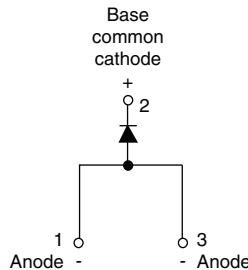


## Surface Mountable Fast Soft Recovery Diode, 8 A



D-PAK



PRODUCT SUMMARY	
Package	D-PAK (TO-252AA)
$I_{F(AV)}$	8 A
$V_R$	1000 V, 1200 V
$V_F$ at $I_F$	1.3 V
$I_{FSM}$	110 A
$t_{rr}$	80 ns
$T_J$ max.	150 °C
Diode variation	Single die
Snap factor	0.6

### FEATURES

- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### APPLICATIONS

- Output rectification and freewheeling diode in inverters, choppers and converters
- Input rectifications where severe restrictions on conducted EMI should be met

### DESCRIPTION

The VS-8EWF..S-M3 fast soft recovery rectifier series has been optimized for combined short reverse recovery time, low forward voltage drop and low leakage current.

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	8	A
$V_{RRM}$		1000/1200	V
$I_{FSM}$		110	A
$V_F$	8 A, $T_J = 25$ °C	1.3	V
$t_{rr}$	1 A, 100 A/μs	80	ns
$T_J$	Range	- 40 to 150	°C

VOLTAGE RATINGS			
PART NUMBER	$V_{RRM}$ , MAXIMUM PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ AT 150 °C mA
VS-8EWF10S-M3	1000	1100	4
VS-8EWF12S-M3	1200	1300	

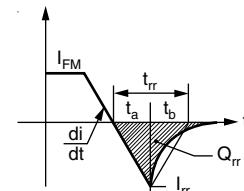
ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 96$ °C, 180° conduction half sine wave	8	
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$ (1)	10 ms sine pulse, rated $V_{RRM}$ applied	93	A
		10 ms sine pulse, no voltage reapplied	110	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	43	$A^2s$
		10 ms sine pulse, no voltage reapplied	61	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	432	$A^2\sqrt{s}$

#### Note

(1) Connecting one pin only

ELECTRICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum forward voltage drop	$V_{FM}$	8 A, $T_J = 25^\circ\text{C}$	1.3	V
Forward slope resistance	$r_t$	$T_J = 150^\circ\text{C}$	25.6	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$		0.93	V
Maximum reverse leakage current	$I_{RM}$	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	0.1 4	mA
		$V_R = \text{Rated } V_{RRM}$		

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	$t_{rr}$	$I_F$ at 8 A pk	270	ns
Reverse recovery current	$I_{rr}$	25 A/ $\mu\text{s}$	4.2	A
Reverse recovery charge	$Q_{rr}$	$T_J = 25^\circ\text{C}$	1	$\mu\text{C}$
Snap factor	S		0.6	



THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	$T_J, T_{Stg}$		- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation	2.5	$^\circ\text{C}/\text{W}$
Typical thermal resistance, junction to ambient (PCB mount)	$R_{thJA}^{(1)}$		50	
Soldering temperature	$T_S$	For 10 s	240	$^\circ\text{C}$
Approximate weight			1	g
			0.03	oz.
Marking device		Case style D-PAK (TO-252AA)	8EWF10S	
			8EWF12S	

### Note

(2) When mounted on 1" square (650 mm<sup>2</sup>) PCB of FR-4 or G-10 material 4 oz. (140  $\mu\text{m}$ ) copper 40  $^\circ\text{C}/\text{W}$   
For recommended footprint and soldering techniques refer to application note #AN-994

