

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

80PF(R)...



DO-203AB (DO-5)

80PF(R)...W



DO-203AB (DO-5)

FEATURES

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


**RoHS
COMPLIANT**
PRODUCT SUMMARY
 $I_{F(AV)}$

80 A

TYPICAL APPLICATIONS

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

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 |
|---------------|--------------|----------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------|
| 80PF(R)...(W) | 40 | 400 | 500 | 9 |
| | 80 | 800 | 960 | |
| | 120 | 1200 | 1440 | |

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



Vishay High Power Products

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| 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 | | 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 | | 10 230 | |
| | | t = 10 ms | 100 % V_{RRM} reappplied | 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} | $I_{pk} = 220$ A, $T_J = 25$ °C, $t_p = 400$ μs 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 | |
| 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



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| 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

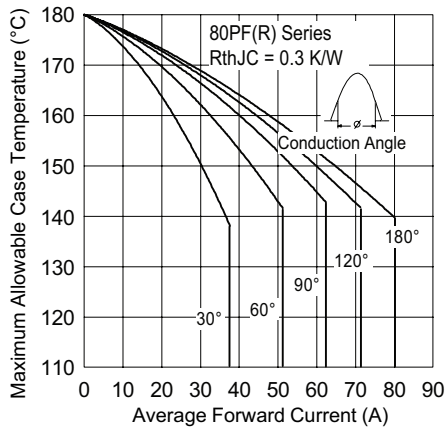


Fig. 1 - Current Ratings Characteristics

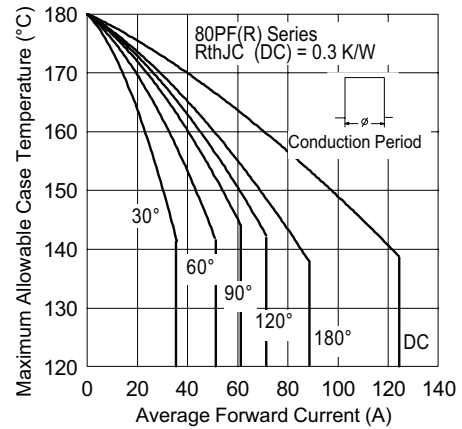


Fig. 2 - Current Ratings Characteristics

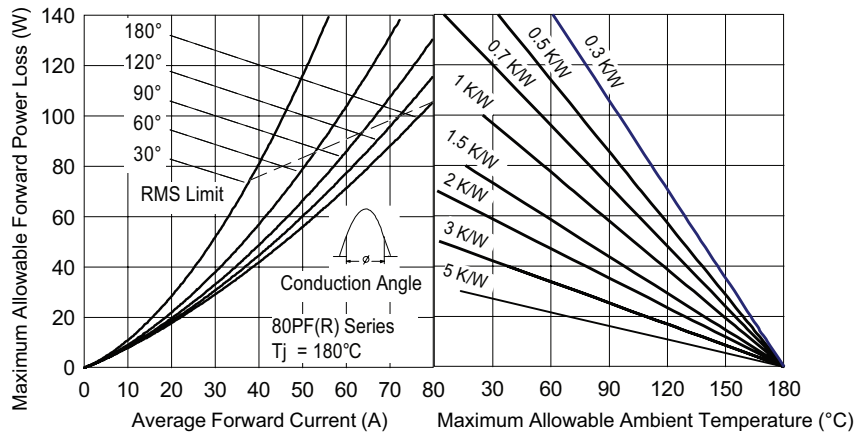


Fig. 3 - Forward Power Loss Characteristics

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



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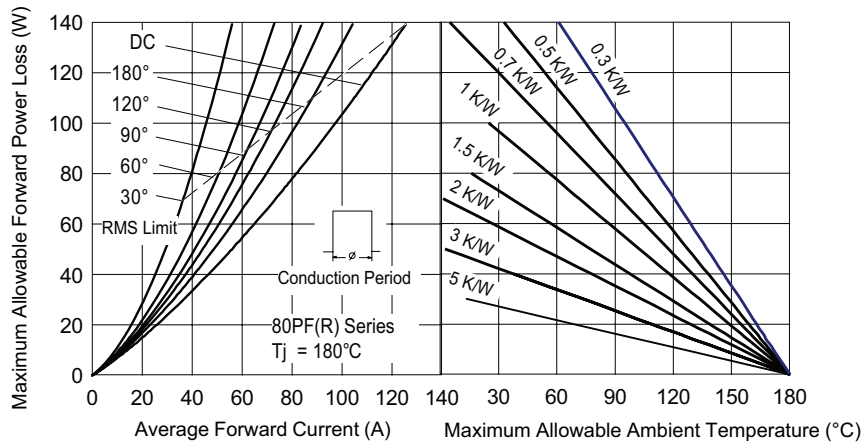


