

International
IR Rectifier

QUIETIR Series
 70EPF..

FAST SOFT RECOVERY
 RECTIFIER DIODE



$$V_F < 1.45V @ 70A$$

$$t_{rr} = 100ns$$

$$V_{RRM} 1000/1200V$$

Major Ratings and Characteristics

| Characteristics | 70EPF.. | Units |
|--|------------|------------|
| $I_{F(AV)}$ Rect. Conduction 50% duty Cycle @ $T_C = 97^\circ C$ | 70 | A |
| V_{RRM} range(*) | 1000/1200 | V |
| I_{FSM} | 950 | A |
| V_F @ 70A, $T_J = 25^\circ C$ | 1.45 | V |
| t_{rr} @ 100A/ μs , $T_J = 25^\circ C$ | 100 | ns |
| T_J range | -40 to 150 | $^\circ C$ |

Description/Features

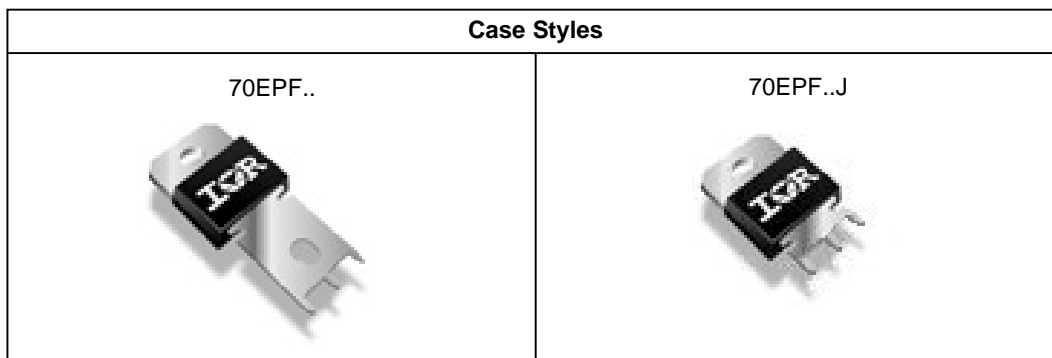
The 70EPF.. fast soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions. Available in the new **PowIRtab™** package, this new series is suitable for a large range of applications combining excellent die to footprint ratio and sturdiness connectivity for use in high current environments.

Typical applications are both:

- Output rectification and freewheeling in inverters, choppers and converters
- Input rectifications where severe restrictions on conducted EMI should be met.

Case Styles



(*) for higher voltage up to 1600V contact factory

Voltage Ratings

| Part Number | V_{RRM} , maximum peak reverse voltage V | V_{RSM} , maximum non repetitive peak reverse voltage V | I_{RRM} 150°C mA |
|-------------|---|--|--------------------------|
| 70EPF10 | 1000 | 1100 | 15 |
| 70EPF12 | 1200 | 1300 | |

Absolute Maximum Ratings

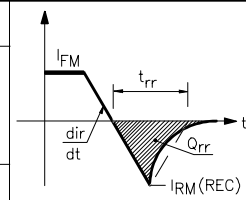
| Parameters | 70EPF.. | Units | Conditions |
|--|---------|---------------|---|
| $I_{F(AV)}$ Max. Average Forward Current | 70 | A | @ $T_C = 93^\circ\text{C}$, 180° conduction half sine wave |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current | 800 | A | 10ms Sine pulse, rated V_{RRM} applied |
| | 950 | | 10ms Sine pulse, no voltage reapplied |
| I^2t Max. I^2t for fusing | 3200 | A^2s | 10ms Sine pulse, rated V_{RRM} applied |
| | 4500 | | 10ms Sine pulse, no voltage reapplied |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing | 32000 | $A^2\sqrt{s}$ | 10ms, no voltage reapplied |

Electrical Specifications

| Parameters | 70EPF.. | Units | Conditions |
|---------------------------------------|---------|-----------|---------------------------------|
| V_{FM} Max. Forward Voltage Drop | 1.45 | V | @ 70A, $T_J = 25^\circ\text{C}$ |
| r_t Forward slope resistance | 4.13 | $m\Omega$ | $T_J = 150^\circ\text{C}$ |
| $V_{F(TO)}$ Threshold voltage | 0.94 | V | |
| I_{RM} Max. Reverse Leakage Current | 0.1 | mA | $T_J = 25^\circ\text{C}$ |
| | 12 | | $T_J = 150^\circ\text{C}$ |

