

# International **IR** Rectifier


## **SAFEIR** Series 25ETS..

### INPUT RECTIFIER DIODE

#### Description/Features

The 25ETS.. 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
	$I_{FSM}$	= 300A
	$V_{RRM}$	800 to 1200V

#### Output Current in Typical Applications

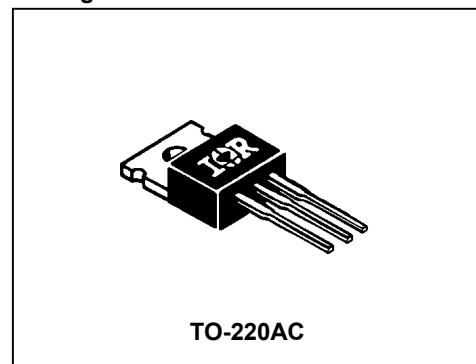
	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ\text{C}$ , $T_J = 125^\circ\text{C}$ , common heatsink of $1^\circ\text{C/W}$	20	23	A

#### Major Ratings and Characteristics

Characteristics	25ETS..	Units
$I_{F(AV)}$ Sinusoidal waveform	25	A
$V_{RRM}$ Range(*)	800 to 1200	V
$I_{FSM}$	300	A
$V_F$ @10A, $T_J = 25^\circ\text{C}$	1.0	V
$T_J$	-40 to 150	$^\circ\text{C}$

(\*) for higher voltage up to 1600V contact factory

#### Package Outline



Also available in SMD-220 package (series 25ETS..S)

## 25ETS.. *SAFEIR* Series

Bulletin I2157 rev. A 08/02

International  
**IRF** 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
25ETS08	800	900	1
25ETS12	1200	1300	

Provide terminal coating for voltages above 1200V

### Absolute Maximum Ratings

Parameters	25ETS..	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	25	A	@ $T_C = 106^\circ\text{C}$ , 180° conduction half sine wave
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current	250	A	10ms Sine pulse, rated $V_{RRM}$ applied
	300		10ms Sine pulse, no voltage reapplied
$I^2t$ Max. $I^2t$ for fusing	316	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	442		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	4420	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reapplied

### Electrical Specifications

Parameters	25ETS..	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.14	V	@ 25A, $T_J = 25^\circ\text{C}$
$r_t$ Forward slope resistance	9.62	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.87	V	
$I_{RM}$ Max. Reverse Leakage Current	0.1	mA	$T_J = 25^\circ\text{C}$
	1.0		$T_J = 150^\circ\text{C}$

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

### Thermal-Mechanical Specifications

Parameters	25ETS..	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	0.9	$^\circ\text{C/W}$	DC operation
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	62	$^\circ\text{C/W}$	
$R_{thCS}$ Typ. 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-220AC		

