



## Silicon Carbide Schottky Diode

### Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI

## Electrical Characteristics (Per Leg)

| PARAMETER                 | SYMBOL | UNIT    | TEST CONDITIONS  | Typ. | Max. |
|---------------------------|--------|---------|--|------|------|
| Forward voltage drop      | $V_F$  | V       | $I_F=20A, T_j=25^\circ C$                                      | 1.34 | 1.55 |
|                           |        |         | $I_F=20A, T_j=175^\circ C$                                     | 1.86 | 2.70 |
| Reverse leakage current   | $I_R$  | $\mu A$ | $V_R=1200V, T_j=25^\circ C$                                    | 0.5  | 25   |
|                           |        |         | $V_R=1200V, T_j=175^\circ C$                                   | 5    | -    |
| Total capacitive charge   | $Q_C$  | nC      | $V_R=800V, T_j=25^\circ C$ ,<br>$Q_C = \int_0^{V_R} I_C(V) dV$ | 114  | -    |
| Total capacitance         | C      | pF      | $V_R=0V, f=1MHz$   | 1552 | -    |
|                           |        |         | $V_R=400V, f=1MHz$   | 107  | -    |
|                           |        |         | $V_R=800V, f=1MHz$   | 79   | -    |
| Capacitance Stored Energy | $E_C$  | $\mu J$ | $V_R=800V$   | 29.3 | -    |

## Thermal Characteristics $T_a=25$ Unless otherwise specified

| PARAMETER          | SYMBOL    | UNIT         | VALUE                                      |
|--------------------|-----------|--------------|--|
| Thermal resistance | $R_{j-c}$ | $^\circ C/W$ | 0.47 <sup>(1)</sup><br>0.24 <sup>(2)</sup> |

