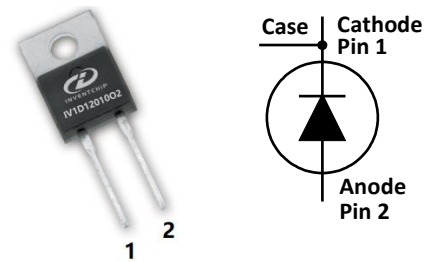


## IV1D1201002 – 1200V 10A SiC Schottky Diode

### Features:

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature independent switching behavior
- Positive Temperature Coefficient on  $V_F$

### Package



### Applications:

- Solar Power Boost
- Inverter Free Wheeling Diodes
- Vienna 3-Phase PFC
- AC/DC Converters
- Switch Mode Power Supplies

| Part Number | Package |
|-------------|---------|
| IV1D1201002 | TO220-2 |

### Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

| Symbol        | Parameter   | Value      | Unit             |
|---------------|---|------------|------------------|
| $V_{RRM}$     | Reverse voltage (repetitive peak)                                   | 1200       | V                |
| $V_{DC}$      | DC blocking voltage   | 1200       | V                |
| $I_F$         | Forward current (continuous) @Tc=25°C                               | 28         | A                |
|               | Forward current (continuous) @Tc=150°C                              | 10.5       | A                |
| $I_{FSM}$     | Surge non-repetitive forward current sine halfwave @Tc=25°C tp=10ms | 55         | A                |
| $P_{tot}$     | Total power dissipation @ Tc=25°C                                   | 153        | W                |
|               | Total power dissipation @ Tc=150°C                                  | 25         |                  |
| $\int i^2 dt$ | $I^2t$ value @Tc=25°C tp=10ms                                       | 15         | A <sup>2</sup> S |
| Tstg          | Storage temperature range   | -55 to 175 | °C               |
| Tj            | Operating junction temperature range                                | -55 to 175 | °C               |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## Electrical Characteristics

| Symbol | Parameter               | Typ.        | Max.      | Unit          | Test Conditions   | Note   |
|--------|-------------------------|-------------|-----------|---------------|---|--------|
| $V_F$  | Forward Voltage         | 1.56<br>2.2 | 1.8<br>3  | V             | $I_F = 10\text{ A } T_J = 25^\circ\text{C}$<br>$I_F = 10\text{ A } T_J = 175^\circ\text{C}$     | Fig. 1 |
| $I_R$  | Reverse Current         | 2.5<br>12.5 | 50<br>175 | $\mu\text{A}$ | $V_R = 1200\text{ V } T_J = 25^\circ\text{C}$<br>$V_R = 1200\text{ V } T_J = 175^\circ\text{C}$ | Fig. 2 |
| C      | Total Capacitance       | 575         |           | pF            | $V_R = 1\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$                                    | Fig. 3 |
|        |                         | 59          |           |               | $V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$                                  |        |
|        |                         | 42.5        |           |               | $V_R = 800\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$                                  |        |
| $Q_C$  | Total Capacitive Charge | 62          |           | nC            | $V_R = 800\text{ V}, T_J = 25^\circ\text{C},$<br>$Q_C = \int_0^{V_R} C(V)dV$                    | Fig. 4 |

## Thermal Characteristics

| Symbol        | Parameter                                | Typ. | Unit               | Note  |
|---------------|--|------|--------------------|-------|
| $R_{th(j-c)}$ | Thermal Resistance from Junction to Case | 0.98 | $^\circ\text{C/W}$ | Fig.7 |

