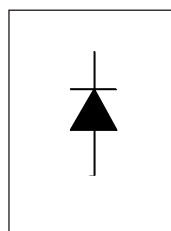


International
IOR Rectifier

QUIET**IR** Series 60EPF.. 60CPF.. HV

FAST SOFT RECOVERY RECTIFIER DIODE



$$\begin{aligned} V_F &< 1.2V @ 30A \\ t_{rr} &= 95 \text{ ns} \\ V_{RRM} &1000 \text{ to } 1200V \end{aligned}$$

Description/Features

The 60EPF.. & 60CPF.. fast soft recovery QUIET**IR** 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.

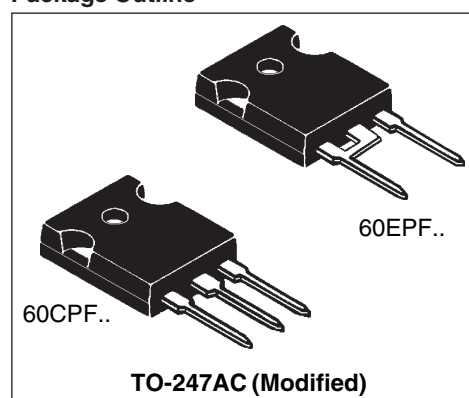
Typical applications are both:

- output rectification and freewheeling in inverters, choppers and converters
- and input rectifications where severe restrictions on conducted EMI should be met.

Major Ratings and Characteristics

Characteristics	60EPF.. 60CPF..	Units
$I_{F(AV)}$ Sinusoidal waveform	60	A
V_{RRM} range	1000to1200	V
I_{FSM}	700	A
V_F @ 30 A, $T_J=25^\circ\text{C}$	1.2	V
t_{rr} @ 1 A, -100A/ μs	95	ns
T_J range	-40to150	$^\circ\text{C}$

Package Outline



60EPF.. 60CPF.. HV QUIETIR Series

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Voltage Ratings

Part Number	V_{RRM} , maximum peak reverse voltage V	V_{RSM} , maximum non repetitive peak reverse voltage V	I_{RRM} 150°C mA
60EPF10, 60CPF10	1000	1100	8
60EPF12, 60CPF12	1200	1300	

Absolute Maximum Ratings

Parameters	60.PF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	60	A	@ $T_C = 103^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	700	A	10ms Sine pulse, rated V_{RRM} applied
	830		10ms Sine pulse, no voltage reappplied
I^2t Max. I^2t for fusing	2450	A^2s	10ms Sine pulse, rated V_{RRM} applied
	3460		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	34600	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

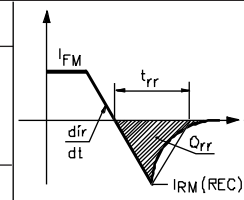
Electrical Specifications

Parameters	60.PF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.4	V	@ 60A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	4.6	m Ω	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.9	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	8		$T_J = 150^\circ\text{C}$

$V_R = \text{rated } V_{RRM}$

Recovery Characteristics

Parameters	60.PF..	Units	Conditions
t_{rr} Reverse Recovery Time	480	ns	$I_F @ 60\text{Apk}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	8	A	
Q_{rr} Reverse Recovery Charge	2.7	μC	
S Snap Factor	0.6		



Thermal-Mechanical Specifications

Parameters	60.PF..	Units	Conditions
T_J Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case	0.4	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	40	$^\circ\text{C/W}$	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.2	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	6(0.21)	g(oz.)	
T Mounting Torque	Min.	6(5)	Kg-cm (lbf-in)
	Max.	12(10)	
Case Style	TO-247AC		JEDEC (Modified)

