

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

	$V_F < 1.2\text{ V @ }40\text{A}$
	$t_{rr} = 90\text{ ns}$
	$V_{RRM} = 1000\text{ to }1200\text{V}$

Description/ Features

The 80EPF...PbF fast soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.

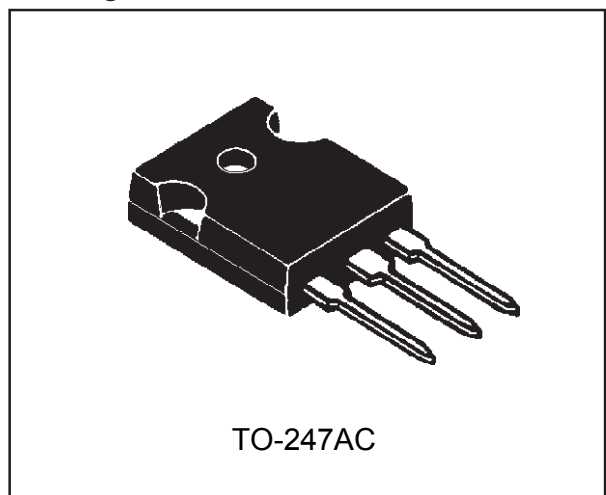
The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

- 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	Values	Units
$I_{F(AV)}$ Sinusoidal waveform	80	A
V_{RRM}	1000-1200	V
I_{FSM}	1100	A
V_F @40A, $T_J=25^\circ\text{C}$	1.2	V
t_{rr} @1A, -100A/ μs	90	ns
T_J	-40to150	$^\circ\text{C}$

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
80EPF10PbF	1000	1100	12
80EPF12PbF	1200	1300	12

Absolute Maximum Ratings

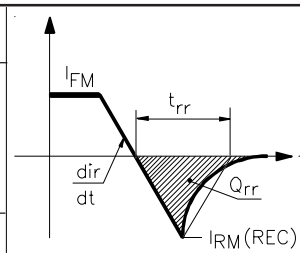
Parameters	80EPF..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	80	A	@ $T_C = 92^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	1100	A	10ms Sine pulse, rated V_{RRM} applied
	1250		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	5000	A^2s	10ms Sine pulse, rated V_{RRM} applied
	7000		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	70000	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

Electrical Specifications

Parameters		80EPF..	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop	1.35	V	@ 80A, T _J = 25°C	
r _t	Forward slope resistance	4.03	mΩ	T _J = 150°C	
V _{F(TO)}	Threshold voltage	0.87	V		
I _{RM}	Max. Reverse Leakage Current	0.1	mA	T _J = 25 °C	V _R = rated V _{RRM}
		12		T _J = 150 °C	

Recovery Characteristics

Parameters	80EPF..	Units	Conditions
t_{rr} Reverse Recovery Time	480	ns	$I_F @ 80\text{A}$ @ 25A/ μs @ 25°C
I_{rr} Reverse Recovery Current	7.1	A	
Q_{rr} Reverse Recovery Charge	2.1	μC	
S Snap Factor	0.5		



Thermal-Mechanical Specifications

Parameters			80EPF..	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		0.35	°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

