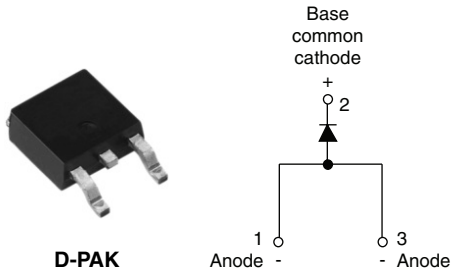


## Surface Mountable Fast Soft Recovery Diode, 8 A



### FEATURES/DESCRIPTION

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



**RoHS\***  
COMPLIANT

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

This series is designed and qualified for industrial level and lead (Pb)-free.

### APPLICATIONS

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

PRODUCT SUMMARY	
$V_F$ at 8 A	< 1.3 V
$t_{rr}$	80 ns
$V_{RRM}$	1000/1200 V

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	8	A
$V_{RRM}$		1000/1200	V
$I_{FSM}$		170	A
$V_F$	8 A, $T_J = 25^\circ\text{C}$	1.3	V
$t_{rr}$	1 A, 100 A/ $\mu\text{s}$	80	ns
$T_J$	Range	- 40 to 150	$^\circ\text{C}$

VOLTAGE RATINGS			
PART NUMBER	$V_{RRM}$ , MAXIMUM PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ AT $150^\circ\text{C}$ mA
8EWF10SPbF	1000	1100	4
8EWF12SPbF	1200	1300	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 94^\circ\text{C}$ , 180° conduction half sine wave	8	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	170	
		10 ms sine pulse, no voltage reapplied	200	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	144	$\text{A}^2\text{s}$
		10 ms sine pulse, no voltage reapplied	200	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	2000	$\text{A}^2\sqrt{\text{s}}$

\* Pb containing terminations are not RoHS compliant, exemptions may apply

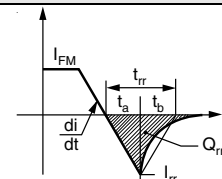
# 8EWF..SPbF Soft Recovery Series



Vishay High Power Products Surface Mountable  
Fast Soft Recovery Diode, 8 A

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

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	$t_{rr}$	$I_F$ at 8 Apk 25 A/ $\mu\text{s}$ $T_J = 25\text{ }^\circ\text{C}$	270	ns
Reverse recovery current	$I_{rr}$		4.2	A
Reverse recovery charge	$Q_{rr}$		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	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient (PCB mount)	$R_{thJA}^{(1)}$		50	
Soldering temperature	$T_S$	For 10 seconds	240	$^\circ\text{C}$
Approximate weight			1	g
			0.03	oz.
Marking device		Case style D-PAK (TO-252AA)	8EWF12S	

## Note

<sup>(1)</sup> 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  $^\circ\text{C/W}$   
For recommended footprint and soldering techniques refer to application note #AN-994



