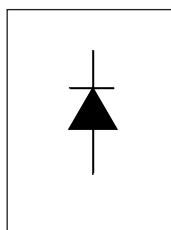


International  
**IOR** Rectifier

**QUIETIR** Series  
 80EPF..

### FAST SOFT RECOVERY RECTIFIER DIODE



$$V_F < 1.1V @ 40A$$

$$t_{rr} = 70ns$$

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

#### 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/ $\mu s$	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

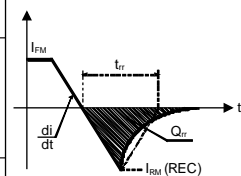
Electrical Specifications

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/ $\mu\text{s}$ @ 25°C
$I_{rr}$ Reverse Recovery Current	3.4	A	
$Q_{rr}$ Reverse Recovery Charge	0.5	$\mu\text{C}$	
S Snap Factor	0.5		



Thermal-Mechanical Specifications

Parameters	80EPF..	Units	Conditions
T <sub>J</sub> Max. Junction Temperature Range	-40 to 150	°C	
T <sub>stg</sub> Max. Storage Temperature Range	-40 to 150	°C	
R <sub>thJC</sub> Max. Thermal Resistance Junction to Case	0.35	°C/W	DC operation
R <sub>thJA</sub> Max. Thermal Resistance Junction to Ambient	40	°C/W	
R <sub>thCS</sub> 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		

