

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^2s
	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

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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}	$t = 10 \text{ ms}$	No voltage reapplied	1500	A
		$t = 8.3 \text{ ms}$		1570	
		$t = 10 \text{ ms}$	100 % V_{RRM} reapplied	1260	
		$t = 8.3 \text{ ms}$		1320	
Maximum I^2t for fusing	I^2t	$t = 10 \text{ ms}$	No voltage reapplied	11 250	A^2s
		$t = 8.3 \text{ ms}$		10 230	
		$t = 10 \text{ ms}$	100 % V_{RRM} reapplied	7950	
		$t = 8.3 \text{ ms}$		7200	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1 \text{ ms to } 10 \text{ ms, no voltage reapplied}$		112 500	$\text{A}^2\sqrt{\text{s}}$
Low level value of threshold voltage	$V_{F(TO)}$	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J \text{ maximum}$		0.73	V
Low level value of forward slope resistance	r_f	$(16.7 \% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J \text{ maximum}$		3.0	$\text{m}\Omega$
Maximum forward voltage drop	V_{FM}	$I_{pk} = 220 \text{ A, } T_J = 25 \text{ °C, } t_p = 400 \mu\text{s rectangular wave}$		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	$T_J = T_J$ 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

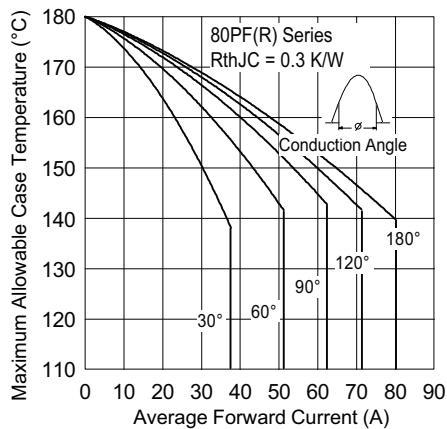


Fig. 1 - Current Ratings Characteristics

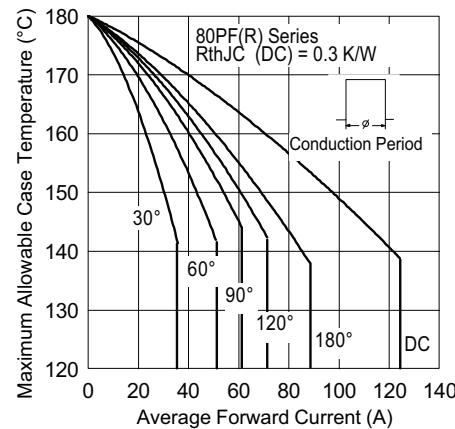


Fig. 2 - Current Ratings Characteristics

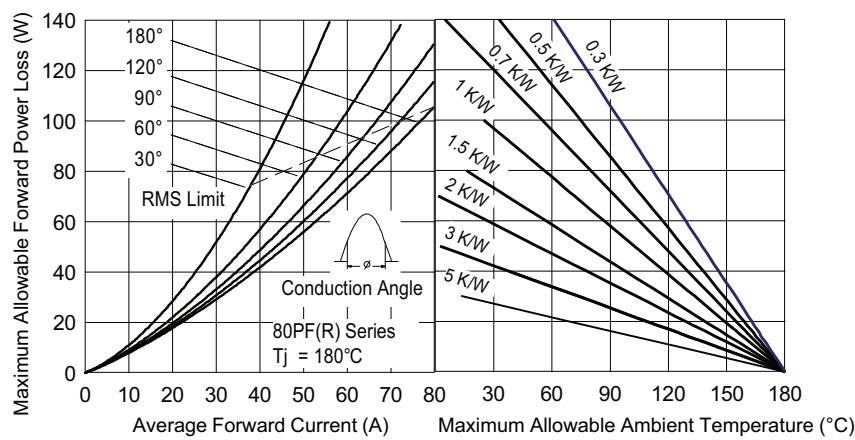


Fig. 3 - Forward Power Loss Characteristics

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

Vishay Semiconductors

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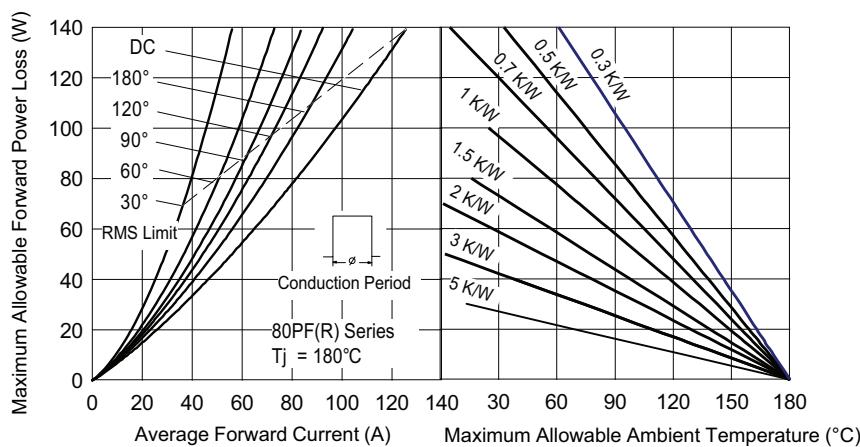


Fig. 4 - Forward Power Loss Characteristics

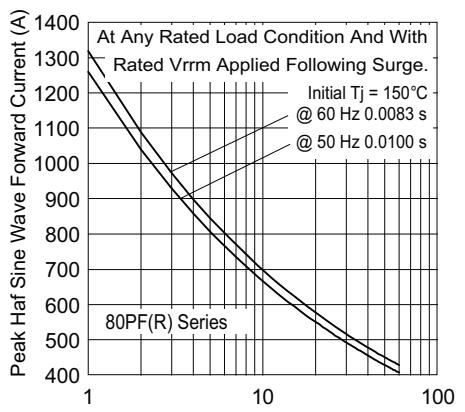


Fig. 5 - Maximum Non-Repetitive Surge Current

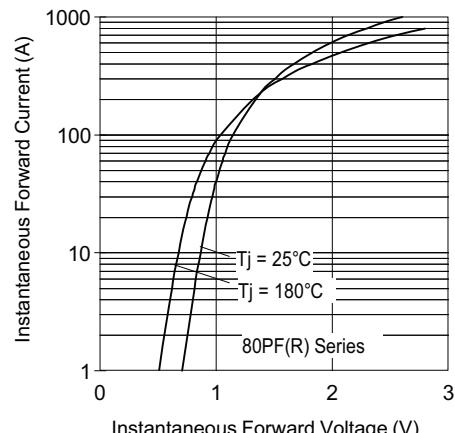


Fig. 7 - Forward Voltage Drop Characteristics

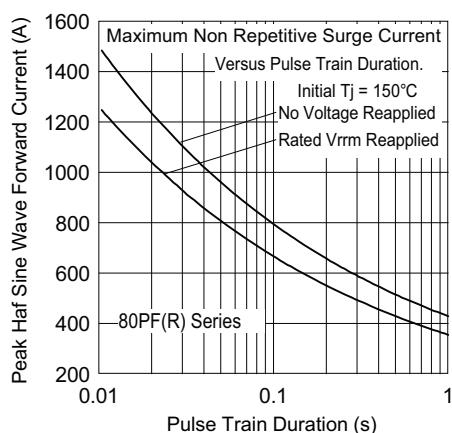


Fig. 6 - Maximum Non-Repetitive Surge Current

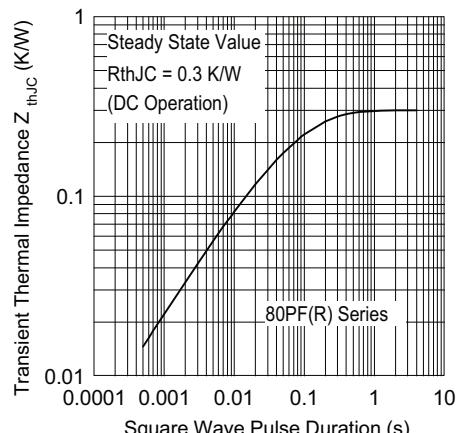
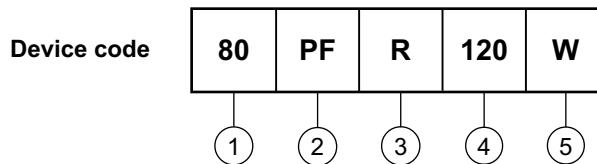


