


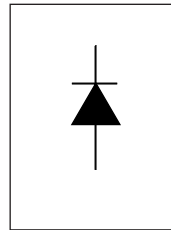
**INPUT RECTIFIER DIODE  
TO-220 FULLPAK**

**Description/Features**

The 10ETS..FP 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 



$V_F < 1.1V @ 10A$   
 $I_{FSM} = 200A$   
 $V_{RRM} 800 \text{ to } 1600V$

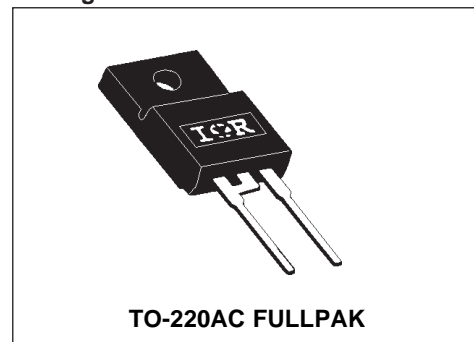
**Output Current in Typical Applications**

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

**Major Ratings and Characteristics**

Characteristics	10ETS..FP	Units
$I_{F(AV)}$ Sinusoidal waveform	10	A
$V_{RRM}$	800 to 1600	V
$I_{FSM}$	200	A
$V_F @ 10A, T_J=25^\circ C$	1.1	V
$T_J$	-40 to 150	$^\circ C$

**Package Outline**



# 10ETS..FP SAFEIR Series

Preliminary Data Sheet I2142 rev. A 03/99

International  
 Rectifier

## 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
10ETS08FP	800	900	0.5
10ETS12FP	1200	1300	
10ETS16FP	1600	1700	

Provide terminal coating for voltages above 1200V

## Absolute Maximum Ratings

Parameters	10ETS..FP	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
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	1450	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

## Electrical Specifications

Parameters	10ETS..FP	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.1	V	@ 10A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	20	$m\Omega$	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.82	V	
$I_{RM}$ Max. Reverse Leakage Current	0.05	mA	$T_J = 25^\circ\text{C}$
	0.50		$T_J = 150^\circ\text{C}$

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

## Thermal-Mechanical Specifications

Parameters	10ETS..FP	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-220FULLPAK		(94/V0)