# 8EWF..SPbF Soft Recovery Series

Surface Mountable Vishay High Power Products  
Fast Soft Recovery Diode, 8 A

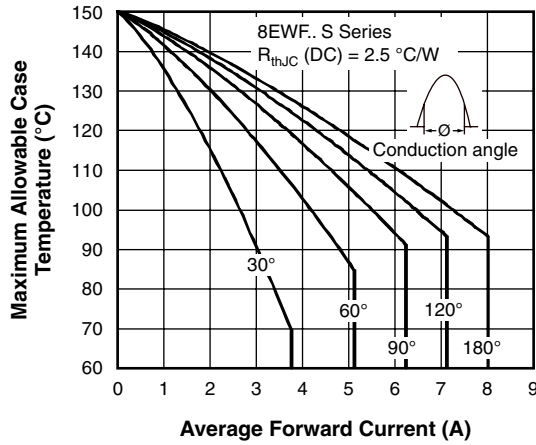


Fig. 1 - Current Rating Characteristics

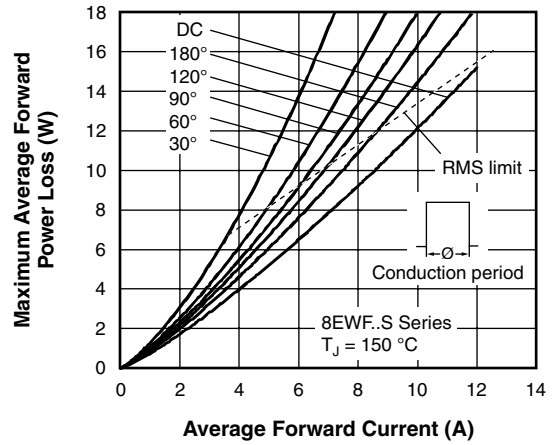


Fig. 4 - Forward Power Loss Characteristics

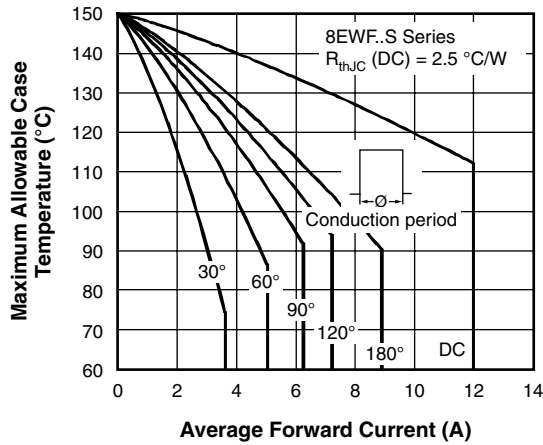


Fig. 2 - Current Rating Characteristics

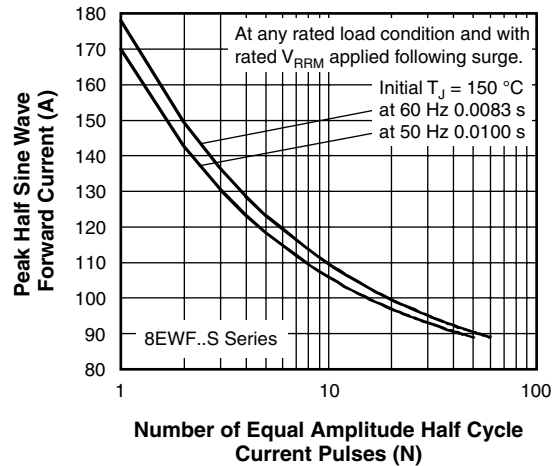


Fig. 5 - Maximum Non-Repetitive Surge Current

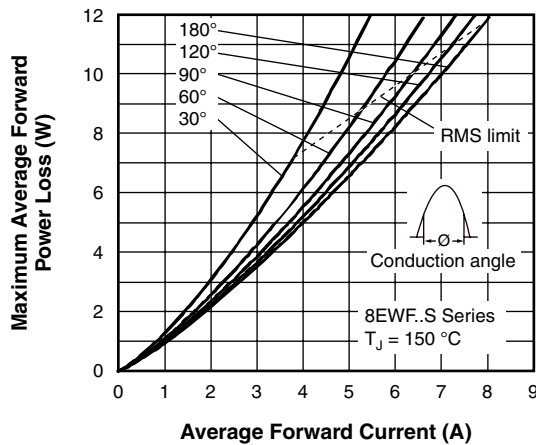


Fig. 3 - Forward Power Loss Characteristics

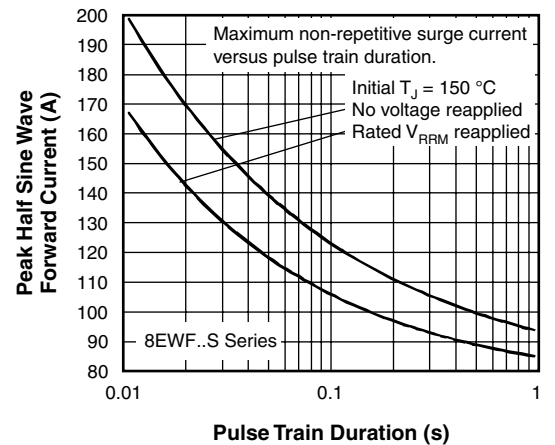


Fig. 6 - Maximum Non-Repetitive Surge Current

# 8EWF..SPbF Soft Recovery Series



Vishay High Power Products

Surface Mountable  
Fast Soft Recovery Diode, 8 A

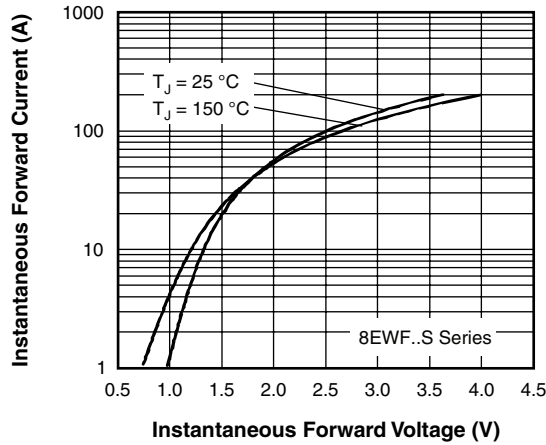


Fig. 7 - Forward Voltage Drop Characteristics

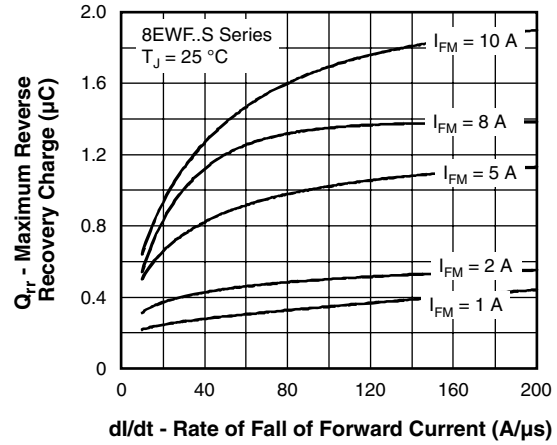


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

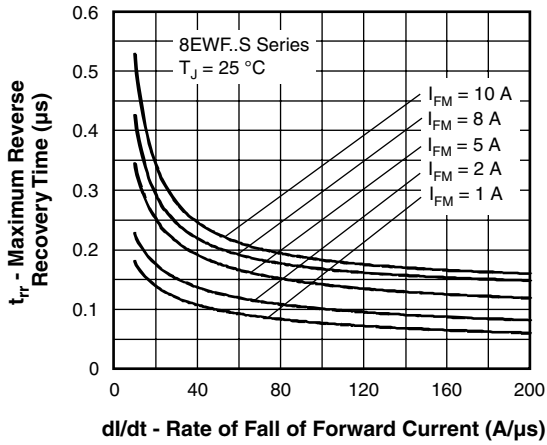


