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Bulletin I2108 rev.G 08/00

International IOR Rectifier

SAFEIR Series 8EWS..S

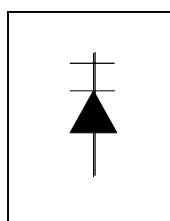
SURFACE MOUNTABLE INPUT RECTIFIER DIODE

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.



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

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, $R_{thCA} = 15^\circ C/W$	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

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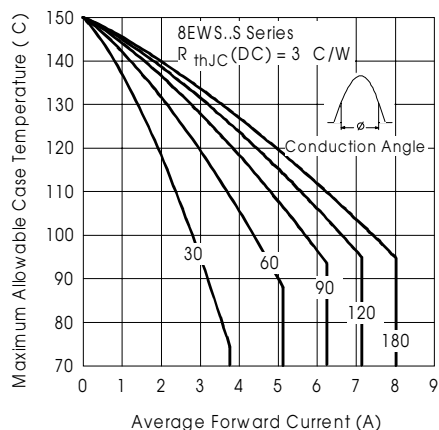


Fig. 1 - Current Rating Characteristics

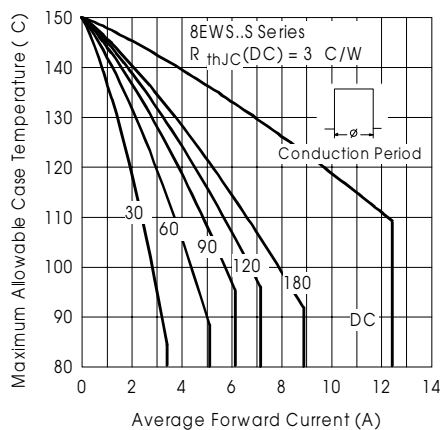


Fig. 2 - Current Rating Characteristics

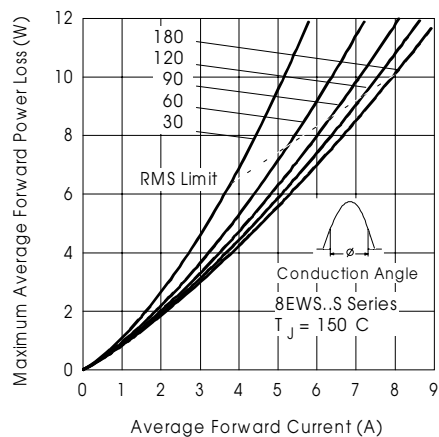


Fig. 3 - Forward Power Loss Characteristics

