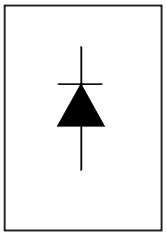
International
IOR Rectifier

*QUIET**IR*** Series
30EPF12PbF, 30CPF12PbF

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



V_F < 1.41V @ 30A
t_{rr} = 95 ns
V_{RRM} = 1200V

Description/ Features

The 30EPF12PbF & 30CPF12PbF 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.

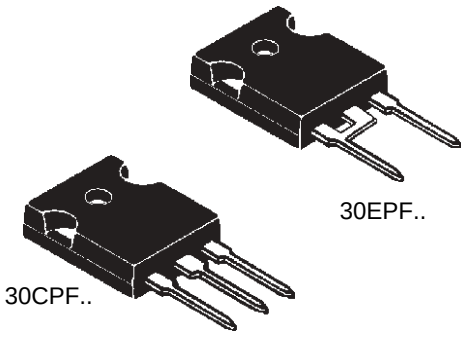
Typical applications are:

- 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°C	1.41	V
trr @ 1A, 100A/µs	95	ns
T_J	- 40 to 150	°C

Package Outline



TO-247AC (Modified)

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

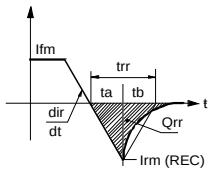
	Parameters	30.PF..	Units	Conditions
$I_{F(AV)}$	Max. Average Forward Current	30	A	@ T_C = 95° C, 180° conduction half sine wave
I_{FSM}	Max. Peak One Cycle Non-Repetitive	300	A	10ms Sine pulse, rated V_{RRM} applied
	Surge Current	350		10ms Sine pulse, no voltage reapplied
I^2t	Max. I^2t for fusing	450	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°C	
r_t	Forward slope resistance	10.09	mΩ	T_J = 150°C	
$V_{F(TO)}$	Threshold voltage	0.992	V		
I_{RM}	Max. Reverse Leakage Current	0.1	mA	T_J = 25 °C	V_R = rated V_{RRM}
		6		T_J = 150 °C	

Typical Recovery Characteristics

	Parameters	30.PF..	Units	Conditions
t_{rr}	Reverse Recovery Time	450	ns	I_F @ 30Apk
I_{rr}	Reverse Recovery Current	6.1	A	@ 25A/ µs
Q_{rr}	Reverse Recovery Charge	2.16	µC	@ 25°C
S	Snap Factor tb/ta	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 (Ibf-in)	
		Max.	12 (10)		
	Case Style		TO-247AC		JEDEC (Modified)
	Marking Device		30EPF12,30CPF12		