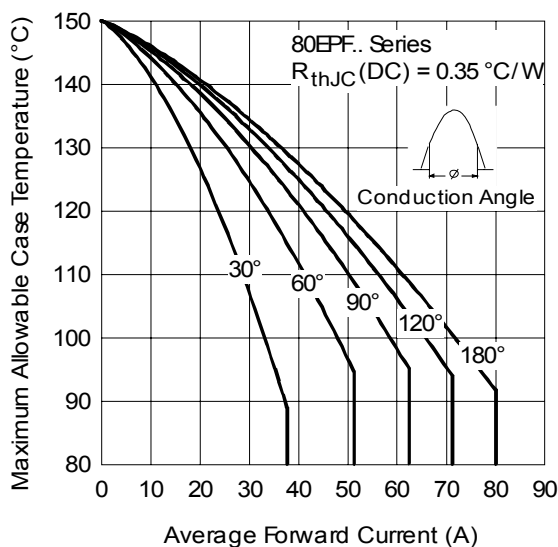


Fig. 1 - Current Rating Characteristics

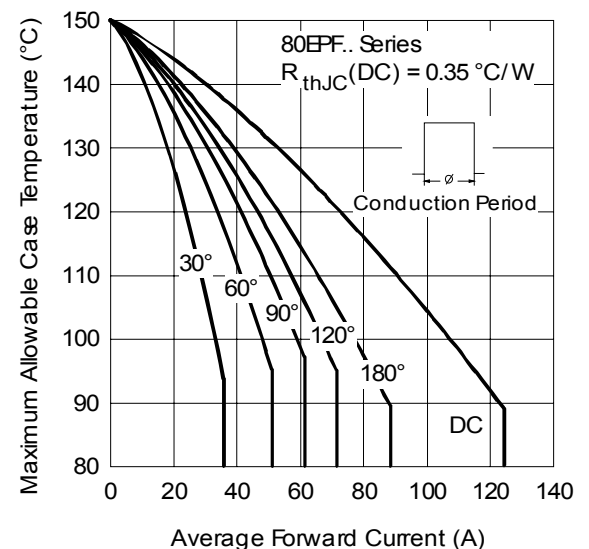


Fig. 2 - Current Rating Characteristics

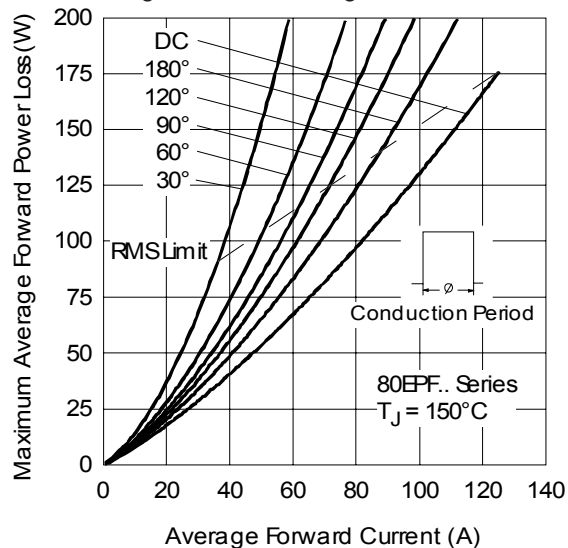


Fig. 3 - Forward Power Loss Characteristics

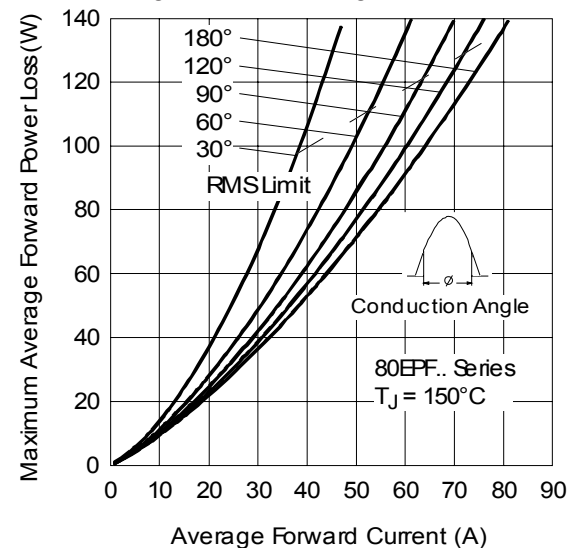


Fig. 4 - Forward Power Loss Characteristics

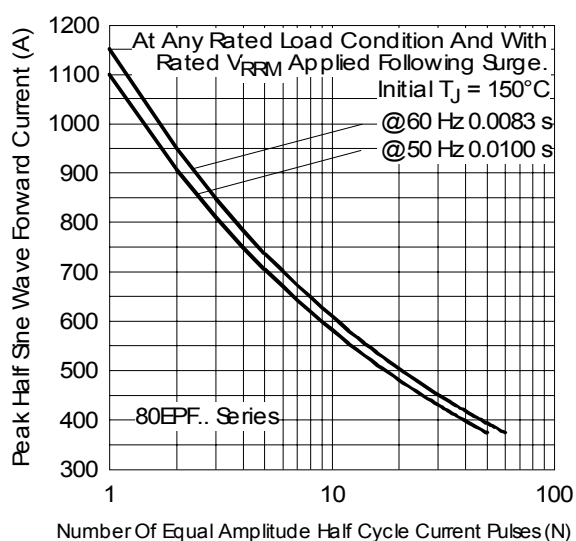


