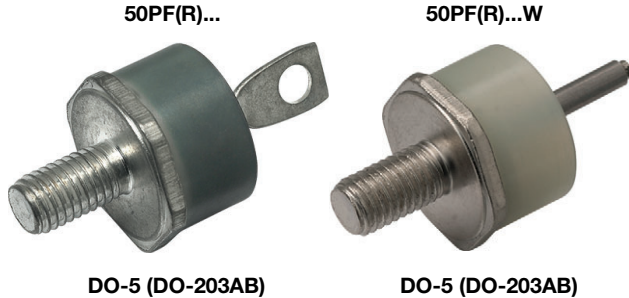


Standard Recovery Diodes, Generation 2 DO-5 (Stud Version), 50 A



DO-5 (DO-203AB)

DO-5 (DO-203AB)

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

- Converters
- Power supplies
- Machine tool controls
- Welding
- Any high voltage input rectification bridge

| PRIMARY CHARACTERISTICS | |
|-------------------------|-----------------|
| $I_{F(AV)}$ | 50 A |
| Package | DO-5 (DO-203AB) |
| Circuit configuration | Single |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|-----------------------------------|-----------------|--------------|------------------|
| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
| $I_{F(AV)}$ | | 50 | A |
| | T_C | 128 | °C |
| $I_{F(RMS)}$ | | 78 | A |
| I_{FSM} | 50 Hz | 570 | A |
| | 60 Hz | 595 | |
| I^2t | 50 Hz | 1600 | A ² s |
| | 60 Hz | 1450 | |
| V_{RRM} | Range | 1400 to 1600 | V |
| T_J | | -55 to +160 | °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-50PF(R)...(W) | 140 | 1400 | 1650 | 4.5 |
| | 160 | 1600 | 1900 | |



| FORWARD CONDUCTION | | | | | |
|---|---------------|--|---------------------------|---|-------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | 50 | A |
| | | | | 128 | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | | | 78 | A |
| Maximum peak, one cycle forward, non-repetitive surge current | I_{FSM} | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial $T_J = 150\text{ °C}$ | A |
| | | t = 8.3 ms | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | |
| | | t = 8.3 ms | | | |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reapplied | | A ² s |
| | | t = 8.3 ms | | | |
| | | t = 10 ms | 100 % V_{RRM} reapplied | | |
| | | t = 8.3 ms | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reapplied | | 16 000 | 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 | | 0.77 | 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 | | 4.30 | mΩ |
| Maximum forward voltage drop | V_{FM} | $I_{pk} = 125\text{ A}$, $T_J = 25\text{ °C}$, $t_p = 400\text{ }\mu\text{s}$ rectangular wave | | 1.50 | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|---|----------------|---|-----------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | -55 to 160 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | 0.51 | K/W |
| Thermal resistance, case to heatsink | R_{thCS} | Mounting surface, smooth, flat and greased | 0.25 | |
| Maximum allowable mounting torque (+0 %, -10 %) | | Not lubricated thread, tightening on nut ⁽¹⁾ | 3.4 (30) | N · m (lbf · in) |
| | | Lubricated thread, tightening on nut ⁽¹⁾ | 2.3 (20) | |
| | | Not lubricated thread, tightening on hexagon ⁽²⁾ | 4.2 (37) | |
| | | Lubricated thread, 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° | 0.11 | 0.10 | $T_J = T_J$ maximum | K/W |
| 120° | 0.16 | 0.16 | | |
| 90° | 0.20 | 0.22 | | |
| 60° | 0.29 | 0.31 | | |
| 30° | 0.49 | 0.50 | | |

