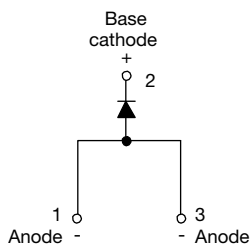


Surface Mount Fast Soft Recovery Rectifier Diode, 8 A



FEATURES

- Meets MSL level 1, per J-STD-020, LF maximum of 260 °C


RoHS

- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION

The VS-8EWF..SPbF 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.

This series is designed and qualified for industrial level.

APPLICATIONS

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

PRODUCT SUMMARY

Package	D-PAK (TO-252AA)
$I_{F(AV)}$	8 A
V_R	200 V, 400 V, 600 V
V_F at I_F	1.2 V
I_{FSM}	150 A
t_{rr}	55 ns
T_J max.	150 °C
Diode variation	Single die
Snap factor	0.5

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	8	A
V_{RRM}		200 to 600	V
I_{FSM}		150	A
V_F	8 A, $T_J = 25$ °C	1.2	V
t_{rr}	1 A, 100 A/ μ s	55	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
8EWF02SPbF	200	300	3
8EWF04SPbF	400	500	
8EWF06SPbF	600	700	

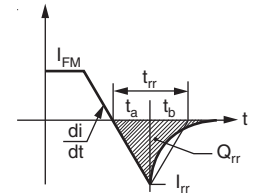
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 96$ °C, 180° conduction half sine wave	8	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	125	
		10 ms sine pulse, no voltage reapplied	150	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	78	A ² s
		10 ms sine pulse, no voltage reapplied	110	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	1100	A ² $\sqrt{s}$



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V _{FM}	8 A, T _J = 25 °C		1.2	V
Forward slope resistance	r _t	T _J = 150 °C		16	mΩ
Threshold voltage	V _{F(TO)}			1.13	V
Maximum reverse leakage current	I _{RM}	T _J = 25 °C	V _R = Rated V _{RRM}	0.1	mA
		T _J = 150 °C		3	

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	t_{rr}	I_F at 8 A _{pk} 25 A/ μ s $T_J = 25\text{ }^{\circ}\text{C}$	200	ns
Reverse recovery current	I_{rr}		2.6	A
Reverse recovery charge	Q_{rr}		0.25	μ C
Snap factor	S		0.5	



THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-40 to 150	$^{\circ}\text{C}$
Soldering temperature	T_S	For 10 seconds	260	
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	
Approximate weight			1	g
			0.03	oz.
Marking device		Case style TO-252AA (D-PAK)	8EWF06S	

Note

⁽¹⁾ When mounted on 1" square (650 mm²) PCB of FR-4 or G-10 material 4 oz. (140 μ m) copper 40 $^{\circ}\text{C/W}$
For recommended footprint and soldering techniques refer to application note #AN-994