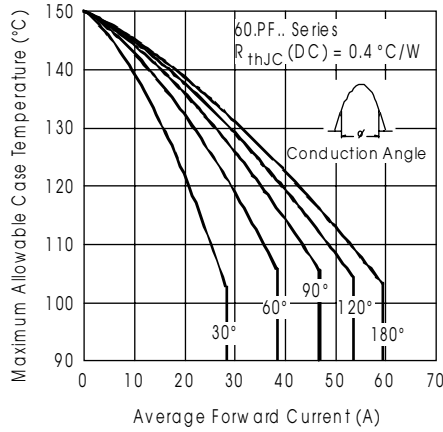


Fig. 1- Current Rating Characteristics

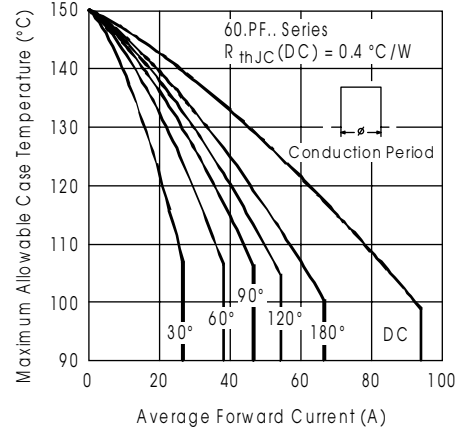


Fig. 2- Current Rating Characteristics

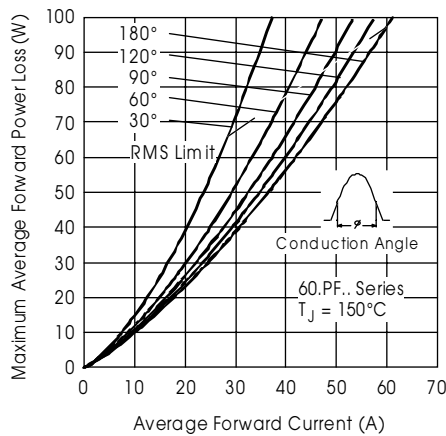


Fig. 3- Forward Power Loss Characteristics

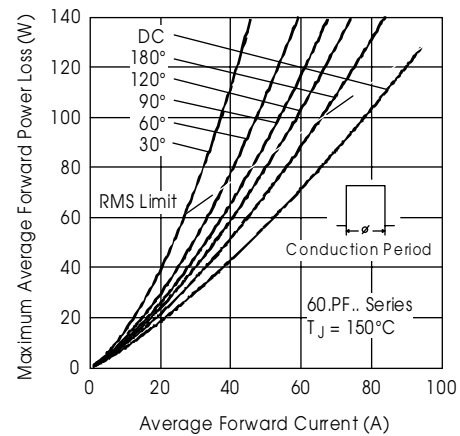


Fig. 4- Forward Power Loss Characteristics

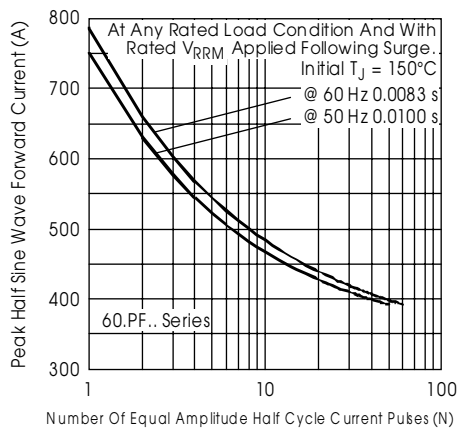


Fig. 5- Maximum Non-Repetitive Surge Current

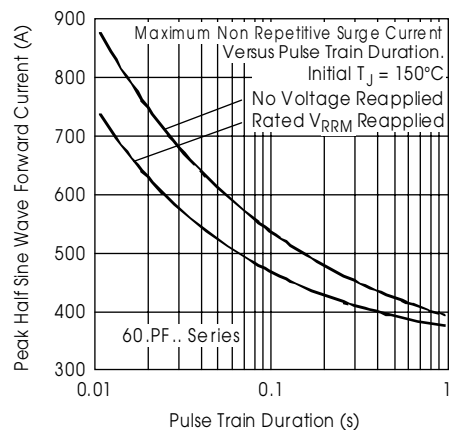


