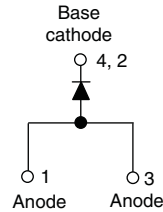


Surface Mountable Input Rectifier Diode, 8 A



D-PAK



DESCRIPTION/FEATURES

The 8EWS..SPbF 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.

Typical applications are in input rectification and these products are designed to be used with Vishay HPP switches and output rectifiers which are available in identical package outlines.

This product has been designed and qualified for industrial level.

Compliant to RoHS directive 2002/95/EC.

| PRODUCT SUMMARY | |
|-----------------|------------|
| V_F at 5 A | 1 V |
| I_{FSM} | 200 A |
| V_{RRM} | 800/1200 V |

| 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} | | 200 | 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 |
| 8EWS08SPbF | 800 | 900 | 0.5 |
| 8EWS12SPbF | 1200 | 1300 | |

8EWS..SPbF High Voltage Series



Vishay High Power Products Surface Mountable
Input Rectifier Diode, 8 A

| 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 | 170 | |
| | | 10 ms sine pulse, no voltage reapplied | 200 | |
| Maximum I^2t for fusing | I^2t | 10 ms sine pulse, rated V_{RRM} applied | 130 | A ² s |
| | | 10 ms sine pulse, no voltage reapplied | 145 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | $t = 0.1\text{ ms to }10\text{ ms}$, no voltage reapplied | 1450 | A ² √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 | mΩ |
| 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} | | - 55 to 150 | °C |
| | | | Soldering temperature | |
| 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 | |
| Approximate weight | | | 1 | g |
| | | | 0.03 | oz. |
| Marking device | | Case style D-PAK (TO-252AA) | 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



