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Bulletin I2108 rev.G 08/00

# International **IOR** Rectifier

# SAFEIR Series 8EWS..S

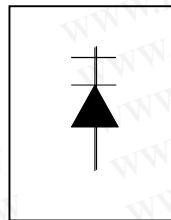
## SURFACE MOUNTABLE INPUT RECTIFIER DIODE

### Description/Features

The 8EWS..S 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.

The **High Reverse Voltage** range available allows design of input stage primary rectification with **Outstanding Voltage Surge** capability.

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.



$V_F < 1V @ 5A$   
 $I_{FSM} = 200A$   
 $V_{RRM} 800 \text{ to } 1200V$

### Output Current in Typical Applications

Applications	Single-phase Bridge	Three-phase Bridge	Units
NEMAFR-4 or G10 glass fabric-based epoxy with 4oz (140µm) copper	1.2	1.6	A
Aluminum IMS, $R_{thCA} = 15^\circ C/W$	2.5	2.8	
Aluminum IMS with heatsink, $R_{thCA} = 5^\circ C/W$	5.5	6.5	

$T_A = 55^\circ C, T_J = 125^\circ C, \text{footprint } 300mm^2$

### Major Ratings and Characteristics

Characteristics	8EWS..S	Units
$I_{F(AV)}$ Sinusoidal waveform	8	A
$V_{RRM}$ Range(*)	800 to 1200	V
$I_{FSM}$	200	A
$V_F @ 5A, T_J = 25^\circ C$	1.0	V
$T_J$	-55 to 150	°C

### Package Outline



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

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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
8EWS08S	800	900	0.5
8EWS10S	1000	1100	
8EWS12S	1200	1300	

### Absolute Maximum Ratings

Parameters	8EWS..S	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	8	A	@ $T_C = 95^\circ\text{C}$ , 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 reappplied
$I^2t$ Max. $I^2t$ for fusing	144	$A^2s$	10ms Sine pulse, rated $V_{RRM}$ applied
	204		10ms Sine pulse, no voltage reappplied
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing	2040	$A^2\sqrt{s}$	$t = 0.1$ to 10ms, no voltage reappplied

### Electrical Specifications

Parameters	8EWS..S	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop	1.1	V	@ 8A, $T_J = 25^\circ\text{C}$
$r_f$ Forward slope resistance	21.8	mΩ	$T_J = 150^\circ\text{C}$
$V_{F(TO)}$ Threshold voltage	0.81	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	8EWS..S	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 150	°C	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	°C	
	Soldering Temperature	240	°C
$R_{thJC}$ Max. Thermal Resistance Junction to Case	3	°C/W	DC operation
$R_{thJA}$ Typ. Thermal Resistance Junction to Ambient (PCB Mount)**	50	°C/W	
wt Approximate Weight	1(0.03)	g(oz.)	
T Case Style	TO-252AA(D-PAK)		

\*\*When mounted on 1" square (650mm<sup>2</sup>) 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

