

International
IR Rectifier

QUIETIR Series
30EPF06PbF, 30CPF06PbF

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



$V_F < 1.2V @ 10A$
 $t_{rr} = 60ns$
 $V_{RRM} = 600V$

Description/ Features

The 30EPF06PbF & 30CPF06PbF 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.

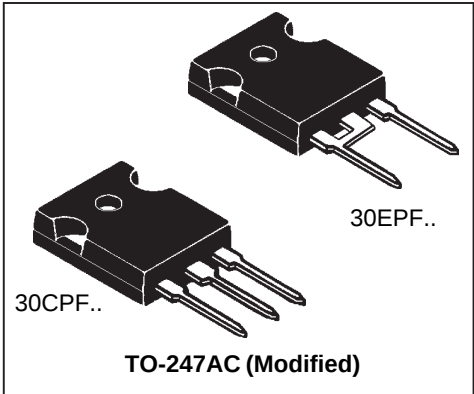
Typical applications are:

- 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}	600	V
I_{FSM}	350	A
$V_F @ 10A, T_J = 25^{\circ}C$	1.2	V
$t_{rr} @ 1A, 100A/\mu s$	60	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
30EPF06PbF, 30CPF06PbF	600	700	2

Absolute Maximum Ratings

Parameters	30.PF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	30	A	@ $T_C = 98^\circ\text{C}$, 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

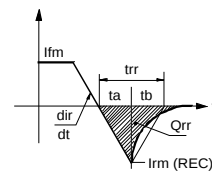
Electrical Specifications

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	12.5	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.9	V	
I_{RM} Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	2.0		$T_J = 150^\circ\text{C}$

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

Typical Recovery Characteristics

Parameters	30.PF..	Units	Conditions
t_{rr} Reverse Recovery Time	160	ns	$I_F @ 20\text{Apk}$ @ 100A/ μs @ 25°C
I_{rr} Reverse Recovery Current	10	A	
Q_{rr} Reverse Recovery Charge	1.25	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	30EPF06/ 30CPF06		

