

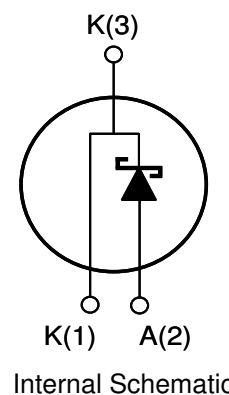
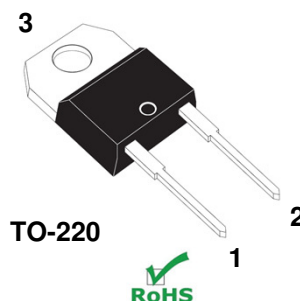
## Silicon Carbide Power Schottky Diode

### Features:

- Positive Temperature Coefficient for Ease of Paralleling
- Temperature Independent Switching Behavior
- 175 °C Maximum Operating Temperature
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage

### Applications:

- Solar Inverter
- SMPS
- Power Factor Correction
- Induction Heating
- UPS
- Motor Drive



| Product Summary |      |    |
|-----------------|------|----|
| $V_{DC}$        | 1200 | V  |
| $I_F$           | 5    | A  |
| $Q_c$           | 20   | nC |

## MAXIMUM RATINGS

| Parameter                            | Symbol         | Conditions                                                | Value       | Unit               |
|--------------------------------------|----------------|-----------------------------------------------------------|-------------|--------------------|
| Repetitive Peak Reverse Voltage      | $V_{RRM}$      | $T_J = 25\text{ }^{\circ}\text{C}$                        | 1200        | V                  |
| DC Blocking Voltage                  | $V_{DC}$       |                                                           | 1200        |                    |
| Continuous Forward Current           | $I_F$          | $T_C < 160\text{ }^{\circ}\text{C}$                       | 5           | A                  |
|                                      |                | $T_C < 100\text{ }^{\circ}\text{C}$                       | 12          |                    |
| Peak Repetitive Forward Current      | $I_{FRM}$      | $T_C = 125\text{ }^{\circ}\text{C}$ , $D = 0.1$           | 30          |                    |
| Non-Repititive Forward Surge Current | $I_{FSM}$      | $T_C = 25\text{ }^{\circ}\text{C}$ , $t_p = 10\text{ ms}$ | 26          |                    |
|                                      |                | $T_C = 25\text{ }^{\circ}\text{C}$ , $t_p = 10\text{ us}$ | 100         |                    |
| Power Dissipation                    | $P_{TOT}$      | $T_C = 25\text{ }^{\circ}\text{C}$                        | 115         | W                  |
| Operating and Storage Temperature    | $T_j, T_{stg}$ |                                                           | -55 to +175 | $^{\circ}\text{C}$ |

# THERMAL CHARACTERISTICS

| Parameter                            | Symbol       | Conditions | Value |      |     | Unit                          |
|--------------------------------------|--------------|------------|-------|------|-----|-------------------------------|
|                                      |              |            | Min   | Typ  | Max |                               |
| Thermal Resistance, junction-case    | $R_{th\ JC}$ |            | -     | 1.31 | -   | $^{\circ}\text{C} / \text{W}$ |
| Thermal Resistance, junction-ambient | $R_{th\ JA}$ |            | -     | 62   | -   |                               |

# ELECTRICAL CHARACTERISTICS, at $T_j = 25\text{ C}$ unless otherwise stated

| Parameter               | Symbol | Conditions                                                                    | Value |     |     | Unit          |
|-------------------------|--------|-------------------------------------------------------------------------------|-------|-----|-----|---------------|
|                         |        |                                                                               | Min   | Typ | Max |               |
| Forward Voltage         | $V_F$  | $I_F = 5\text{ A}, T_j = 25\text{ }^{\circ}\text{C}$                          | -     | 1.6 | 1.8 | V             |
|                         |        | $I_F = 5\text{ A}, T_j = 175\text{ }^{\circ}\text{C}$                         | -     | 2.4 | 2.9 |               |
| Reverse Current         | $I_R$  | $V_R = 1200\text{ V}, T_j = 25\text{ }^{\circ}\text{C}$                       | -     | 5   | 50  | $\mu\text{A}$ |
|                         |        | $V_R = 1200\text{ V}, T_j = 175\text{ }^{\circ}\text{C}$                      | -     | 100 | -   |               |
| Total Capacitive Charge | $Q_C$  | $V_R = 400\text{ V}, I_F = 5\text{ A},$<br>$di/dt = 500\text{ A}/\mu\text{s}$ | -     | 20  | -   | nC            |
| Total Capacitance       | C      | $V_R = 1\text{ V}, f = 100\text{ kHz}$                                        | -     | 580 | -   | pF            |
|                         |        | $V_R = 300\text{ V}, f = 100\text{ kHz}$                                      | -     | 24  | -   |               |
|                         |        | $V_R = 600\text{ V}, f = 100\text{ KHz}$                                      | -     | 17  | -   |               |

