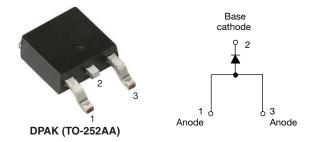
Vishay Semiconductors

High Voltage Surface Mountable Input Rectifier Diode, 8 A



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PRIMARY CHARACTERISTICS							
I _{F(AV)} 8 A							
V _R	800 V, 1200 V						
V _F at I _F	1.1 V						
I _{FSM}	150 A						
T _J max.	150 °C						
Package	DPAK (TO-252AA)						
Circuit configuration	Single						

FEATURES

- · Glass passivated pellet chip junction
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- Input rectification
- Vishay Semiconductors switches and output rectifiers which are available in identical package outlines

DESCRIPTION

The VS-8EWS..S-M3 rectifier high voltage 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.

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. (140 $\mu m)$ copper	1.2	1.6	•						
Aluminum IMS, R _{thCA} = 15 °C/W	2.5	2.8	A						
Aluminum IMS with heatsink, $R_{thCA} = 5 \text{ °C/W}$	5.5	6.5							

Note

T_A = 55 °C, T_J = 125 °C, footprint 300 mm²

MAJOR RATINGS AND CHARACTERISTICS									
SYMBOL	CHARACTERISTICS	VALUES	UNITS						
I _{F(AV)}	Sinusoidal waveform	8	A						
V _{RRM}		800/1200	V						
I _{FSM}		150	A						
V _F	8 A, T _J = 25 °C	1.10	V						
TJ		-55 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-8EWS08S-M3	800	900	0.5						
VS-8EWS12S-M3	1200	1300	0.5						

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ABSOLUTE MAXIMUM RATINGS								
PARAMETER	PARAMETER SYMBOL TEST CONDITIONS							
Maximum average forward current	I _{F(AV)}	T_{C} = 105 °C, 180° conduction half sine wave	8					
Maximum peak one cycle	1	10 ms sine pulse, rated V _{RRM} applied	125	A				
non-repetitive surge current	I _{FSM}	10 ms sine pulse, no voltage reapplied	150					
Maximum I ² t for fusing	l ² t	10 ms sine pulse, rated V _{RRM} applied	78	A ² s				
Maximum - t for fusing	1-1	10 ms sine pulse, no voltage reapplied	110 A					
Maximum I ² √t for fusing	l²√t	t = 0.1 ms to 10 ms, no voltage reapplied	1100	A²√s				

ELECTRICAL SPECIFICATIONS							
PARAMETER	SYMBOL	TEST CO	VALUES	UNITS			
Maximum forward voltage drop	V _{FM}	8 A, T _J = 25 °C		1.1	V		
Forward slope resistance	r _t	T.I = 150 °C	20	mΩ			
Threshold voltage	V _{F(TO)}	1j = 150°C	0.82	V			
Maximum rovered lookage ourrent		T _J = 25 °C	V - Dated V	0.05	mA		
Maximum reverse leakage current	IRM	T _J = 150 °C	$V_{R} = Rated V_{RRM}$	0.50	ША		

THERMAL - MECHANICAL SPECIFICATIONS								
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS				
Maximum junction and storage temperature range	T _J , T _{Stg}		-55 to +150	°C				
Maximum thermal resistance, junction to case	R _{thJC}	DC operation	2.5	°C/W				
Typical thermal resistance, junction to ambient (PCB mount)	R _{thJA} ⁽¹⁾		62	0/11				
Approximate weight			1	g				
Approximate weight			0.03	oz.				
Marking device		Case style DPAK (TO-252AA)	8EWS08S					
		Case Sigle DFAR (10-232AA)	8EWS12S					

Note

(1) When mounted on 1" square (650 mm²) PCB of FR-4 or G-10 material 4 oz. (140 µm) copper 40 °C/W For recommended footprint and soldering techniques refer to application note #AN-994



VS-8EWS08S-M3, VS-8EWS12S-M3

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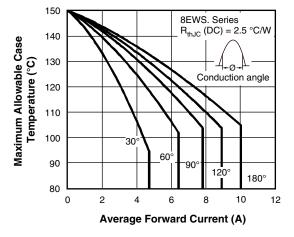


