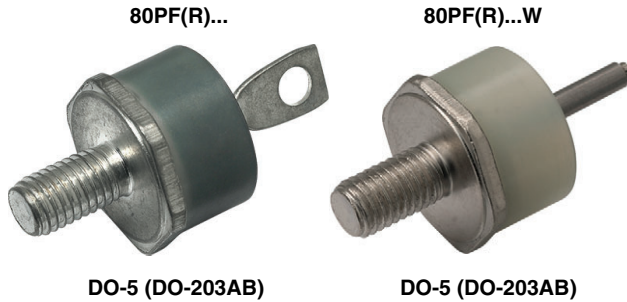


## Standard Recovery Diodes, Generation 2 DO-5 (Stud Version), 80 A



### FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Wire version available
- Low thermal resistance
- Designed and qualified for multiple level
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	80 A
Package	DO-5 (DO-203AB)
Circuit configuration	Single

### 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 <sup>2</sup> 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 $T_J = 150\text{ °C}$ mA
VS-80PF(R)...(W)	140	1400	1650	4.5
	160	1600	1900	



FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum average forward current at case temperature	I <sub>F(AV)</sub>	180° conduction, half sine wave			80	A	
					123	°C	
Maximum RMS forward current	I <sub>F(RMS)</sub>				126	A	
Maximum peak, one-cycle forward, non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T <sub>J</sub> = 150 °C	1200	A	
		t = 8.3 ms			1250		
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		1000		
		t = 8.3 ms			1050		
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied			7100	A <sup>2</sup> s
		t = 8.3 ms				6450	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied			5000	
		t = 8.3 ms				4550	
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 ms to 10 ms, no voltage reapplied			71 000	A <sup>2</sup> √s	
Low level value of threshold voltage	V <sub>F(TO)</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			0.73	V	
Low level value of forward slope resistance	r <sub>f</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			3.0	mΩ	
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 220 A, T <sub>J</sub> = 25 °C, t <sub>p</sub> = 400 μs rectangular wave			1.46	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	
Allowable mounting torque		Not lubricated threads, tightening on nut <sup>(1)</sup>	3.4 (30)	N · m (lbf · in)
		Lubricated threads, tightening on nut <sup>(1)</sup>	2.3 (20)	
		Not lubricated threads, tightening on Hexagon <sup>(2)</sup>	4.2 (37)	
		Lubricated threads, 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-5 (DO-203AB)	

**Notes**

(1) Recommended for pass-through holes

(2) Torque must be applicable only to Hexagon and not to plastic structure, recommended for holed heatsink