Fig. 5 - Maximum Non-Repetitive Surge Current

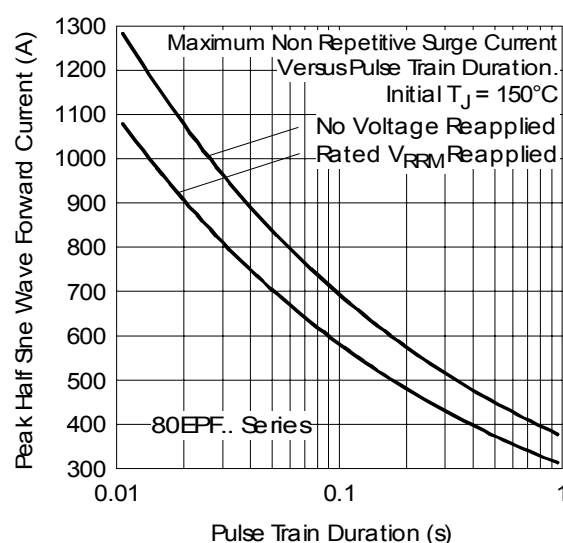


Fig. 6 - Maximum Non-Repetitive Surge Current

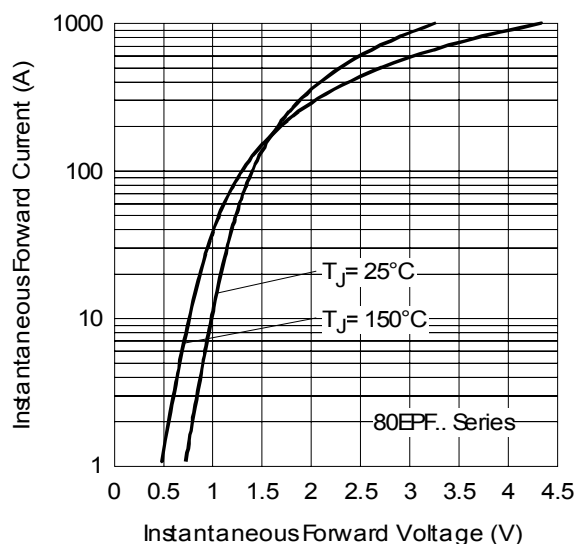


Fig. 7 - Forward Voltage Drop Characteristics

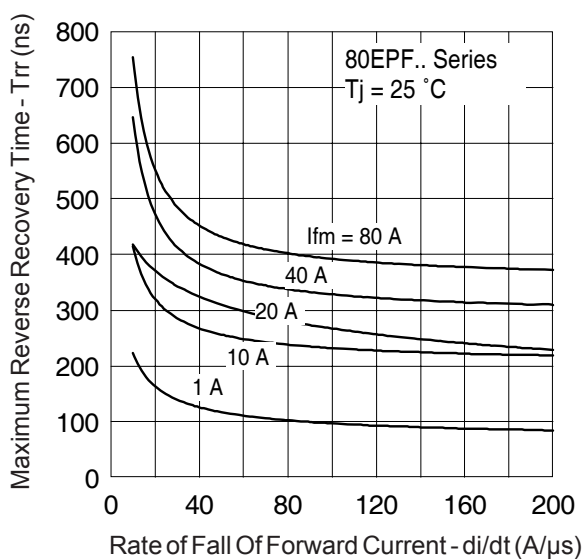


Fig. 8 - Recovery Time Characteristics, $T_J = 25^\circ\text{C}$

