



SAFEIR Series
10ETS12, 10ETS12S

INPUT RECTIFIER DIODE

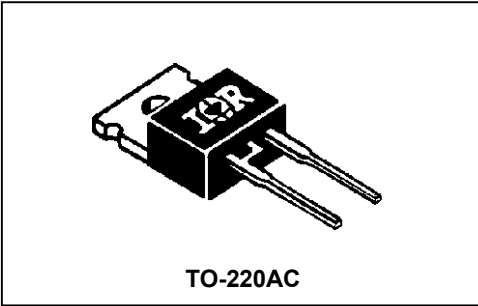
Description/Features

The 10ETS.. 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.

$V_F < 1V @ 10A$
 $I_{FSM} = 200A$
 $V_{RRM} 800 \text{ to } 1200V$

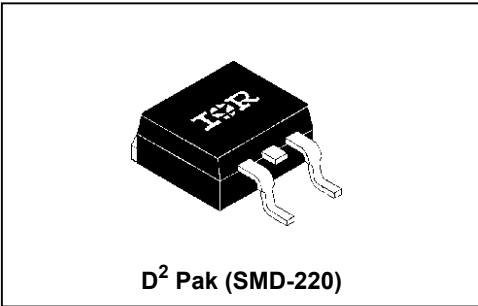
Package Outline



Major Ratings and Characteristics

Characteristics	10ETS..	Units
$I_{F(AV)}$ Sinusoidal waveform	10	A
V_{RRM} Range	800 to 1200	V
I_{FSM}	200	A
$V_F @ 10A, T_J = 25^\circ C$	1.1	V
T_J	-40 to 150	°C

Package Outline



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°C/W	12.0	16.0	A

10ETS.., 10ETS..S *SAFEIR* Series

Bulletin I2121 rev. C 12/01

International
IOR 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
10ETS08, 10ETS08S	800	900	0.5
10ETS12, 10ETS12S	1200	1300	

Absolute Maximum Ratings

Parameters	10ETS..	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..	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..	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 (PCB Mount)*	62	$^\circ\text{C/W}$	
T_s Soldering Temperature	240	$^\circ\text{C}$	
wt Approximate Weight	2 (0.07)	g (oz.)	
Case Style	TO-220AC, D ² Pak (SMD-220)		

* When mounted on 1" square (650mm²) PCB of FR-4 or G-10 material 4 oz (140µm) copper 40°C/W
For recommended footprint and soldering techniques refer to application note #AN-994

