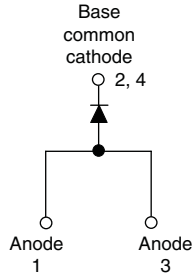


## Fast Soft Recovery Rectifier Diode, 80 A



TO-247AC



### FEATURES/DESCRIPTION

The 80EPF..PbF fast soft recovery rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.



RoHS\*  
COMPLIANT

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

This product series has been designed and qualified for industrial level and lead (Pb)-free.

### APPLICATIONS

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

### PRODUCT SUMMARY

$V_F$ at 40 A	< 1.2 V
$t_{rr}$	90 ns
$V_{RRM}$	1000/1200 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	TEST CONDITIONS	VALUES	UNITS
$V_{RRM}$		1000/1200	V
$I_{F(AV)}$	Sinusoidal waveform	80	A
$I_{FSM}$		1100	
$t_{rr}$	1 A, - 100 A/ $\mu$ s	90	ns
$V_F$	40 A, $T_J = 25^\circ\text{C}$	1.2	V
$T_J$		- 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	$I_{RRM}$ AT 150 $^\circ\text{C}$ mA
80EPF10PbF	1000	1100	12
80EPF12PbF	1200	1300	

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 92^\circ\text{C}$ , 180 $^\circ$ conduction half sine wave	80	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	1100	
		10 ms sine pulse, no voltage reapplied	1250	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	5000	$\text{A}^2\text{s}$
		10 ms sine pulse, no voltage reapplied	7000	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	70 000	$\text{A}^2\sqrt{\text{s}}$

\* Pb containing terminations are not RoHS compliant, exemptions may apply

# 80EPF..PbF Soft Recovery Series

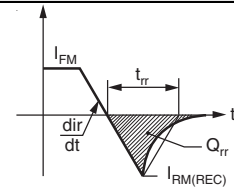


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Fast Soft Recovery  
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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	80 A, $T_J = 25\text{ }^\circ\text{C}$		1.35	V
Forward slope resistance	$r_t$	$T_J = 150\text{ }^\circ\text{C}$		4.03	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.87	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		12	

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	$t_{rr}$	$I_F$ at 80 Apk 25 A/ $\mu\text{s}$ 25 $^\circ\text{C}$	480	ns
Reverse recovery current	$I_{rr}$		7.1	A
Reverse recovery charge	$Q_{rr}$		2.1	$\mu\text{C}$
Snap factor	S		0.5	



THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$		- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation	0.35	$^\circ\text{C}/\text{W}$
Maximum thermal resistance, junction to ambient	$R_{thJA}$		40	
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased	0.2	
Approximate weight			6	g
			0.21	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style TO-247AC (JEDEC)	80EPF10	
			80EPF12	



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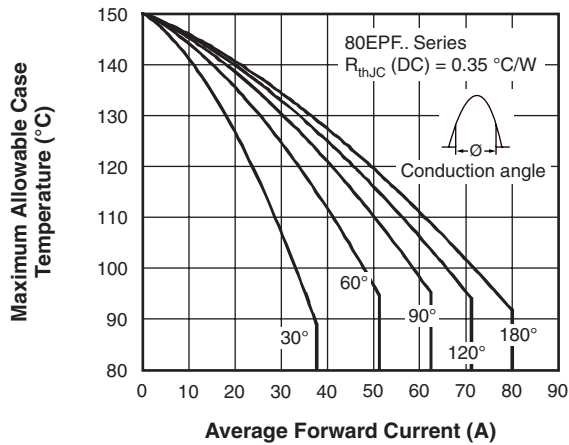


