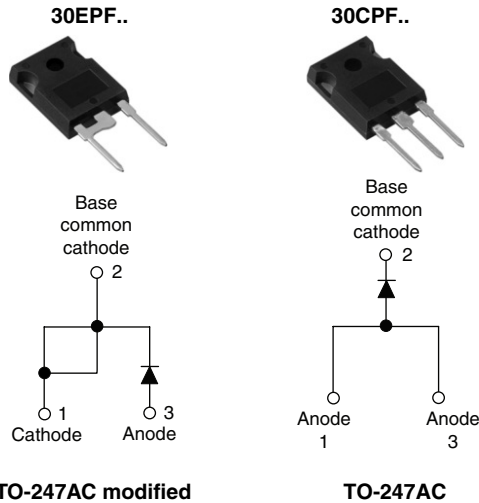


## Fast Soft Recovery Rectifier Diode, 30 A



### FEATURES/DESCRIPTION

The 30EPF..PbF and 30CPF..PbF 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.

30CPF series is a drop in replacement for 25CPF series (parallel connection only).

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 10 A	< 1.2 V
$t_{rr}$	60 ns
$V_{RRM}$	200 to 600 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	30	A
$V_{RRM}$		200 to 600	V
$I_{FSM}$		350	A
$V_F$	10 A, $T_J = 25^\circ\text{C}$	1.2	V
$t_{rr}$	1 A, 100 A/ $\mu\text{s}$	60	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	$I_{RRM}$ AT 150 $^\circ\text{C}$ mA
30EPF02PbF, 30CPF02PbF	200	300	2
30EPF04PbF, 30CPF04PbF	400	500	
30EPF06PbF, 30CPF06PbF	600	700	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 98^\circ\text{C}$ , 180 $^\circ$ conduction half sine wave	30	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	300	
		10 ms sine pulse, no voltage reapplied	350	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	450	$\text{A}^2\text{s}$
		10 ms sine pulse, no voltage reapplied	636	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	6360	$\text{A}^2\sqrt{\text{s}}$

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

# 30EPF..PbF/30CPF..PbF Soft Recovery Series

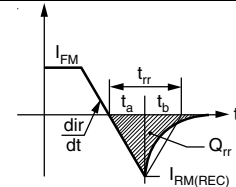


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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	30 A, $T_J = 25\text{ }^\circ\text{C}$		1.41	V
Forward slope resistance	$r_t$	$T_J = 150\text{ }^\circ\text{C}$		12.5	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.9	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		2.0	

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	$t_{rr}$	$I_F$ at 20 Apk 100 A/ $\mu\text{s}$ $25\text{ }^\circ\text{C}$	160	ns
Reverse recovery current	$I_{rr}$		10	A
Reverse recovery charge	$Q_{rr}$		1.25	$\mu\text{C}$
Snap factor	S	Typical	0.6	



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	0.8	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	$R_{thJA}$		40	
Maximum 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 modified (JEDEC)	30EPS02, 30CPF02	
			30EPS04, 30CPF04	
			30EPS06, 30CPF06	



# 30EPF..PbF/30CPF..PbF Soft Recovery Series

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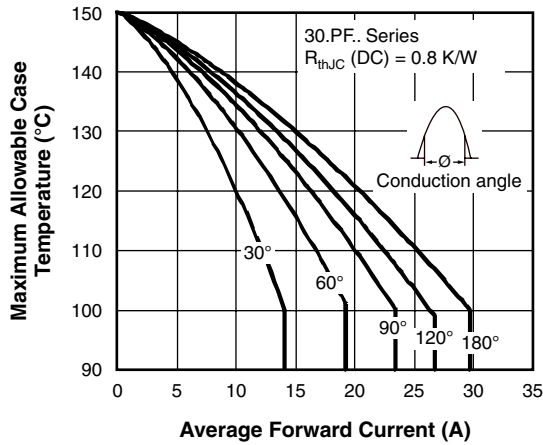


