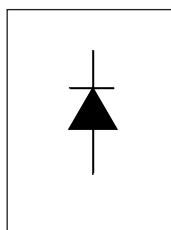


International
IOR Rectifier

QUIETIR Series
80EPF..

FAST SOFT RECOVERY RECTIFIER DIODE



$$V_F < 1.1V @ 40A$$

$$t_{rr} = 70ns$$

$$V_{RRM} \text{ 200 to 600V}$$

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} range	200 to 600	V
I_{FSM}	1000	A
V_F @ 40A, $T_J = 25^\circ C$	1.1	V
t_{rr} @ 1A, -100A/ μs	70	ns
T_J range	-40 to 150	$^\circ C$

Package Outline



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
80EPF02	200	300	17
80EPF04	400	500	
80EPF06	600	700	

Absolute Maximum Ratings

Parameters	80EPF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	80	A	@ $T_C = 95^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	850	A	10ms Sine pulse, rated V_{RRM} applied
	1000		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	3610	A^2s	10ms Sine pulse, rated V_{RRM} applied
	5100		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	51000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

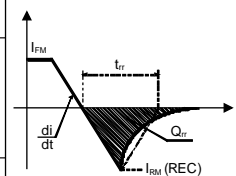
Electrical Specifications

Parameters	80EPF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.25	V	@ 80A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	3.5	$m\Omega$	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.85	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	17		$T_J = 150^\circ\text{C}$

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

Recovery Characteristics

Parameters	80EPF..	Units	Conditions
t_{rr} Reverse Recovery Time	190	ns	$I_F @ 40\text{Apk}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	3.4	A	
Q_{rr} Reverse Recovery Charge	0.5	μC	
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		

