

## 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 <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 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	

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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 <sup>2</sup> 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 <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	$V_{FM}$	$I_{pk} = 220$ 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 <sup>(1)</sup>		3.4 (30)	N · m (lbf · in)
		Lubricated thread, tightening on nut <sup>(1)</sup>		2.3 (20)	
		Not lubricated thread, tightening on hexagon <sup>(2)</sup>		4.2 (37)	
		Lubricated thread, tightening on hexagon <sup>(2)</sup>		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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$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.14	0.10	$T_J = T_{J \text{ maximum}}$	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

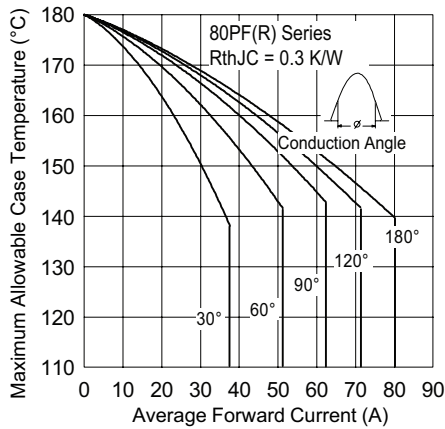


Fig. 1 - Current Ratings Characteristics

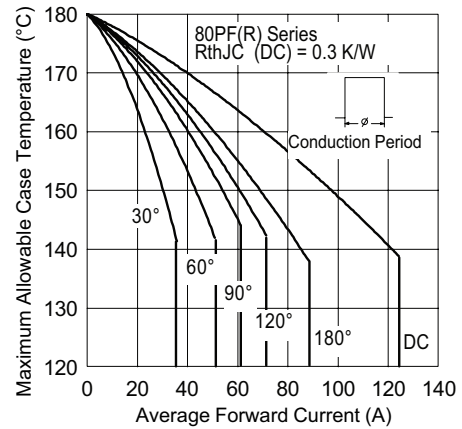


Fig. 2 - Current Ratings Characteristics

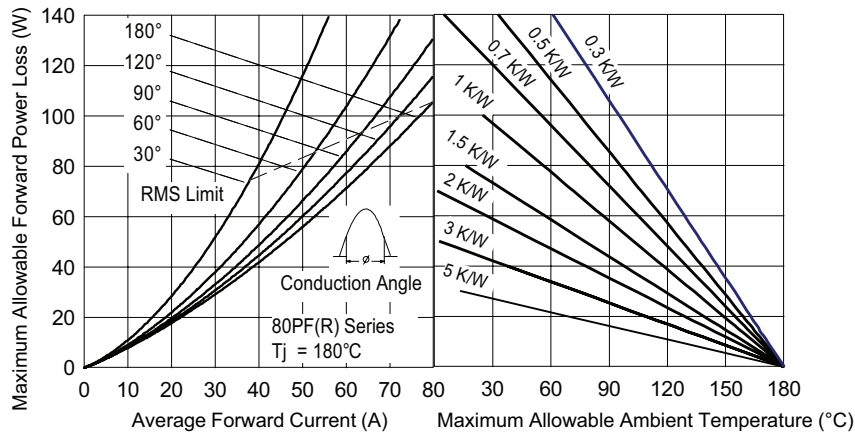


Fig. 3 - Forward Power Loss Characteristics

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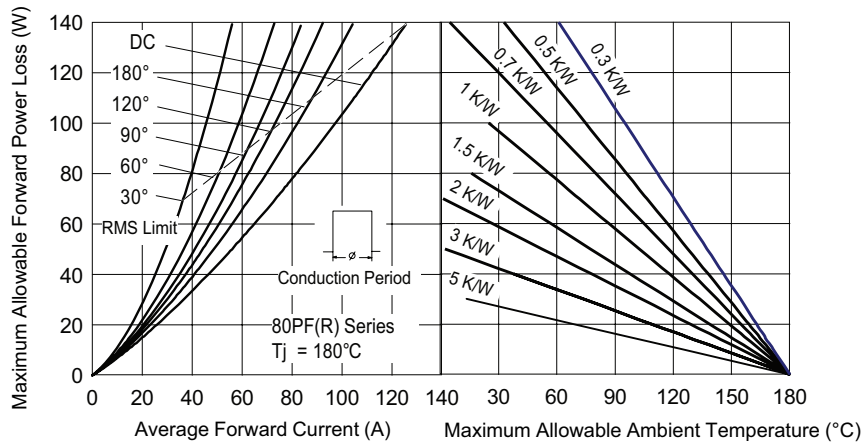