Fig. 1 - Current Rating Characteristics

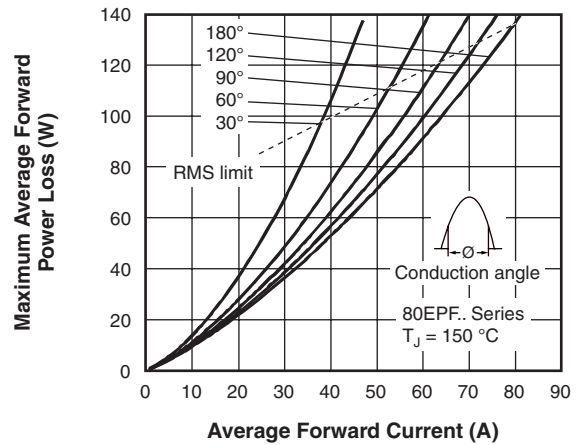


Fig. 4 - Forward Power Loss Characteristics

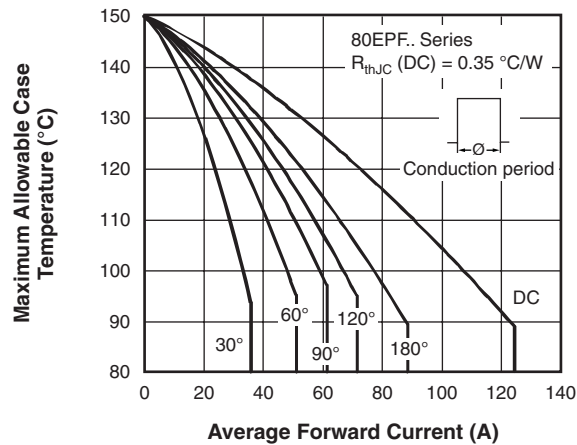


Fig. 2 - Current Rating Characteristics

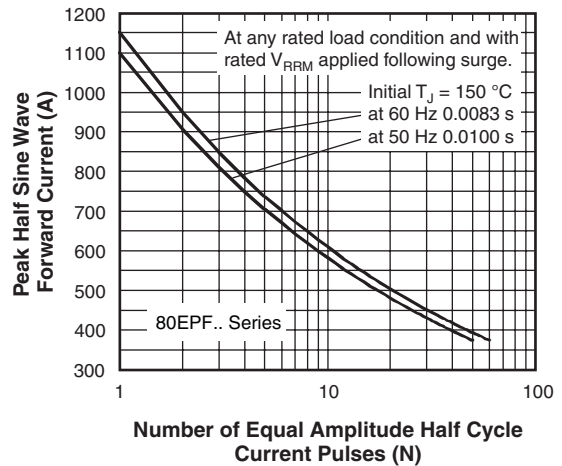


Fig. 5 - Maximum Non-Repetitive Surge Current

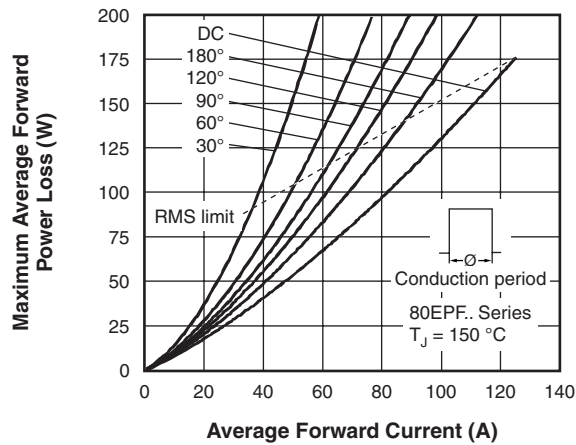


Fig. 3 - Forward Power Loss Characteristics

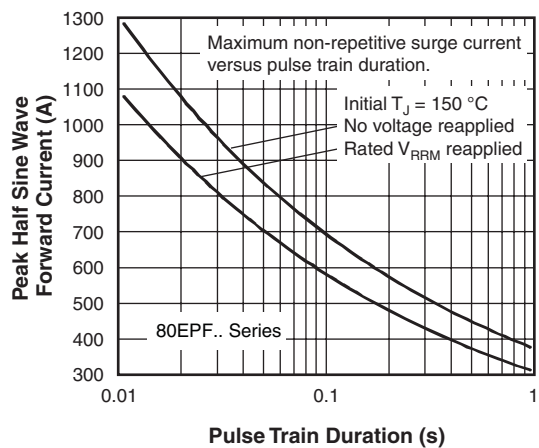


Fig. 6 - Maximum Non-Repetitive Surge Current

# 80EPF..PbF Soft Recovery Series



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Fast Soft Recovery Rectifier Diode, 80 A

