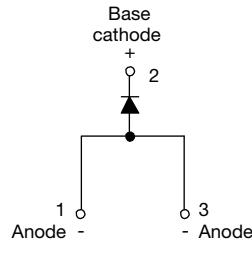


Surface Mount Fast Soft Recovery Rectifier Diode, 8 A



FEATURES

- Glass passivated pellet chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Meets JESD 201 class 2 whisker test
- Flexible solution for reliable AC power rectification
- High surge, low V_F rugged blocking diode for DC charging stations
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	8 A
V_R	1200 V
V_F at I_F	1.3 V
I_{FSM}	150 A
t_{rr}	80 ns
T_J max.	150 °C
Package	DPAK (TO-252AA)
Circuit configuration	Single
Snap factor	0.6

APPLICATIONS

- On-board and off-board EV / HEV battery chargers
- Renewable energy inverters

DESCRIPTION

The VS-8EWF12SLHM3 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}		1200	V
I_{FSM}		150	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-8EWF12SLHM3	1200	1300	4

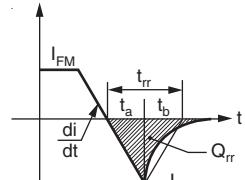
ABSOLUTE MAXIMUM RATINGS

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}	10 ms sine pulse, rated V_{RRM} applied	125	A
		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^2s
		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, $T_J = 25^\circ\text{C}$		1.3	V
Forward slope resistance	r_f	$T_J = 150^\circ\text{C}$		25.6	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.93	V
Maximum reverse leakage current	I_{RM}	$T_J = 25^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150^\circ\text{C}$		4	

RECOVERY CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Reverse recovery time	t_{rr}	I_F at 8 A _{pk} 25 A/ μ s $T_J = 25^\circ\text{C}$	270	ns	
Reverse recovery current	I_{rr}		4.2	A	
Reverse recovery charge	Q_{rr}		1	μC	
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	
Approximate weight			1	g
Marking device			0.03	oz.
		Case style DPAK (TO-252AA)	8EWF12SH	

Note

⁽¹⁾ When mounted on 1" square (650 mm²) PCB of FR-4 or G-10 material 4 oz. (140 μm) copper 40 $^\circ\text{C/W}$

