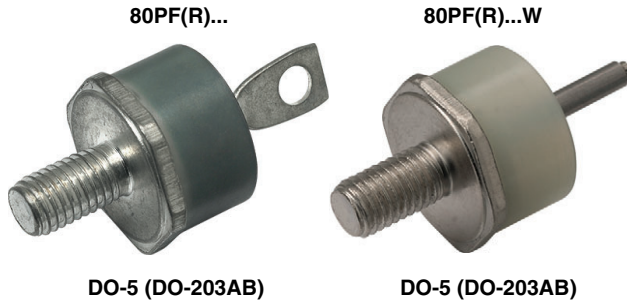


Standard Recovery Diodes, Generation 2 DO-5 (DO-203AB) (Stud Version), 80 A


FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Wire version available
- Low thermal resistance
- Designed and qualified for multiple level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**
TYPICAL APPLICATIONS

- Battery charges
- Converters
- Power supplies
- Machine tool controls
- Welding

PRIMARY CHARACTERISTICS

| | |
|-----------------------|-----------------|
| $I_{F(AV)}$ | 80 A |
| Package | DO-5 (DO-203AB) |
| Circuit configuration | Single |

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
|--------------|-----------------|-------------|------------------|
| $I_{F(AV)}$ | | 80 | A |
| | T_C | 140 | °C |
| $I_{F(RMS)}$ | | 126 | A |
| I_{FSM} | 50 Hz | 1500 | A |
| | 60 Hz | 1570 | |
| I^2t | 50 Hz | 11 250 | A ² s |
| | 60 Hz | 10 230 | |
| V_{RRM} | Range | 400 to 1200 | V |
| T_J | | -55 to +180 | °C |

ELECTRICAL SPECIFICATIONS
VOLTAGE RATINGS

| TYPE NUMBER | VOLTAGE CODE | V_{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V | V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | I_{RRM} MAXIMUM AT $T_J = 150$ °C mA |
|------------------|--------------|--|--|---|
| VS-80PF(R)...(W) | 40 | 400 | 500 | 9 |
| | 80 | 800 | 960 | |
| | 120 | 1200 | 1440 | |



| FORWARD CONDUCTION | | | | | | |
|---|---------------|--|----------------------------|---|---------|-------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS | |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | 80 | A | |
| | | | | 140 | °C | |
| Maximum RMS forward current | $I_{F(RMS)}$ | | | 126 | A | |
| Maximum peak, one-cycle forward, non-repetitive surge current | I_{FSM} | t = 10 ms | No voltage reappplied | 1500 | A | |
| | | t = 8.3 ms | | Sinusoidal half wave, initial $T_J = 150\text{ °C}$ | | 1570 |
| | | t = 10 ms | 100 % V_{RRM} reappplied | | | 1260 |
| | | t = 8.3 ms | | | | 1320 |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reappplied | | 11 250 | A ² s |
| | | t = 8.3 ms | | 100 % V_{RRM} reappplied | 10 230 | |
| | | t = 10 ms | 7950 | | | |
| | | t = 8.3 ms | 7200 | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reappplied | | | 112 500 | A ² /s |
| Low level value of threshold voltage | $V_{F(TO)}$ | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 0.73 | V | |
| Low level value of forward slope resistance | r_f | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum | | 3.0 | mΩ | |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 220\text{ A}$, $T_J = 25\text{ °C}$, $t_p = 400\text{ }\mu\text{s}$ rectangular wave | | 1.40 | V | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | | |
|--|----------------|--|--|-----------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum junction operating and storage temperature range | T_J, T_{Stg} | | | -55 to +180 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | | 0.30 | K/W |
| Maximum thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth, flat and greased | | 0.25 | |
| Allowable mounting torque | | Not lubricated threads, tightening on nut ⁽¹⁾ | | 3.4 (30) | N · m (lbf · in) |
| | | Lubricated threads, tightening on nut ⁽¹⁾ | | 2.3 (20) | |
| | | Not lubricated threads, tightening on Hexagon ⁽²⁾ | | 4.2 (37) | |
| | | Lubricated threads, tightening on Hexagon ⁽²⁾ | | 3.2 (28) | |
| Approximate weight | | | | 15.8 | g |
| | | | | 0.56 | oz. |
| Case style | | See dimensions - link at the end of datasheet | | DO-5 (DO-203AB) | |