Recovery Characteristics

| Parameters | 70EPF.. | Units | Conditions |
|-----------------------------------|---------|---------------|--|
| t_{rr} Reverse Recovery Time | 500 | ns | $I_F @ 85\text{Apk}$ @ 25A/ μs |
| I_{rr} Reverse Recovery Current | 8.4 | A | |
| Q_{rr} Reverse Recovery Charge | 2.9 | μC | @ 25°C |
| S Snap Factor | 0.5 | | |



Thermal-Mechanical Specifications

| Parameters | | 70EPF.. | Units | Conditions |
|------------|--|------------------------------|--------|--------------------------------------|
| T_J | Max. Junction Temperature Range | -40 to 150 | °C | |
| T_{stg} | Max. Storage Temperature Range | -40 to 150 | °C | |
| R_{thJC} | Max. Thermal Resistance Junction to Case | 0.35 | °C/W | DC operation |
| R_{thJA} | Max. Thermal Resistance Junction to Ambient | 40 | °C/W | |
| R_{thCS} | Typical Thermal Resistance, Case to Heatsink | 0.2 | °C/W | Mounting surface, smooth and greased |
| wt | Approximate Weight | 6(0.21) | g(oz.) | |
| T | Mounting Torque | Min. | 6(5) | Kg-cm (lbf-in) |
| | | Max. | 12(10) | |
| Case Style | | <i>PowIRab</i> TM | | |

