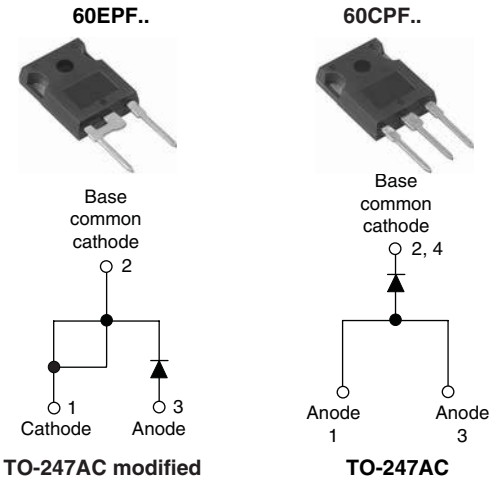
Fast Soft Recovery Rectifier Diode, 60 A



TO-247AC modified | TO-247AC

FEATURES/DESCRIPTION

The 60EPF..PbF and 60CPF..PbF fast soft recovery rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.

Pb-free Available

RoHS* COMPLIANT

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 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 30 A	< 1.2 V
t_{rr}	95 ns
V_{RRM}	1000/1200 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
V_{RRM}		1000/1200	V
$I_{F(AV)}$	Sinusoidal waveform	60	A
I_{FSM}		700	
t_{rr}	1 A, - 100 A/µs	95	ns
V_F	30 A, T_J = 25 °C	1.2	V
T_J	Range	- 40 to 150	°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 °C mA
60EPF10PbF, 60CPF10PbF	1000	1100	8
60EPF12PbF, 60CPF12PbF	1200	1300	

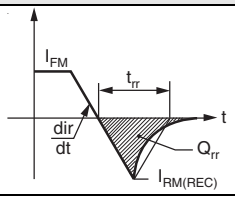
ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	T_C = 103 °C, 180° conduction half sine wave	60	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	700	
		10 ms sine pulse, no voltage reapplied	830	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	2450	A^2s
		10 ms sine pulse, no voltage reapplied	3460	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied	34 600	$A^2\sqrt{s}$

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

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM}	60 A, T_J = 25 °C		1.4	V
Forward slope resistance	r_t	T_J = 125 °C		4.6	mΩ
Threshold voltage	$V_{F(TO)}$			0.9	V
Maximum reverse leakage current	I_{RM}	T_J = 25 °C	V_R = Rated V_{RRM}	0.1	mA
		T_J = 150 °C		8	

RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Reverse recovery time	t_{rr}	I_F at 60 Apk 25 A/µs 25 °C	480	ns	
Reverse recovery current	I_{rr}		8	A	
Reverse recovery charge	Q_{rr}		2.7	µC	
Snap factor	S		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	0.4	°C/W
Maximum thermal resistance, junction to ambient		R_{thJA}		40	
Typical 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)	60EPF10	
				60EPF12	
			Case style TO-247AC	60CPF10	
				60CPF12	

