

International
IR Rectifier

QUIETIR Series
60EPF.. 60CPF.. HV

FAST SOFT RECOVERY
RECTIFIER DIODE



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

Description/Features

The 60EPF.. & 60CPF.. fast soft recovery **QUIETIR** 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.

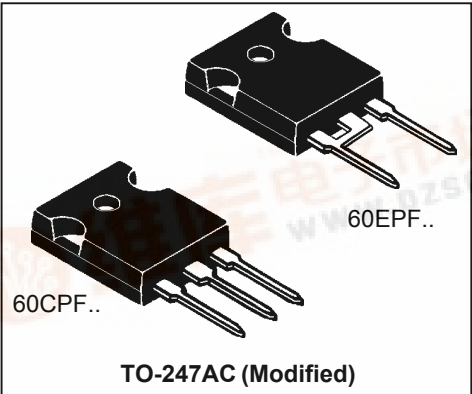
Typical applications are both:

- 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, $T_J=25^{\circ}C$	1.2	V
t_{rr} @1A, -100A/ μ s	95	ns
T_J range	-40to 150	$^{\circ}C$

Package Outline



60EPF.. 60CPF.. HV *QUIETIR* Series

Bulletin I2130 rev. B 01/01

International
IR Rectifier

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 reapplied
I^2t Max. I^2t for fusing	2450	A^2s	10ms Sine pulse, rated V_{RRM} applied
	3460		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	34600	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

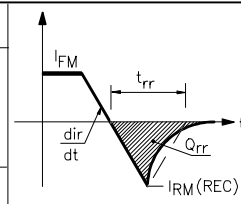
Electrical Specifications

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	mΩ	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ 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	°C	
T_{stg} Max. Storage Temperature Range	-40 to 150	°C	
R_{thJC} Max. Thermal Resistance Junction to Case	0.4	°C/W	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	40	°C/W	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.2	°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)

