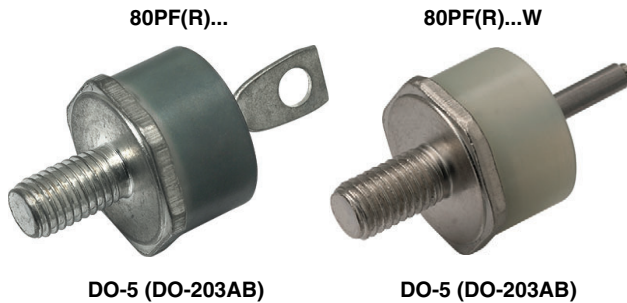


## Standard Recovery Diodes, Generation 2 DO-5 (DO-203AB) (Stud Version), 80 A


**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](http://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 <sup>2</sup> 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<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J = 150$ °C<br>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 <sup>2</sup> 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 <sup>2</sup> /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 <sup>(1)</sup>     |  | 3.4<br>(30)     | N · m<br>(lbf · in) |
|  |                | Lubricated threads, tightening on nut <sup>(1)</sup>         |  | 2.3<br>(20)     |                     |
|  |                | Not lubricated threads, tightening on Hexagon <sup>(2)</sup> |  | 4.2<br>(37)     |                     |
|  |                | Lubricated threads, tightening on Hexagon <sup>(2)</sup>     |  | 3.2<br>(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