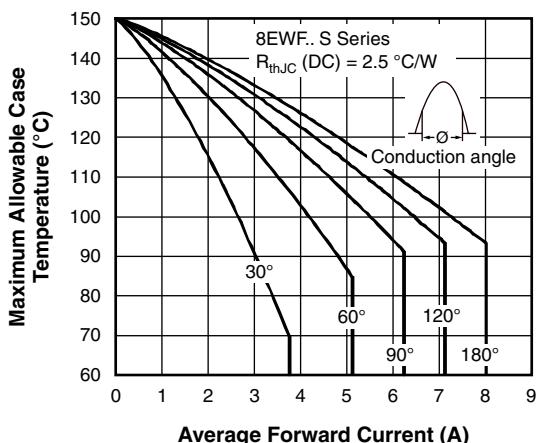


Fig. 1 - Current Rating Characteristics

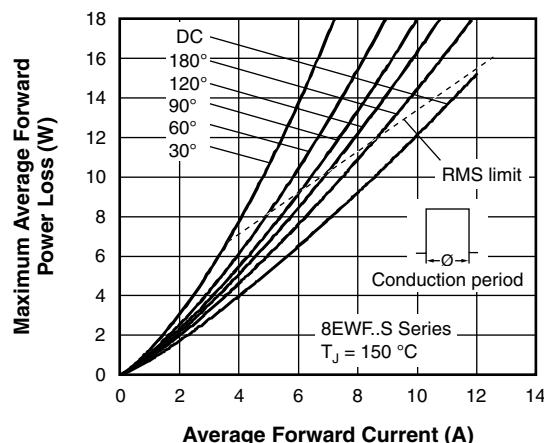


Fig. 4 - Forward Power Loss Characteristics

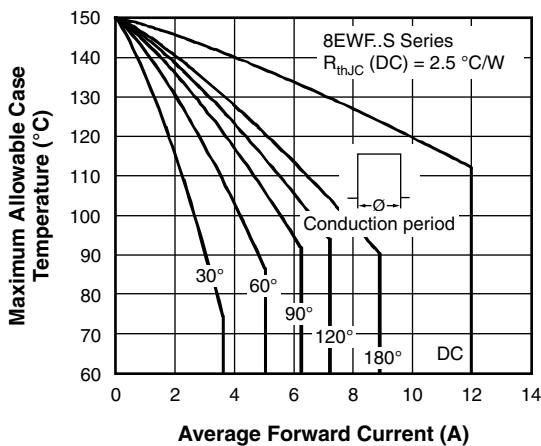


Fig. 2 - Current Rating Characteristics

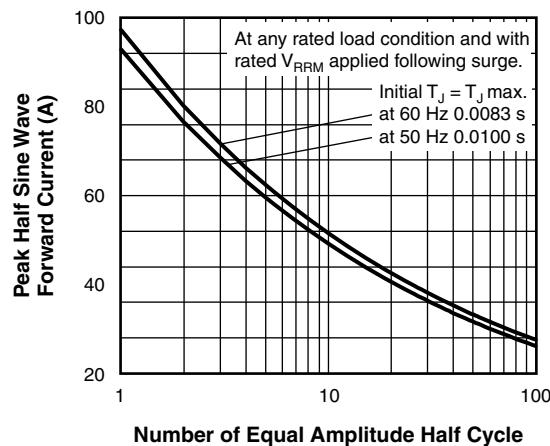


Fig. 5 - Maximum Non-Repetitive Surge Current

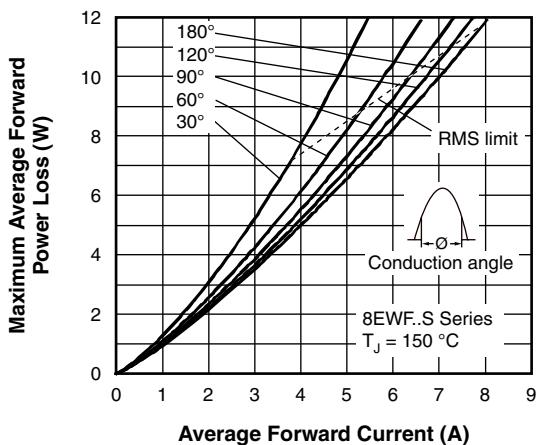


Fig. 3 - Forward Power Loss Characteristics

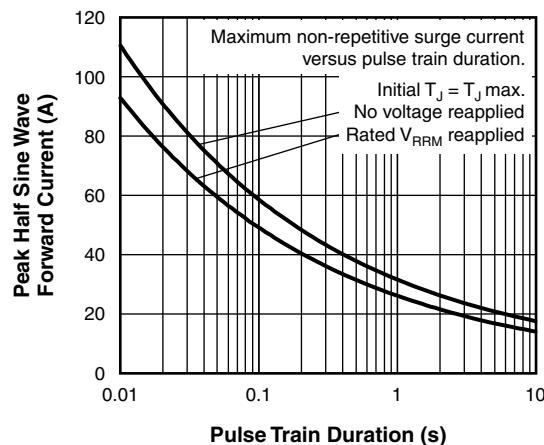


