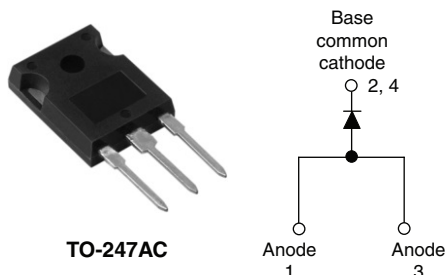


## Fast Soft Recovery Rectifier Diode, 80 A



### FEATURES/DESCRIPTION

The 80EPF.. fast soft recovery 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.

This product series has been designed and qualified for Industrial level.

### 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	< 1.1 V
$t_{rr}$	70 ns
$V_{RRM}$	200 to 600 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$V_{RRM}$		200 to 600	V
$I_{F(AV)}$	Sinusoidal waveform	80	A
$I_{FSM}$		1000	
$t_{rr}$	1 A, - 100 A/ $\mu$ s	70	ns
$V_F$	40 A, $T_J = 25^\circ\text{C}$	1.1	V
$T_J$	Range	- 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
80EPF02	200	300	17
80EPF04	400	500	
80EPF06	600	700	

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 95^\circ\text{C}$ , 180° conduction half sine wave	80	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	850	
		10 ms sine pulse, no voltage reapplied	1000	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	3610	$\text{A}^2\text{s}$
		10 ms sine pulse, no voltage reapplied	5100	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	51 000	$\text{A}^2\sqrt{\text{s}}$

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## ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	80 A, $T_J = 25\text{ }^{\circ}\text{C}$		1.25	V
Forward slope resistance	$r_t$	$T_J = 125\text{ }^{\circ}\text{C}$		3.5	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.85	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^{\circ}\text{C}$		17	

## RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Reverse recovery time	$t_{rr}$	$I_F$ at 40 Apk 25 A/ $\mu\text{s}$ 25 $^{\circ}\text{C}$	190	ns	
Reverse recovery current	$I_{rr}$		3.4	A	
Reverse recovery charge	$Q_{rr}$		0.5	$\mu\text{C}$	
Snap factor	S		0.5		

## THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>		- 40 to 150	°C
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation	0.35	°C/W
Maximum thermal resistance, junction to ambient	R <sub>thJA</sub>		40	
Typical thermal resistance, case to heatsink	R <sub>thCS</sub>	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	80EPF02	
			80EPF04	
			80EPF06	



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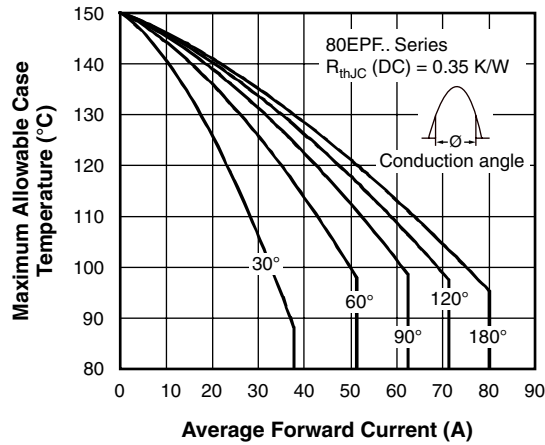