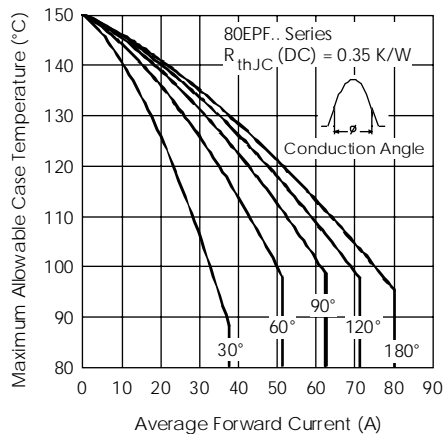


Fig. 1 - Current Rating Characteristics

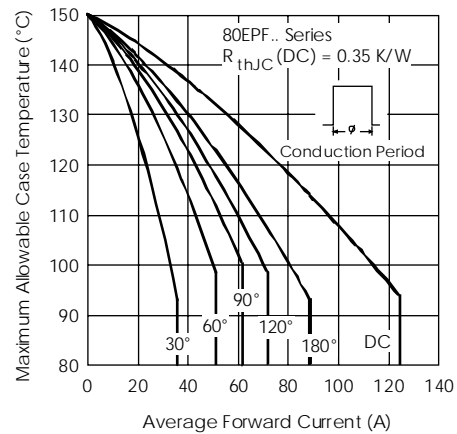


Fig. 2 - Current Rating Characteristics

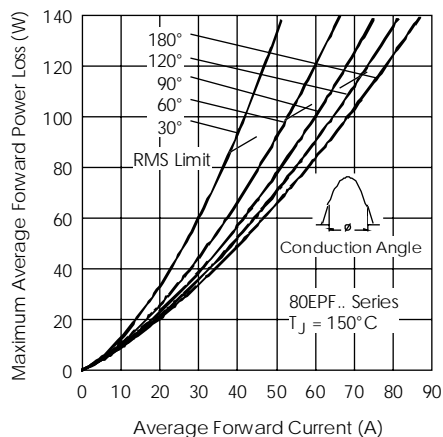


Fig. 3 - Forward Power Loss Characteristics

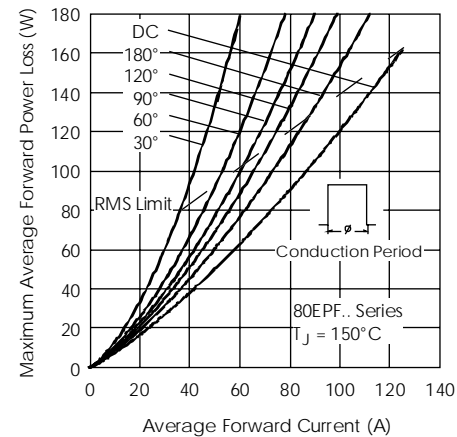


Fig. 4 - Forward Power Loss Characteristics

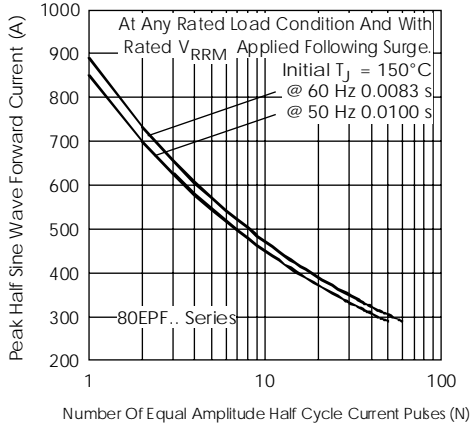


Fig. 5 - Maximum Non-Repetitive Surge Current

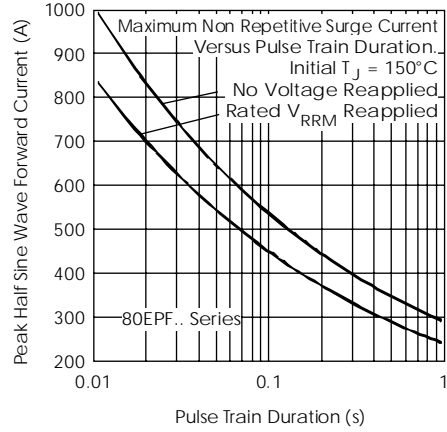


Fig. 6 - Maximum Non-Repetitive Surge Current

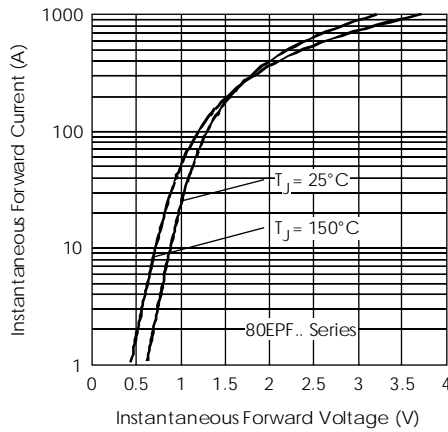


Fig. 7 - Forward Voltage Drop Characteristics

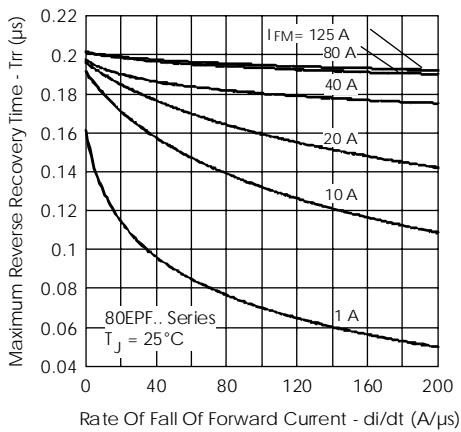


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

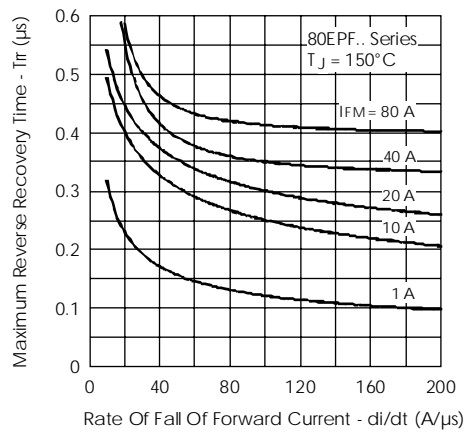


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

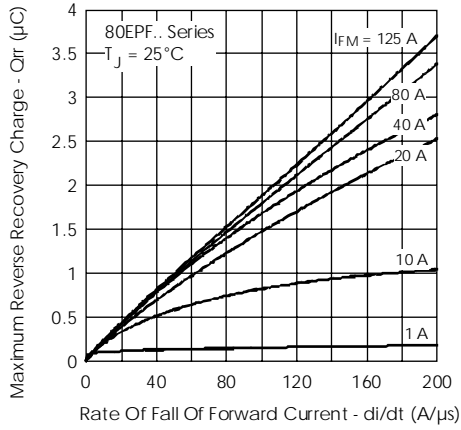


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

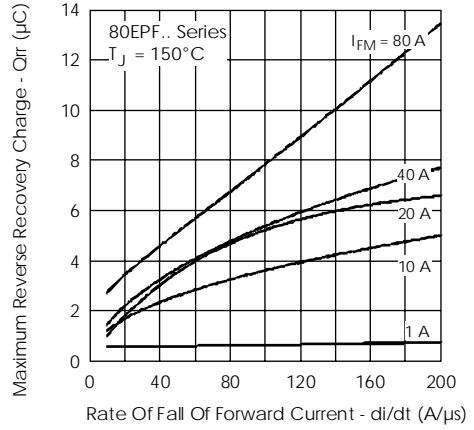


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