| $\Delta R_{thJC}$ 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

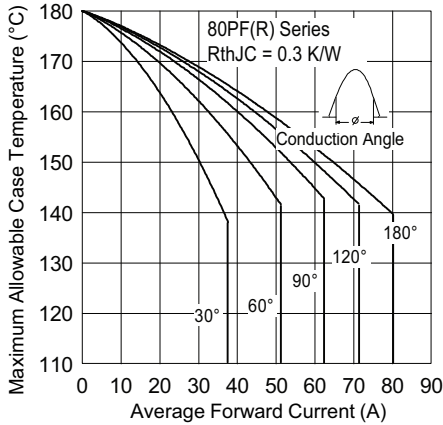


Fig. 1 - Current Ratings Characteristics

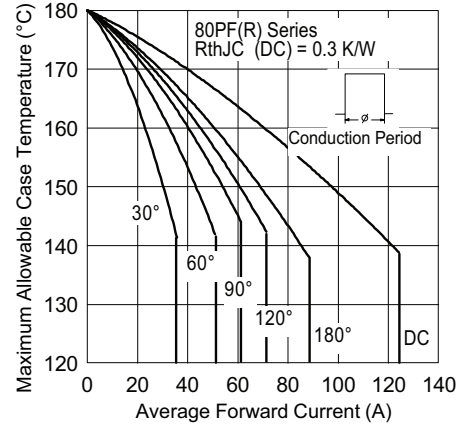


Fig. 2 - Current Ratings Characteristics

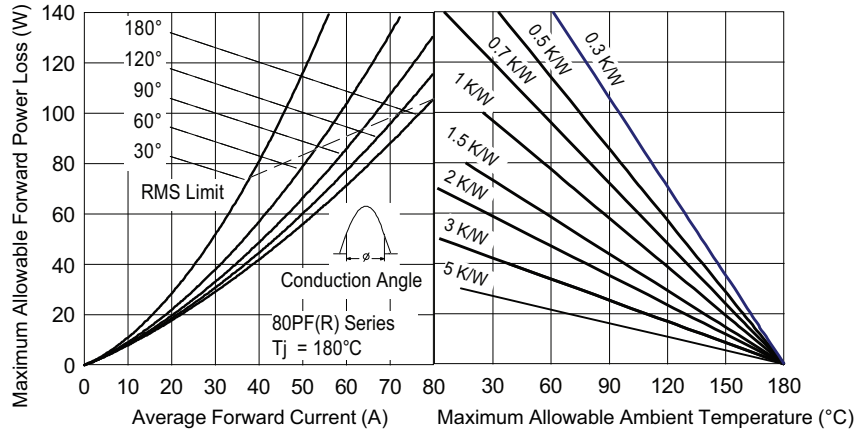


Fig. 3 - Forward Power Loss Characteristics

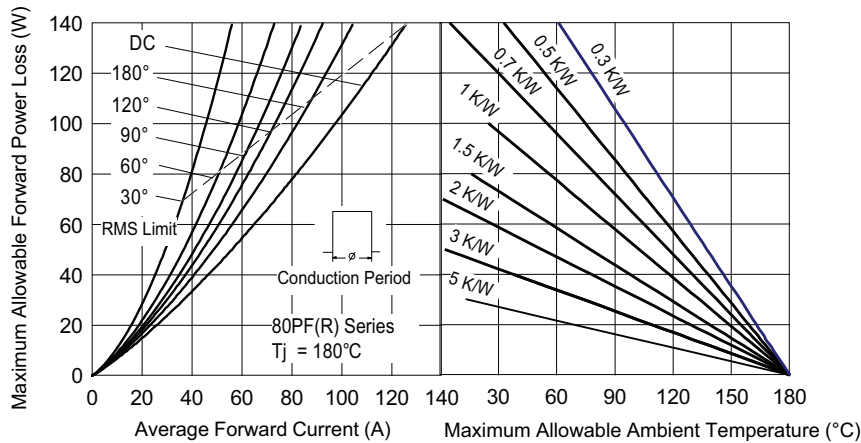


Fig. 4 - Forward Power Loss Characteristics

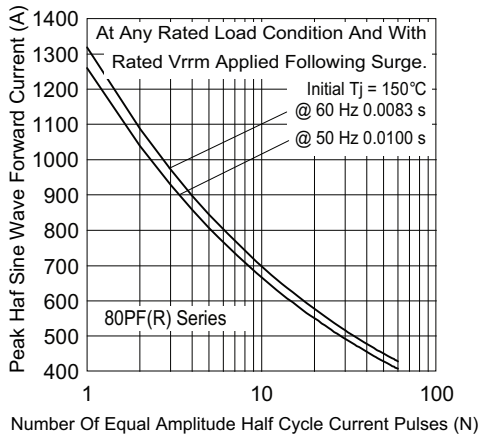


Fig. 5 - Maximum Non-Repetitive Surge Current

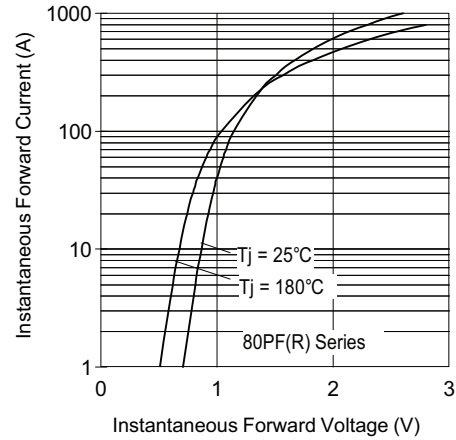


Fig. 7 - Forward Voltage Drop Characteristics

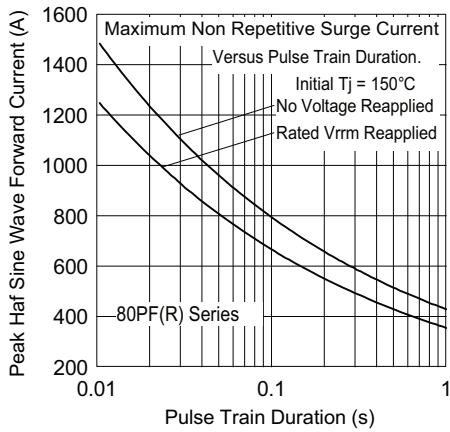


Fig. 6 - Maximum Non-Repetitive Surge Current

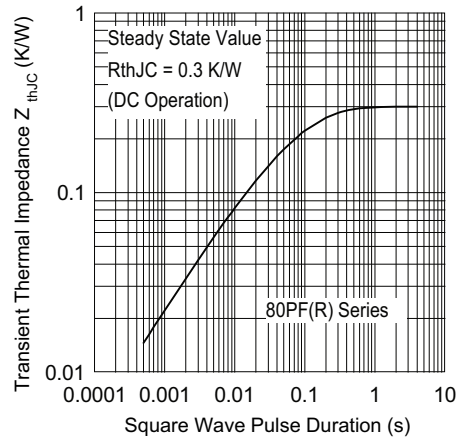
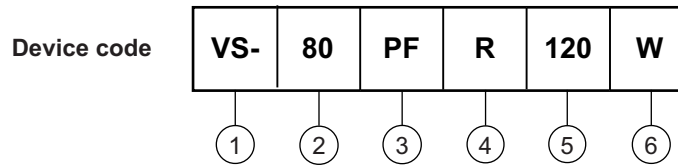