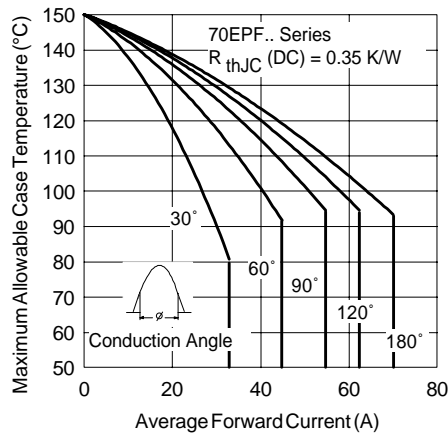


Fig. 1 - Current Rating Characteristics

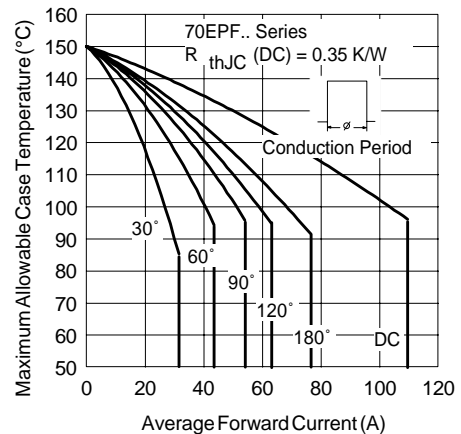


Fig. 2 - Current Rating Characteristics

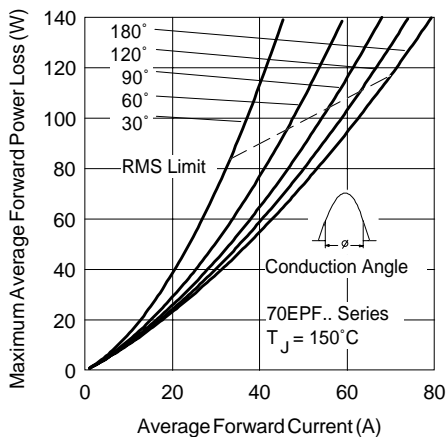


Fig. 3 - Forward Power Loss Characteristics

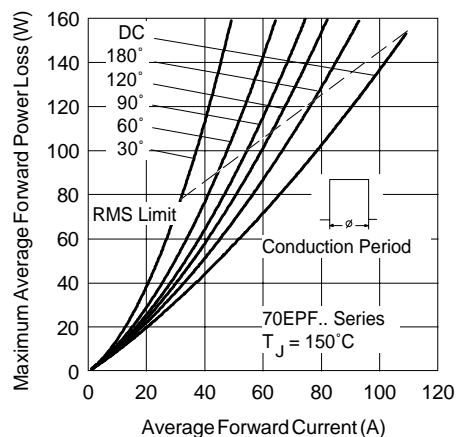


Fig. 4 - Forward Power Loss Characteristics

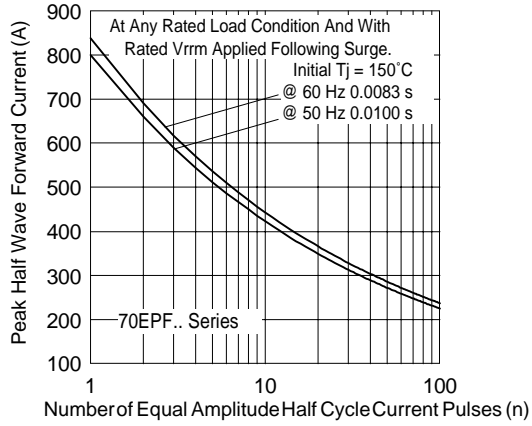


Fig.5-Maximum Non-Repetitive Surge Current

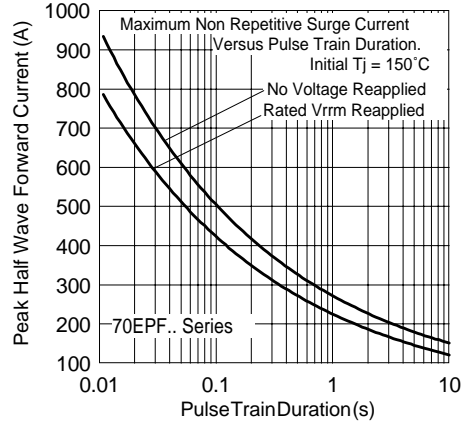


Fig.6-Maximum Non-Repetitive Surge Current

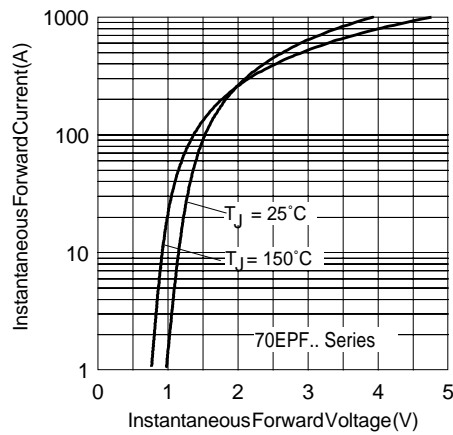


Fig.7-Forward Voltage Drop Characteristics

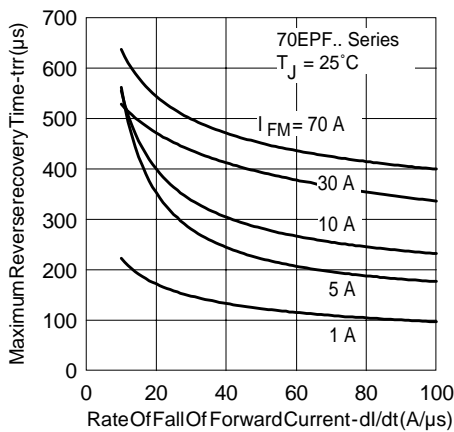


Fig.8-Recovery Time Characteristics, Tj=25°C

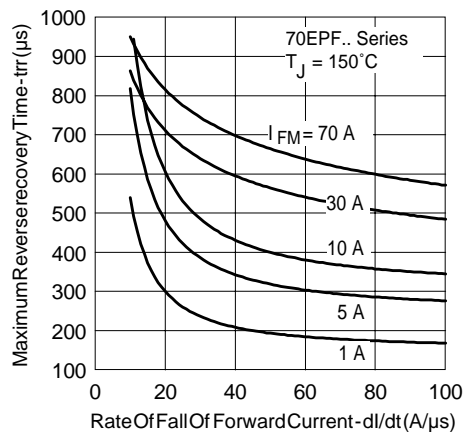


Fig.9-Recovery Time Characteristics, Tj=150°C

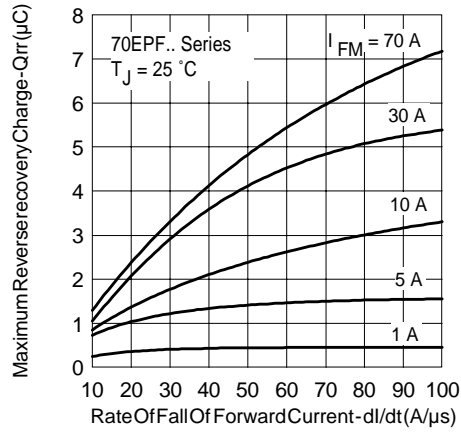