Fig. 6- Maximum Non-Repetitive Surge Current

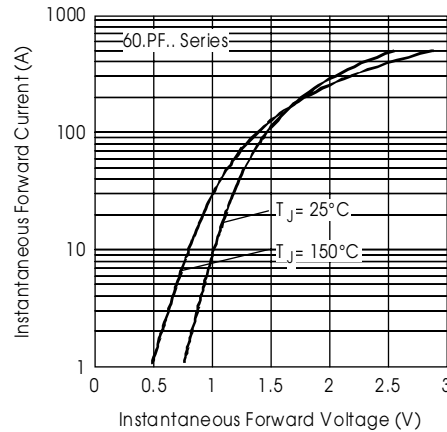


Fig. 7 - Forward Voltage Drop Characteristics

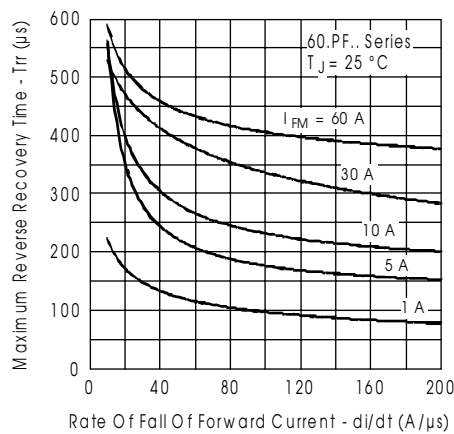


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

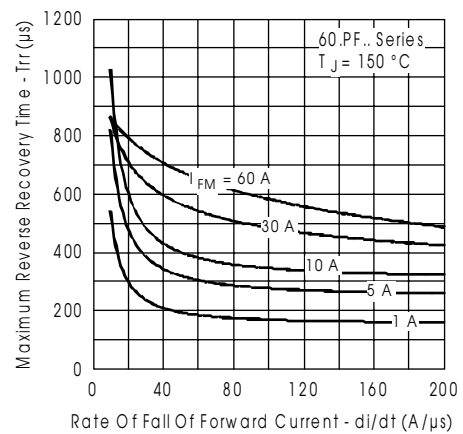


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

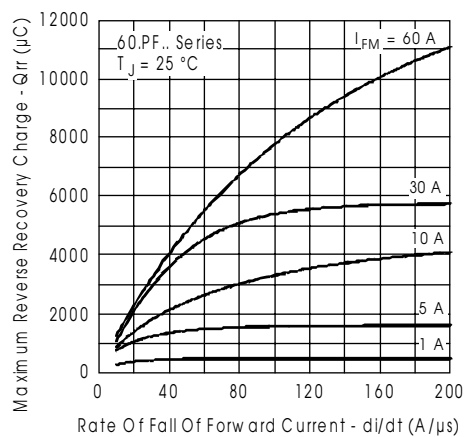


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