Note

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

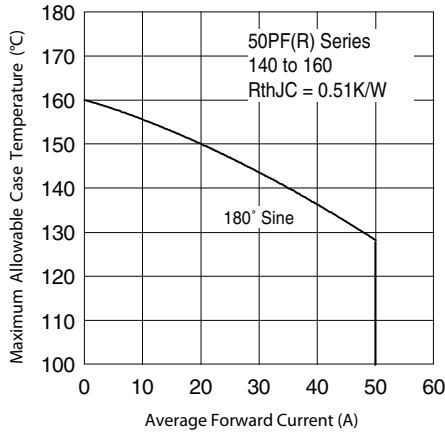


Fig. 1 - Current Ratings Characteristics

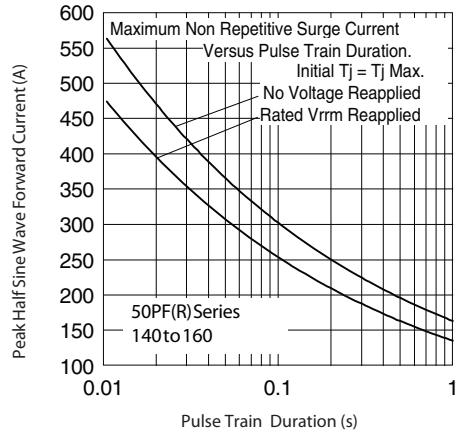


Fig. 3 - Maximum Non-Repetitive Surge Current

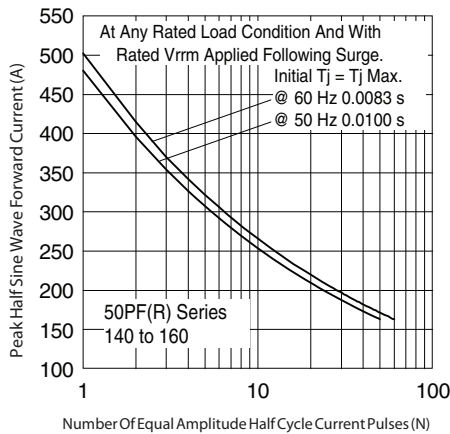


Fig. 2 - Maximum Non-Repetitive Surge Current

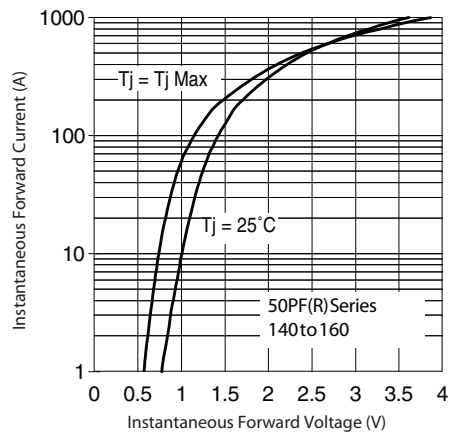


Fig. 4 - Forward Voltage Drop Characteristics

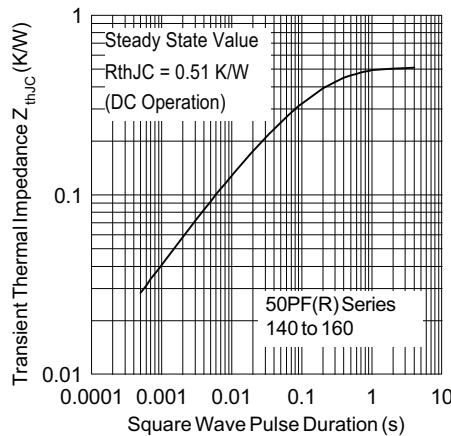
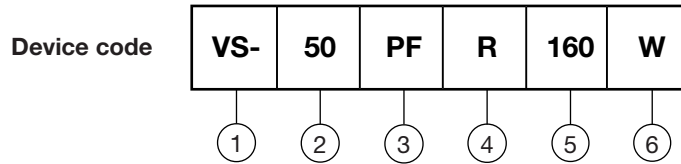