## Typical Performance

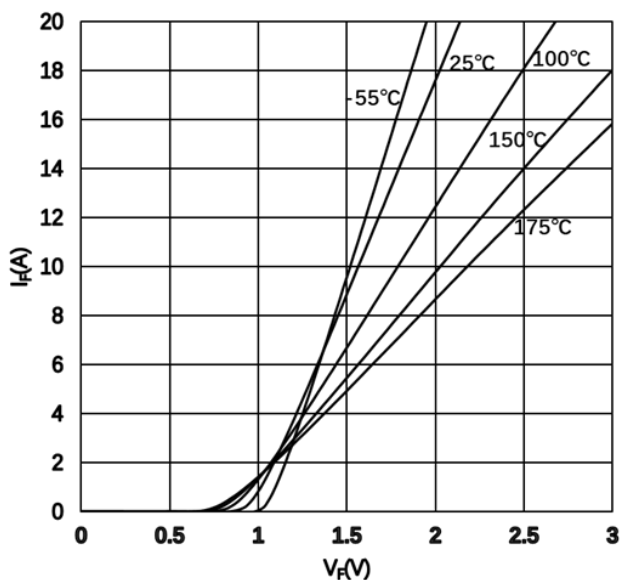


Figure 1. Typical Forward Characteristics

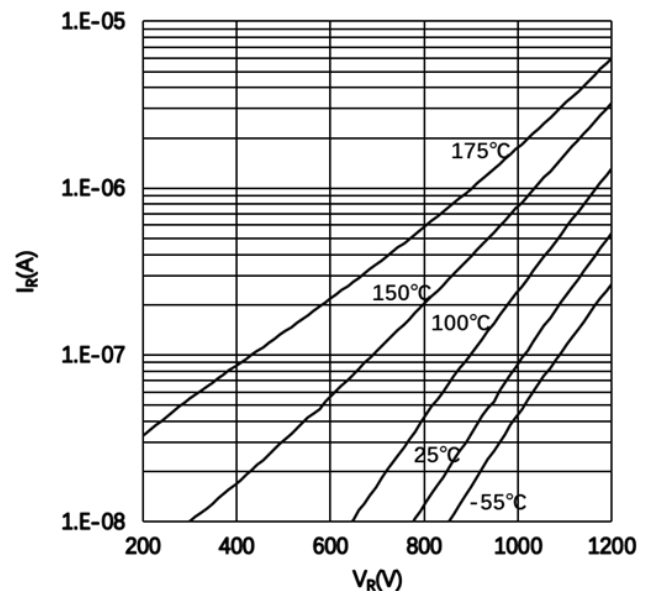


Figure 2. Typical Reverse Characteristics

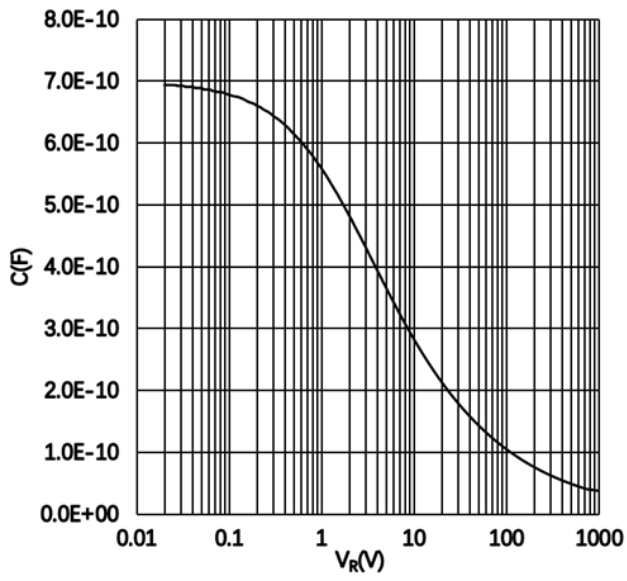


Figure 3. Capacitance vs. Reverse Voltage

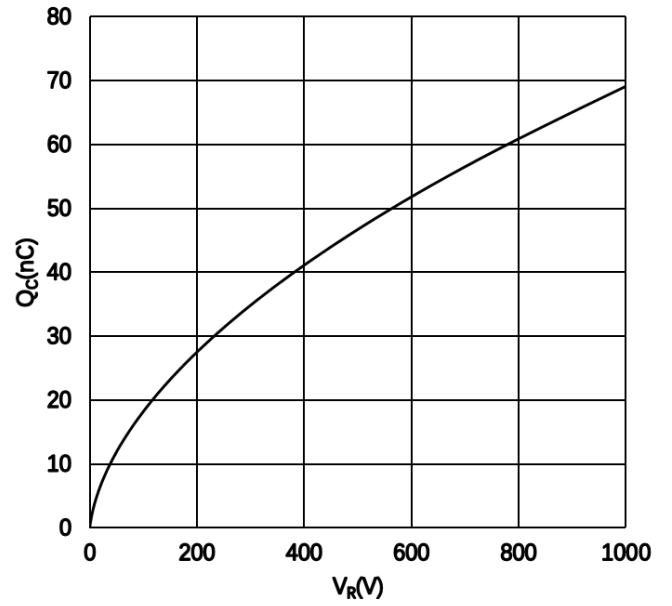


Figure 4. Recovery Charge vs. Reverse Voltage

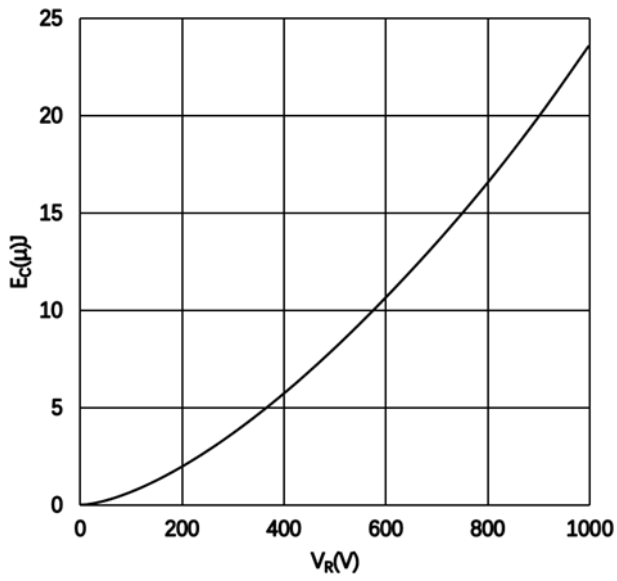


Figure 5. Capacitance Stored Energy

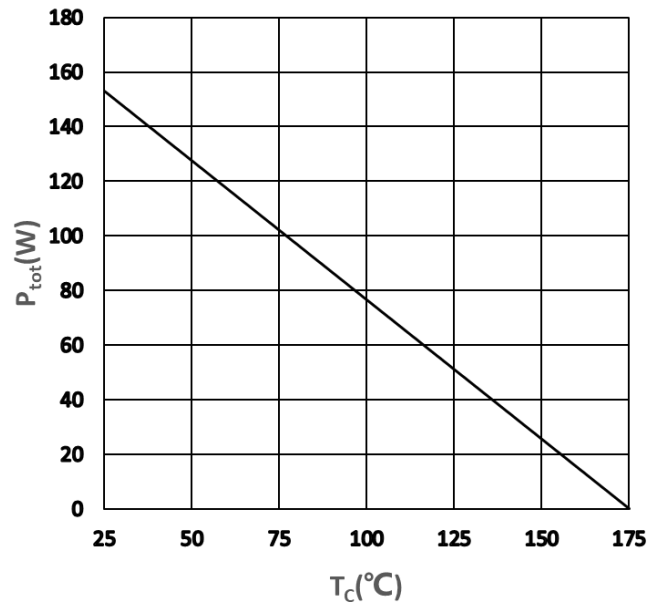


Figure 6. Power Derating

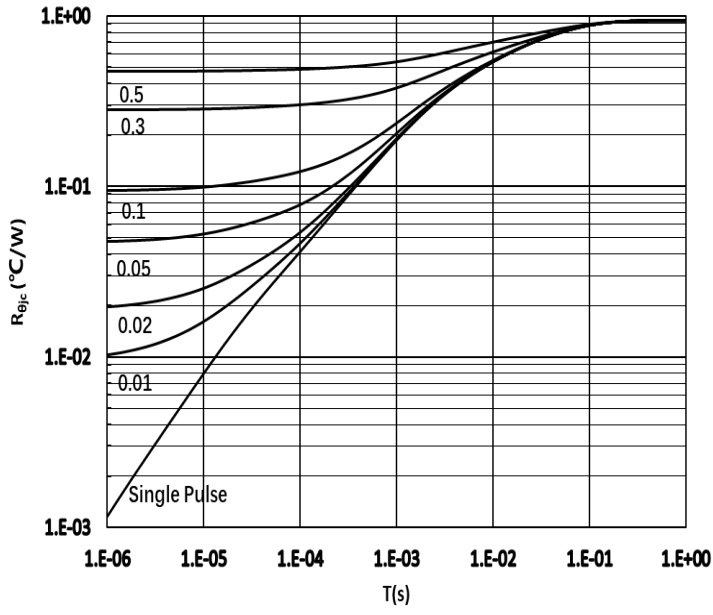


Figure 7. Transient Thermal Impedance

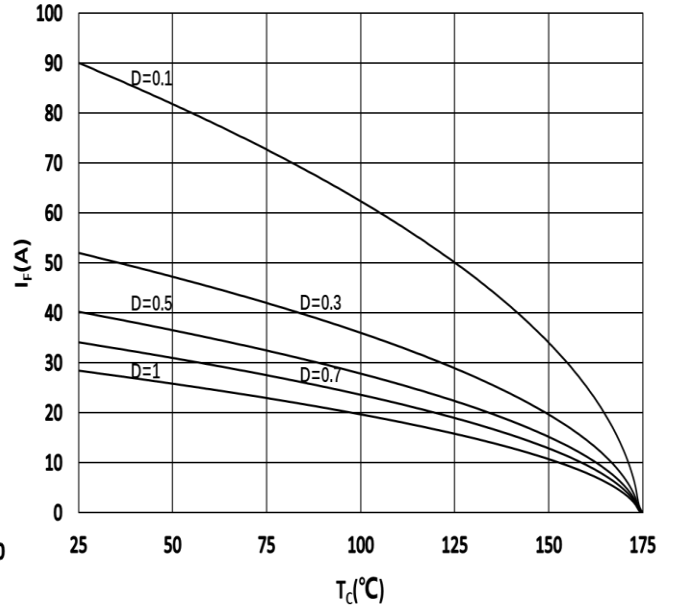
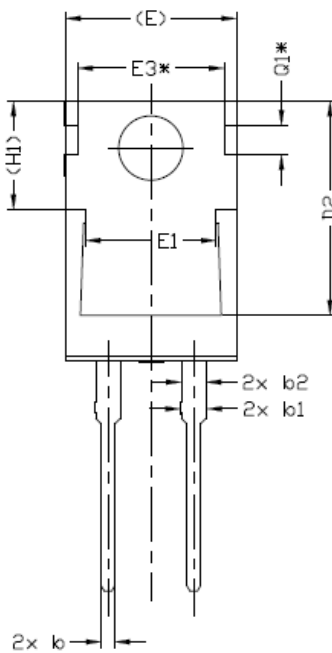
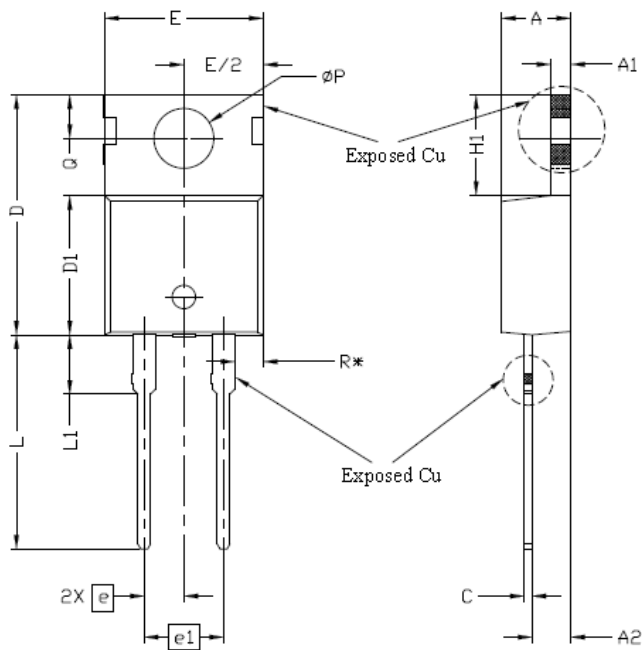


Figure 8. Forward Current as a Function of Temp.

