

Bulletin I2158 rev. A 08/02

International **IR** Rectifier

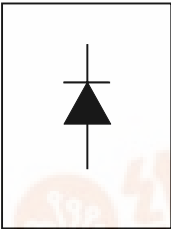
SAFEIR Series 25ETS..S

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}	$800 - 1200V$

Output Current in Typical Applications

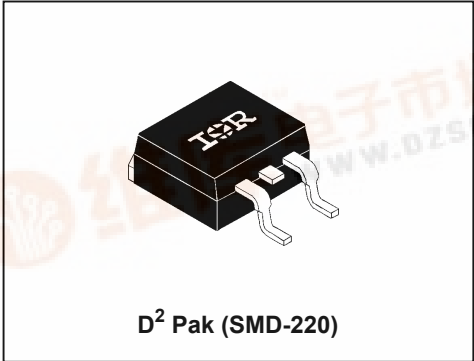
	Single-phase Bridge	Three-phase Bridge	Units
Capacitive input filter $T_A = 55^\circ C$, $T_J = 125^\circ C$, common heatsink of $1^\circ C/W$	20	23	A

Major Ratings and Characteristics

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

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

Package Outline



D² Pak (SMD-220)



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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
25ETS08S	800	900	1
25ETS12S	1200	1300	

Provide terminal coating for voltages above 1200V

Absolute Maximum Ratings

Parameters	25ETS..S	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..S	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..S	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	D ² Pak (SMD-220)		

