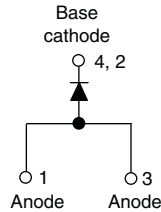


Surface Mountable Input Rectifier Diode, 8 A



D-PAK



FEATURES

- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

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

DESCRIPTION

The VS-8EWS16S-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.

PRODUCT SUMMARY	
Package	D-PAK (TO-252AA)
$I_{F(AV)}$	8 A
V_R	1600 V
V_F at I_F	1.1 V
I_{FSM}	120 A
T_J max.	150 °C
Diode variation	Single die

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 μ m) copper	1.2	1.6	A
Aluminum IMS, $R_{thCA} = 15$ °C/W	2.5	2.8	
Aluminum IMS with heatsink, $R_{thCA} = 5$ °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}		1600	V
I_{FSM}		120	A
V_F	8 A, $T_J = 25$ °C	1.10	V
T_J		- 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-8EWS16S-M3	1600	1700	0.5

VS-8EWS16S-M3 High Voltage Series



Vishay Semiconductors

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ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 96\text{ }^\circ\text{C}$, 180° conduction half sine wave	8	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}^{(1)}$	10 ms sine pulse, rated V_{RRM} applied	101	
		10 ms sine pulse, no voltage reapplied	120	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	51	A^2s
		10 ms sine pulse, no voltage reapplied	72	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1\text{ ms to }10\text{ ms}$, no voltage reapplied	510	$A^2\sqrt{s}$

Note

(1) Connecting one pin only.

ELECTRICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum forward voltage drop	V_{FM}	8 A, $T_J = 25\text{ }^\circ\text{C}$	1.1	V
Forward slope resistance	r_t	$T_J = 150\text{ }^\circ\text{C}$	20	$m\Omega$
Threshold voltage	$V_{F(TO)}$		0.82	V
Maximum reverse leakage current	I_{RM}	$T_J = 25\text{ }^\circ\text{C}$	0.05	mA
		$T_J = 150\text{ }^\circ\text{C}$		

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	
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	2.5	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient (PCB mount)	$R_{thJA}^{(1)}$		62	
Approximate weight			1	g
			0.03	oz.
Marking device		Case style TO-252AA (D-PAK)	8EWS16S	