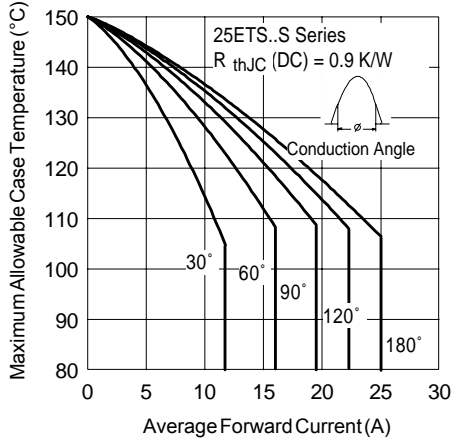


Fig. 1 - Current Rating Characteristics

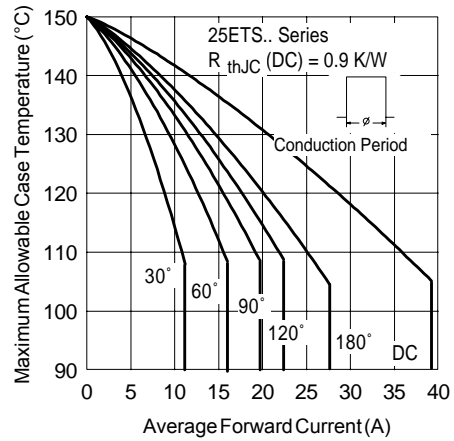


Fig. 2 - Current Rating Characteristics

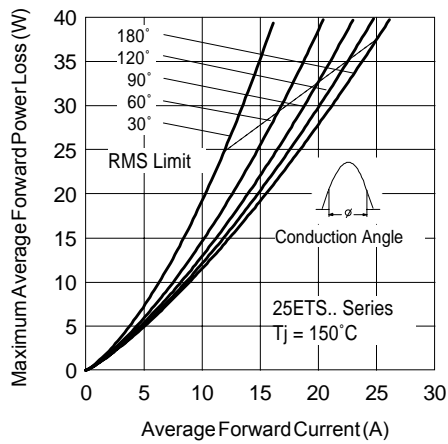


Fig. 3 - Forward Power Loss Characteristics

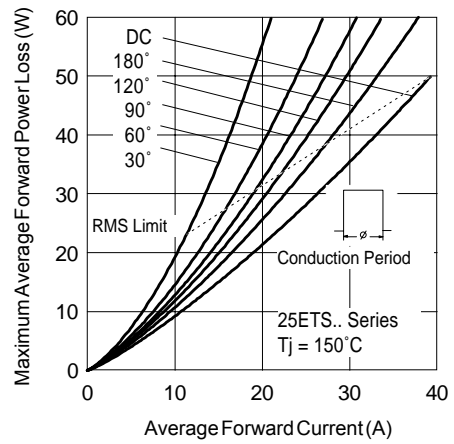


Fig. 4 - Forward Power Loss Characteristics

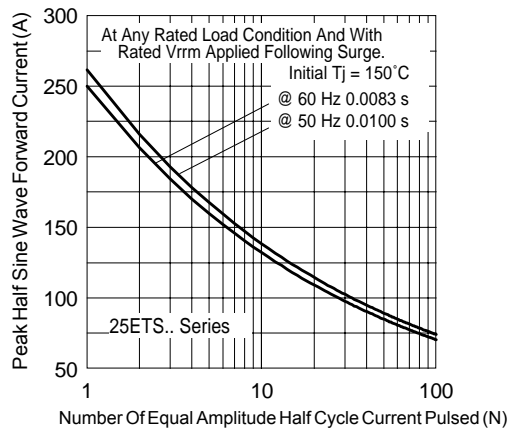


Fig. 5 - Maximum Non-Repetitive Surge Current

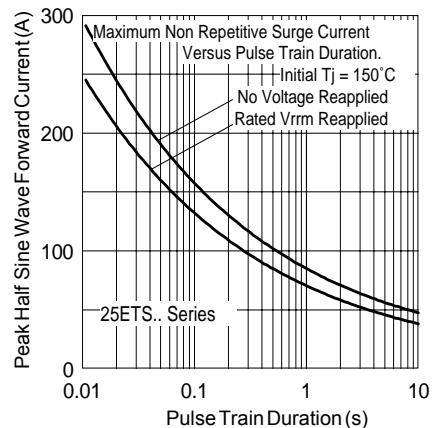


Fig. 6 - Maximum Non-Repetitive Surge Current

25ETS.. **SAFEIR** Series

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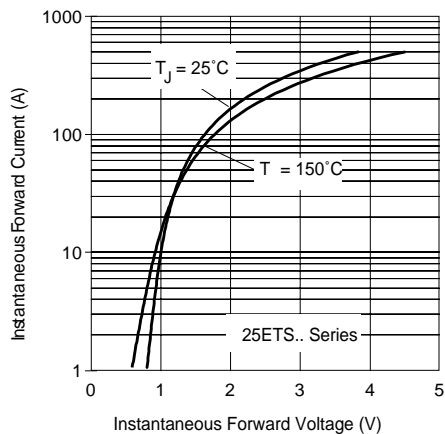


