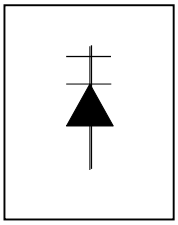
Bulletin I2108 rev. G 08/00

International
IOR Rectifier

SAFEIR Series
8EWS..S

SURFACE MOUNTABLE
INPUT RECTIFIER DIODE



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

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.

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 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°C	1.0	V
T_J	-55 to 150	°C

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

Package Outline



TO-252AA (D-Pak)

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° 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 reapplied
I^2t	Max. I^2t for fusing	144	A^2s	10ms Sine pulse, rated V_{RRM} applied
		204		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for fusing	2040	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied

Electrical Specifications

	Parameters	8EWS..S	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	1.1	V	@ 8A, T_J = 25°C	
r_t	Forward slope resistance	21.8	mΩ	T_J = 150°C	
$V_{F(TO)}$	Threshold voltage	0.81	V		
I_{RM}	Max. Reverse Leakage Current	0.05	mA	T_J = 25 °C	V_R = rated V_{RRM}
		0.50		T_J = 150 °C	

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 (650mm^2) 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

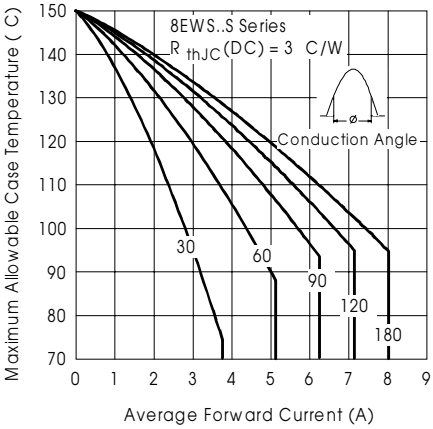


Fig. 1 - Current Rating Characteristics

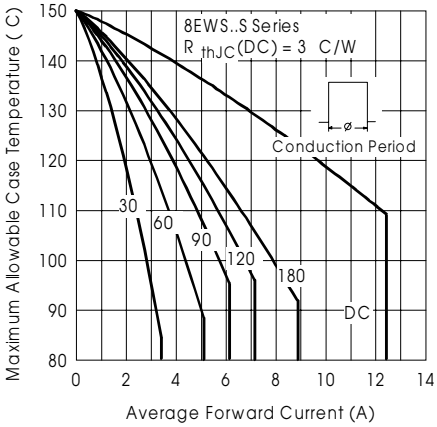


Fig. 2 - Current Rating Characteristics

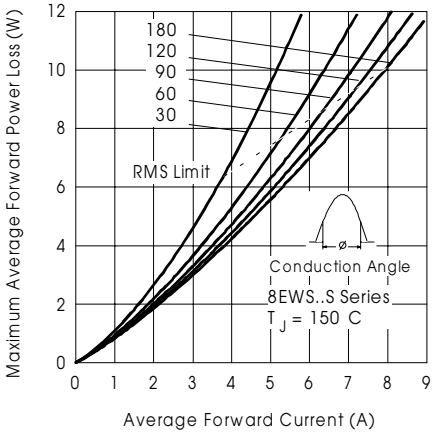


Fig. 3 - Forward Power Loss Characteristics

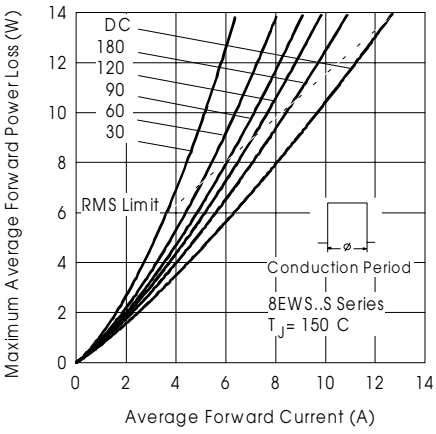


Fig. 4 - Forward Power Loss Characteristics

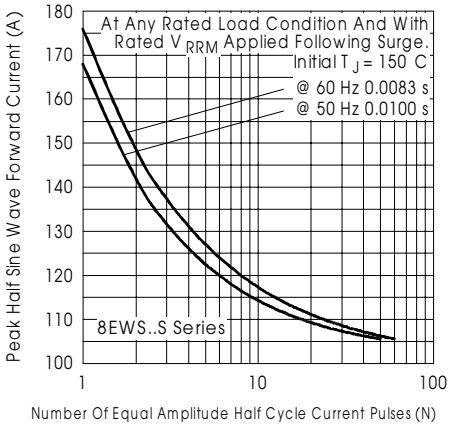


Fig. 5 - Maximum Non-Repetitive Surge Current

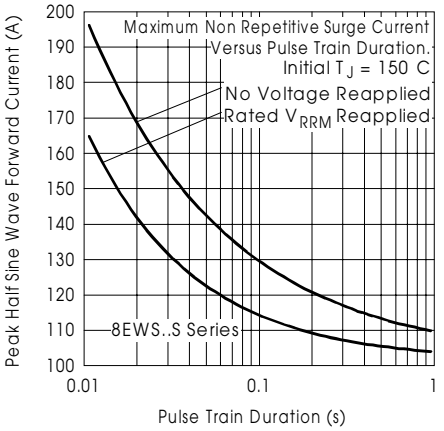


Fig. 6 - Maximum Non-Repetitive Surge Current

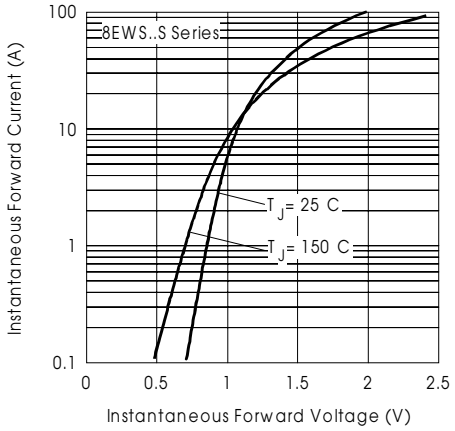


Fig. 7 - Forward Voltage Drop Characteristics

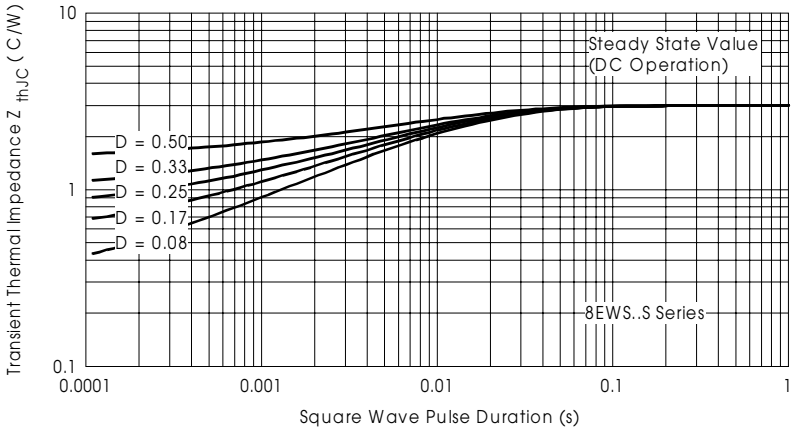
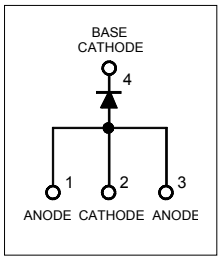


