

International
IOR Rectifier

SAFEIR Series
8EWS..S

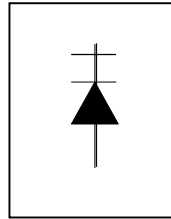
SURFACE MOUNTABLE INPUT RECTIFIER DIODE

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
NEMA FR-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	

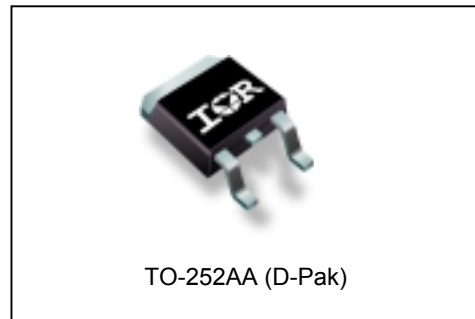
$T_A = 55^\circ C$, $T_J = 125^\circ C$, footprint 300mm²

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

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

Package Outline



8EWS..S *SAFEIR* Series

Bulletin I2108 rev. G 08/00

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
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_t 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	for 10 seconds (1.6mm from case)
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 (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

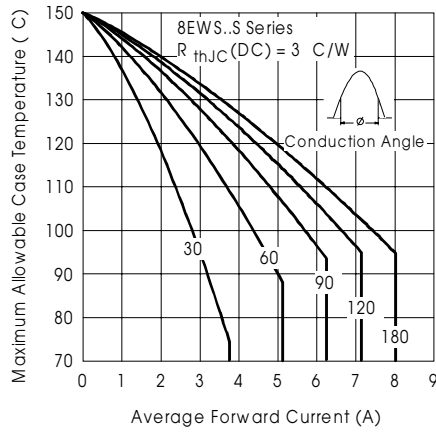


Fig. 1 - Current Rating Characteristics

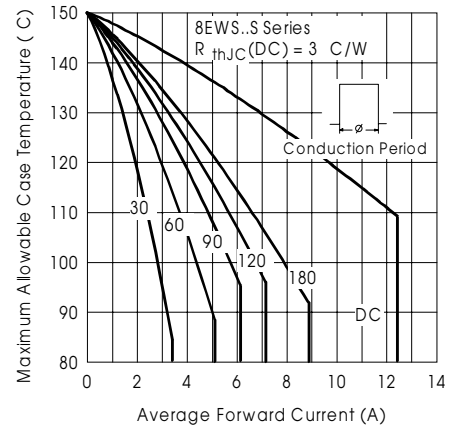


Fig. 2 - Current Rating Characteristics

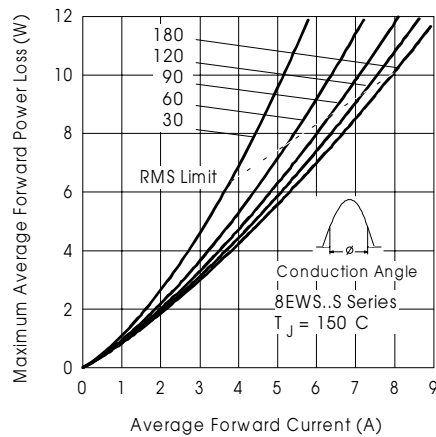


Fig. 3 - Forward Power Loss Characteristics

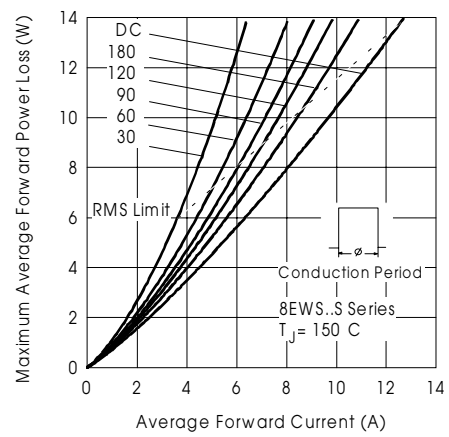


Fig. 4 - Forward Power Loss Characteristics

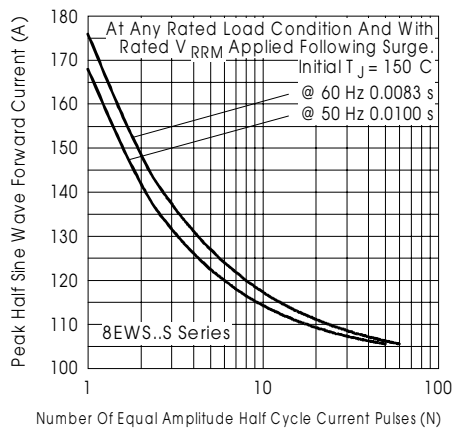


Fig. 5 - Maximum Non-Repetitive Surge Current

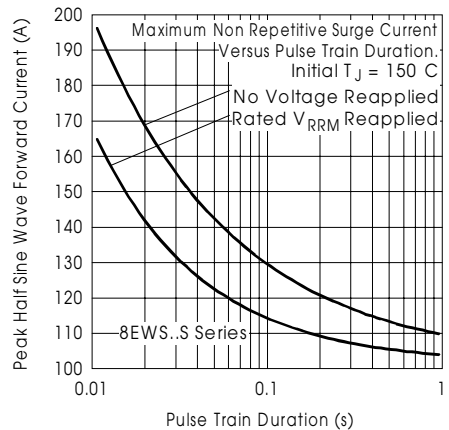


Fig. 6 - Maximum Non-Repetitive Surge Current

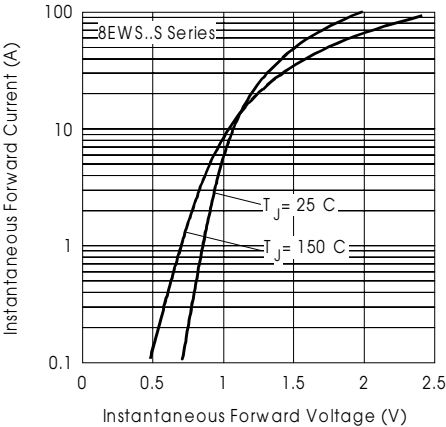


Fig.7-Forward Voltage Drop Characteristics

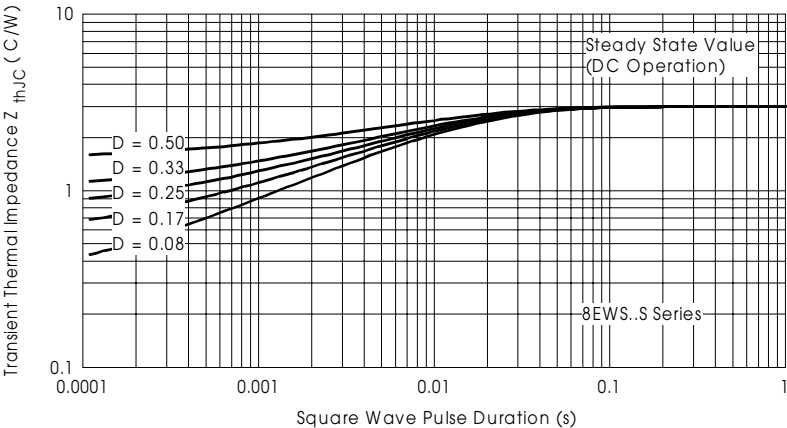


Fig.8- Thermal Impedance Z_{thJC} Characteristics

Ordering Information Table

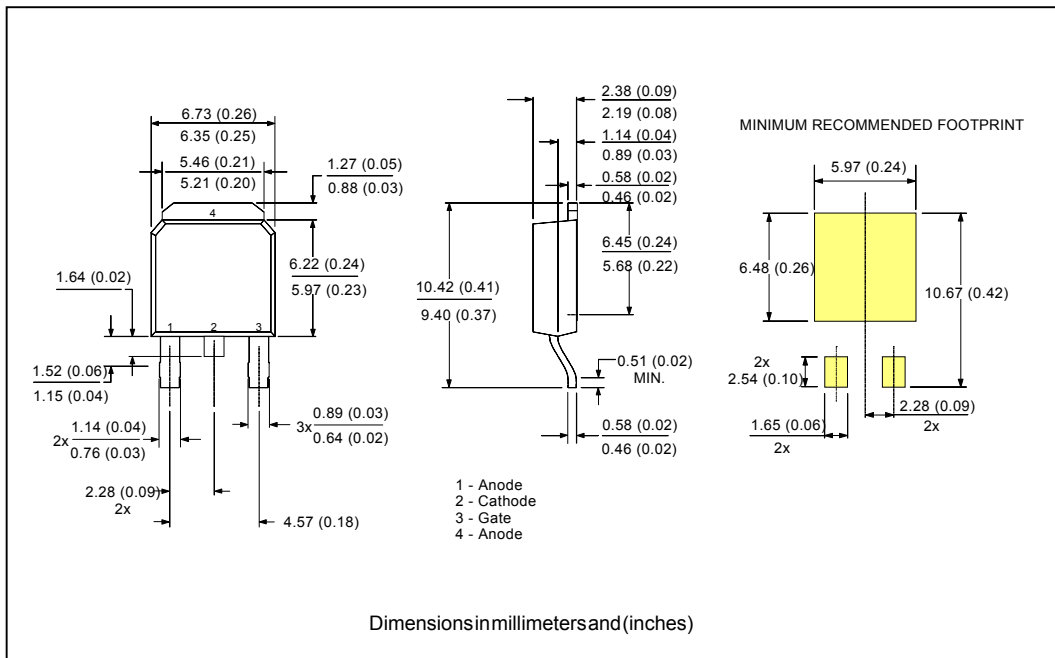
Device Code						
8	E	W	S	12	S	TRL
1	2	3	4	5	6	7