Fig. 7 - Forward Voltage Drop Characteristics

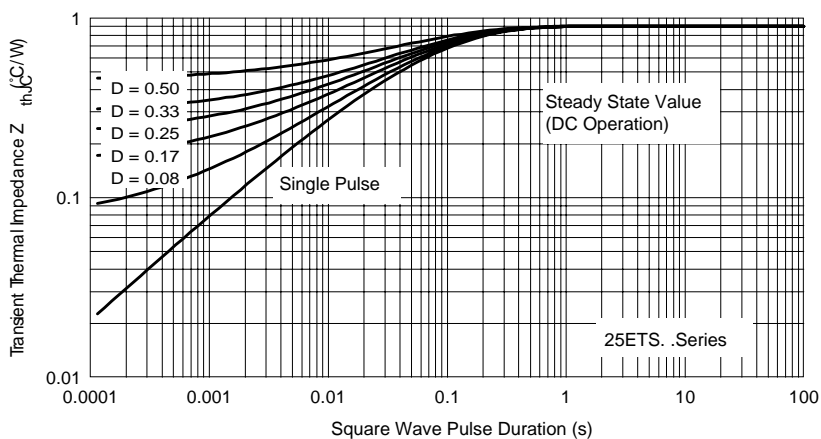
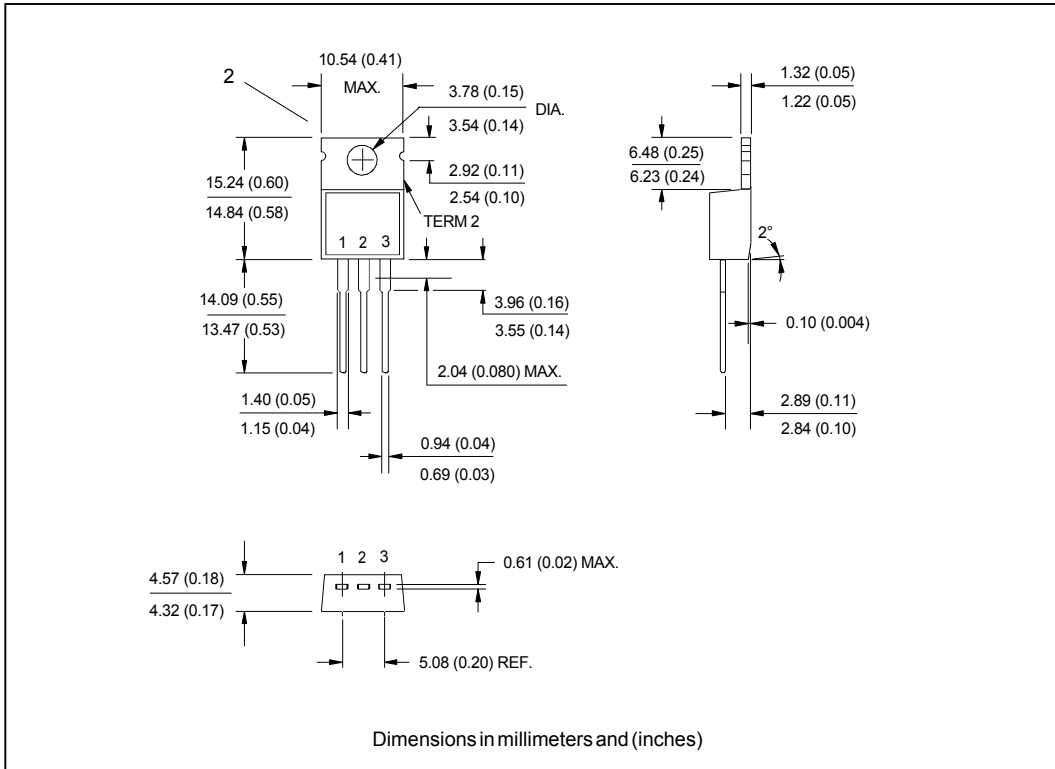
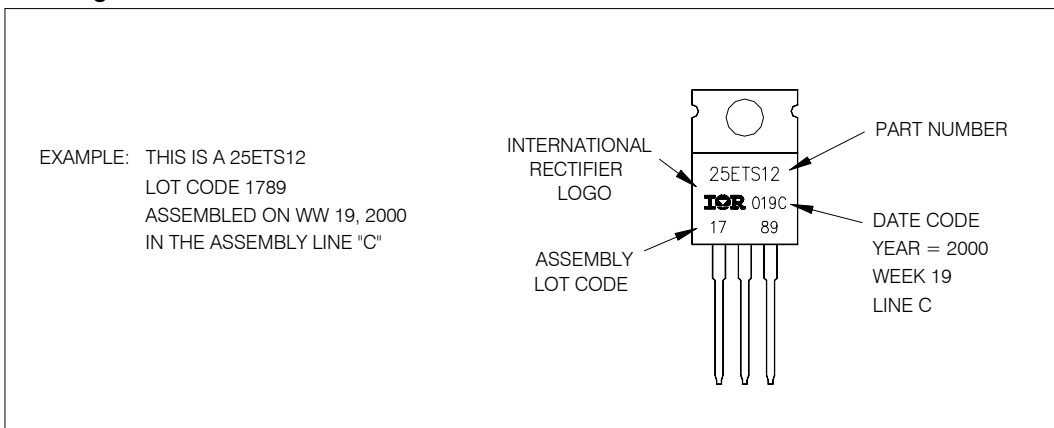


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Marking Information



## 25ETS.. *SAFEIR* Series

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International  
**IR** Rectifier

### Ordering Information Table

Device Code				
25	E	T	S	12
①	②	③	④	⑤

<p><b>1</b> - Current Rating</p> <p><b>2</b> - Circuit Configuration: E = Single Diode</p> <p><b>3</b> - Package: T = TO-220AC</p> <p><b>4</b> - Type of Silicon: S = Standard Recovery Rectifier</p> <p><b>5</b> - Voltage code: Code x 100 = <math>V_{RRM}</math></p>	<table border="1"> <tr> <td>08 = 800V</td> </tr> <tr> <td>12 = 1200V</td> </tr> </table>	08 = 800V	12 = 1200V
08 = 800V			
12 = 1200V			

(\*) for higher voltage up to 1600V contact factory

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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Visit us at [www.irf.com](http://www.irf.com) for sales contact information. 08/02