

FAST SOFT RECOVERY
RECTIFIER DIODE



$V_F < 1.1V @ 30A$
 $t_{rr} = 70ns$
 $V_{RRM} 200 \text{ to } 600V$

Description/Features

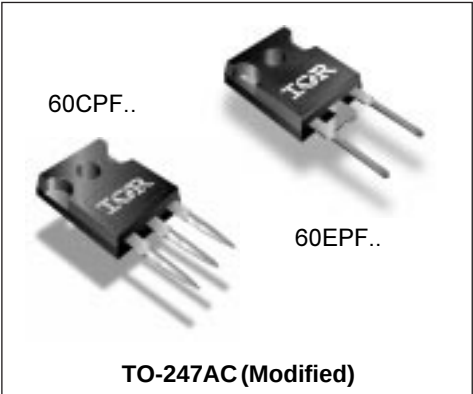
The 60EPF.. & 60CPF.. fast soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop. The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

- 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}	200 to 600	V
I_{FSM}	830	A
$V_F @ 30A, T_J = 25^{\circ}C$	1.1	V
$t_{rr} @ 1A, 100A/\mu s$	70	ns
T_J	-40 to 150	$^{\circ}C$

Package Outline



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
60EPF02, 60CPF02	200	300	5
60EPF04, 60CPF04	400	500	
60EPF06, 60CPF06	600	700	

Absolute Maximum Ratings

Parameters	60.PF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	60	A	@ $T_C = 106^\circ\text{C}$, 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

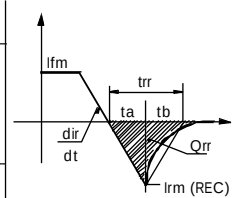
Electrical Specifications

Parameters	60.PF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.3	V	@ 60A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	5.0	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.88	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	5.0		$T_J = 150^\circ\text{C}$

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

Typical Recovery Characteristics

Parameters	60.PF..	Units	Conditions
t_{rr} Reverse Recovery Time	180	ns	$I_F @ 60\text{Apk}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	3.4	A	
Q_{rr} Reverse Recovery Charge	0.5	μC	
S Snap Factor t_b/t_a	0.5	typical	



Thermal-Mechanical Specifications

Parameters	60.PF..	Units	Conditions
T_J Max. Junction Temperature Range	-40to150	°C	
T_{stg} Max. Storage Temperature Range	-40to150	°C	
R_{thJC} Max. Thermal Resistance Junction to Case	0.4	°C/W	DCoperation
R_{thJA} Max. Thermal Resistance Junction to Ambient	40	°C/W	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.2	°C/W	Mountingsurface, smoothandgreased
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)

