

# 1200V SiC Schottky Diode

## FEATURES

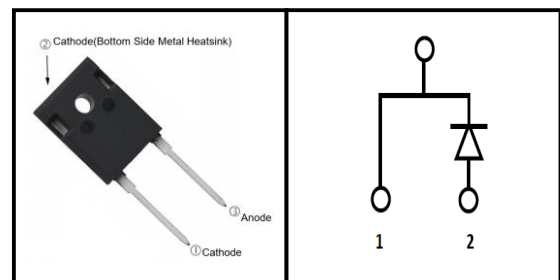
- Low Conduction and Switch Loss
- Positive Temperature Coefficient on VF
- Temperature Independent Switching Behavior
- Fast Reverse Recovery
- High Surge Current Capability
- Pb-free lead plating

## BENEFITS

- Higher System Efficiency
- Parallel Device Convenience
- High Temperature Application
- High Frequency Operation
- Hard Switching & High Reliability
- Environmental Protection

## APPLICATIONS

- Switch Mode Power Supply (SMPS)
- Uninterruptible Power Supply (UPS)
- Power Factor Correction (PFC)
- Solar/ Wind Renewable Energy
- Power Inverters
- Motor Drives



## Device Marking and Package Information

| Device      | Package   | Marking     |
|-------------|-----------|-------------|
| C2S120F020B | TO-247-2L | C2S120F020B |

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

| Parameter                                  | Symbol         | Test Conditions  | Value   | Unit             |
|--|----------------|--|---------|------------------|
| Peak Repetitive Reverse Voltage            | $V_{RRM}$      | $T_J = 25^\circ\text{C}$                                       | 1200    | V                |
| Peak Reverse Surge Voltage                 | $V_{RSM}$      | $T_J = 25^\circ\text{C}$                                       | 1200    | V                |
| DC Blocking Voltage                        | $V_R$          | $T_J = 25^\circ\text{C}$                                       | 1200    | V                |
| Continuous Forward Current                 | $I_F$          | $T_J \leq 135^\circ\text{C}$                                   | 20      | A                |
| Repetitive Peak Forward Surge Current      | $I_{FRM}$      | $T_C = 25^\circ\text{C}$ , $T_P = 8.3\text{ms}$ Half Sine Wave | 150     | A                |
| Maximum Case Temperature                   | $T_C$          |  | 135     | $^\circ\text{C}$ |
| Operating Junction and Storage Temperature | $T_J, T_{stg}$ |  | -55~175 | $^\circ\text{C}$ |

## Thermal Resistance

| Parameter                            | Symbol     | Value | Unit               |
|--------------------------------------|------------|-------|--------------------|
| Thermal Resistance, Junction-to-Case | $R_{thJC}$ | 0.65  | $^\circ\text{C/W}$ |

**Specifications**  $T_J = 25^{\circ}\text{C}$ , unless otherwise noted

| Parameter               | Symbol | Test Conditions   | Value |      | Unit          |
|-------------------------|--------|---|-------|------|---------------|
|                         |        |   | Typ.  | Max. |               |
| Forward Voltage         | $V_F$  | $I_F = 20\text{A}, T_J = 25^{\circ}\text{C}$  | 1.6   | 1.8  | V             |
|                         |        | $I_F = 20\text{A}, T_J = 175^{\circ}\text{C}$   | 2.25  | 2.5  | V             |
| Reverse Current         | $I_R$  | $V_R = 1200\text{V}, T_J = 25^{\circ}\text{C}$  | 5     | 20   | $\mu\text{A}$ |
|                         |        | $V_R = 1200\text{V}, T_J = 175^{\circ}\text{C}$   | 30    | 200  | $\mu\text{A}$ |
| Total Capacitive Charge | $Q_C$  | $I_F = 20\text{A}, di/dt = 200\text{A}/\mu\text{s}$<br>$V_R = 1200\text{V}, T_J = 25^{\circ}\text{C}$ | 59    | --   | nC            |
| Total Capacitance       | C      | $V_R = 0\text{V}, T_J = 25^{\circ}\text{C}, f = 1\text{ MHz}$   | 1280  | --   | pF            |
|                         |        | $V_R = 400\text{V}, T_J = 25^{\circ}\text{C}, f = 1\text{ MHz}$                                       | 95    | --   |               |
|                         |        | $V_R = 800\text{V}, T_J = 25^{\circ}\text{C}, f = 1\text{ MHz}$                                       | 77    | --   |               |