Notes

- (1) Recommended for pass-through holes
- (2) Torque must be applicable only to Hexagon and not to plastic structure, recommended for holed heatsink

| ΔR_{thJC} CONDUCTION | | | | |
|------------------------------|-----------------------|------------------------|---------------------|-------|
| CONDUCTION ANGLE | SINUSOIDAL CONDUCTION | RECTANGULAR CONDUCTION | TEST CONDITIONS | UNITS |
| 180° | 0.14 | 0.10 | $T_J = T_J$ maximum | K/W |
| 120° | 0.16 | 0.17 | | |
| 90° | 0.21 | 0.22 | | |
| 60° | 0.30 | 0.31 | | |
| 30° | 0.50 | 0.50 | | |

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

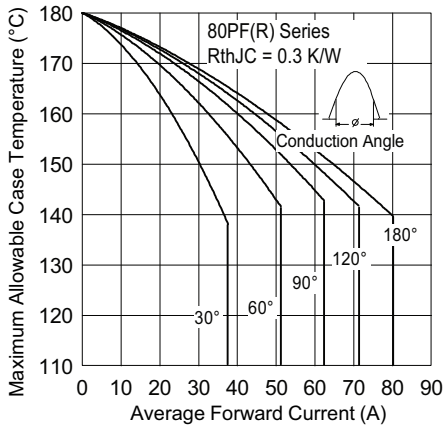


