

SPP16065D1

650V Silicon Carbide Diode

Features

- 650-Volt Schottky Rectifier
- Shorter recovery time
- High-speed switching possible
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF

Benefits

- Higher safety margin against overvoltage
- Improved efficiency all load conditions
- Increased efficiency compared to Silicon Diode alternatives
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Applications

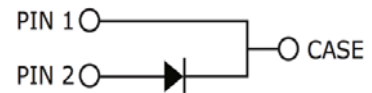
- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives
- HID Lighting

Package



Type : TO-220 -2lead

1、 Cathode 2、 Anode



Absolute Maximum Ratings $T_c = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | SPP16065D1 | Units |
|-----------|---|----------------|-------|
| VRRM | Repetitive Peak Reverse Voltage | 650 | V |
| VRSM | Surge Peak Reverse Voltage | 650 | V |
| VDC | DC Blocking Voltage | 650 | V |
| IF | Continuous Forward Current @Tc=25°C @Tc=135°C @Tc=150°C | 37 18 16 | A |
| IFRM | Repetitive Peak Forward Surge Current tp = 10 ms, Half Sine Wave @TC=25°C @TC=110°C | 110 70 | A |
| IFSM | Non-Repetitive Peak Forward Surge Current tp= 10 ms, Half Sine Wave @TC=25°C @TC=110°C | 160 146 | A |
| IFSM | Non-Repetitive Peak Forward Surge Current @TC=25°C, tp = 10 us, Half Sine Wave | 450 | A |
| Ptot | Power Dissipation @Tc=25°C @Tc=110°C | 159 69 | W |
| TJ , Tstg | Operating Junction and Storage Temperature | -55 to +175 | °C |

Electrical Characteristics

$T_C = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Test Conditions | Test Conditions | Min | Typ | Max | Unit |
|--------|---------------------------|--|-----|-----------------|------------|------|
| VF | Forward Voltage | IF=16A, TC=25° C IF=16A, TC=175° C | - | 1.5 2.1 | 1.8 3.0 | V |
| IR | Reverse Current | VR=650V, TC=25° C VR=650V, TC=175° C | - | 10 20 | 50 100 | μA |
| QC | Total Capacitive Charge | VR =400V, IF =16A TJ = 25° C $Q_C = \int_0^{V_r} C(V) dv$ | - | 41 | - | nC |
| C | Total Capacitance | VR =0V, TJ = 25° C, f=1MHz VR =200V, TJ = 25° C, f=1MHz VR =400V, TJ = 25° C, f=1MHz | - | 860 50 35 | - | pF |
| EC | Capacitance Stored Energy | VR=400V | - | 8.2 | - | μJ |

Thermal Characteristics

| Symbol | Parameter | Typ | Unit |
|--------|--|------|------|
| RθJC | Thermal Resistance from Junction to Case | 0.94 | °C/W |