Fig. 6 - Maximum Non-Repetitive Surge Current

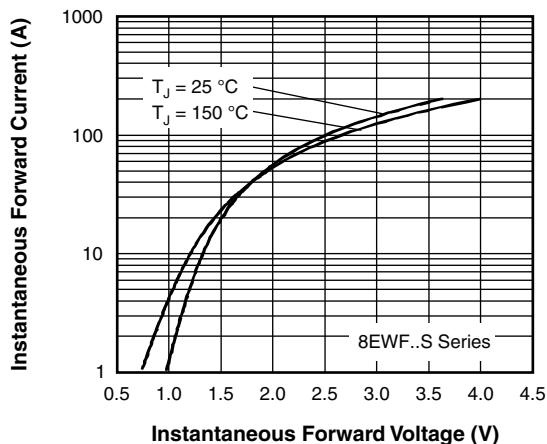


Fig. 7 - Forward Voltage Drop Characteristics

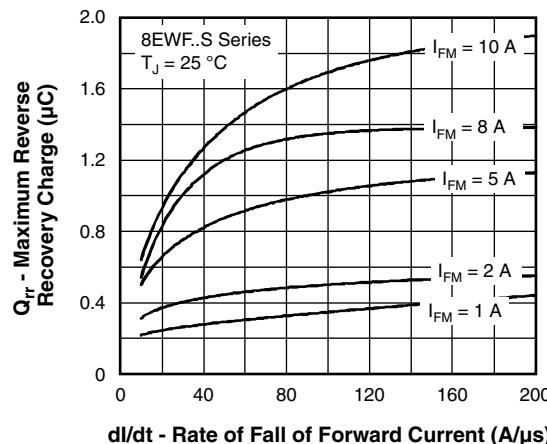


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25 \text{ }^{\circ}\text{C}$

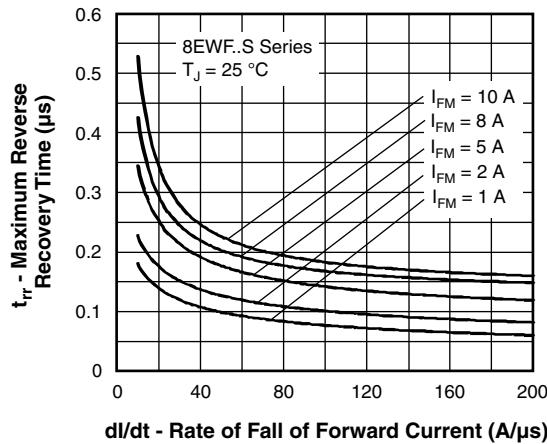


Fig. 8 - Recovery Time Characteristics,  $T_J = 25 \text{ }^{\circ}\text{C}$

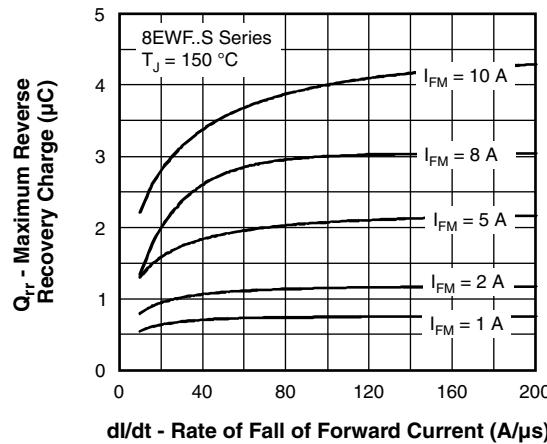


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150 \text{ }^{\circ}\text{C}$

