

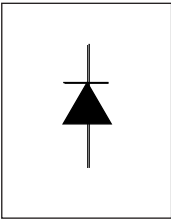
SURFACE MOUNTABLE
INPUT RECTIFIER DIODE

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.



$$\begin{aligned} V_F &< 1V @ 5A \\ I_{FSM} &= 200A \\ V_{RRM} &800 \text{ to } 1600V \end{aligned}$$

Output Current in Typical Applications

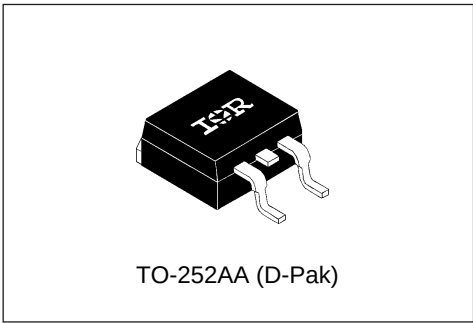
Applications	Single-phase Bridge	Three-phase Bridge	Units
NEMA FR-4 or G10 glass fabric-based epoxy with 4 oz (140µm) copper	1.2	1.6	A
Aluminum IMS, R _{thCA} = 15°C/W	2.5	2.8	
Aluminum IMS with heatsink, R _{thCA} = 5°C/W	5.5	6.5	

T_A = 55°C, T_J = 125°C, footprint 300mm²

Major Ratings and Characteristics

Characteristics	8EWS..S	Units
I _{F(AV)} Sinusoidal waveform	8	A
V _{RRM}	800 to 1600	V
I _{FSM}	200	A
V _F @ 5A, T _J = 25°C	1.0	V
T _J	-40 to 150	°C

Package Outline



TO-252AA (D-Pak)

8EWS..S *SAFEIR* Series

Bulletin I2108 rev. E 05/98

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	
8EWS16S	1600	1700	

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	$\text{A}^2\sqrt{\text{s}}$	$t = 0.1$ 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	-40 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
Soldering Temperature	240	$^\circ\text{C}$	for 10 seconds (1.6mm from case)
R_{thJC} Max. Thermal Resistance Junction to Case	3	$^\circ\text{C/W}$	DC operation
R_{thJA} Typ. Thermal Resistance Junction to Ambient (PCB Mount)**	50	$^\circ\text{C/W}$	
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