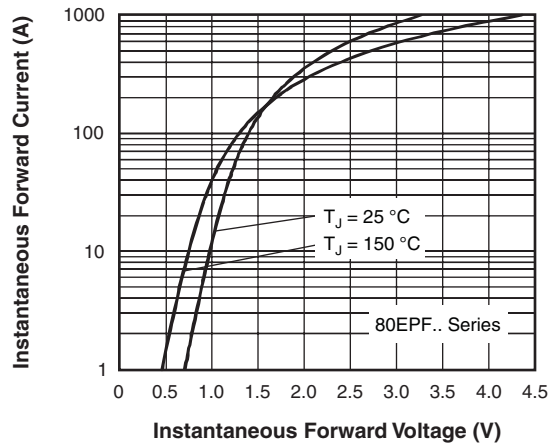


Fig. 7 - Forward Voltage Drop Characteristics

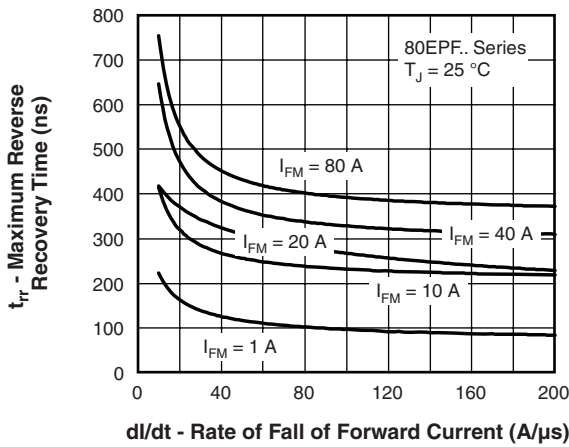


Fig. 8 - Recovery Time Characteristics,  $T_J = 25\text{ °C}$

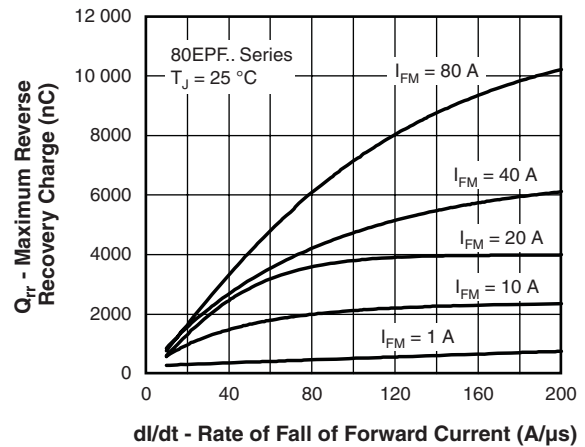


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25\text{ °C}$

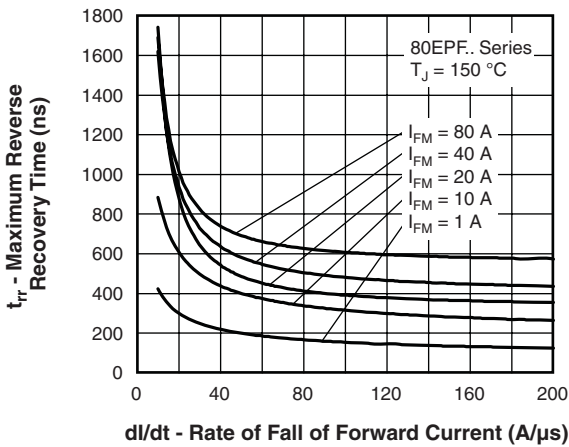


Fig. 9 - Recovery Time Characteristics,  $T_J = 150\text{ °C}$

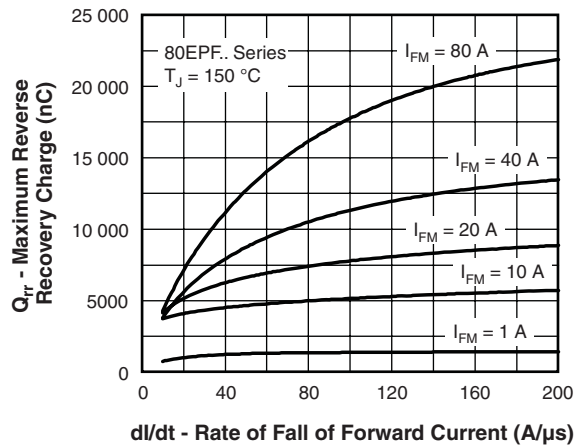


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150\text{ °C}$



# 80EPF..PbF Soft Recovery Series

Fast Soft Recovery  
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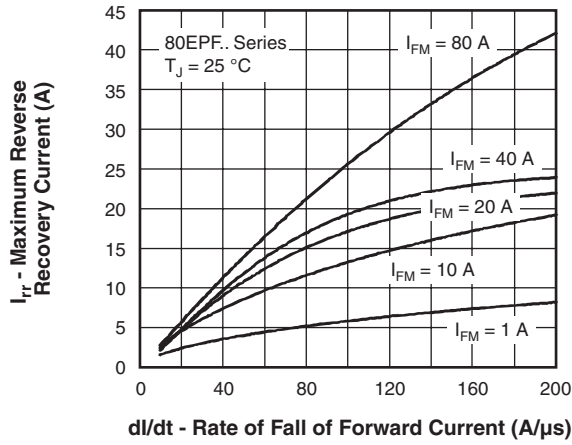


