


International  
**IR** Rectifier

**QUIETIR** Series  
85EPF..HV

FAST SOFT RECOVERY  
RECTIFIER DIODE

	$I_{F(RMS)}$ = 160A
	$V_F$ < 1.4V @ 100A
	$t_{rr}$ = 95ns
	$V_{RRM}$ 800 to 1200V

#### Major Ratings and Characteristics

Characteristics	85EPF..	Units
$I_{F(AV)}$ Rect. Conduction 50% duty Cycle @ $T_C = 85^\circ\text{C}$	85	A
$I_{F(RMS)}$	160	A
$V_{RRM}$ range (*)	800 to 1200	V
$I_{FSM}$	1100	A
$V_F$ @ 100A, $T_J = 25^\circ\text{C}$	1.4	V
$t_{rr}$ @ 1A, -100A/ $\mu\text{s}$	95	ns
$T_J$ range	-40 to 150	$^\circ\text{C}$

#### Description/ Features

The 85EPF.. 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**<sup>TM</sup> 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

85EPF..	85EPF..J
	

(\*) 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
85EPF08	800	900	15
85EPF10	1000	1100	
85EPF12	1200	1300	

Absolute Maximum Ratings

Parameters	85EPF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	85	A	@ $T_c = 85^\circ\text{C}$ , 180° conduction half sine wave
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	1100	A	10ms Sine pulse, rated $V_{RRM}$ applied
	1250		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	5000	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	7000		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	70000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

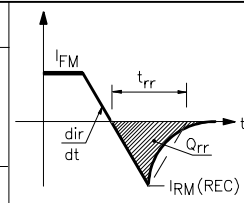
Electrical Specifications

Parameters	85EPF..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.36	V	@ 85A, $T_j = 25^\circ\text{C}$
$r_t$ Forward slope resistance	4.03	$m\Omega$	$T_j = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.87	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_j = 25^\circ\text{C}$
	15		$T_j = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

Recovery Characteristics

Parameters	85EPF..	Units	Conditions
$t_{rr}$ Reverse Recovery Time	480	ns	$I_F @ 85\text{Apk}$ @ 25A/ $\mu\text{s}$ @ 25°C
$I_{rr}$ Reverse Recovery Current	7.1	A	
$Q_{rr}$ Reverse Recovery Charge	2.1	$\mu\text{C}$	
S Snap Factor	0.5		



Thermal-Mechanical Specifications

Parameters	85EPF..	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	PowIRtab™		