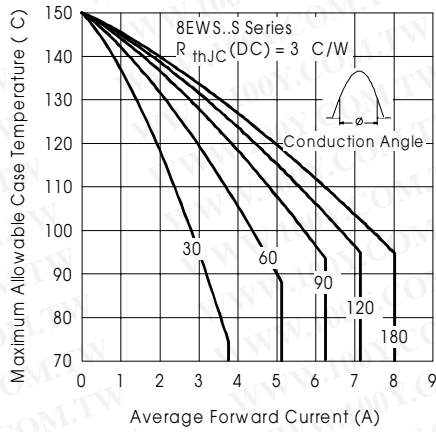


Fig. 1 - Current Rating Characteristics

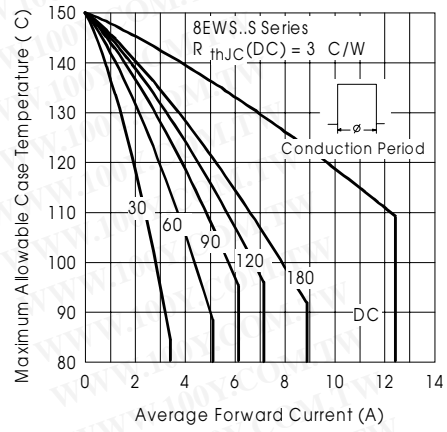


Fig. 2 - Current Rating Characteristics

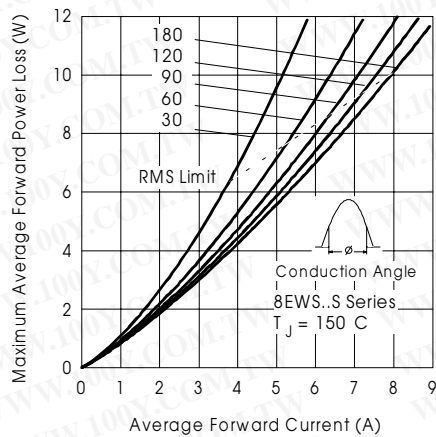


Fig. 3 - Forward Power Loss Characteristics

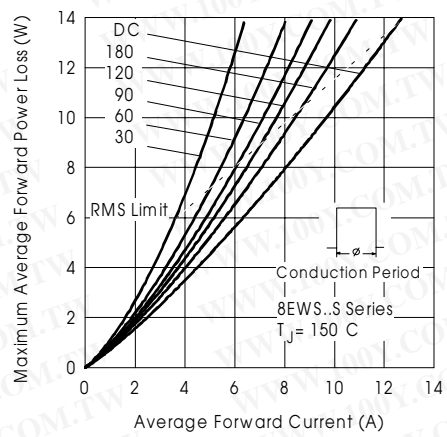


Fig. 4 - Forward Power Loss Characteristics

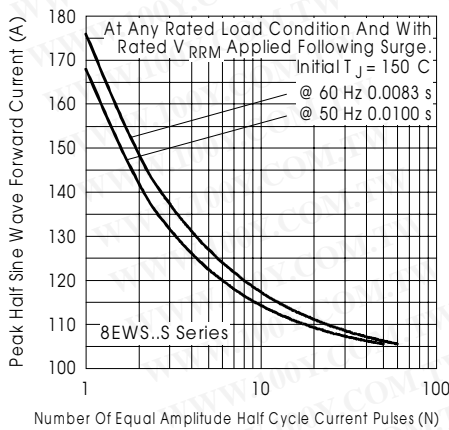


Fig. 5 - Maximum Non-Repulsive Surge Current

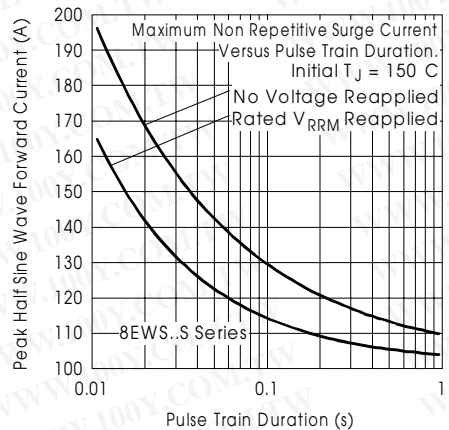


Fig. 6 - Maximum Non-Repulsive Surge Current

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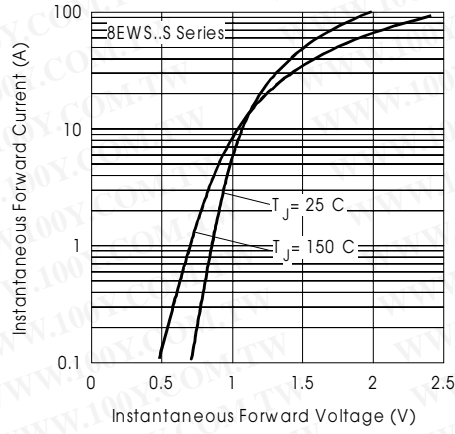