Fig. 12 - Recovery Current Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

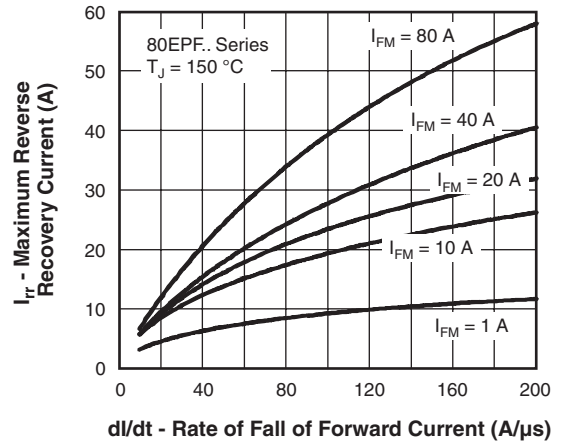


Fig. 13 - Recovery Current Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

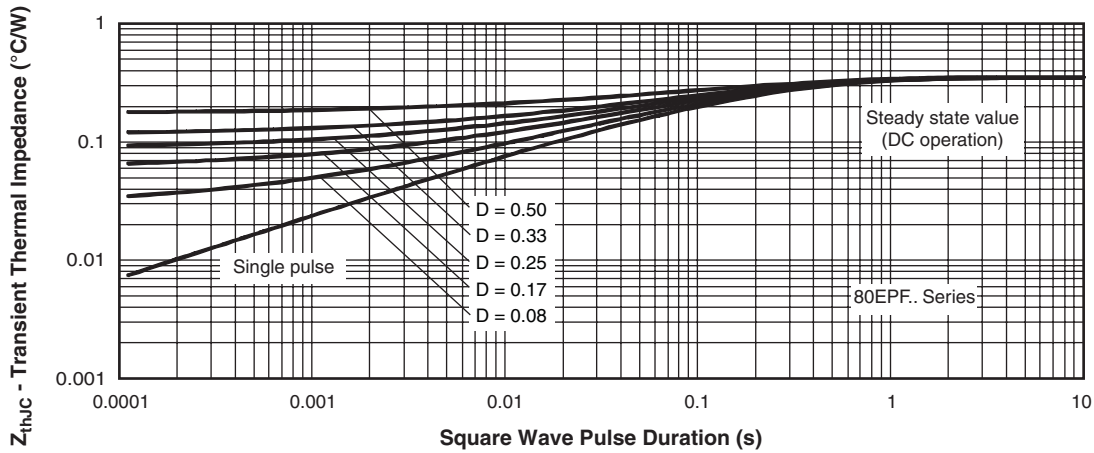


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

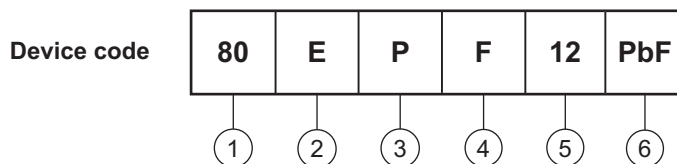
# 80EPF..PbF Soft Recovery Series



Vishay High Power Products

Fast Soft Recovery  
Rectifier Diode, 80 A

## ORDERING INFORMATION TABLE



- 1** - Current rating (80 = 80 A)
- 2** - Circuit configuration:  
E = Single diode
- 3** - Package:  
P = TO-247AC
- 4** - Type of silicon:  
F = Fast diode
- 5** - Voltage code x 100 =  $V_{RRM}$
- 6** -
  - None = Standard production
  - PbF = Lead (Pb)-free

10 = 1000 V
12 = 1200 V

### LINKS TO RELATED DOCUMENTS

Dimensions	<a href="http://www.vishay.com/doc?95223">http://www.vishay.com/doc?95223</a>
Part marking information	<a href="http://www.vishay.com/doc?95226">http://www.vishay.com/doc?95226</a>



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