Fig. 1 - Current Rating Characteristics

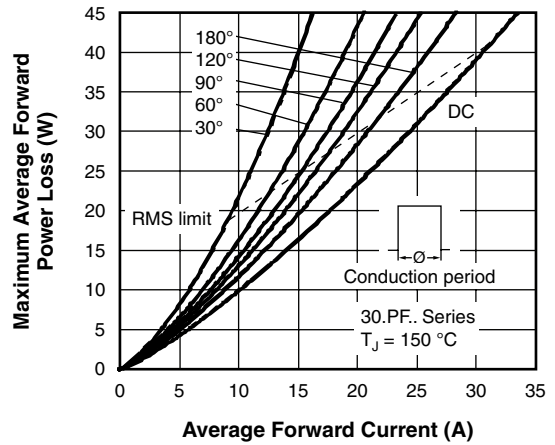


Fig. 4 - Forward Power Loss Characteristics

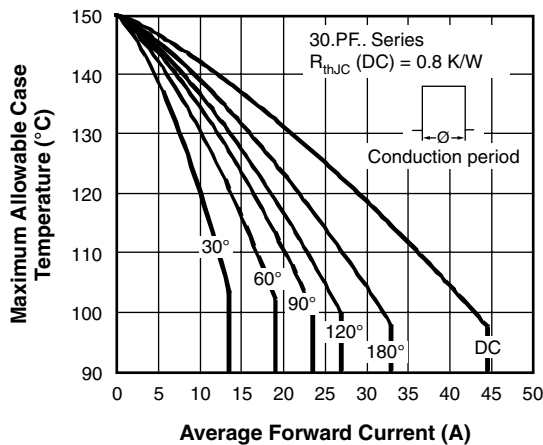


Fig. 2 - Current Rating Characteristics

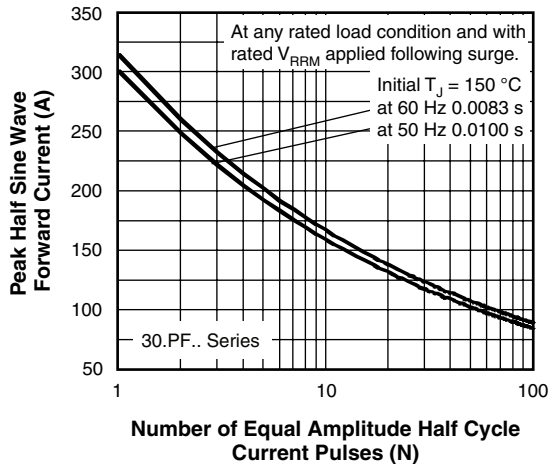


Fig. 5 - Maximum Non-Repetitive Surge Current

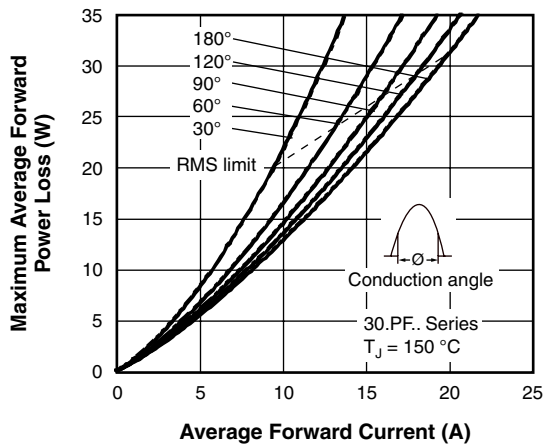


Fig. 3 - Forward Power Loss Characteristics

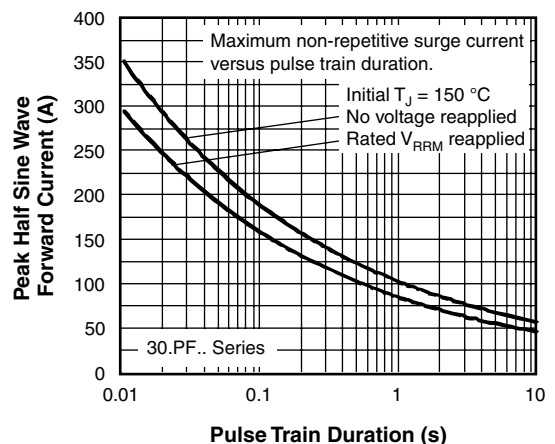


Fig. 6 - Maximum Non-Repetitive Surge Current

# 30EPF..PbF/30CPF..PbF Soft Recovery Series



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Fast Soft Recovery Rectifier Diode, 30 A