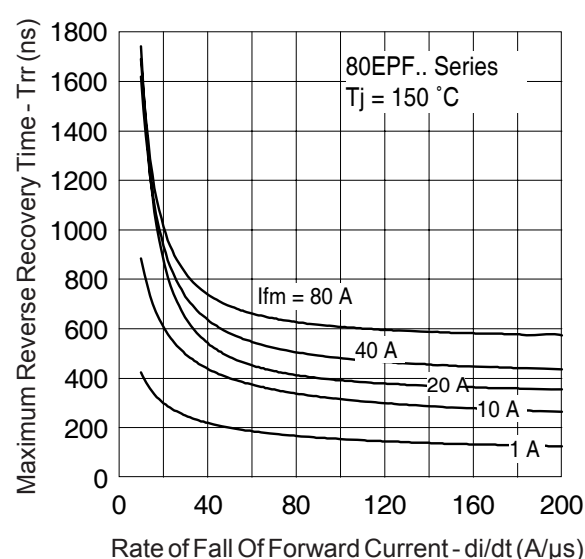


Fig. 9 - Recovery Time Characteristics, $T_J = 150^\circ\text{C}$

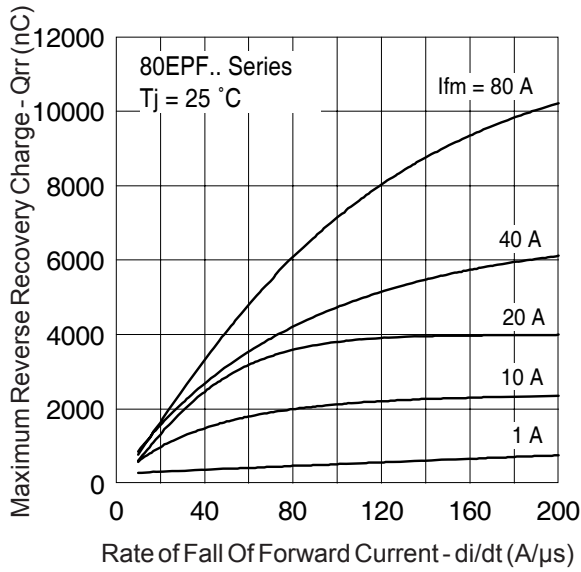


Fig. 10 - Recovery Charge Characteristics, $T_J = 25^\circ\text{C}$

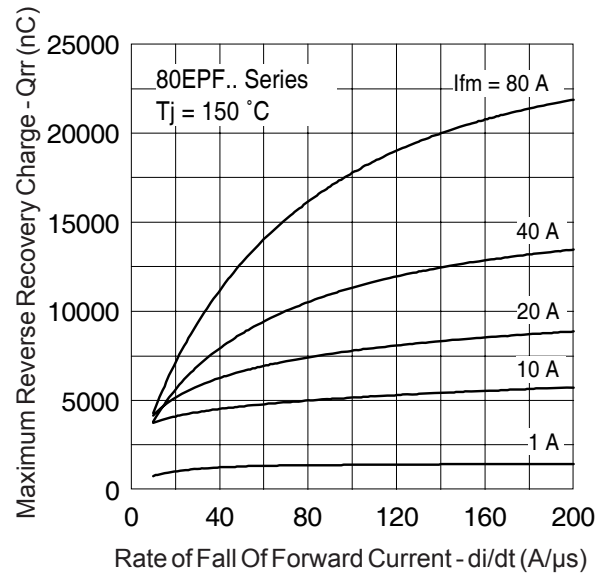


Fig. 11 - Recovery Charge Characteristics, $T_J = 150^\circ\text{C}$

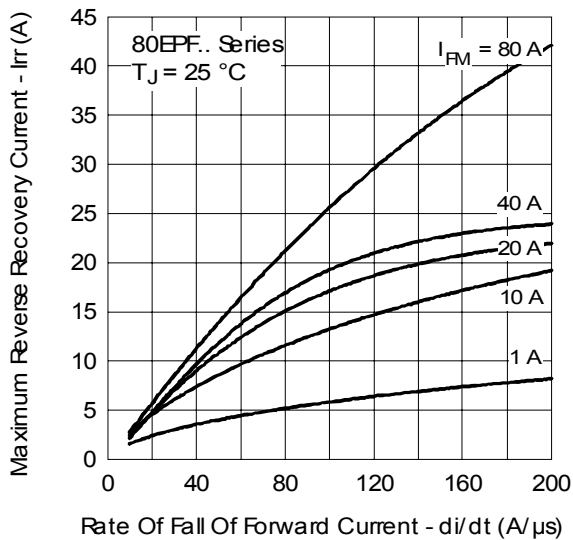