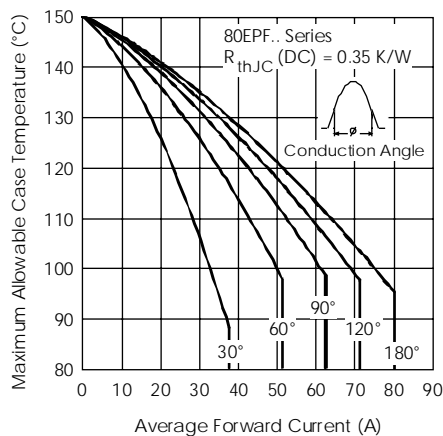


Fig. 1 - Current Rating Characteristics

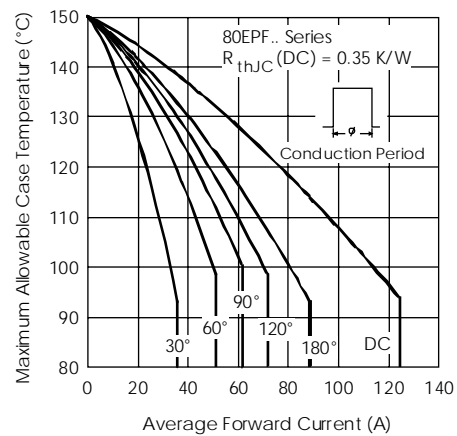


Fig. 2 - Current Rating Characteristics

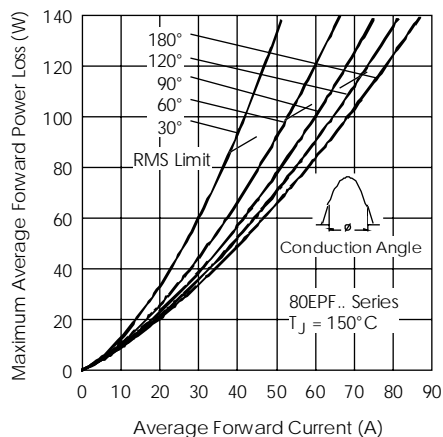


Fig. 3 - Forward Power Loss Characteristics

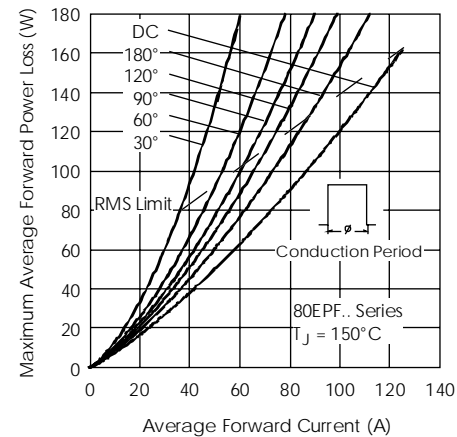


Fig. 4 - Forward Power Loss Characteristics

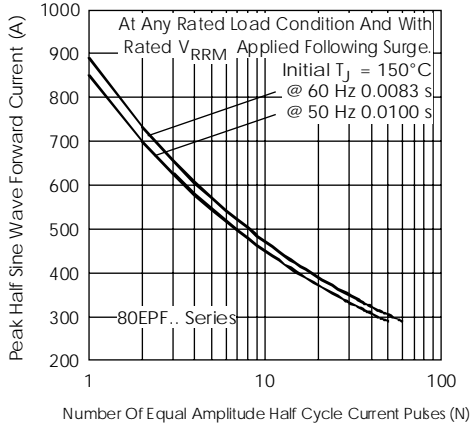


Fig. 5 - Maximum Non-Repetitive Surge Current

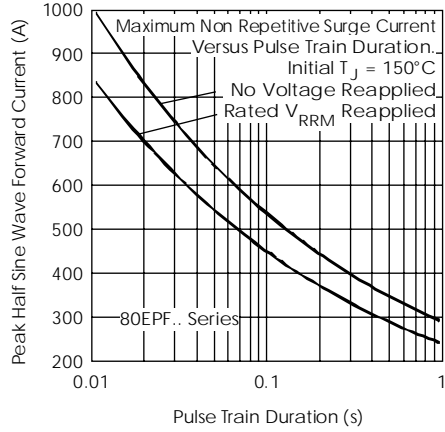


Fig. 6 - Maximum Non-Repetitive Surge Current

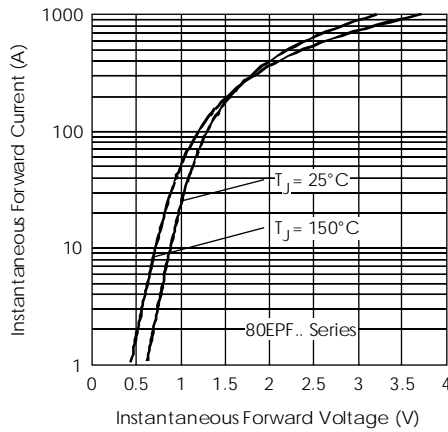


Fig. 7 - Forward Voltage Drop Characteristics

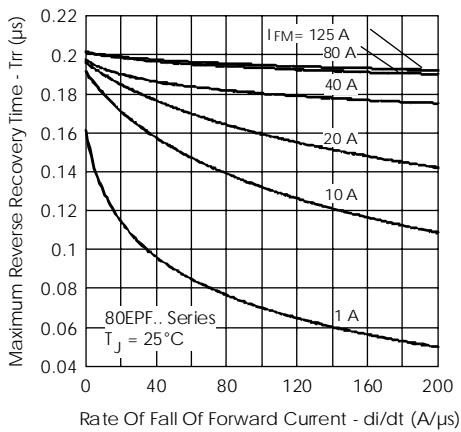


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

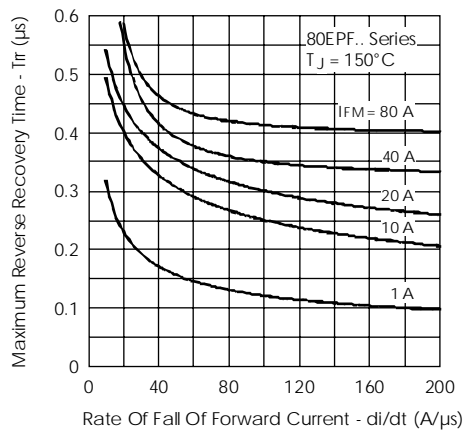