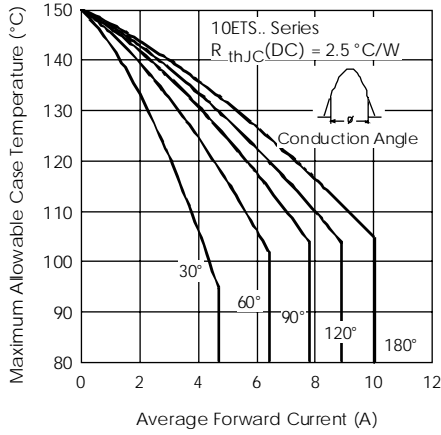


Fig. 1 - Current Rating Characteristics

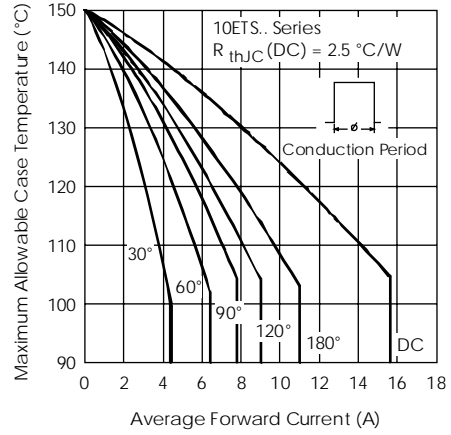


Fig. 2 - Current Rating Characteristics

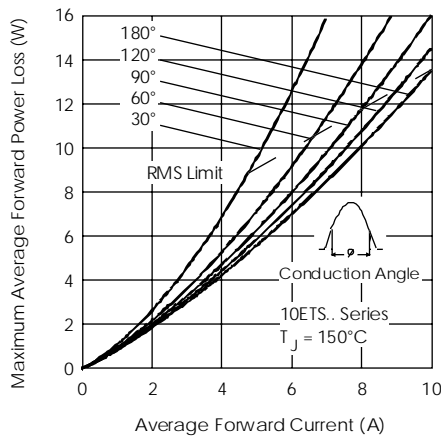


Fig. 3 - Forward Power Loss Characteristics

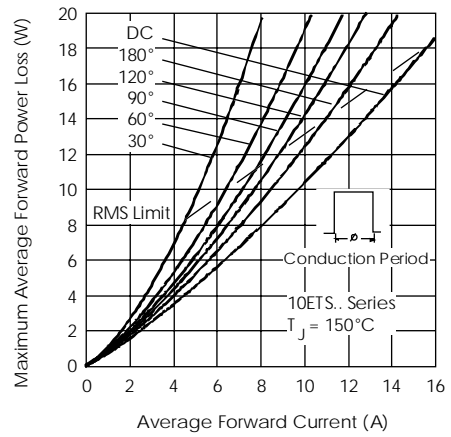


Fig. 4 - Forward Power Loss Characteristics

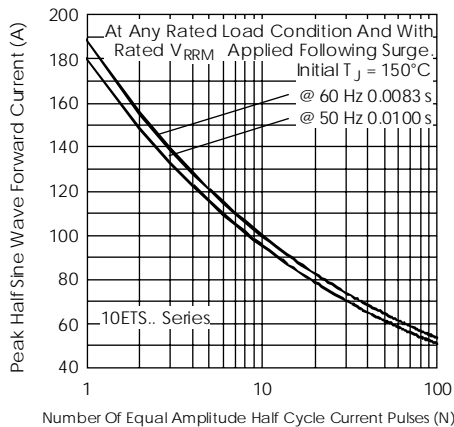


Fig. 5 - Maximum Non-Repetitive Surge Current

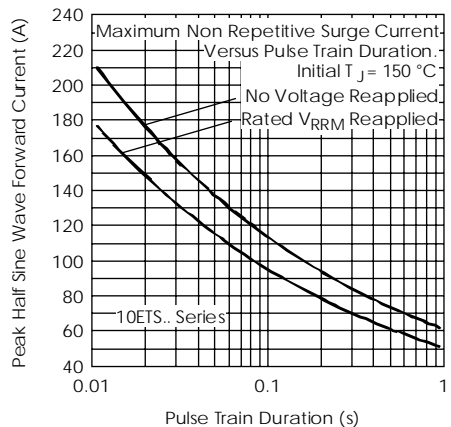


Fig. 6 - Maximum Non-Repetitive Surge Current

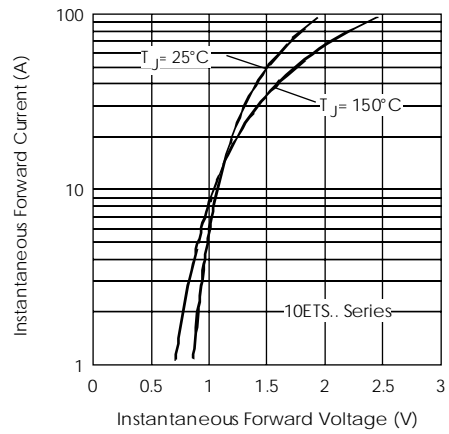


Fig.8-Forward Voltage Drop Characteristics

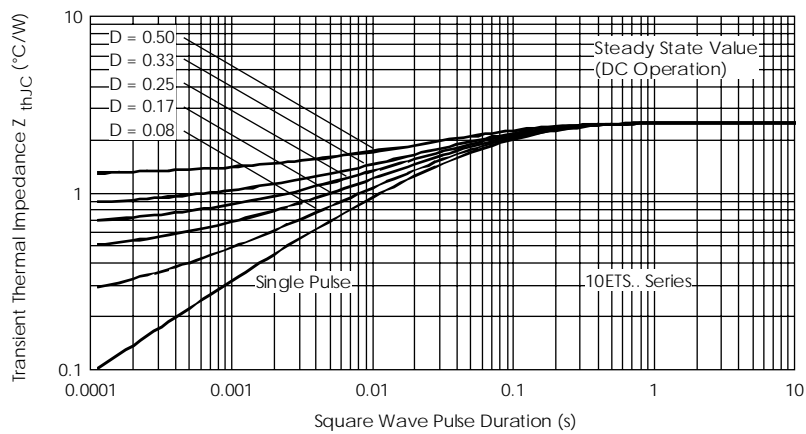
