

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_f
- Temperature-independent Switching
- 175°C Operating Junction Temperature

Benefits

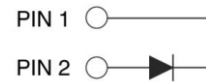
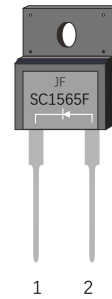
- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Applications

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

ITO-220AC

SC1565F



| | | | |
|----------------------------------|---|-----|----|
| V_{RRM} | = | 650 | V |
| $I_F(T_c \leq 42^\circ\text{C})$ | = | 18 | A |
| Q_C | = | 36 | nC |

Maximum Ratings

(Ratings at 25 °C ambient temperature unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|----------------|--|---------------|------------------|--|--------|
| V_{RRM} | Repetitive Peak Reverse Voltage | 650 | V | $T_c = 25^\circ\text{C}$ | |
| V_{RSM} | Surge Peak Reverse Voltage | 650 | V | $T_c = 25^\circ\text{C}$ | |
| V_R | DC Blocking Voltage | 650 | V | $T_c = 25^\circ\text{C}$ | |
| I_F | Forward Current | 18 15 | A | $T_c \leq 42^\circ\text{C}$ $T_c \leq 65^\circ\text{C}$ | |
| I_{FSM} | Non-Repetitive Forward Surge Current | 100 | A | $T_c = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave | |
| P_{tot} | Power Dissipation | 47 | W | $T_c = 25^\circ\text{C}$ | Fig. 3 |
| T_J, T_{STG} | Operating Junction and Storage Temperature | -55 to 175 | $^\circ\text{C}$ | | |

Electrical Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|--------|-------------------------|-----------------|-------------|---------|--|--------|
| V_F | Forward Voltage | 1.4 1.7 | 1.65 2.3 | V | $I_F = 15A, T_J = 25^\circ C$ $I_F = 15A, T_J = 175^\circ C$ | Fig. 1 |
| I_R | Reverse Current | 2 10 | 20 200 | μA | $V_R = 650V, T_J = 25^\circ C$ $V_R = 650V, T_J = 175^\circ C$ | Fig. 2 |
| C | Total Capacitance | 865 88 72 | / | pF | $V_R = 0V, T_J = 25^\circ C, f = 1MHz$ $V_R = 200V, T_J = 25^\circ C, f = 1MHz$ $V_R = 400V, T_J = 25^\circ C, f = 1MHz$ | Fig. 5 |
| Q_C | Total Capacitive Charge | 36 | / | nC | $V_R = 650V, I_F = 15A$ $di/dt = 200A/\mu s, T_J = 25^\circ C$ | Fig. 4 |

Thermal Characteristics

| Symbol | Parameter | Typ. | Unit | Note |
|-----------------|---|------|--------------|--------|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 3.2 | $^\circ C/W$ | Fig. 6 |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 80 | $^\circ C/W$ | |
| T_{sold} | Soldering Temperature | 260 | $^\circ C$ | |