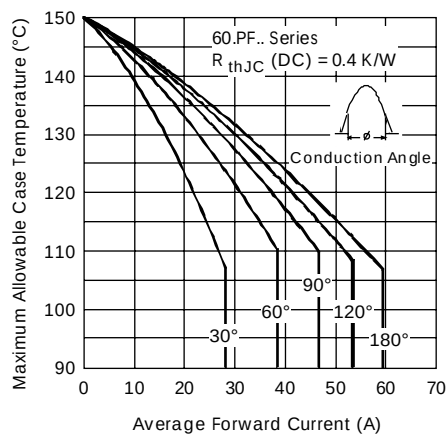


Fig. 1 - Current Rating Characteristics

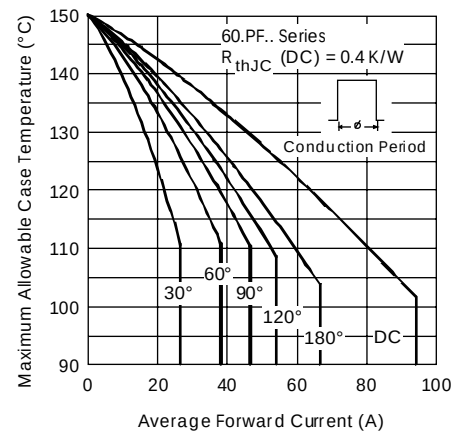


Fig. 2 - Current Rating Characteristics

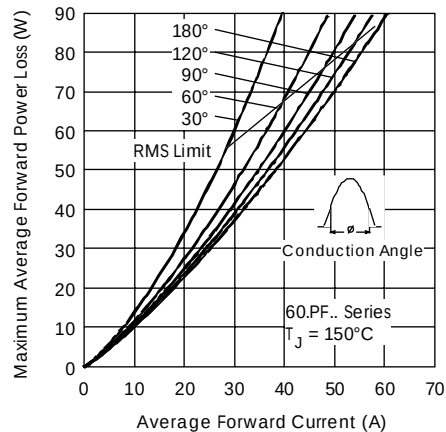


Fig. 3 - Forward Power Loss Characteristics

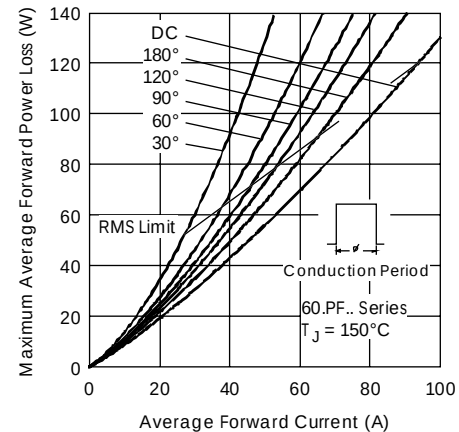


Fig. 4 - Forward Power Loss Characteristics

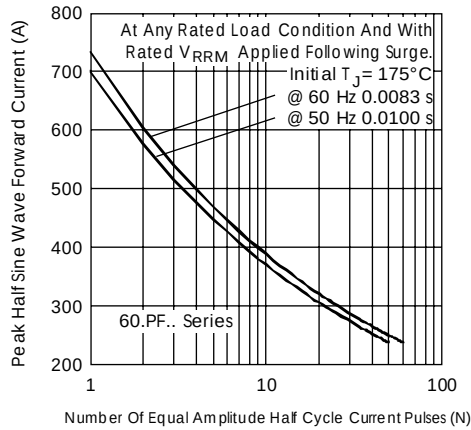


Fig. 5 - Maximum Non-Repetitive Surge Current

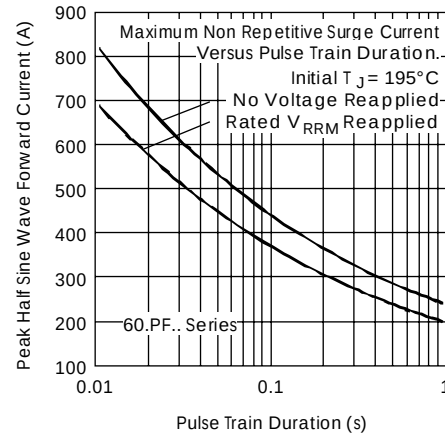


Fig. 6 - Maximum Non-Repetitive Surge Current

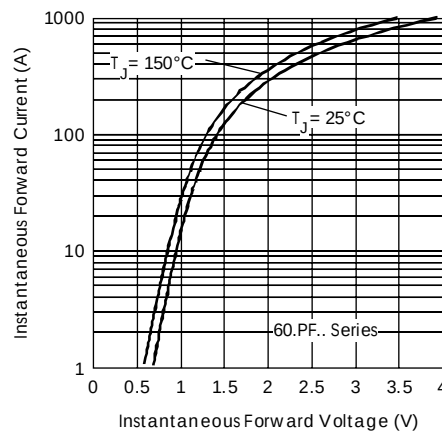


Fig. 7 - Forward Voltage Drop Characteristics

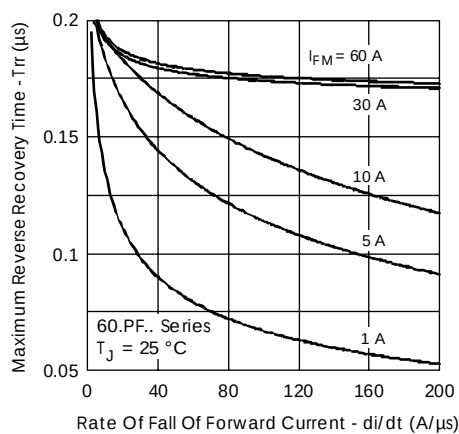


