


# International **IR** Rectifier

## **QUIETIR** Series 80EPF.. HV

### FAST SOFT RECOVERY RECTIFIER DIODE

	$V_F < 1.2\text{ V @ } 40\text{ A}$ $t_{rr} = 90\text{ ns}$ $V_{RRM} 1000\text{ to }1200\text{ V}$
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#### Description/Features

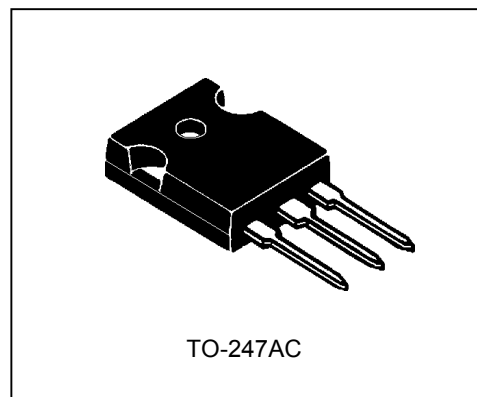
The 80EPF.. fast soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop. The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

Typical applications are both:

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

#### Major Ratings and Characteristics

Characteristics	80EPF..	Units
$I_{F(AV)}$ Sinusoidal waveform	80	A
$V_{RRM}$	1000 to 1200	V
$I_{FSM}$	1100	A
$V_F$ @40 A, $T_J = 25^\circ\text{C}$	1.2	V
$t_{rr}$ @1 A, -100 A/ $\mu\text{s}$	90	ns
$T_J$	-40 to 150	$^\circ\text{C}$



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
80EPF10	1000	1100	12
80EPF12	1200	1300	

Absolute Maximum Ratings

Parameters	80EPF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	80	A	@ $T_C = 92^\circ\text{C}$ , 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

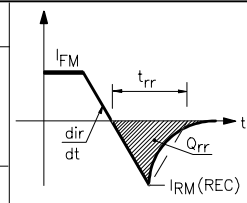
Electrical Specifications

Parameters	80EPF..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.35	V	@ 80A, $T_J = 25^\circ\text{C}$
$r_t$ 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	$T_J = 25^\circ\text{C}$
	12		$T_J = 150^\circ\text{C}$

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

Recovery Characteristics

Parameters	80EPF..	Units	Conditions
$t_{rr}$ Reverse Recovery Time	480	ns	$I_F @ 80\text{Apk}$ @ 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		80EPF..	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		TO-247AC	JEDEC	