Fig. 8 - Recovery Time Characteristics,  $T_J = 25\text{ }^\circ\text{C}$

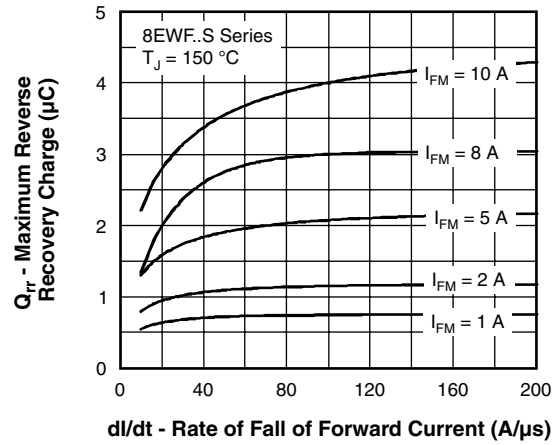


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

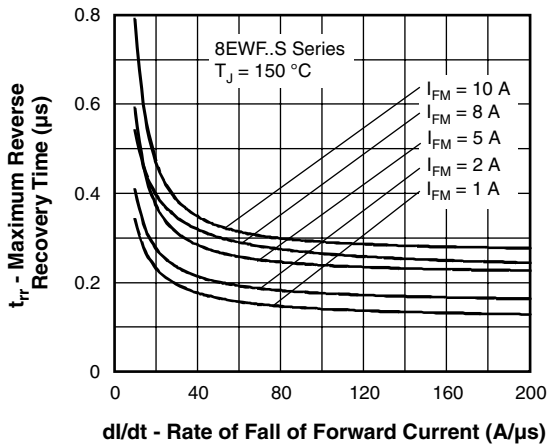


Fig. 9 - Recovery Time Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

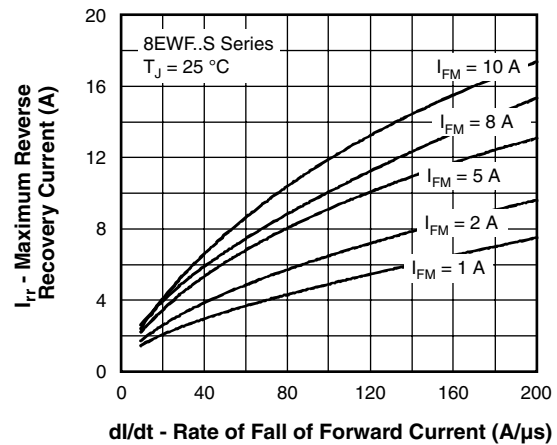


Fig. 12 - Recovery Current Characteristics,  $T_J = 25\text{ }^\circ\text{C}$



# 8EWF..SPbF Soft Recovery Series

Surface Mountable Vishay High Power Products  
Fast Soft Recovery Diode, 8 A

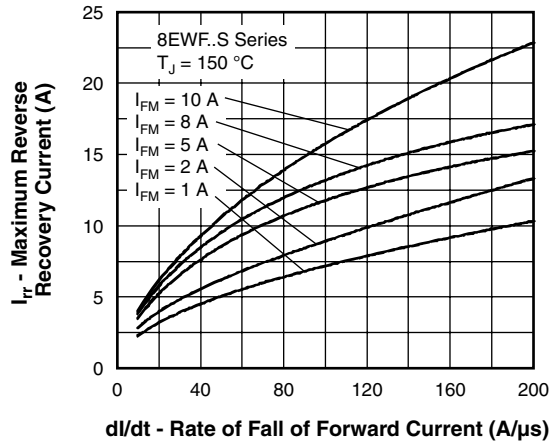


Fig. 13 - Recovery Current Characteristics,  $T_J = 150\text{ }^\circ\text{C}$

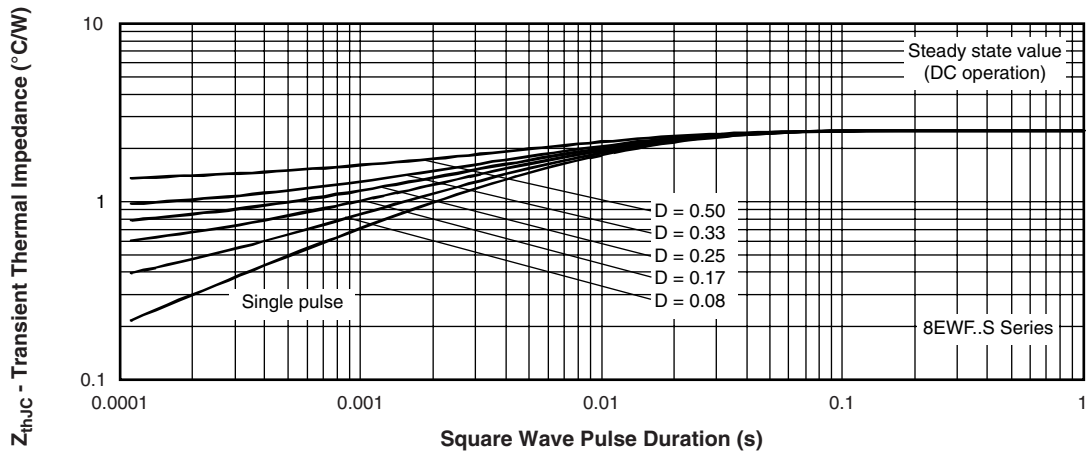


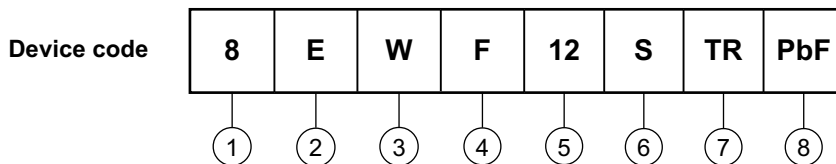
Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

# 8EWF..SPbF Soft Recovery Series



Vishay High Power Products      Surface Mountable  
Fast Soft Recovery Diode, 8 A

## ORDERING INFORMATION TABLE



- 1** - Current rating (8 = 8 A)