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

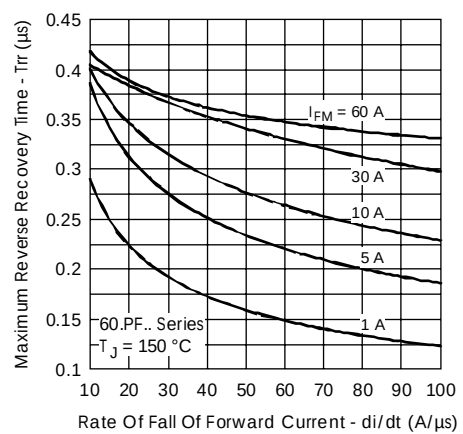


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

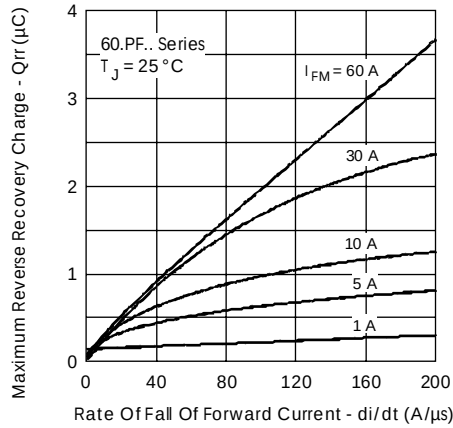


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

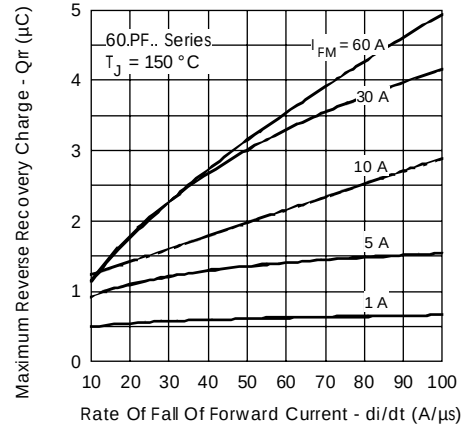


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

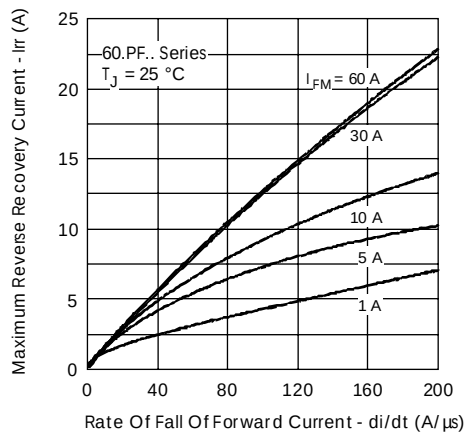


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

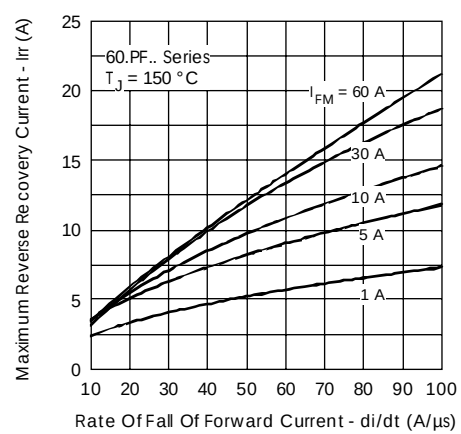


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

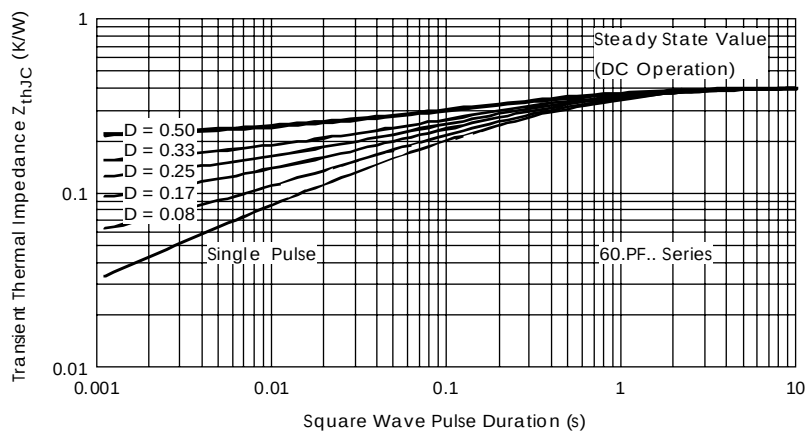
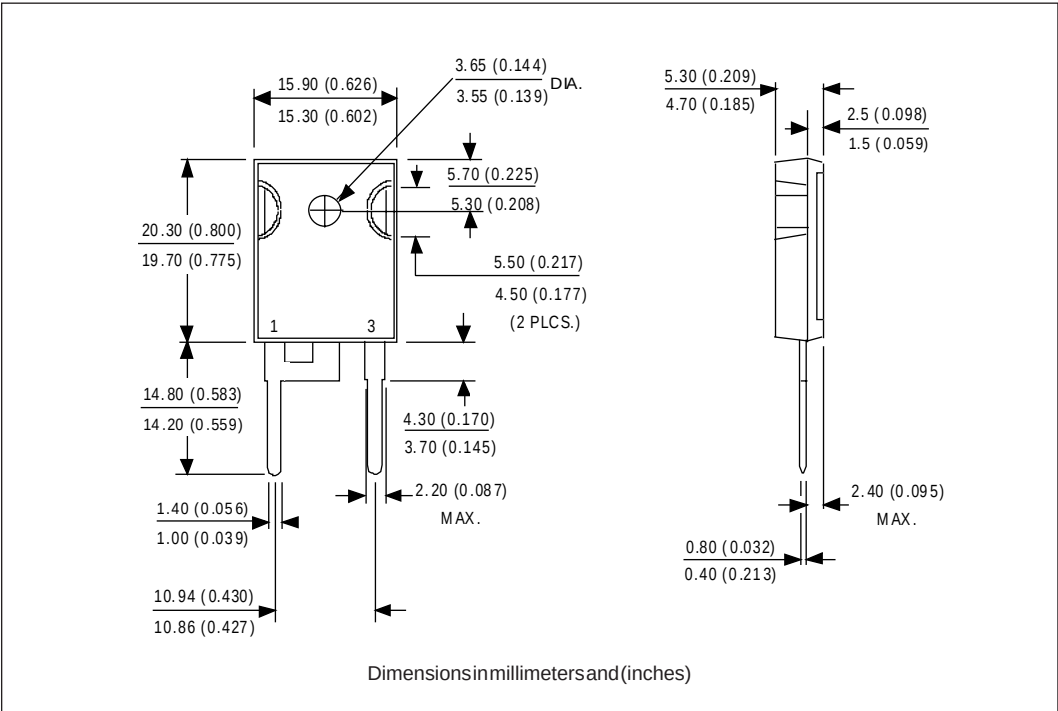