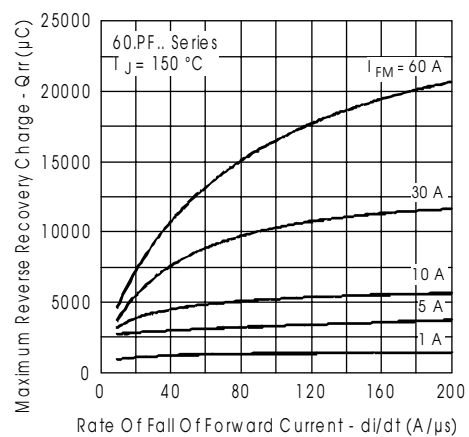


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

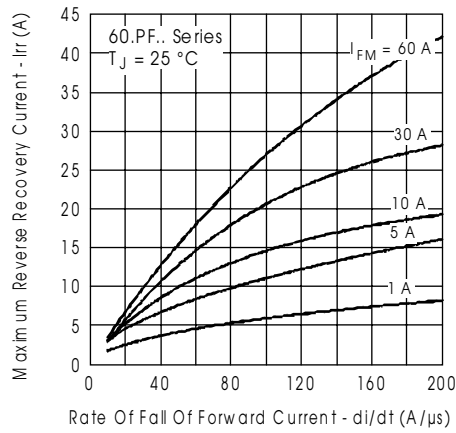


Fig. 12 - Recovery Current Characteristics, $T_j = 25^\circ\text{C}$

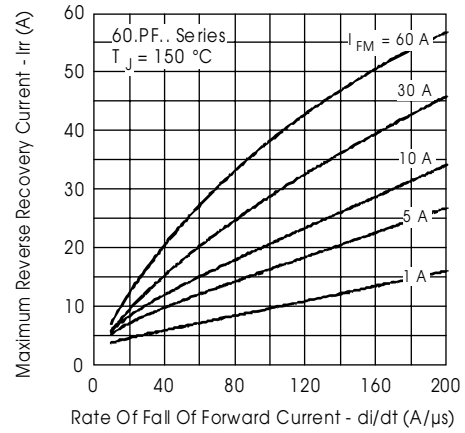


Fig. 13 - Recovery Current Characteristics, $T_j = 150^\circ\text{C}$

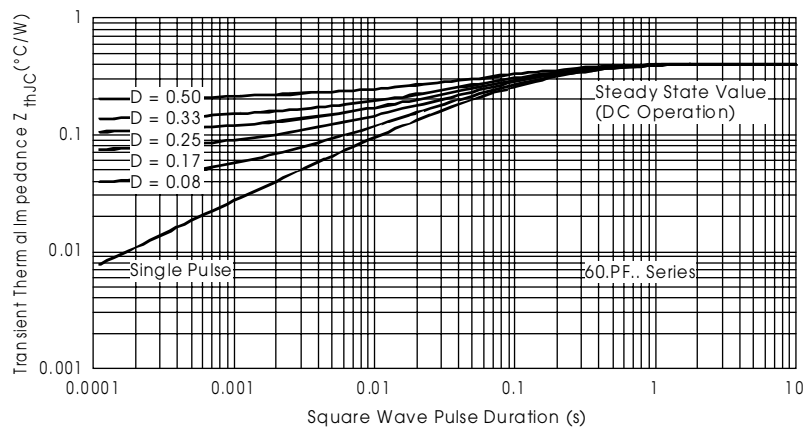


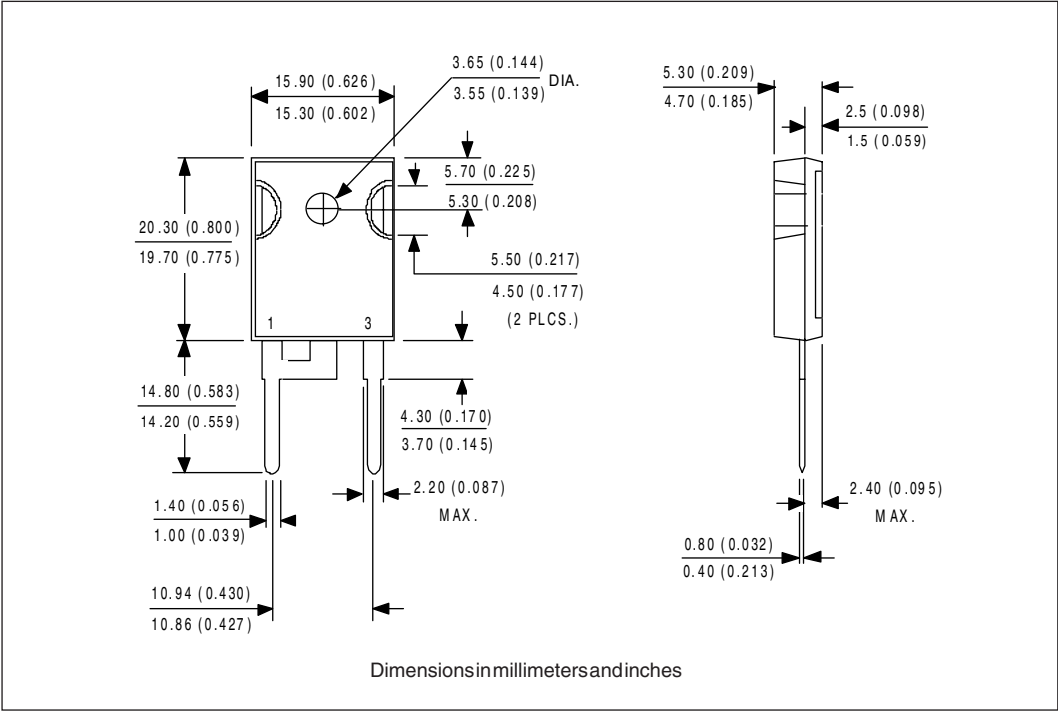
Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