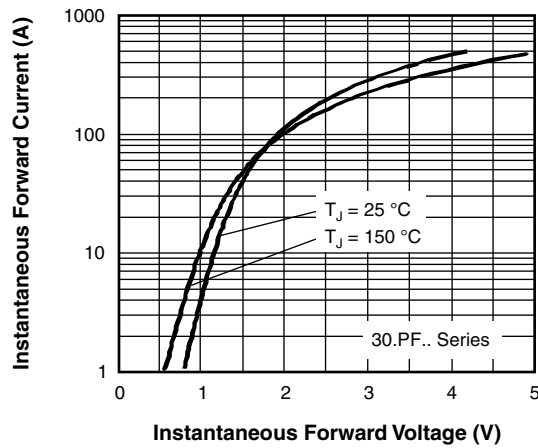


Fig. 7 - Forward Voltage Drop Characteristics

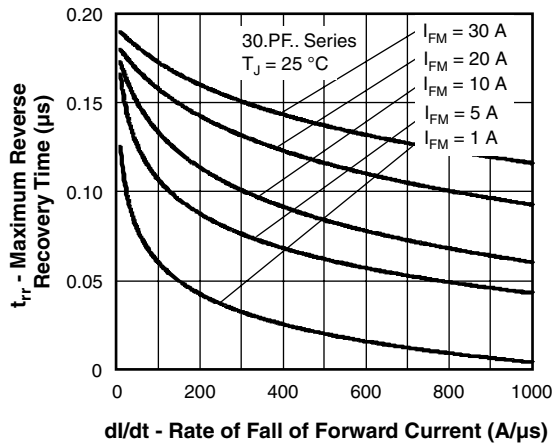


Fig. 8 - Recovery Time Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

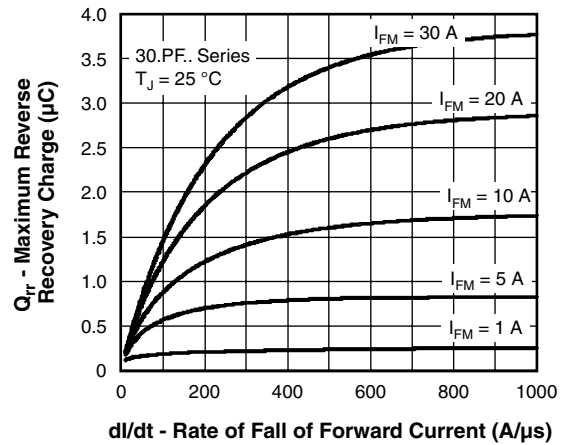


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

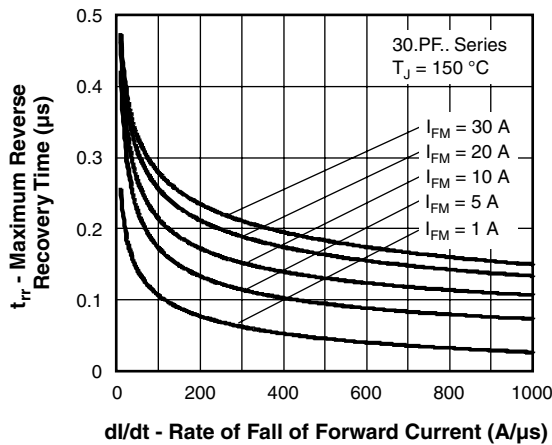


Fig. 9 - Recovery Time Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

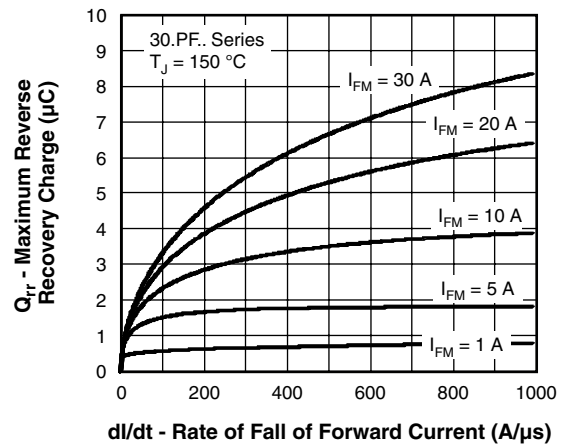


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150\text{ }^\circ\text{C}$



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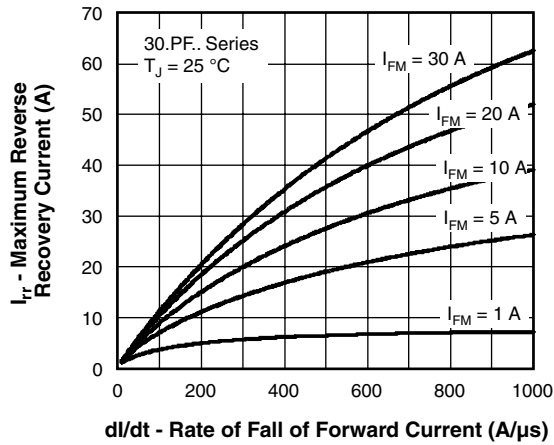


Fig. 12 - Recovery Current Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

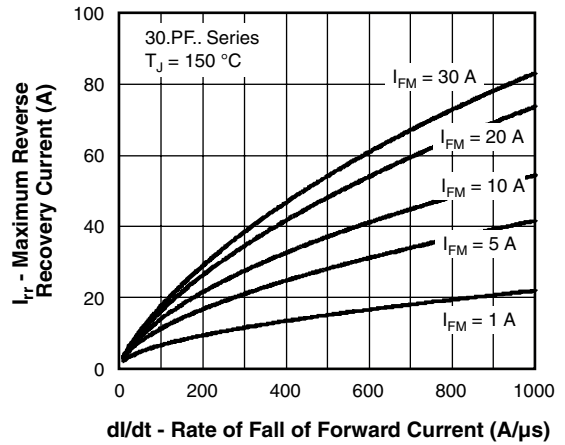


Fig. 13 - Recovery Current Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