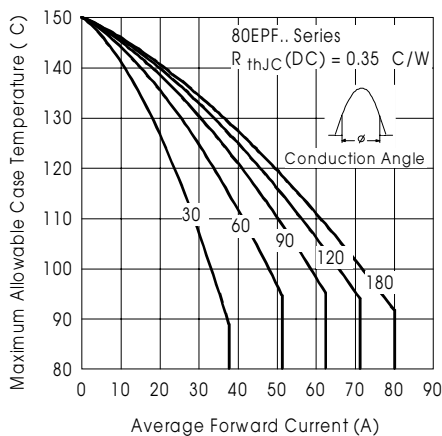


Fig. 1 - Current Rating Characteristics

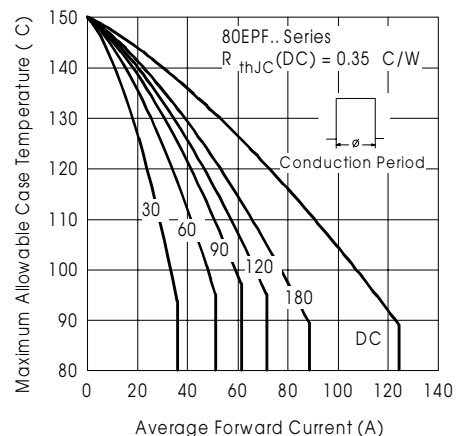


Fig. 2 - Current Rating Characteristics

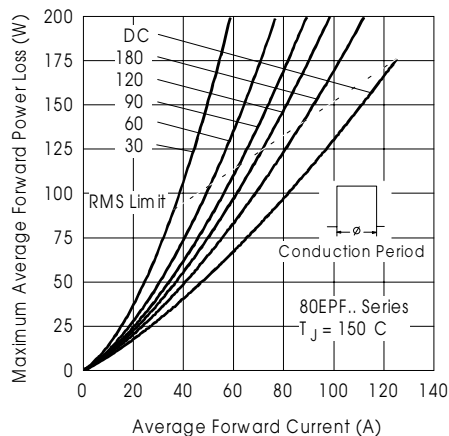


Fig. 3 - Forward Power Loss Characteristics

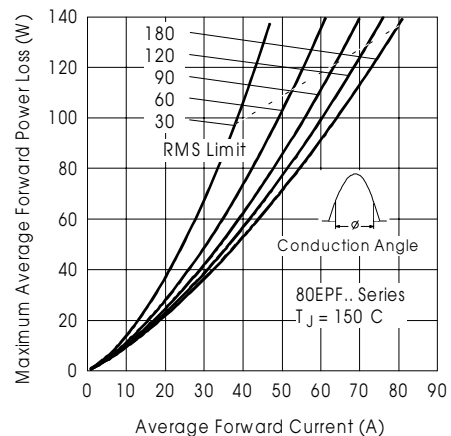


Fig. 4 - Forward Power Loss Characteristics

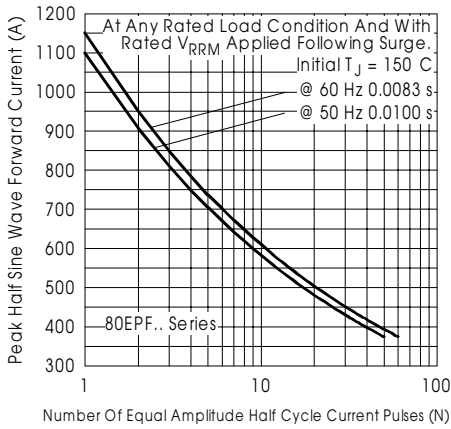


Fig. 5 - Maximum Non-Repetitive Surge Current

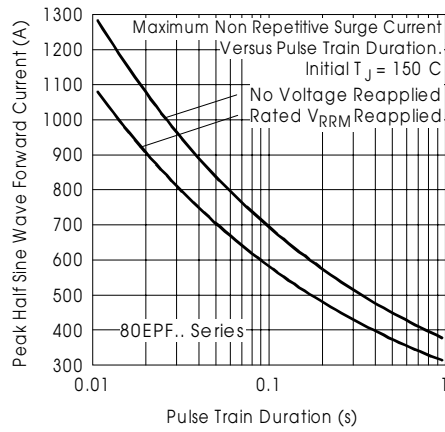


Fig. 6 - Maximum Non-Repetitive Surge Current