Typical Performance

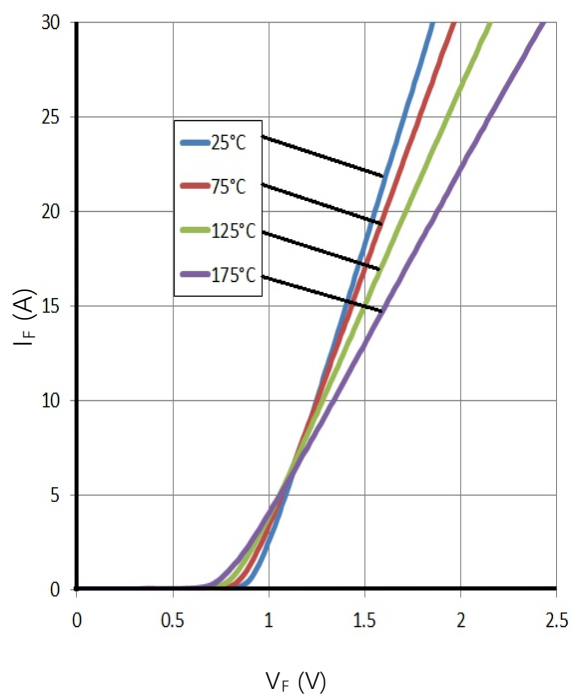


Figure 1. Forward Characteristics

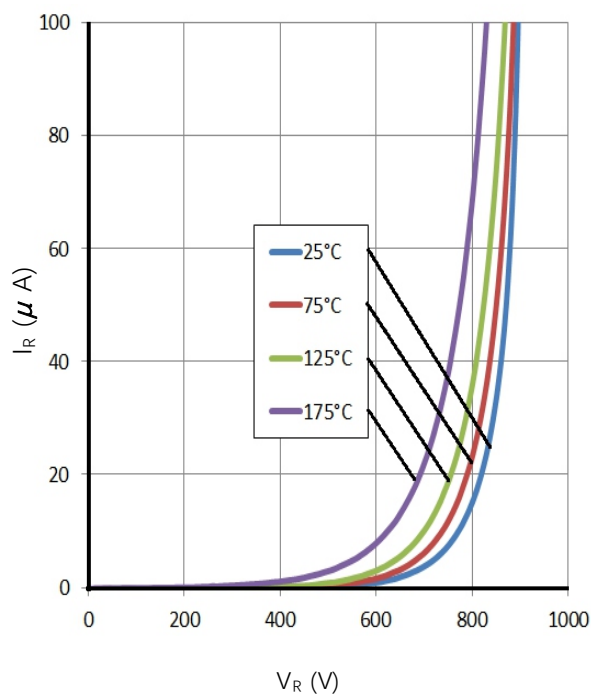


Figure 2. Reverse Characteristics

Typical Performance

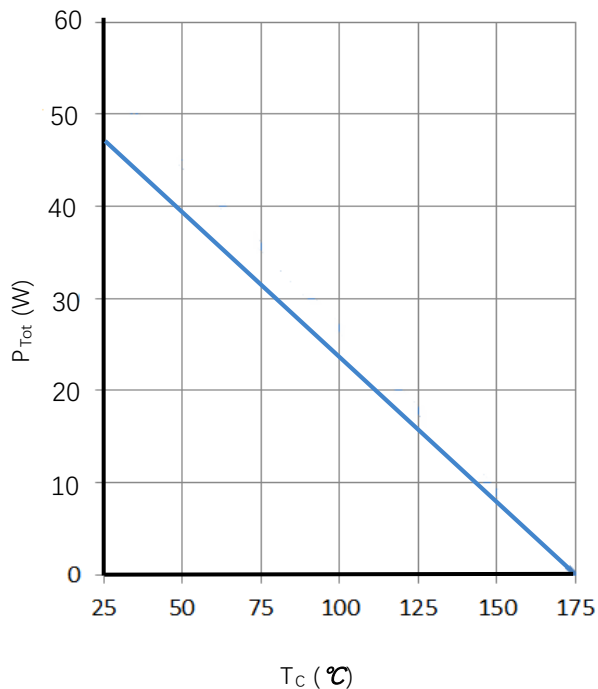


Figure 3. Power Derating

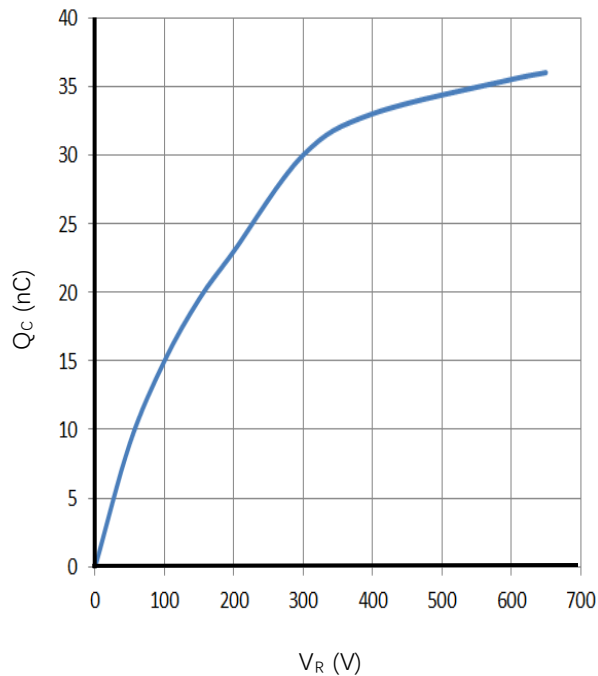


Figure 4. Total Capacitive Charge vs. Reverse Voltage