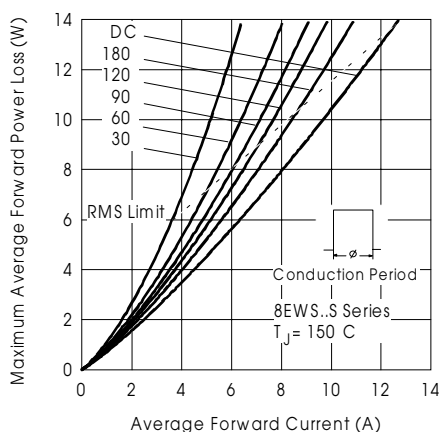


Fig. 4 - Forward Power Loss Characteristics

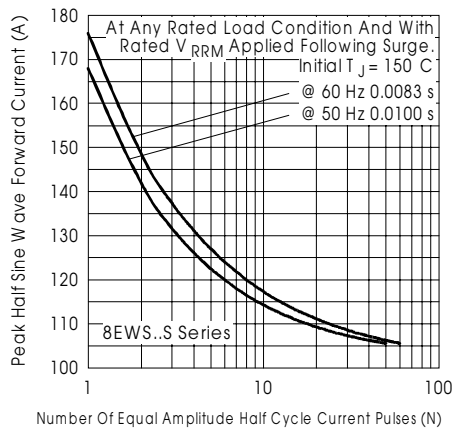


Fig. 5 - Maximum Non-Repetitive Surge Current

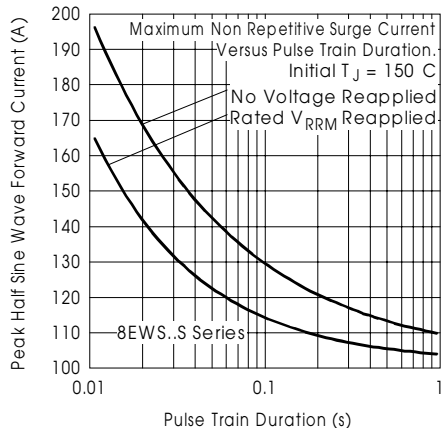


Fig. 6 - Maximum Non-Repetitive Surge Current

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Bulletin I2108 rev. G 08/00

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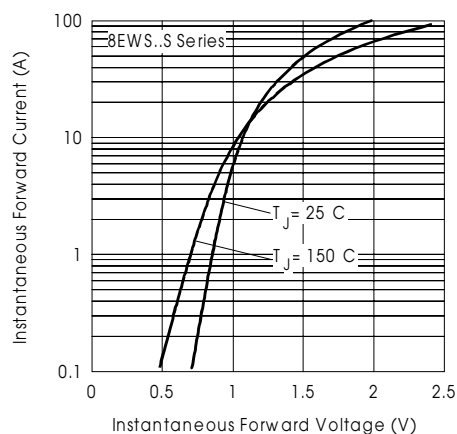


Fig. 7 - Forward Voltage Drop Characteristics

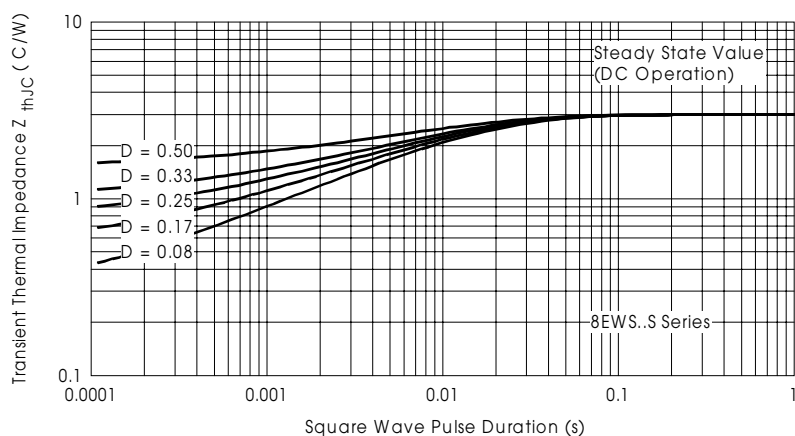


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

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Bulletin I2108 rev. G 08/00

Ordering Information Table

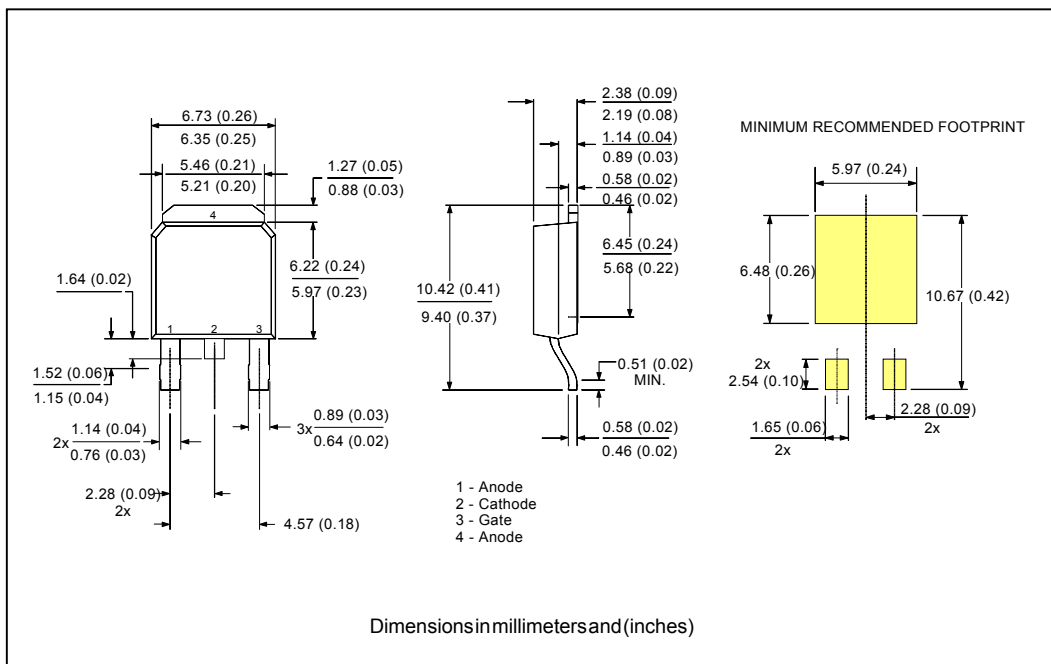
Device Code						
8	E	W	S	12	S	TRL
1	2	3	4	5	6	7