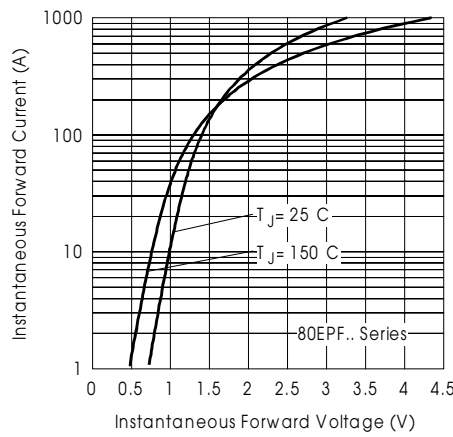


Fig. 7 - Forward Voltage Drop Characteristics

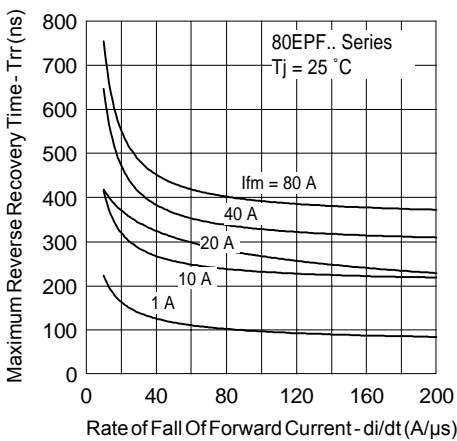


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

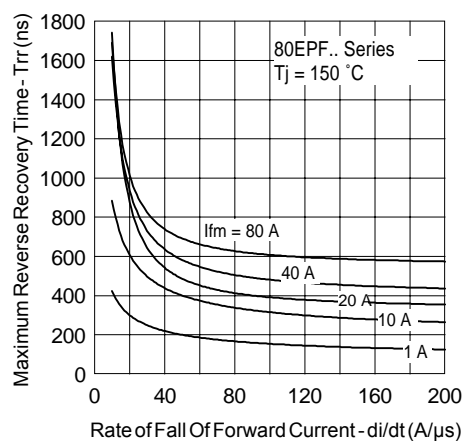


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

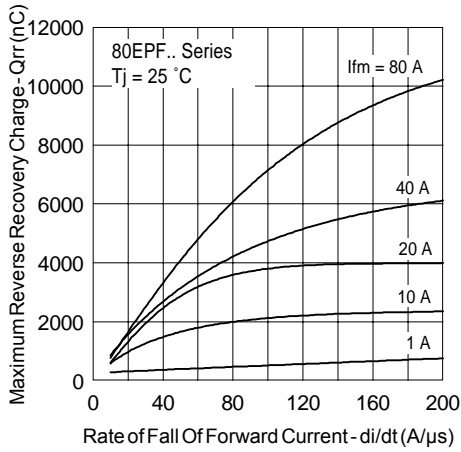


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

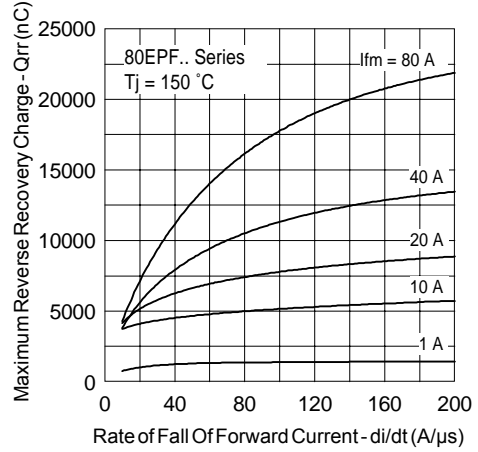


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