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code				
60	E	P	F	06
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}

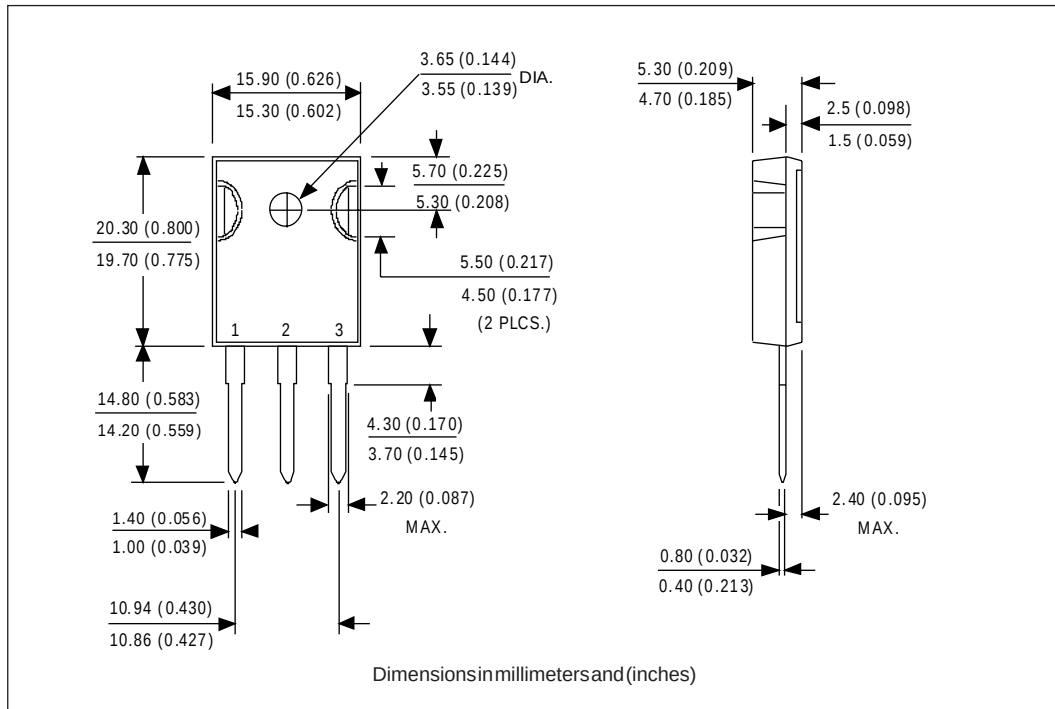
02 = 200V

04 = 400V

06 = 600V

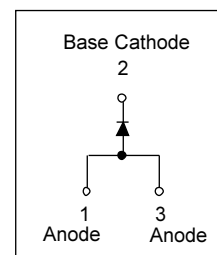
The circuit diagram shows the internal connection between the base, cathode, and anode. The base is connected to the cathode, and the anode is connected to the base. The diagram is labeled with BASE, CATHODE, and ANODE.

Outline Table



Ordering Information Table

Device Code				
60	C	P	F	06
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}			
	02 = 200V 04 = 400V 06 = 600V			



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Data and specifications subject to change without notice.