Fig. 1 - Current Rating Characteristics

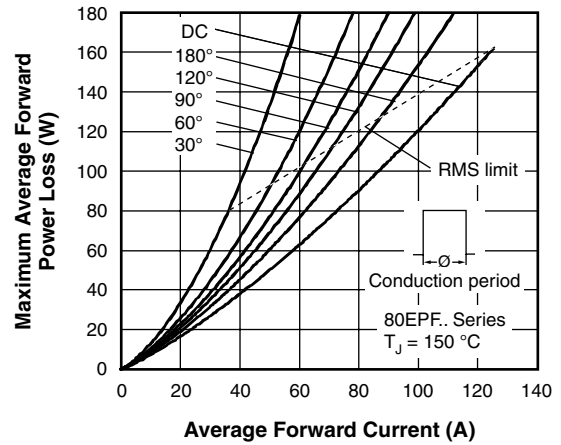


Fig. 4 - Forward Power Loss Characteristics

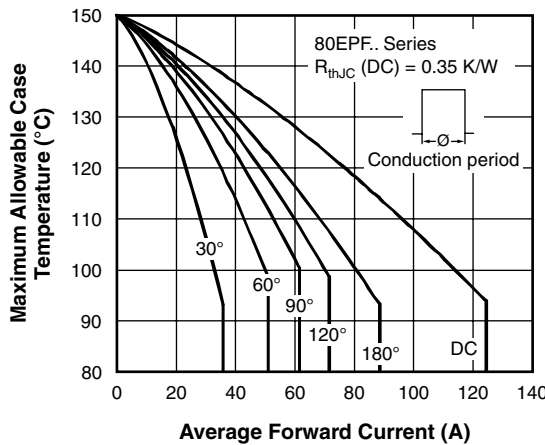


Fig. 2 - Current Rating Characteristics

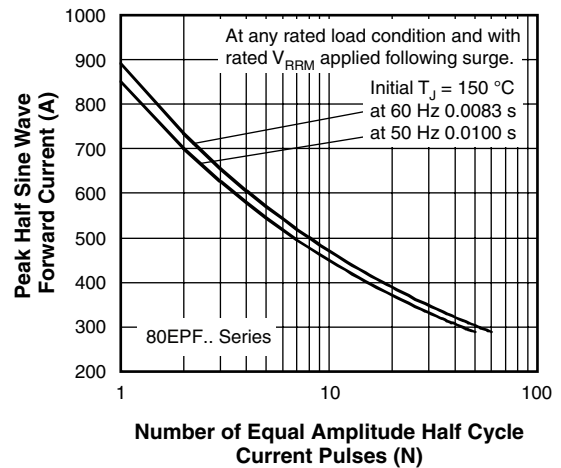


Fig. 5 - Maximum Non-Repetitive Surge Current

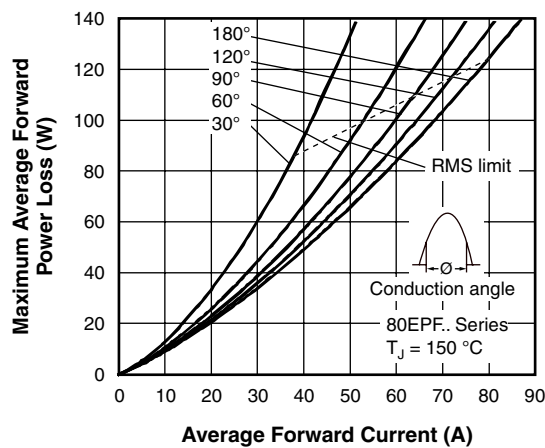


Fig. 3 - Forward Power Loss Characteristics

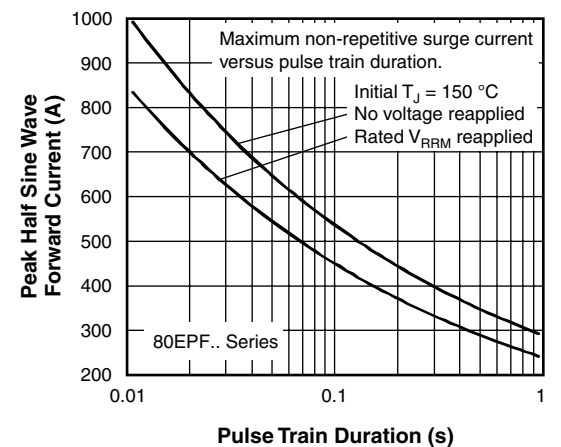


Fig. 6 - Maximum Non-Repetitive Surge Current

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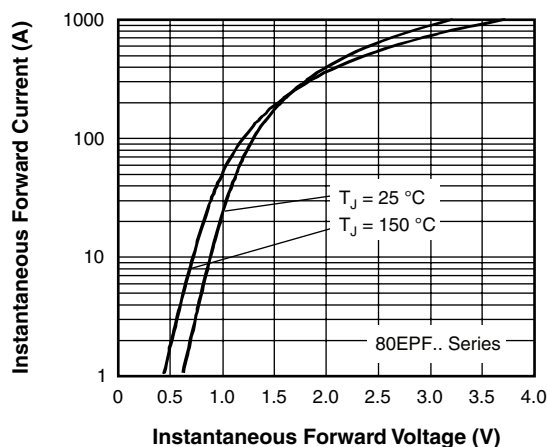