8EWS..SPbF High Voltage Series

Surface Mountable Vishay High Power Products
Input Rectifier Diode, 8 A

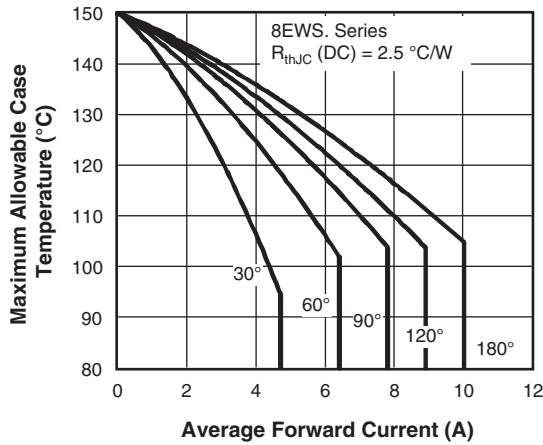


Fig. 1 - Current Rating Characteristics

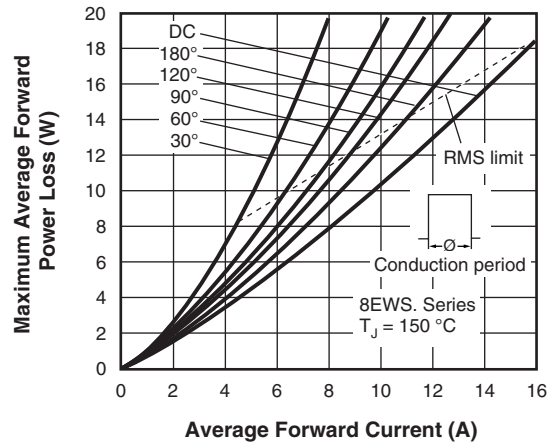


Fig. 4 - Forward Power Loss Characteristics

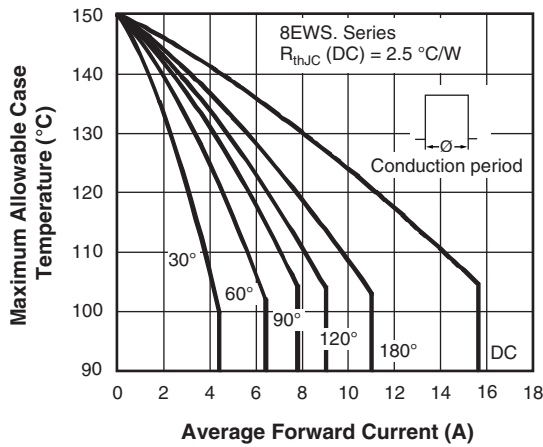


Fig. 2 - Current Rating Characteristics

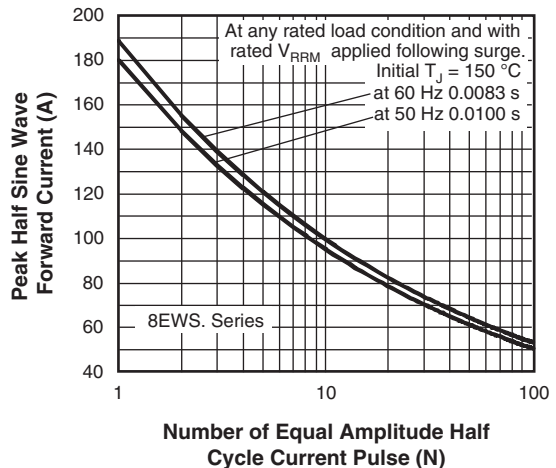


Fig. 5 - Maximum Non-Repetitive Surge Current

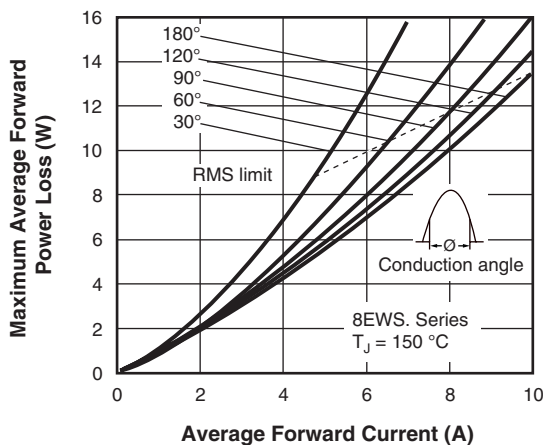