Fig. 5 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE



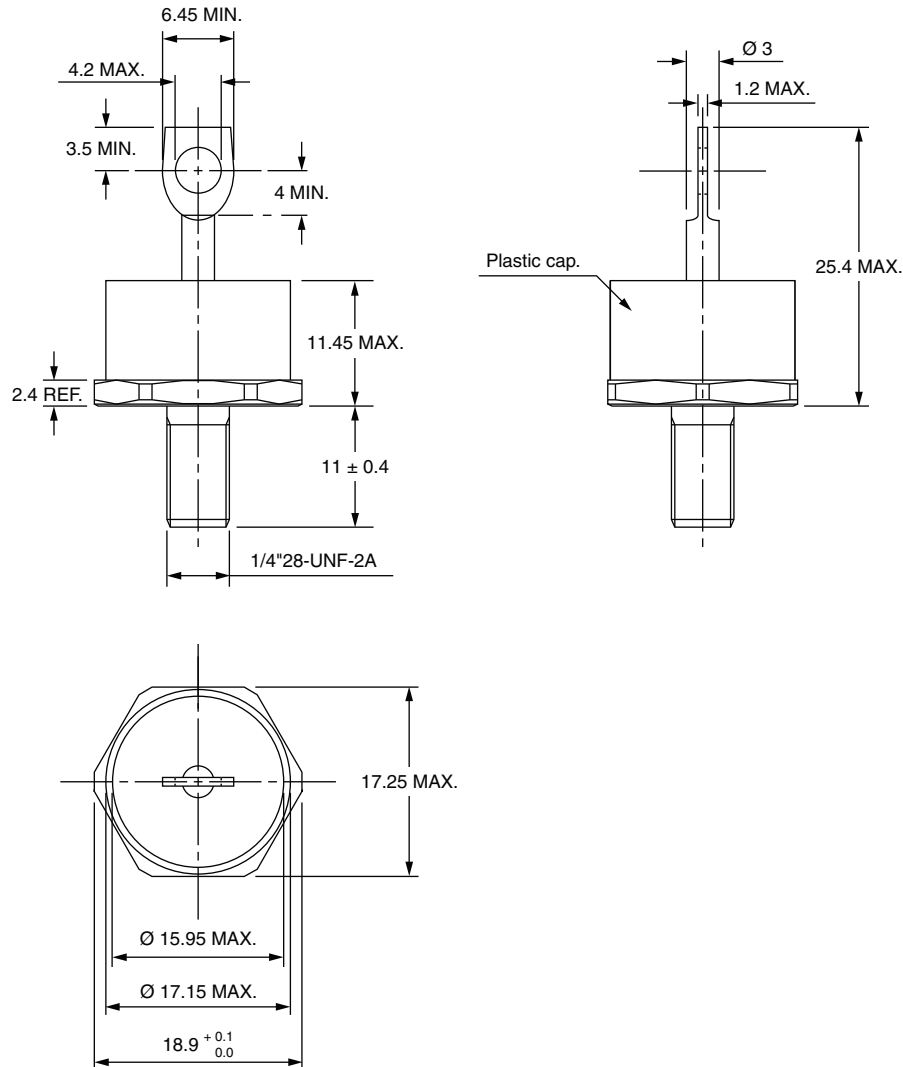
- 1** - Vishay Semiconductors product
- 2** - 50 = standard device
- 3** - PF = plastic package
- 4** -
 - None = stud normal polarity (cathode to stud)
 - R = stud reverse polarity (anode to stud)
- 5** - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6** -
 - None = standard terminal
(see dimensions for 50PF(R)... - link at the end of datasheet)
 - W = wire terminal
(see dimensions for 50PF(R)...W - link at the end of datasheet)