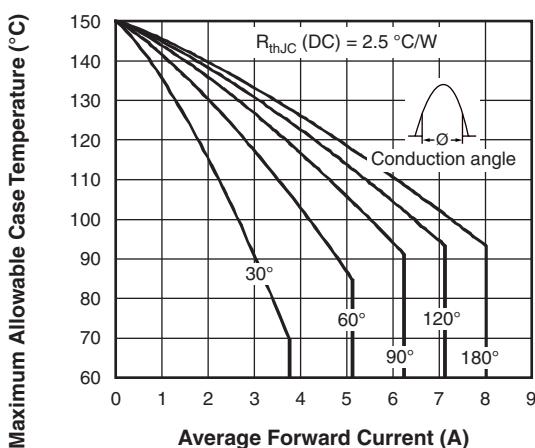


Fig. 1 - Current Rating Characteristics

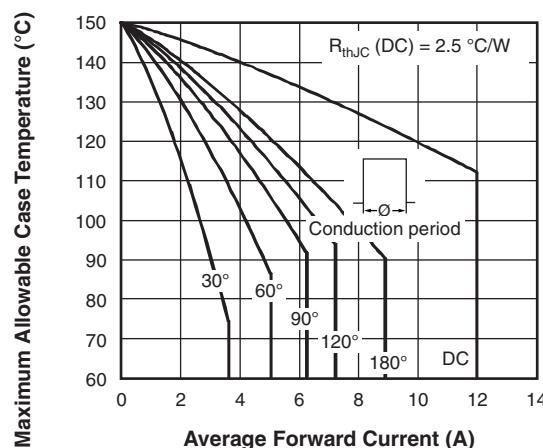


Fig. 2 - Current Rating Characteristics

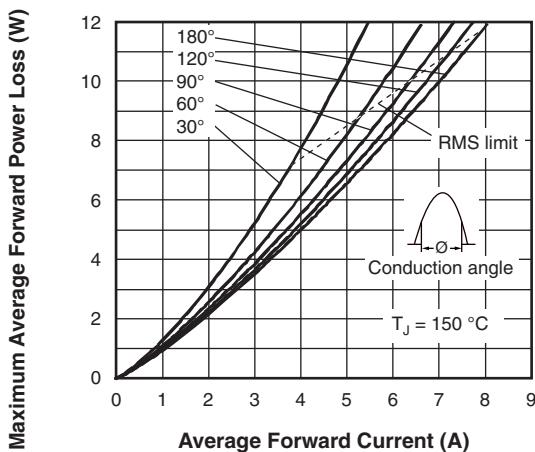


Fig. 3 - Forward Power Loss Characteristics

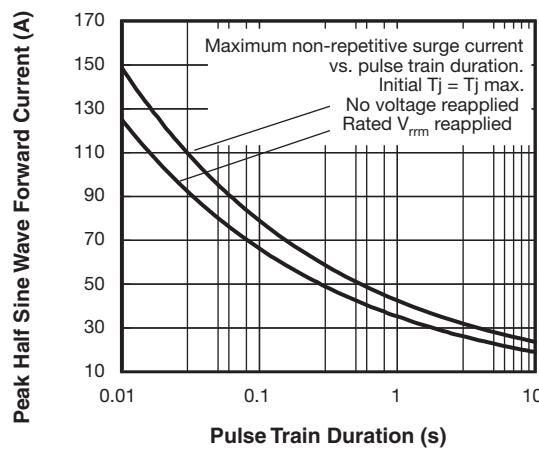


Fig. 6 - Maximum Non-Repetitive Surge Current

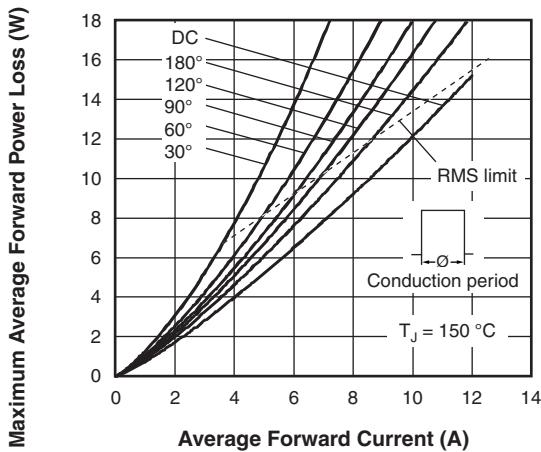


Fig. 4 - Forward Power Loss Characteristics

