

# BCM120S02D2

## Silicon Carbide Schottky Diode

1200V, 2A

### Description

BCM120S02D2 utilizes Bestirpower’s advanced silicon carbide diode technology. This technology combines the benefits of excellent low forward voltage and robustness. Consequently, the family is suitable for application requiring high power efficiency

### Benefits

- Extremely fast switching
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability
- System efficiency improvement

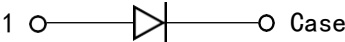
### Applications

- Solar inverter
- Power factor correction
- Data Center
- Switch mode power supply
- AC/DC converters

### Features

| $V_{RRM}$ | $I_F$ | $T_{J,max}$ | $Q_C$ |
|-----------|-------|-------------|-------|
| 1200 V    | 2 A   | 175 °C      | 12 nC |

- High surge current capability
- No reverse recovery
- Positive Temperature Coefficient
- Specified dv/dt ruggedness
- Halogen-free / RoHS compliant



### Absolute Maximum Ratings (T<sub>C</sub> = 25°C unless otherwise noted)

| Symbol         | Parameter                                  |                                          | Value       | Unit             |
|----------------|--------------------------------------------|------------------------------------------|-------------|------------------|
| $V_{RRM}$      | Repetitive Peak Reverse Voltage            |                                          | 1200        | V                |
| $I_F$          | Forward Current                            | $T_C = 25^{\circ}C$                      | 10          | A                |
|                |                                            | $T_C = 135^{\circ}C$                     | 5           | A                |
|                |                                            | $T_C = 166^{\circ}C$                     | 2           | A                |
| $I_{F,SM}$     | Non-Repetitive Forward Surge Current       | $T_C = 25^{\circ}C, t_p = 10\text{ ms}$  | 18          | A                |
|                |                                            | $T_C = 110^{\circ}C, t_p = 10\text{ ms}$ | 16          | A                |
| $I_{F,RM}$     | Repetitive Peak Forward Surge Current      | $T_C = 25^{\circ}C, t_p = 10\text{ ms}$  | 16          | A                |
| $I^2dt$ value  | $\int I^2 dt$                              | $T_C = 25^{\circ}C, t_p = 10\text{ ms}$  | 1.62        | A <sup>2</sup> s |
|                |                                            | $T_C = 110^{\circ}C, t_p = 10\text{ ms}$ | 1.28        | A <sup>2</sup> s |
| $P_{tot}$      | Power Dissipation                          | $T_C = 25^{\circ}C$                      | 83          | W                |
|                |                                            | $T_C = 110^{\circ}C$                     | 36          | W                |
|                |                                            | $T_C = 150^{\circ}C$                     | 14          | W                |
| $T_J, T_{STG}$ | Operating Junction and Storage Temperature |                                          | -55 to +175 | °C               |

Thermal Characteristics

| Symbol          | Parameter                                  | Value | Unit          |
|-----------------|--------------------------------------------|-------|---------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case, Typ. | 1.81  | $^{\circ}C/W$ |

Electrical Characteristics ( $T_C = 25^{\circ}C$  unless otherwise noted)

| Symbol   | Parameter                | Test Conditions                           | Min  | Typ  | Max  | Unit    |
|----------|--------------------------|-------------------------------------------|------|------|------|---------|
| $V_{DC}$ | DC blocking voltage      |                                           | 1200 | -    | -    | V       |
| $V_F$    | Forward Voltage          | $I_F=1A$                                  | -    | 1.17 | -    | V       |
|          |                          | $I_F=2A, T_C=25^{\circ}C$                 | -    | 1.38 | 1.60 |         |
|          |                          | $I_F=2A, T_C=175^{\circ}C$                | -    | 2.0  | -    |         |
| $I_R$    | Reverse Current          | $V_R = 1200\text{ V}, T_C = 25^{\circ}C$  | -    | 1.0  | 50   | $\mu A$ |
|          |                          | $V_R = 1200\text{ V}, T_C = 175^{\circ}C$ | -    | 4.0  | -    |         |
| $Q_C$    | Total Capacitive Charge  | $V_R = 800\text{ V}, T_C = 25^{\circ}C$   | -    | 12   | -    | nC      |
| C        | Total capacitance        | $V_R=1V, f=1MHZ$                          | -    | 125  | -    | pF      |
|          |                          | $V_R=400V, f=1MHZ$                        | -    | 12   | -    | pF      |
|          |                          | $V_R=800V, f=1MHZ$                        | -    | 9    | -    | pF      |
| $E_C$    | Capacitance StoredEnergy | $V_R=800V$                                | -    | 3.70 | -    | $\mu J$ |

