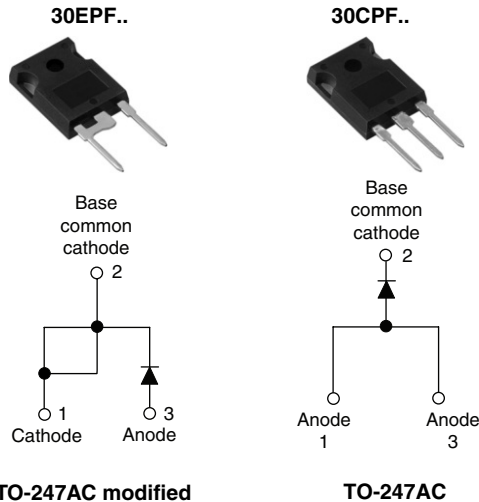




## Fast Soft Recovery Rectifier Diode, 30 A



### FEATURES/DESCRIPTION

The 30EPF.. and 30CPF.. 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.

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

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 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
30EPF02, 30CPF02	200	300	2
30EPF04, 30CPF04	400	500	
30EPF06, 30CPF06	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	$\text{A}^2\sqrt{\text{s}}$

# 30EPF..., 30CPF... Soft Recovery Series

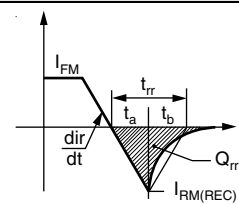


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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	30 A, $T_J = 25\text{ }^\circ\text{C}$		1.41	V
Forward slope resistance	$r_t$	$T_J = 150\text{ }^\circ\text{C}$		12.5	$\text{m}\Omega$
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 $^\circ\text{C}$	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	$^\circ\text{C}/\text{W}$
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 JEDEC modified	30EPS02, 30CPF02	
			30EPS04, 30CPF04	
			30EPS06, 30CPF06	



# 30EPF., 30CPF.. Soft Recovery Series

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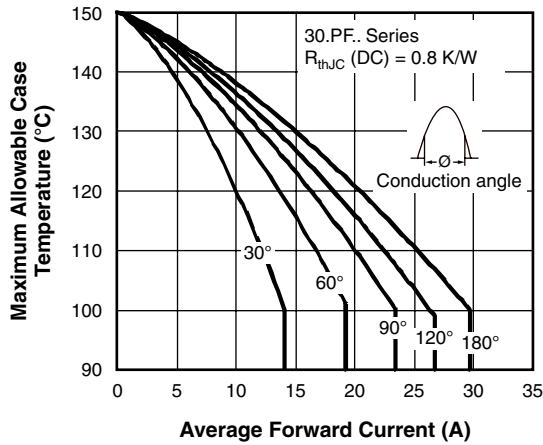