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

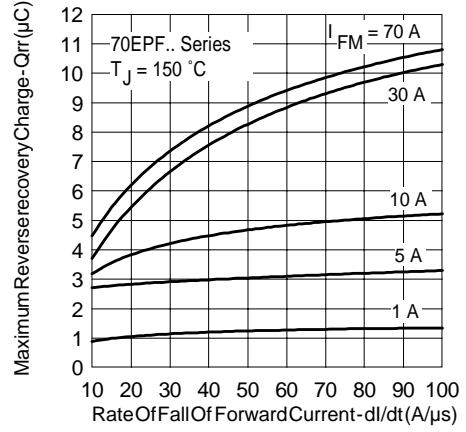


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

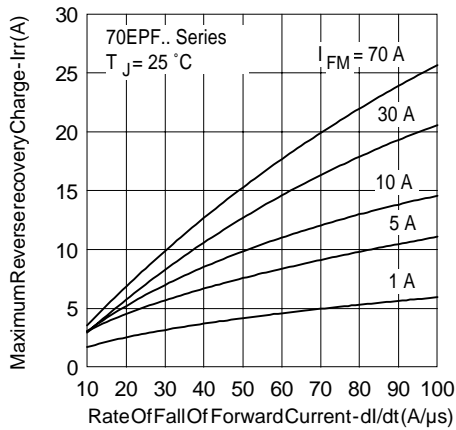


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

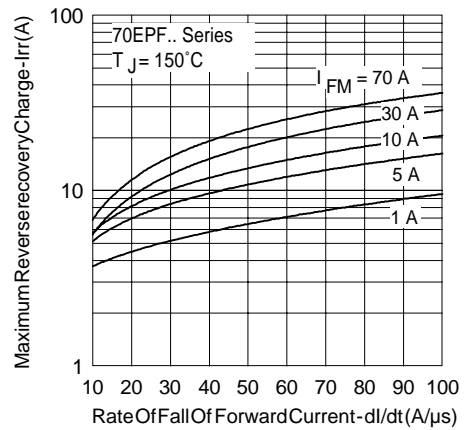


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

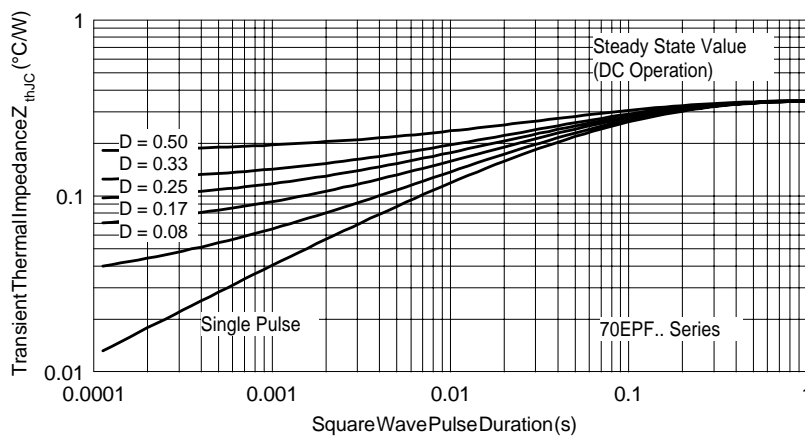
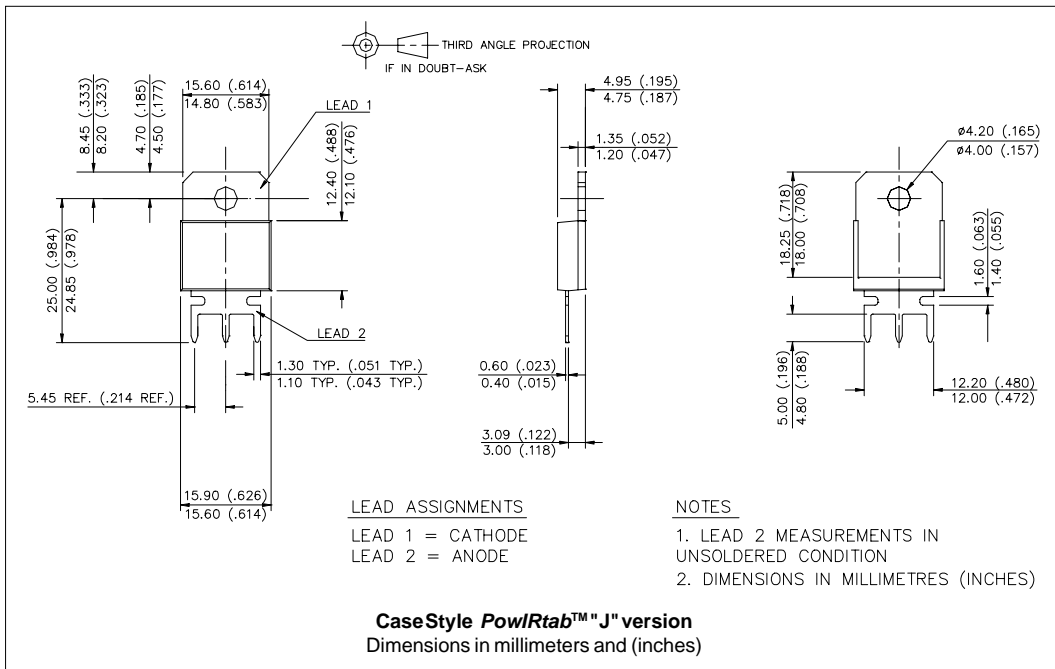
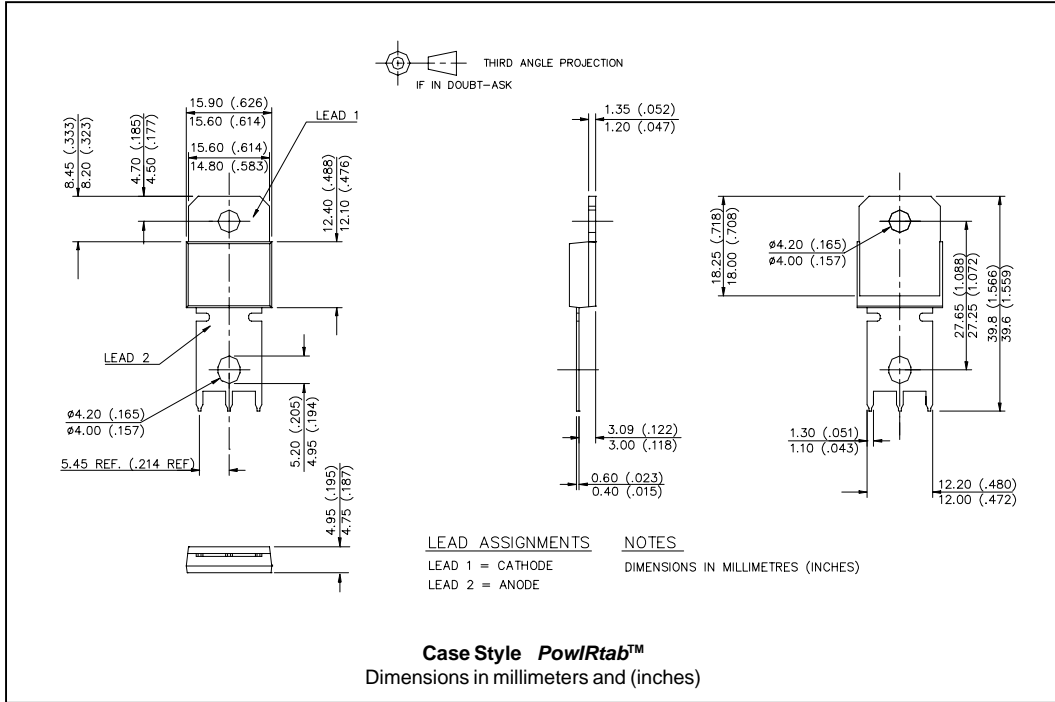


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

| Device Code | | | | | | | | | | | | | |
|-------------|---|----|---|----|---|----|---|---|---|---|---|---|---|
| | <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 5px;">70</td> <td style="padding: 5px;">E</td> <td style="padding: 5px;">P</td> <td style="padding: 5px;">F</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">J</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table> | 70 | E | P | F | 12 | J | ① | ② | ③ | ④ | ⑤ | ⑥ |
| 70 | E | P | F | 12 | J | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | | | | | | | | |
| 1 | - Current Rating | | | | | | | | | | | | |
| 2 | - Circuit Configuration: E = Single Diode | | | | | | | | | | | | |
| 3 | - Package: P = TO-247AC | | | | | | | | | | | | |
| 4 | - Type of Silicon: F = Fast Recovery | | | | | | | | | | | | |
| 5 | - Voltage code: Code x 100 = V_{RRM} (*) | | | | | | | | | | | | |
| 6 | - none = PowIRtab™ standard J = Short Lead Version | | | | | | | | | | | | |

| |
|------------|
| 10 = 1000V |
| 12 = 1200V |

(*) for higher voltage up to 1600V contact factory

Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level.
 Qualification Standards can be found on IR's Web site.