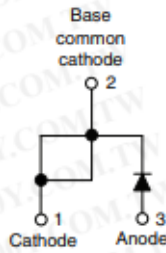




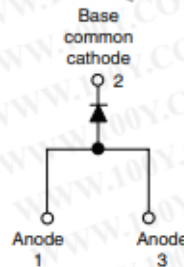
30EPF..PbF, 30CPF..PbF Soft Recovery Series

Vishay High Power Products

Fast Soft Recovery Rectifier Diode, 30 A



TO-247AC modified



TO-247AC

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.

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.



RoHS* COMPLIANT

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

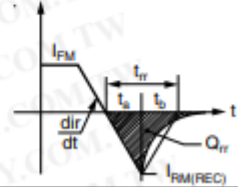
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 98^\circ\text{C}$, 180 $^\circ$ conduction half sine wave	30	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	300	
		10 ms sine pulse, no voltage reapplied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

ELECTRICAL SPECIFICATIONS

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

RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	t_{rr}	I_F at 20 Apk	160	ns
Reverse recovery current	I_{rr}	100 A/ μs	10	A
Reverse recovery charge	Q_{rr}	25°C	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	$^\circ\text{C}$
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 modified (JEDEC)	30EPS02, 30CPF02	
			30EPS04, 30CPF04	
			30EPS06, 30CPF06	