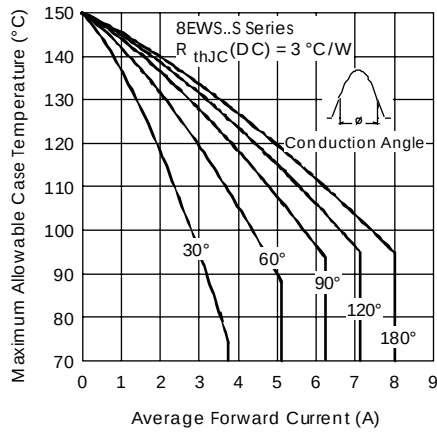


Fig. 1 - Current Rating Characteristics

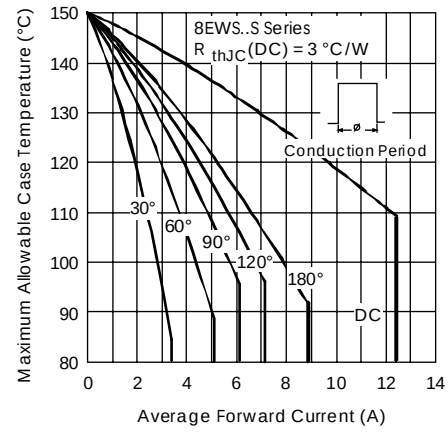


Fig. 2 - Current Rating Characteristics

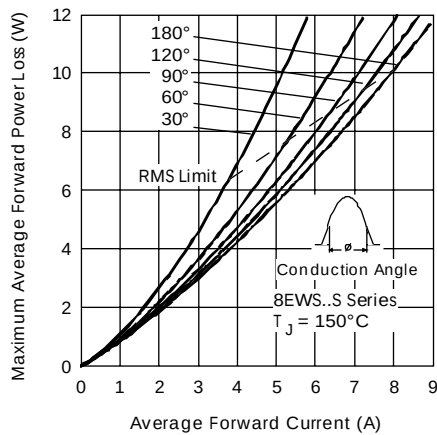


Fig. 3 - Forward Power Loss Characteristics

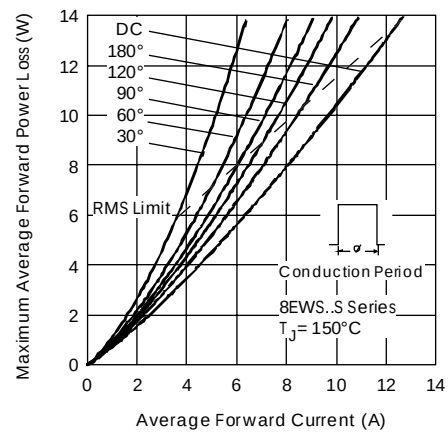


Fig. 4 - Forward Power Loss Characteristics

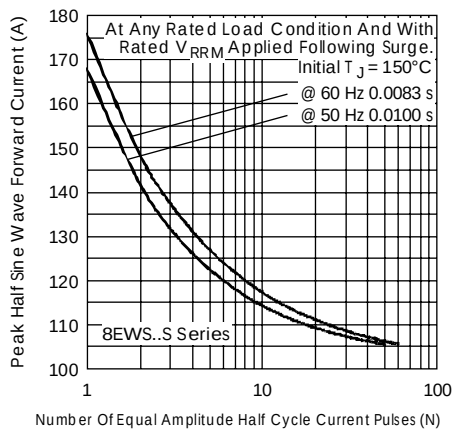


Fig. 5 - Maximum Non-Repetitive Surge Current

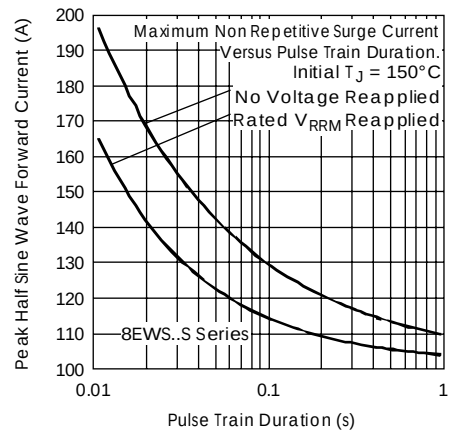


Fig. 6 - Maximum Non-Repetitive Surge Current

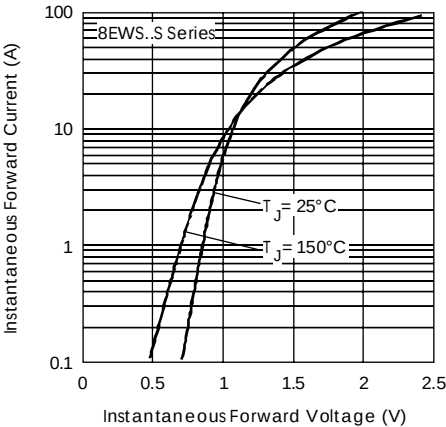


Fig.7-Forward Voltage Drop Characteristics

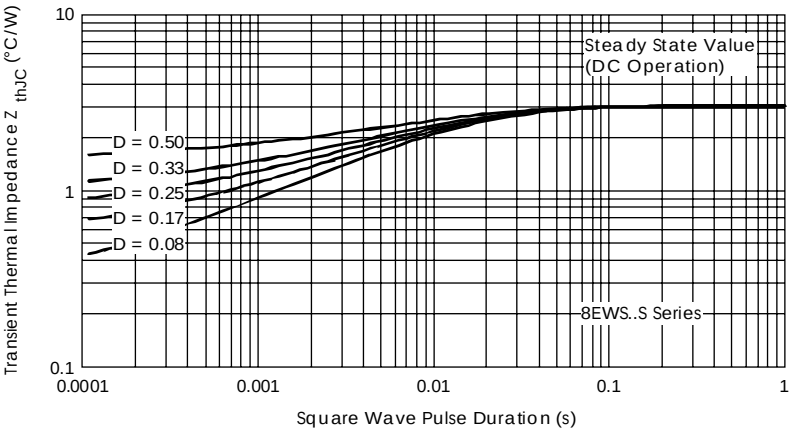


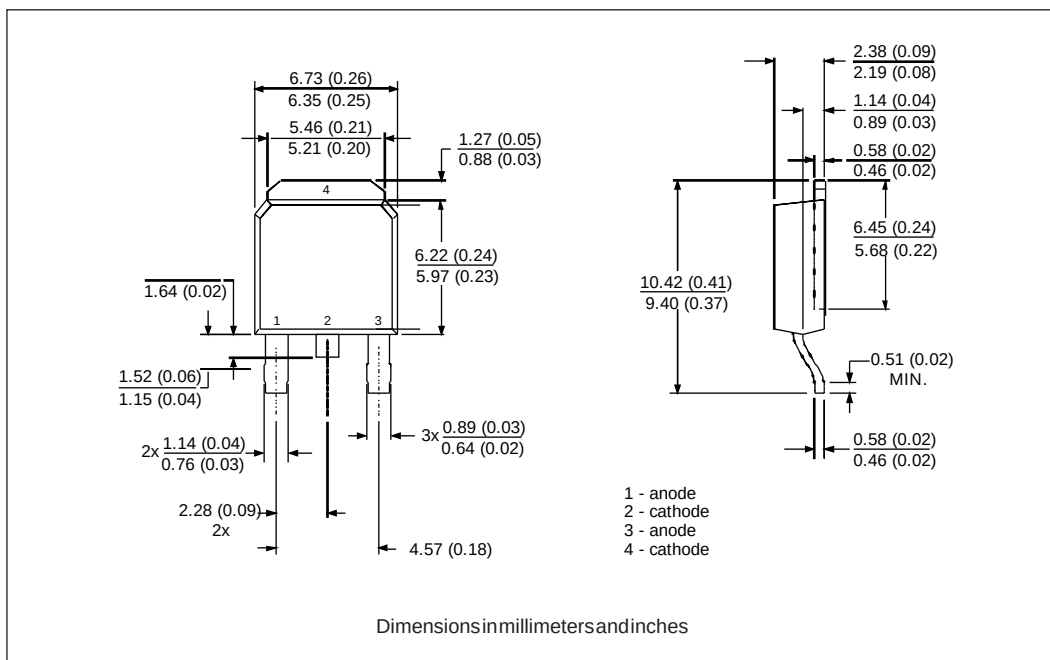
Fig.8- Thermal Impedance Z_{thJC} Characteristics

Ordering Information Table

Device Code						
8	E	W	S	16	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
16	= 1600V

Outline Table



Bulletin I2108 rev. E 05/98

IOR Rectifier

EXAMPLE: THIS IS AN 8EWS16S

Diagram illustrating the 8EWS16S diode package and its markings.

The left diagram shows the diode symbol with terminals 1, 2, and 3, and the label BASE.