Fig. 3 - Forward Power Loss Characteristics

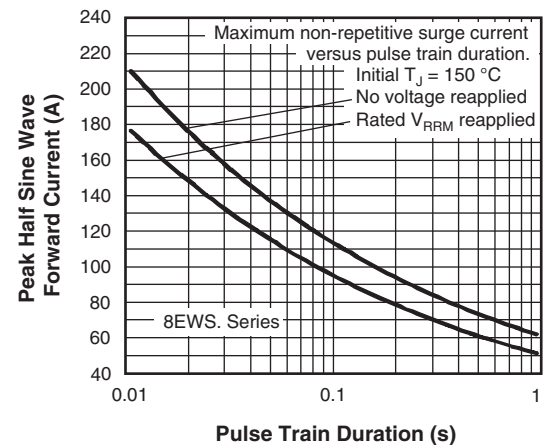


Fig. 6 - Maximum Non-Repetitive Surge Current

8EWS..SPbF High Voltage Series



Vishay High Power Products Surface Mountable
Input Rectifier Diode, 8 A

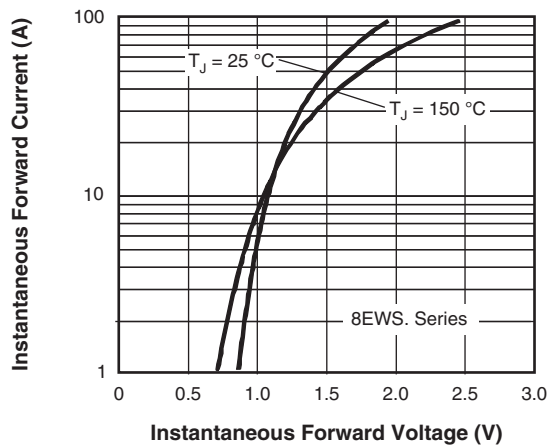


Fig. 7 - Forward Voltage Drop Characteristics

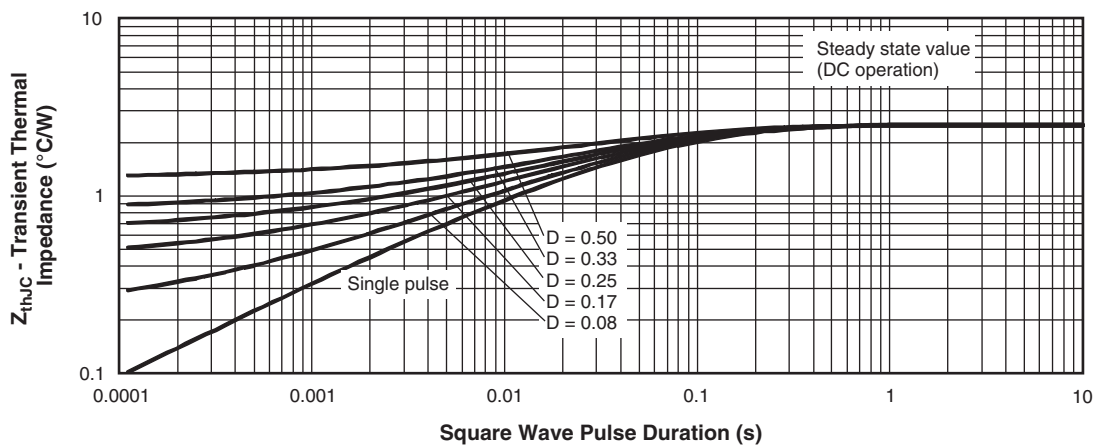


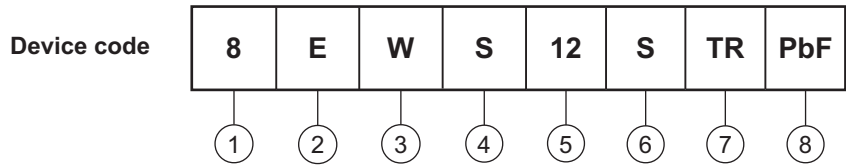
Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