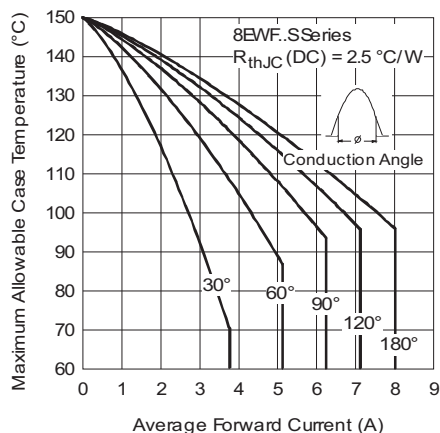


Fig. 1 - Current Rating Characteristics

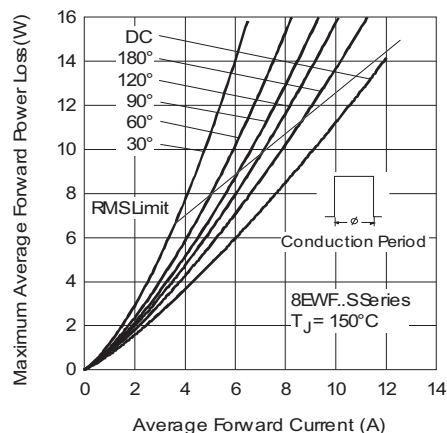


Fig. 4 - Forward Power Loss Characteristics

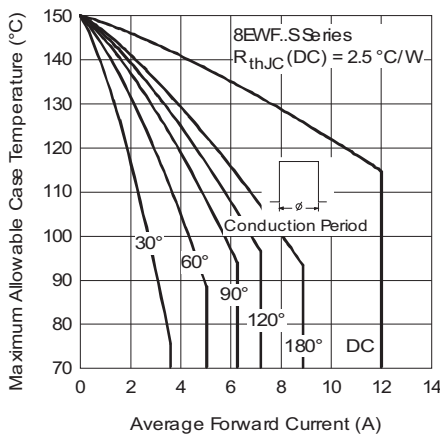


Fig. 2 - Current Rating Characteristics

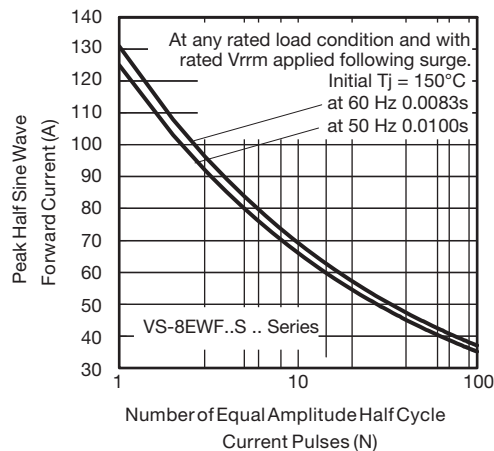


Fig. 5 - Maximum Non-Repetitive Surge Current

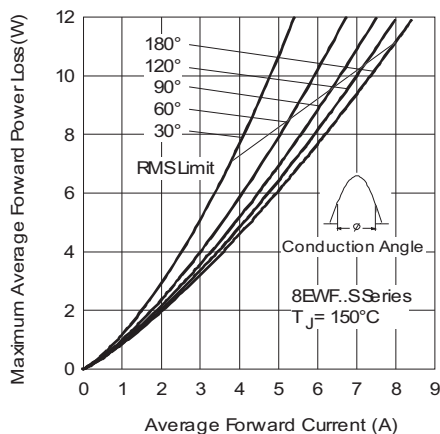


Fig. 3 - Forward Power Loss Characteristics

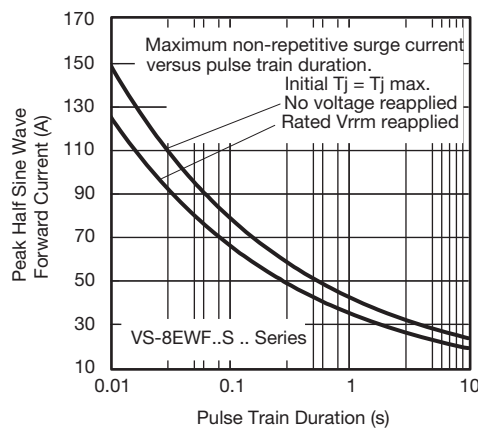


Fig. 6 - Maximum Non-Repetitive Surge Current

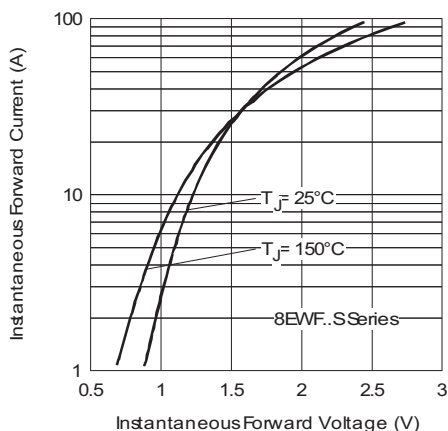


Fig. 7 - Forward Voltage Drop Characteristics

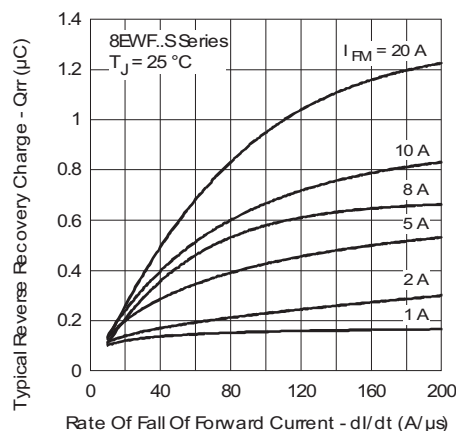


Fig. 10 - Recovery Charge Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

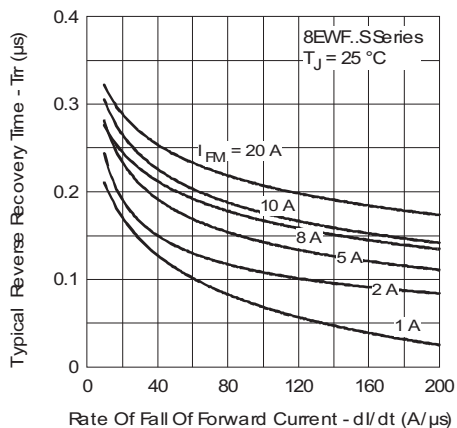


Fig. 8 - Recovery Time Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

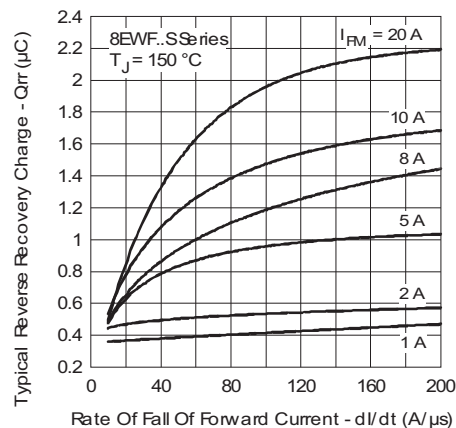


Fig. 11 - Recovery Charge Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$

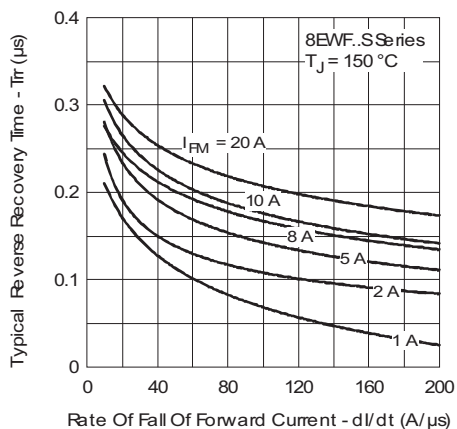


Fig. 9 - Recovery Time Characteristics, $T_J = 150\text{ }^{\circ}\text{C}$

