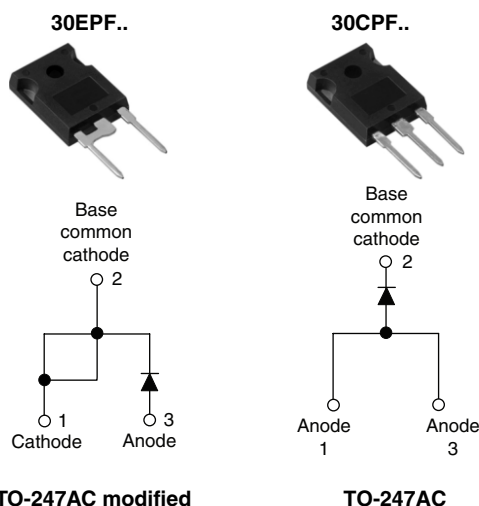


Fast Soft Recovery Rectifier Diode, 30 A



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.

Compliant to RoHS directive 2002/95/EC.

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 V 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/ μs	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° 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	A^2s
		10 ms sine pulse, no voltage reapplied	636	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	6360	$\text{A}^2\sqrt{\text{s}}$

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

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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/ μs 25 $^{\circ}\text{C}$	160	ns	
Reverse recovery current	I_{rr}		10	A	
Reverse recovery charge	Q_{rr}		1.25	μC	
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	°C
Maximum thermal resistance, junction to case	R _{thJC}	DC operation	0.8	°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	



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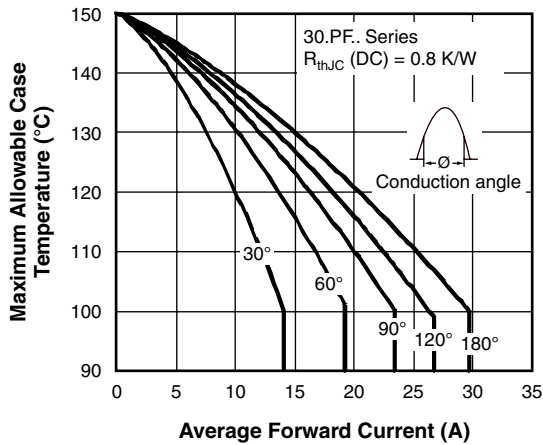