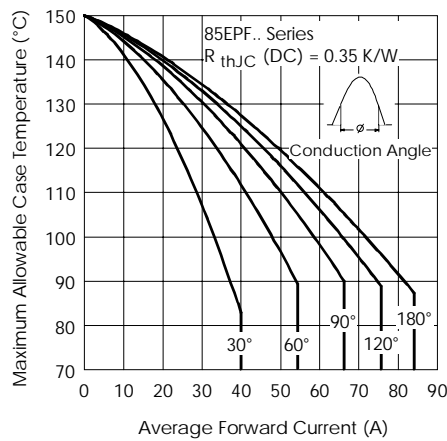


Fig. 1 - Current Rating Characteristics

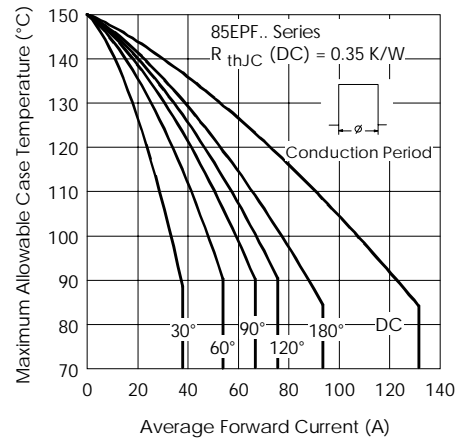


Fig. 2 - Current Rating Characteristics

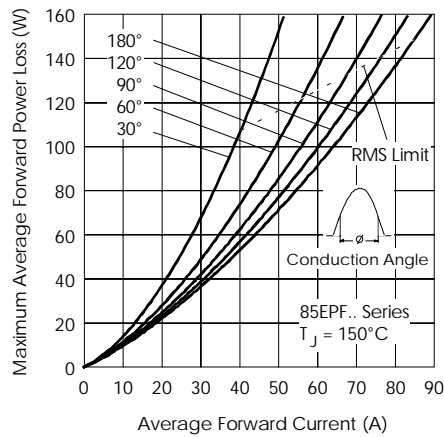


Fig. 3 - Forward Power Loss Characteristics

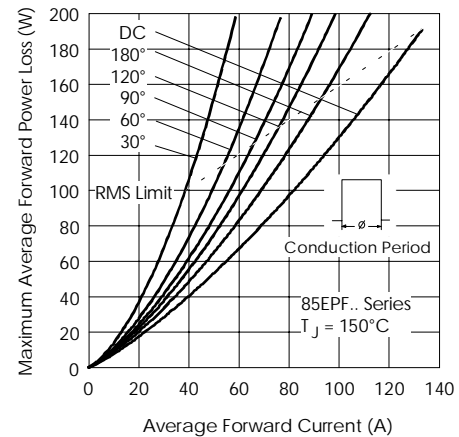


Fig. 4 - Forward Power Loss Characteristics

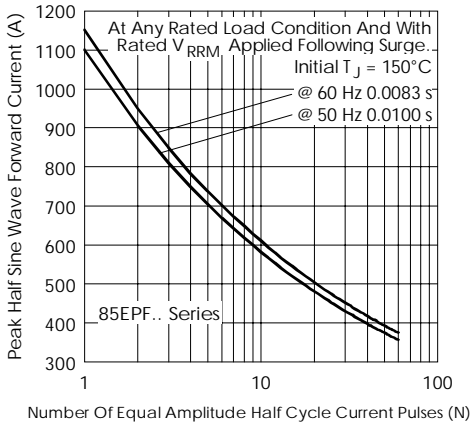


Fig.5-Maximum Non-Repetitive Surge Current

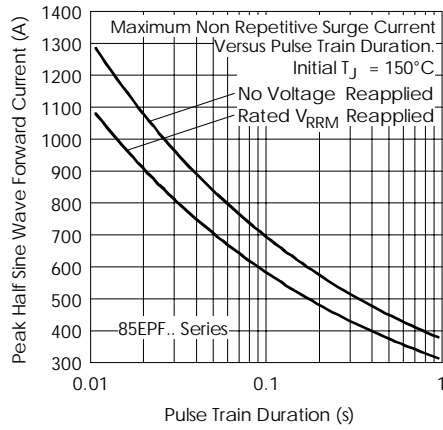


Fig.6-Maximum Non-Repetitive Surge Current

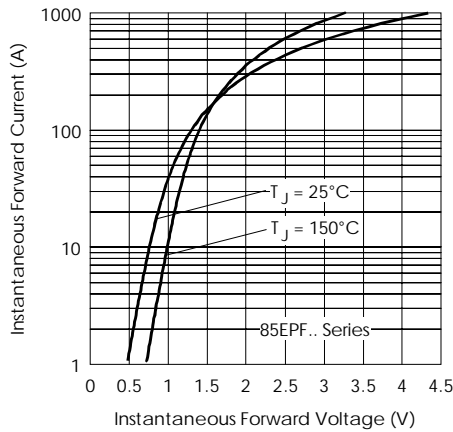


Fig.7-Forward Voltage Drop Characteristics

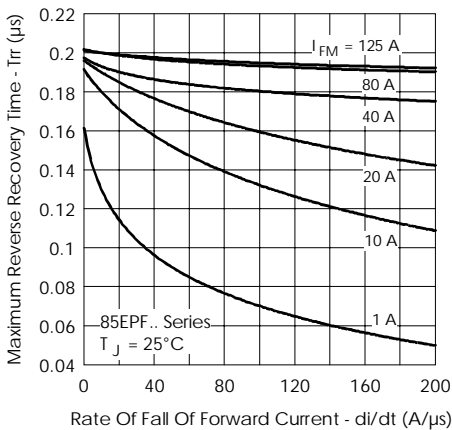


Fig.8-Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

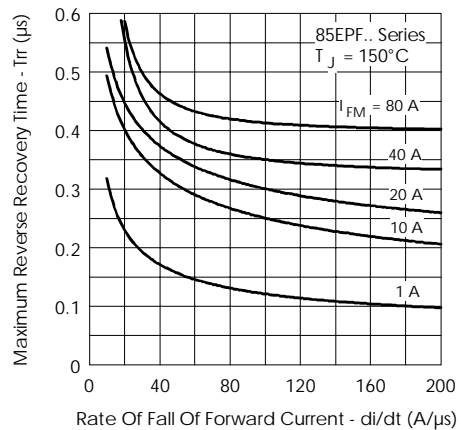