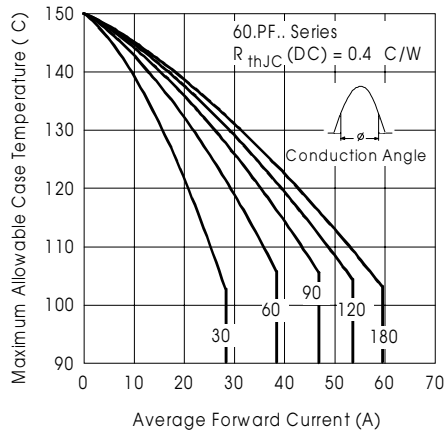


Fig.1-CurrentRatingCharacteristics

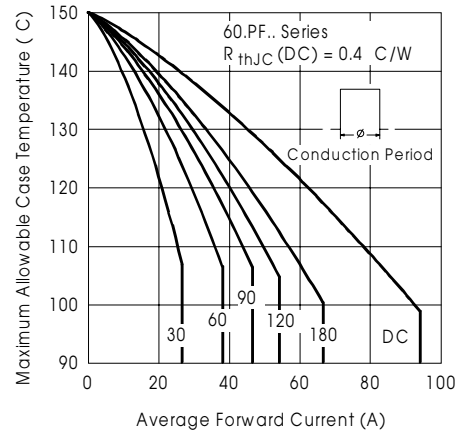


Fig.2-CurrentRatingCharacteristics

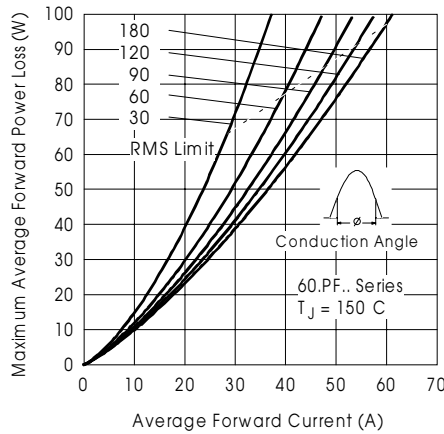


Fig.3-ForwardPowerLossCharacteristics

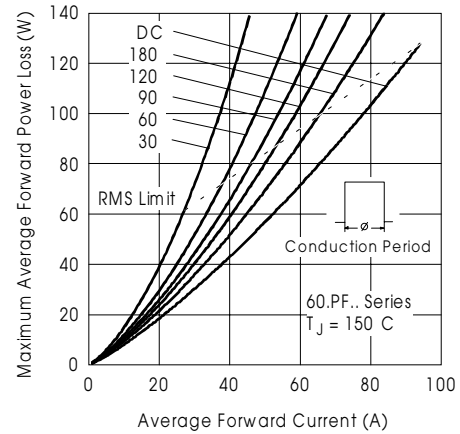


Fig.4-ForwardPowerLossCharacteristics

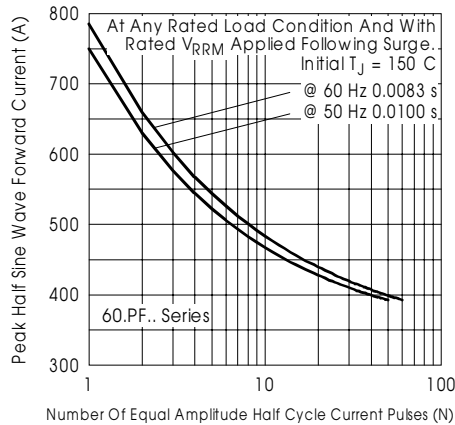


Fig.5-MaximumNon-RepetitiveSurgeCurrent

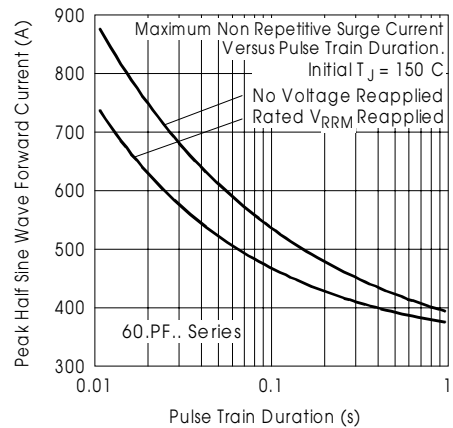


Fig.6-MaximumNon-RepetitiveSurgeCurrent

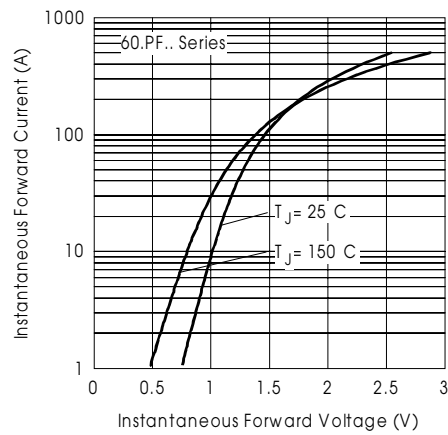


Fig. 7 - Forward Voltage Drop Characteristics

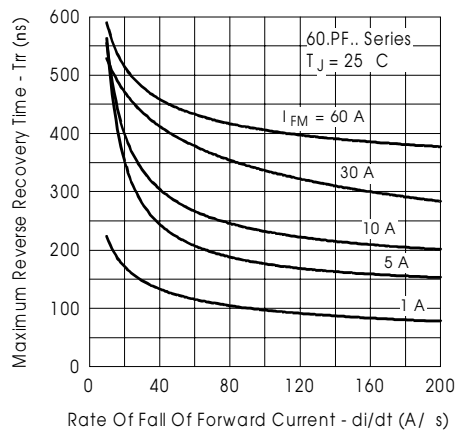