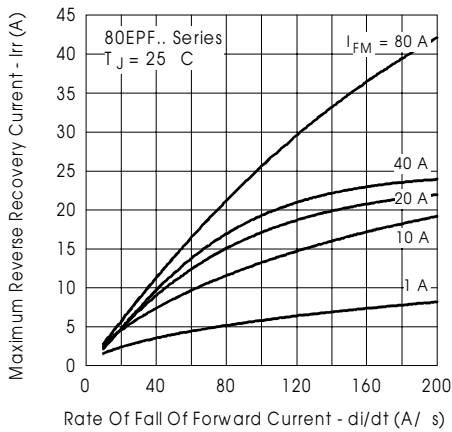


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

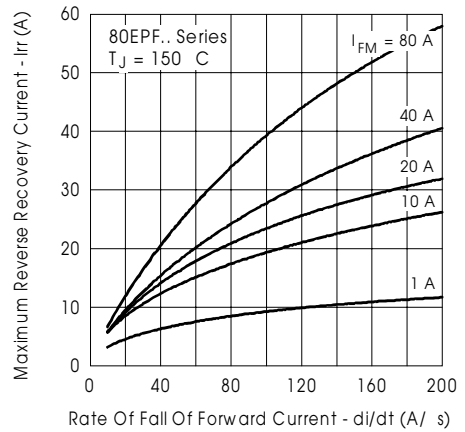


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

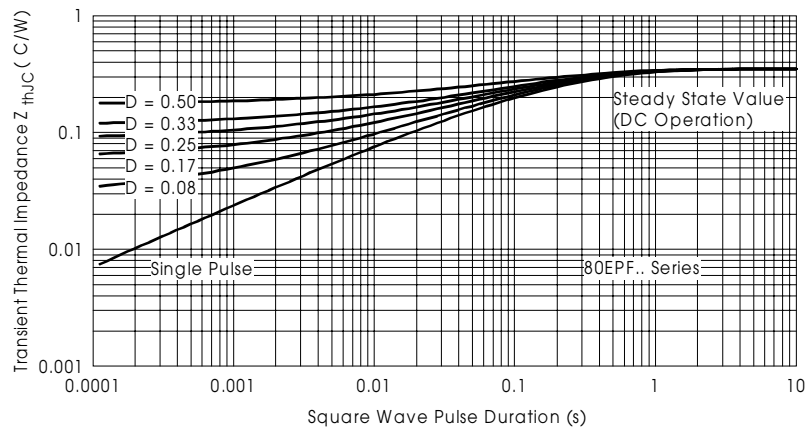
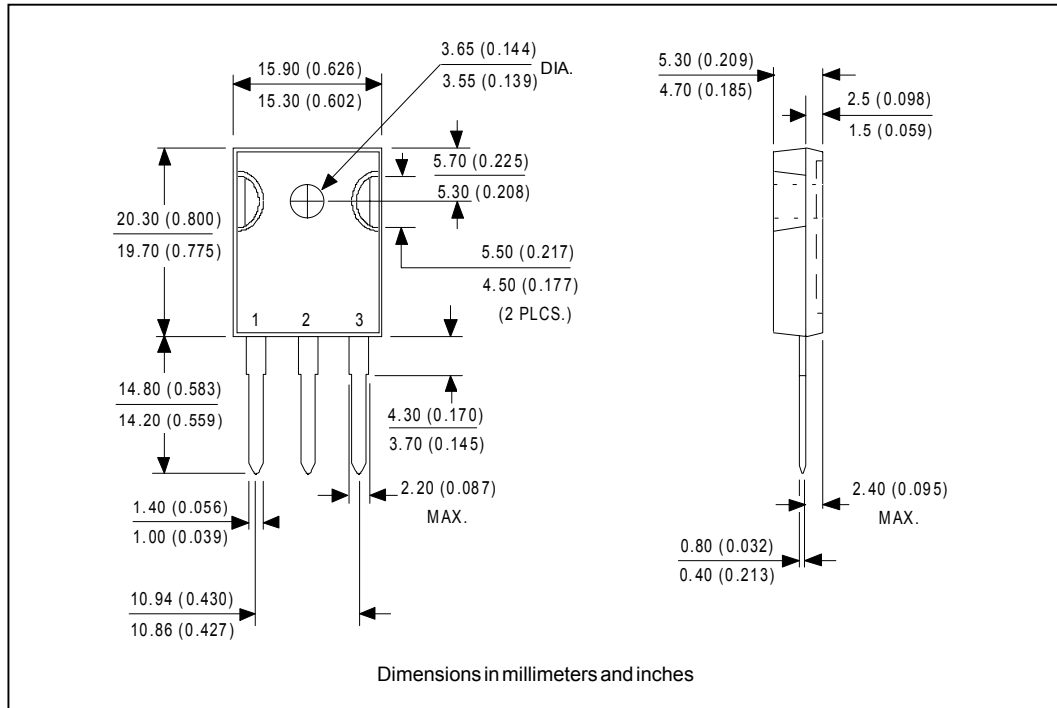
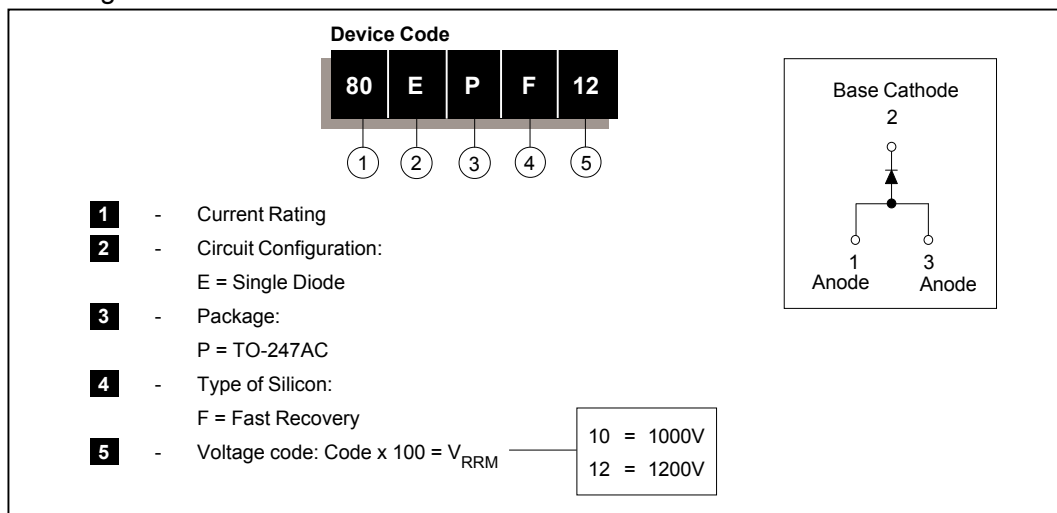


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table



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.

International  
**IOR** Rectifier

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