Fig. 1 - Current Rating Characteristics

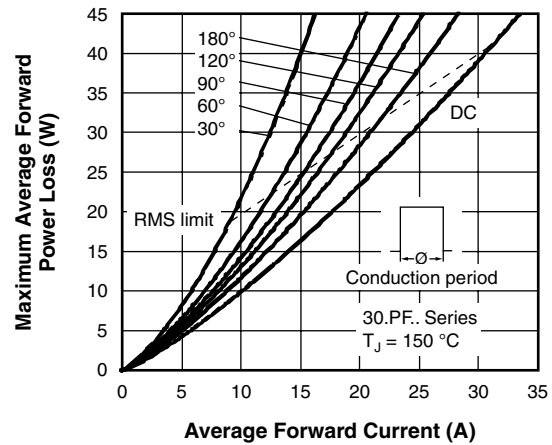


Fig. 4 - Forward Power Loss Characteristics

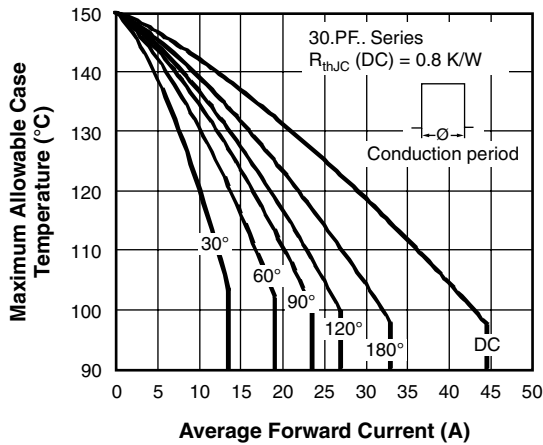


Fig. 2 - Current Rating Characteristics

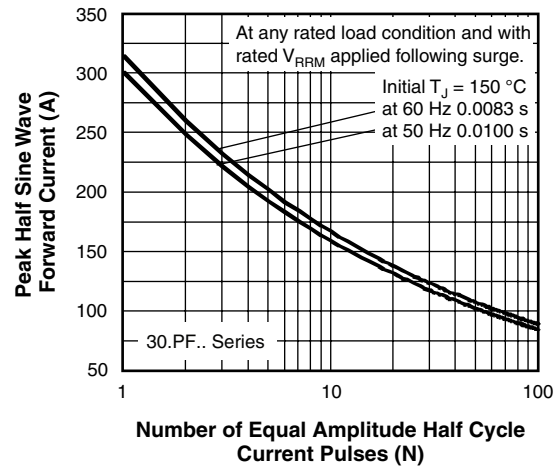


Fig. 5 - Maximum Non-Repetitive Surge Current

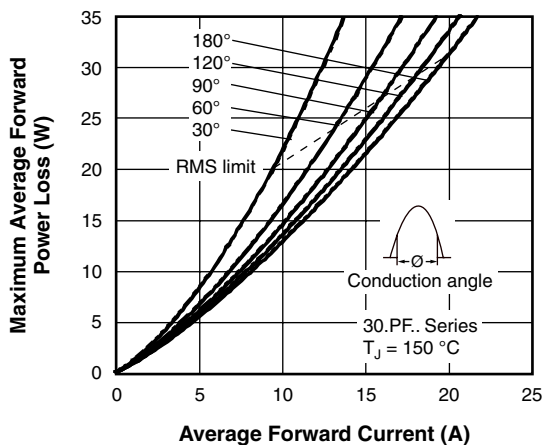


Fig. 3 - Forward Power Loss Characteristics

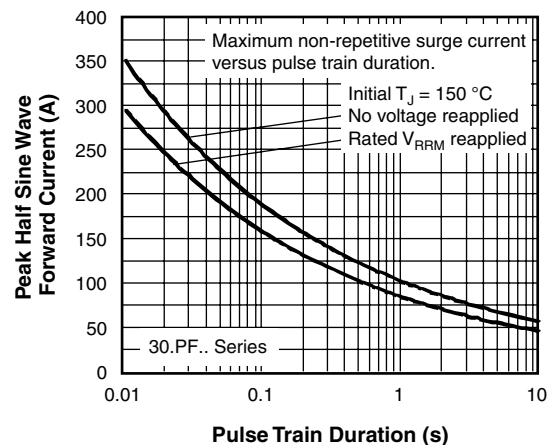


Fig. 6 - Maximum Non-Repetitive Surge Current

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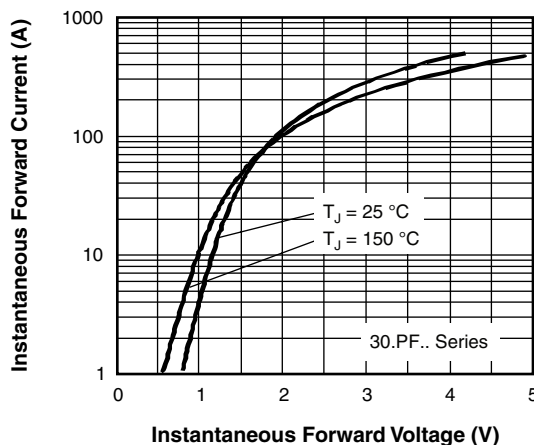