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

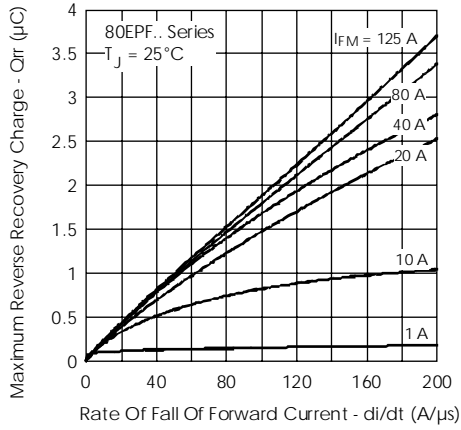


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

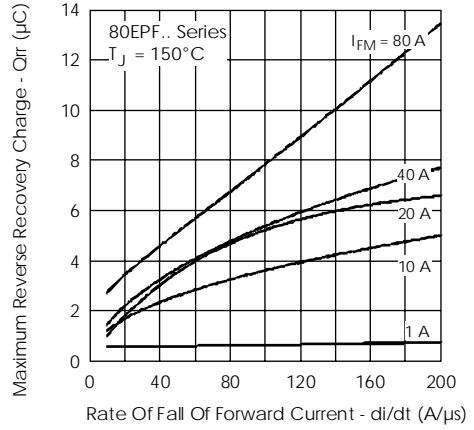


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

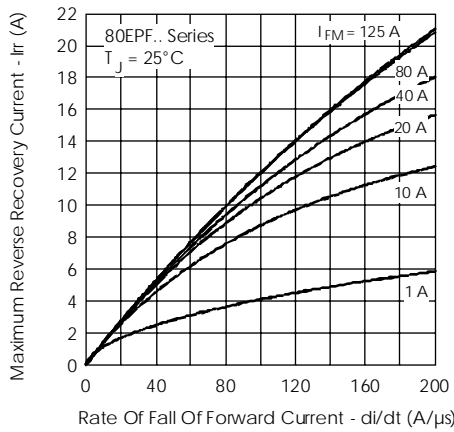


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

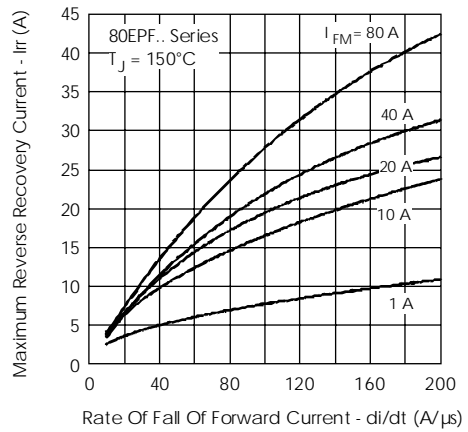


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

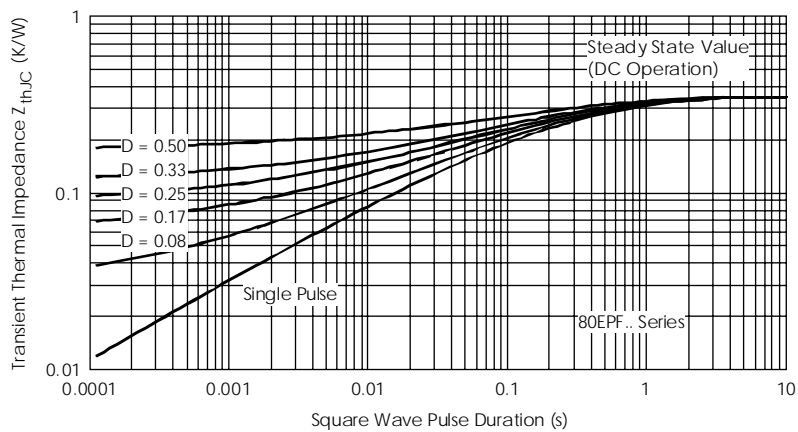
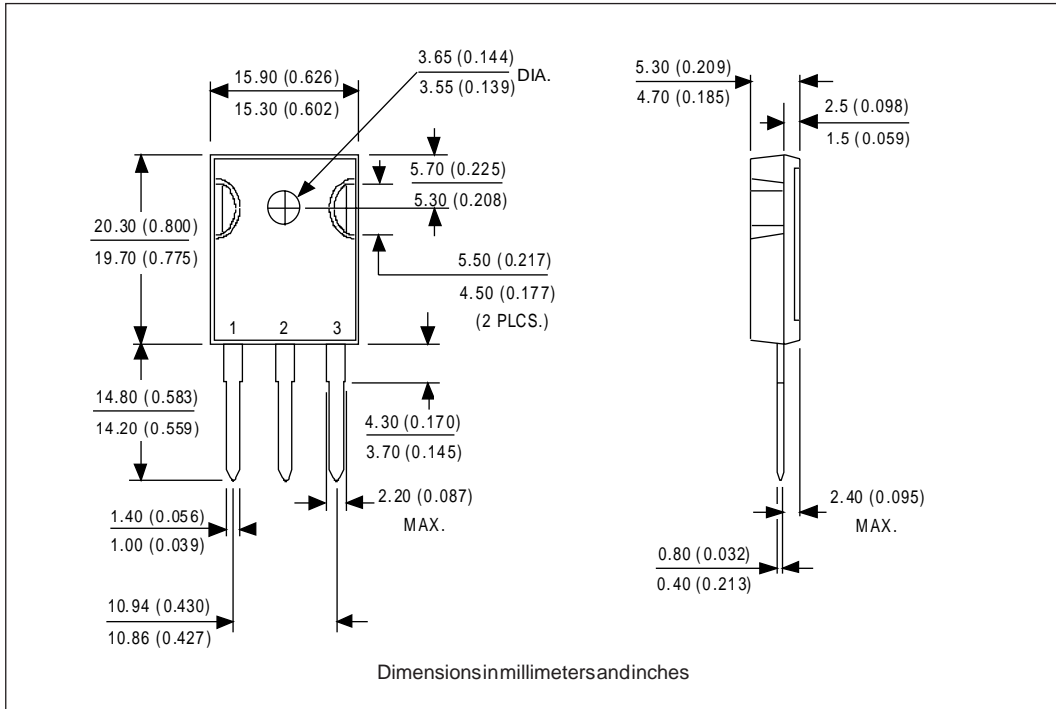


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code				
80	E	P	F	06
①	②	③	④	⑤

<p>1 - Current Rating</p> <p>2 - Circuit Configuration: E = Single Diode, 3 pins</p> <p>3 - Package: P = TO-247AC</p> <p>4 - Type of Silicon: F = Fast Recovery</p> <p>5 - Voltage code: Code x 100 = V_{RRM}</p>	<table border="1"> <tr> <td>02 = 200V</td> </tr> <tr> <td>04 = 400V</td> </tr> <tr> <td>06 = 600V</td> </tr> </table>	02 = 200V	04 = 400V	06 = 600V
02 = 200V				
04 = 400V				
06 = 600V				

Base Cathode
2

1 Anode 3 Anode

International
IOR Rectifier

WORLDHEADQUARTERS: 233 Kansas St., El Segundo, California 90245 U.S.A. Tel: (310) 322 3331. Fax: (310) 322 3332.
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IR CANADA: 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. Fax: (905) 475 8801.
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino. Tel: ++ 39 11 4510111. Fax: ++ 39 11 4510220.
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.
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