

FS4A030120D

Silicon Carbide Schottky Diode

| | | | |
|------------------------------|---|------|----|
| V_{RRM} | = | 1200 | V |
| $I_F (T_C \leq 135^\circ C)$ | = | 36 | A |
| Q_C | = | 75 | nC |

Features

- New Thin Wafer Technology
- Low Forward Voltage Drop (V_F)
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching

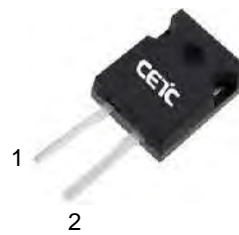
Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Applications

- Switch Mode Power Supplies
- Uninterruptible Power Supplies
- Motor drive, PV Inverter, Wind Power Station

Package



TO-247-2



| Part Number | Package |
|-------------|----------|
| FS4A030120D | TO-247-2 |

Maximum Ratings

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|----------------|--|---------------|------------|---|-------|
| V_{RRM} | Repetitive Peak Reverse Voltage | 1200 | V | $T_C = 25^\circ C$ | |
| V_{RSM} | Surge Peak Reverse Voltage | 1200 | V | $T_C = 25^\circ C$ | |
| V_R | DC Blocking Voltage | 1200 | V | $T_C = 25^\circ C$ | |
| I_F | Forward Current | 36 30 | A | $T_C \leq 135^\circ C$ $T_C \leq 145^\circ C$ | |
| I_{FSM} | Non-Repetitive Forward Surge Current | 240 | A | $T_C = 25^\circ C$, $t_p = 8.3ms$, Half Sine Wave | |
| P_{tot} | Power Dissipation | 333 | W | $T_C = 25^\circ C$ | Fig.3 |
| T_J, T_{STG} | Operating Junction and Storage Temperature | -55 to 175 | $^\circ C$ | | |
| | TO-247 Mounting Torque | 1 | Nm | M3 Screw | |

Electrical Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|--------|-------------------------|-------------------|------------|---------|--|-------|
| V_F | Forward Voltage | 1.5 2.1 | 1.8 2.5 | V | $I_F = 30A, T_J = 25^\circ C$ $I_F = 30A, T_J = 175^\circ C$ | Fig.1 |
| I_R | Reverse Current | 15 100 | 100 500 | μA | $V_R = 1200V, T_J = 25^\circ C$ $V_R = 1200V, T_J = 175^\circ C$ | Fig.2 |
| C | Total Capacitance | 1810 130 95 | / | pF | $V_R = 0.1V, T_J = 25^\circ C, f = 1MHz$ $V_R = 400V, T_J = 25^\circ C, f = 1MHz$ $V_R = 800V, T_J = 25^\circ C, f = 1MHz$ | Fig.5 |
| Q_C | Total Capacitive Charge | 75 | / | nC | $V_R = 800V, I_F = 30A$ $di/dt = 200A/\mu s, T_J = 25^\circ C$ | Fig.4 |

Thermal Characteristics

| Symbol | Parameter | Typ. | Unit | Note |
|-----------------|---|------|--------------|-------|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 0.45 | $^\circ C/W$ | Fig.6 |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 80 | $^\circ C/W$ | |
| T_{sold} | Soldering Temperature | 260 | $^\circ C$ | |

