

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

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

$I_{F(AV)}$	80 A
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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 $T_J = 150\text{ °C}$ mA
80PF(R)...(W)	40	400	500	9
	80	800	960	
	120	1200	1440	

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 reapplied	Sinusoidal half wave, initial T _J = 150 °C	1500	A
		t = 8.3 ms			1570	
		t = 10 ms	100 % V _{RRM} reapplied		1260	
		t = 8.3 ms			1320	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		11 250	A ² s
		t = 8.3 ms			10 230	
		t = 10 ms	100 % V _{RRM} reapplied		7950	
		t = 8.3 ms			7200	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			112 500	A ² √s
Low level value of threshold voltage	V _{F(TO)}	(16.7 % x π x I _{F(AV)} < I < π x I _{F(AV)}), T _J = T _J maximum			0.73	V
Low level value of forward slope resistance	r _f	(16.7 % x π x I _{F(AV)} < I < π x 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



ΔR_{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

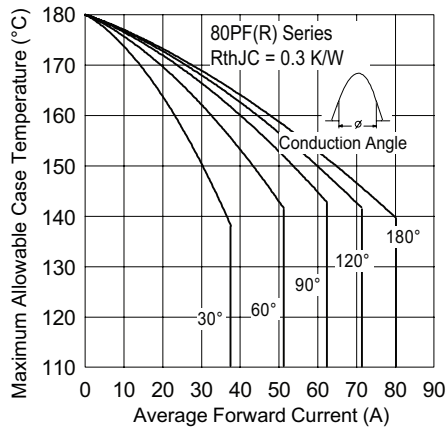


Fig. 1 - Current Ratings Characteristics

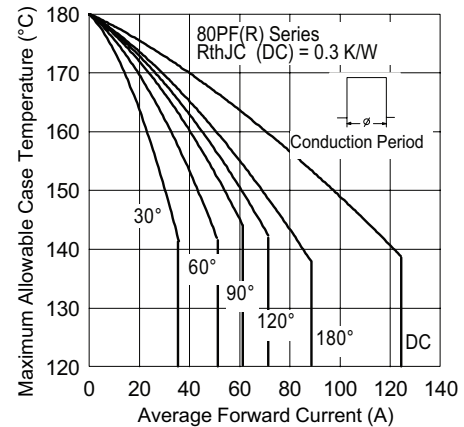


Fig. 2 - Current Ratings Characteristics

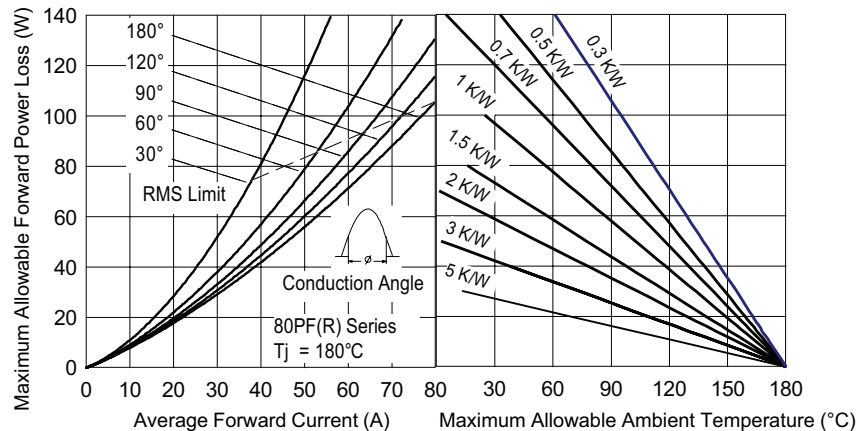


Fig. 3 - Forward Power Loss Characteristics

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

Vishay High Power Products

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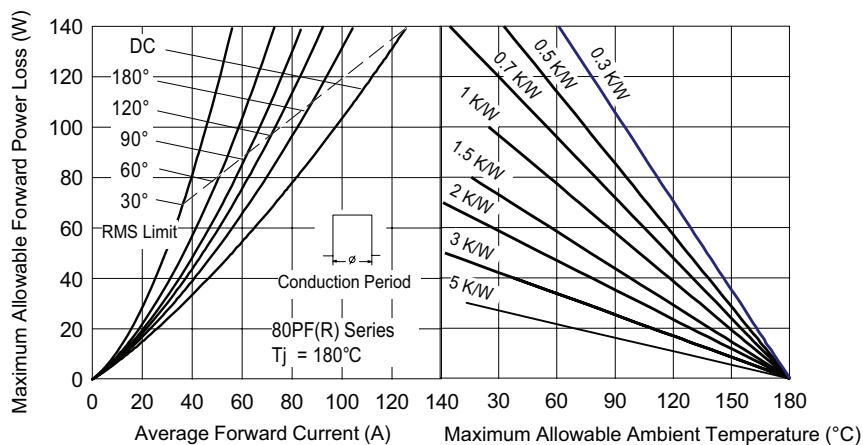


