per diode ($\lambda_{grease} = 0.81\text{ W}/(\text{m}^{\circ}\text{K})$) | | 0.08 | | K/W |
| | per module ($\lambda_{grease} = 0.81\text{ W}/(\text{m}^{\circ}\text{K})$) | | 0.04 | | K/W |
| $R_{CC'+EE'}$ | measured | $T_c = 25^{\circ}\text{C}$ | 0.65 | | $\text{m}\Omega$ |
| | per diode | $T_c = 125^{\circ}\text{C}$ | 1.0 | | $\text{m}\Omega$ |
| M_s | to heatsink M6 | 3.0 | | 5.0 | Nm |
| M_t | to terminals M5 | 2.5 | | 5.0 | Nm |
| a | | | | 5 * 9.81 | m/s^2 |
| w | | | | 160 | g |



SKKD

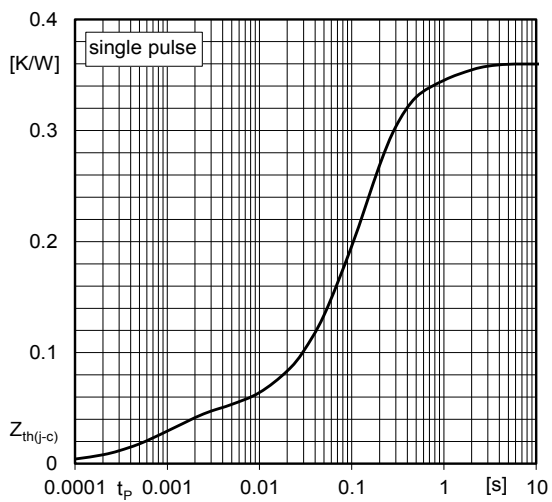


Fig. 1: Transient thermal impedance vs. time

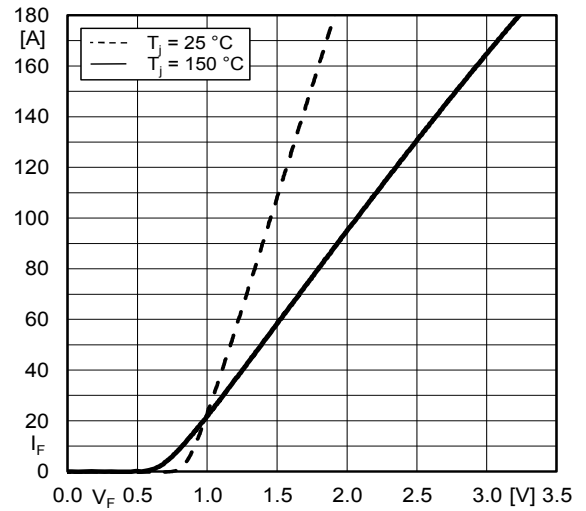


Fig. 2: Typical forward characteristic (chip level)

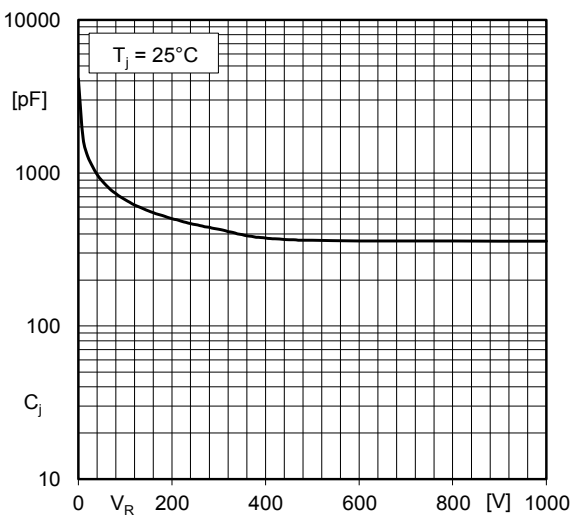
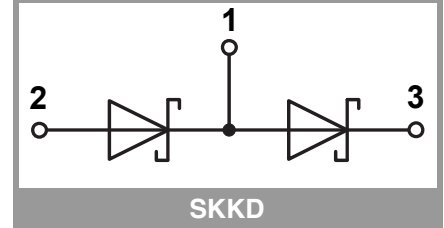
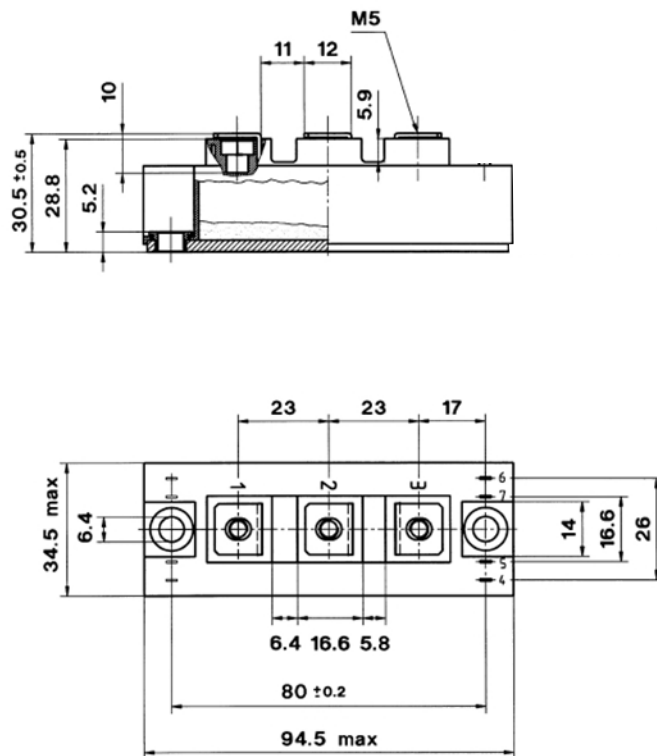


Fig. 3: Typ. capacitance-voltage charact. (1 MHz)



SEMITRANS 2N

This is an electrostatic discharge sensitive device (ESDS) due to international standard IEC 61340.*

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