Typical Characteristics

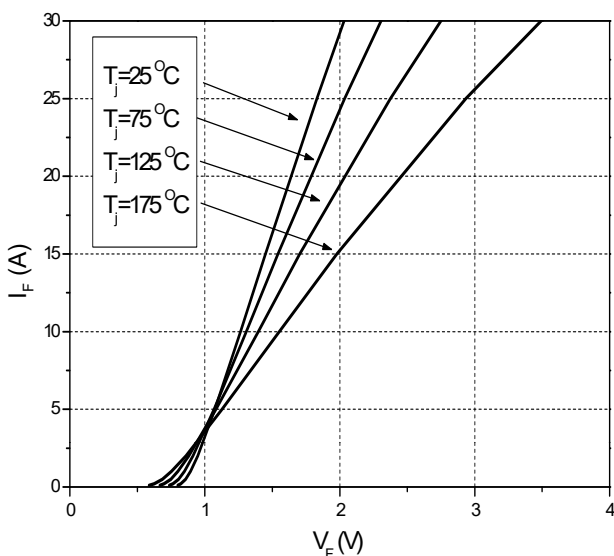


Figure 1. Forward Characteristics

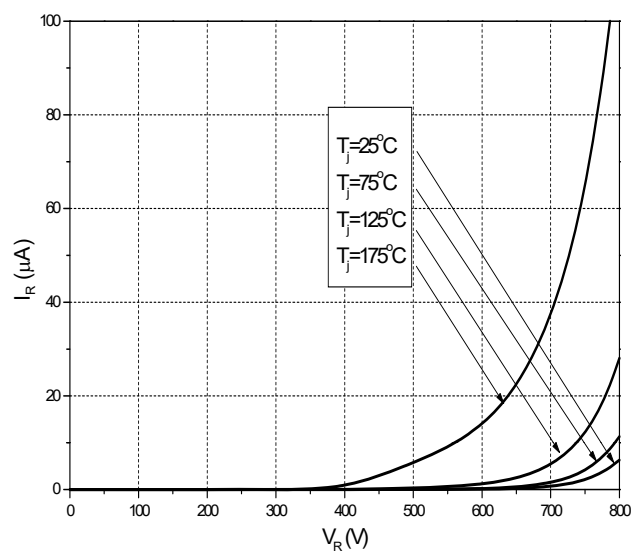


Figure 2. Reverse Characteristics

Typical Characteristics

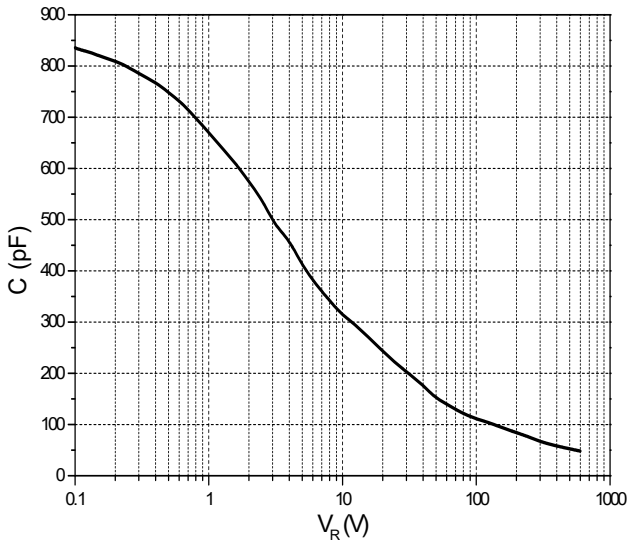


Figure 3. Capacitance vs. Reverse Voltage

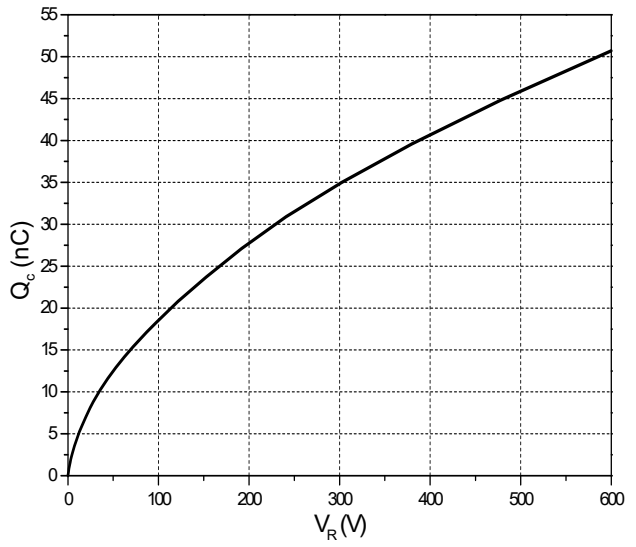


Figure 4. Total Capacitance Charge vs. Reverse Voltage

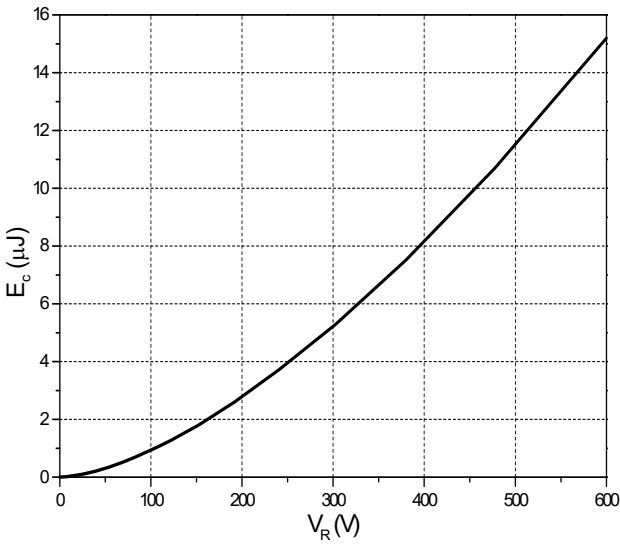


Figure 5. Capacitance Stored Energy