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

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}

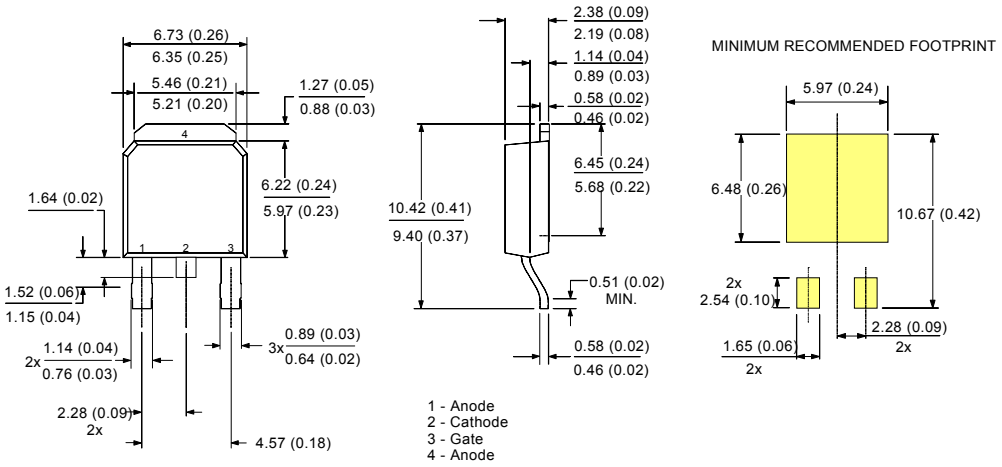
08	=	800V
10	=	1000V
12	=	1200V

6 - S = Surface Mountable

7 - Tape and Reel Option
TRL = Left Reel
TRR = Right Orientation Reel

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

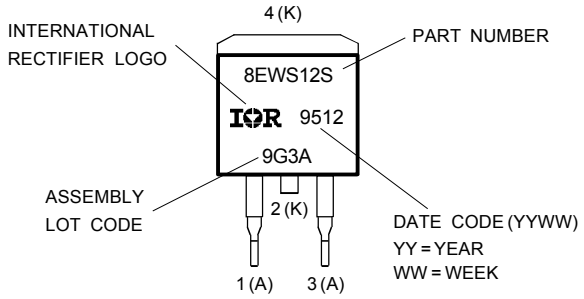
Outline Table



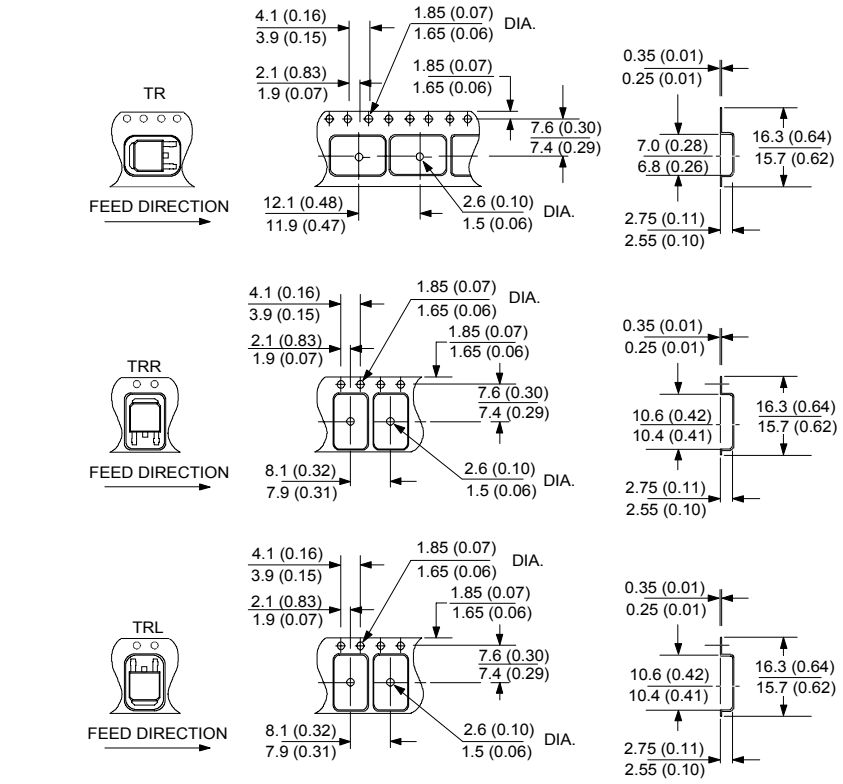
Dimensions in millimeters and (inches)

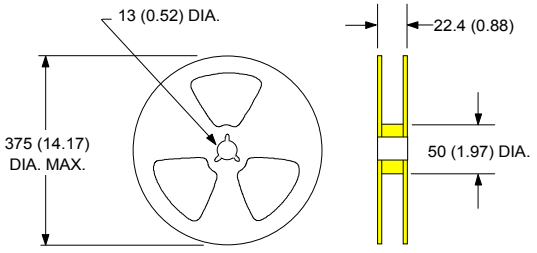
Marking Information

EXAMPLE: THIS IS AN 8EWS12S



Tape & Reel Information





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.

International
IOR Rectifier

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EUROPEAN HEADQUARTERS: Hurst Green, Oxted, Surrey RH8 9BB, U.K. Tel: ++ 44 1883 732020. Fax: ++ 44 1883 733408.
IR CANADA: 15 Lincoln Court, Brampton, Markham, Ontario L6T3Z2. Tel: (905) 453 2200. Fax: (905) 475 8801.
IR GERMANY: Saalburgstrasse 157, 61350 Bad Homburg. Tel: ++ 49 6172 96590. Fax: ++ 49 6172 965933.
IR ITALY: Via Liguria 49, 10071 Borgaro, Torino. Tel: ++ 39 11 4510111. Fax: ++ 39 11 4510220.
IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.
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