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Outline Table

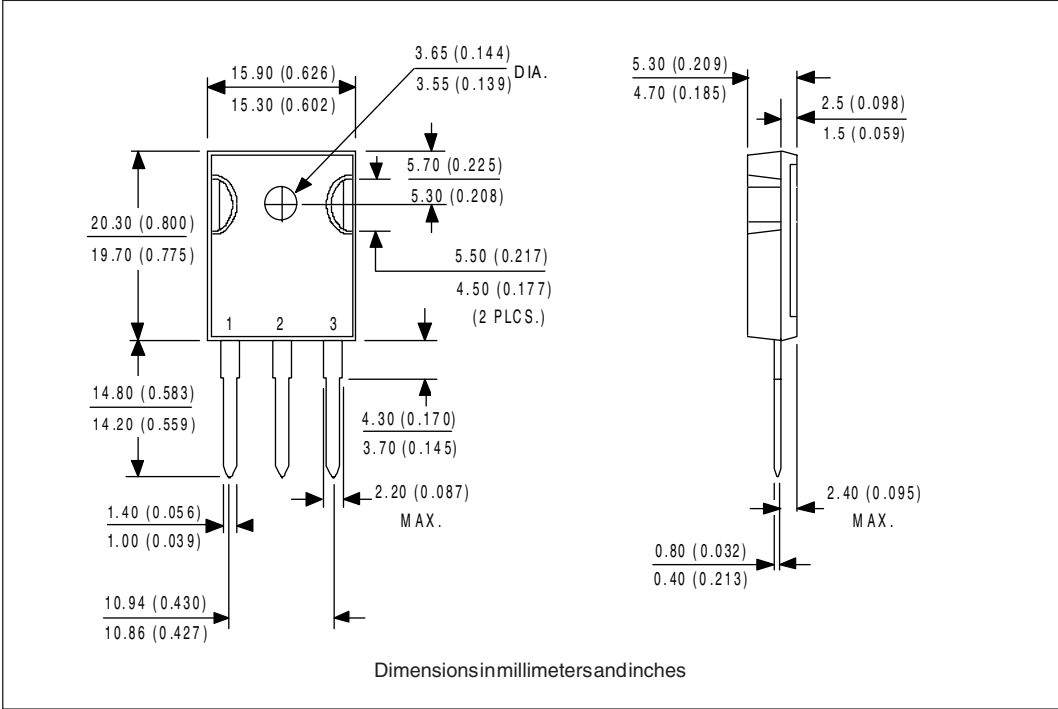


Ordering Information Table

Device Code				
60	E	P	F	12
1	2	3	4	5
1	Current Rating			
2	Circuit Configuration:			
	E = Single Diode			
3	Package:			
	P = TO-247AC (Modified)			
4	Type of Silicon:			
	F = Fast Recovery			
5	Voltage code: Code x 100 = V_{RRM}			
	10 = 1000V			
	12 = 1200V			

Circuit diagram of the diode package showing the internal connection between the cathode, anode, and base. The diagram is labeled with 1, 2, and 3, corresponding to the pins. The base is connected to the cathode, and the anode is connected to the base. The diagram is labeled with BASE, CATHODE, and ANODE.

Outline Table



Ordering Information Table

Device Code				
60	C	P	F	12
1	2	3	4	5
1	- Current Rating			
2	- Circuit Configuration: C = Single Diode, 3 pins			
3	- Package: P = TO-247AC (Modified)			
4	- Type of Silicon: F = Fast Recovery			
5	- Voltage code: Code x 100 = V _{RRM}			
				10 = 1000V 12 = 1200V

Base Cathode
2

1 Anode 3 Anode

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Data and specifications subject to change without notice

11/97