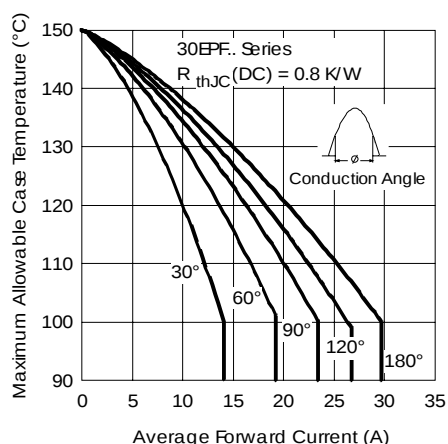


Fig. 1 - Current Rating Characteristics

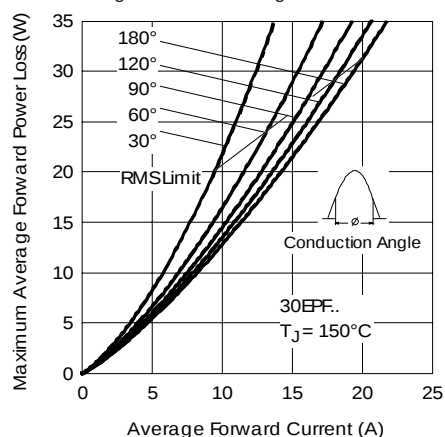


Fig. 3 - Forward Power Loss Characteristics

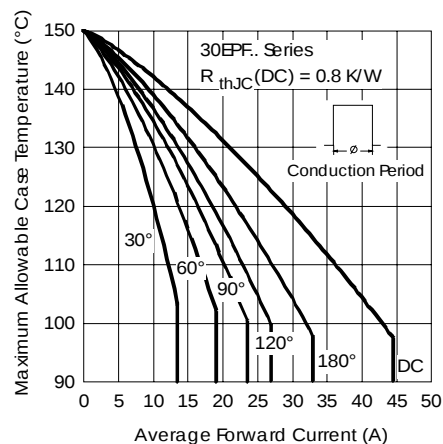


Fig. 2 - Current Rating Characteristics

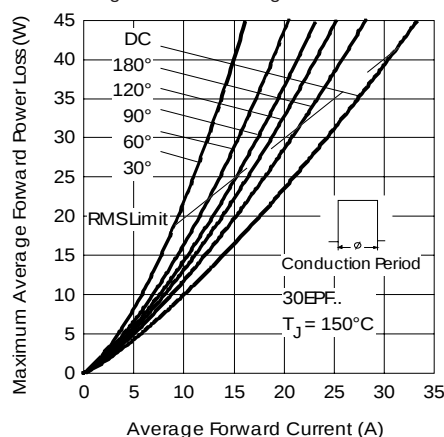


Fig. 4 - Forward Power Loss Characteristics

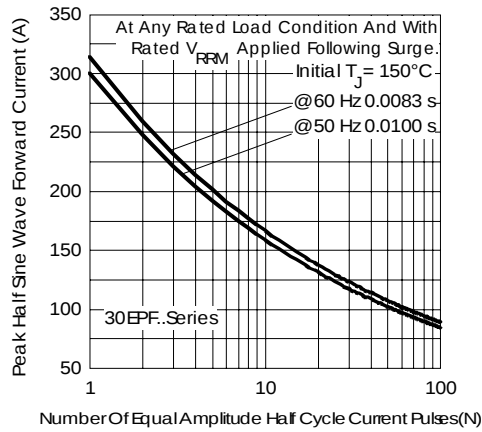


Fig. 5 - Maximum Non-Repetitive Surge Current

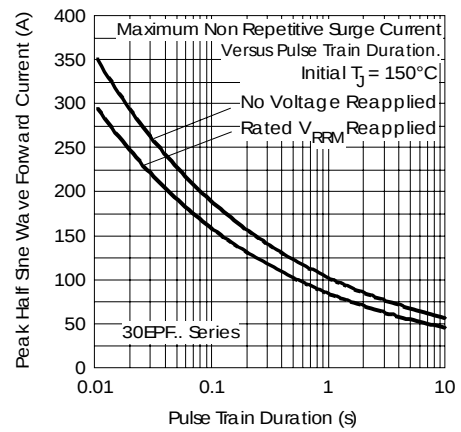


Fig. 6 - Maximum Non-Repetitive Surge Current

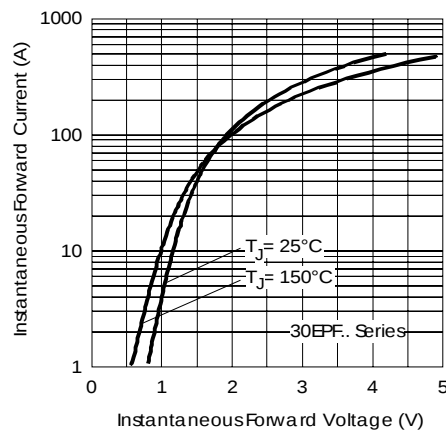


Fig. 7 - Forward Voltage Drop Characteristics

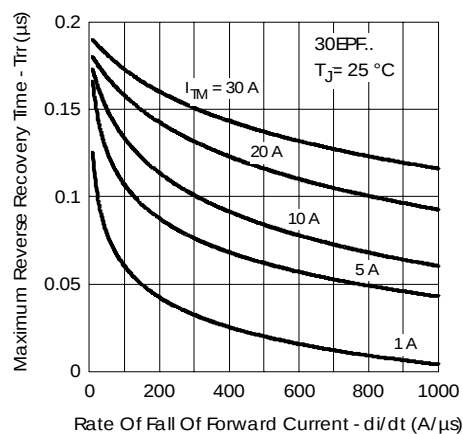


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

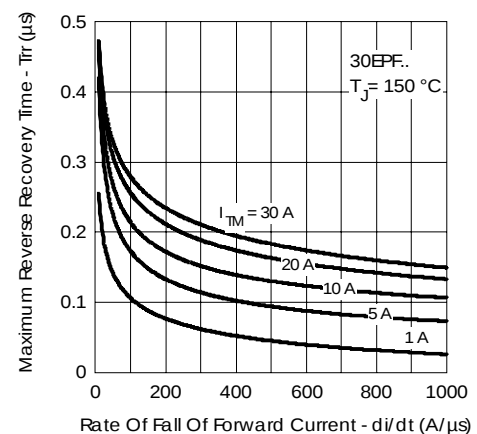