Fig. 1 - Current Rating Characteristics

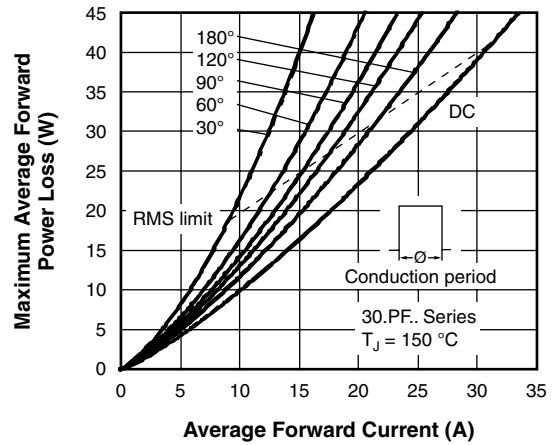


Fig. 4 - Forward Power Loss Characteristics

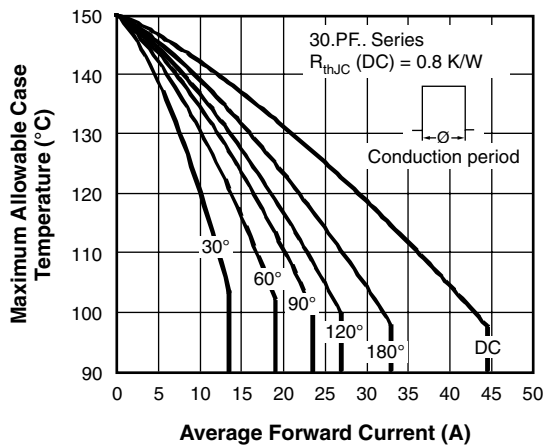


Fig. 2 - Current Rating Characteristics

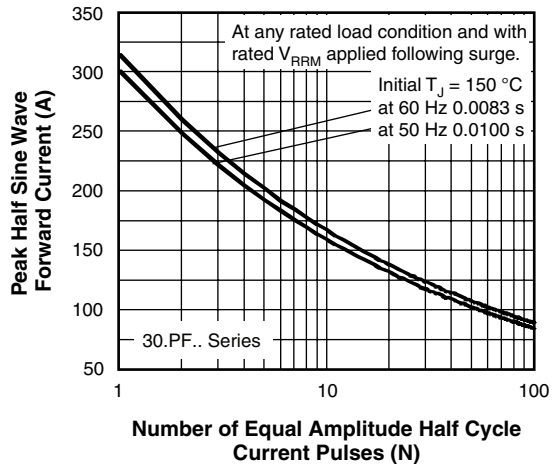


Fig. 5 - Maximum Non-Repetitive Surge Current

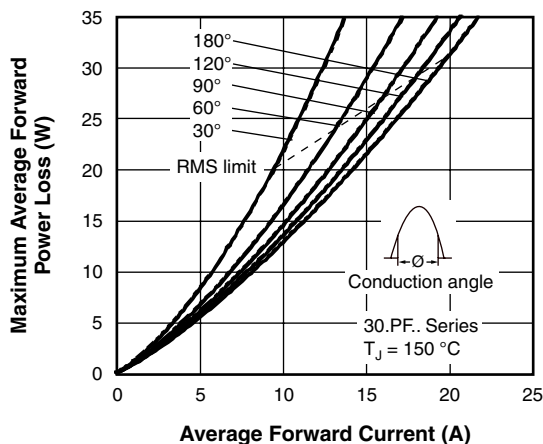


Fig. 3 - Forward Power Loss Characteristics

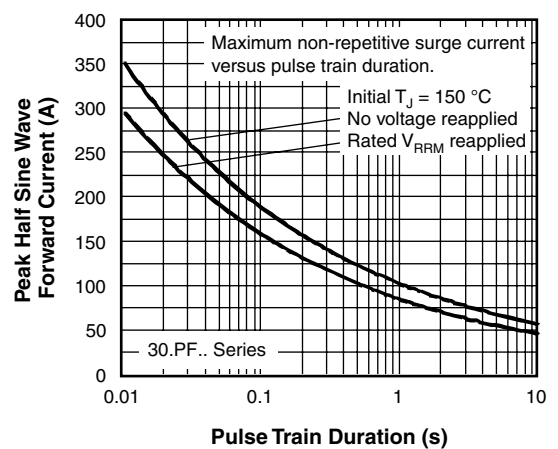


Fig. 6 - Maximum Non-Repetitive Surge Current

# 30EPF..., 30CPF.. Soft Recovery Series



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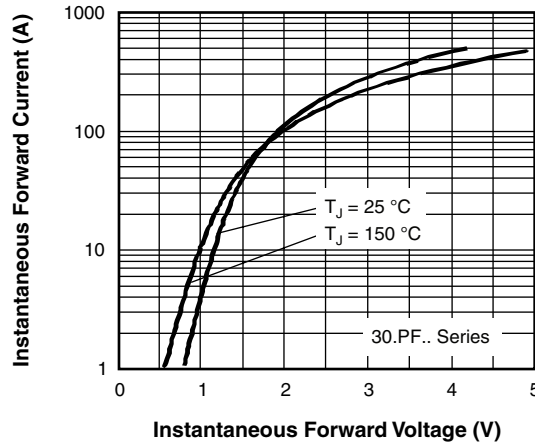