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



Bulletin 12108 rev. G 08/00

IOR Rectifier

Diagram illustrating the markings on an 8EWS12S diode:

- 4 (K)**: Marking at the top of the diode.
- PART NUMBER**: Points to the **8EWS12S** marking.
- INTERNATIONAL RECTIFIER LOGO**: Points to the **IOR** logo.
- 9512**: Marking next to the logo.
- 9G3A**: Marking below the logo.
- ASSEMBLY LOT CODE**: Points to the **9G3A** marking.
- 2 (K)**: Marking on the central pin.
- DATE CODE (YYWW)**: Points to the **9512** marking.
 - YY = YEAR**
 - WW = WEEK**
- 1 (A)**: Marking on the left pin.
- 3 (A)**: Marking on the right pin.

Technical drawing of TO-25AA Tape & Reel showing three orientations: TR, TRR, and TRL. Each orientation includes a side view of the tape with dimensions and a top view of the reel with dimensions.

TR Orientation:

- Side View Dimensions: 4.1 (0.16), 3.9 (0.15), 2.1 (0.83), 1.9 (0.07), 1.85 (0.07), 1.65 (0.06), 7.6 (0.30), 7.4 (0.29), 12.1 (0.48), 11.9 (0.47), 2.6 (0.10), 1.5 (0.06), 0.35 (0.01), 0.25 (0.01), 7.0 (0.28), 6.8 (0.26), 16.3 (0.64), 15.7 (0.62), 2.75 (0.11), 2.55 (0.10).
- Reel Dimensions: 13 (0.52) DIA., 375 (14.17) DIA. MAX., 22.4 (0.88), 50 (1.97) DIA.

TRR Orientation:

- Side View Dimensions: 4.1 (0.16), 3.9 (0.15), 2.1 (0.83), 1.9 (0.07), 1.85 (0.07), 1.65 (0.06), 7.6 (0.30), 7.4 (0.29), 8.1 (0.32), 7.9 (0.31), 2.6 (0.10), 1.5 (0.06), 0.35 (0.01), 0.25 (0.01), 10.6 (0.42), 10.4 (0.41), 16.3 (0.64), 15.7 (0.62), 2.75 (0.11), 2.55 (0.10).
- Reel Dimensions: 13 (0.52) DIA., 375 (14.17) DIA. MAX., 22.4 (0.88), 50 (1.97) DIA.

TRL Orientation:

- Side View Dimensions: 4.1 (0.16), 3.9 (0.15), 2.1 (0.83), 1.9 (0.07), 1.85 (0.07), 1.65 (0.06), 7.6 (0.30), 7.4 (0.29), 8.1 (0.32), 7.9 (0.31), 2.6 (0.10), 1.5 (0.06), 0.35 (0.01), 0.25 (0.01), 10.6 (0.42), 10.4 (0.41), 16.3 (0.64), 15.7 (0.62), 2.75 (0.11), 2.55 (0.10).
- Reel Dimensions: 13 (0.52) DIA., 375 (14.17) DIA. MAX., 22.4 (0.88), 50 (1.97) DIA.

TO-25AA Tape & Reel

When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 2,000 pieces per reel for TR and multiples of 3,000 pieces per reel for both TRL and TRR.