$\Delta R_{thJC}$ 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

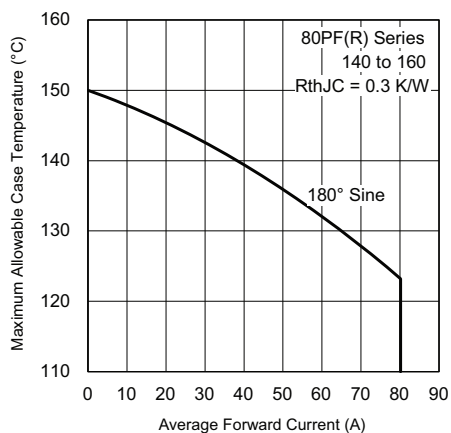


Fig. 1 - Current Ratings Characteristics

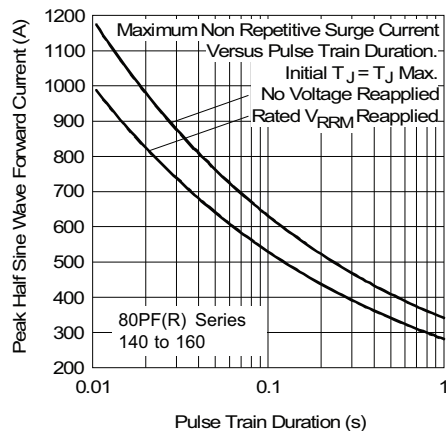


Fig. 3 - Forward Power Loss Characteristics

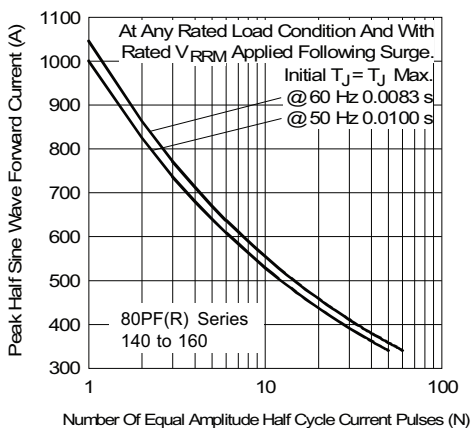


Fig. 2 - Current Ratings Characteristics

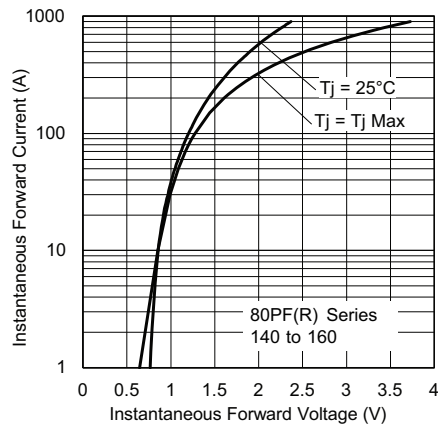


Fig. 4 - Forward Power Loss Characteristics

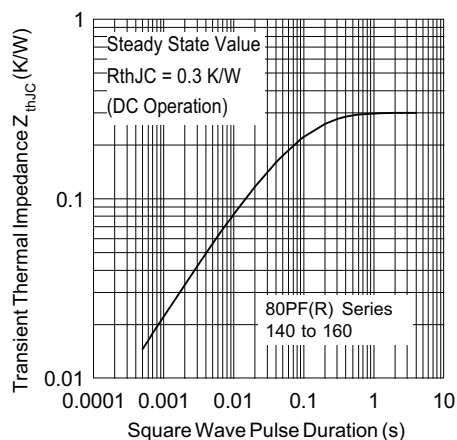


Fig. 5 - Maximum Non-Repetitive Surge Current



## ORDERING INFORMATION TABLE

Device code	VS-	80	PF	R	160	W
	1	2	3	4	5	6

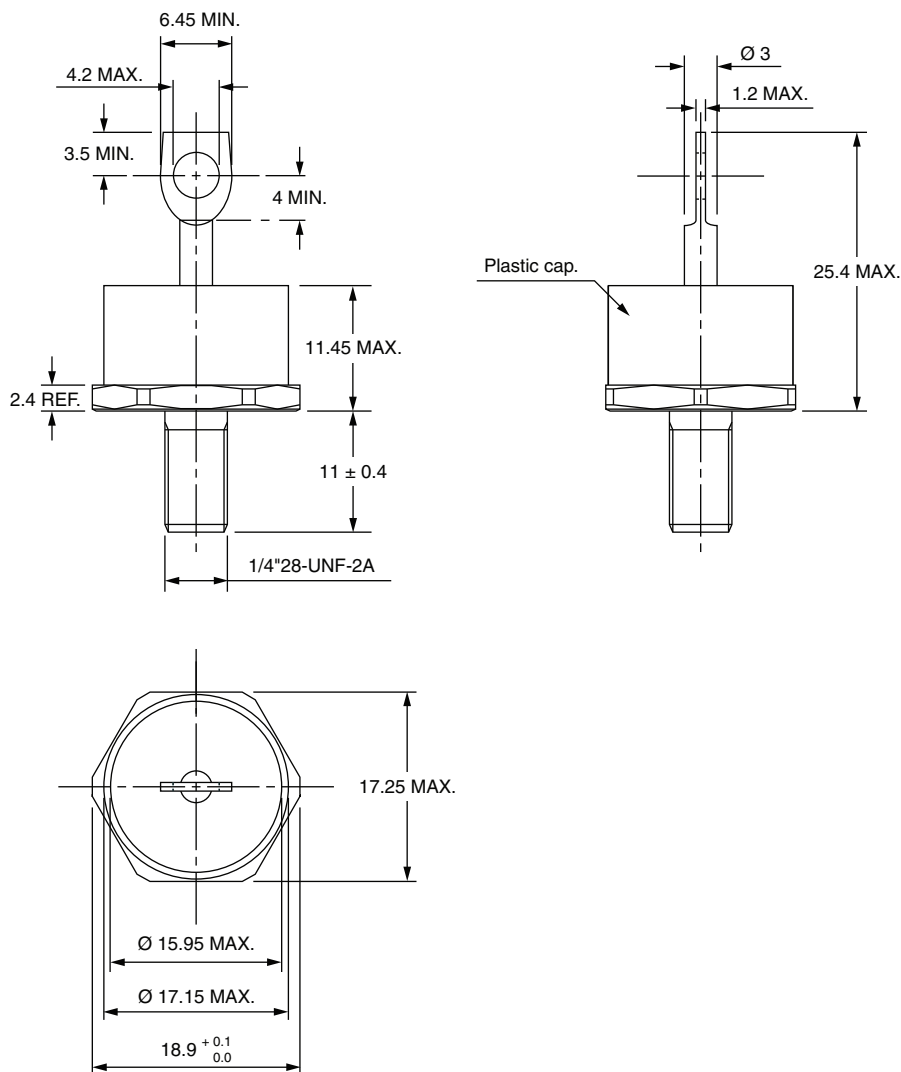
- |          |   |   |
|----------|---|---|
| <b>1</b> | - | Vishay Semiconductors product   |
| <b>2</b> | - | 80 = standard device  |
| <b>3</b> | - | PF = plastic package  |
| <b>4</b> | - | <ul style="list-style-type: none"><li>• None = stud normal polarity (cathode to stud)</li><li>• R = stud reverse polarity (anode to stud)</li></ul>   |
| <b>5</b> | - | Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)   |
| <b>6</b> | - | <ul style="list-style-type: none"><li>• None = standard terminal<br/>(see dimensions for 80PF(R)... - link at the end of datasheet)</li><li>• W = wire terminal<br/>(see dimensions for 80PF(R)...W - link at the end of datasheet)</li></ul> |

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95345">www.vishay.com/doc?95345</a>