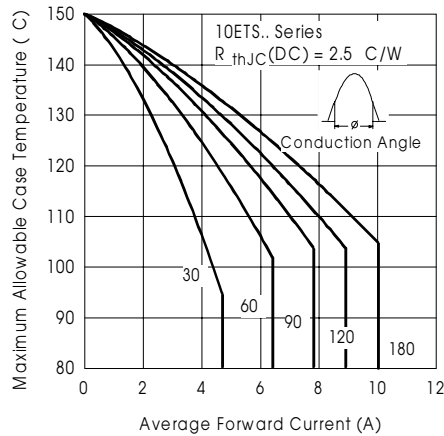


Fig. 1 - Current Rating Characteristics

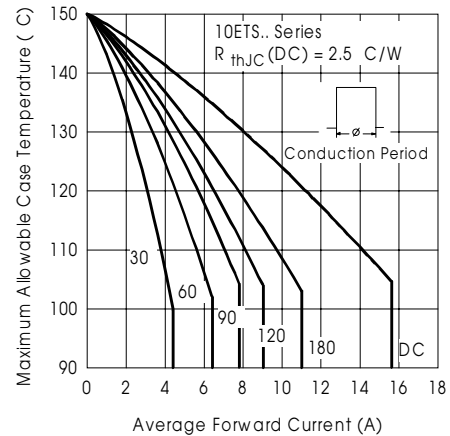


Fig. 2 - Current Rating Characteristics

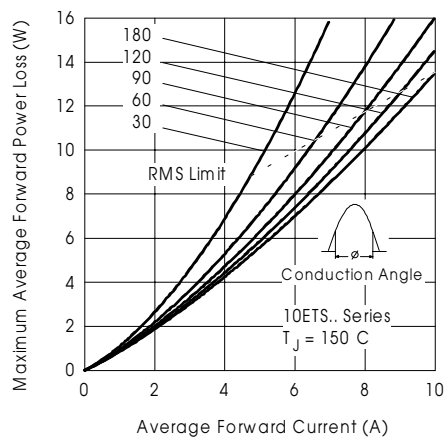


Fig. 3 - Forward Power Loss Characteristics

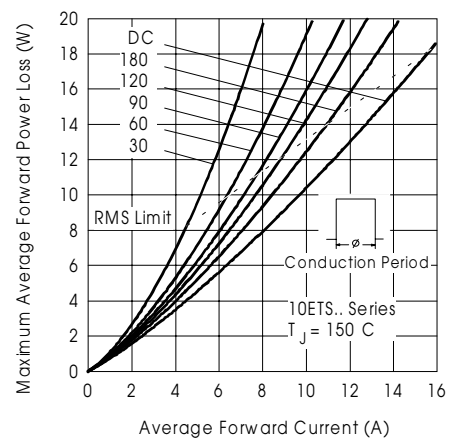


Fig. 4 - Forward Power Loss Characteristics

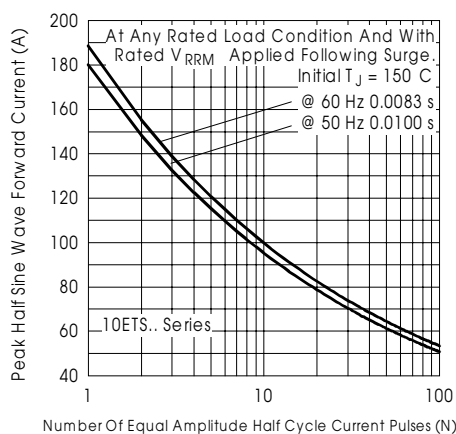