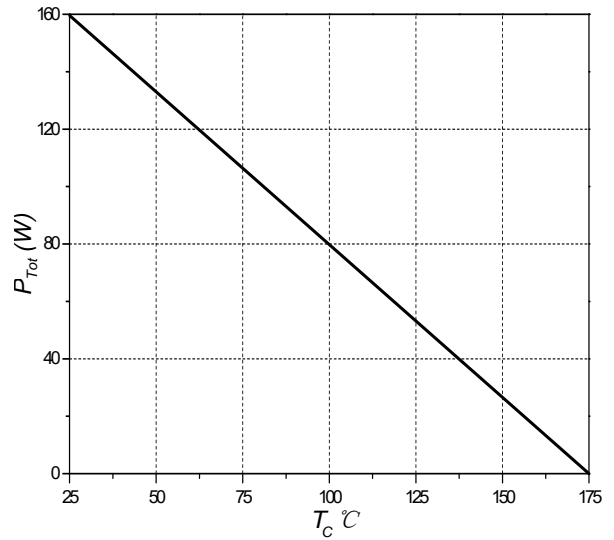


Figure 6. Power Derating

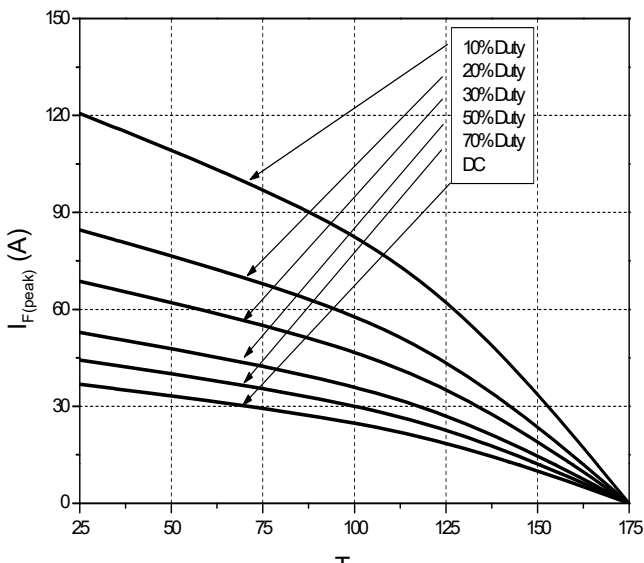
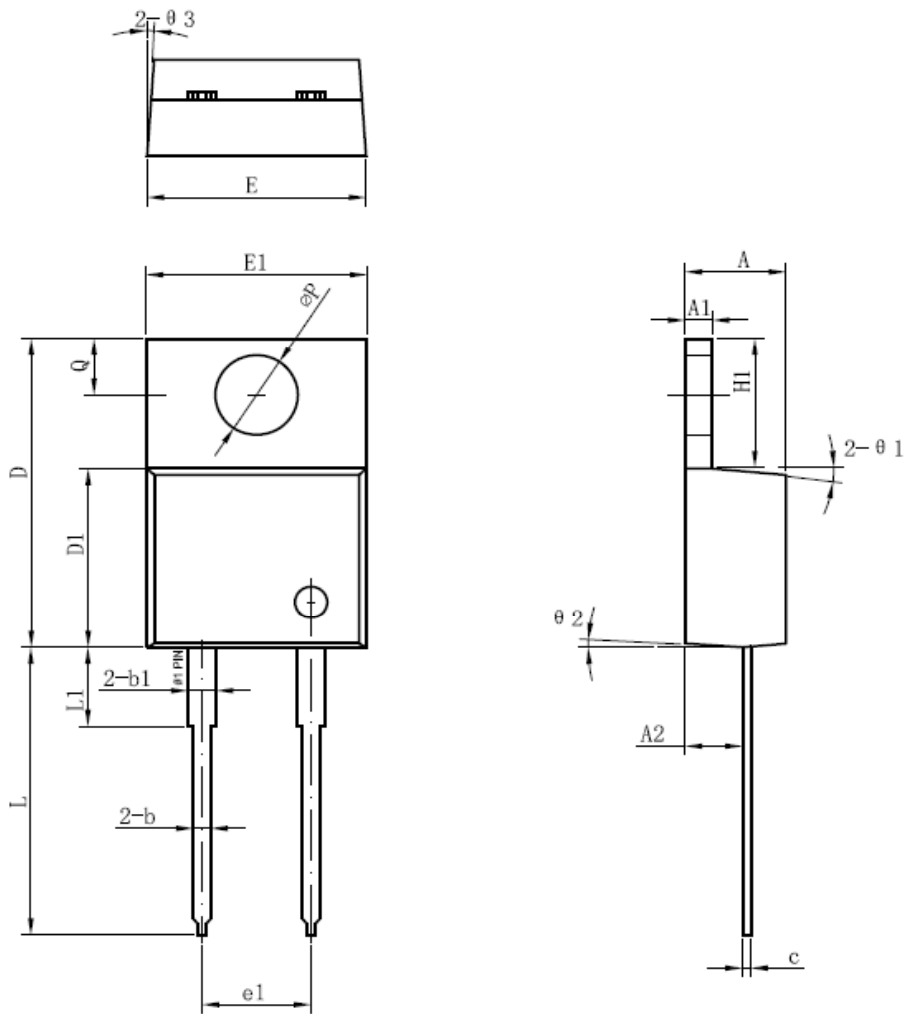


Figure 7. Current Derating

Package Dimensions TO-220-2Lead



| Symbol | Millimeters | | |
|------------|-------------|-------|-------|
| | Min. | Typ. | Max. |
| A | 4.55 | 4.70 | 4.85 |
| A1 | 1.17 | 1.27 | 1.37 |
| A2 | 2.59 | 2.69 | 2.89 |
| b | 0.71 | 0.81 | 0.96 |
| b1 | | 1.27 | |
| c | 0.36 | 0.38 | 0.61 |
| D | 14.64 | 14.94 | 15.24 |
| D1 | 8.55 | 8.70 | 8.85 |
| E | 10.01 | 10.16 | 10.31 |
| E1 | 9.98 | 10.18 | 10.38 |
| e1 | | 5.08 | |
| H1 | 6.04 | 6.24 | 6.44 |
| L | 13.00 | 13.86 | 14.08 |
| L1 | | 3.80 | |
| ϕP | 3.74 | 3.84 | 4.04 |
| Q | 2.54 | 2.74 | 2.94 |
| $\theta 1$ | | 5° | |
| $\theta 2$ | | 4° | |
| $\theta 3$ | | 4° | |

Marking Layout



1ST Line : Company logo

2nd Line : Date code

3rd Line : Device name