Fig. 4 - Forward Power Loss Characteristics

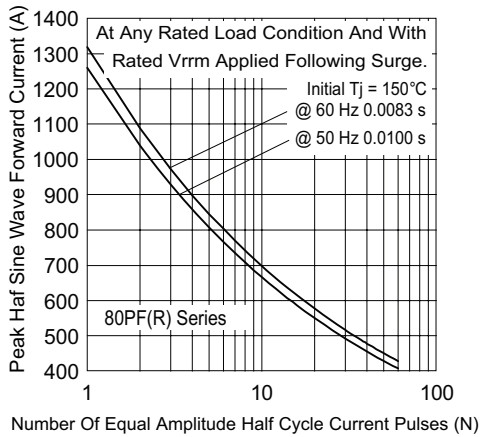


Fig. 5 - Maximum Non-Repetitive Surge Current

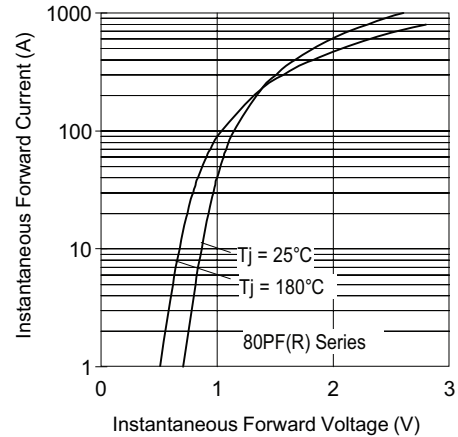


Fig. 7 - Forward Voltage Drop Characteristics

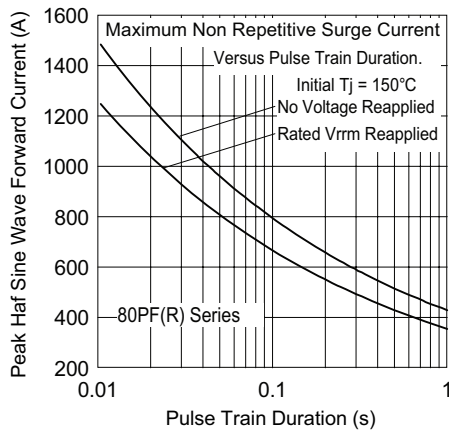


Fig. 6 - Maximum Non-Repetitive Surge Current

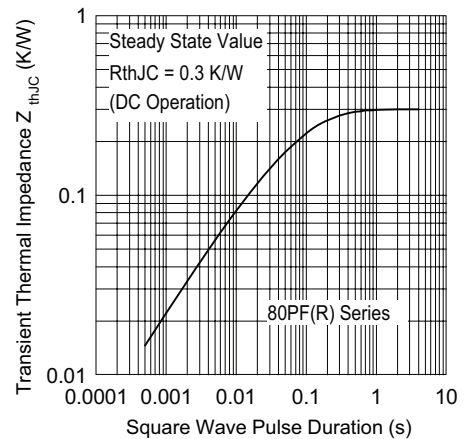
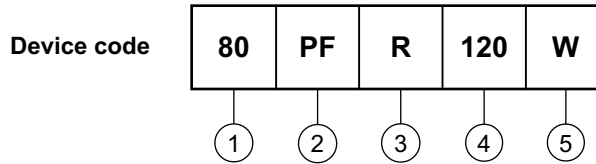


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE



- 1** -
 - 80 = Standard device
 - 82 = Isolated lead on standard terminal
with silicone sleeve available for 1200 V only
(red = Reverse polarity)
(blue = Normal polarity)
- 2** - PF = Plastic package
- 3** -
 - None = Stud normal polarity (cathode to stud)
 - R = Stud reverse polarity (anode to stud)
- 4** - Voltage code x 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 |



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- Техническая поддержка проекта;
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