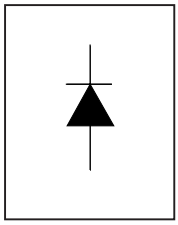
Bulletin I2166 rev. B 09/05

International
IOR Rectifier

SAFEIR Series
8EWS..SPbF

SURFACE MOUNTABLE INPUT RECTIFIER DIODE
Lead-Free ("PbF" suffix)



V_F < 1V @ 10A
I_{FSM} = 200A
V_{RRM} = 800V, 1200V

Description/ Features

The 8EWS..SPbF 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	Values	Units
$I_{F(AV)}$ Sinusoidal waveform	10	A
V_{RRM}	800, 1200	V
I_{FSM}	200	A
V_F @ 10A, T_J = 25°C	1.10	V
T_J	- 40 to 150	°C

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
8EWS08SPbF	800	900	0.5
8EWS12SPbF	1200	1300	

Absolute Maximum Ratings

	Parameters	Values	Units	Conditions
$I_{F(AV)}$	Max. Average Forward Current	10	A	@ T_C = 105° 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	130	A^2s	10ms Sine pulse, rated V_{RRM} applied
		145		10ms Sine pulse, no voltage reapplied
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for fusing	1450	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied

Electrical Specifications

	Parameters	Values	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop	1.1	V	@ 10A, T_J = 25°C	
r_t	Forward slope resistance	20	mΩ	T_J = 150°C	
$V_{F(TO)}$	Threshold voltage	0.82	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	Values	Units	Conditions
T_J	Max. Junction Temperature Range	-40 to 150	°C	
T_{stg}	Max. Storage Temperature Range	-40 to 150	°C	
	Soldering Temperature	240	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case	2.5	°C/W	DC operation
R_{thJA}	Typ. Thermal Resistance Junction to Ambient (PCB Mount)**	62	°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

