

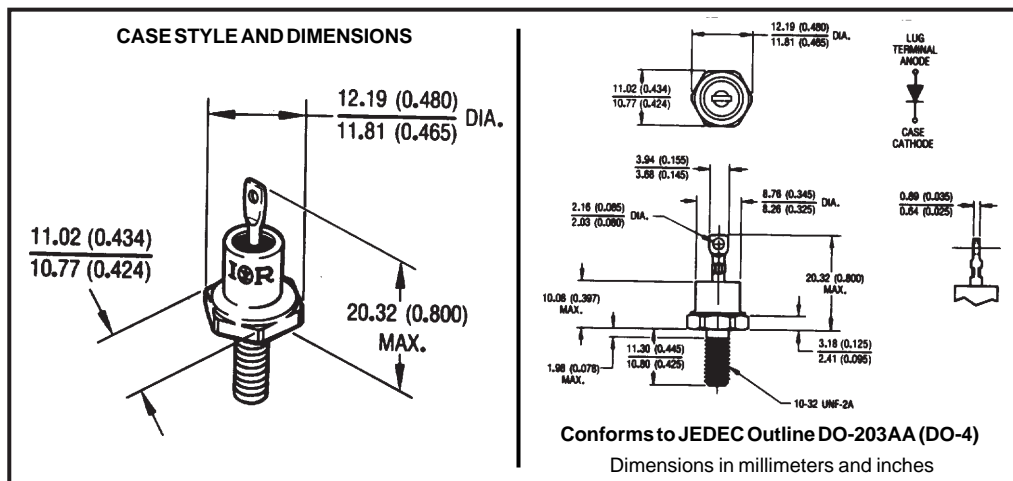
Major Ratings and Characteristics

| Characteristics | 21FQ... | Units |
|-------------------------------------|------------|------------|
| $I_{F(AV)}$ Rectangular waveform | 30 | A |
| V_{RRM} range | 35 to 45 | V |
| I_{FSM} @ $t_p = 5 \mu s$ sine | 7800 | A |
| V_F @ 30 Apk, $T_J = 125^\circ C$ | 0.51 | V |
| T_J range | -65 to 150 | $^\circ C$ |

Description/Features

The 21FQ Schottky rectifier series has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C T_J operation
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Hermetic packaging



Voltage Ratings

| Part number | 21FQ035 | 21FQ040 | 21FQ045 |
|---|---------|---------|---------|
| V_R Max. DC Reverse Voltage (V) | 35 | 40 | 45 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | | | |

Absolute Maximum Ratings

| Parameters | 21FQ | Units | Conditions |
|---|------|-------|--|
| $I_{F(AV)}$ Max. Average Forward Current * See Fig. 5 | 30 | A | 50% duty cycle @ $T_C = 107^\circ\text{C}$, rectangular waveform |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 7 | 7800 | A | Following any rated load condition and with rated V_{RWM} applied |
| | 600 | | |
| E_{AS} Non-Repetitive Avalanche Energy | 40 | mJ | $T_J = 25^\circ\text{C}$, $I_{AS} = 6$ Amps, $L = 2.2$ mH |
| I_{AR} Repetitive Avalanche Current | 6 | A | Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical |

Electrical Specifications

| Parameters | 21FQ | Units | Conditions |
|---|--------|------------------|---|
| V_{FM} Max. Forward Voltage Drop (1) * See Fig. 1 | 0.57 | V | @ 30A $T_J = 25^\circ\text{C}$ |
| | 0.69 | V | @ 60A |
| | 0.51 | V | @ 30A $T_J = 125^\circ\text{C}$ |
| | 0.65 | V | @ 60A |
| I_{RM} Max. Reverse Leakage Current (1) * See Fig. 2 | 4 | mA | $T_J = 25^\circ\text{C}$ |
| | 150 | mA | $T_J = 125^\circ\text{C}$ $V_R = \text{rated } V_R$ |
| C_T Max. Junction Capacitance | 1850 | pF | $V_R = 5V_{DC}$, (test signal range 100Khz to 1Mhz) 25°C |
| L_S Typical Series Inductance | 6.5 | nH | Measured from top of terminal to mounting plane |
| dv/dt Max. Voltage Rate of Change (Rated V_R) | 10,000 | V/ μs | |