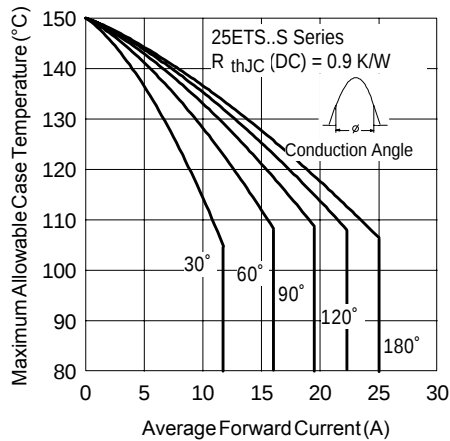


Fig. 1 - Current Rating Characteristics

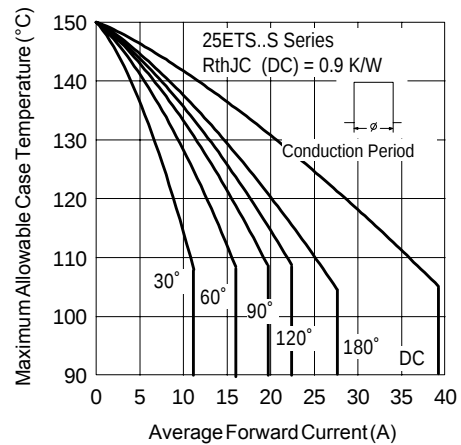


Fig. 2 - Current Rating Characteristics

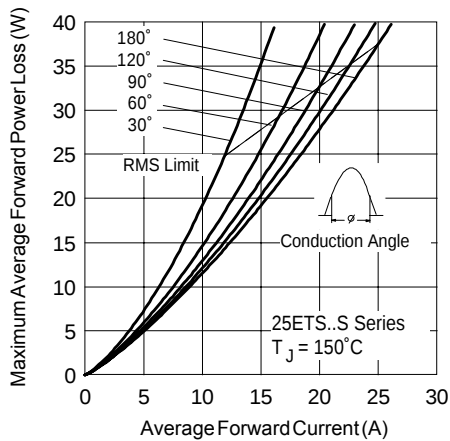


Fig. 3 - Forward Power Loss Characteristics

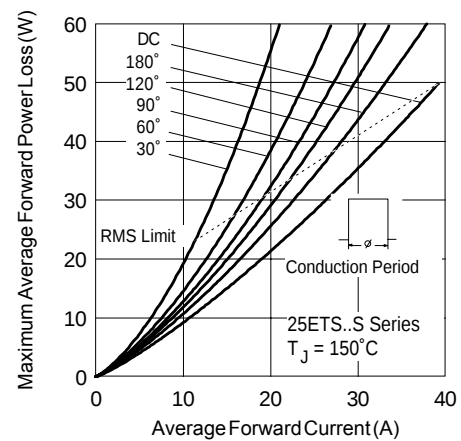


Fig. 4 - Forward Power Loss Characteristics

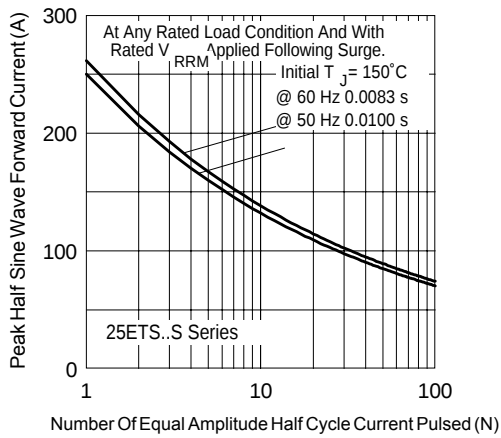


Fig. 5 - Maximum Non-Repetitive Surge Current

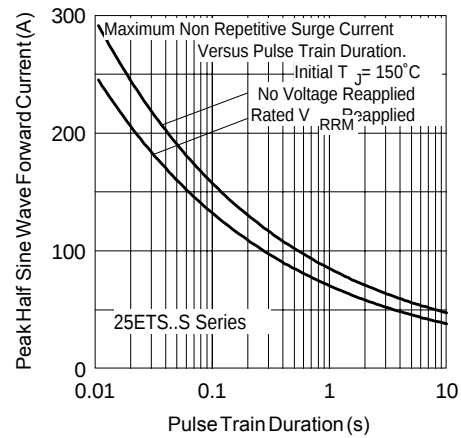


Fig. 6 - Maximum Non-Repetitive Surge Current

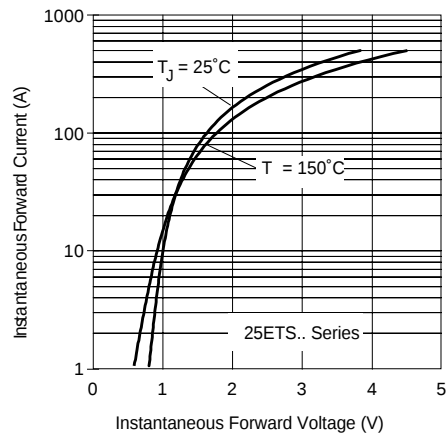


Fig. 7 - Forward Voltage Drop Characteristics

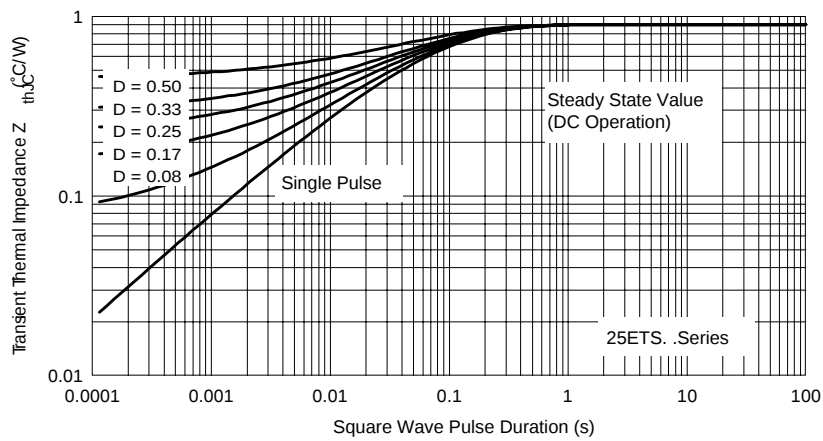
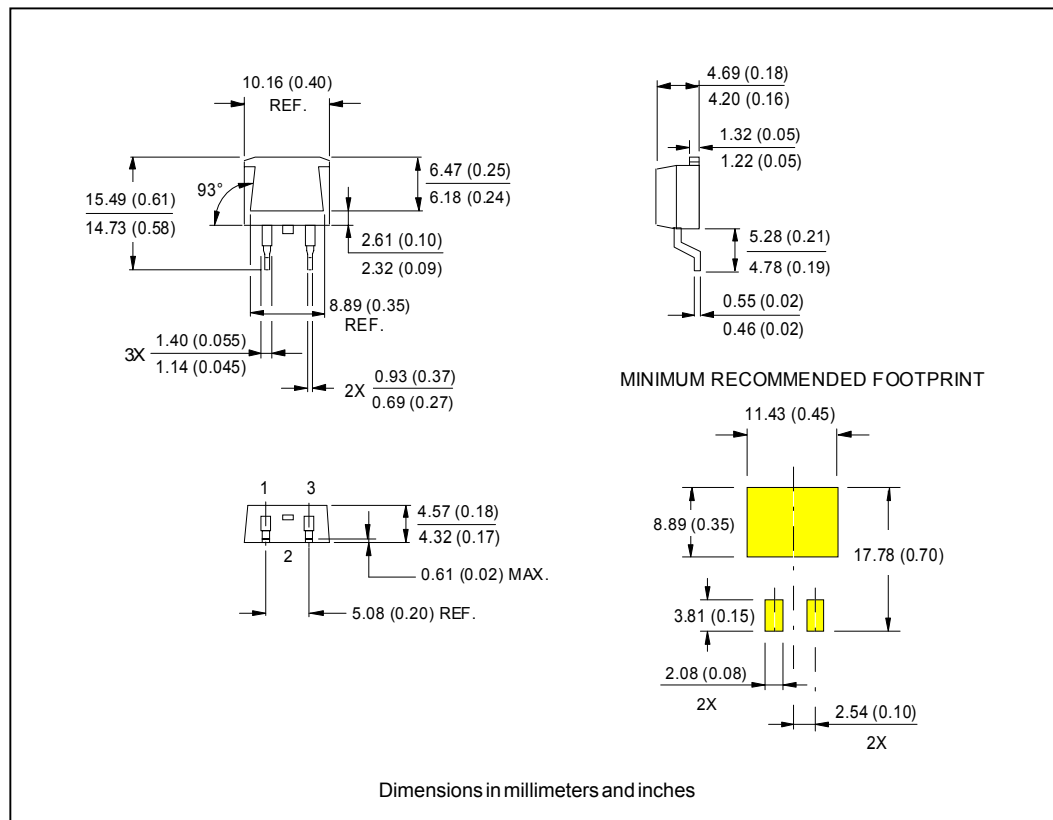


