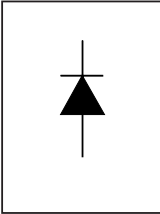


International
IR Rectifier

SAFEIR Series
10ETS12FPPbF

INPUT RECTIFIER DIODE
TO-220 FULLPAK
Lead-Free ("PbF" suffix)



$$\begin{aligned} V_F &< 1.1V @ 10A \\ I_{FSM} &= 200A \\ V_{RRM} &= 1200V \end{aligned}$$

Description/ Features

The 10ETS12FPPbF rectifier **SAFEIR** series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150°C junction temperature.

Typical applications are in input rectification and these products are designed to be used with International Rectifier Switches and Output Rectifiers which are available in identical package outlines. Fully isolated package ($V_{INS} = 2500 V_{RMS}$).

UL E78996 approved 

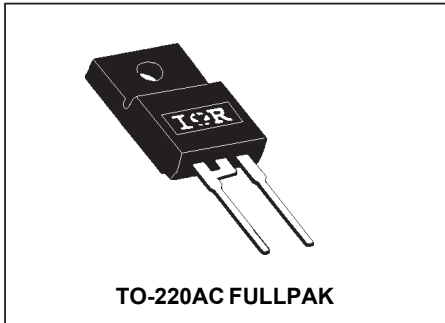
Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ\text{C}$, $T_J = 125^\circ\text{C}$ common heatsink of 1°C/W	12.0	16.0	A

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Sinusoidal waveform	10	A
V_{RRM} Range	1200	V
I_{FSM}	200	A
V_F @ 10 A, $T_J = 25^\circ\text{C}$	1.1	V
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
10ETS12FPPbF	1200	1300	0.5

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	10	A	@ $T_C = 105^\circ\text{C}$, 180° conduction half sine wave
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current	170	A	10ms Sine pulse, rated V_{RRM} applied
	200		10ms Sine pulse, no voltage reapplied
I^2t Max. I^2t for fusing	130	A^2s	10ms Sine pulse, rated V_{RRM} applied
	145		10ms Sine pulse, no voltage reapplied
I^2Vt Max. I^2Vt for fusing	1450	A^2Vs	$t = 0.1$ to 10ms, no voltage reapplied

Electrical Specifications

Parameters		Values	Units	Conditions	
V _{FM}	Max. Forward Voltage Drop	1.1	V	@ 10A, T _J = 25°C	
r _t	Forward slope resistance	20	mΩ	T _J = 150°C	
V _{F(TO)}	Threshold voltage	0.82	V		
I _{RM}	Max. Reverse Leakage Current	0.05	mA	T _J = 25 °C	V _R = rated V _{RRM}
		0.50		T _J = 150 °C	

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-40 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case	2.5	$^\circ\text{C/W}$	DC operation
R_{thJA} Max. Thermal Resistance Junction to Ambient	62	$^\circ\text{C/W}$	
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.5	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	
Case Style	TO-220 FULLPAK	(94/V0)	
Marking Device	10ETS12FP		

