Bulletin I27174 rev. A 01/05

International
IOR Rectifier

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

**STANDARD RECOVERY DIODES**
**GEN II DO5**

**Stud Version**

## Features

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Low thermal resistance

80 A

## Typical Applications

- Converters
- Power supplies
- Machine tool controls
- Welding
- Any High Voltage Input Rectification Bridge

80PF(R)...

case style DO-203AB (DO-5)

## Major Ratings and Characteristics

| Parameters | | 80PF (R)... | Units |
|---|---|---|---|
| | | 140 to 160 | |
| $I_{F(AV)}$ | | 80 | A |
| | @ $T_C$ | 123 | °C |
| $I_{F(RMS)}$ | | 126 | A |
| $I_{FSM}$ | @50Hz | 1200 | A |
| | @60Hz | 1250 | |
| $I^2t$ | @50Hz | 7100 | $A^2s$ |
| | @60Hz | 6450 | |
| $V_{RRM}$ | range | 1400 to 1600 | V |
| $T_J$ | range | - 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 | $I_{RRM}$ max. @ $T_J$ = 150°C mA |
|---|---|---|---|---|
| 80PF (R)... | 140 | 1400 | 1650 | 4.5 |
| | 160 | 1600 | 1900 | |

Forward Conduction

| Parameter | | 80PF(R)... 140 to 160 | Units | Conditions | | |
|---|---|---|---|---|---|---|
| $I_{F(AV)}$ | Max. average forward current @ Case temperature | 80 | A | 180° conduction, half sine wave | | |
| | | 123 | °C | | | |
| $I_{F(RMS)}$ | Max. RMS forward current | 126 | A | | | |
| $I_{FSM}$ | Max. peak, one-cycle forward, non-repetitive surge current | 1200 | A | t = 10ms | No voltage reapplied | Sinusoidal half wave, Initial $T_J$ = 150°C |
| | | 1250 | | t = 8.3 ms | | |
| | | 1000 | | t = 10ms | 100% $V_{RRM}$ reapplied | |
| | | 1050 | | t = 8.3 ms | | |
| $I^2t$ | Maximum $I^2t$ for fusing | 7100 | $A^2s$ | t = 10ms | No voltage reapplied | |
| | | 6450 | | t = 8.3ms | | |
| | | 5000 | | t = 10ms | 100% $V_{RRM}$ reapplied | |
| | | 4550 | | t = 8.3ms | | |
| $I^2\sqrt{t}$ | Maximum $I^2\sqrt{t}$ for fusing | 71000 | $A^2\sqrt{s}$ | t = 0.1 to 10ms, no voltage reapplied | | |
| $V_{F(TO)}$ | Low level value of threshold voltage | 0.73 | V | (16.7% x $\pi$ x $I_{F(AV)}$ < I < $\pi$ x $I_{F(AV)}$), $T_J$ = $T_J$ max. | | |
| $r_f$ | Low level value of forward slope resistance | 3.0 | mΩ | (16.7% x $\pi$ x $I_{F(AV)}$ < I < $\pi$ x $I_{F(AV)}$), $T_J$ = $T_J$ max. | | |
| $V_{FM}$ | Max. forward voltage drop | 1.46 | V | $I_{pk}$= 220A, $T_J$ = 25°C, $t_p$ = 400µs rectangular wave | | |

## Thermal and Mechanical Specifications

| | Parameter | 80PF(R)... 140to160 | Units | Conditions |
|---|---|---|---|---|
| $T_J$ | Max. junction operating temperature range | -55 to 150 | °C | |
| $T_{stg}$ | Max. storage temperature range | -55 to 150 | | |
| $R_{thJC}$ | Max. thermal resistance, junction to case | 0.30 | K/W | DC operation |
| $R_{thCS}$ | Max. thermal resistance, case to heatsink | 0.25 | | Mounting surface, smooth, flat and greased |
| T | Allowable mounting torque | 3.4 +0-10% | Nm | Tighting on nut (1) |
| | | 30 | lbf · in | Not lubricated threads |
| | | 2.3 +0-10% | Nm | Tighting on hexagon (2) |
| | | 20 | lbf · in | Lubricated threads |
| wt | Approximate weight | 15.8 (0.56) | g(oz) | |
| | Case style | DO-203AB (DO5) | | See Outline Table |

(1) As general recommendation we suggest to tight on Hexagon and not on nut

(2) Torque must be appliable only to Hexagon and not to plastic structure

## $\Delta R_{thJC}$ Conduction

(The following table shows the increment of thermal resistence $R_{thJC}$ when devices operate at different conduction angles than DC)

| Conduction angle | Sinusoidal conduction | Rectangular conduction | Units | Conditions |
|---|---|---|---|---|
| 180° | 0.14 | 0.10 | K/W | $T_J = T_J$ max. |
| 120° | 0.16 | 0.17 | | |
| 90° | 0.21 | 0.22 | | |
| 60° | 0.30 | 0.31 | | |
| 30° | 0.50 | 0.50 | | |