Fig.7-Forward Voltage Drop Characteristics

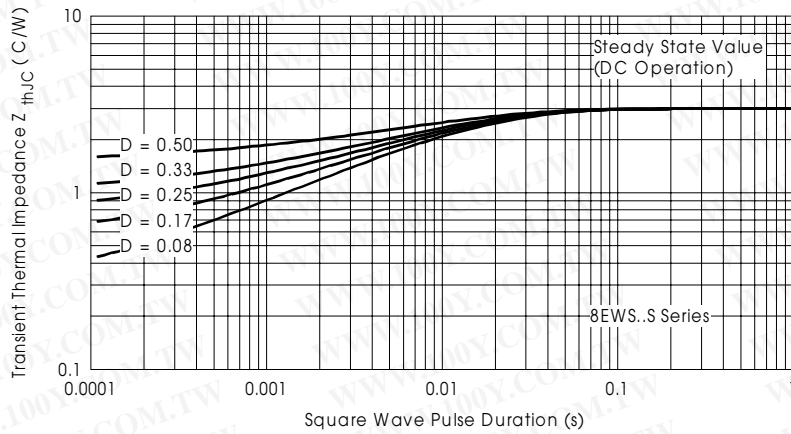


Fig.8-Thermal Impedance  $Z_{thJC}$  Characteristics

Ordering Information Table

Device Code						
8	E	W	S	12	S	TRL
①	②	③	④	⑤	⑥	⑦

- 1** - Current Rating
- 2** - Circuit Configuration  
E = Single Diode
- 3** - Package  
W = D-PAK
- 4** - Type of Silicon  
S = Standard Recovery Rectifier
- 5** - Voltage code: Code x 100 =  $V_{RRM}$
- 6** - S = Surface Mountable
- 7** - Tape and Reel Option  
TRL = Left Reel  
TRR = Right Orientation Reel