<sup>(1)</sup>Per Leg, <sup>(2)</sup>Per Device

## Typical Characteristics (Per Leg)

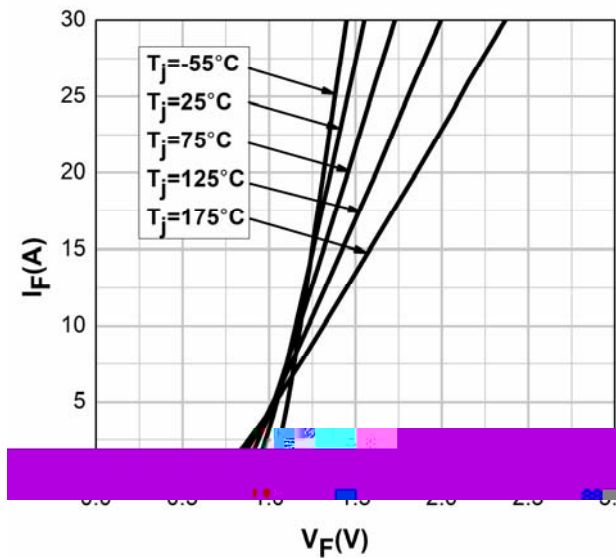


Figure 1. Forward Characteristics

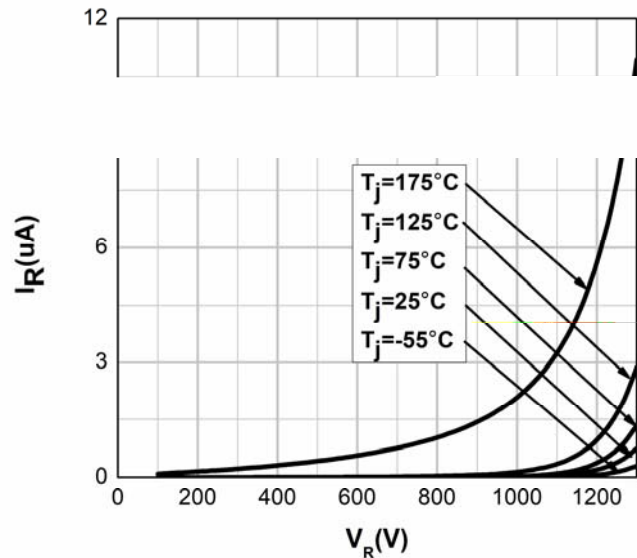


Figure2. Reverse Characteristic

Figure 3. Capacitance vs. Reverse Voltage

Figure 4. Total Capacitance Charge vs. Reverse Voltage

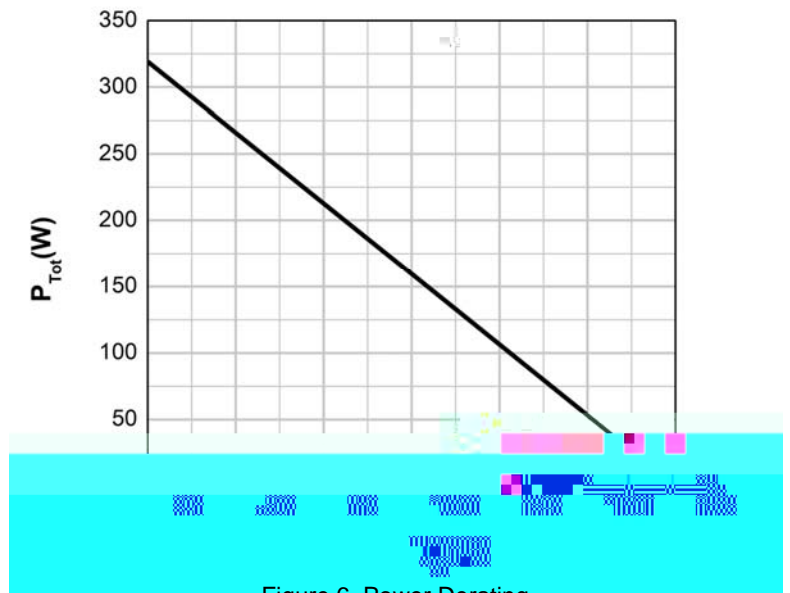


Figure 5. Capacitance Stored Energy

Figure 6. Power Derating

Figure 7. Current Derating

## Typical Characteristics (Device)

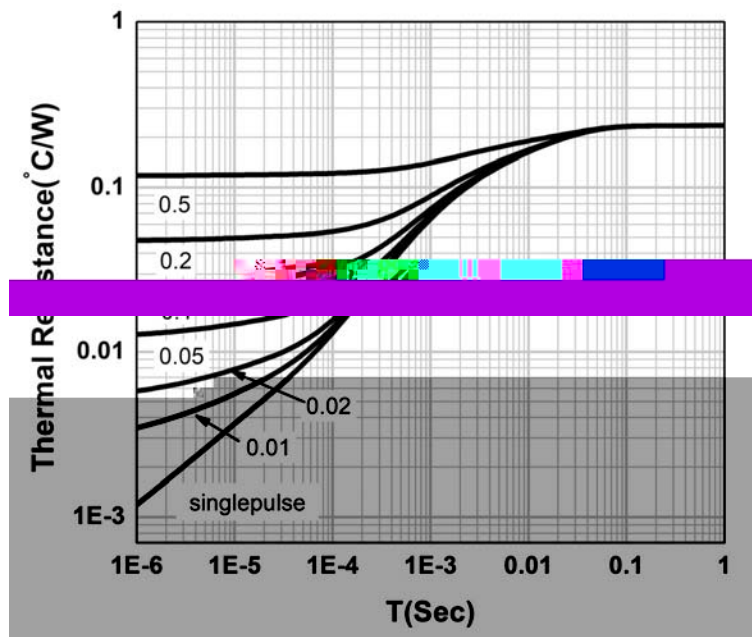
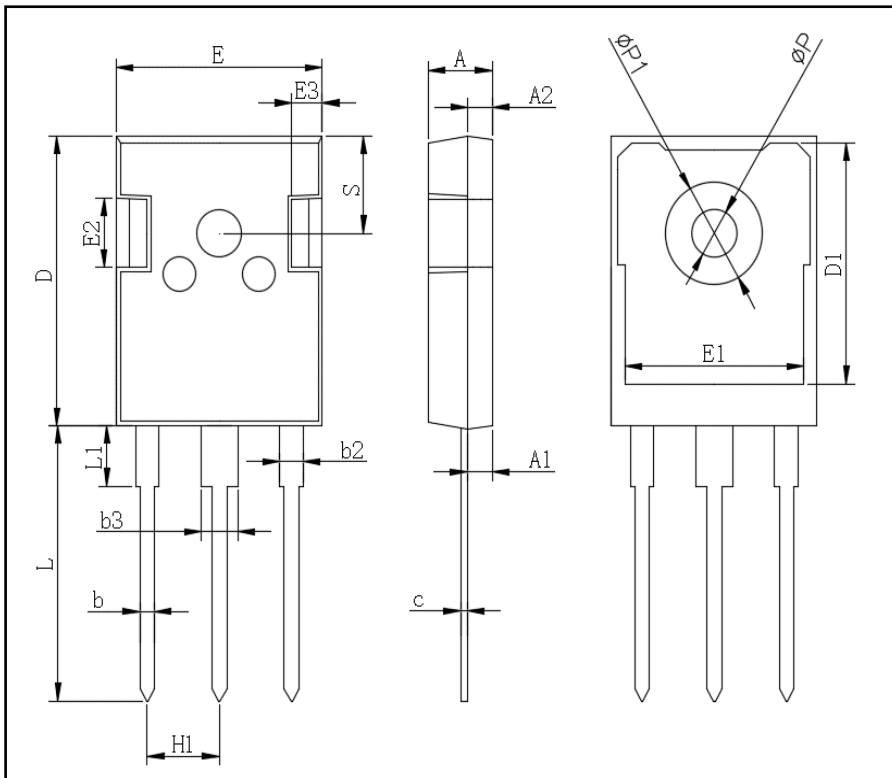


Figure 8. Transient Thermal Impedance

## Outline Dimensions



| TO-247AB |         |       |
|----------|---------|-------|
| Dim      | Min     | Max   |
| A        | 4.80    | 5.20  |
| A1       | 2.21    | 2.61  |
| A2       | 1.85    | 2.15  |
| b        | 1.0     | 1.4   |
| b2       | 1.91    | 2.21  |
| C        | 0.5     | 0.7   |
| D        | 20.70   | 21.30 |
| D1       | 16.25   | 16.85 |
| E        | 15.50   | 16.10 |
| E1       | 13.0    | 13.6  |
| E2       | 4.80    | 5.20  |
| E3       | 2.30    | 2.70  |
| L        | 19.62   | 20.22 |
| L1       | -       | 4.30  |
| P        | 3.40    | 3.80  |
| P1       |         | 7.30  |
| S        | 6.15TYP |       |
| H1       | 5.44TYP |       |
| b3       | 2.80    | 3.20  |



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