Fig. 5 - Maximum Non-Repetitive Surge Current

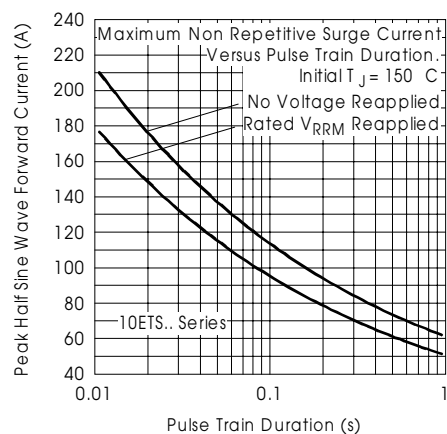


Fig. 6 - Maximum Non-Repetitive Surge Current

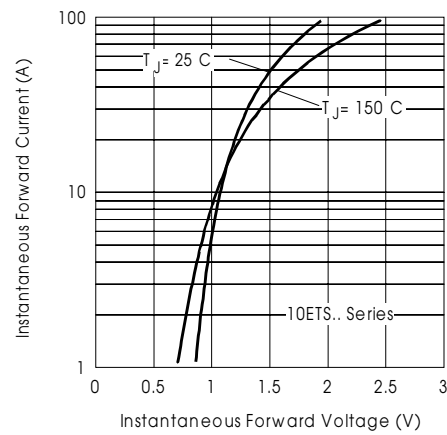


Fig. 8 - Forward Voltage Drop Characteristics

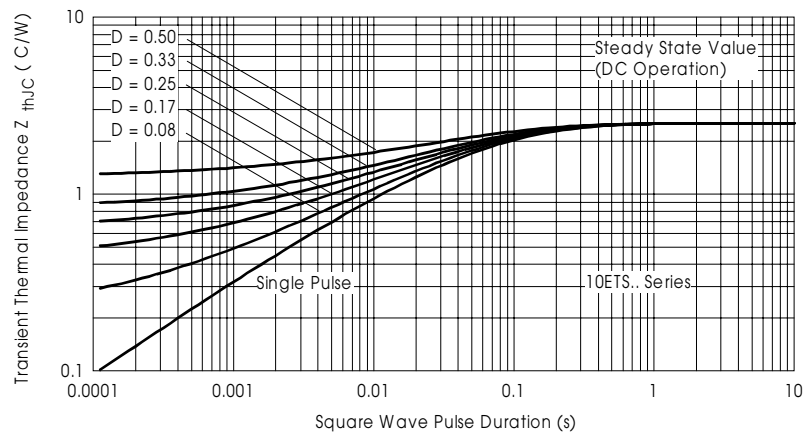
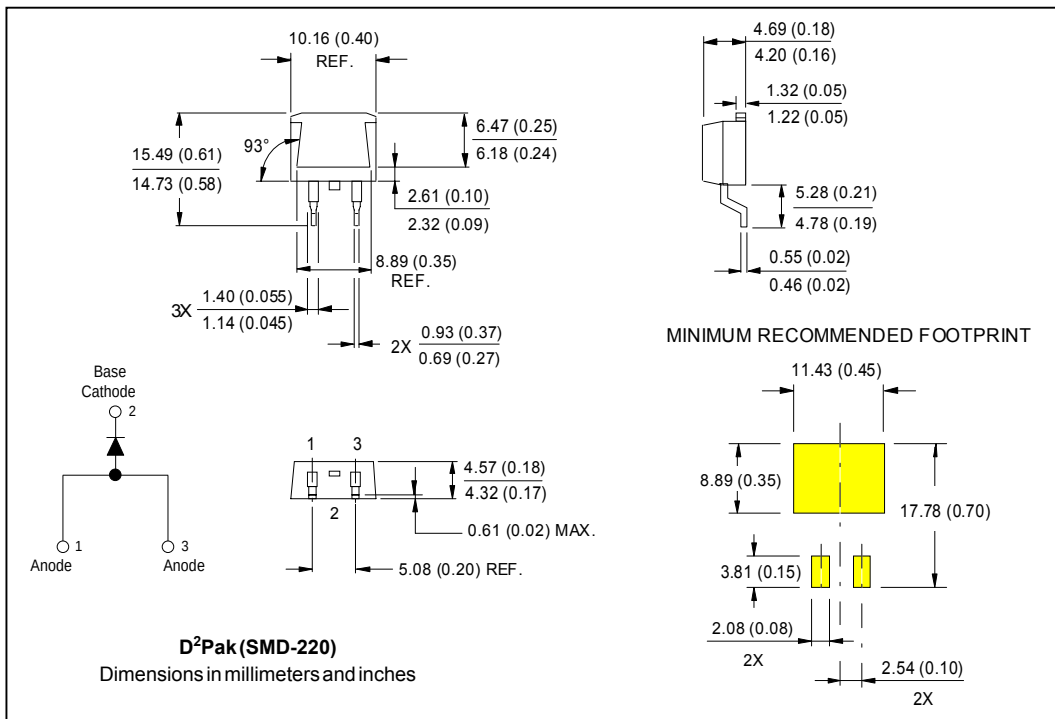
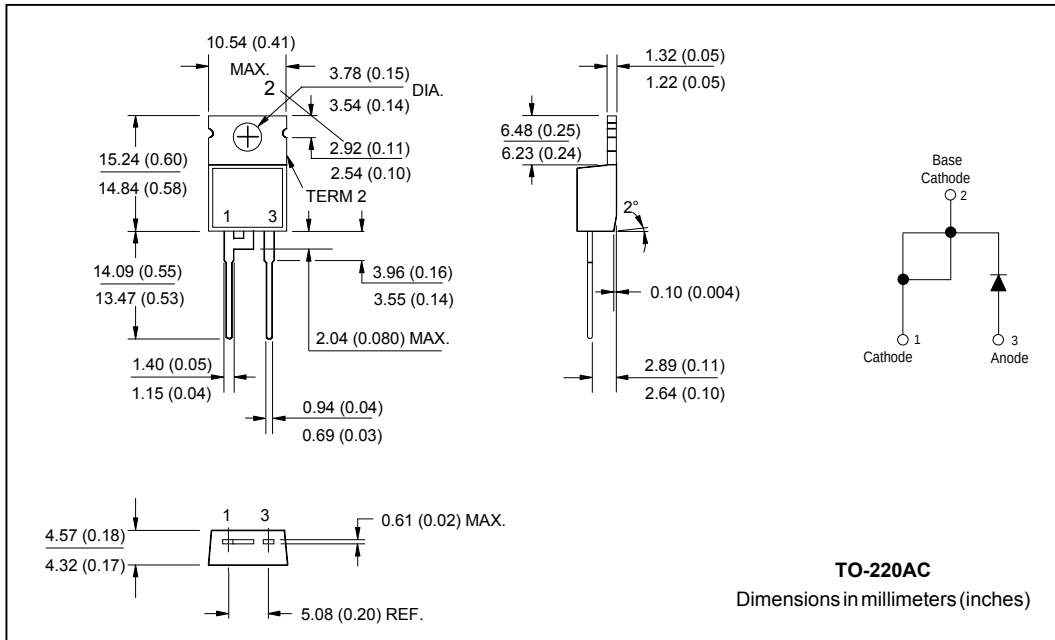