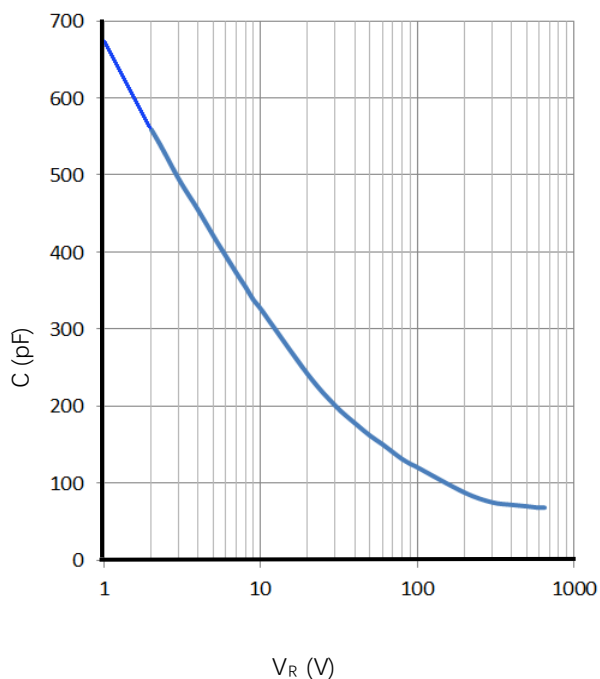


Figure 5. Total Capacitance vs. Reverse Voltage

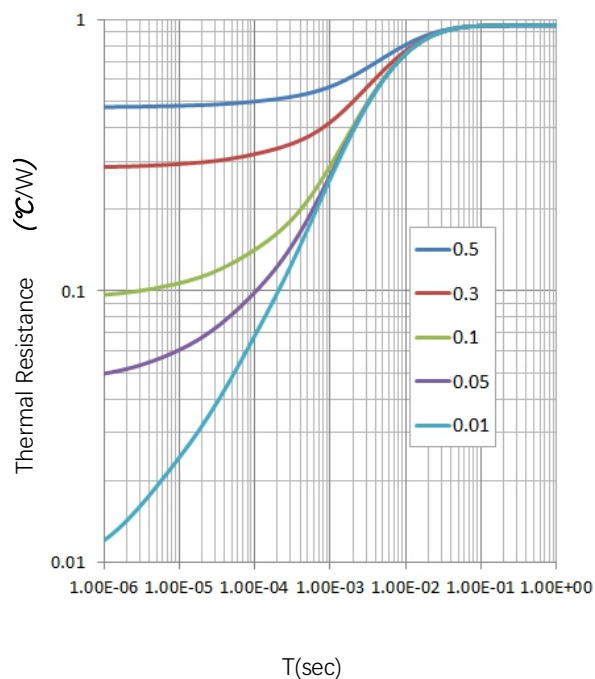
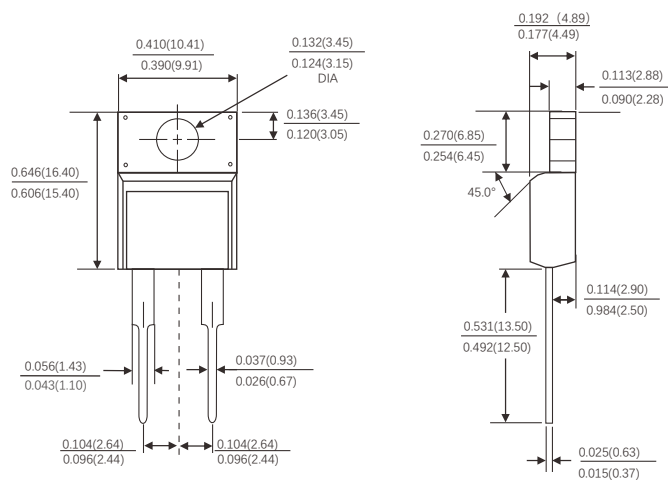


Figure 6. Transient Thermal Impedance

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Dimensions in inches and (millimeters)

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