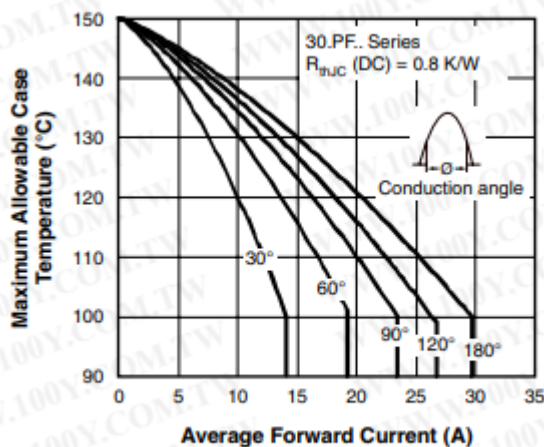


Fig. 1 - Current Rating Characteristics

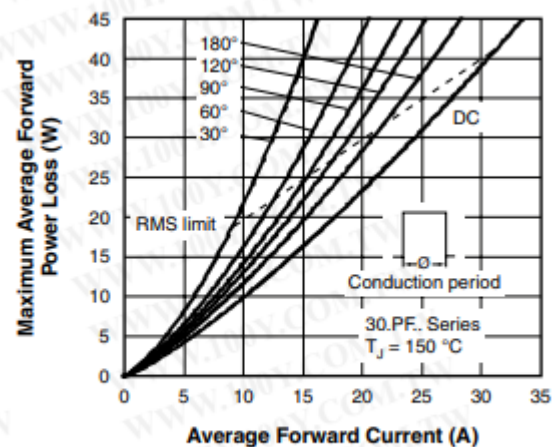


Fig. 4 - Forward Power Loss Characteristics

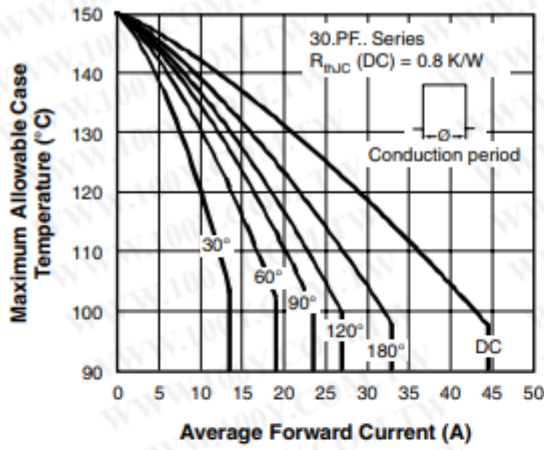


Fig. 2 - Current Rating Characteristics

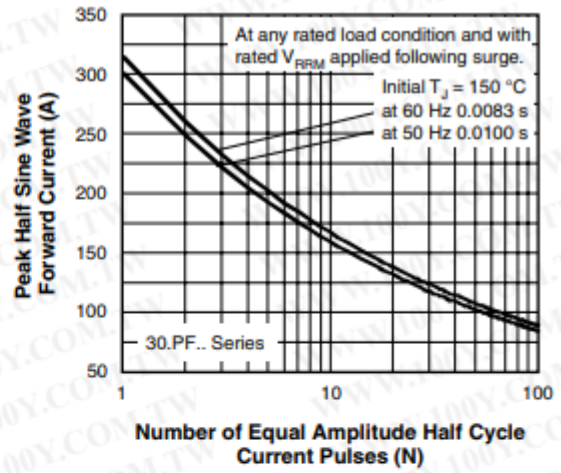


Fig. 5 - Maximum Non-Repetitive Surge Current

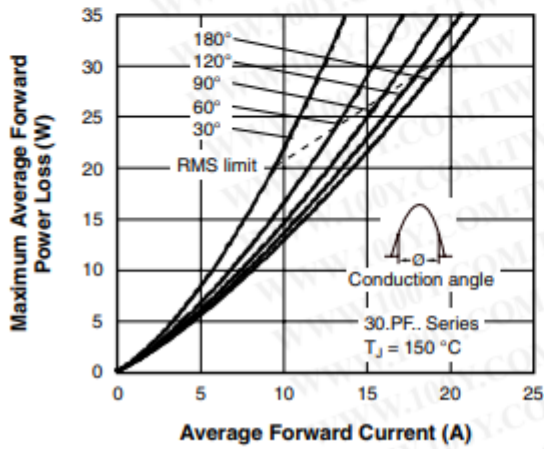


Fig. 3 - Forward Power Loss Characteristics

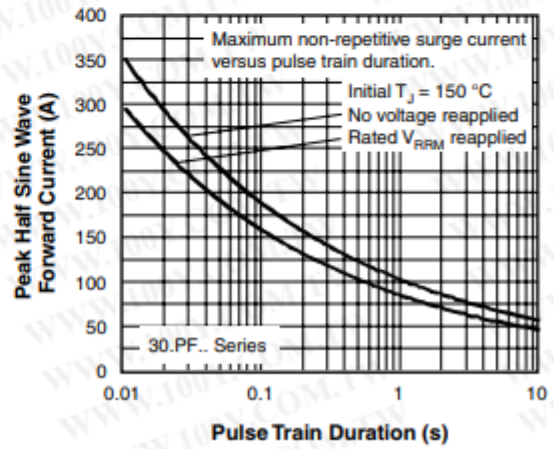


Fig. 6 - Maximum Non-Repetitive Surge Current

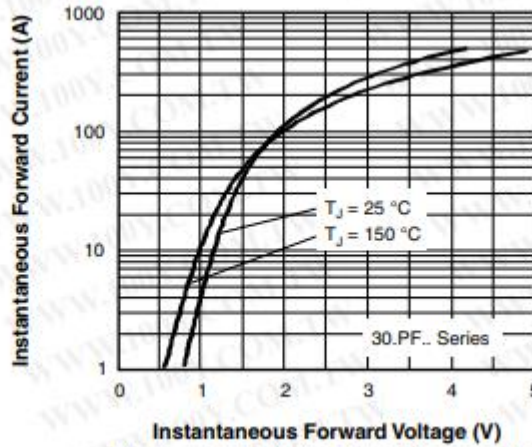


Fig. 7 - Forward Voltage Drop Characteristics

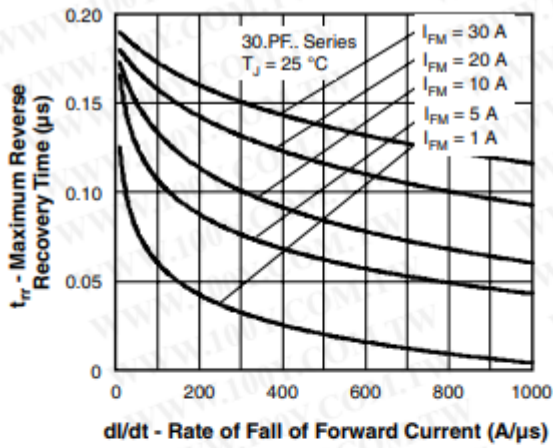