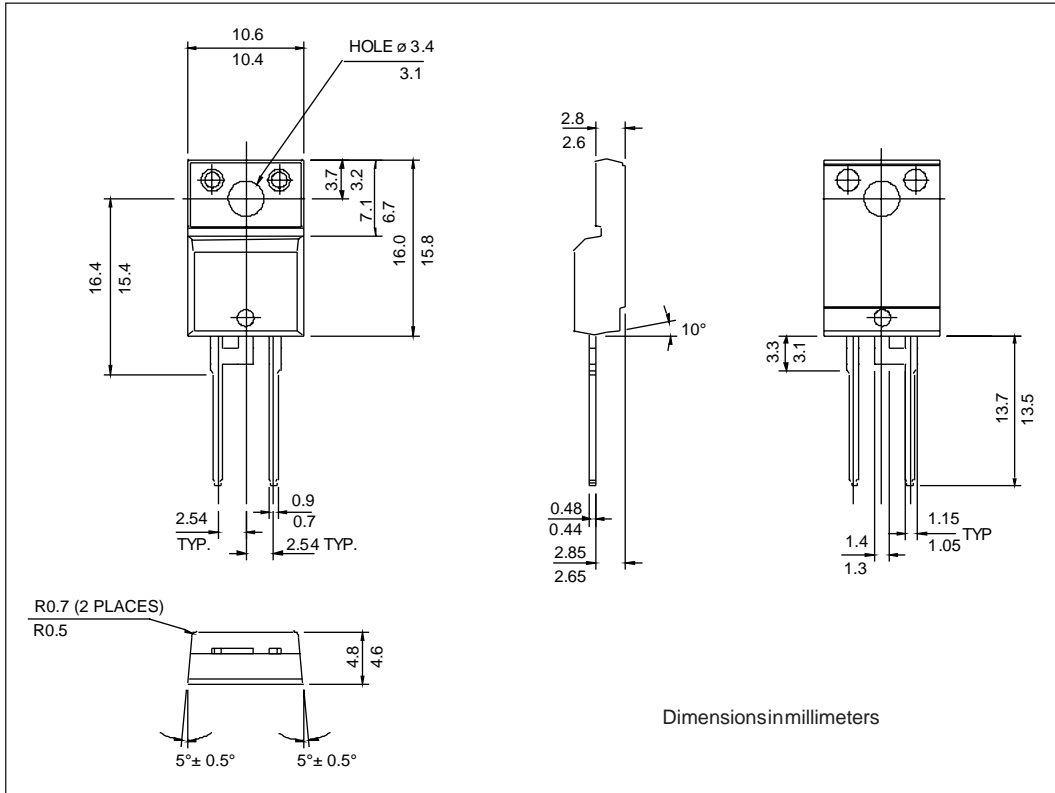


Fig.9- Thermal Impedance  $Z_{thjC}$  Characteristics

Outline Table



Ordering Information Table

Device Code					
10	E	T	S	16	FP
①	②	③	④	⑤	⑥

<b>1</b>	-	Current Rating	
<b>2</b>	-	Circuit Configuration:	
		E = Single Diode	
<b>3</b>	-	Package:	
		T = TO-220AC	
<b>4</b>	-	Type of Silicon:	
		S = Standard Recovery Rectifier	
<b>5</b>	-	Voltage code: Code x 100 = $V_{RRM}$	
<b>6</b>	-	TO-220 FULLPAK	

08 = 800V	
12 = 1200V	
16 = 1600V	

CATHODE      ANODE

International  
**ISOR** Rectifier

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Data and specifications subject to change without notice.