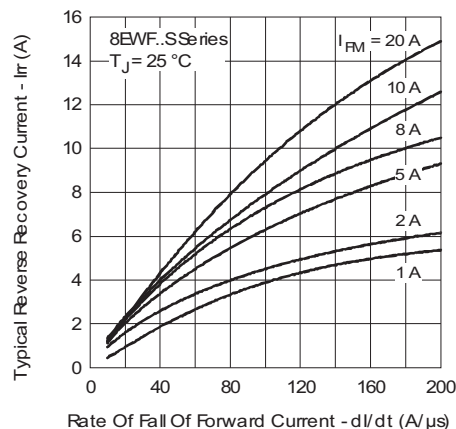


Fig. 12 - Recovery Current Characteristics, $T_J = 25\text{ }^{\circ}\text{C}$

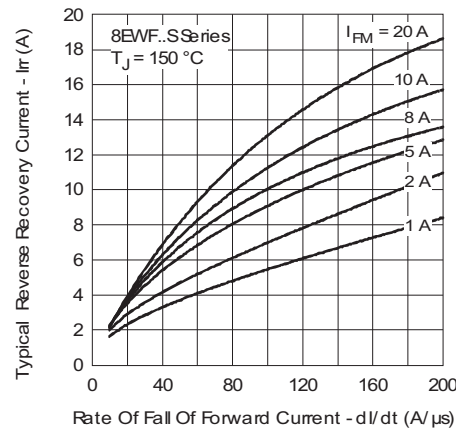


Fig. 13 - Recovery Current Characteristics, $T_J = 150^\circ\text{C}$

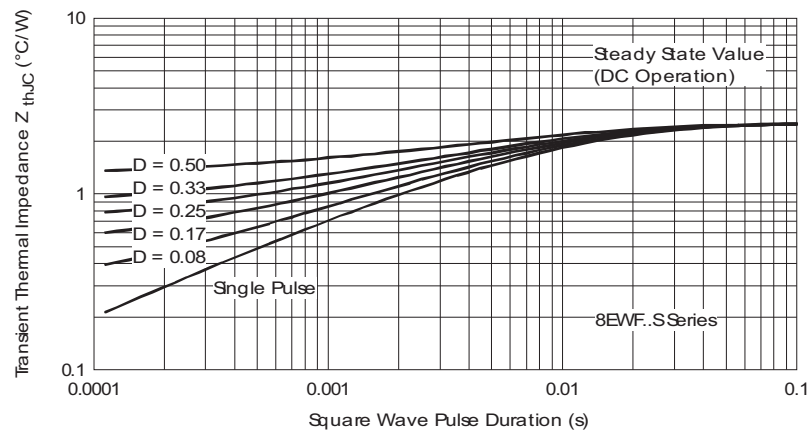


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	8	E	W	F	06	S	TR	PbF
	1	2	3	4	5	6	7	8	9

- 1 - Vishay Semiconductors product
 - 2 - Current rating ($8 = 8\text{ A}$)
 - 3 - Circuit configuration:
E = Single diode
 - 4 - Package:
W = D-PAK
 - 5 - Type of silicon:
F = Fast soft recovery rectifier
 - 6 - Voltage code $\times 100 = V_{\text{RRM}}$
 - 7 - S = Surface mountable
 - 8 - • TR = Tape and reel
• TRR = Tape and reel (right oriented)
• TRL = Tape and reel (left oriented)
 - 9 - PbF = Lead (Pb)-free
- 02 = 200 V
04 = 400 V
06 = 600 V

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95016
Part marking information	www.vishay.com/doc?95059
Packaging information	www.vishay.com/doc?95033
SPICE model	www.vishay.com/doc?95551



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