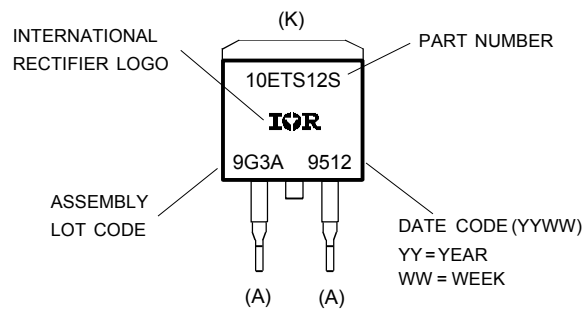
Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

Outline Table

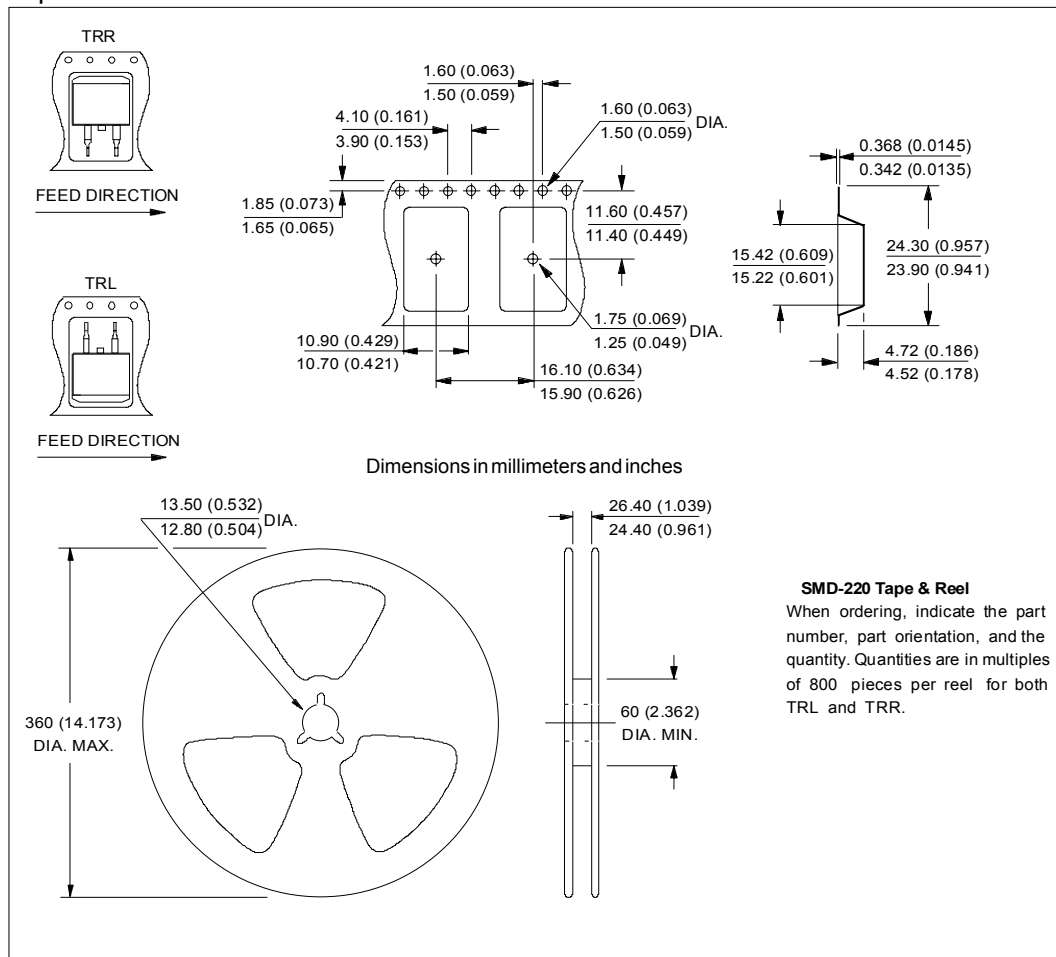


Marking Information

EXAMPLE: THIS IS AN 10ETS12S



Tape & Reel Information



Ordering Information Table

Device Code						
	10	E	T	S	12	S TRL
	①	②	③	④	⑤	⑥ ⑦
1	-	Current Rating				
2	-	Circuit Configuration				
		E = Single Diode				
3	-	Package				
		T = TO-220AC				
4	-	Type of Silicon				
		S = Standard Recovery Rectifier				
5	-	Voltage code: Code x 100 = V_{RRM}				
6	-	S = TO-220 D ² Pak (SMD-220) Version				
7	-	Tape and Reel Option				
		TRL = Left Reel				
		TRR = Right Orientation Reel				

08 = 800V
 12 = 1200V

Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level.
 Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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 11/01



Notice

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