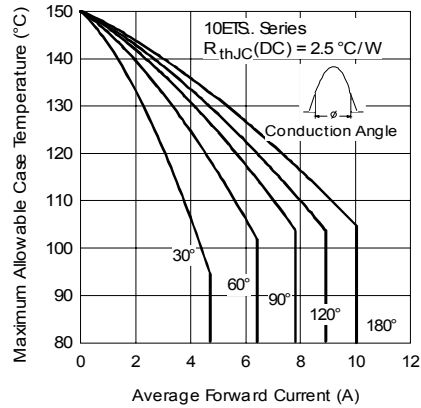


Fig. 1 - Current Rating Characteristics

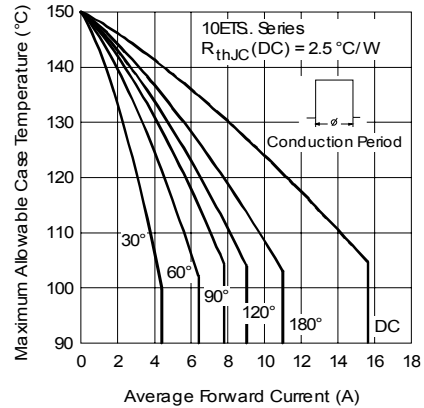


Fig. 2 - Current Rating Characteristics

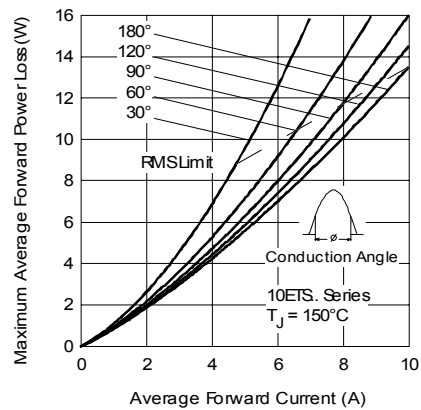


Fig. 3 - Forward Power Loss Characteristics

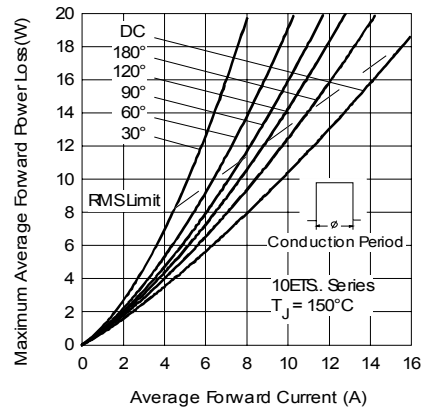


Fig. 4 - Forward Power Loss Characteristics

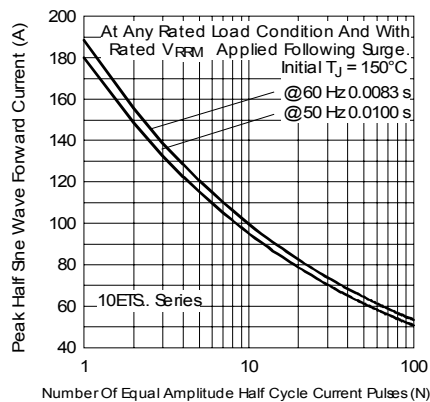


Fig. 5 - Maximum Non-Repetitive Surge Current

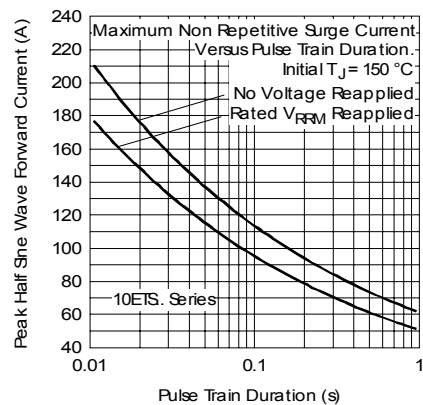


Fig. 6 - Maximum Non-Repetitive Surge Current

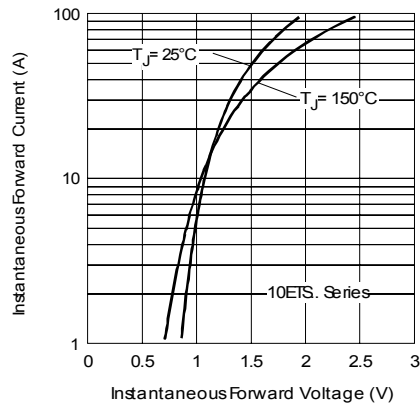