Fig. 1 - Current Ratings Characteristics

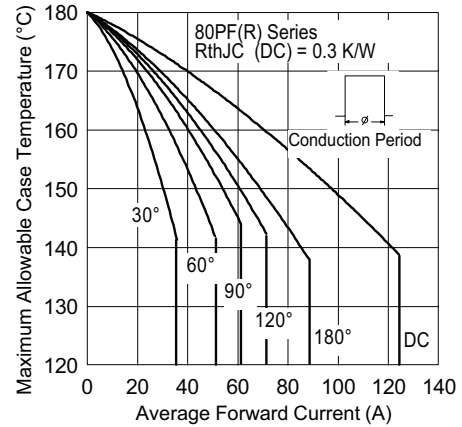


Fig. 2 - Current Ratings Characteristics

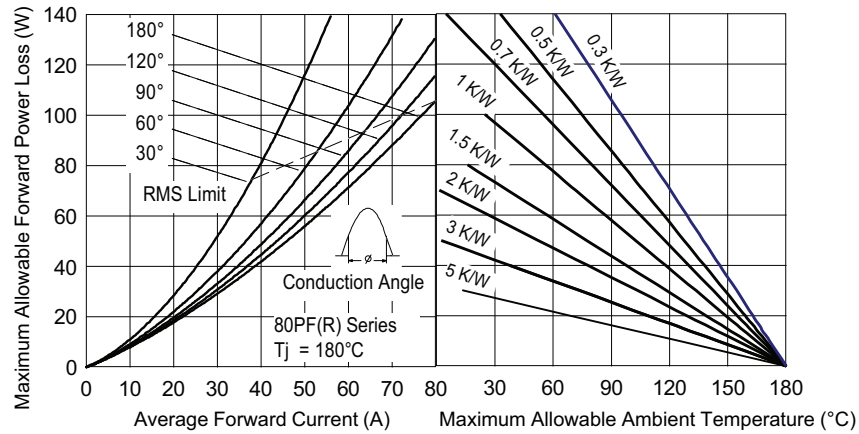


Fig. 3 - Forward Power Loss Characteristics

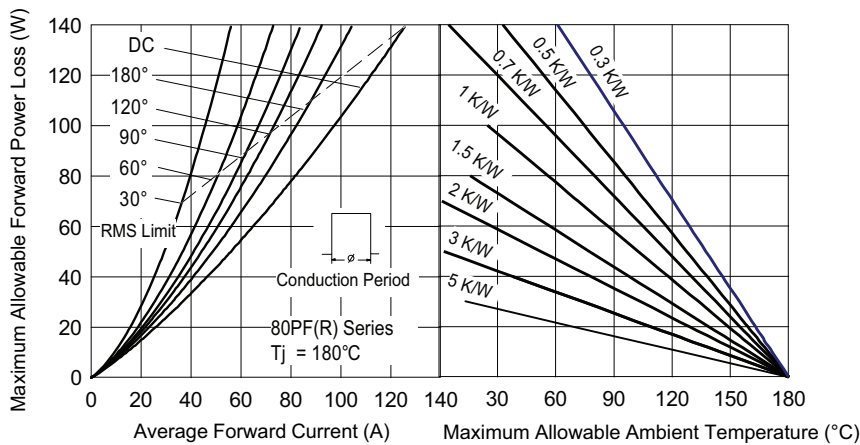


Fig. 4 - Forward Power Loss Characteristics

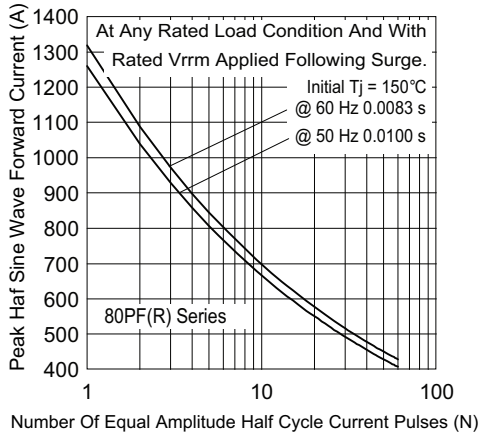


Fig. 5 - Maximum Non-Repetitive Surge Current

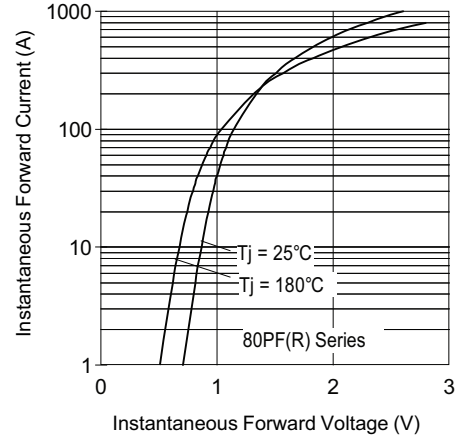


Fig. 7 - Forward Voltage Drop Characteristics

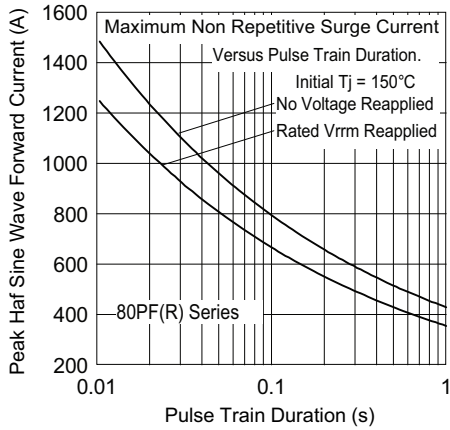


Fig. 6 - Maximum Non-Repetitive Surge Current

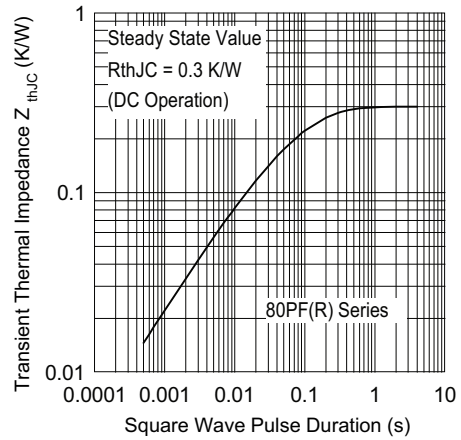
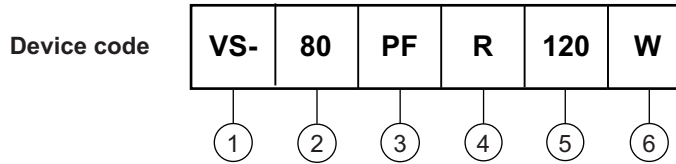