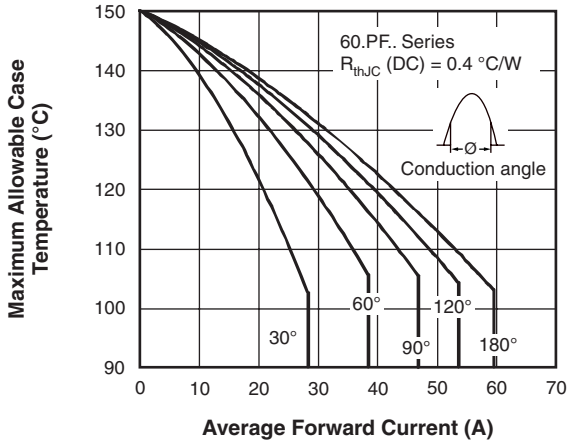


Fig. 1 - Current Rating Characteristics

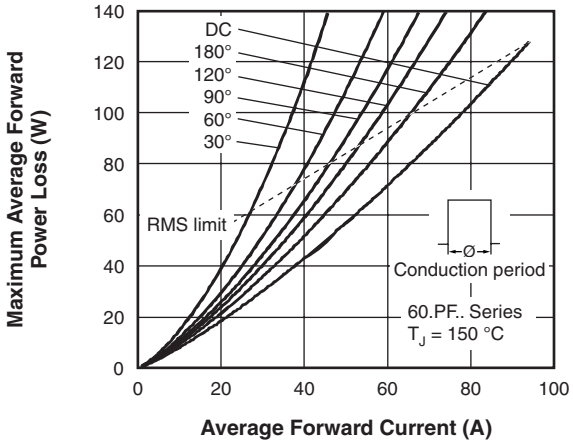


Fig. 4 - Forward Power Loss Characteristics

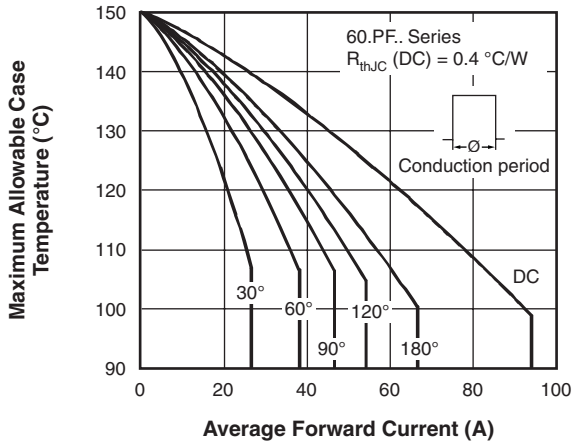


Fig. 2 - Current Rating Characteristics

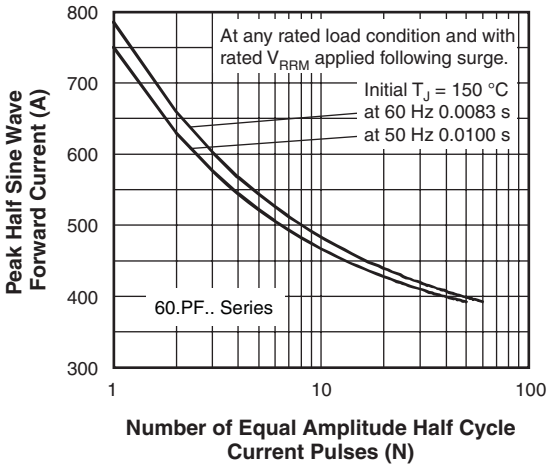


Fig. 5 - Maximum Non-Repetitive Surge Current

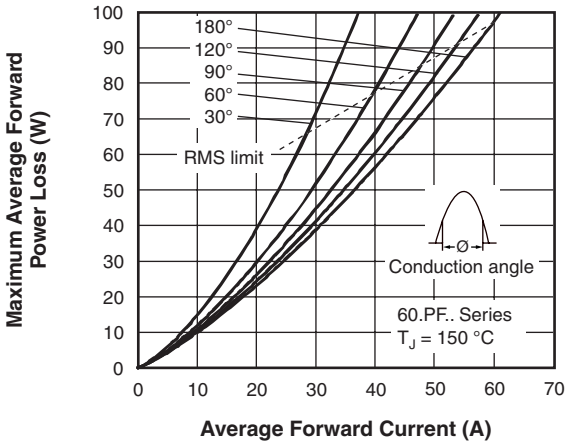


Fig. 3 - Forward Power Loss Characteristics

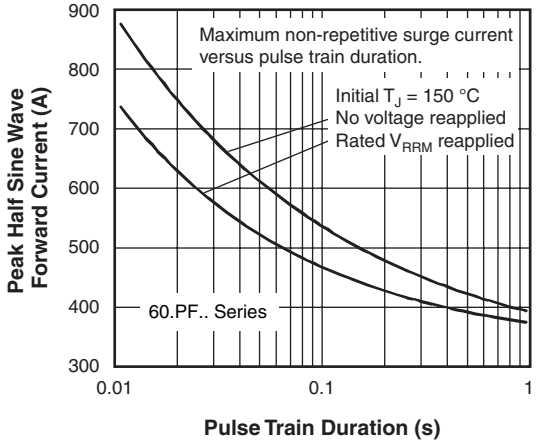


Fig. 6 - Maximum Non-Repetitive Surge Current

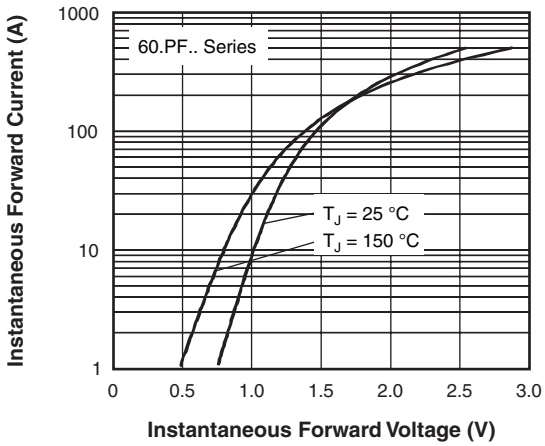