Fig. 7 - Forward Voltage Drop Characteristics

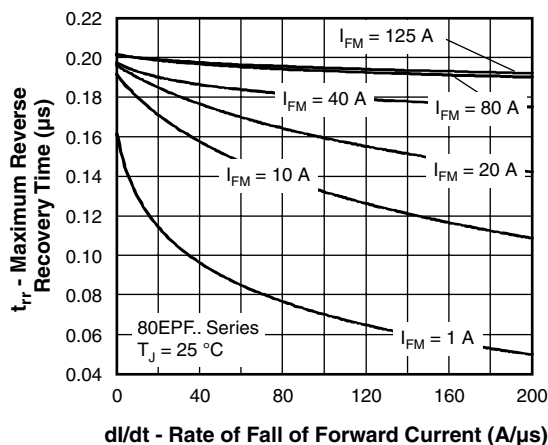


Fig. 8 - Recovery Time Characteristics,  $T_J = 25\text{ }^{\circ}\text{C}$

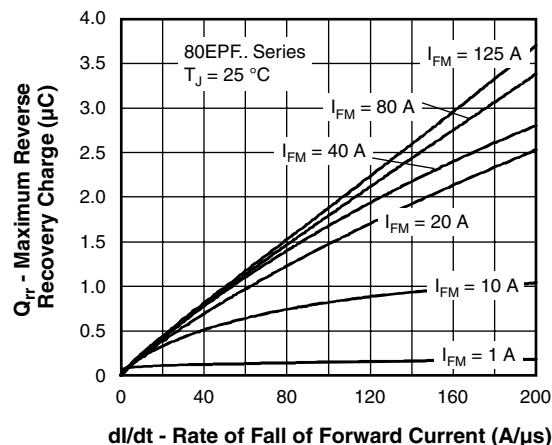


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25\text{ }^{\circ}\text{C}$

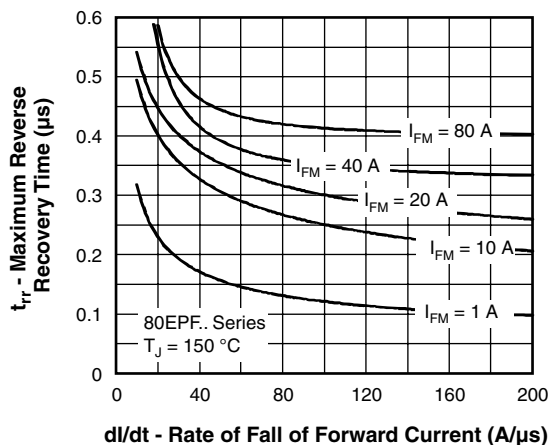


Fig. 9 - Recovery Time Characteristics,  $T_J = 150\text{ }^{\circ}\text{C}$

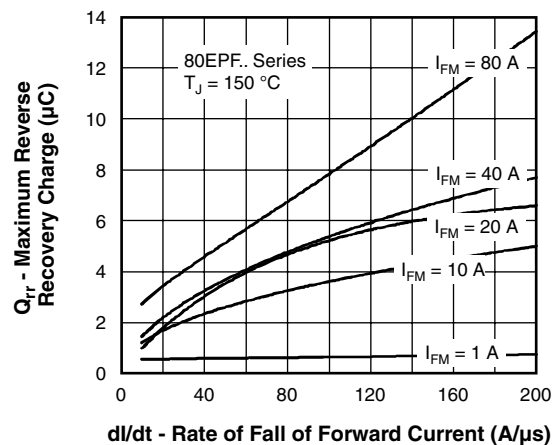


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150\text{ }^{\circ}\text{C}$