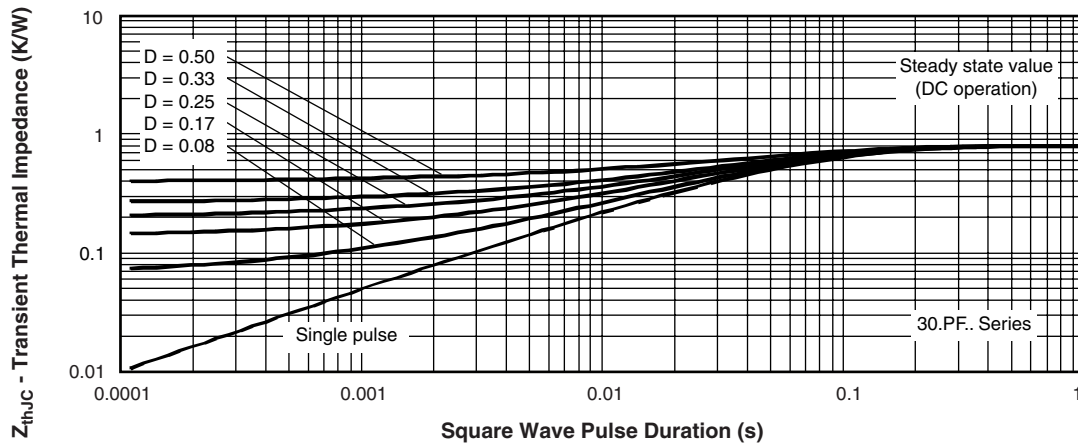


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

# 30EPF..PbF/30CPF..PbF Soft Recovery Series

Vishay High Power Products

Fast Soft Recovery  
Rectifier Diode, 30 A



## ORDERING INFORMATION TABLE

Device code	30	E	P	F	06	PbF
	①	②	③	④	⑤	⑥
<b>1</b>	-	Current rating (30 = 30 A)				
<b>2</b>	-	Circuit configuration: E = Single diode C = Single diode, 3 pins				
<b>3</b>	-	Package: P = TO-247AC (modified)				
<b>4</b>	-	Type of silicon: F = Fast recovery				
<b>5</b>	-	Voltage code x 100 = $V_{RRM}$				
<b>6</b>	-	• 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?95001">http://www.vishay.com/doc?95001</a>
Part marking information	<a href="http://www.vishay.com/doc?95006">http://www.vishay.com/doc?95006</a>



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