Fig. 7 - Forward Voltage Drop Characteristics

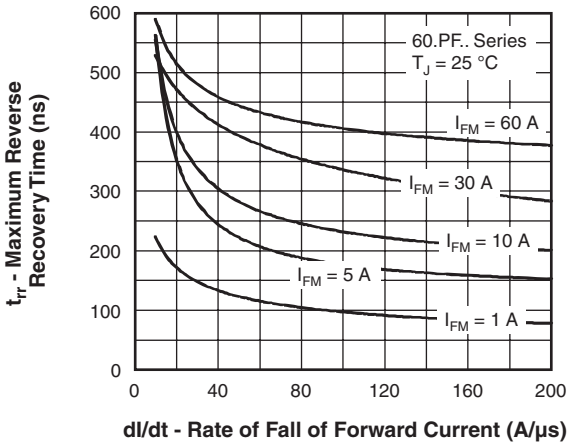


Fig. 8 - Recovery Time Characteristics, T_J = 25 °C

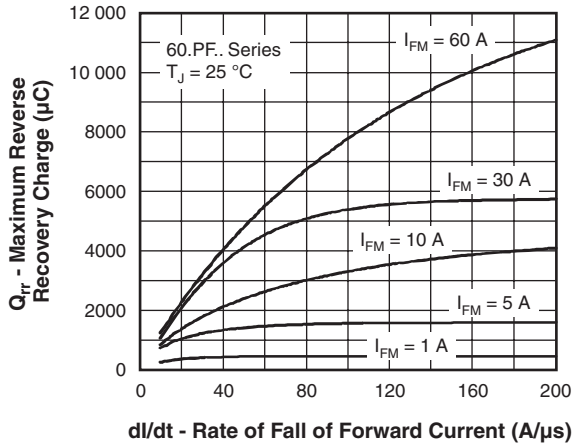


Fig. 10 - Recovery Charge Characteristics, T_J = 25 °C

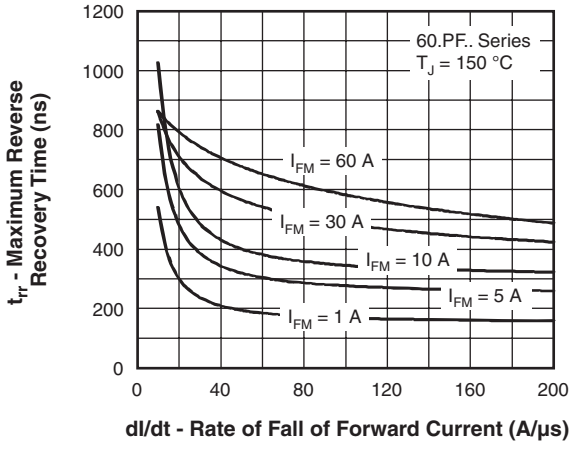


Fig. 9 - Recovery Time Characteristics, T_J = 150 °C

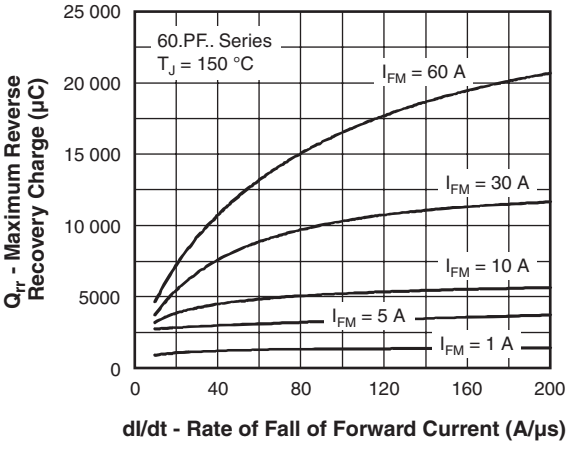


Fig. 11 - Recovery Charge Characteristics, T_J = 150 °C

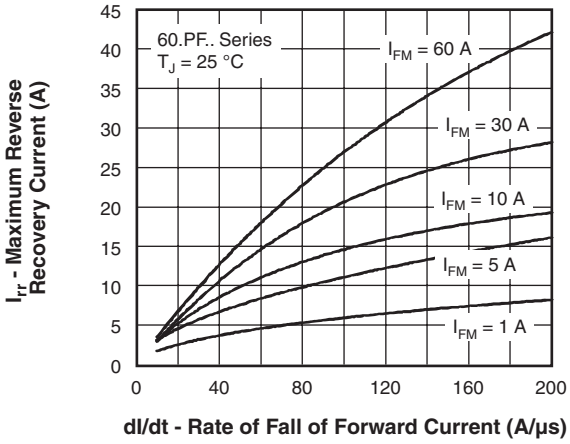


Fig. 12 - Recovery Current Characteristics, T_J = 25 °C

