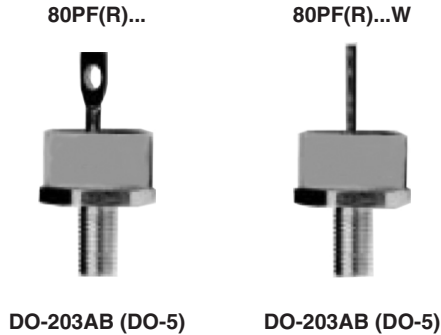


Standard Recovery Diodes Generation 2 DO-5 (Stud Version), 80 A



FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Wire version available
- Low thermal resistance
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for multiple level



TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

| | |
|-------------|------|
| $I_{F(AV)}$ | 80 A |
|-------------|------|

MAJOR RATINGS AND CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | VALUES | UNITS |
|--------------|-----------------|--------------|------------------|
| $I_{F(AV)}$ | | 80 | A |
| | T_C | 123 | °C |
| $I_{F(RMS)}$ | | 126 | A |
| I_{FSM} | 50 Hz | 1200 | A |
| | 60 Hz | 1250 | |
| I^2t | 50 Hz | 7100 | A ² s |
| | 60 Hz | 6450 | |
| V_{RRM} | Range | 1400 to 1600 | V |
| T_J | | - 55 to 150 | °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 |
|---------------|--------------|--|--|---|
| 80PF(R)...(W) | 140 | 1400 | 1650 | 4.5 |
| | 160 | 1600 | 1900 | |

80PF(R)...(W) High Voltage Series



Vishay High Power Products

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

| 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 | |
| | | | | 123 | °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 | 1200 | A | |
| | | t = 8.3 ms | | Sinusoidal half wave, initial $T_J = 150\text{ °C}$ | | 1250 |
| | | t = 10 ms | 100 % V_{RRM} reappplied | | | 1000 |
| | | t = 8.3 ms | | | | 1050 |
| Maximum I^2t for fusing | I^2t | t = 10 ms | No voltage reappplied | | 7100 | A ² s |
| | | t = 8.3 ms | | 100 % V_{RRM} reappplied | 6450 | |
| | | t = 10 ms | 5000 | | | |
| | | t = 8.3 ms | 4550 | | | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reappplied | | | 71 000 | 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 | | 0.73 | 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 | | 1.46 | V | |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|---|----------------|---|-----------------|---------------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum junction and storage temperature range | T_J, T_{Stg} | | - 55 to 150 | °C |
| Maximum thermal resistance, junction to case | R_{thJC} | DC operation | 0.30 | 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-203AB (DO-5) | |

Notes

(1) Recommended for pass-through holes

(2) Torque must be applicable only to hexagon and not to plastic structure, recommended for holed heatsink



80PF(R)...(W) High Voltage Series

Standard Recovery Diodes Vishay High Power Products
 Generation 2 DO-5 (Stud Version), 80 A

| 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

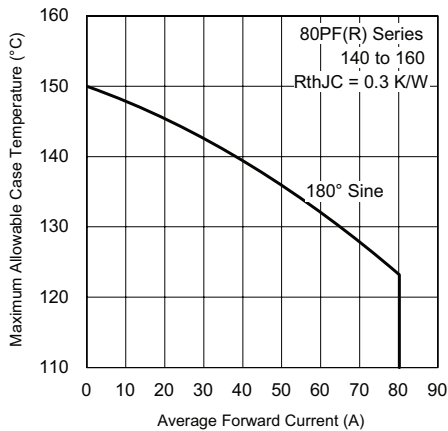


Fig. 1 - Current Ratings Characteristics

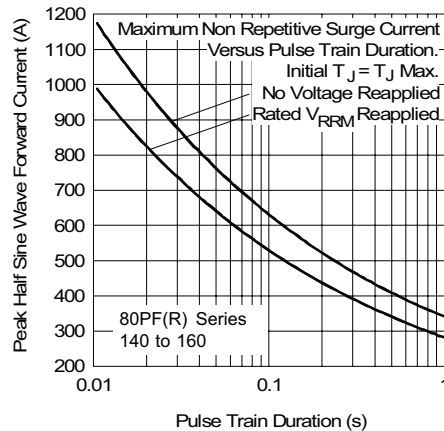


Fig. 3 - Maximum Non-Repetitive Surge Current

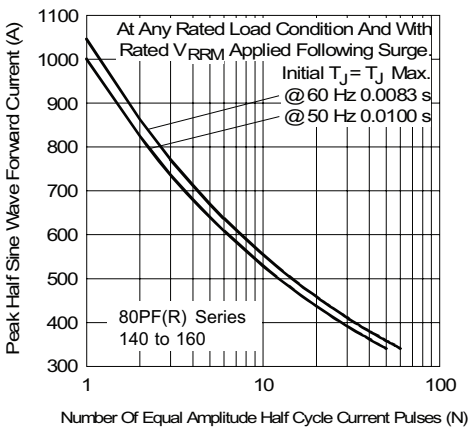


Fig. 2 - Maximum Non-Repetitive Surge Current

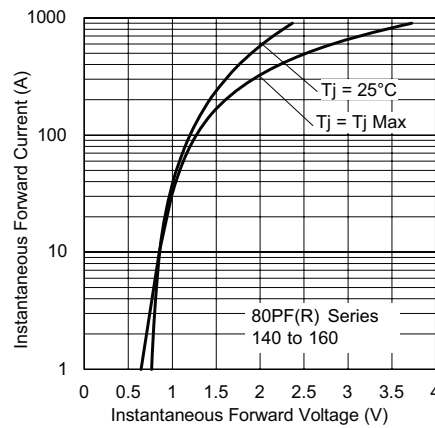


Fig. 4 - Forward Voltage Drop Characteristics

80PF(R)...(W) High Voltage Series



Vishay High Power Products

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

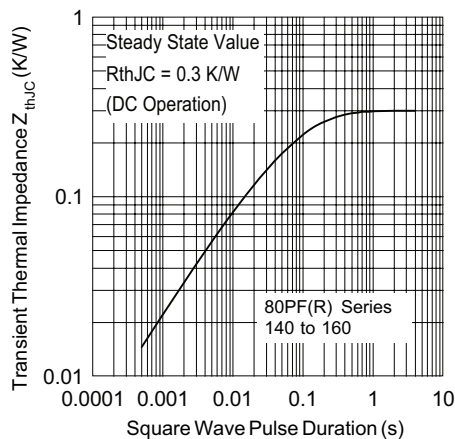


Fig. 5 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

| | | | | | |
|-------------|-----------|-----------|----------|------------|----------|
| Device code | 80 | PF | R | 160 | W |
| | ① | ② | ③ | ④ | ⑤ |

- 1** - 80 = Standard device
- 2** - PF = Plastic package
- 3** -
 - None = Stud normal polarity (cathode to stud)
 - R = Stud reverse polarity (anode to stud)
- 4** - Voltage code $\times 10 = V_{RRM}$ (see Voltage Ratings table)
- 5** -
 - 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 |



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.