Typical Performance

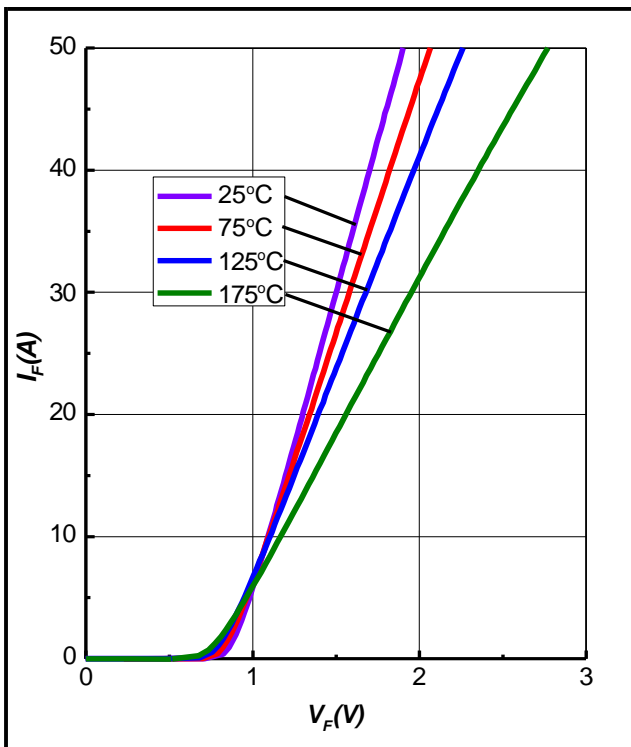


Figure 1. Forward Characteristics

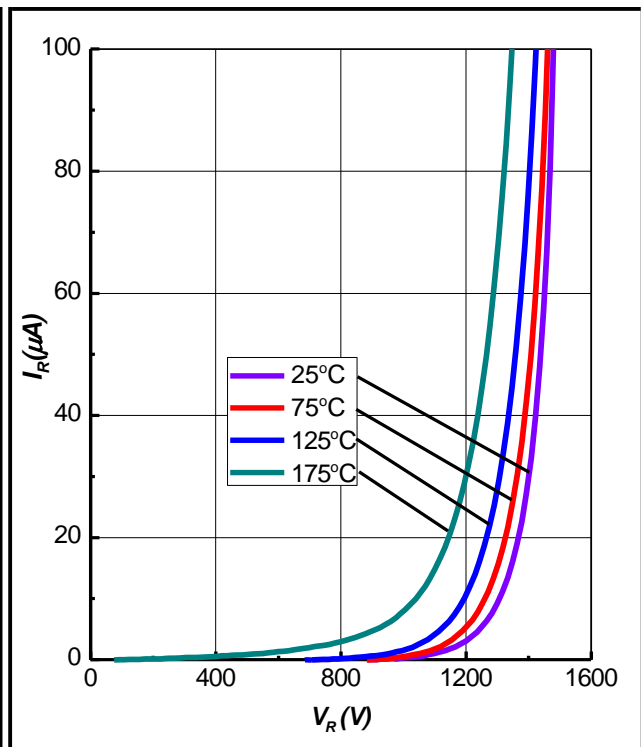


Figure 2. Reverse Characteristics

Typical Performance

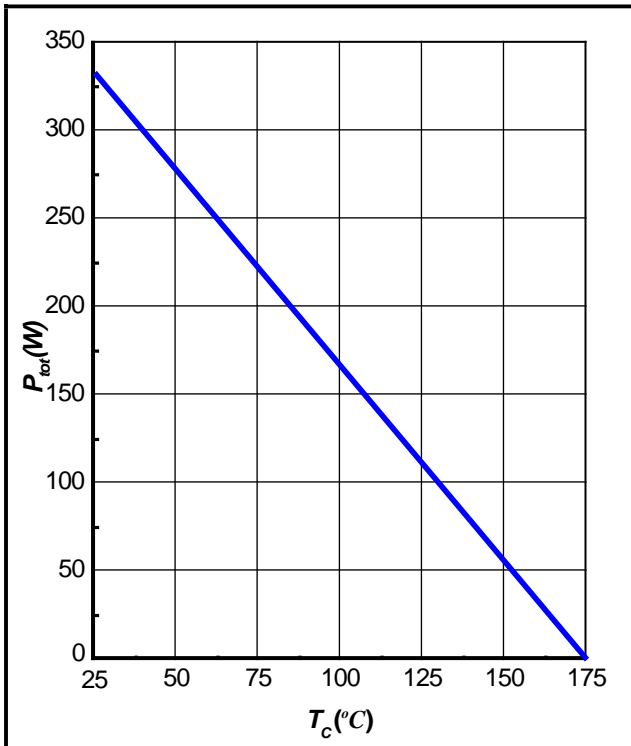


Figure 3. Power Derating

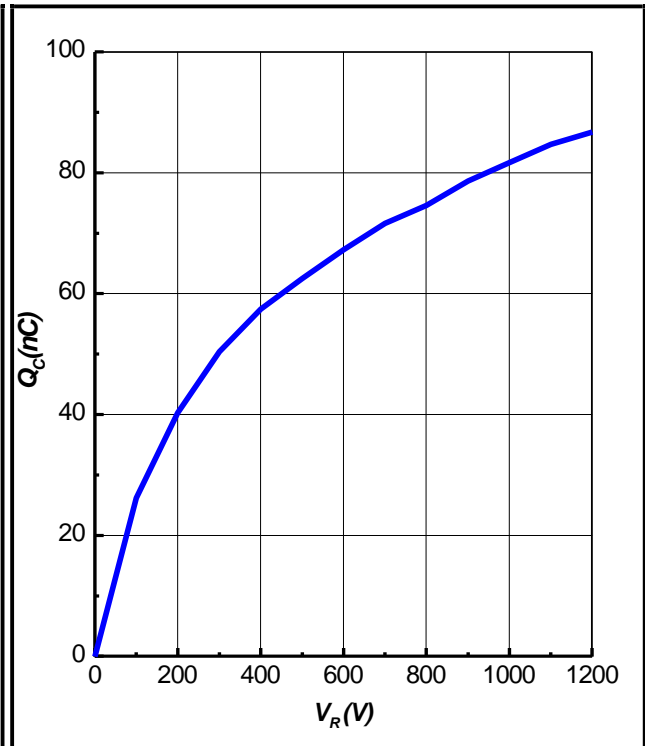


Figure 4. Total Capacitive Charge vs. Reverse Voltage

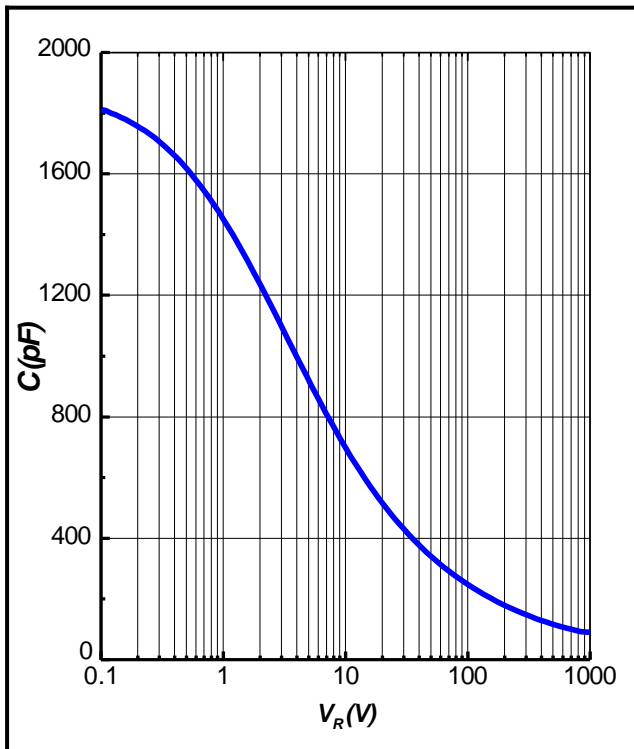


Figure 5. Total Capacitance vs. Reverse Voltage

