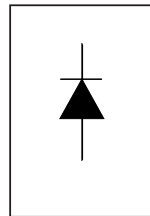


International
IR Rectifier

QUIETIR Series
30EPF12PbF, 30CPF12PbF

**FAST SOFT RECOVERY
RECTIFIER DIODE**
Lead-Free ("PbF" suffix)



$$V_F < 1.41V @ 30A$$

$$t_{rr} = 95 \text{ ns}$$

$$V_{RRM} = 1200V$$

Description/ Features

The 30EPF12PbF & 30CPF12PbF 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.

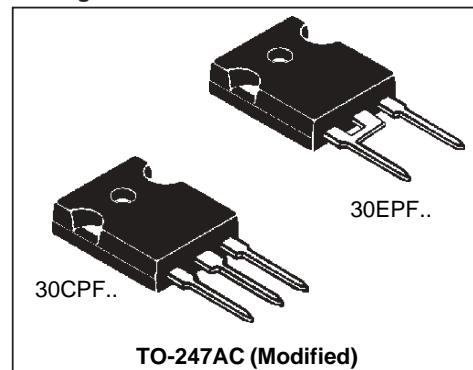
Typical applications are:

- Output rectification and freewheeling in inverters, choppers and converters
- and input rectifications where severe restrictions on conducted EMI should be met.
- 30CPF series is a drop in replacement for 25CPF Series (parallel connection only)

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Sinusoidal waveform	30	A
V_{RRM}	1200	V
I_{FSM}	350	A
V_F @ 30 A, $T_J = 25^\circ\text{C}$	1.41	V
t_{rr} @ 1A, 100A/ μs	95	ns
T_J	-40 to 150	$^\circ\text{C}$

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
30EPF12PbF, 30CPF12PbF	1200	1300	6

Absolute Maximum Ratings

Parameters	30.PF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	30	A	@ $T_C = 95^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	300	A	10ms Sine pulse, rated V_{RRM} applied
	350		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	450	A^2s	10ms Sine pulse, rated V_{RRM} applied
	636		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	6360	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied

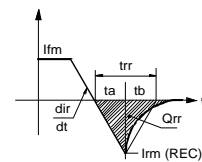
Electrical Specifications

Parameters	30.PF..	Units	Conditions
V_{FM} Max. Forward Voltage Drop	1.41	V	@ 30A, $T_J = 25^\circ\text{C}$
r_t Forward slope resistance	10.09	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.992	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	6		$T_J = 150^\circ\text{C}$

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

Typical Recovery Characteristics

Parameters	30.PF..	Units	Conditions
t_{rr} Reverse Recovery Time	450	ns	$I_F @ 30\text{Apk}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	6.1	A	
Q_{rr} Reverse Recovery Charge	2.16	μC	
S Snap Factor t_b/t_a	0.6	typical	



Thermal-Mechanical Specifications

Parameters	30.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	0.8	°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)
Marking Device	30EPF12,30CPF12		