Package Marking and Ordering Information

| Part Number | Top Marking | Package | Packing Method | Reel Size | Tape Width | Quantity   |
|-------------|-------------|---------|----------------|-----------|------------|------------|
| BCM120S02D2 | BCM120S02D2 | TO252NC | Tape & Reel    | 330 mm    | 16 mm      | 2500 units |

Typical Performance Characteristics

Figure 1. Forward Characteristics

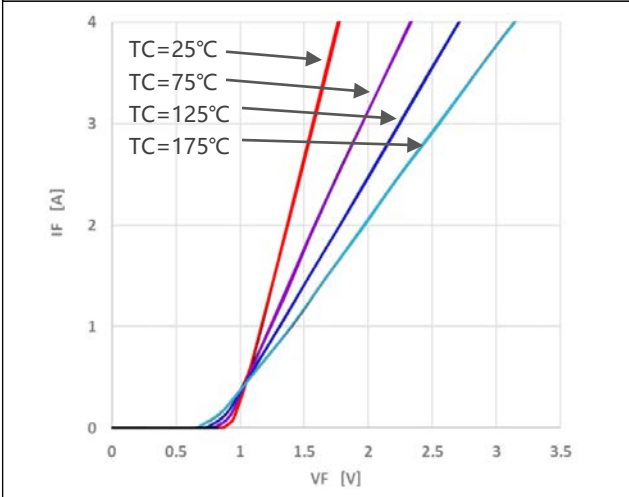


Figure 2. Reverse Characteristics

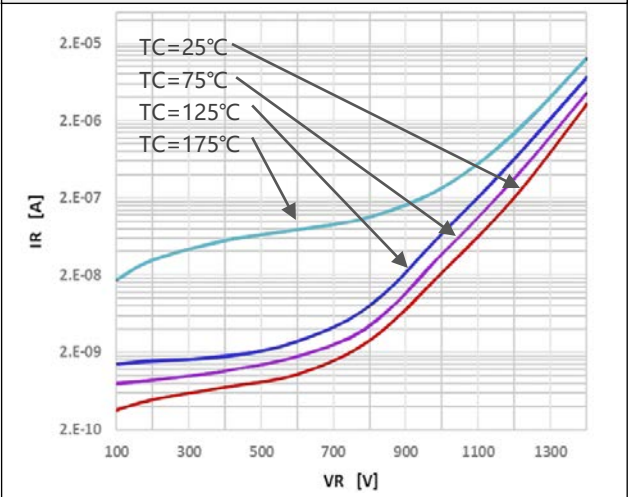


Figure 3. Peak Forward Current Derating

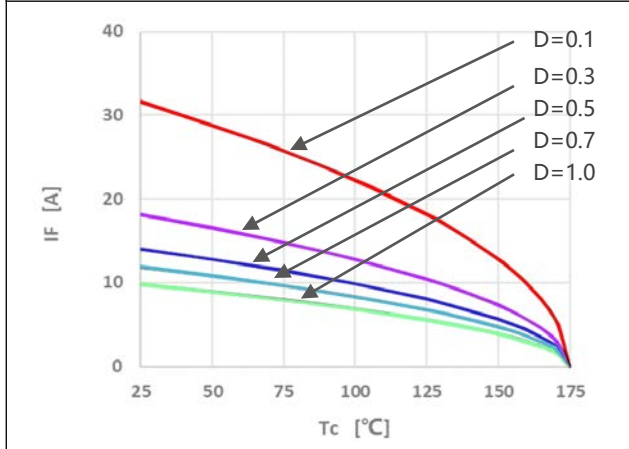


Figure 4. Power Dissipation

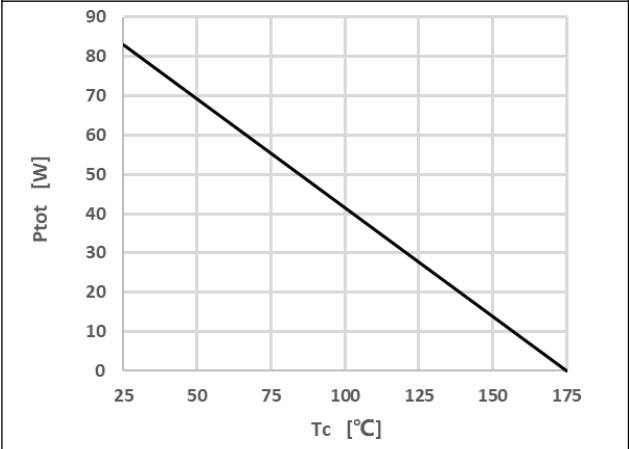


Figure 5. Capacitance vs. Reverse Voltage

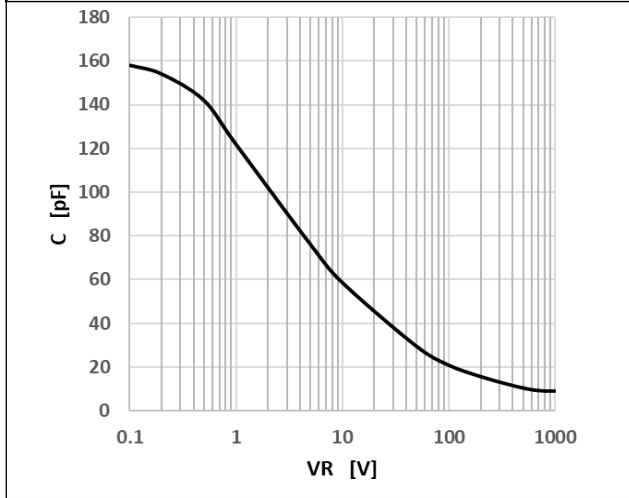
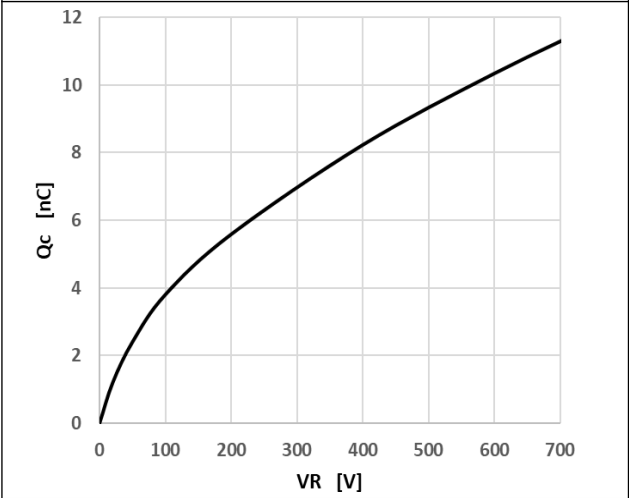