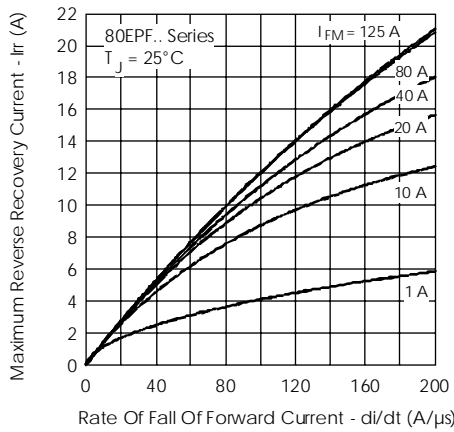


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

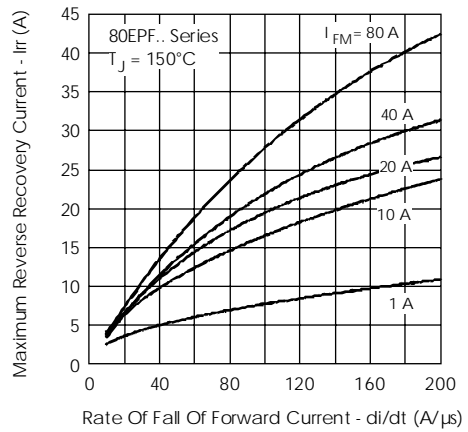


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

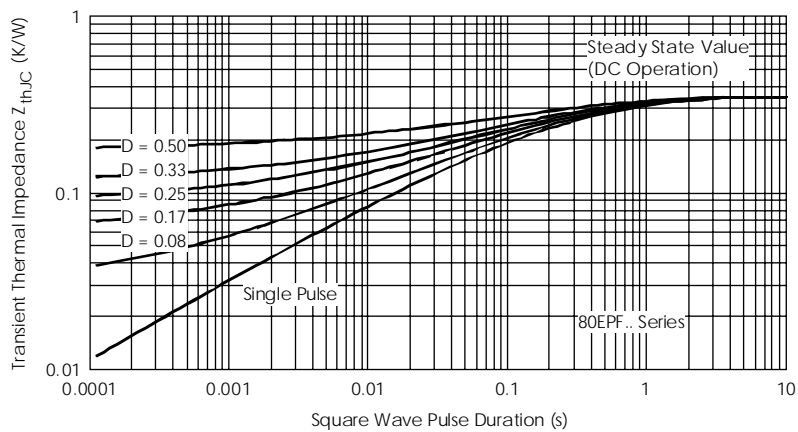
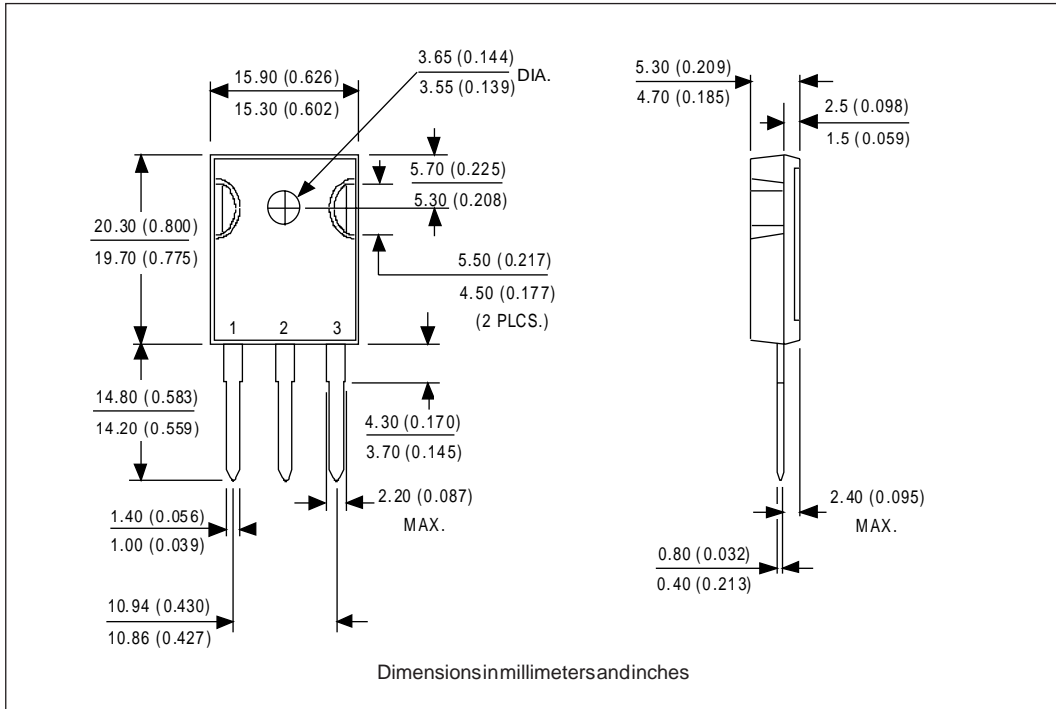


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

Device Code				
80	E	P	F	06
①	②	③	④	⑤

- 1** - Current Rating
- 2** - Circuit Configuration:  
E = Single Diode, 3 pins
- 3** - Package:  
P = TO-247AC
- 4** - Type of Silicon:  
F = Fast Recovery
- 5** - Voltage code: Code x 100 =  $V_{RRM}$

02 = 200V  
 04 = 400V  
 06 = 600V

Base Cathode  
2

1 Anode      3 Anode

International  
**IOR** Rectifier

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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.  
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**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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