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

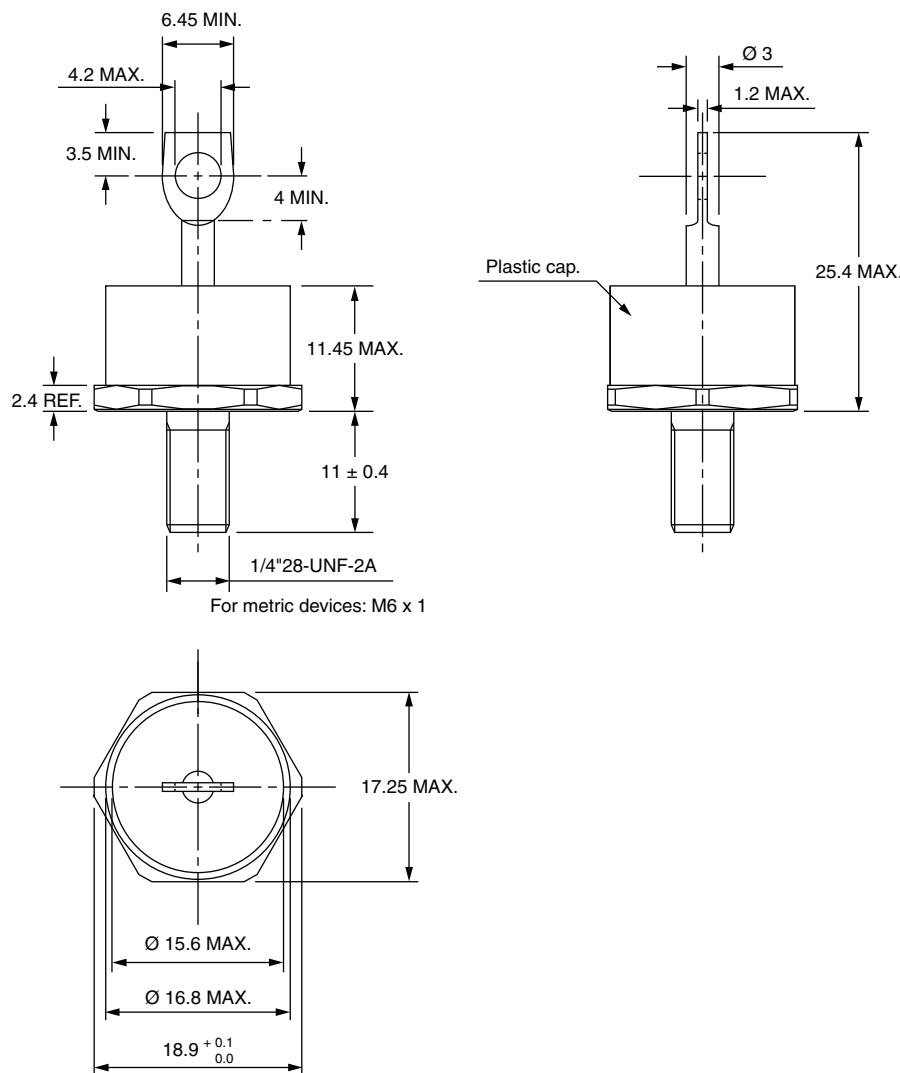
ORDERING INFORMATION TABLE


- 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

DO-203AB (DO-5) for 50PF(R)...(W), 80PF(R)...(W) and 95PF(R)...(W) Series

DIMENSIONS FOR 80PF(R), 50PF(R) AND 95PF(R) SERIES in millimeters



Note

- For metric device please contact factory

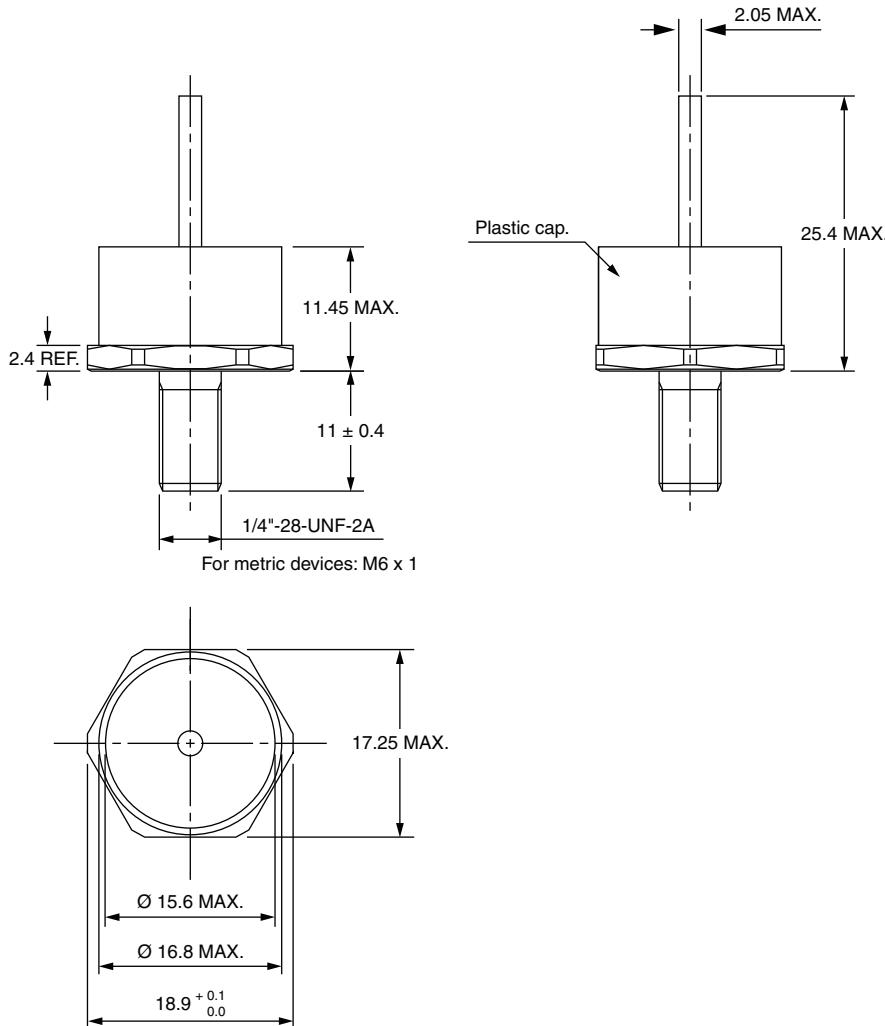
Outline Dimensions