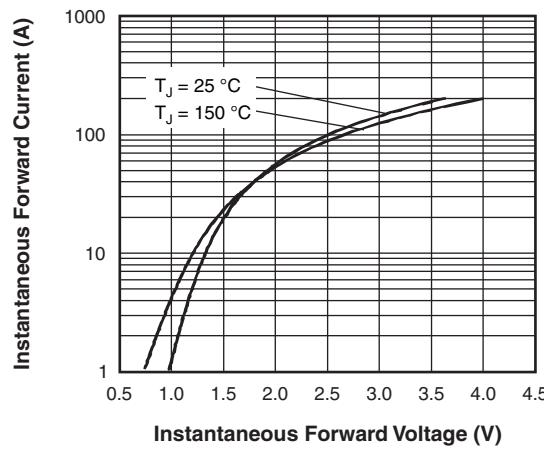


Fig. 7 - Forward Voltage Drop Characteristics

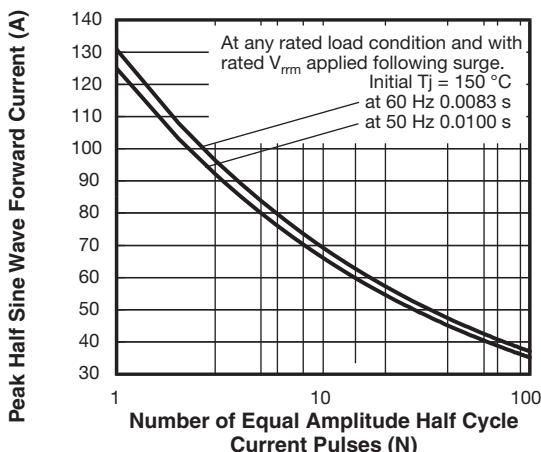


Fig. 5 - Maximum Non-Repetitive Surge Current

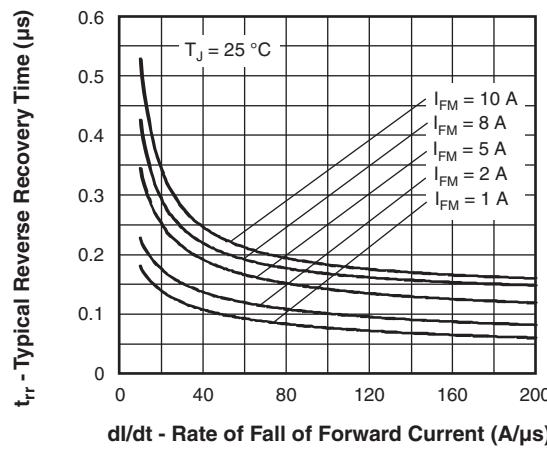


Fig. 8 - Recovery Time Characteristics, $T_J = 25 \text{ }^{\circ}\text{C}$

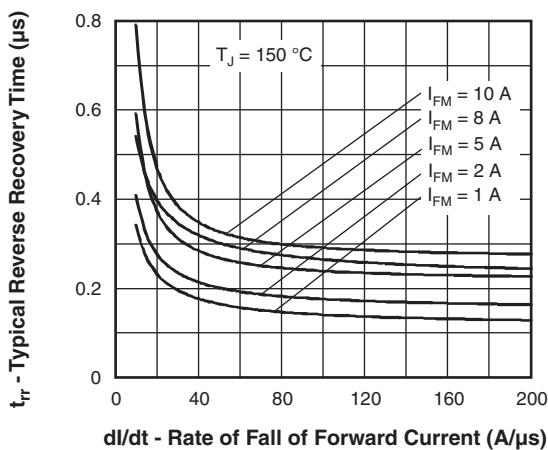


Fig. 9 - Recovery Time Characteristics, $T_J = 150 \text{ }^{\circ}\text{C}$