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



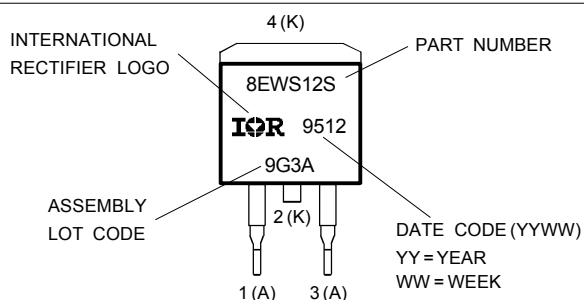
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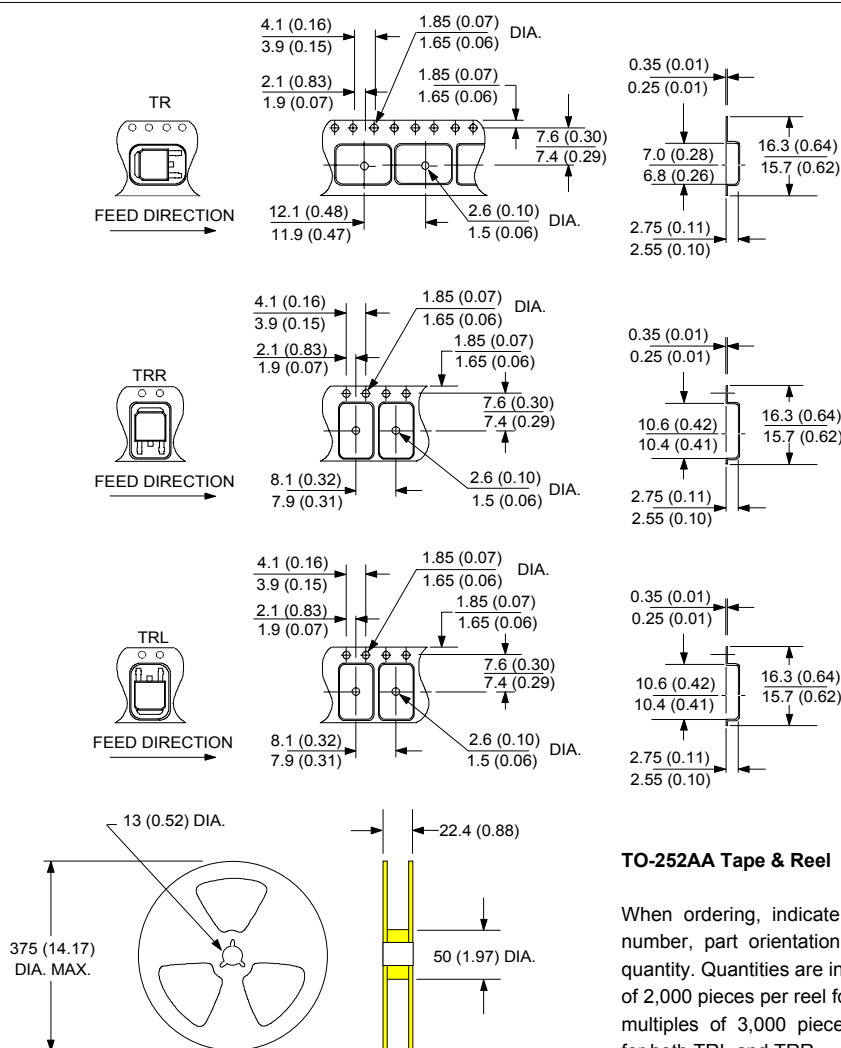
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Marking Information

EXAMPLE: THIS IS AN 8EWS12S



Tape & Reel Information



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Bulletin I2108 rev. G 08/00

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Data and specifications subject to change without notice.