The right diagram shows the physical component with the following markings and labels:

- INTERNATIONAL RECTIFIER LOGO
- (K)
- PART NUMBER: 8EWS16S
- 9512 (DATE CODE: YYWW, where YY = YEAR and WW = WEEK)
- 9G3A (ASSEMBLY LOT CODE)
- ASSEMBLY LOT CODE
- DATE CODE (YYWW)
- YY = YEAR
- WW = WEEK
- (A) (A)

TR

FEED DIRECTION →

4.1 (0.16)
3.9 (0.15)
2.1 (0.83)
1.9 (0.07)

1.85 (0.07)
1.65 (0.06)
1.85 (0.07)
1.65 (0.06)

DIA.

7.6 (0.30)
7.4 (0.29)

12.1 (0.48)
11.9 (0.47)

2.6 (0.10)
1.5 (0.06)

DIA.

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)

TRR

FEED DIRECTION →

4.1 (0.16)
3.9 (0.15)
2.1 (0.83)
1.9 (0.07)

1.85 (0.07)
1.65 (0.06)
1.85 (0.07)
1.65 (0.06)

DIA.

7.6 (0.30)
7.4 (0.29)

8.1 (0.32)
7.9 (0.31)

2.6 (0.10)
1.5 (0.06)

DIA.

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)

TRL

FEED DIRECTION →

4.1 (0.16)
3.9 (0.15)
2.1 (0.83)
1.9 (0.07)

1.85 (0.07)
1.65 (0.06)
1.85 (0.07)
1.65 (0.06)

DIA.

7.6 (0.30)
7.4 (0.29)

8.1 (0.32)
7.9 (0.31)

2.6 (0.10)
1.5 (0.06)

DIA.

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)

13 (0.52) DIA.

22.4 (0.88)

50 (1.97) DIA.

375 (14.17) DIA. MAX.

TO-252AA 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.