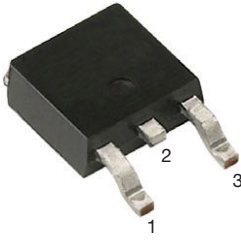
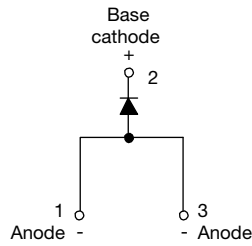


High Voltage Surface Mountable Input Rectifier Diode, 8 A



DPAK (TO-252AA)



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?999912


RoHS
 COMPLIANT
 HALOGEN
FREE

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.

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 |

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} | | 800/1200 | V |
| I_{FSM} | | 150 | A |
| V_F | 8 A, $T_J = 25$ °C | 1.10 | V |
| T_J | | -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 | |

**ABSOLUTE MAXIMUM RATINGS**

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|---------------|--|--------|-----------------------------|
| Maximum average forward current | $I_{F(AV)}$ | $T_C = 105\text{ }^\circ\text{C}$, 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^2s |
| | | 10 ms sine pulse, no voltage reapplied | 110 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | $t = 0.1\text{ ms to }10\text{ ms}$, no voltage reapplied | 1100 | $\text{A}^2\sqrt{\text{s}}$ |

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 | $\text{m}\Omega$ |
| Threshold voltage | $V_{F(TO)}$ | | 0.82 | V |
| Maximum reverse leakage current | I_{RM} | $T_J = 25\text{ }^\circ\text{C}$ | 0.05 | mA |
| | | $T_J = 150\text{ }^\circ\text{C}$ | 0.50 | |

THERMAL - MECHANICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|------------------|----------------------------|-------------|--------------------|
| Maximum junction and storage temperature range | T_J, T_{Stg} | | -55 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) | $R_{thJA}^{(1)}$ | | 62 | |
| Approximate weight | | | 1 | g |
| | | | 0.03 | oz. |
| Marking device | | Case style DPAK (TO-252AA) | 8EWS08S | |
| | | | 8EWS12S | |