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



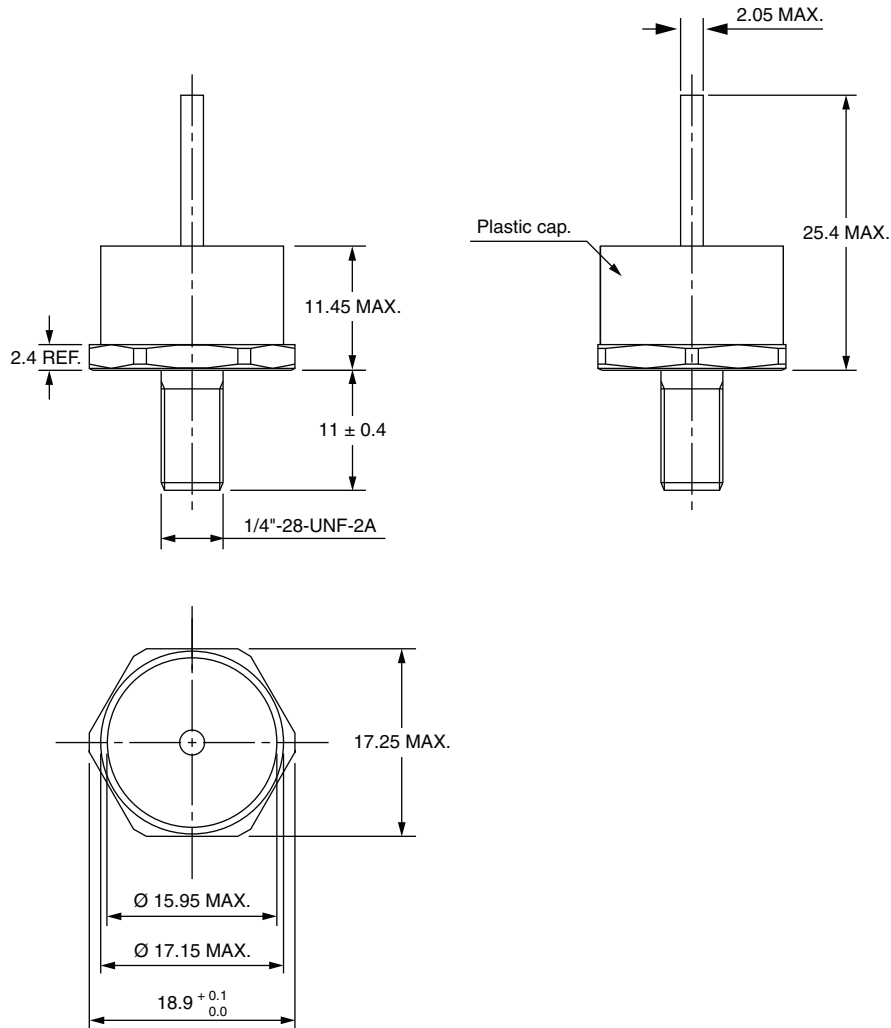
DO-203AB (DO-5) for 50PF(R)...(W), 80PF(R)...(W), and 95PF(R)...(W) Series

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



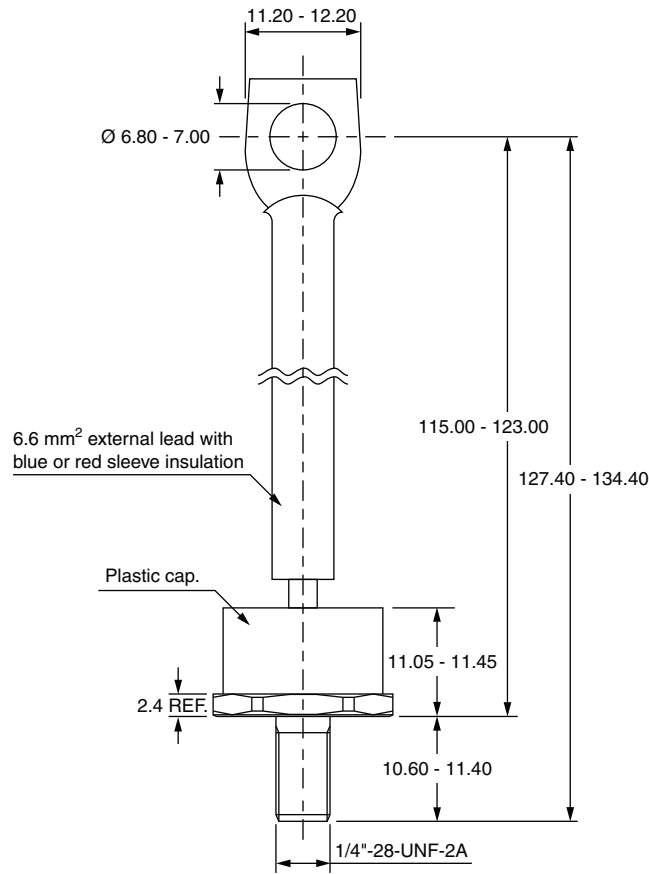


DIMENSIONS FOR 80PF(R)...(W), 50PF(R)...(W), AND 95PF(R)...(W) SERIES in millimeters





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





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