- 2** - Circuit configuration:  
E = Single diode
- 3** - Package:  
W = D-PAK
- 4** - Type of silicon:  
F = Fast soft recovery rectifier
- 5** - Voltage code x 100 =  $V_{RRM}$  ——— 10 = 1000 V  
12 = 1200 V
- 6** - S = Surface mountable
- 7** -
  - TR = Tape and reel
  - TRR = Tape and reel (right oriented)
  - TRL = Tape and reel (left oriented)
- 8** -
  - None = Standard production
  - PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95016">http://www.vishay.com/doc?95016</a>
Part marking information	<a href="http://www.vishay.com/doc?95059">http://www.vishay.com/doc?95059</a>
Packaging information	<a href="http://www.vishay.com/doc?95033">http://www.vishay.com/doc?95033</a>

## D-PAK (TO-252AA)



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	0.086	0.094	
A1	-	0.13	-	0.005	
b	0.64	0.89	0.025	0.035	
b2	0.76	1.14	0.030	0.045	
b3	4.95	5.46	0.195	0.215	3
c	0.46	0.61	0.018	0.024	
c2	0.46	0.89	0.018	0.035	
D	5.97	6.22	0.235	0.245	5
D1	5.21	-	0.205	-	3
E	6.35	6.73	0.250	0.265	5
E1	4.32	-	0.170	-	3

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
e	2.29 BSC		0.090 BSC		
H	9.40	10.41	0.370	0.410	
L	1.40	1.78	0.055	0.070	
L1	2.74 BSC		0.108 REF.		
L2	0.51 BSC		0.020 BSC		
L3	0.89	1.27	0.035	0.050	3
L4	-	1.02	-	0.040	
L5	1.14	1.52	0.045	0.060	2
Ø	0°	10°	0°	10°	
Ø1	0°	15°	0°	15°	
Ø2	25°	35°	25°	35°	

### Notes

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Lead dimension uncontrolled in L5
- (3) Dimension D1, E1, L3 and b3 establish a minimum mounting surface for thermal pad
- (4) Section C - C dimension apply to the flat section of the lead between 0.13 and 0.25 mm (0.005 and 0.10") from the lead tip
- (5) Dimension D, and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (6) Dimension b1 and c1 applied to base metal only
- (7) Datum A and B to be determined at datum plane H
- (8) Outline conforms to JEDEC outline TO-252AA



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