Fig. 12 - Recovery Current Characteristics, $T_J = 25^\circ\text{C}$

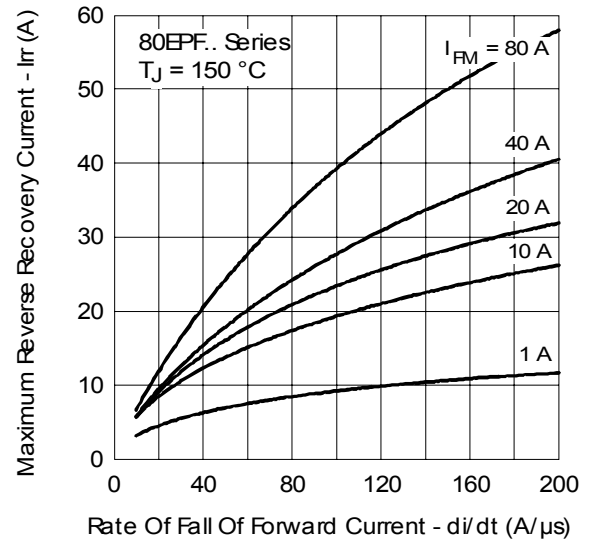


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

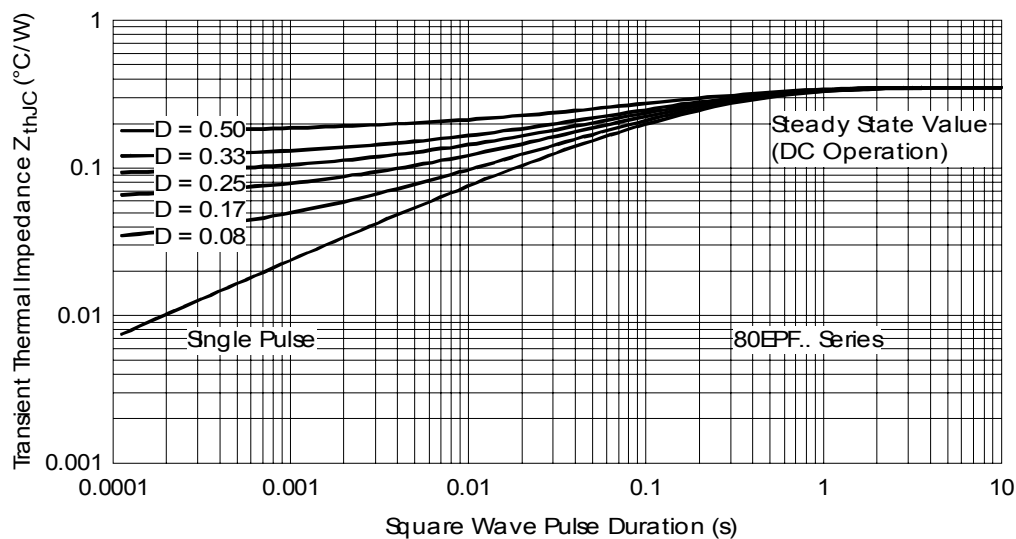
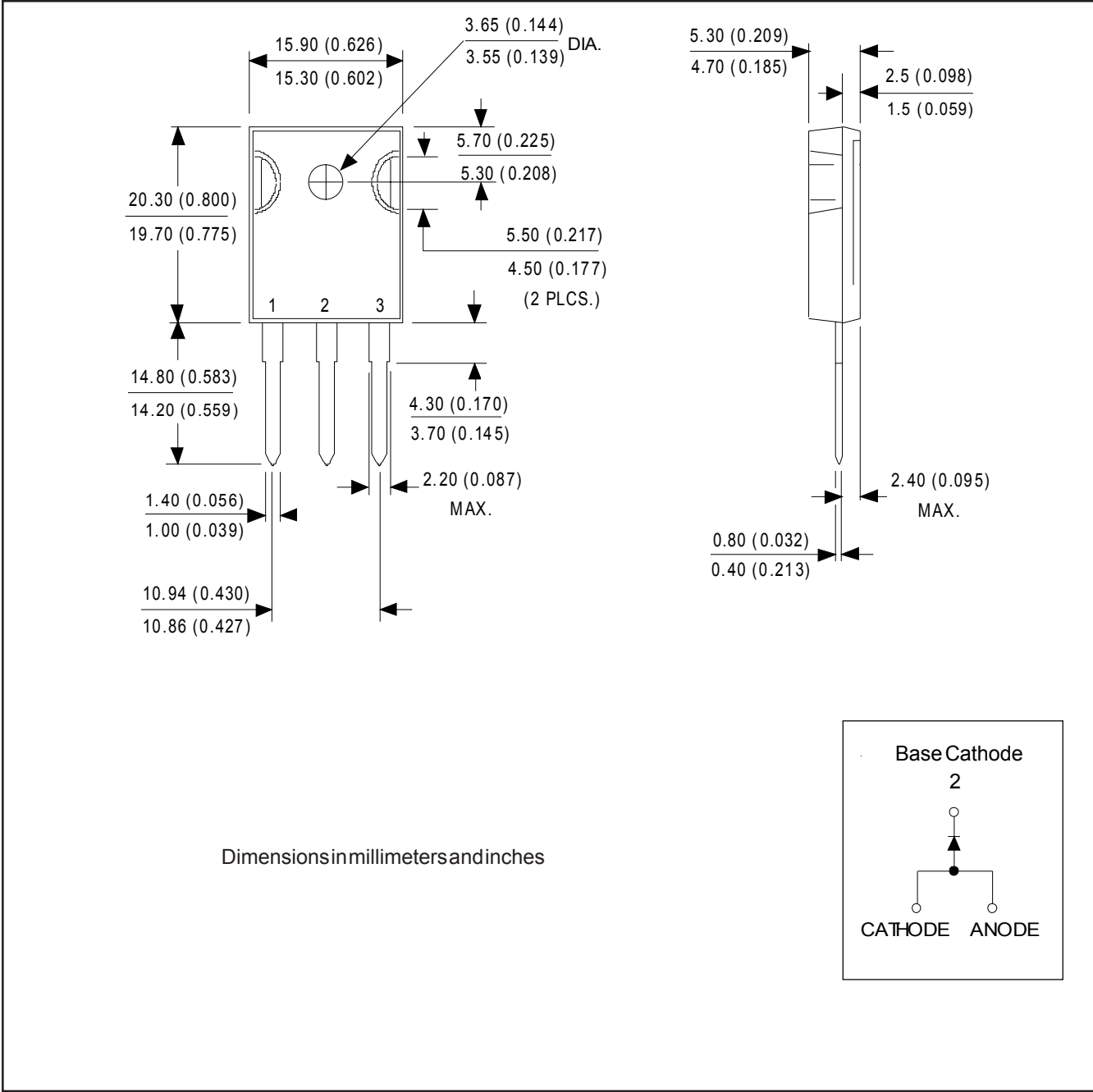


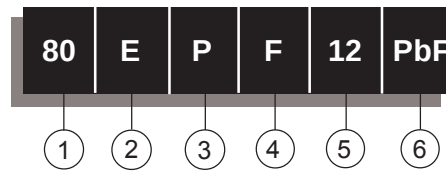
Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code



- 1** - Current Rating (80 = 80A)
- 2** - Circuit Configuration:
E = Single Diode
- 3** - Package:
P = TO-247AC
- 4** - Type of Silicon:
F = Fast diode
- 5** - Voltage Code X 100 = V_{RRM}
- 6** -
 - none = Standard Production
 - PbF = Lead-Free

10	=	1000V
12	=	1200V

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

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