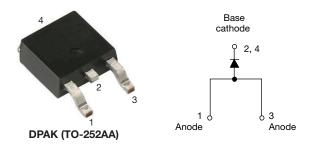
Vishay Semiconductors

# High Voltage Surface Mount Input Rectifier Diode, 8 A



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PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	8 A			
V <sub>R</sub>	1600 V			
V <sub>F</sub> at I <sub>F</sub>	1.1 V			
I <sub>FSM</sub>	150 A			
T <sub>J</sub> 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
- AEC-Q101 qualified
- Meets JESD 201 class 2 whisker test
- Flexible solution for reliable AC power rectification
- $\bullet\,$  High surge, low  $V_F$  rugged blocking diode for DC charging stations
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

## **APPLICATIONS**

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

## DESCRIPTION

The VS-8EWS16SLHM3 rectifier high voltage series has been optimized for very low forward voltage drop, with moderate leakage.

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 <sub>thCA</sub> = 15 °C/W	2.5	2.8	A				
Aluminum IMS with heatsink, $R_{thCA} = 5 \text{ °C/W}$	5.5	6.5					

### Note

T<sub>A</sub> = 55 °C, T<sub>J</sub> = 125 °C, footprint 300 mm<sup>2</sup>

MAJOR RATINGS AND CHARACTERISTICS							
SYMBOL	CHARACTERISTICS	CHARACTERISTICS VALUES UN					
I <sub>F(AV)</sub>	Sinusoidal waveform	8	A				
V <sub>RRM</sub>		1600	V				
I <sub>FSM</sub>		150	А				
V <sub>F</sub>	8 A, T <sub>J</sub> = 25 °C	1.10	V				
TJ		-40 to +150	°C				

VOLTAGE RATINGS			
PART NUMBER	V <sub>RRM</sub> , MAXIMUM PEAK REVERSE VOLTAGE V	V <sub>RSM</sub> , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I <sub>RRM</sub> AT 150 °C mA
VS-8EWS16SLHM3	1600	1700	0.5

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 1
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COMPLIANT HALOGEN

# VS-8EWS16SLHM3



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ABSOLUTE MAXIMUM RATINGS						
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS		
Maximum average forward current	I <sub>F(AV)</sub>	$T_C = 105$ °C, 180° conduction half sine wave	8			
Maximum peak one cycle		10 ms sine pulse, rated V <sub>RRM</sub> applied	125	А		
non-repetitive surge current	IFSM	10 ms sine pulse, no voltage reapplied	150			
Maximum I <sup>2</sup> t for fusing	l <sup>2</sup> t	10 ms sine pulse, rated V <sub>RRM</sub> applied	78	A <sup>2</sup> s		
Maximum 1-t for fusing	1-1	10 ms sine pulse, no voltage reapplied 110		A-S		
Maximum I <sup>2</sup> √t for fusing	l²√t	t = 0.1 ms to 10 ms, no voltage reapplied	1100	A²√s		

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V <sub>FM</sub>	8 A, T <sub>J</sub> = 25 °C		1.1	V
Forward slope resistance	r <sub>t</sub>	- T <sub>J</sub> = 150 °C		20	mΩ
Threshold voltage	V <sub>F(TO)</sub>			0.82	V
Maximum rayaraa laakaga ayrrant		T <sub>J</sub> = 25 °C	V - Reted V	0.05	mA
Maximum reverse leakage current	IRM	T <sub>J</sub> = 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 <sub>J</sub> , T <sub>Stg</sub>		-40 to +150	°C	
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	R <sub>thJC</sub> DC operation		°C/W	
Typical thermal resistance, junction to ambient (PCB mount)	R <sub>thJA</sub> <sup>(1)</sup>		62	0/00	
Approximate weight			1	g	
Approximate weight			0.03	oz.	
Marking device		Case style DPAK (TO-252AA)	8EWS	16SH	

### Note

(1) When mounted on 1" square (650 mm<sup>2</sup>) PCB of FR-4 or G-10 material 4 oz. (140 µm) copper 40 °C/W

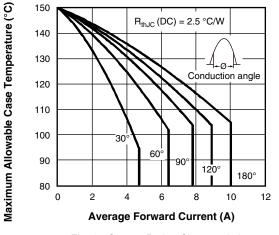


Fig. 1 - Current Rating Characteristics

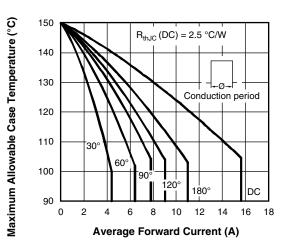


Fig. 2 - Current Rating Characteristics

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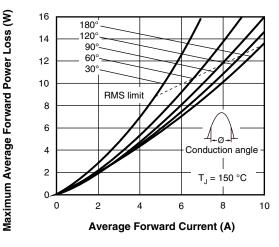