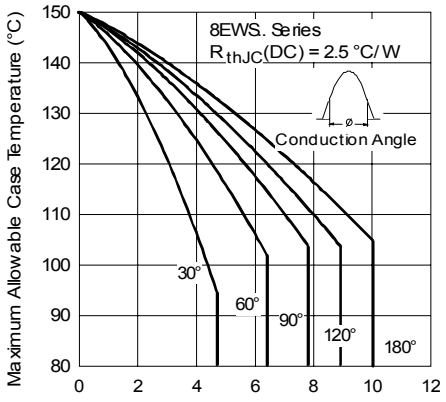


Fig. 1 - Current Rating Characteristics

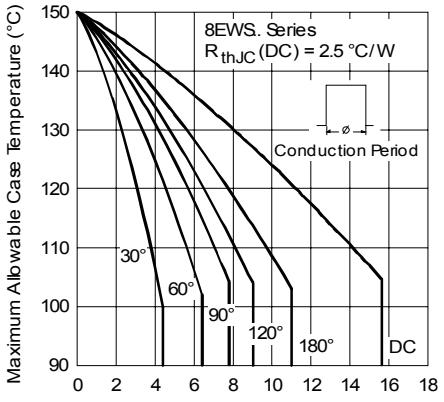


Fig. 2 - Current Rating Characteristics

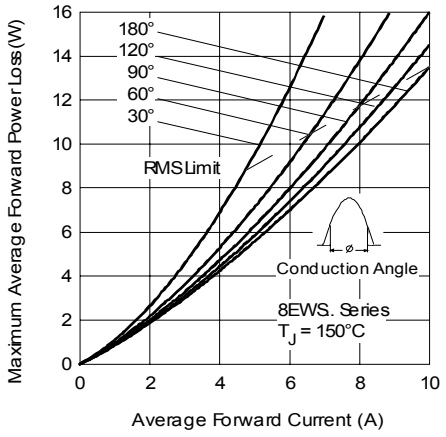


Fig. 3 - Forward Power Loss Characteristics

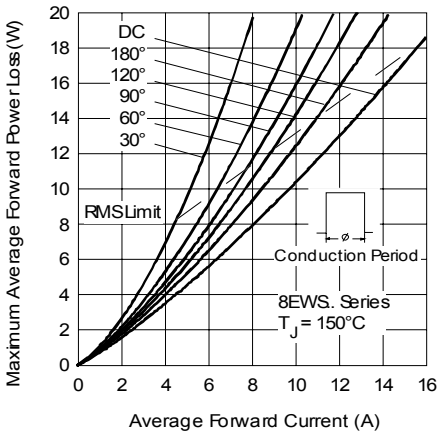


Fig. 4 - Forward Power Loss Characteristics

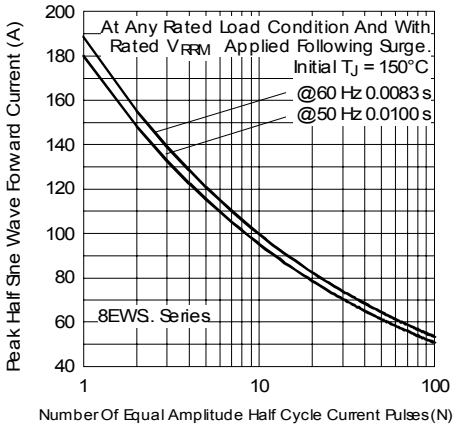


Fig. 5 - Maximum Non-Repetitive Surge Current

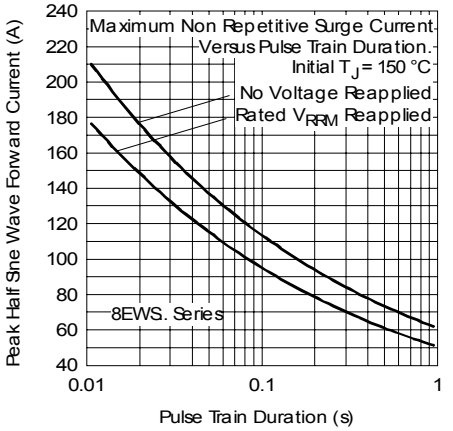


Fig. 6 - Maximum Non-Repetitive Surge Current

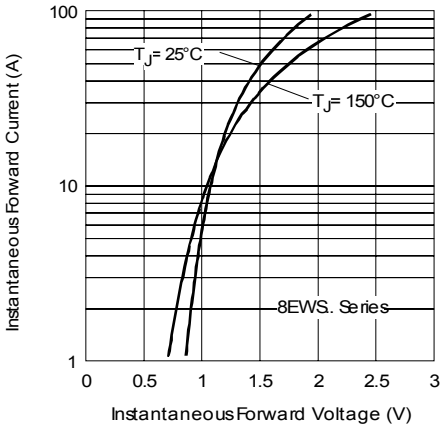


Fig. 8 - Forward Voltage Drop Characteristics

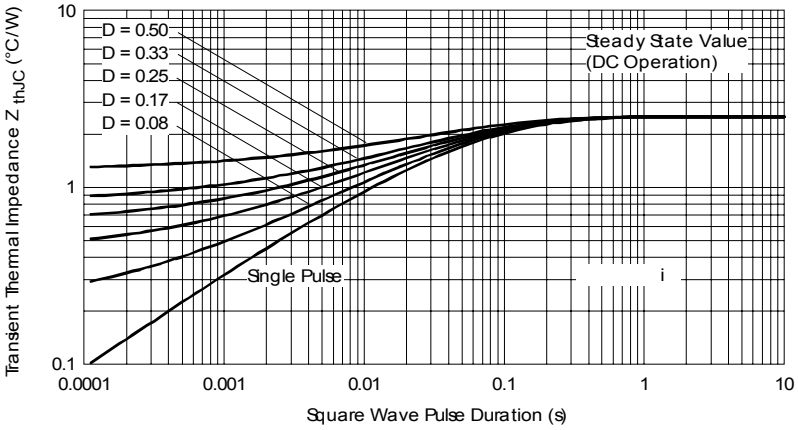
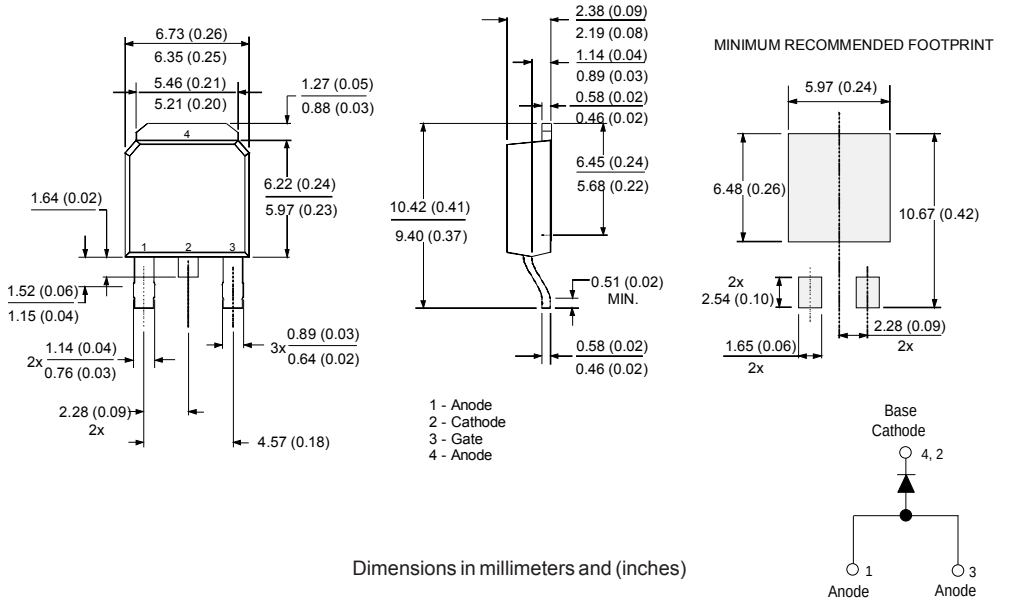
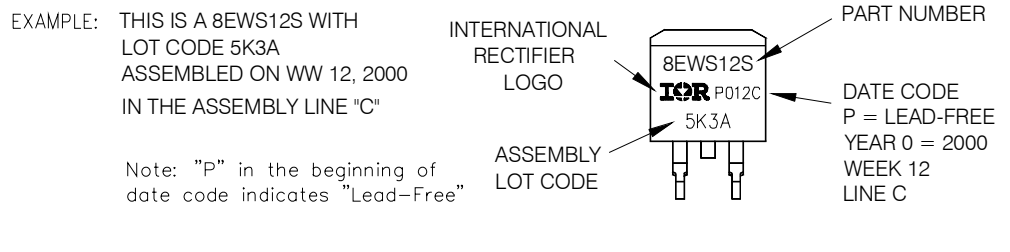