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics



## ORDERING INFORMATION TABLE



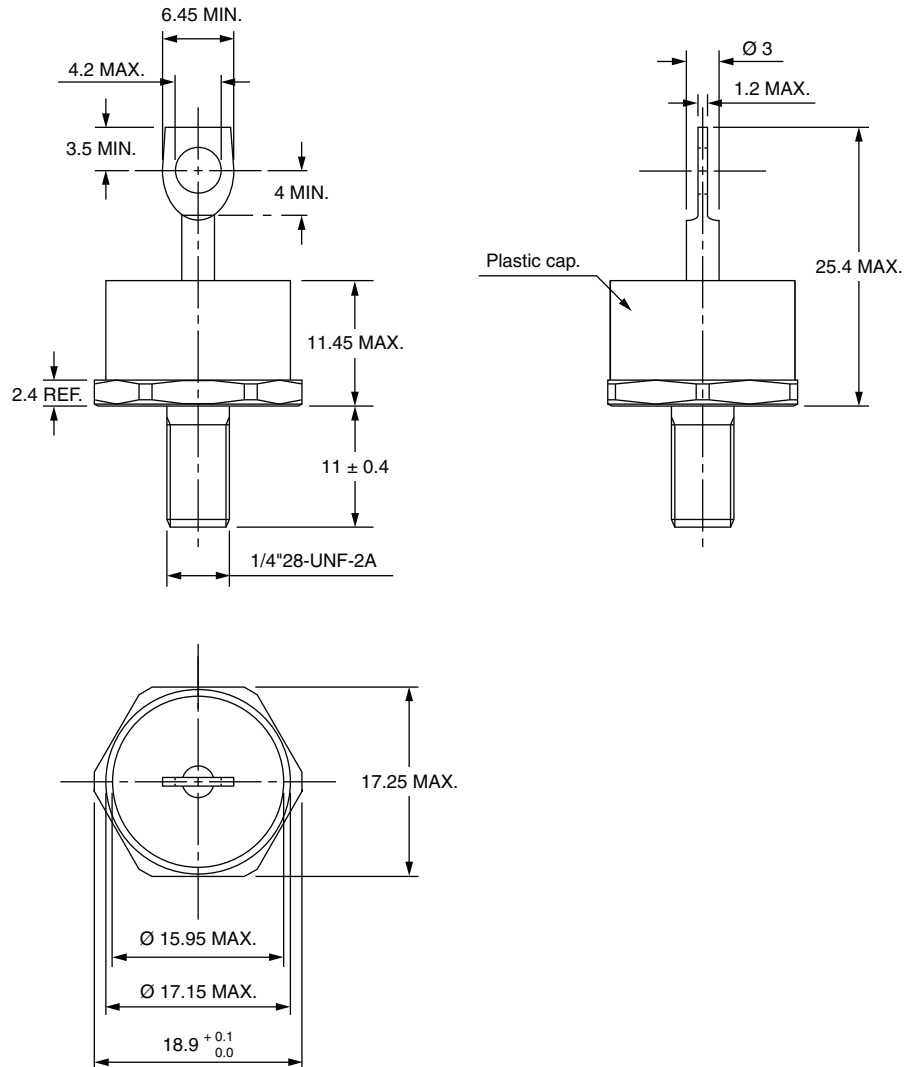
- 1** - Vishay Semiconductors product
- 2** -
  - 80 = standard device
  - 82 = isolated lead on standard terminal  
with silicone sleeve available for 1200 V only  
(red = reverse polarity)  
(blue = normal polarity)
- 3** - PF = plastic package
- 4** -
  - None = stud normal polarity (cathode to stud)
  - 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                 | <a href="http://www.vishay.com/doc?95345">www.vishay.com/doc?95345</a> |