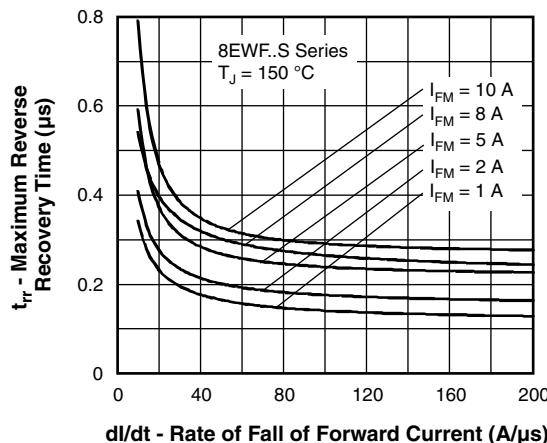


Fig. 9 - Recovery Time Characteristics,  $T_J = 150 \text{ }^{\circ}\text{C}$

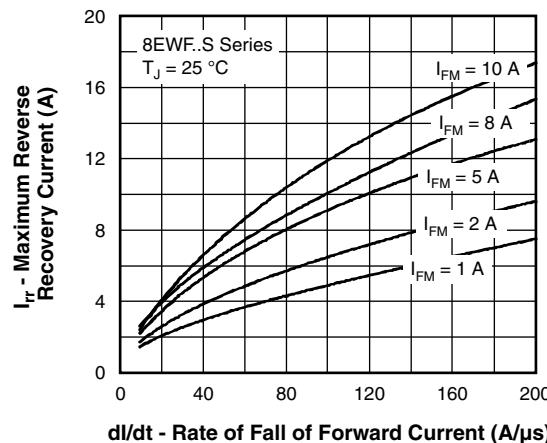


Fig. 12 - Recovery Current Characteristics,  $T_J = 25 \text{ }^{\circ}\text{C}$

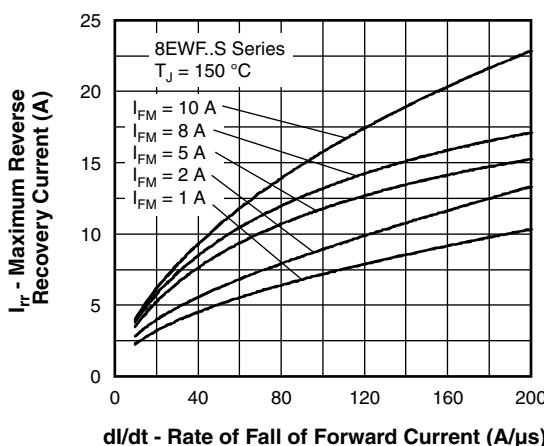


Fig. 13 - Recovery Current Characteristics,  $T_J = 150 \text{ } ^\circ\text{C}$

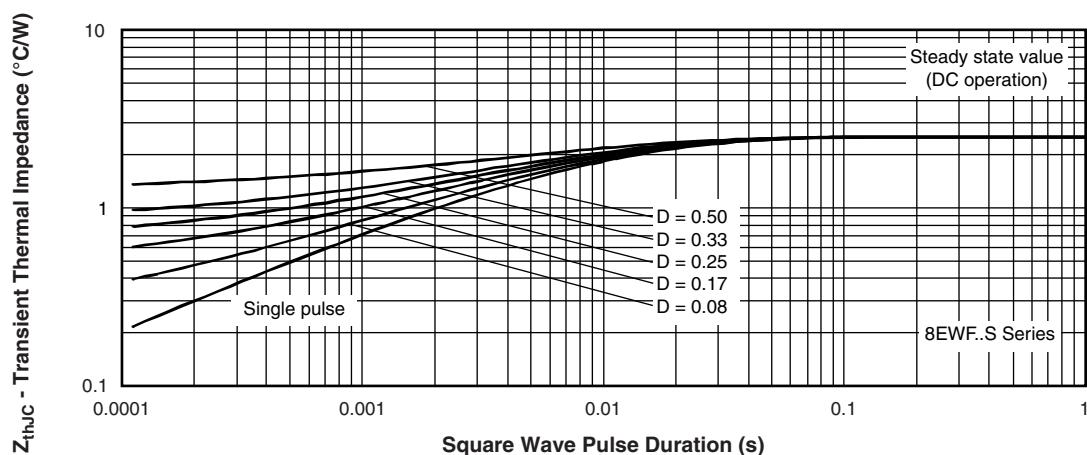


Fig. 14 - Thermal Impedance  $Z_{\text{thJC}}$  Characteristics

**ORDERING INFORMATION TABLE**

Device code	<b>VS-</b>	<b>8</b>	<b>E</b>	<b>W</b>	<b>F</b>	<b>12</b>	<b>S</b>	<b>TR</b>	<b>-M3</b>
	1	2	3	4	5	6	7	8	9

- [1]** - Vishay Semiconductors product
- [2]** - Current rating (8 = 8 A)
- [3]** - Circuit configuration:  
E = Single diode
- [4]** - Package:  
W = D-PAK
- [5]** - Type of silicon:  
F = Fast soft recovery rectifier
- [6]** - Voltage code x 100 =  $V_{RRM}$  →
  - 10 = 1000 V
  - 12 = 1200 V
- [7]** - S = Surface mountable
- [8]** - • TR = Tape and reel
  - TRR = Tape and reel (right oriented)
  - TRL = Tape and reel (left oriented)
- [9]** - Environmental digit:  
-M3 = Halogen-free, RoHS compliant and terminations lead (Pb)-free

ORDERING INFORMATION (Example)				
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION	
VS-8EWF10S-M3	75	3000	Antistatic plastic tubes	
VS-8EWF10STR-M3	2000	2000	13" diameter reel	
VS-8EWF10STRL-M3	3000	3000	13" diameter reel	
VS-8EWF10STRR-M3	3000	3000	13" diameter reel	
VS-8EWF12S-M3	75	3000	Antistatic plastic tubes	
VS-8EWF12STR-M3	2000	2000	13" diameter reel	
VS-8EWF12STRL-M3	3000	3000	13" diameter reel	
VS-8EWF12STRR-M3	3000	3000	13" diameter reel	

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95016">www.vishay.com/doc?95016</a>
Part marking information	<a href="http://www.vishay.com/doc?95176">www.vishay.com/doc?95176</a>
Packaging information	<a href="http://www.vishay.com/doc?95033">www.vishay.com/doc?95033</a>

## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**