Fig. 8 - Recovery Time Characteristics, T_J = 25 °C

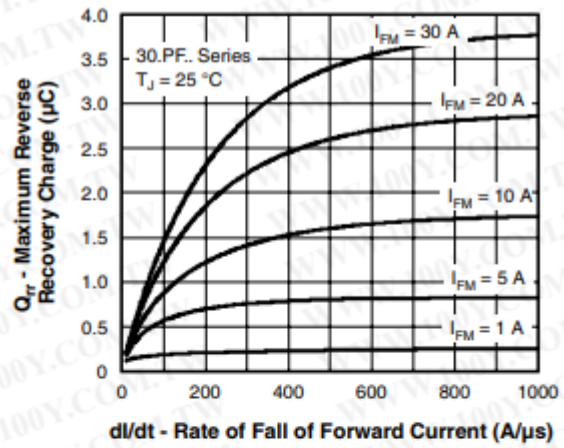


Fig. 10 - Recovery Charge Characteristics, T_J = 25 °C

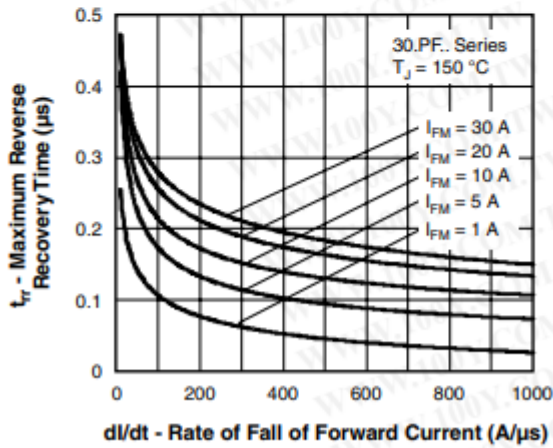


Fig. 9 - Recovery Time Characteristics, T_J = 150 °C

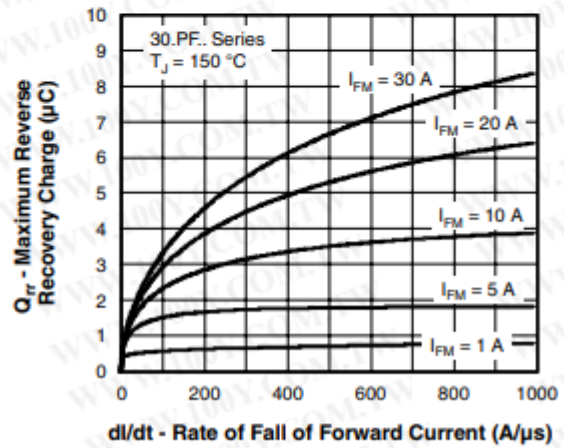


Fig. 11 - Recovery Charge Characteristics, T_J = 150 °C

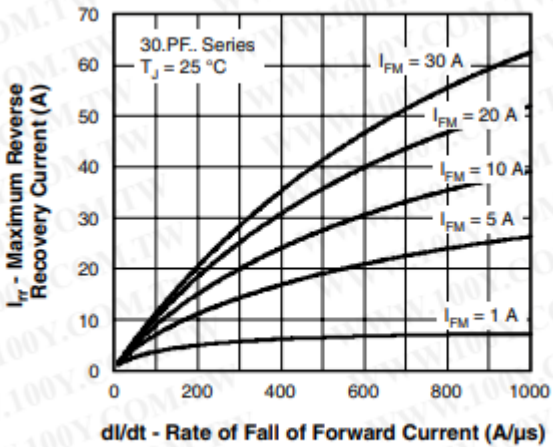


Fig. 12 - Recovery Current Characteristics, T_J = 25 °C

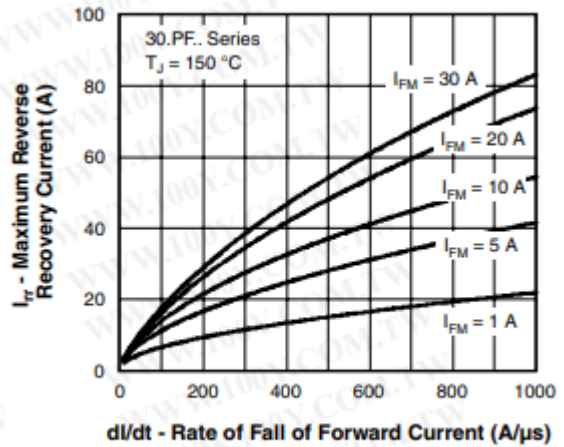


Fig. 13 - Recovery Current Characteristics, T_J = 150 °C

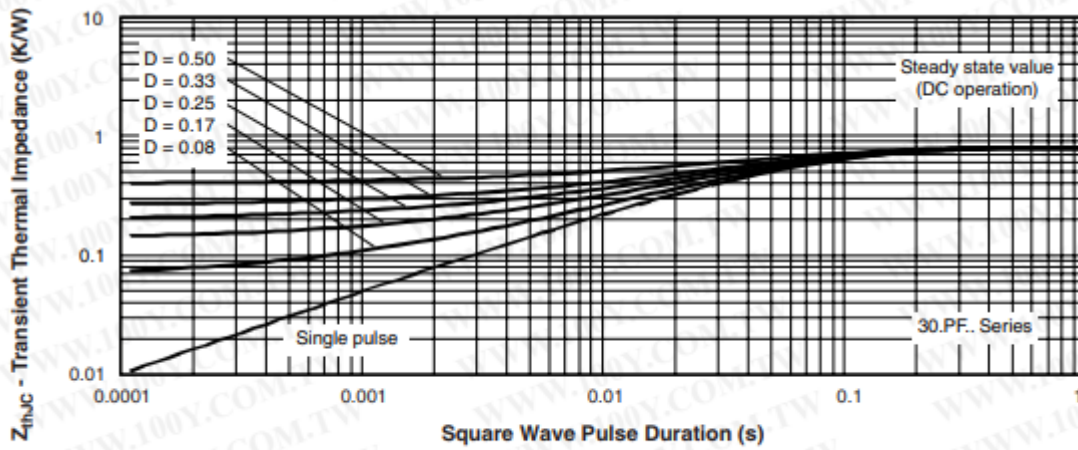


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

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