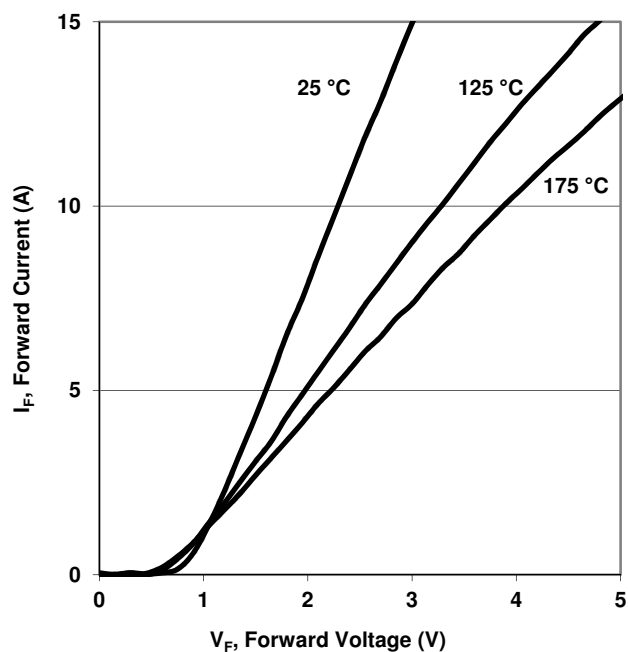


Figure 1. Typ. Forward Characteristics  
 $I_F = f(V_F)$ ; parameter:  $T_j$

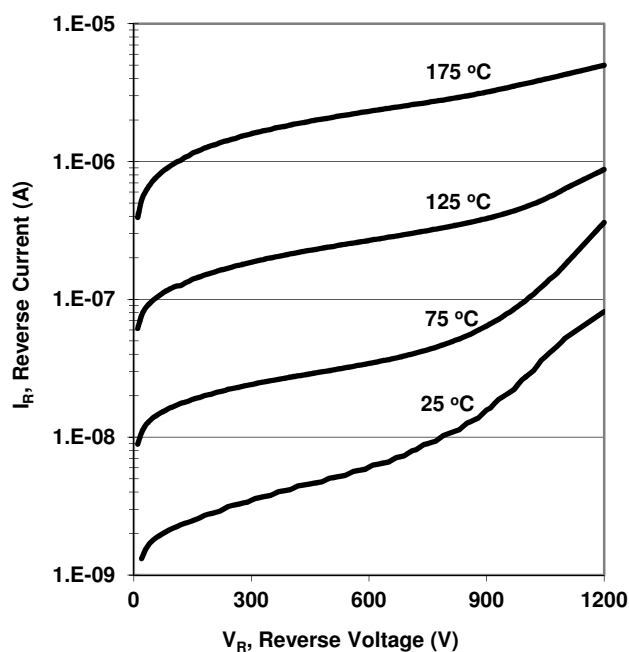


Figure 2. Typ. Reverse Characteristics  
 $I_R = f(V_R)$

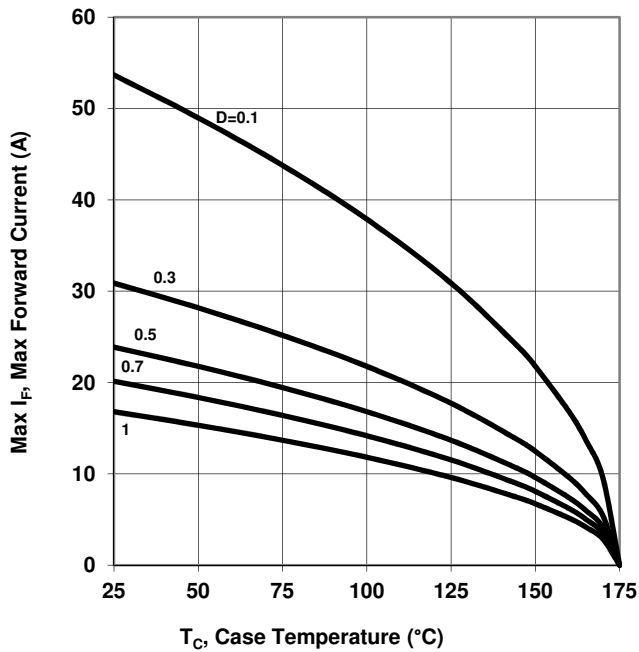


Figure 3. Max Forward Current  
 $I_F = f(T_C); T_j < 175\text{ }^{\circ}\text{C}; R_{th,jc(max)}$

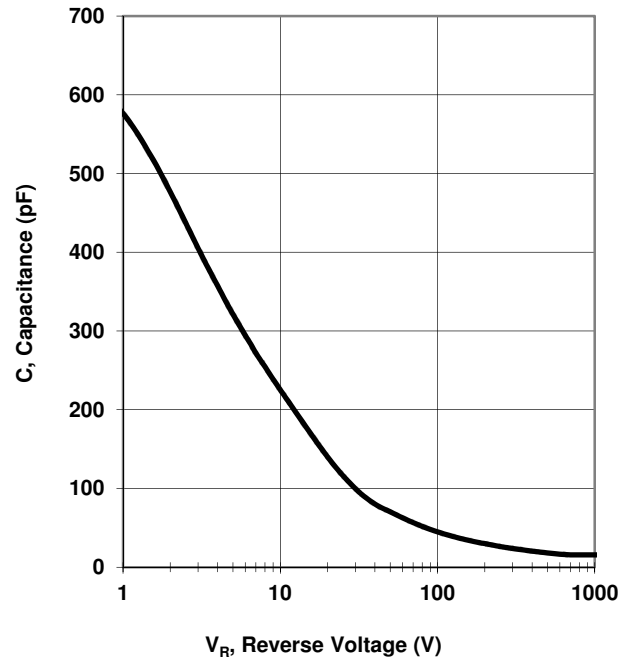


Figure 4. Typ. Capacitance vs.  
Reverse Voltage  
 $C = f(V_R); T_C = 25\text{ }^{\circ}\text{C}; f = 1\text{ MHz}$