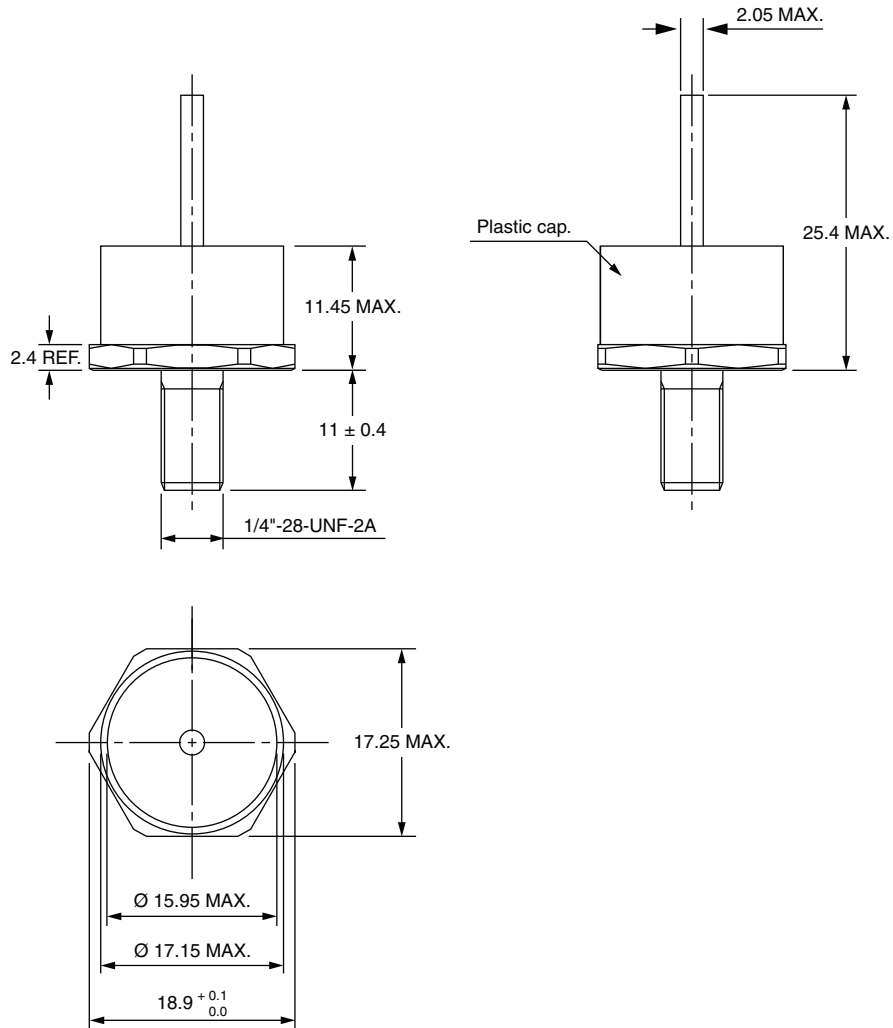
## DO-203AB (DO-5) for 50PF(R)...(W), 80PF(R)...(W), and 95PF(R)...(W) Series

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



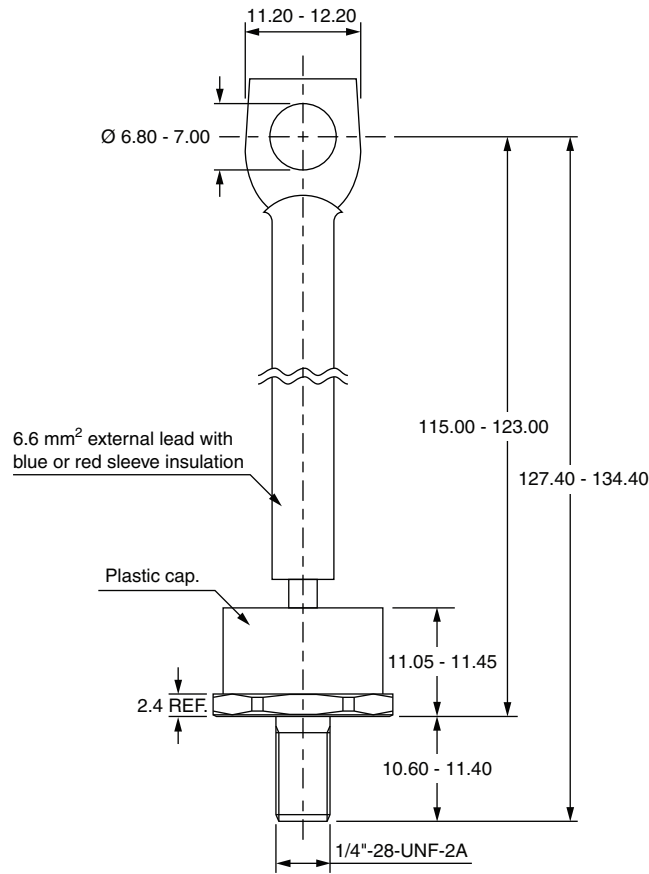


### DIMENSIONS FOR 80PF(R)...(W), 50PF(R)...(W), AND 95PF(R)...(W) SERIES in millimeters





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







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