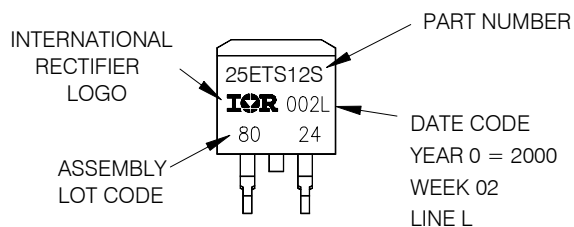
Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

Outline Table



Marking Information

EXAMPLE: THIS IS A 25ETS12S
LOT CODE 8024
ASSEMBLED ON WW 02, 2000
IN THE ASSEMBLY LINE "L"

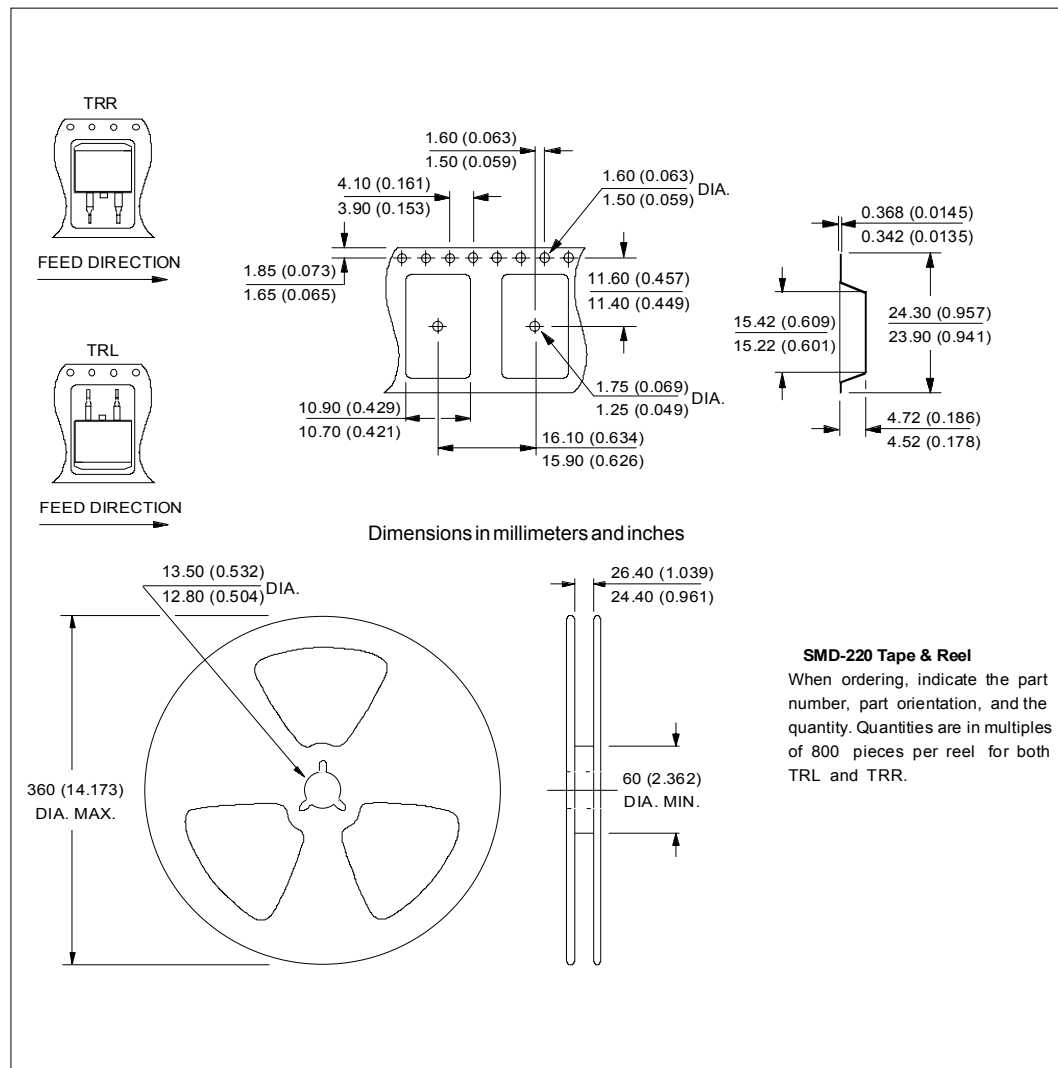


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Tape & Reel Information



Ordering Information Table

Device Code	
25	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 D²Pak (SMD-220) Version
- 7** - Tape and Reel Option

TRL = Left Reel
TRR = Right Orientation Reel

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.