8EWS..SPbF High Voltage Series

Surface Mountable Vishay High Power Products
Input Rectifier Diode, 8 A

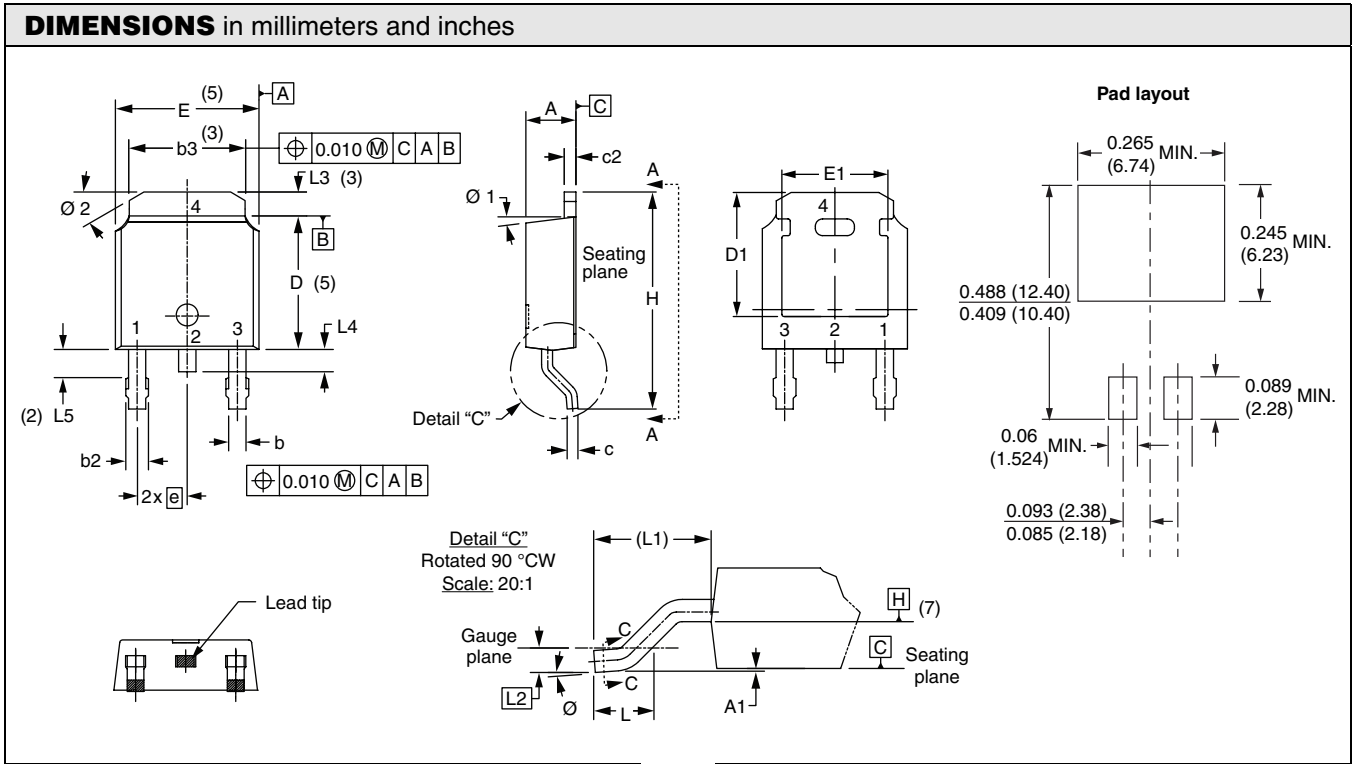
ORDERING INFORMATION TABLE



- 1** - Current rating (8 = 8 A)
- 2** - Circuit configuration:
E = Single diode
- 3** - Package:
W = D-PAK
- 4** - Type of silicon:
S = Standard recovery rectifier
- 5** - Voltage ratings 08 = 800 V
12 = 1200 V
- 6** - S = Surface mountable
- 7** -
 - TR = Tape and reel
 - TRR = Tape and reel (right oriented)
 - TRL = Tape and reel (left oriented)
- 8** - PbF = Lead (Pb)-free

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95016 |
| Part marking information | www.vishay.com/doc?95059 |
| Packaging information | www.vishay.com/doc?95033 |

D-PAK (TO-252AA)



| SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|------|--------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| A | 2.18 | 2.39 | 0.086 | 0.094 | |
| A1 | - | 0.13 | - | 0.005 | |
| b | 0.64 | 0.89 | 0.025 | 0.035 | |
| b2 | 0.76 | 1.14 | 0.030 | 0.045 | |
| b3 | 4.95 | 5.46 | 0.195 | 0.215 | 3 |
| c | 0.46 | 0.61 | 0.018 | 0.024 | |
| c2 | 0.46 | 0.89 | 0.018 | 0.035 | |
| D | 5.97 | 6.22 | 0.235 | 0.245 | 5 |
| D1 | 5.21 | - | 0.205 | - | 3 |
| E | 6.35 | 6.73 | 0.250 | 0.265 | 5 |
| E1 | 4.32 | - | 0.170 | - | 3 |

| SYMBOL | MILLIMETERS | | INCHES | | NOTES |
|--------|-------------|-------|------------|-------|-------|
| | MIN. | MAX. | MIN. | MAX. | |
| e | 2.29 BSC | | 0.090 BSC | | |
| H | 9.40 | 10.41 | 0.370 | 0.410 | |
| L | 1.40 | 1.78 | 0.055 | 0.070 | |
| L1 | 2.74 BSC | | 0.108 REF. | | |
| L2 | 0.51 BSC | | 0.020 BSC | | |
| L3 | 0.89 | 1.27 | 0.035 | 0.050 | 3 |
| L4 | - | 1.02 | - | 0.040 | |
| L5 | 1.14 | 1.52 | 0.045 | 0.060 | 2 |
| Ø | 0° | 10° | 0° | 10° | |
| Ø1 | 0° | 15° | 0° | 15° | |
| Ø2 | 25° | 35° | 25° | 35° | |

Notes

- Dimensioning and tolerancing as per ASME Y14.5M-1994
- Lead dimension uncontrolled in L5
- Dimension D1, E1, L3 and b3 establish a minimum mounting surface for thermal pad
- 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
- 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
- Dimension b1 and c1 applied to base metal only
- Datum A and B to be determined at datum plane H
- Outline conforms to JEDEC outline TO-252AA



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