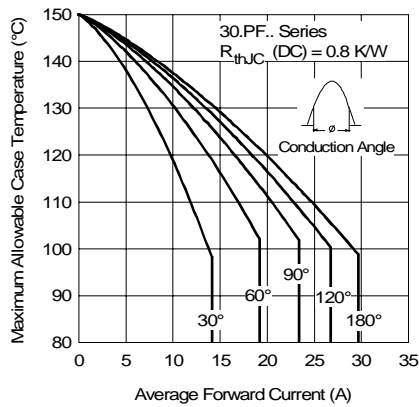


Fig. 1 - Current Rating Characteristics

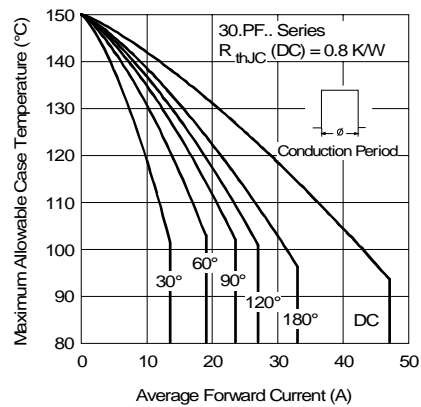


Fig. 2 - Current Rating Characteristics

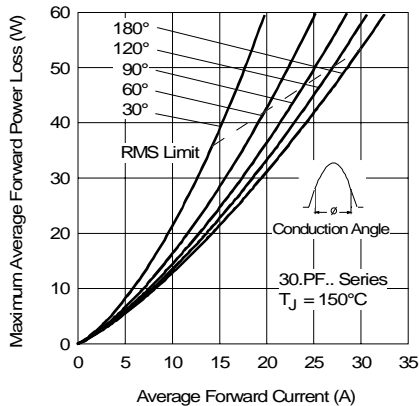


Fig. 3 - Forward Power Loss Characteristics

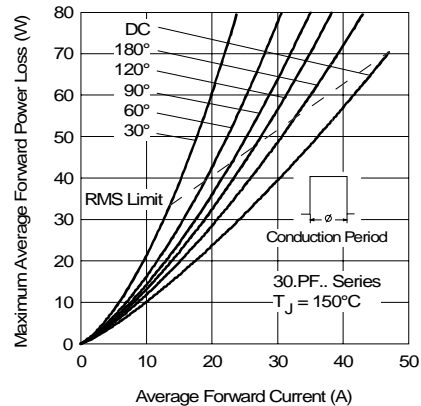


Fig. 4 - Forward Power Loss Characteristics

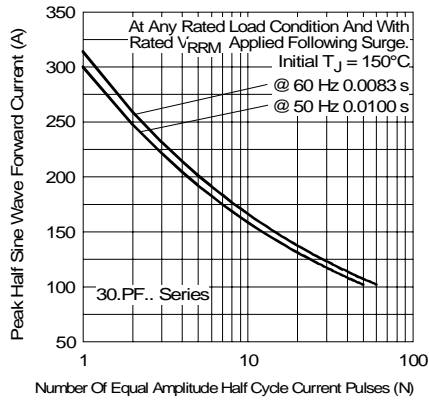


Fig. 5 - Maximum Non-Repetitive Surge Current

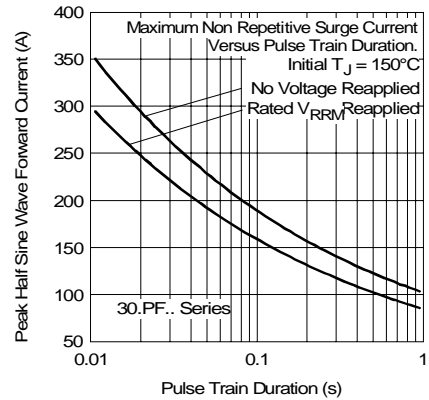


Fig. 6 - Maximum Non-Repetitive Surge Current

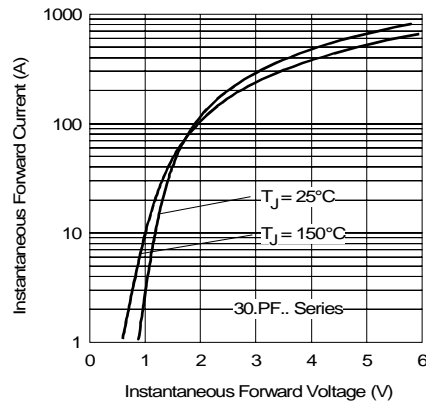


Fig. 7 - Forward Voltage Drop Characteristics

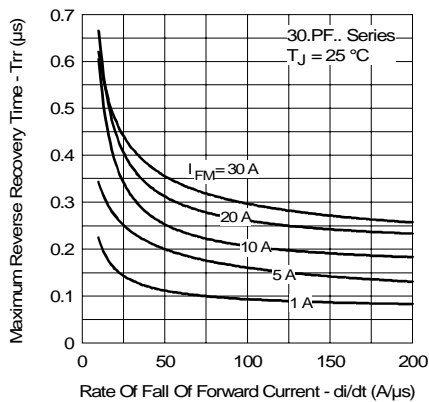