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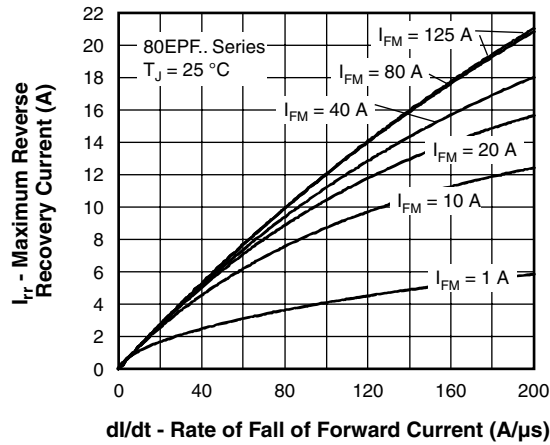


Fig. 12 - Recovery Current Characteristics,  $T_J = 25\text{ }^{\circ}\text{C}$

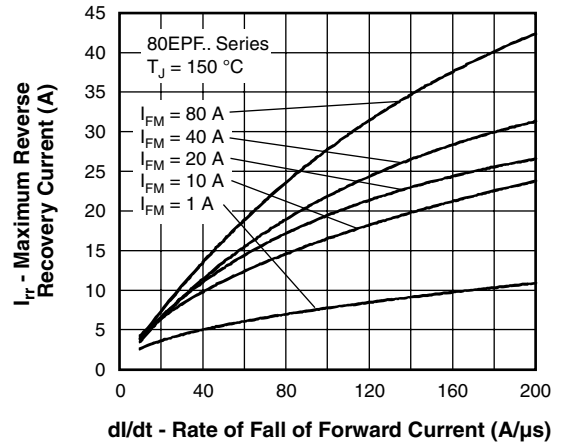


Fig. 13 - Recovery Current Characteristics,  $T_J = 150\text{ }^{\circ}\text{C}$

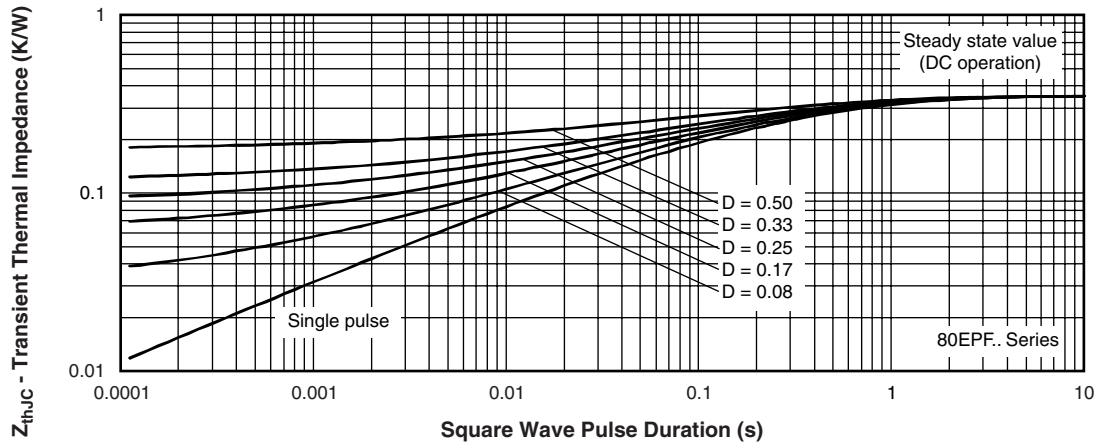


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

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## ORDERING INFORMATION TABLE

Device code	80	E	P	F	06	-
	①	②	③	④	⑤	⑥
①	- Current rating (80 = 80 A)					
②	- Circuit configuration: E = Single diode					
③	- Package: P = TO-247AC					
④	- Type of silicon: F = Fast recovery					
⑤	- Voltage code x 100 = $V_{RRM}$					
⑥	- • None = Standard production • PbF = Lead (Pb)-free					

02 = 200 V  
04 = 400 V  
06 = 600 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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