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

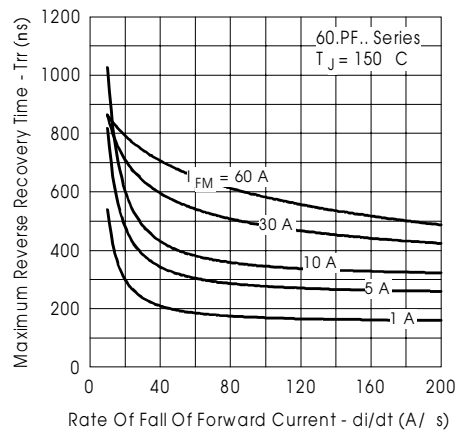


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

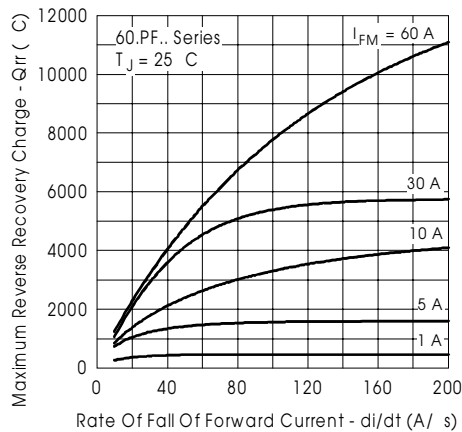


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

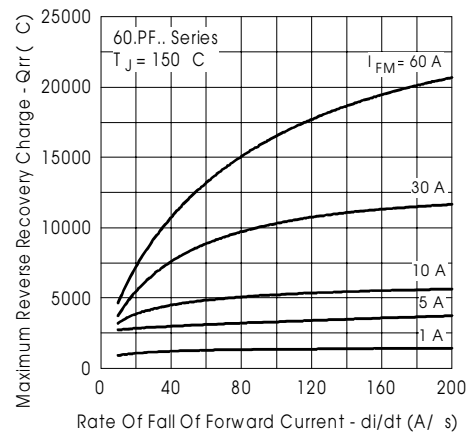


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

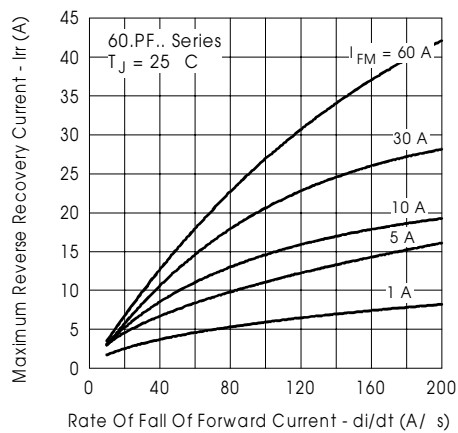


Fig. 12-Recovery Current Characteristics, $T_j = 25^\circ\text{C}$

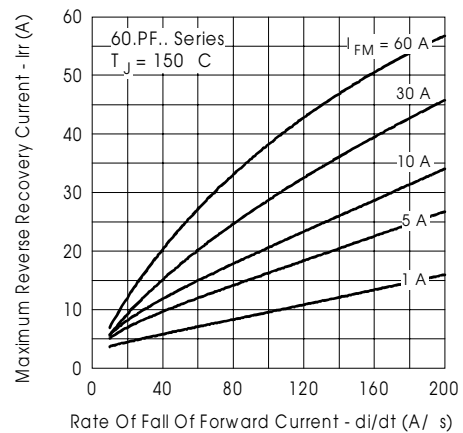


Fig. 13-Recovery Current Characteristics, $T_j = 150^\circ\text{C}$

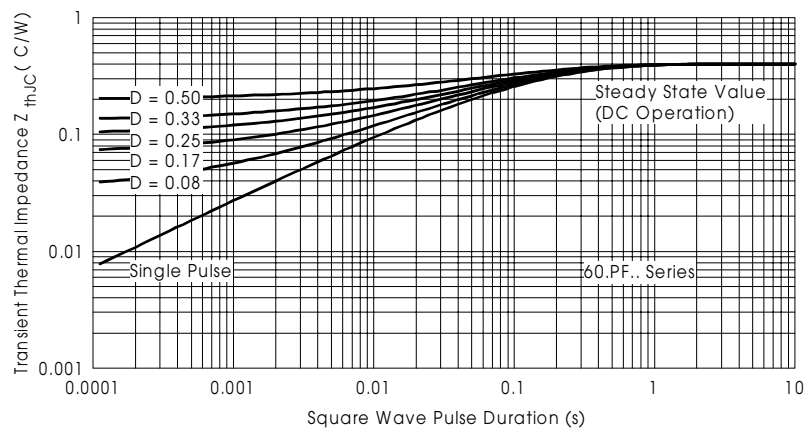