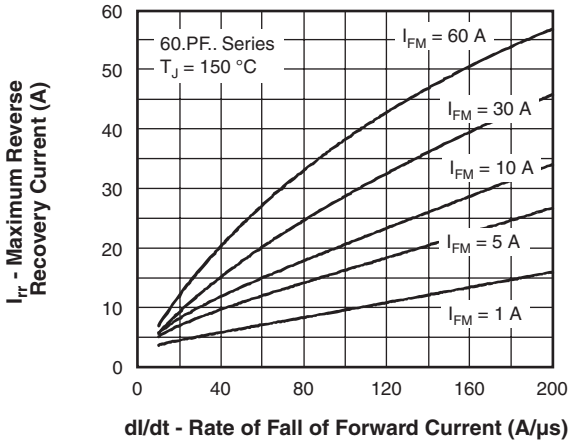


Fig. 13 - Recovery Current Characteristics, T_J = 150 °C

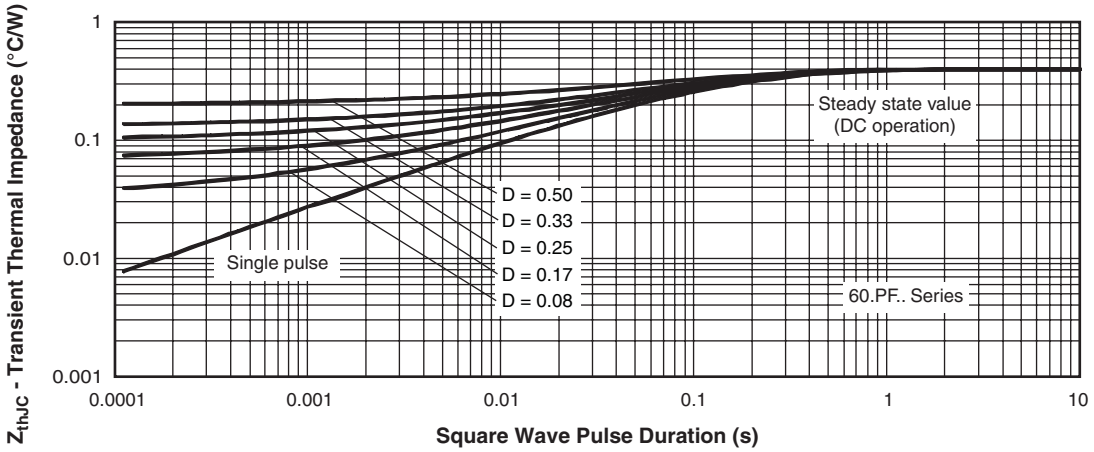
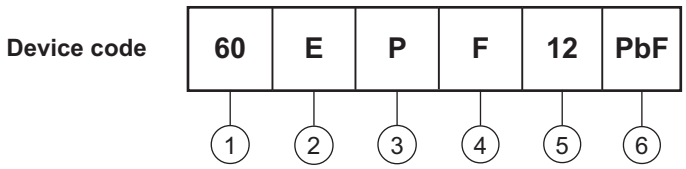


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE



1 - Current rating (60 = 60 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}
- 10 = 1000 V
- 12 = 1200 V

6 - • None = Standard production
- • PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95001
Part marking information	http://www.vishay.com/doc?95006

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