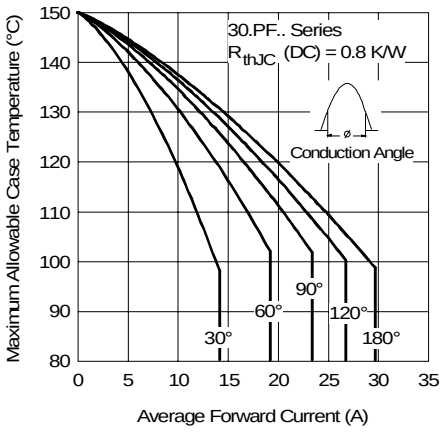


Fig. 1 - Current Rating Characteristics

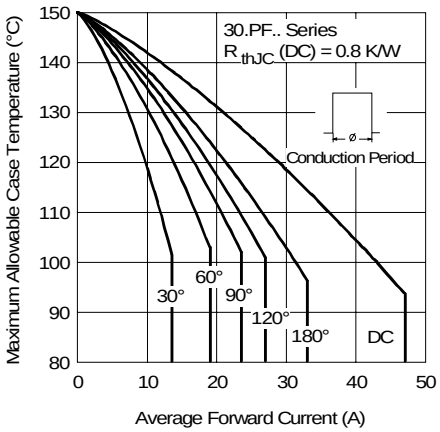


Fig. 2 - Current Rating Characteristics

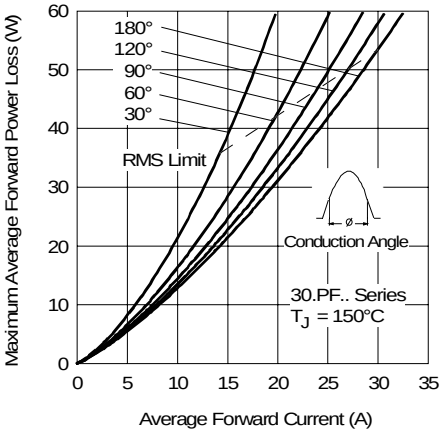


Fig. 3 - Forward Power Loss Characteristics

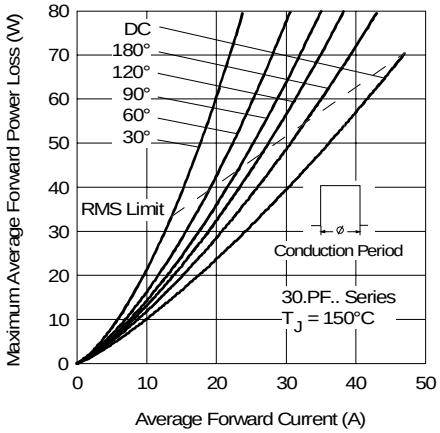


Fig. 4 - Forward Power Loss Characteristics

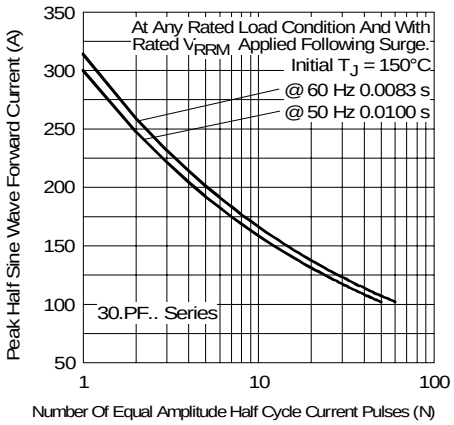


Fig. 5 - Maximum Non-Repetitive Surge Current