Fig. 7 - Forward Voltage Drop Characteristics

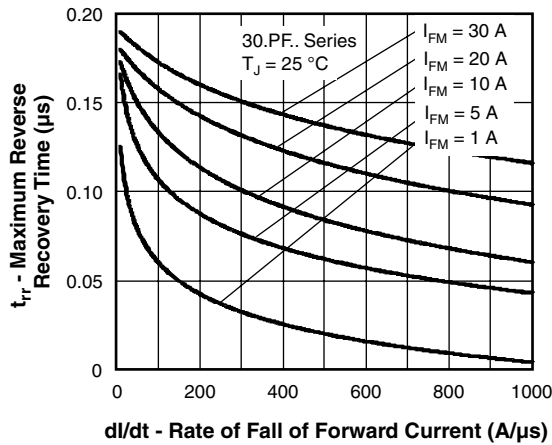


Fig. 8 - Recovery Time Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

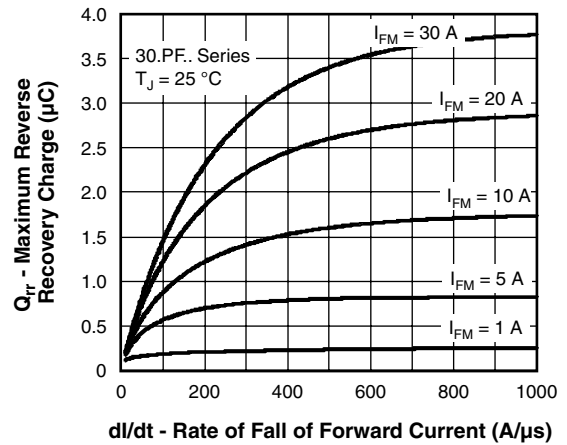


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

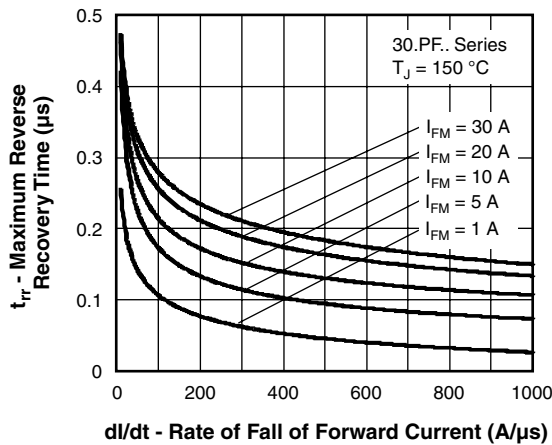


Fig. 9 - Recovery Time Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

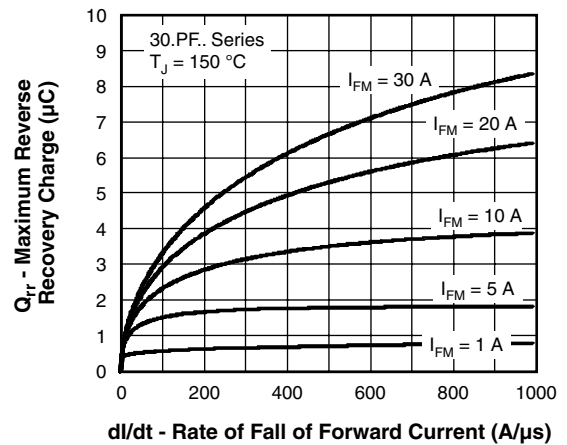


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150\text{ }^\circ\text{C}$



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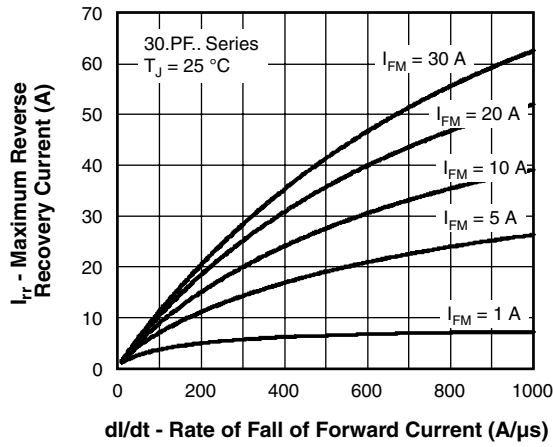


Fig. 12 - Recovery Current Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

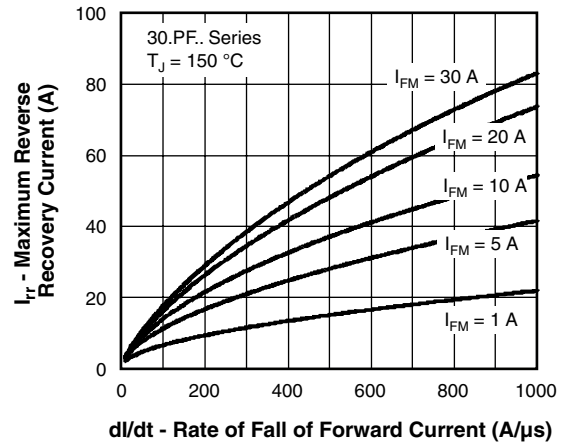


Fig. 13 - Recovery Current Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

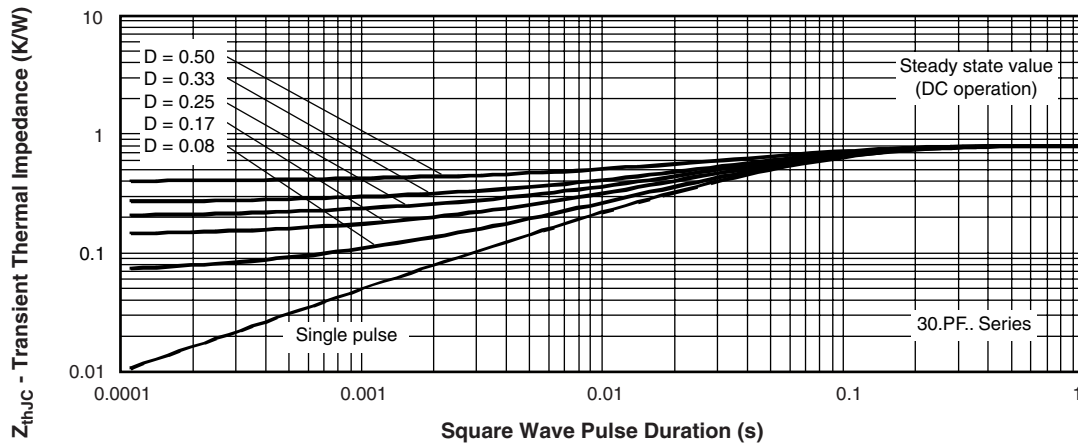


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

# 30EPF..., 30CPF.. Soft Recovery Series

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## ORDERING INFORMATION TABLE

Device code	30	E	P	F	06	-
	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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