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DO-203AB (DO-5) for 50PF(R)...(W),
80PF(R)...(W) and 95PF(R)...(W) Series



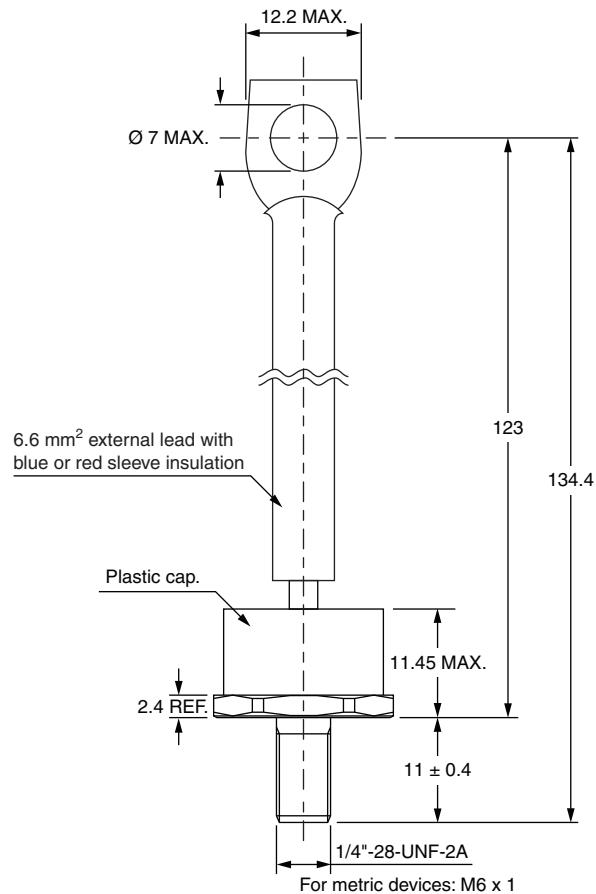
DIMENSIONS FOR 80PF(R)...(W), 50PF(R)...(W) AND 95PF(R)...(W) SERIES in millimeters



Note

- For metric device please contact factory

DIMENSIONS FOR 52PF(R), 82PF(R) AND 97PF(R) SERIES in millimeters



Note

- For metric device please contact factory

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