Figure 6. Capacitance Charge vs. Reverse Voltage



Typical Performance Characteristics

Figure 7. Capacitance Stored Energy

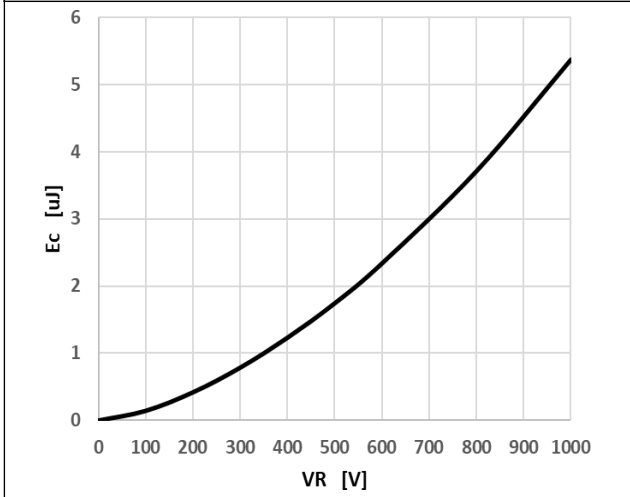
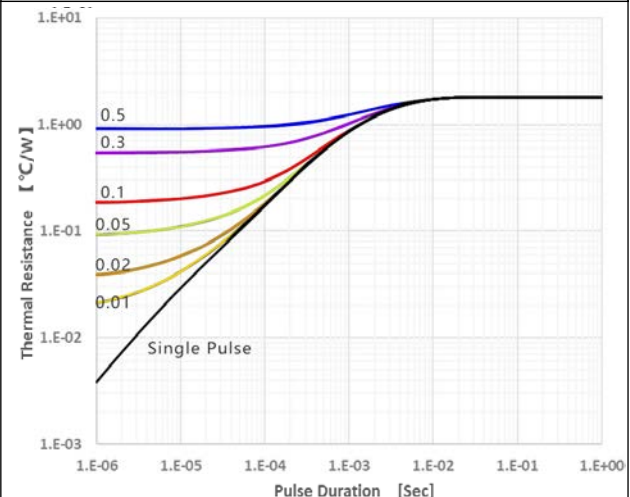
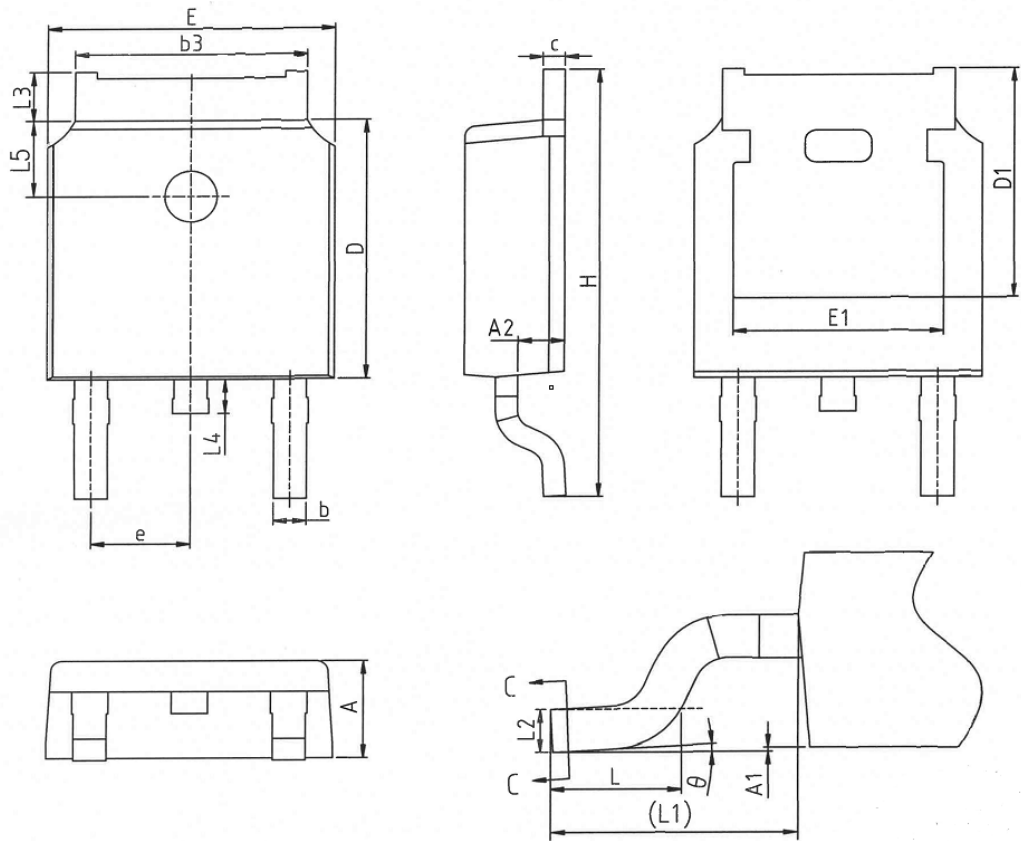


Figure 8. Transient Thermal Impedance



Package Outlines

TO252NC



COMMON DIMENSIONS

| SYMBOL | mm       |       |       |
|--------|----------|-------|-------|
|        | MIN      | NOM   | MAX   |
| A      | 2.20     | 2.30  | 2.38  |
| A1     | 0.00     | -     | 0.12  |
| A2     | 0.97     | 1.07  | 1.17  |
| b      | 0.68     | 0.78  | 0.90  |
| b3     | 5.20     | 5.33  | 5.46  |
| c      | 0.43     | 0.53  | 0.61  |
| D      | 5.98     | 6.10  | 6.22  |
| D1     | 5.30REF  |       |       |
| E      | 6.40     | 6.60  | 6.73  |
| E1     | 4.63     | -     | -     |
| e      | 2.286BSC |       |       |
| H      | 9.40     | 10.10 | 10.50 |
| L      | 1.38     | 1.50  | 1.75  |
| L1     | 2.90REF  |       |       |
| L2     | 0.51BSC  |       |       |
| L3     | 0.88     | -     | 1.28  |
| L4     | 0.50     | -     | 1.00  |
| L5     | 1.65     | 1.80  | 1.95  |
| θ      | 0°       | -     | 8°    |

\* Dimensions in millimeters

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