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

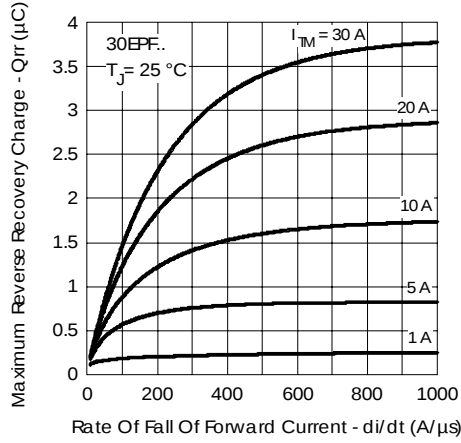


Fig. 10 - Recovery Charge Characteristics, $T_j = 25^\circ\text{C}$

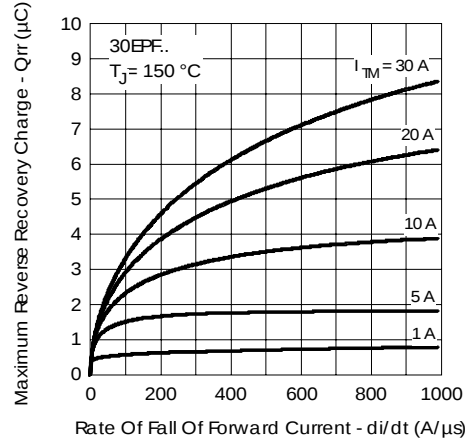


Fig. 11 - Recovery Charge Characteristics, $T_j = 150^\circ\text{C}$

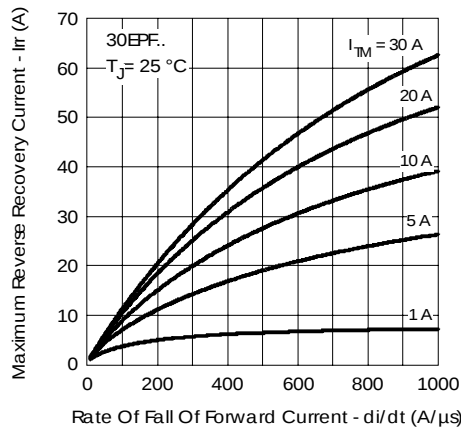


Fig. 12 - Recovery Current Characteristics, $T_j = 25^\circ\text{C}$

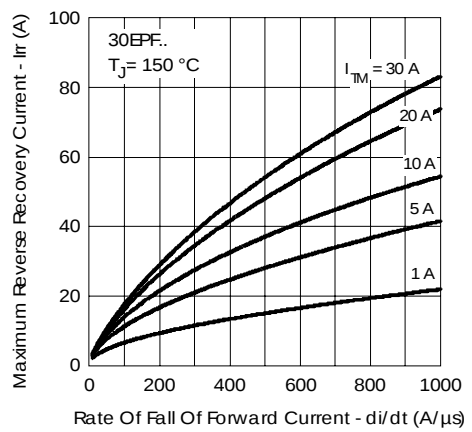


Fig. 13 - Recovery Current Characteristics, $T_j = 150^\circ\text{C}$

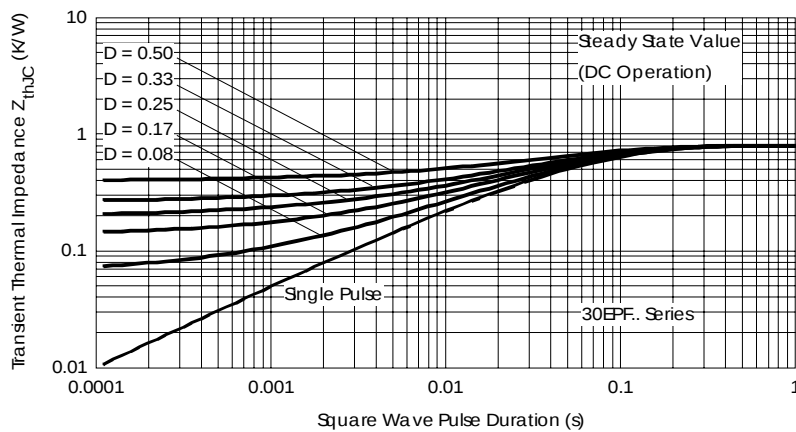
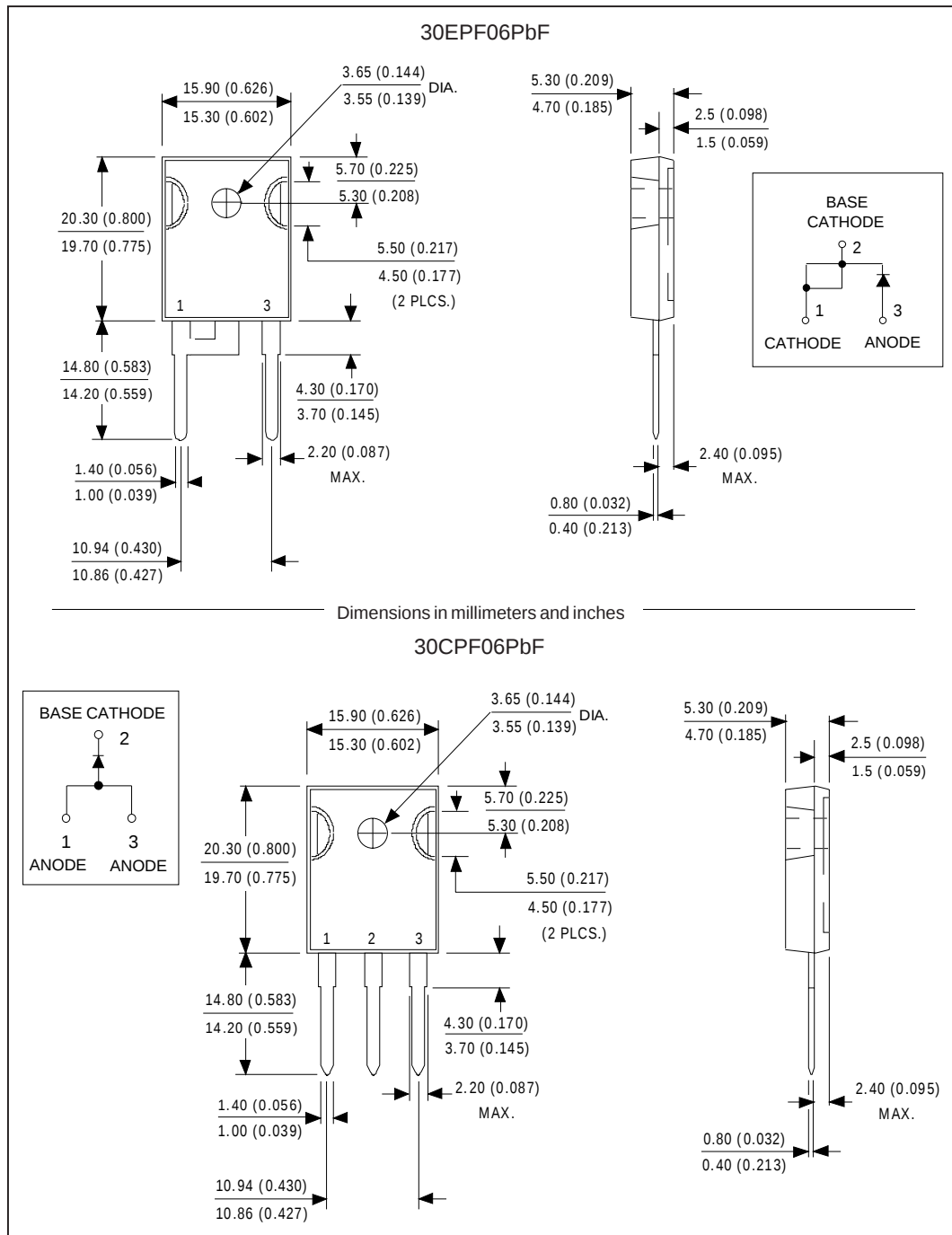


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

EXAMPLE: THIS IS A 30EPF06
WITH ASSEMBLY
LOT CODE 5657
ASSEMBLED ON WW 35, 2000
IN ASSEMBLY LINE "H"

INTERNATIONAL
RECTIFIER
LOGO

ASSEMBLY
LOT CODE

PART NUMBER

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

EXAMPLE: THIS IS A 30CPF06
WITH ASSEMBLY
LOT CODE 5657
ASSEMBLED ON WW 35, 2000
IN ASSEMBLY LINE "H"

INTERNATIONAL
RECTIFIER
LOGO

ASSEMBLY
LOT CODE

PART NUMBER

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

Ordering Information Table

Device Code					
30	E	P	F	06	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 (06 = 600V)				
6	- • none = Standard Production				
	• PbF = Lead-Free				

30EPF06PbF, 30CPF06PbF *QUIETIR* Series

Bulletin I2169 10/04

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IOR Rectifier

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
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