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE



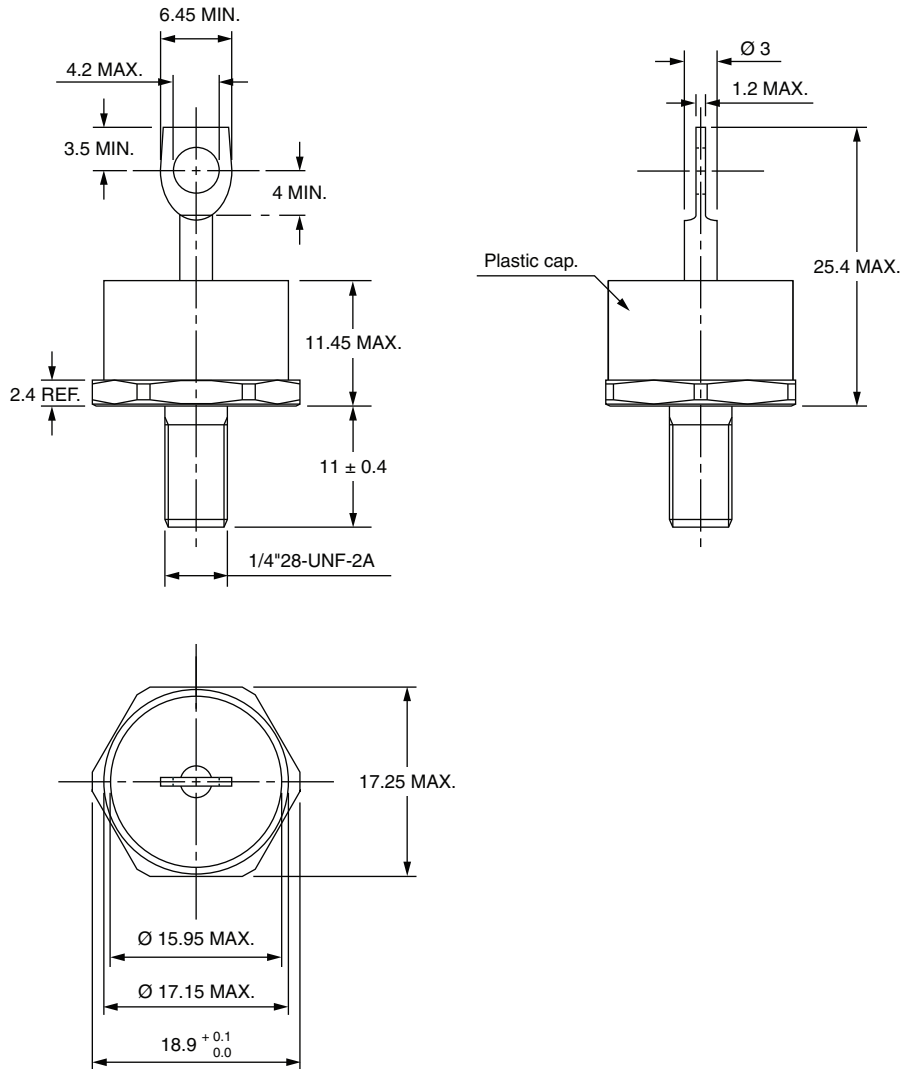
- 1** - Vishay Semiconductors product
- 2** -
 - 80 = standard device
 - 82 = isolated lead on standard terminal
with silicone sleeve available for 1200 V only
(red = reverse polarity)
(blue = normal polarity)
- 3** - PF = plastic package
- 4** -
 - None = stud normal polarity (cathode to stud)
 - R = stud reverse polarity (anode to stud)
- 5** - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6** -
 - None = standard terminal
(see dimensions for 80PF(R)... - link at the end of datasheet)
 - W = wire terminal
(see dimensions for 80PF(R)...W - link at the end of datasheet)

| LINKS TO RELATED DOCUMENTS | |
|----------------------------|--|
| Dimensions | www.vishay.com/doc?95345 |



DO-203AB (DO-5) for 50PF(R)...(W), 80PF(R)...(W), and 95PF(R)...(W) Series

DIMENSIONS FOR 80PF(R), 50PF(R), AND 95PF(R) SERIES in millimeters





DIMENSIONS FOR 80PF(R)...(W), 50PF(R)...(W), AND 95PF(R)...(W) SERIES in millimeters





DIMENSIONS FOR 52PF(R), 82PF(R), AND 97PF(R) SERIES in millimeters





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