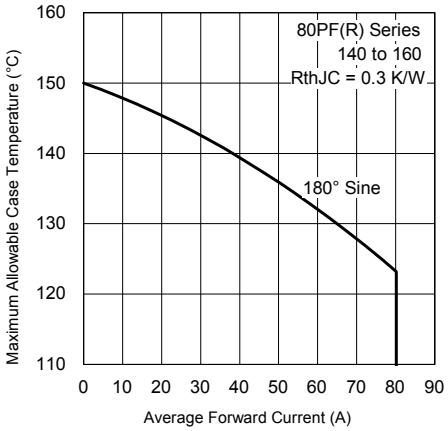



Fig. 1 - Current Ratings Characteristics

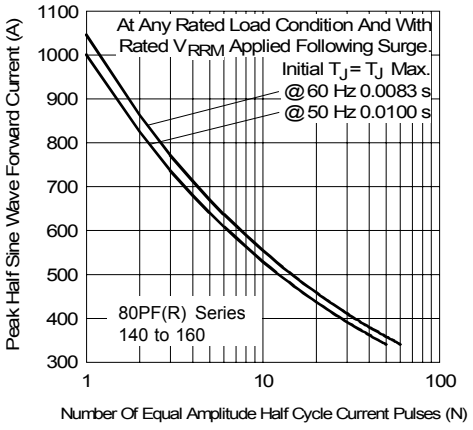



Fig. 2 - Maximum Non-Repetitive Surge Current

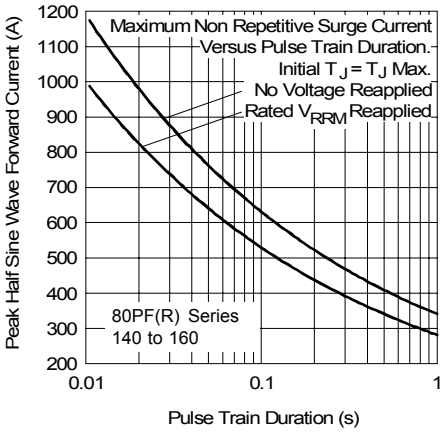



Fig. 3 - Maximum Non-Repetitive Surge Current

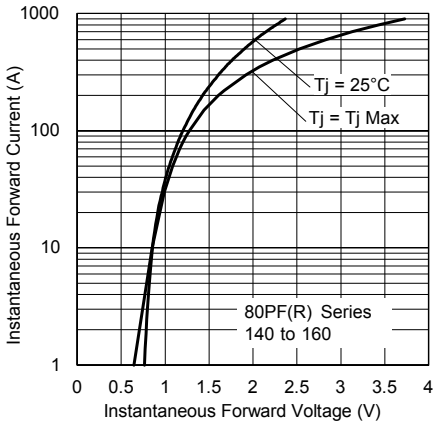



Fig. 4 - Forward Voltage Drop Characteristics

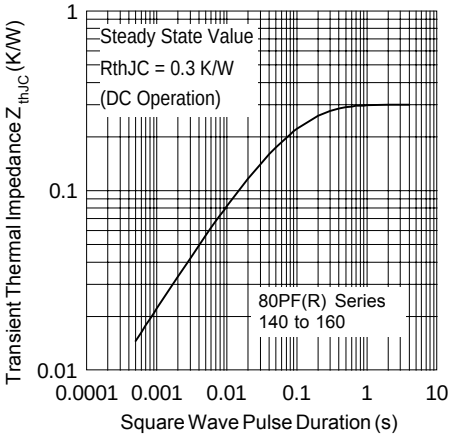
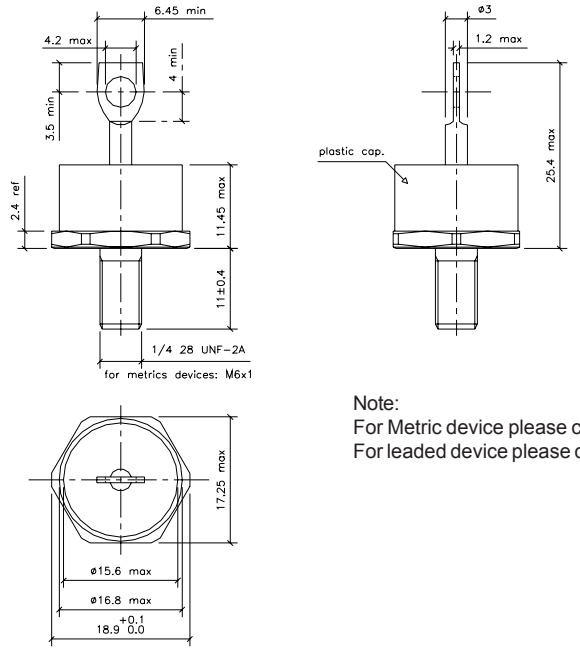



Fig. 5 - Thermal Impedance $Z_{thJC}$ Characteristics

## Outline Table

**Fig. A - 80PF (R)...**
Case Style DO-203AB (DO-5)




Note:
For Metric device please contact Factory
For leaded device please contact factory

## Ordering Information Table

**Device Code**

| 80 | PF | R | 160 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

**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: Code x 10 = $V_{RRM}$ (See Voltage Ratings table)

Data and specifications subject to change without notice.
This product has been designed and qualified for Multiple Level.
Qualification Standards can be found on IR's Web site.

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