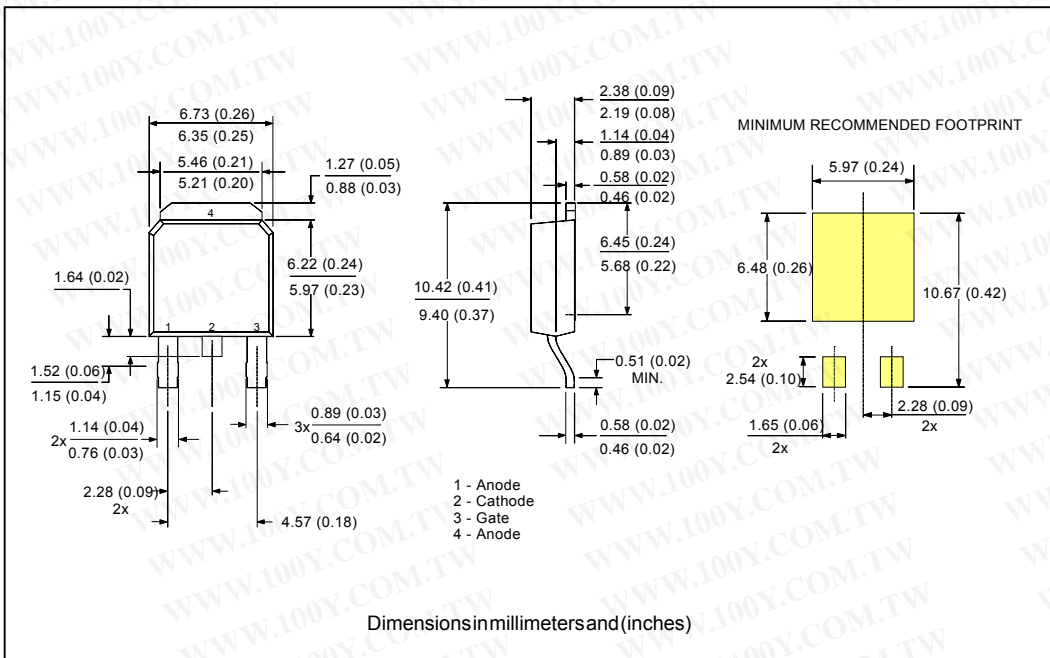
08 = 800V

10 = 1000V

12 = 1200V

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

Outline Table

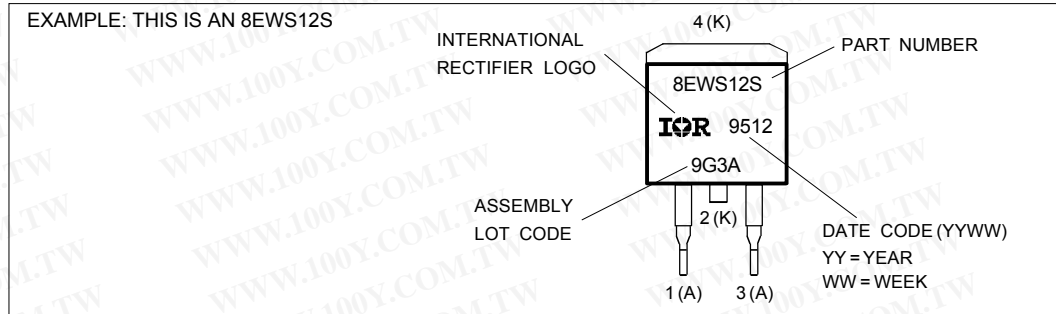


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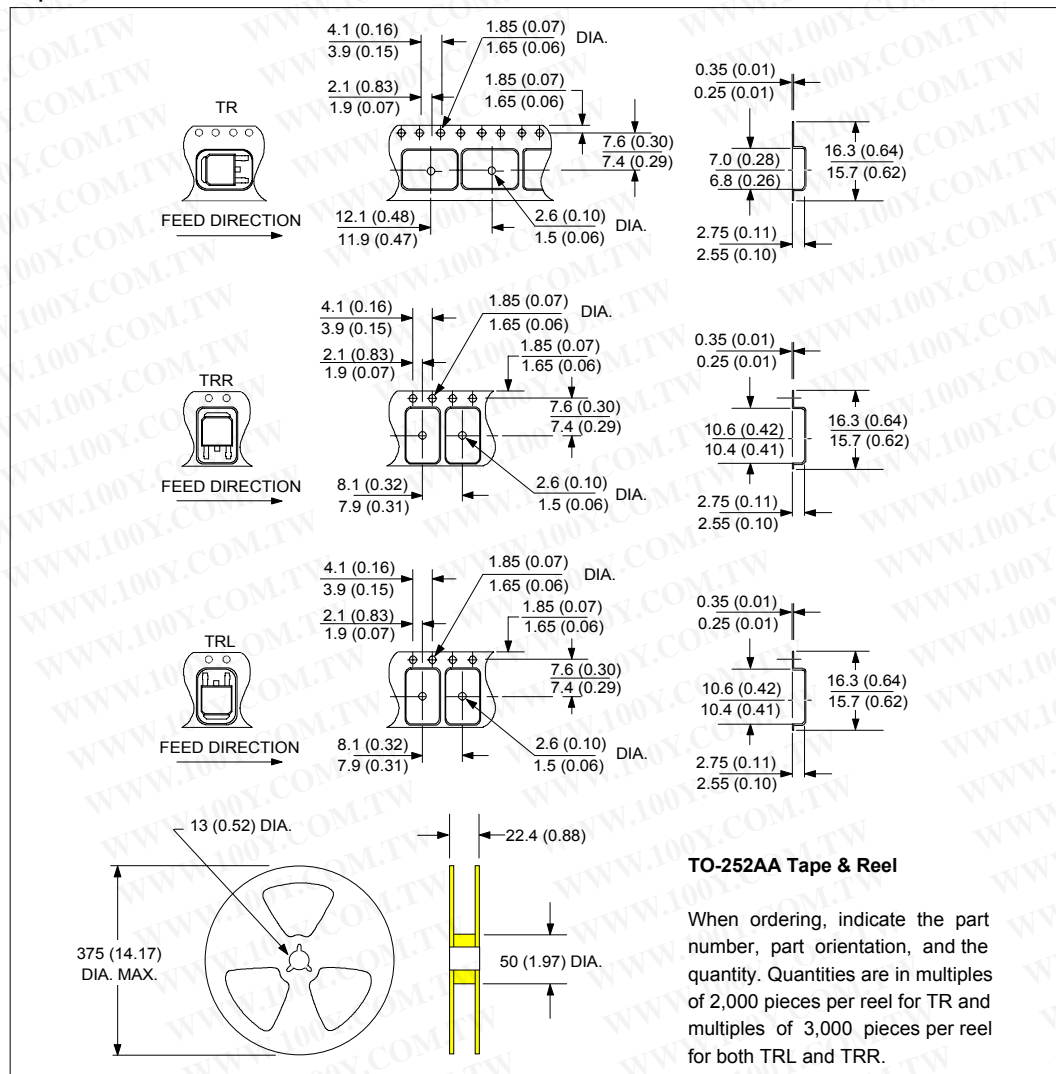
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## Marking Information



## Tape & Reel Information





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