Fig. 9 - Thermal Impedance Z_{thJC} Characteristics

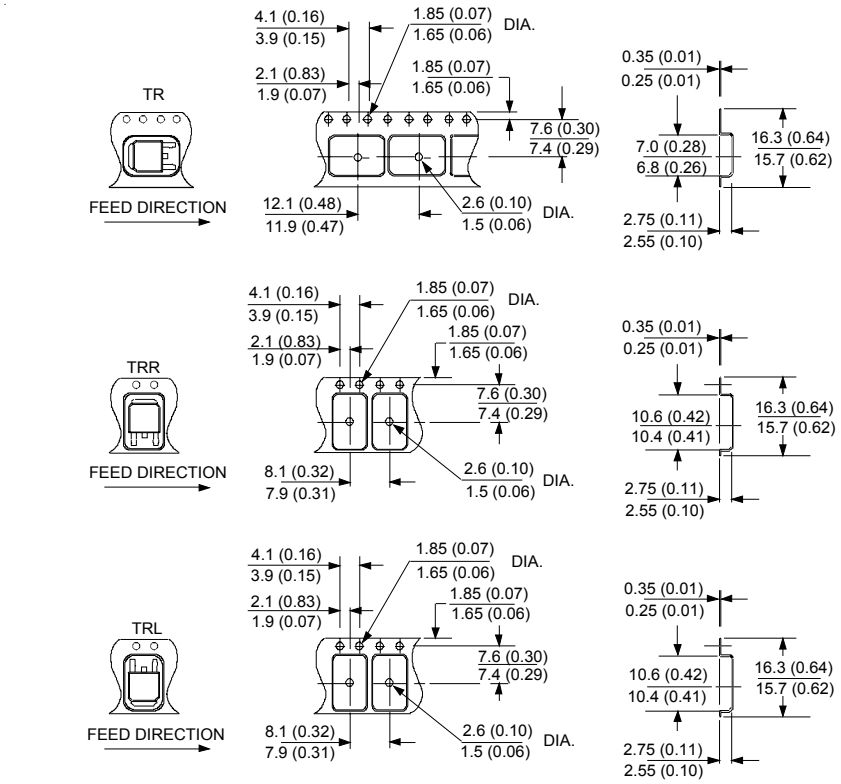
Outline Table

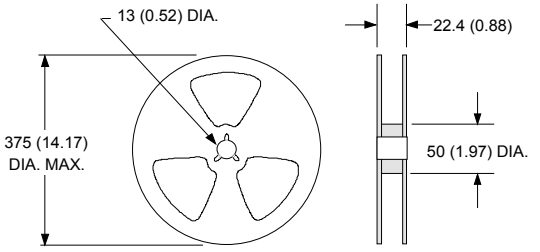


Marking Information



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.

Ordering Information Table

Device Code

8	E	W	S	12	S	TR	PbF
1	2	3	4	5	6	7	8

1 - Current Rating (8 = 8A)

2 - Circuit Configuration:
E = Single Diode

3 - Package:
W = D-Pak

4 - Type of Silicon:
S = Standard Recovery Rectifier

5 - Voltage Ratings
- 08 = 800V
- 12 = 1200V

6 - S = Surface Mountable

7 -
- TR = Tape & Reel
- TRR = Tape & Reel (Right Oriented)
- TRL = Tape & Reel (Left Oriented)

8 -
- none = Standard Production
- PbF = Lead-Free

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

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