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

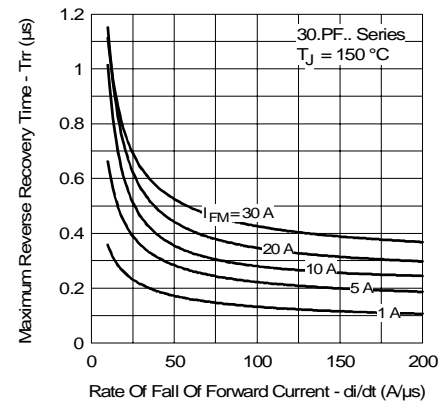


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

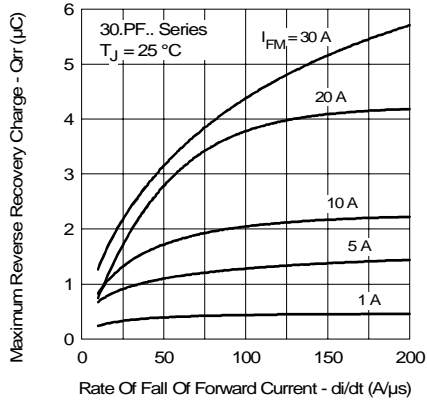


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

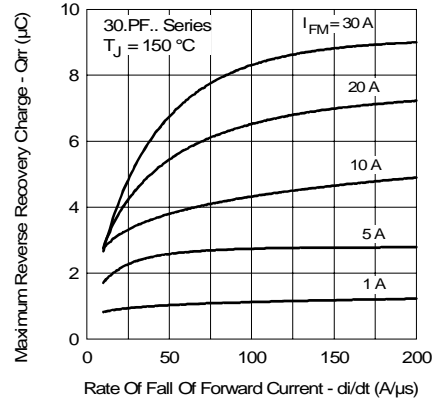


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

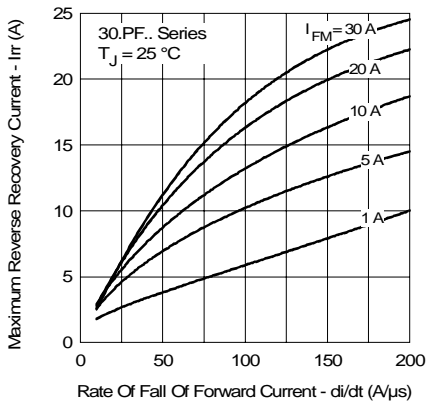


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

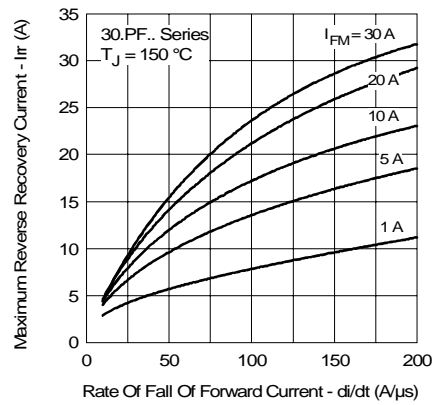


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

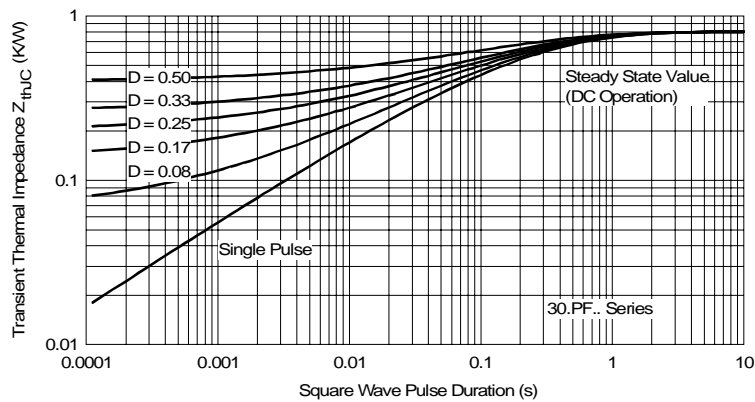
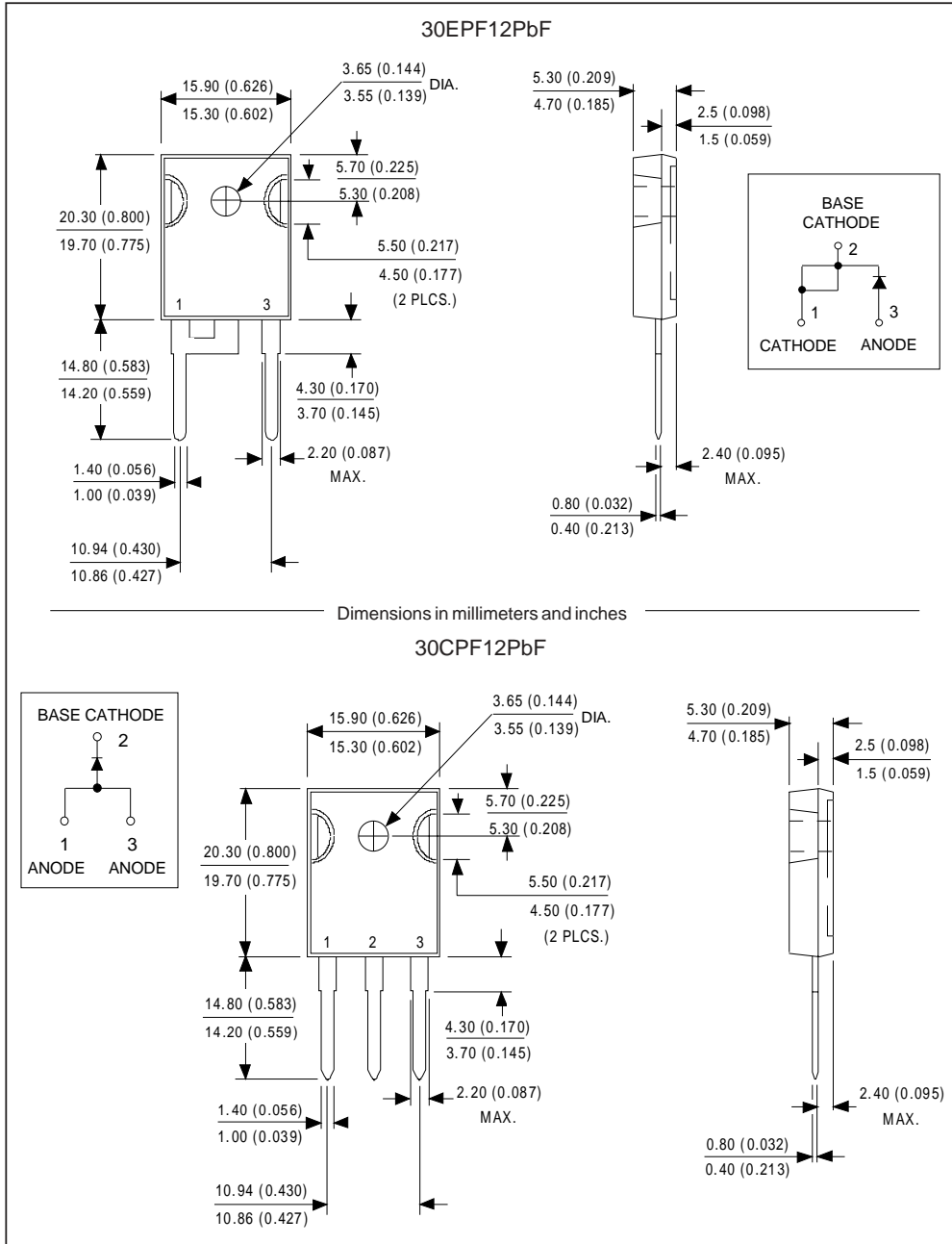


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

EXAMPLE: THIS IS A 30EPF12
 WITH ASSEMBLY
 LOT CODE 5657
 ASSEMBLED ON WW 35, 2000
 IN ASSEMBLY LINE "H"

PART NUMBER

DATE CODE
 P = LEAD-FREE
 YEAR 0 = 2000
 WEEK 35
 LINE H

EXAMPLE: THIS IS A 30EPF12
 WITH ASSEMBLY
 LOT CODE 5657
 ASSEMBLED ON WW 35, 2000
 IN ASSEMBLY LINE "H"

PART NUMBER

DATE CODE
 P = LEAD-FREE
 YEAR 0 = 2000
 WEEK 35
 LINE H

Ordering Information Table

Device Code	30	E	P	F	12	PbF
	①	②	③	④	⑤	⑥
1	- Current Rating (30 = 30A)					
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 Rating (12 = 1200V)					
6	- • none = Standard Production • PbF = Lead-Free					

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
10/04



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