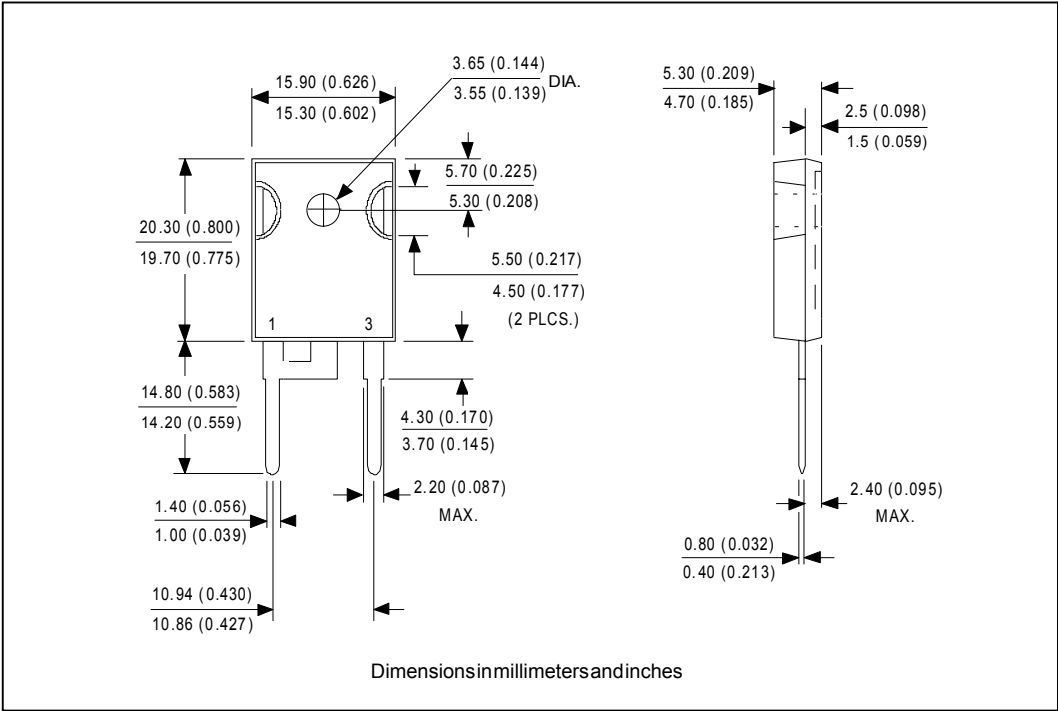
Fig. 14-Thermal Impedance Z_{thJC} Characteristics

60EPF.. 60CPF.. HV *QUIETIR* Series

Bulletin I2130 rev. B 01/01

International
IRF Rectifier

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			

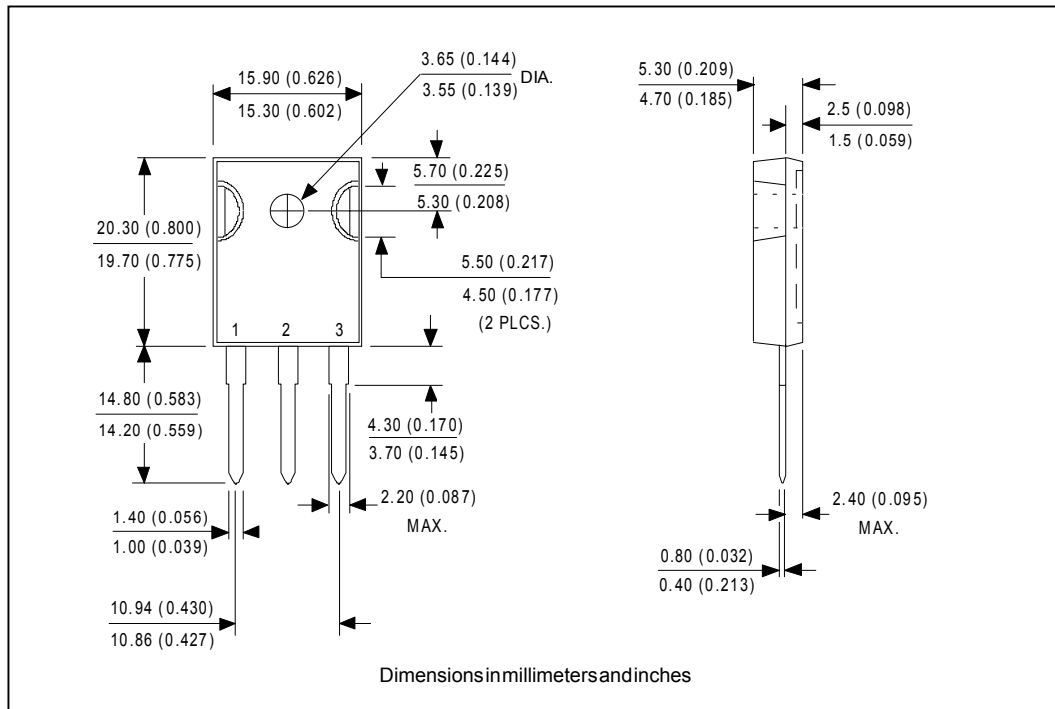
BASE
CATHODE

2

1 3

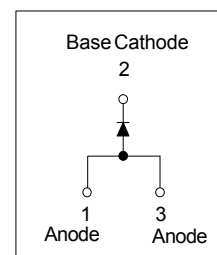
CATHODE ANODE

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			



60EPF.. 60CPF.. HV *QUIETIR* Series

Bulletin I2130 rev. B 01/01

International
IOR Rectifier

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309

Visit us at www.irf.com for sales contact information. 01/01