Fig. 3 - Forward Power Loss Characteristics

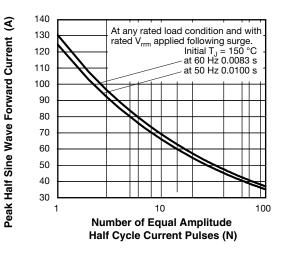


Fig. 5 - Maximum Non-Repetitive Surge Current

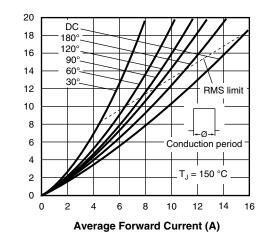


Fig. 4 - Forward Power Loss Characteristics

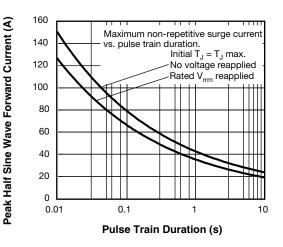
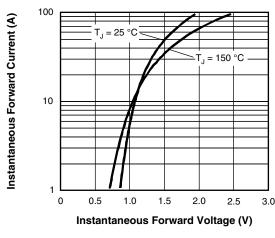


Fig. 6 - Maximum Non-Repetitive Surge Current





Maximum Average Forward Power Loss (W)

# VS-8EWS16SLHM3

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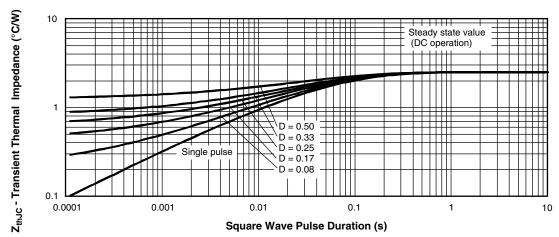


Fig. 8 - Thermal Impedance  $Z_{\text{thJC}}$  Characteristics

## **ORDERING INFORMATION TABLE**

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**ISHA** 

Device code	VS-	8	Е	w	s	16	S	L	н	М3
		2	3	4	5	6	7	8	9	
	1	- Vis	hay Sen	nicondu	ctors pro	oduct				
	2	- Cu	rrent rati	ng (8 =	8 A)					
	3	- Cir	cuit conf	iguratio	n:					
		E =	single							
	4	- Pa	ckage:							
		W	= DPAK	(TO-25	2AA)					
	5	- Тур	pe of sili	con:						
		S =	standa	rd recov	ery rect	ifier				
	6	- Vo	tage coo	de x 100	) = V <sub>RRN</sub>	<sub>۱</sub> (16 = 1	1600 V)			
	7	- S=	surface	e mounta	able					
	8	- L=	tape an	d reel (l	eft orier	nted), fo	r differe	nt orien	tation c	ontact fa
	9	- H=	AEC-Q	101 qua	alified					
	10	- Env	vironme	ntal digit						
		М3	= halog	en-free,	RoHS-0	complia	nt, and	termina	tions lea	ad (Pb)-f

ORDERING INFORMATION (Example)							
PREFERRED P/N	QUANTITY PER T/R MINIMUM ORDER QUANTITY PACKAGING DESCRIPTION						
VS-8EWS16SLHM3	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				
SPICE model	www.vishay.com/doc?96960				

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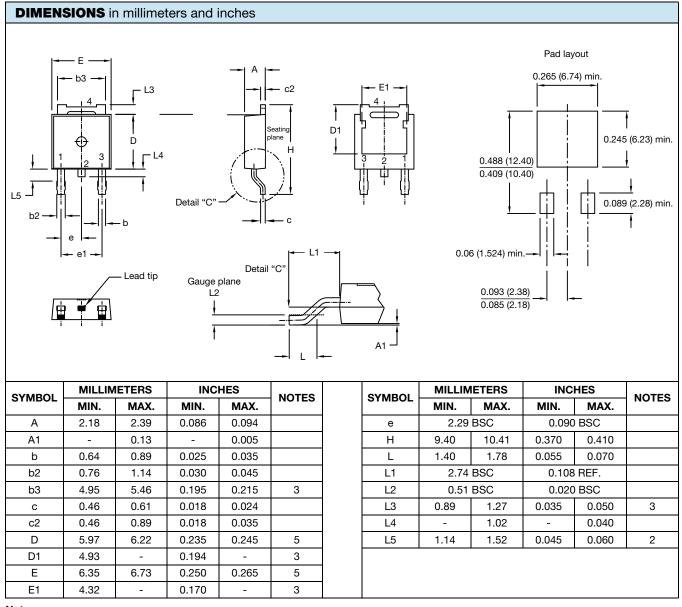
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## **Outline Dimensions**



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# DPAK (TO-252AA)



#### Notes

<sup>(1)</sup> Dimensioning and tolerancing as per ASME Y14.5M-1994

<sup>(2)</sup> Lead dimension uncontrolled in L5

<sup>(3)</sup> 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

<sup>(5)</sup> Outline conforms to JEDEC<sup>®</sup> outline TO-252AA, except for D1 dimension



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