Fig. 7 - Forward Voltage Drop Characteristics

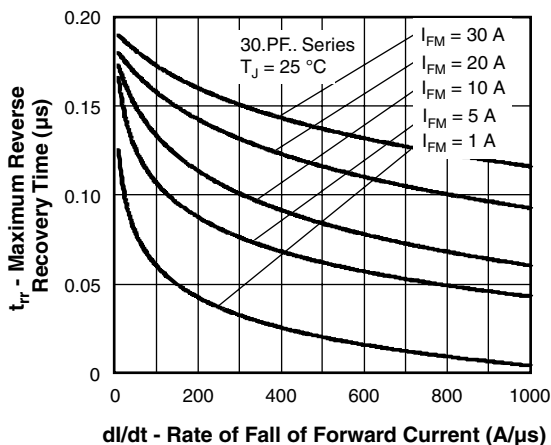


Fig. 8 - Recovery Time Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

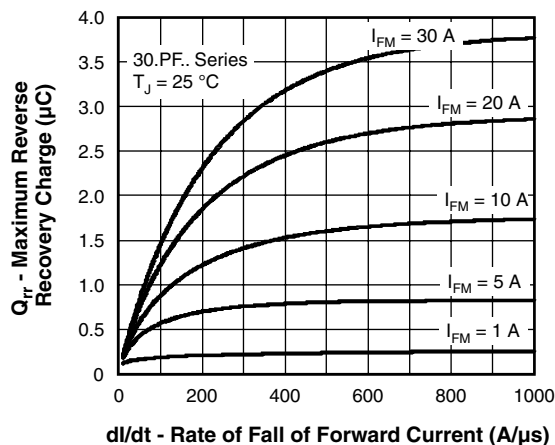


Fig. 10 - Recovery Charge Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

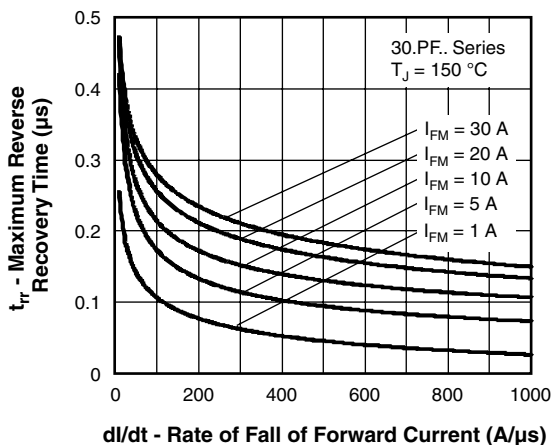


Fig. 9 - Recovery Time Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$

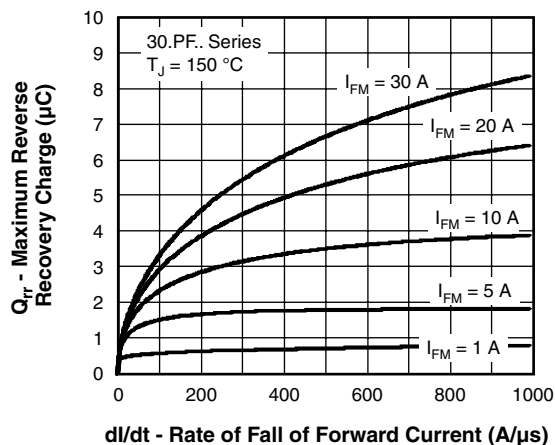


Fig. 11 - Recovery Charge Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$



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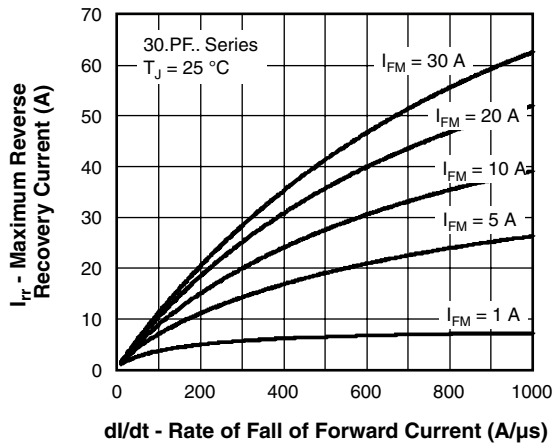


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ C$

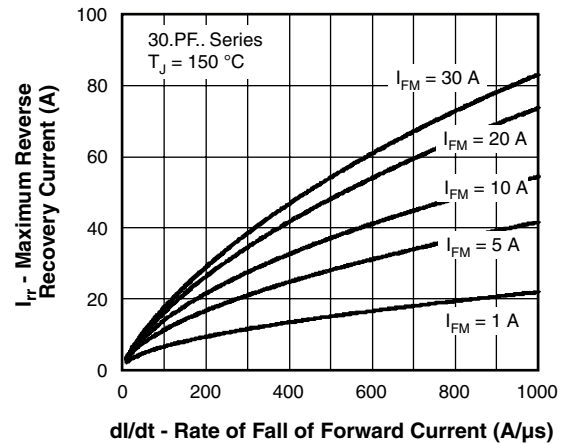


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ C$

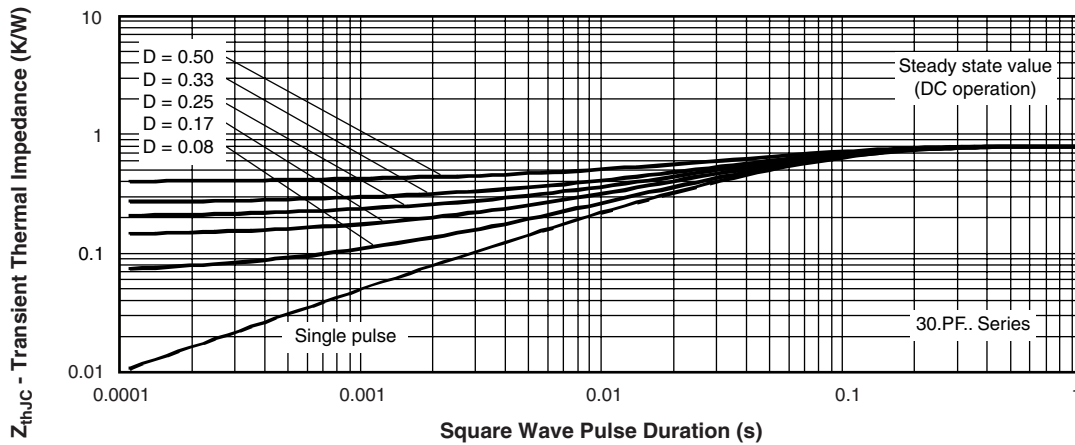


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

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



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ORDERING INFORMATION TABLE

Device code	30	E	P	F	06	PbF
	1	2	3	4	5	6
1	- Current rating (30 = 30 A)					
2	- Circuit configuration:					
	E = Single diode					
	C = Single diode, 3 pins					
3	- Package:					
	P = TO-247AC (modified)					
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	TO-247AC modified	www.vishay.com/doc?95253
	TO-247AC	www.vishay.com/doc?95223
Part marking information	TO-247AC modified	www.vishay.com/doc?95255
	TO-247AC	www.vishay.com/doc?95226



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