Fig. 4 - Forward Power Loss Characteristics

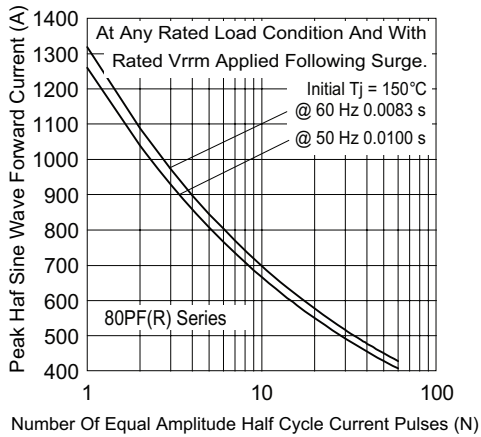


Fig. 5 - Maximum Non-Repetitive Surge Current

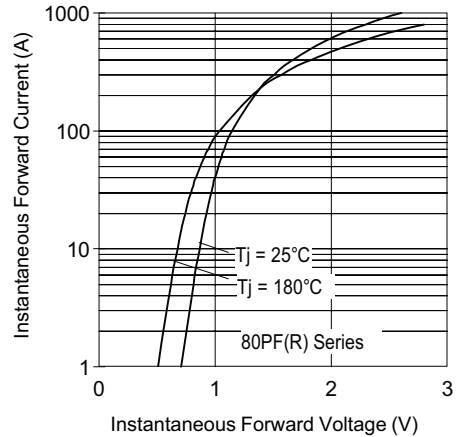


Fig. 7 - Forward Voltage Drop Characteristics

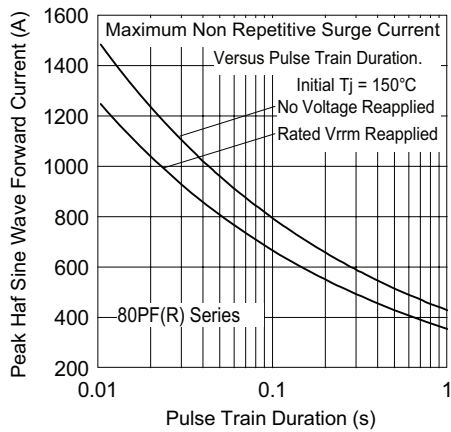


Fig. 6 - Maximum Non-Repetitive Surge Current

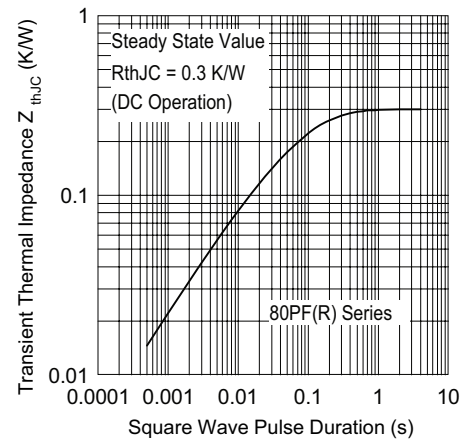
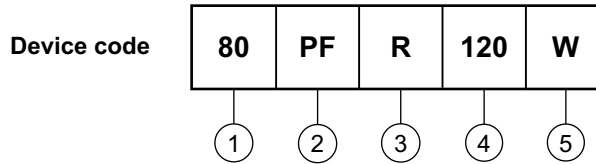


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics



## 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	<a href="http://www.vishay.com/doc?95345">www.vishay.com/doc?95345</a>



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- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
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