Note

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

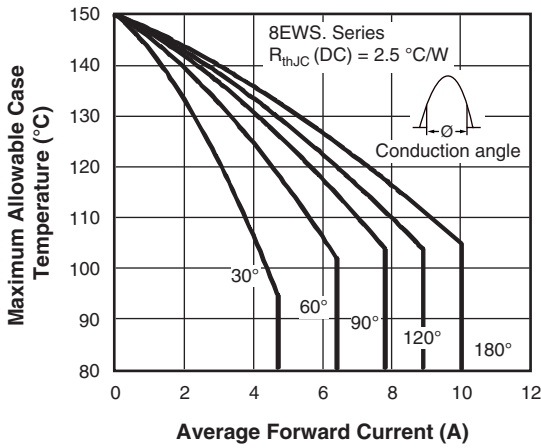


Fig. 1 - Current Rating Characteristics

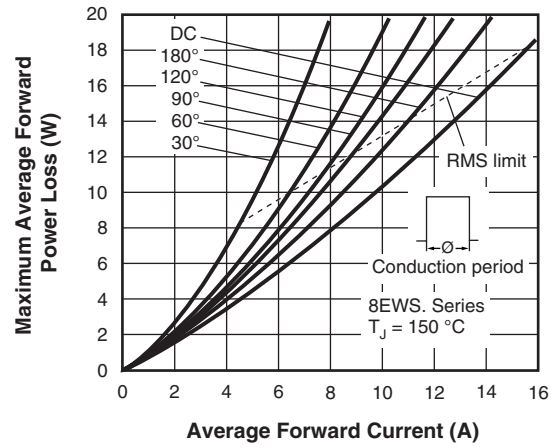


Fig. 4 - Forward Power Loss Characteristics

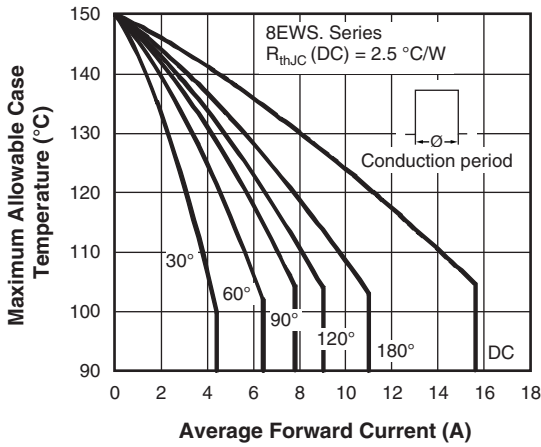


Fig. 2 - Current Rating Characteristics

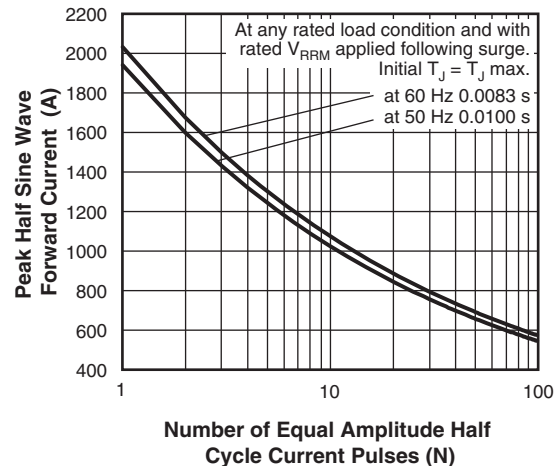


Fig. 5 - Maximum Non-Repetitive Surge Current

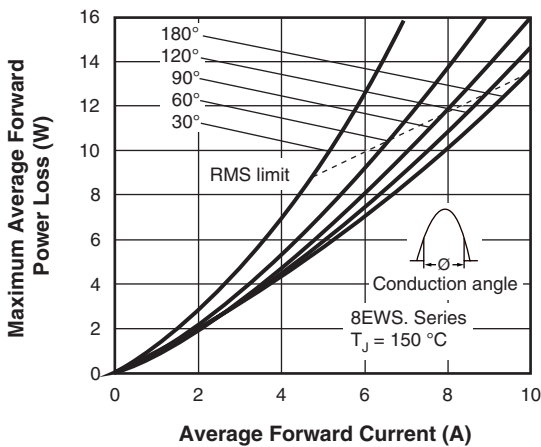


Fig. 3 - Forward Power Loss Characteristics

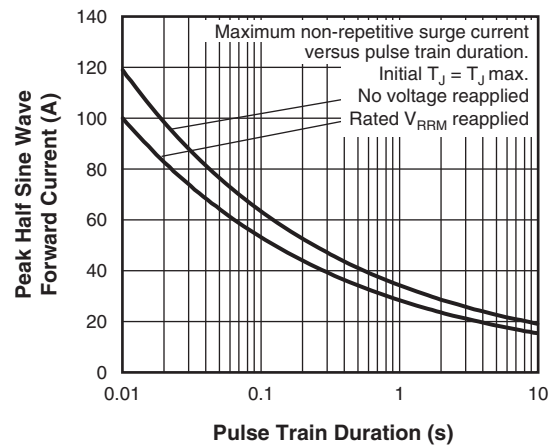


Fig. 6 - Maximum Non-Repetitive Surge Current

VS-8EWS16S-M3 High Voltage Series

Vishay Semiconductors

Surface Mountable Input Rectifier Diode, 8 A

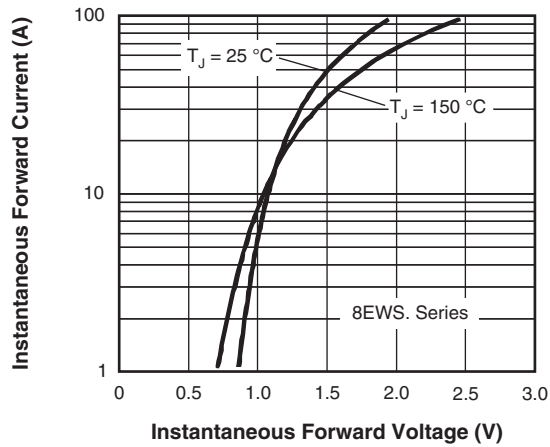


Fig. 7 - Forward Voltage Drop Characteristics

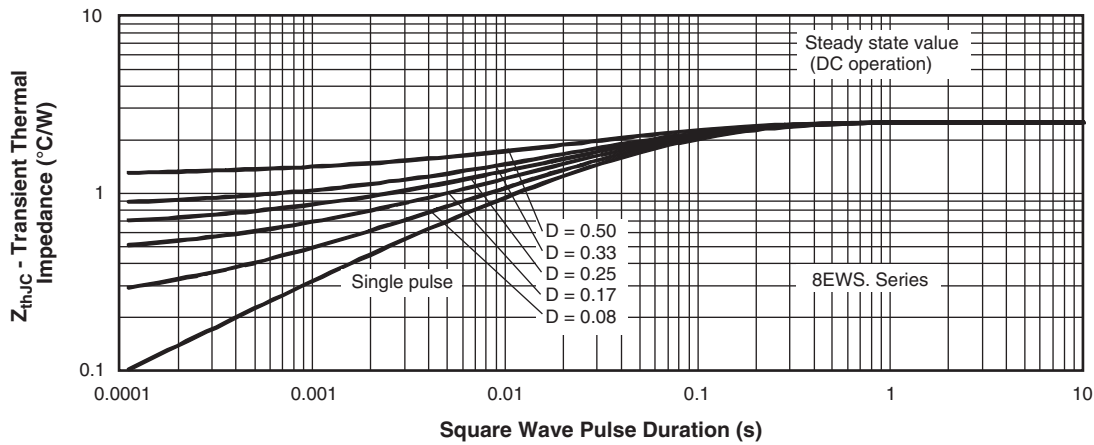


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

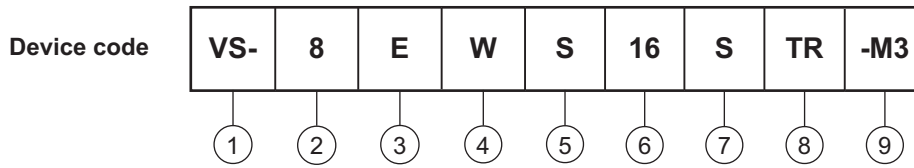


VS-8EWS16S-M3 High Voltage Series

Surface Mountable Input Rectifier Diode, 8 A

Vishay Semiconductors

ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - Current rating (8 = 8 A)
- 3** - Circuit configuration:
E = Single diode
- 4** - Package:
W = D-PAK
- 5** - Type of silicon:
S = Standard recovery rectifier
- 6** - Voltage code x 100 = V_{RRM} (16 = 1600 V)
- 7** - S = Surface mountable
- 8** -
 - TR = Tape and reel
 - TRR = Tape and reel (right oriented)
 - TRL = Tape and reel (left oriented)
- 9** - 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-8EWS16S-M3	75	3000	Antistatic plastic tubes
VS-8EWS16STR-M3	2000	2000	13" diameter reel
VS-8EWS16STRL-M3	3000	3000	13" diameter reel
VS-8EWS16STRR-M3	3000	3000	13" diameter reel

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95016
Part marking information	www.vishay.com/doc?95176
Packaging information	www.vishay.com/doc?95033



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