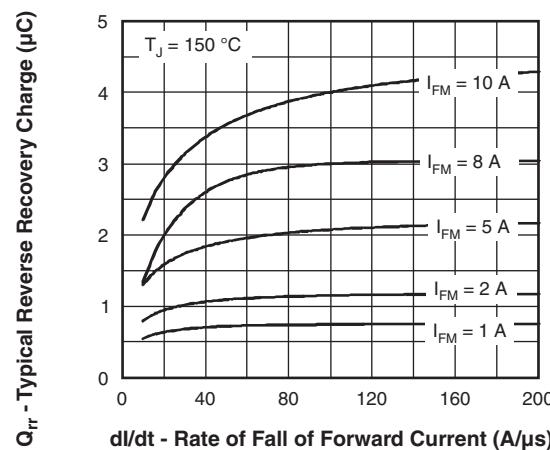


Fig. 11 - Recovery Charge Characteristics, $T_J = 150 \text{ }^{\circ}\text{C}$

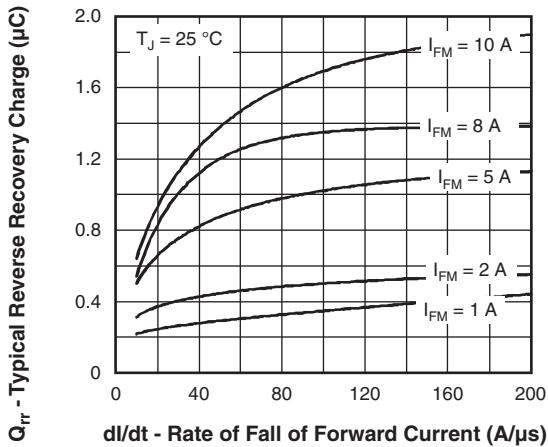


Fig. 10 - Recovery Charge Characteristics, $T_J = 25 \text{ }^{\circ}\text{C}$

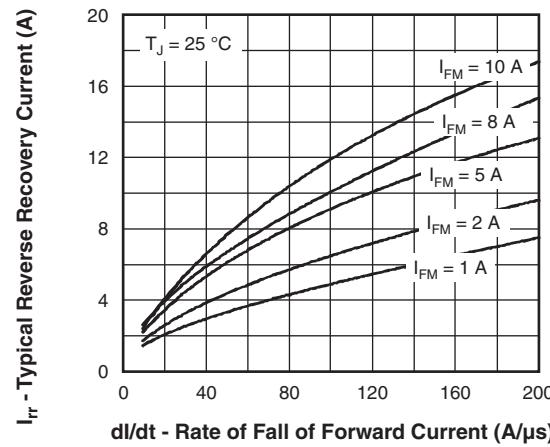


Fig. 12 - Recovery Current Characteristics, $T_J = 25 \text{ }^{\circ}\text{C}$

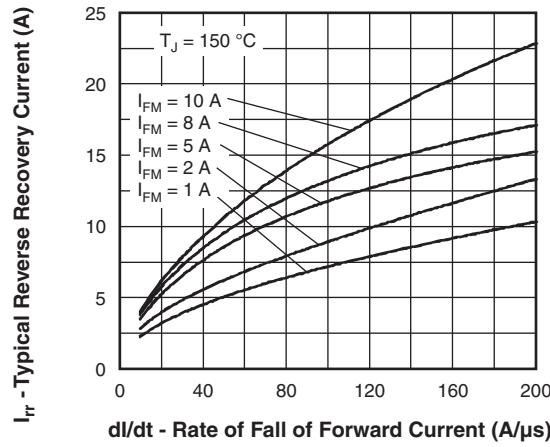
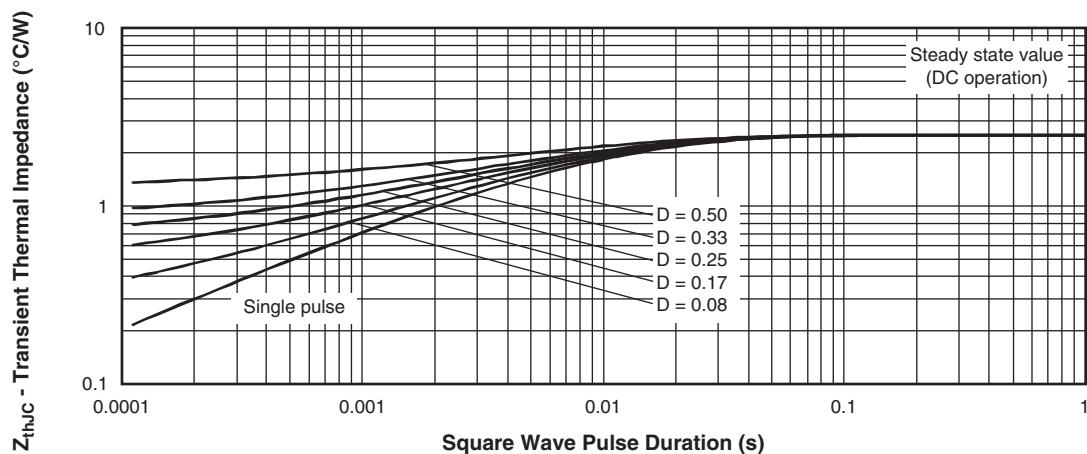