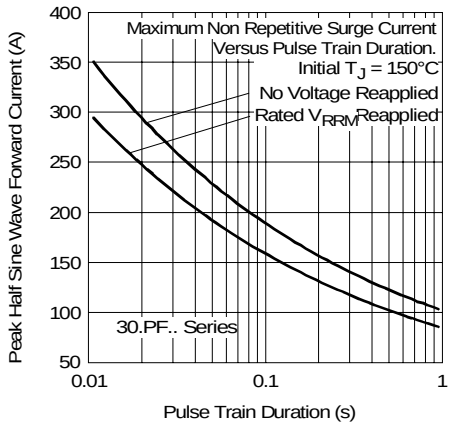


Fig. 6 - Maximum Non-Repetitive Surge Current

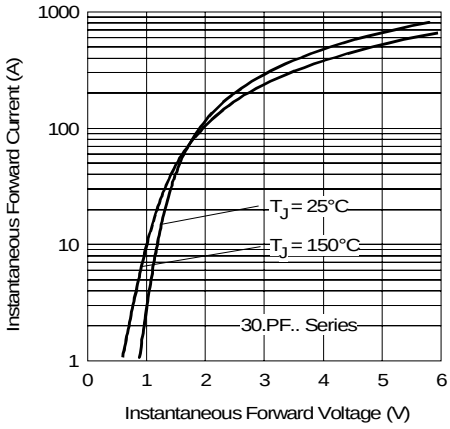


Fig. 7 - Forward Voltage Drop Characteristics

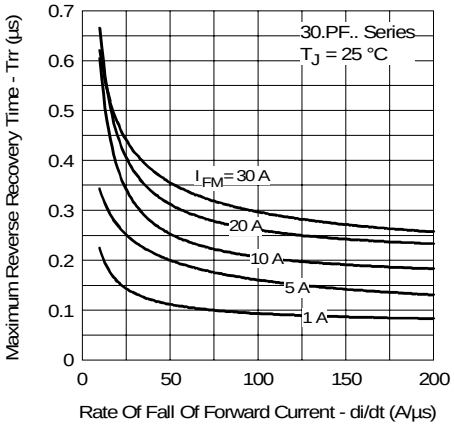


Fig. 8 - Recovery Time Characteristics, T_J = 25°C

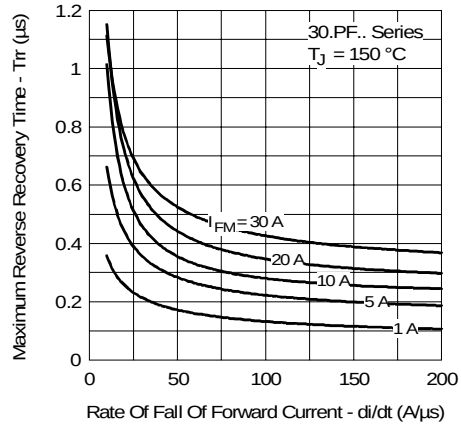


Fig. 9 - Recovery Time Characteristics, T_J = 150°C

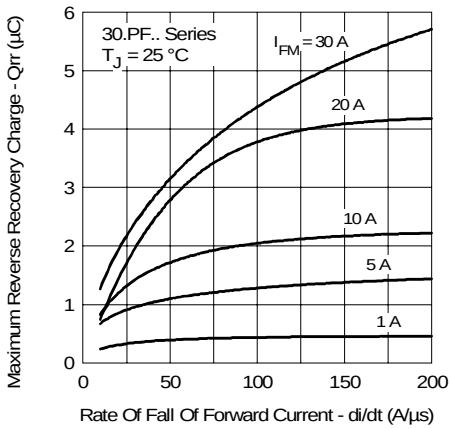


