

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
- RoHS compliant
- Designed and qualified for multiple level



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

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	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



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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
				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		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		6450	
		t = 10 ms	100 % V_{RRM} reappplied	5000	
		t = 8.3 ms		4550	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 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}	$I_{pk} = 220$ A, $T_J = 25$ °C, $t_p = 400$ μs 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	
Allowable mounting torque		Tighting on nut ⁽¹⁾ Not lubricated threads	3.4 + 0 - 10 % (30)	N · m (lbf · in)
		Tighting on hexagon ⁽²⁾ Lubricated threads	2.3 + 0 - 10 % (20)	
Approximate weight			15.8	g
			0.56	oz.
Case style		See dimensions - link at the end of datasheet	DO-203AB (DO-5)	

Notes

- ⁽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



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ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.14	0.10	$T_J = T_{J \text{ maximum}}$	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

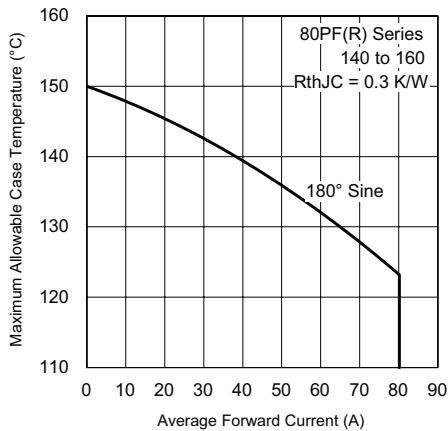


Fig. 1 - Current Ratings Characteristics

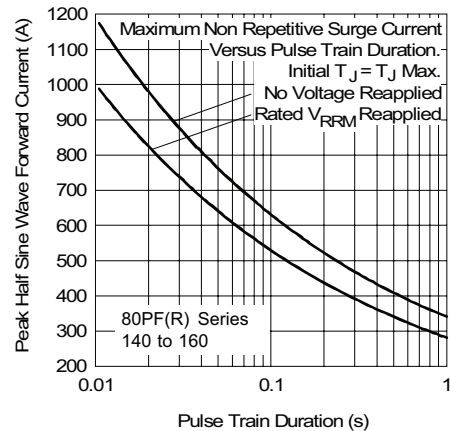


Fig. 3 - Maximum Non-Repetitive Surge Current

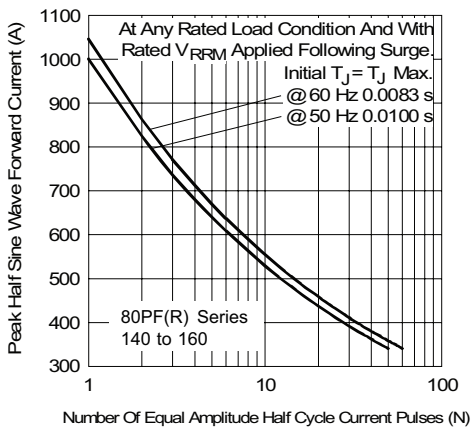


Fig. 2 - Maximum Non-Repetitive Surge Current

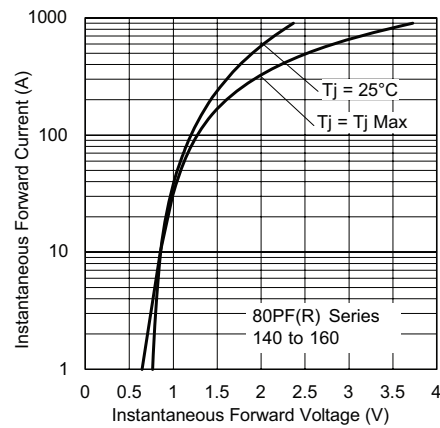


Fig. 4 - Forward Voltage Drop Characteristics

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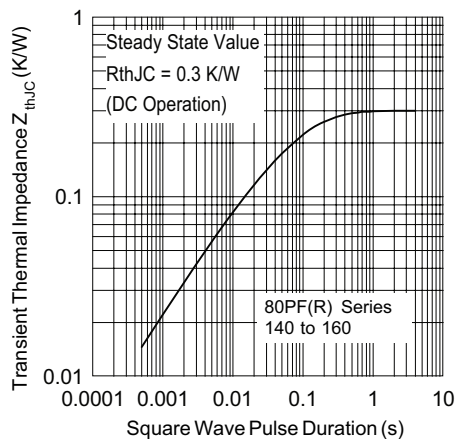


Fig. 5 - Thermal Impedance Z_{thJC} Characteristics

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	http://www.vishay.com/doc?95345



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