Fig.9-Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

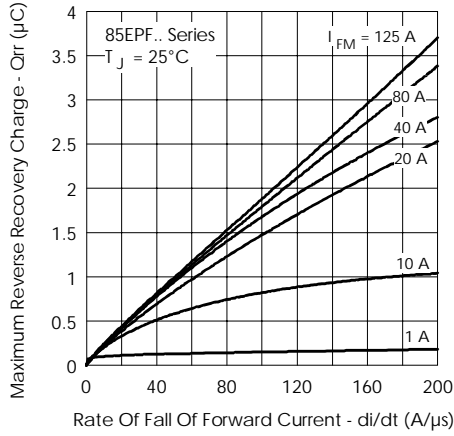


Fig. 10-Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

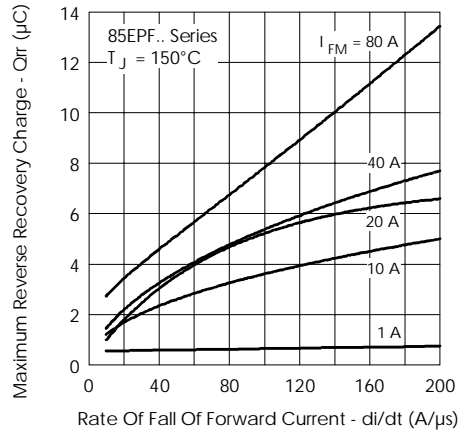


Fig. 11-Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

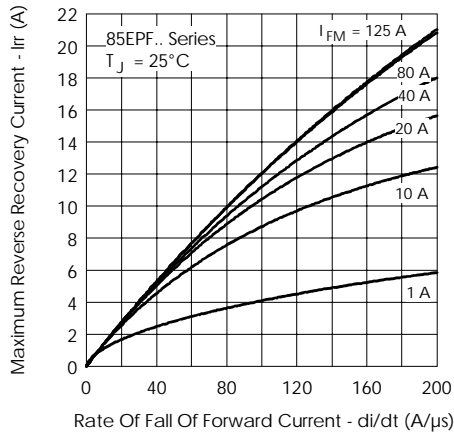


Fig. 12-Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

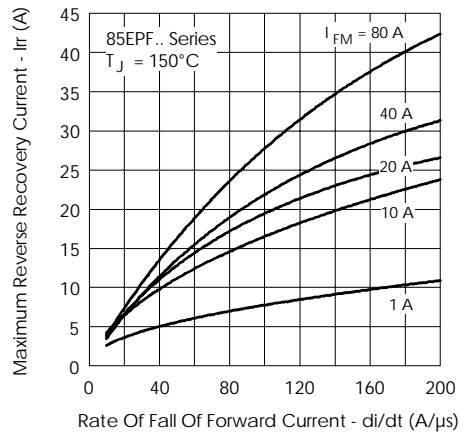


Fig. 13-Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

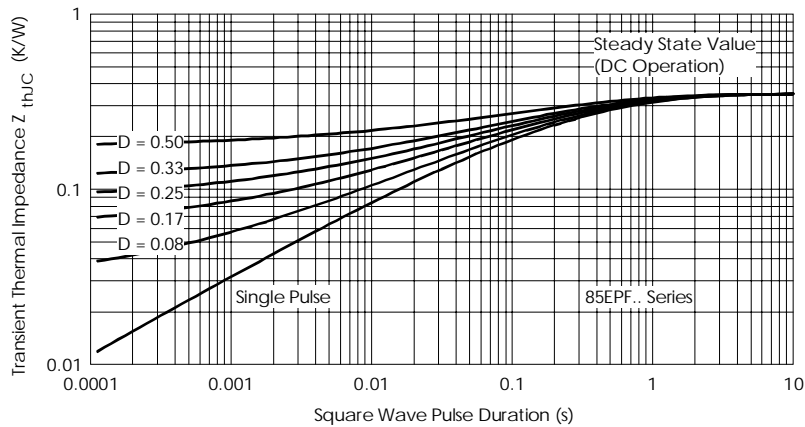
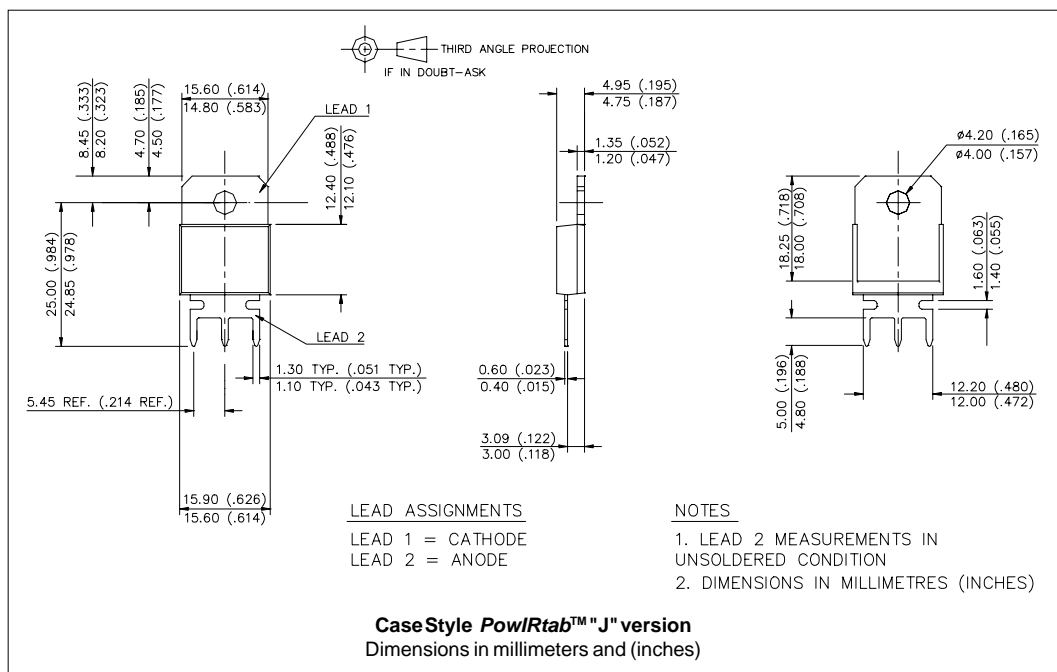
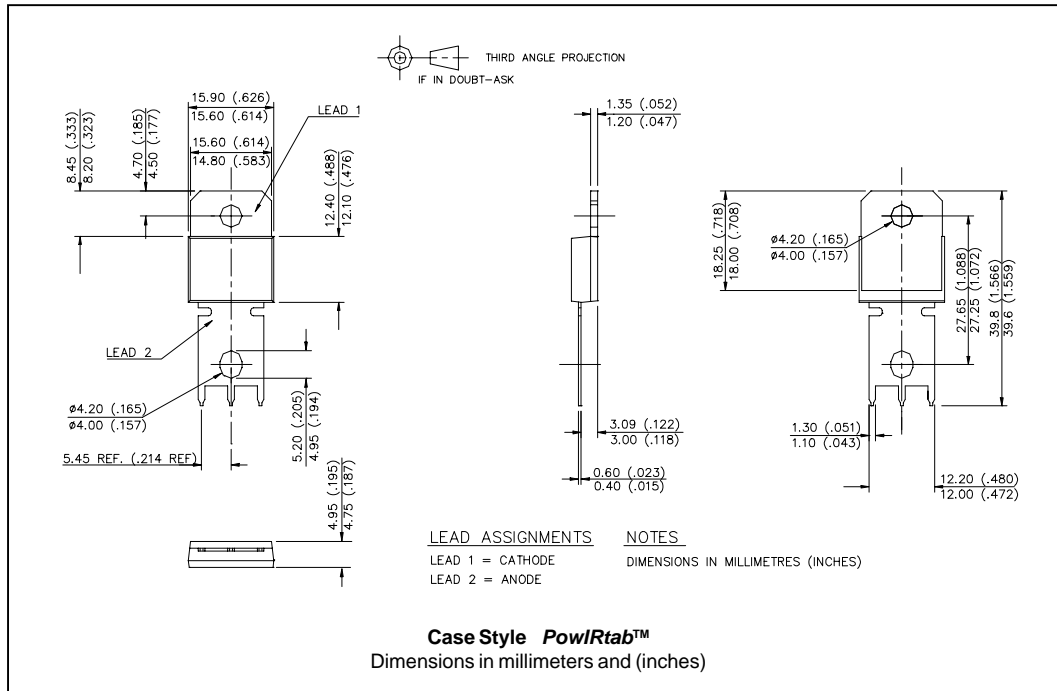


Fig. 14-Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

Device Code													
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">85</td> <td style="padding: 2px 10px;">E</td> <td style="padding: 2px 10px;">P</td> <td style="padding: 2px 10px;">F</td> <td style="padding: 2px 10px;">12</td> <td style="padding: 2px 10px;">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>	85	E	P	F	12	J	①	②	③	④	⑤	⑥
85	E	P	F	12	J								
①	②	③	④	⑤	⑥								
<b>1</b>	- Current Rating												
<b>2</b>	- Circuit Configuration: E = Single Diode												
<b>3</b>	- Package: P = TO-247AC												
<b>4</b>	- Type of Silicon: F = Fast Recovery												
<b>5</b>	- Voltage code: Code x 100 = $V_{RRM}$ (*)												
<b>6</b>	- none=PowIRtab™ standard J = Short Lead Version												

08	= 800V
10	= 1000V
12	= 1200V

Base Cathode  
2

1                      3  
Anode                      Anode

(\*) 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.