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

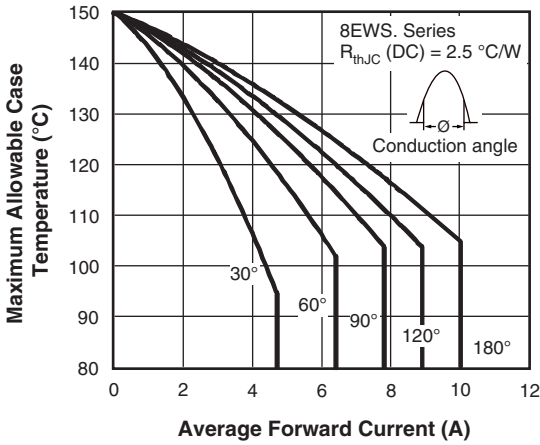


Fig. 1 - Current Rating Characteristics

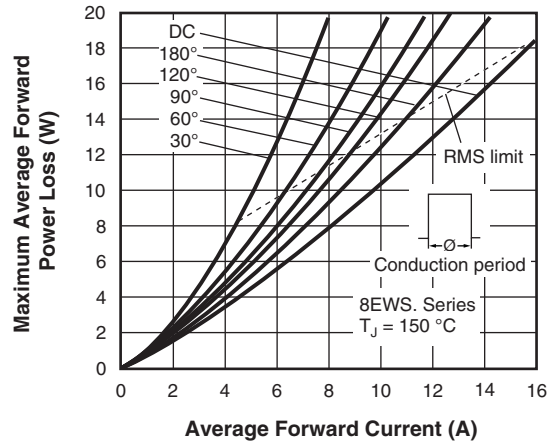


Fig. 4 - Forward Power Loss Characteristics

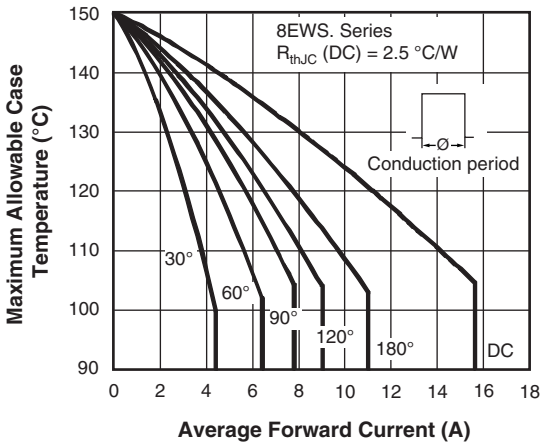


Fig. 2 - Current Rating Characteristics

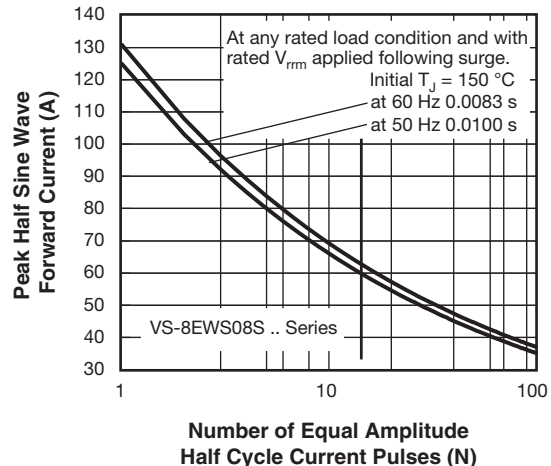


Fig. 5 - Maximum Non-Repetitive Surge Current

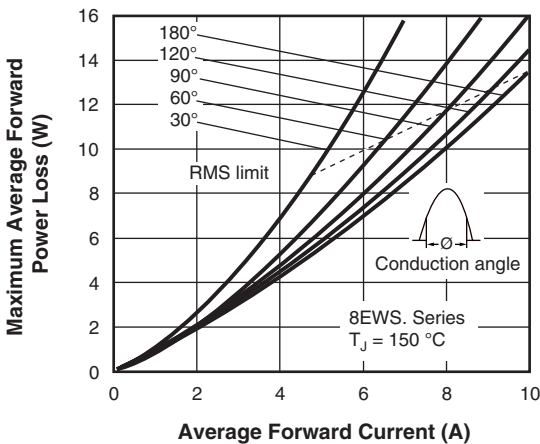


Fig. 3 - Forward Power Loss Characteristics

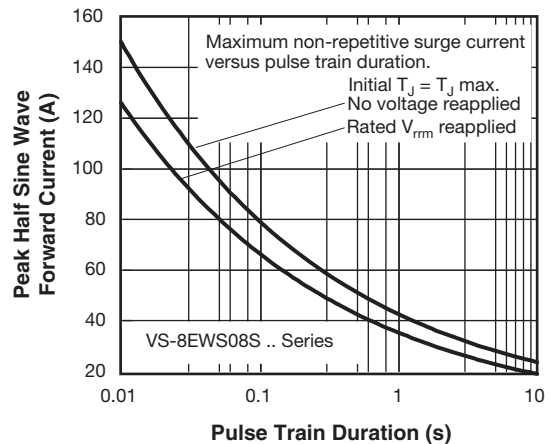


Fig. 6 - Maximum Non-Repetitive Surge Current

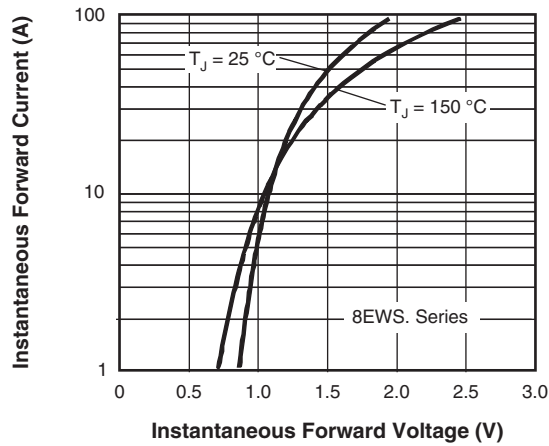


Fig. 7 - Forward Voltage Drop Characteristics

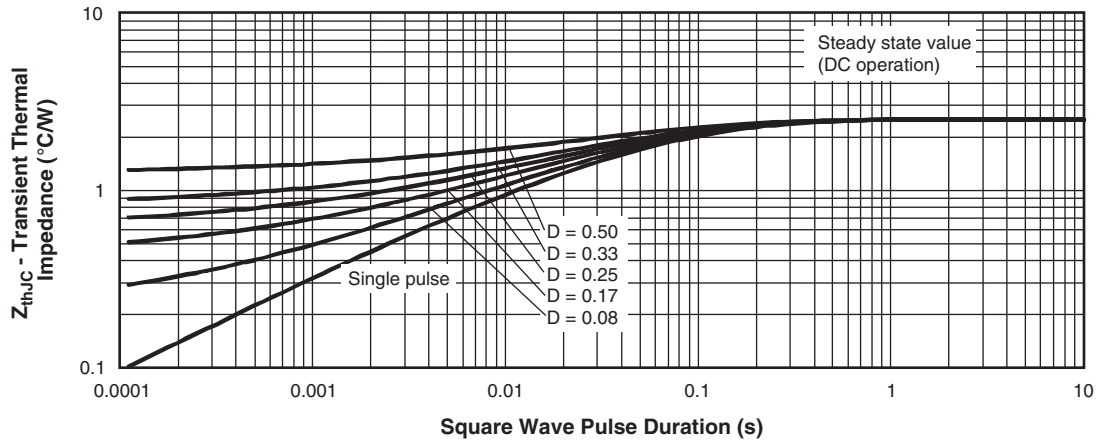
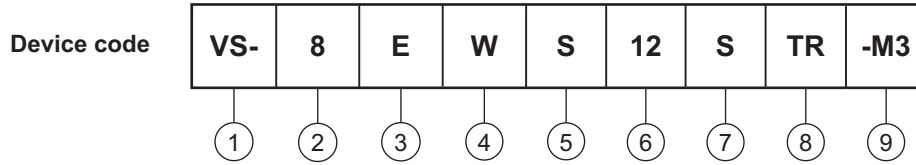


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



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}

| |
|-------------|
| 08 = 800 V |
| 12 = 1200 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-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 |



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Vishay:](#)

[VS-8EWS08S-M3](#) [VS-8EWS12S-M3](#) [VS-8EWS08STRL-M3](#) [VS-8EWS08STR-M3](#) [VS-8EWS12STR-M3](#) [VS-8EWS10STRR-M3](#) [VS-8EWS10STRL-M3](#) [VS-8EWS10S-M3](#) [VS-8EWS10STR-M3](#)