Fig. 13 - Recovery Current Characteristics, $T_J = 150 \text{ }^{\circ}\text{C}$


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

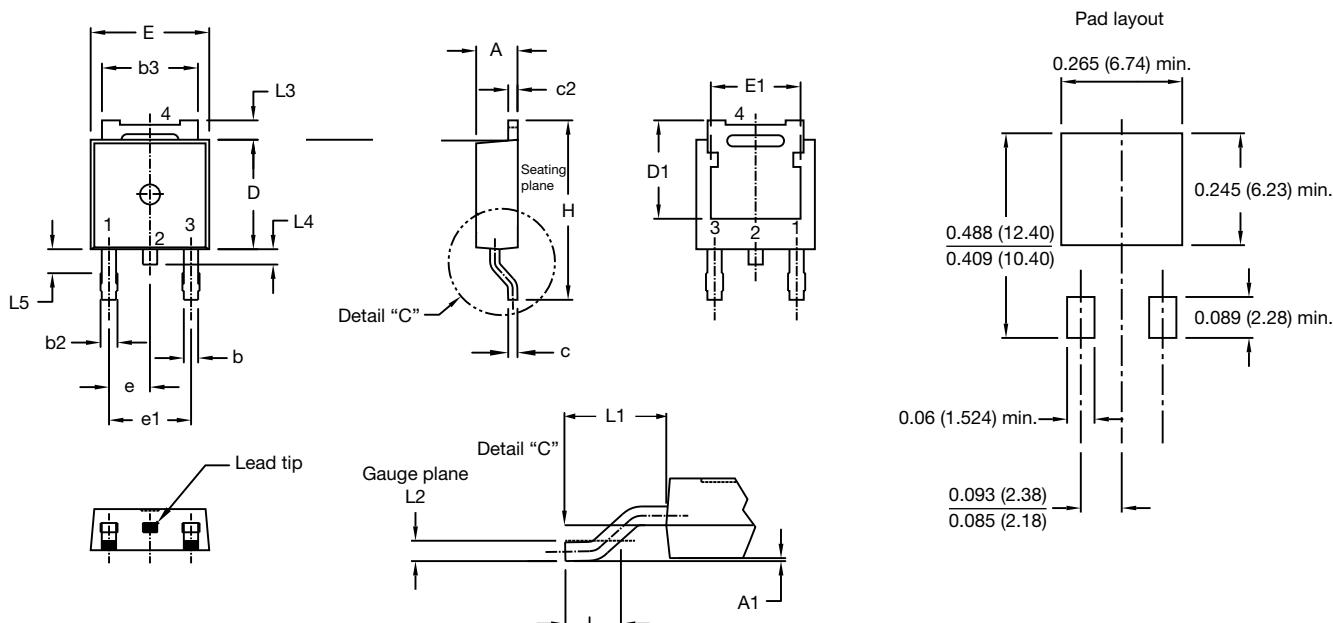
Device code	VS-	8	E	W	F	12	S	L	H	M3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

- 1** - Vishay Semiconductors product
- 2** - Current rating (8 = 8 A)
- 3** - Circuit configuration:
E = single
- 4** - Package:
W = DPAK (TO-252AA)
- 5** - Type of silicon:
F = fast soft recovery rectifier
- 6** - Voltage code x 100 = V_{RRM} — 12 = 1200 V
- 7** - S = surface mountable
- 8** - L = tape and reel (left oriented), for different orientation contact factory
- 9** - H = AEC-Q101 qualified
- 10** - 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-8EWF12SLHM3	3000	3000	13" diameter reel

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95519
Part marking information	www.vishay.com/doc?95518
Packaging information	www.vishay.com/doc?96495

DPAK (TO-252AA)

DIMENSIONS in millimeters and inches


SYMBOL	MILLIMETERS		INCHES		NOTES		SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.				MIN.	MAX.	MIN.	MAX.	
A	2.18	2.39	0.086	0.094			e	2.29 BSC		0.090 BSC		
A1	-	0.13	-	0.005			H	9.40	10.41	0.370	0.410	
b	0.64	0.89	0.025	0.035			L	1.40	1.78	0.055	0.070	
b2	0.76	1.14	0.030	0.045			L1	2.74 BSC		0.108 REF.		
b3	4.95	5.46	0.195	0.215	3		L2	0.51 BSC		0.020 BSC		
c	0.46	0.61	0.018	0.024			L3	0.89	1.27	0.035	0.050	3
c2	0.46	0.89	0.018	0.035			L4	-	1.02	-	0.040	
D	5.97	6.22	0.235	0.245	5		L5	1.14	1.52	0.045	0.060	2
D1	5.21	-	0.205	-	3							
E	6.35	6.73	0.250	0.265	5							
E1	4.32	-	0.170	-	3							

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) Dimensions 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
- (5) Outline conforms to JEDEC® outline TO-252AA

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