Fig. 1 - Current Rating Characteristics

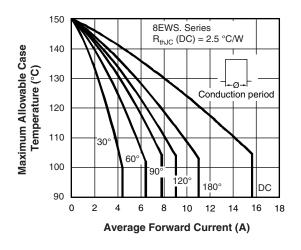


Fig. 2 - Current Rating Characteristics

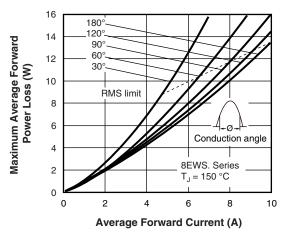


Fig. 3 - Forward Power Loss Characteristics

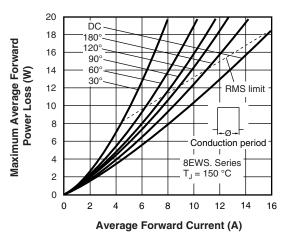


Fig. 4 - Forward Power Loss Characteristics

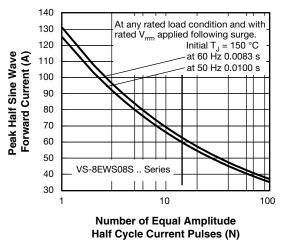


Fig. 5 - Maximum Non-Repetitive Surge Current

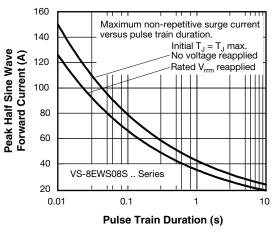


Fig. 6 - Maximum Non-Repetitive Surge Current

Revision: 25-May-2023

3

Document Number: 93383

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VS-8EWS08S-M3, VS-8EWS12S-M3

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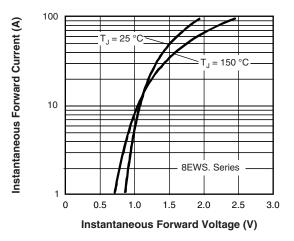


Fig. 7 - Forward Voltage Drop Characteristics

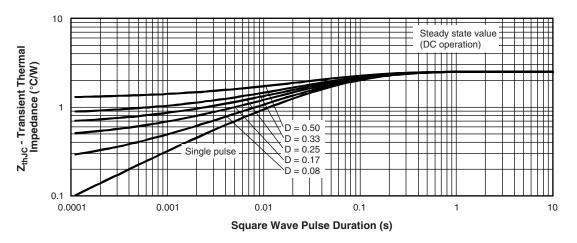
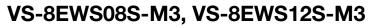


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



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ORDERING INFORMATION TABLE

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Device code	vs-	8	Е	w	S	12	S	TR	-M3	
	1	2	3	4	5	6	(7)	8	9	
	1 ·	- Visł	nay Sen	niconduc	ctors pro	oduct				
	2 - Current rating (8 = 8 A)									
	3 -	- Circuit configuration:								
		E =	E = single diode							
	4 -	- Pac	Package:							
		W =	D-PAK	,						
	5.	. Тур	e of silio	con:						
				d recov	ery recti	ifier _				
	6			le x 100	-		08 = 80			
	7			mounta			12 = 12	00 V		
	8 .			e and ree						
	<u> </u>		-				1			
			-	be and r			-			
	_	• TI	RL = tap	be and re	eel (left	oriente	d)			
	9 -	- Env	ironmer	ntal 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-8EWS08S-M3	75	3000	Antistatic plastic tubes						
VS-8EWS08STR-M3	2000	2000	13" diameter reel						
VS-8EWS08STRL-M3	3000	3000	13" diameter reel						
VS-8EWS08STRR-M3	3000	3000	13" diameter reel						
VS-8EWS12S-M3	75	3000	Antistatic plastic tubes						
VS-8EWS12STR-M3	2000	2000	13" diameter reel						
VS-8EWS12STRL-M3	3000	3000	13" diameter reel						
VS-8EWS12STRR-M3	3000	3000	13" diameter reel						

LINKS TO RELATED DOCUMENTS							
Dimensions	www.vishay.com/doc?95627						
Part marking information	www.vishay.com/doc?95176						
Packaging information	www.vishay.com/doc?95033						
SPICE model	www.vishay.com/doc?96668						

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D-PAK (TO-252AA) "M"

DIMENSIONS in millimeters and inches



SYMBOL	MILLIN	MILLIMETERS		INCHES		NOTES		MILLIN	IETERS	INC	HES	NOTES
STNIDUL	MIN.	MAX.	MIN.	MAX.	NOTES		SYMBOL	MIN.	MAX.	MIN.	MAX.	NOTES
А	2.18	2.39	0.086	0.094			е	2.29	BSC	0.090	BSC	
A1	-	0.13	-	0.005			Н	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	
С	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		Ø	0°	10°	0°	10°	
E	6.35	6.73	0.250	0.265	5		Ø1	0°	15°	0°	15°	
E1	4.32	-	0.170	-	3		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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