## Package Dimensions



| SYMBOL | DIMENSIONS |       |       | NOTES |
|--------|------------|-------|-------|-------|
|        | MIN.       | NOM.  | MAX.  |       |
| A      | 4.24       | 4.44  | 4.64  |       |
| A1     | 1.15       | 1.27  | 1.40  |       |
| A2     | 2.30       | 2.48  | 2.70  |       |
| b      | 0.70       | 0.80  | 0.90  |       |
| b1     | 1.20       | 1.55  | 1.75  |       |
| b2     | 1.20       | 1.45  | 1.70  |       |
| c      | 0.40       | 0.50  | 0.60  |       |
| D      | 14.70      | 15.37 | 16.00 | 4     |
| D1     | 8.82       | 8.92  | 9.02  |       |
| D2     | 12.63      | 12.73 | 12.83 | 5     |
| E      | 9.96       | 10.16 | 10.36 | 4,5   |
| E1     | 6.86       | 7.77  | 8.89  | 5     |
| E3*    | 8.70REF.   |       |       |       |
| e      | 2.54BSC    |       |       |       |
| e1     | 5.08BSC    |       |       |       |
| H1     | 6.30       | 6.45  | 6.60  | 5,6   |
| L      | 13.47      | 13.72 | 13.97 |       |
| L1     | 3.60       | 3.80  | 4.00  |       |
| øP     | 3.75       | 3.84  | 3.93  |       |
| Q      | 2.60       | 2.80  | 3.00  |       |
| Q1*    | 1.73REF.   |       |       |       |
| R*     | 1.82REF.   |       |       |       |

### Note:

1. Package Reference: JEDEC TO220, Variation AB
2. All Dimensions Are In mm
3. Slot Required, Notch May Be Rounded
4. Dimension D&E Do Not Include Mold Flash

## Notes

For further information please contact IVCT' Office.

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