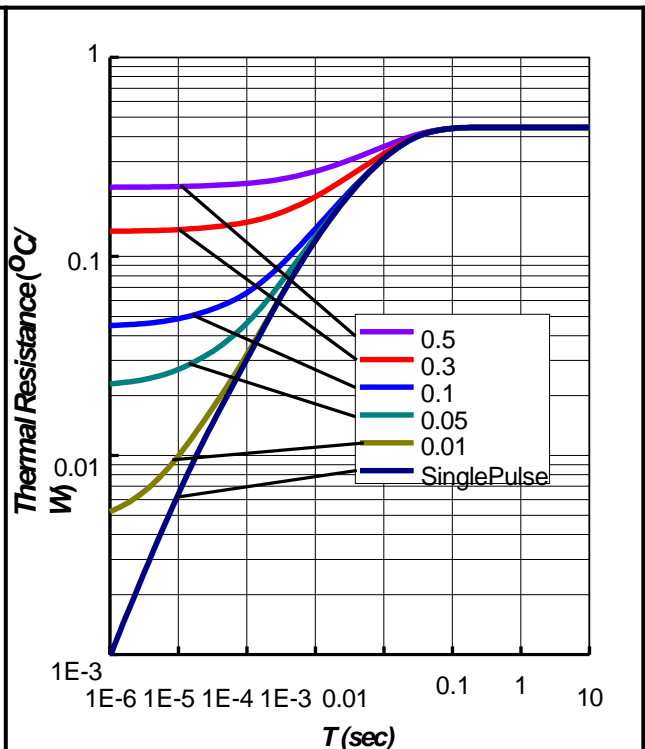
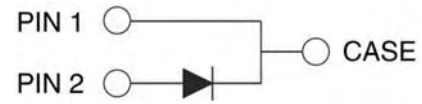
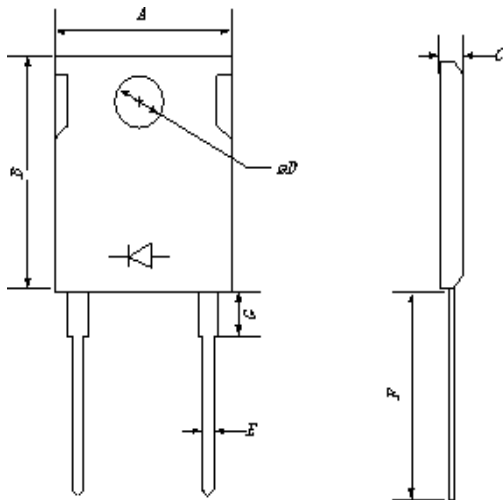


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-247-2



| mbol | Min. (mm) | Typ. (mm) | Max. (mm) |
|------|-----------|-----------|-----------|
| A | 14.18 | 15.75 | 17.33 |
| B | 18.45 | 20.5 | 22.55 |
| C | 4.50 | 5.00 | 5.50 |
| D | 3.15 | 3.50 | 3.85 |
| E | 1.08 | 1.20 | 1.32 |
| F | 18.27 | 20.30 | 22.33 |