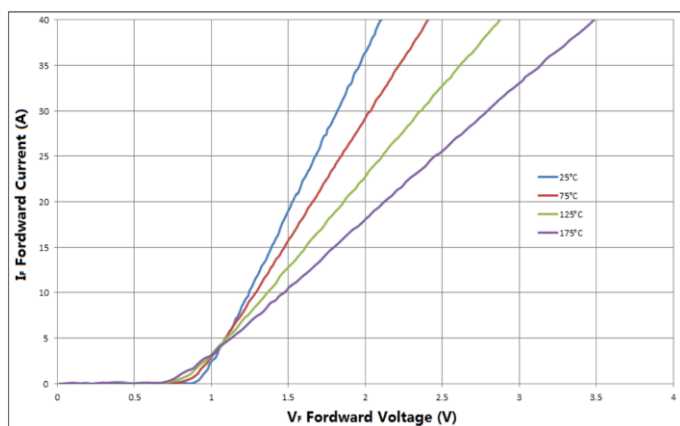


Fig. 1 Forward Characteristics

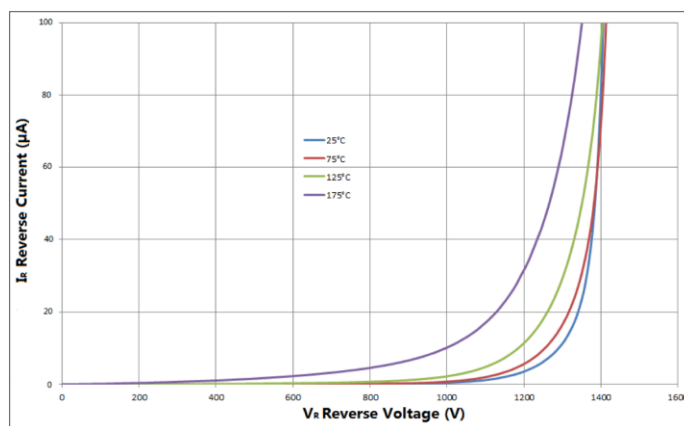


Fig. 2 Reverse Characteristics

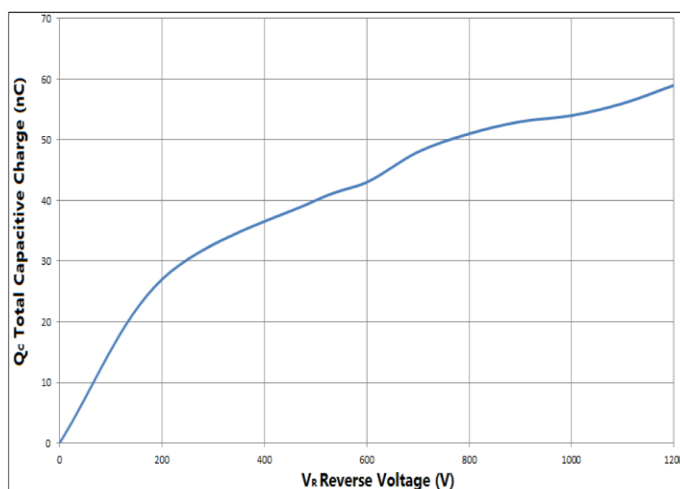


Fig. 3 Total Capacitance Charge vs. Reverse Voltage

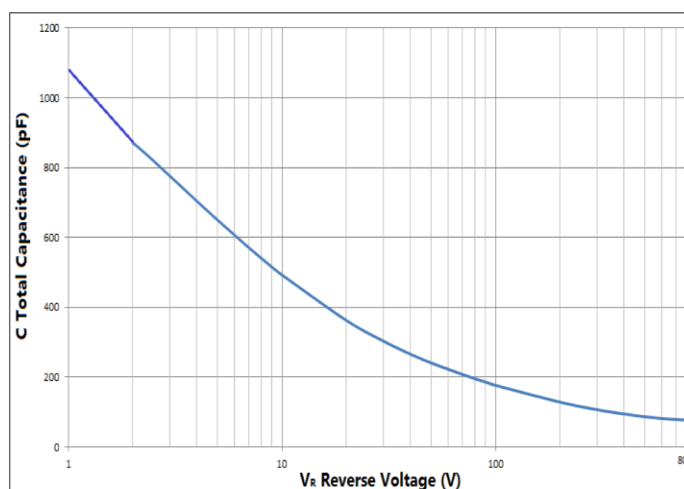


Fig. 4 Total Capacitance vs. Reverse Voltage

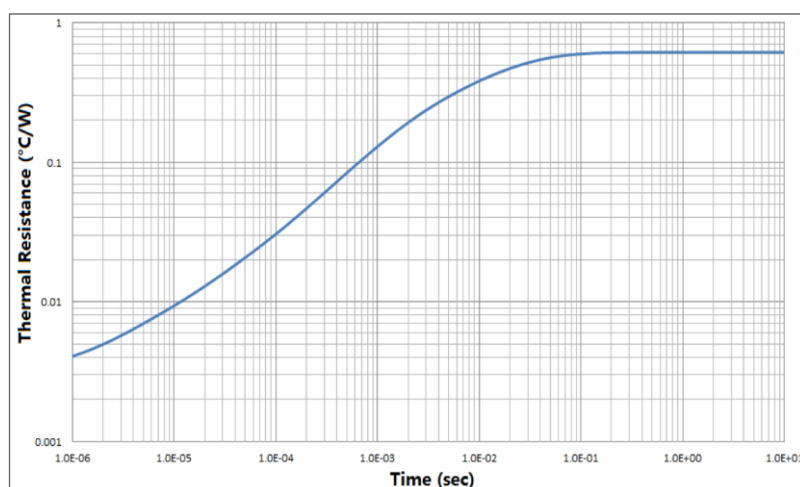
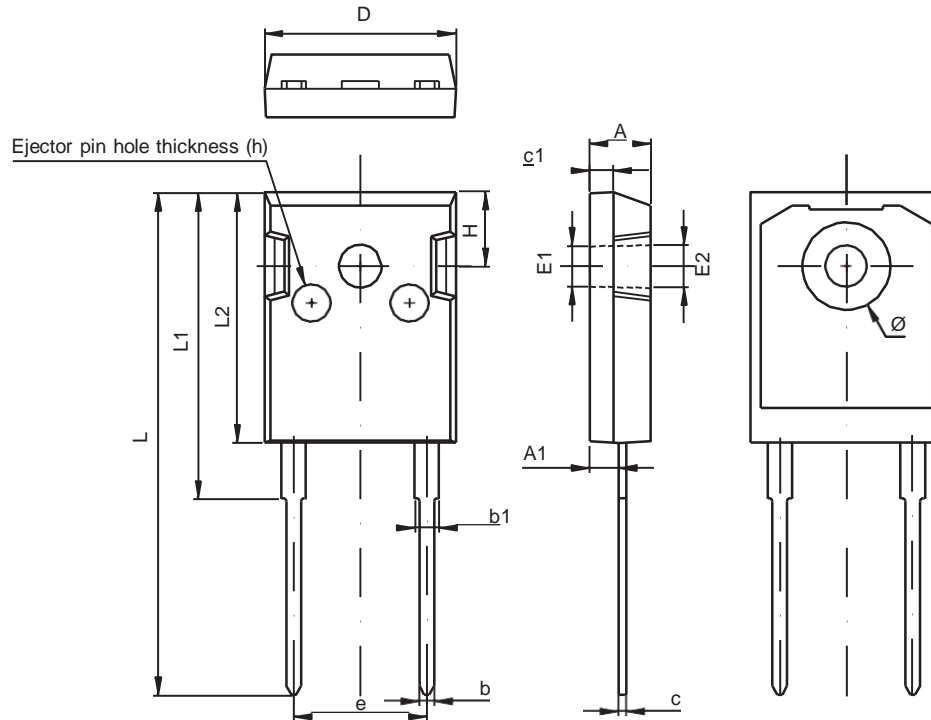


Fig. 5 Transient Thermal Impedance

## TO-247-2



### TO-247-2L DIMENSIONS

| SYMBOL | DIMENSIONS IN MILLIMETERS |        | DIMENSIONS IN INCHES |       |
|--------|---------------------------|--------|----------------------|-------|
|        | MIN.                      | MAX.   | MIN.                 | MAX.  |
| A      | 4.850                     | 5.150  | 0.191                | 0.200 |
| A1     | 2.200                     | 2.600  | 0.087                | 0.102 |
| b      | 1.000                     | 1.400  | 0.039                | 0.055 |
| b1     | 1.800                     | 2.200  | 0.071                | 0.087 |
| c      | 0.500                     | 0.700  | 0.020                | 0.028 |
| c1     | 1.900                     | 2.100  | 0.075                | 0.083 |
| D      | 15.450                    | 15.750 | 0.608                | 0.620 |
| E1     | 3.500 Ref.                |        | 0.138 Ref.           |       |
| E2     | 3.600 Ref.                |        | 0.142 Ref.           |       |
| L      | 40.900                    | 41.300 | 1.610                | 1.626 |
| L1     | 24.800                    | 25.100 | 0.976                | 0.988 |
| L2     | 20.300                    | 20.600 | 0.799                | 0.811 |
| Ø      | 7.100                     | 7.300  | 0.280                | 0.287 |
| e      | 10.900 Typ.               |        | 0.429 Typ.           |       |
| H      | 5.980 Typ.                |        | 0.235 Typ.           |       |
| h      | 0.000                     | 0.300  | 0.000                | 0.012 |

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