Fig. 4 - Forward Power Loss Characteristics

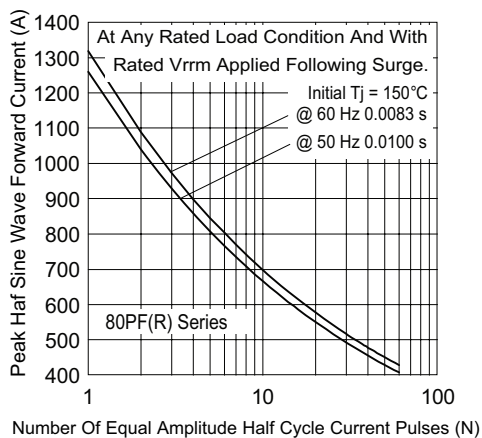


Fig. 5 - Maximum Non-Repetitive Surge Current

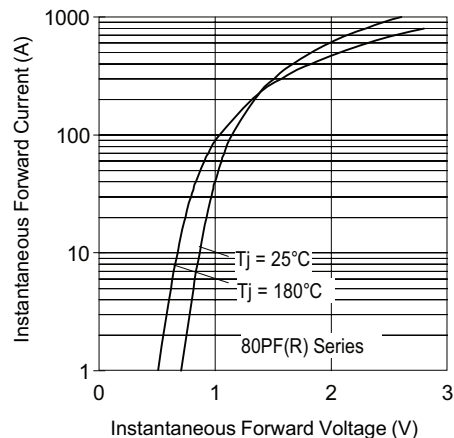


Fig. 7 - Forward Voltage Drop Characteristics

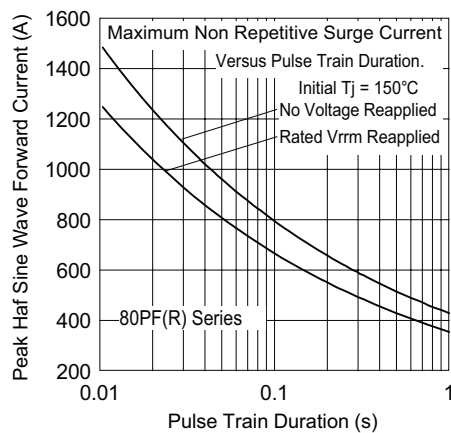


Fig. 6 - Maximum Non-Repetitive Surge Current

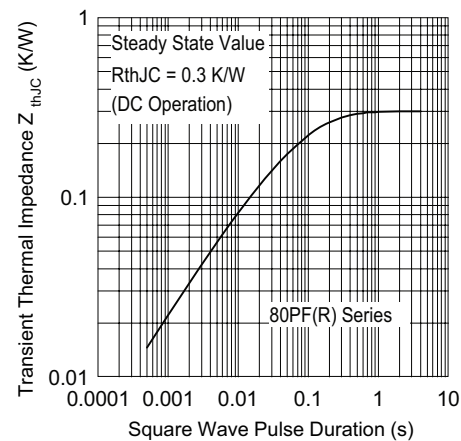


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

Device code	80	PF	R	120	W
	1	2	3	4	5

- | | | |
|--------------|---|---|
| <div>1</div> | - | <ul style="list-style-type: none">• 80 = Standard device• 82 = Isolated lead on standard terminal
with silicone sleeve available for 1200 V only
(red = Reverse polarity)
(blue = Normal polarity) |
| <div>2</div> | - | PF = Plastic package |
| <div>3</div> | - | <ul style="list-style-type: none">• None = Stud normal polarity (cathode to stud)• R = Stud reverse polarity (anode to stud) |
| <div>4</div> | - | Voltage code x 10 = V_{RRM} (see Voltage Ratings table) |
| <div>5</div> | - | <ul style="list-style-type: none">• 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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