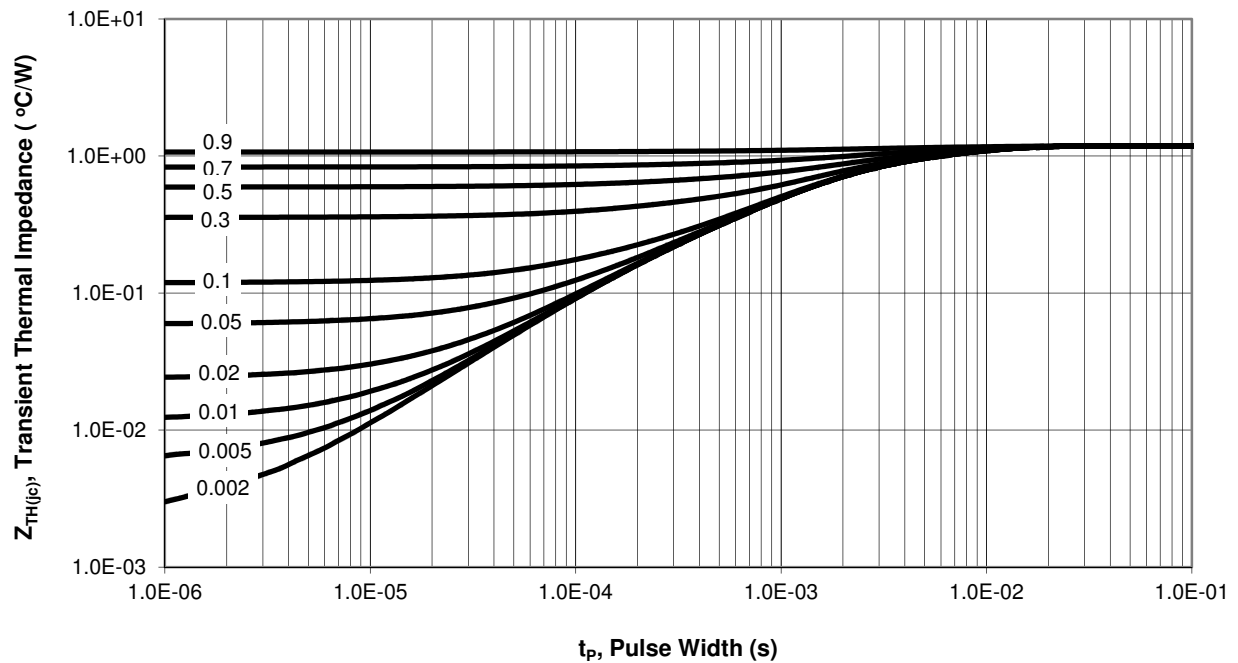
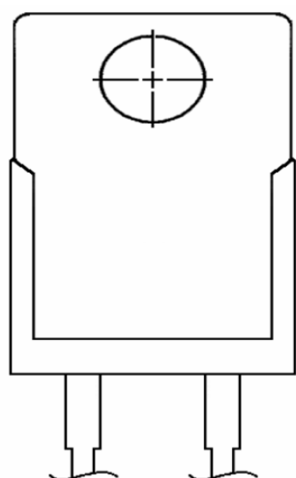
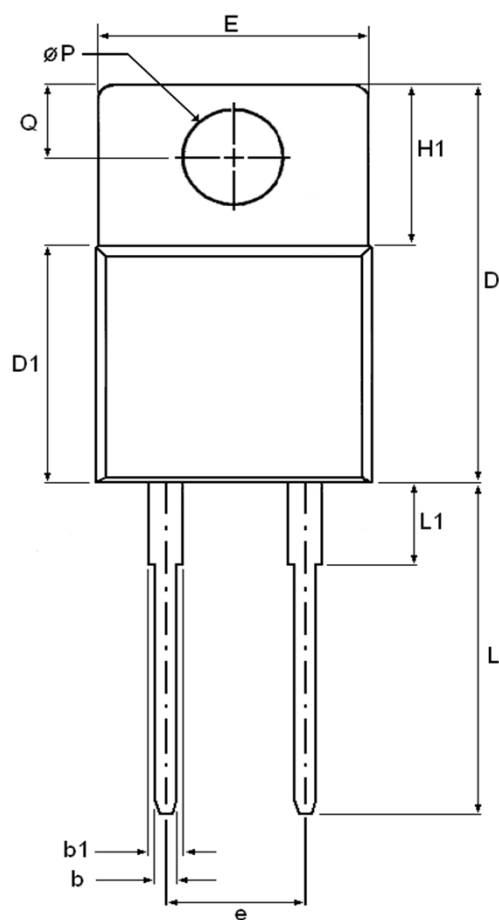


Figure 5. Transient Thermal Impedance  
 $Z_{th(jc)} = f(t_P); \text{parameter: Duty Ratio}$

**Package Dimensions: TO-220**



| DIM | MILLIMETERS |        | INCHES |       |
|-----|-------------|--------|--------|-------|
|     | MIN         | MAX    | MIN    | MAX   |
| A   | 4.191       | 4.699  | 0.165  | 0.185 |
| A1  | 2.387       | 2.489  | 0.094  | 0.098 |
| A2  | 1.219       | 1.321  | 0.048  | 0.052 |
| b   | 0.635       | 0.889  | 0.025  | 0.035 |
| b1  | 1.143       | 1.397  | 0.145  | 0.055 |
| c   | 0.458       | 0.635  | 0.018  | 0.025 |
| D   | 15.113      | 16.621 | 0.595  | 0.615 |
| D1  | 9.017       | 9.271  | 0.355  | 0.365 |
| e   | 5.080       |        | 0.200  |       |
| E   | 9.677       | 9.931  | 0.381  | 0.391 |
| H1  | 6.096       | 6.350  | 0.240  | 0.250 |
| L   | 12.700      | 12.954 | 0.500  | 0.510 |
| L1  | 3.048       | 3.302  | 0.120  | 0.130 |
| Q   | 2.540       | 3.048  | 0.100  | 0.120 |
| ØP  | 3.632       | 3.734  | 0.143  | 0.147 |

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