Fig. 8 - Forward Voltage Drop Characteristics

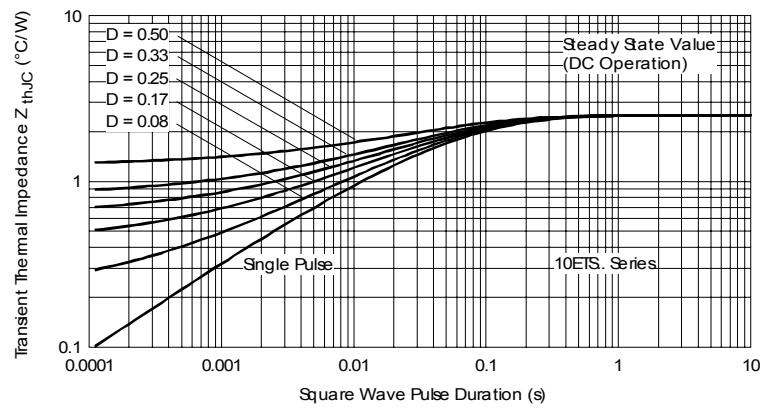
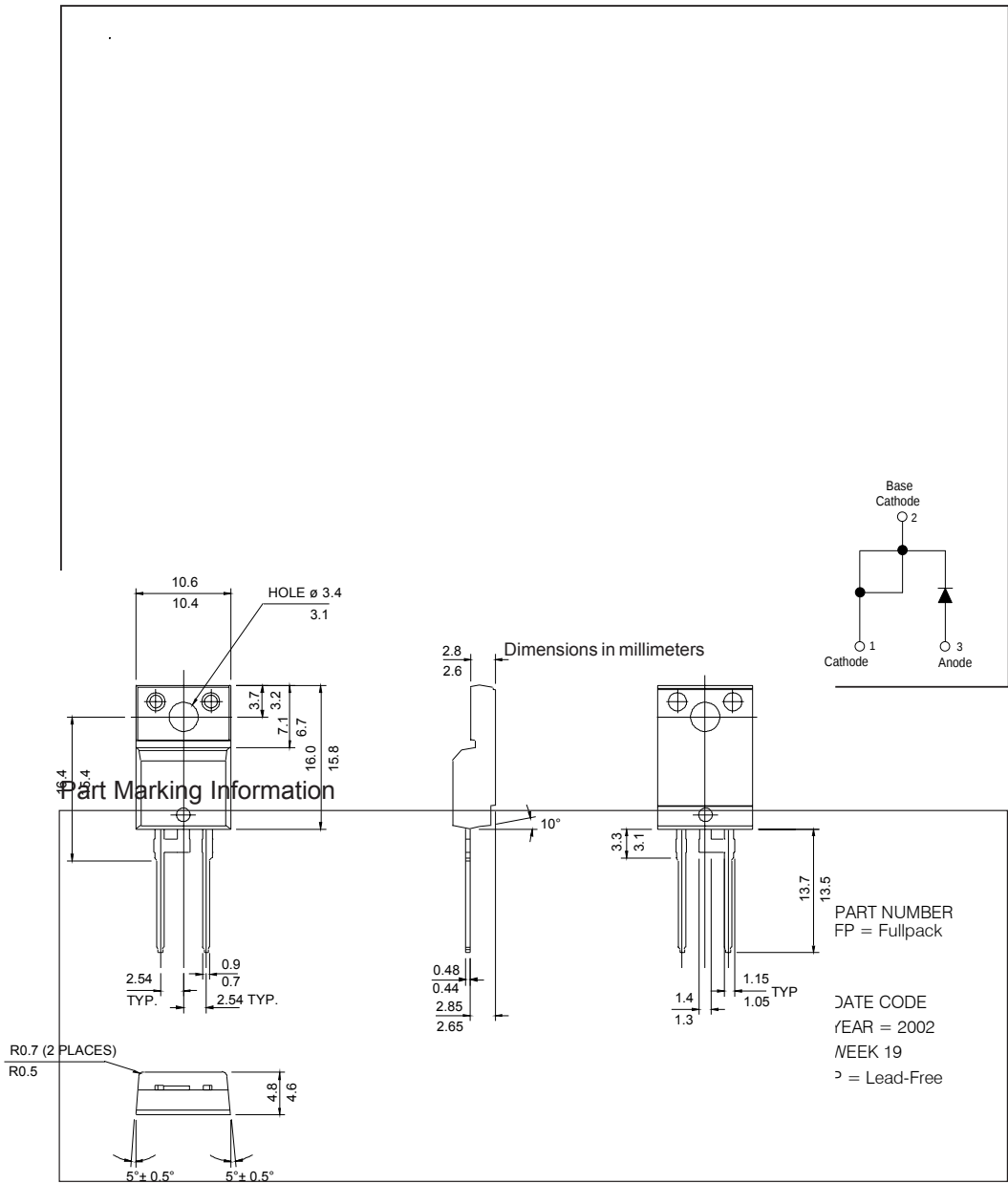


Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Ordering Information Table

Device Code						
10	E	T	S	12	FP	PbF
1	2	3	4	5	6	7
1	-	Current Rating (10 = 10A)				
2	-	Circuit Configuration:				
		E = Single Diode				
3	-	Package:				
		T = TO-220AC				
4	-	Type of Silicon:				
		S = Standard Recovery Rectifier				
5	-	Voltage Rating (12 = 1200V)				
6	-	Fullpak				
7	-	• 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.