Fig. 10 - Recovery Charge Characteristics, T_J = 25°C

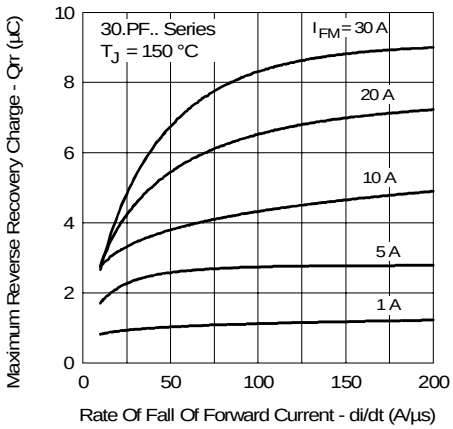


Fig. 11 - Recovery Charge Characteristics, T_J = 150°C

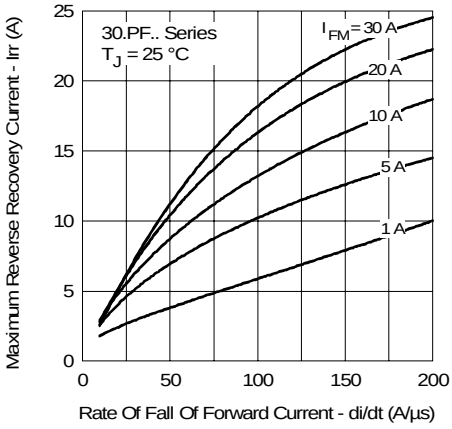


Fig. 12 - Recovery Current Characteristics, T_J = 25°C

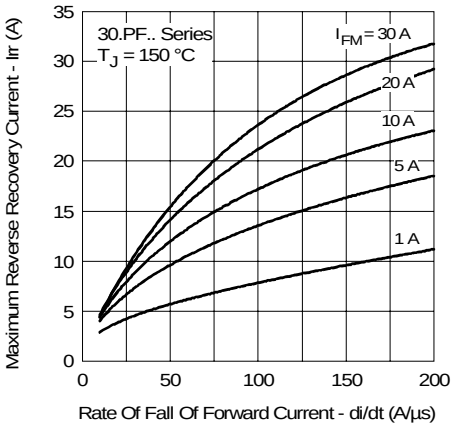


Fig. 13 - Recovery Current Characteristics, T_J = 150°C

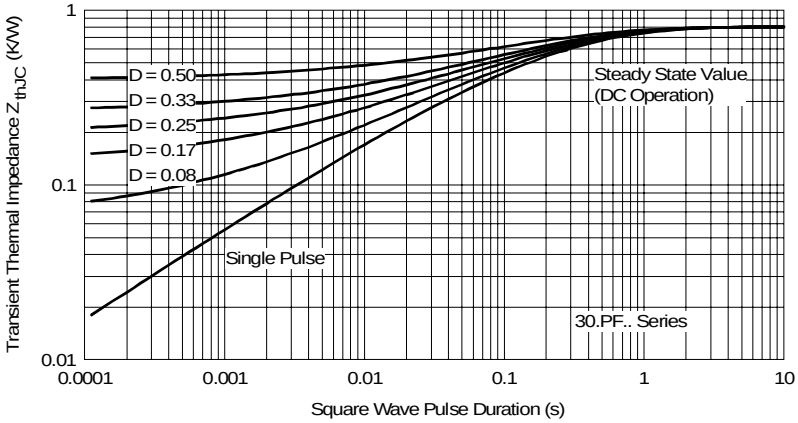
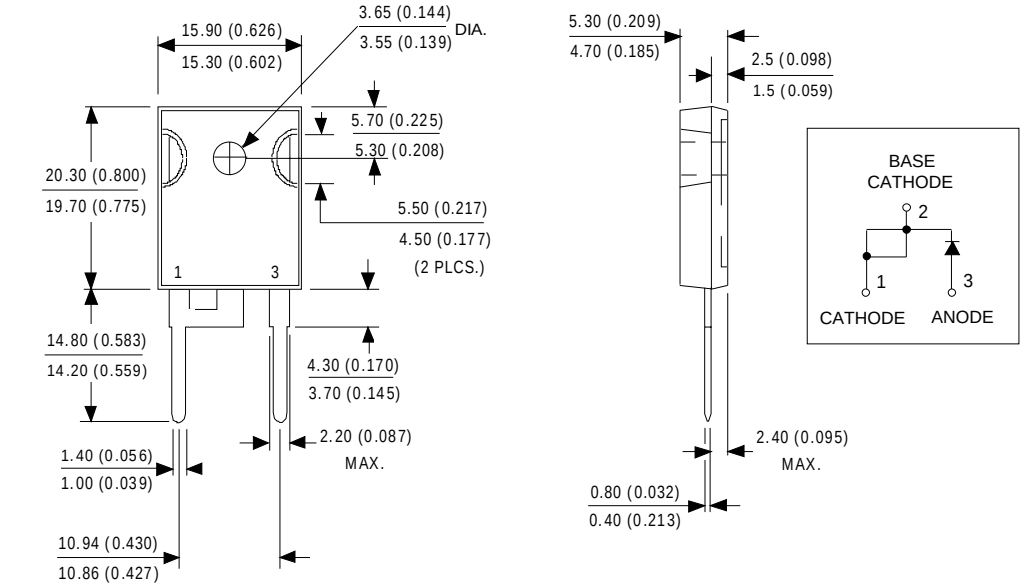