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

| Parameters | 21FQ | Units | Conditions |
|---|----------------|--------------------|--------------------------------------|
| T_J Max. Junction Temperature Range | -65 to 150 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -65 to 150 | $^\circ\text{C}$ | |
| R_{thJC} Max. Thermal Resistance Junction to Case | 1.25 | $^\circ\text{C/W}$ | DC operation * See Fig. 4 |
| R_{thCS} Typical Thermal Resistance, Case to Heatsink | 0.50 | $^\circ\text{C/W}$ | Mounting surface, smooth and greased |
| wt Approximate Weight | 5.8(0.2) | g(oz.) | |
| T Mounting Torque | Min. | 14(12) | Non-lubricated threads |
| | Max. | 23(20) | |
| Case Style | DO-203AA(DO-4) | JEDEC | |

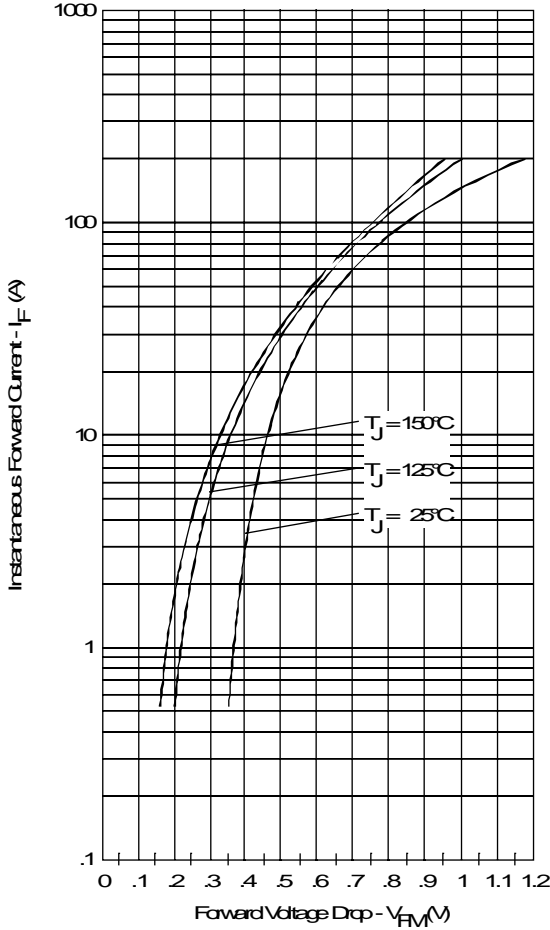


Fig. 1 - Maximum Forward Voltage Drop Characteristics

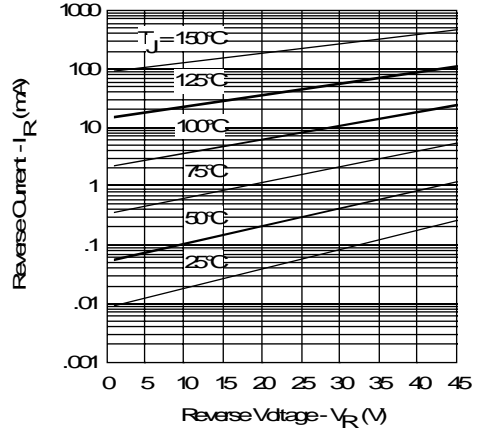


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

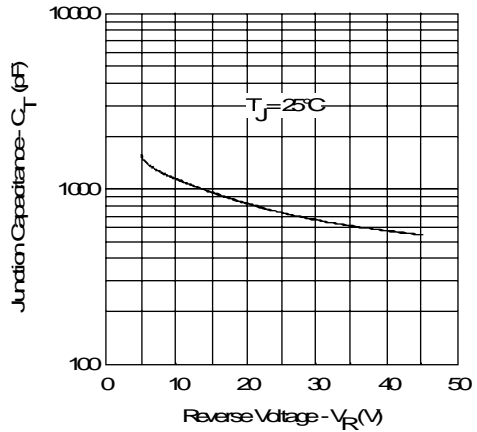


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

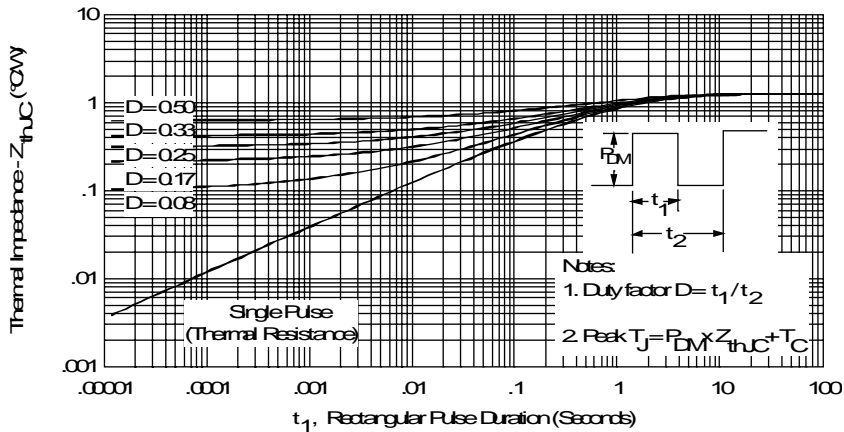


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

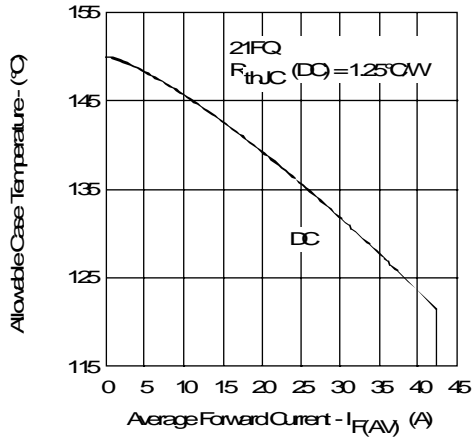


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

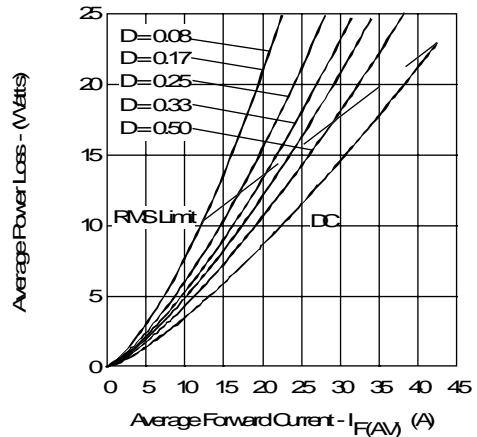


Fig. 6 - Forward Power Loss Characteristics

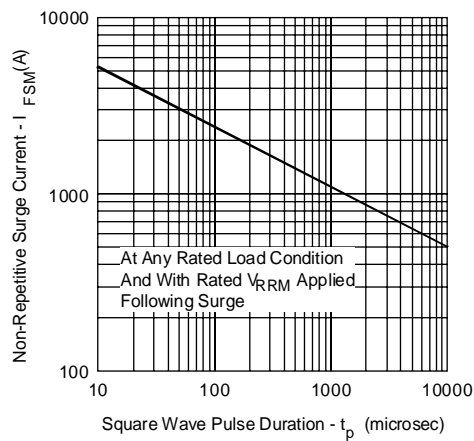


Fig. 7 - Maximum Non-Repetitive Surge Current

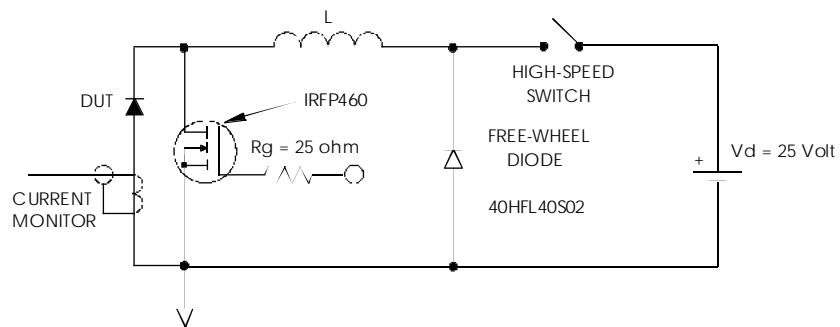


Fig. 8 - Unclamped Inductive Test Circuit