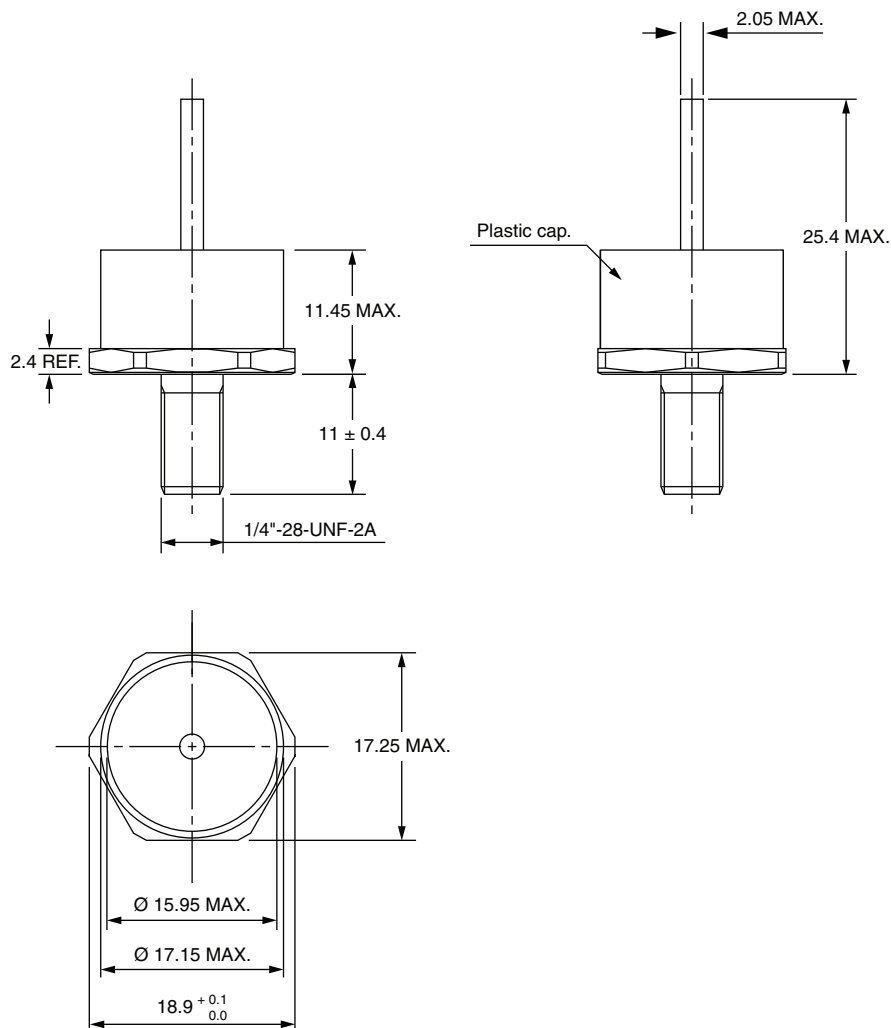
## DO-203AB (DO-5) for 50PF(R)...(W), 80PF(R)...(W), and 95PF(R)...(W) Series

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



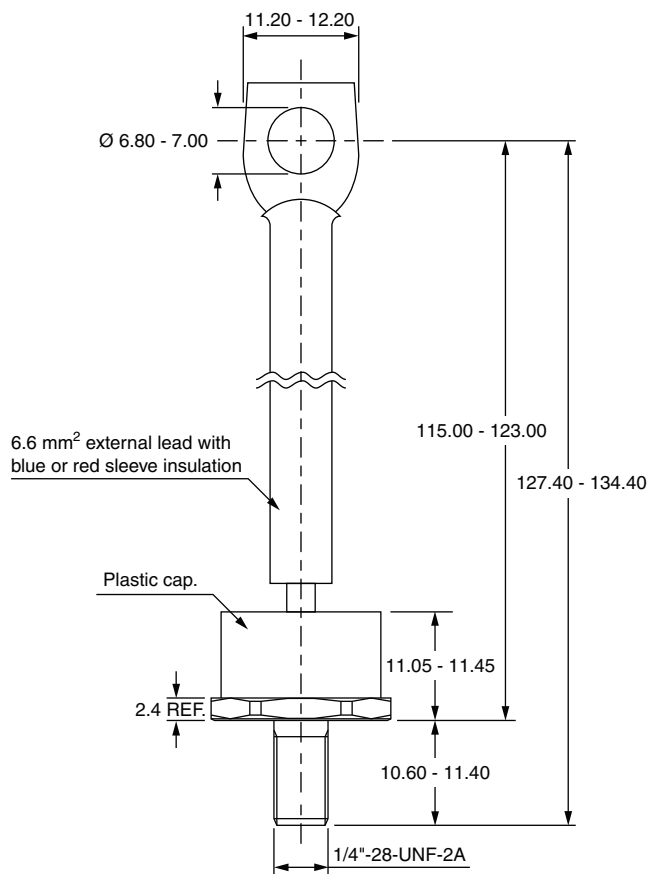


## DIMENSIONS FOR 80PF(R)...(W), 50PF(R)...(W), AND 95PF(R)...(W) SERIES in millimeters





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





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