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

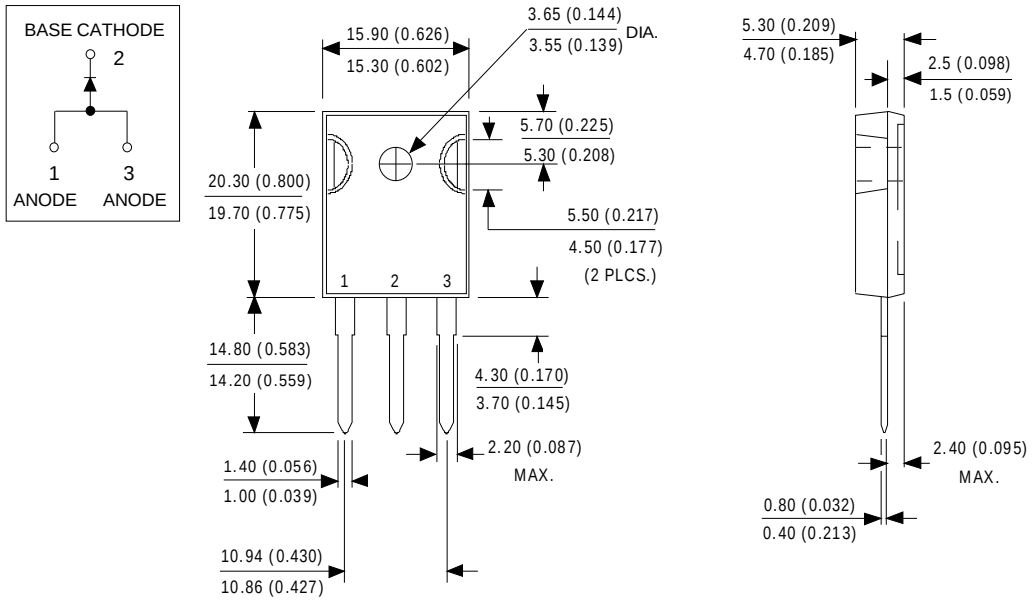
Outline Table

30EPF12PbF

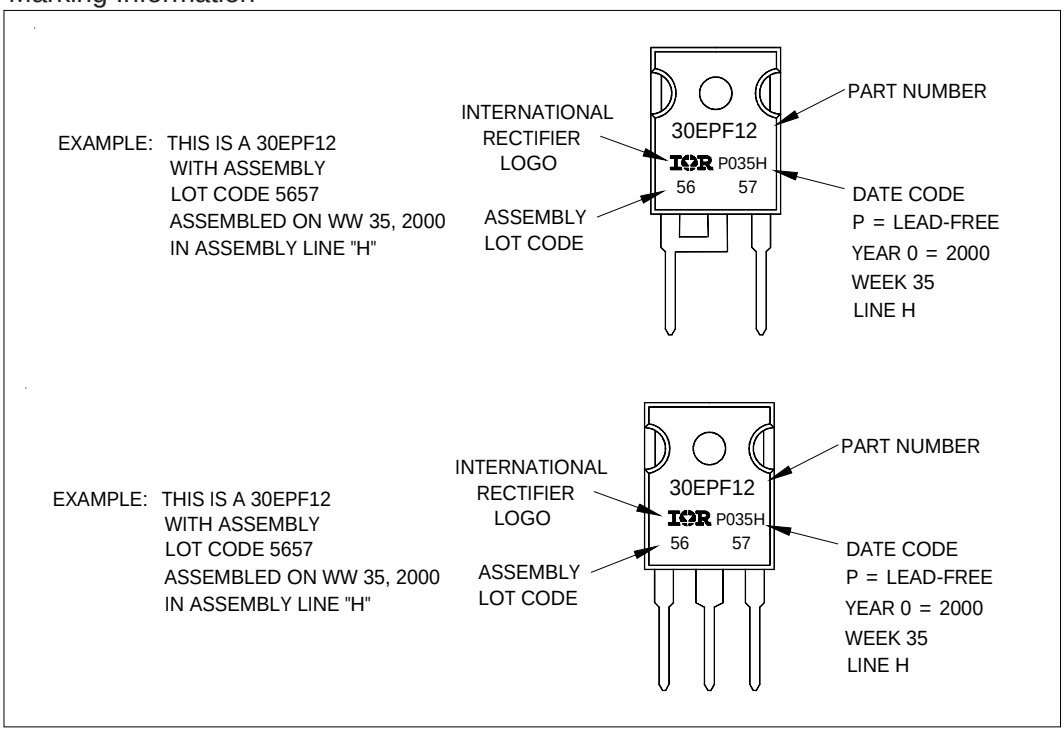


Dimensions in millimeters and inches

30CPF12PbF



Marking Information



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
IOR Rectifier

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10/04

Notice

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