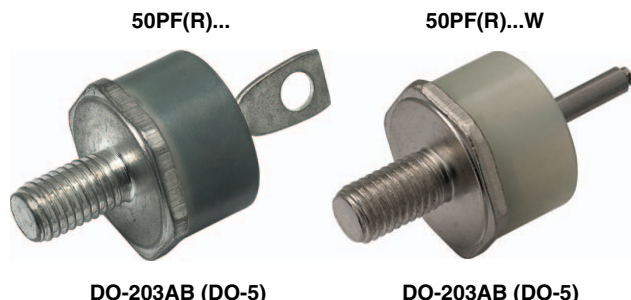


Standard Recovery Diodes, Generation 2 DO-5 (Stud Version), 50 A



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



TYPICAL APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	50 A
Package	DO-203AB (DO-5)
Circuit configuration	Single diode

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		50	A
	T_C	128	°C
$I_{F(RMS)}$		78	A
I_{FSM}	50 Hz	570	A
	60 Hz	595	
I^2t	50 Hz	1600	A ² s
	60 Hz	1450	
V_{RRM}	Range	1400 to 1600	V
T_J		-55 to 160	°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
VS-50PF(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 _{F(AV)}	180° conduction, half sine wave			50	A
					128	°C
Maximum RMS forward current	I _{F(RMS)}				78	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	570	A
		t = 8.3 ms			595	
		t = 10 ms	100 % V _{RRM} reapplied		480	
		t = 8.3 ms			500	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		1600	A ² s
		t = 8.3 ms			1450	
		t = 10 ms	100 % V _{RRM} reapplied		1150	
		t = 8.3 ms			1050	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			16 000	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			0.77	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			4.30	mΩ
Maximum forward voltage drop	V _{FM}	I _{pk} = 125 A, T _J = 25 °C, t _p = 400 μs rectangular wave			1.50	V

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-55 to 160	°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.51	K/W
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°	0.11	0.10	$T_J = T_J \text{ maximum}$	K/W
120°	0.16	0.16		
90°	0.20	0.22		
60°	0.29	0.31		
30°	0.49	0.50		

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

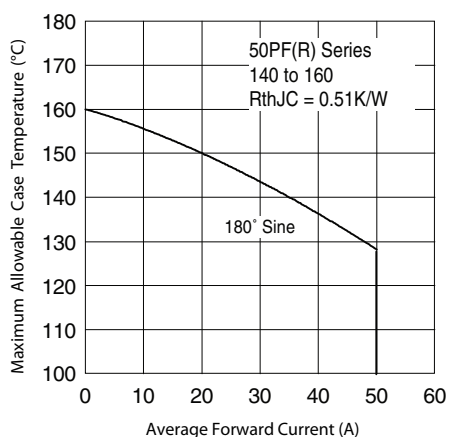


Fig. 1 - Current Ratings Characteristics

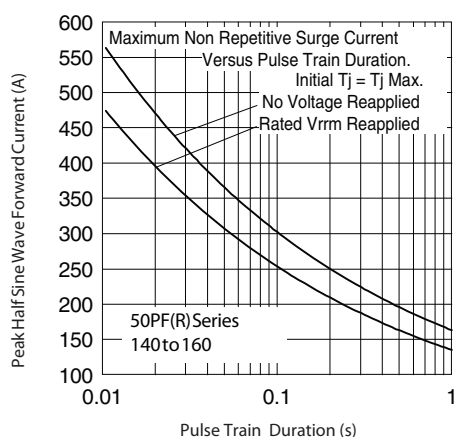


Fig. 3 - Maximum Non-Repetitive Surge Current

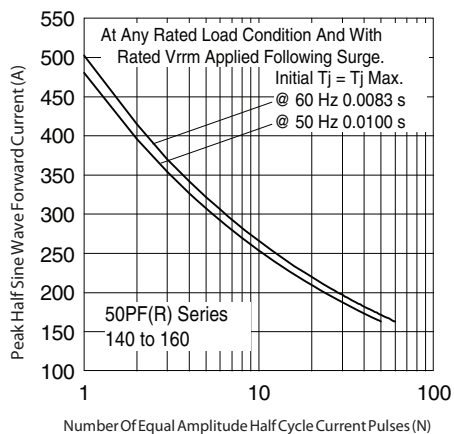


Fig. 2 - Maximum Non-Repetitive Surge Current

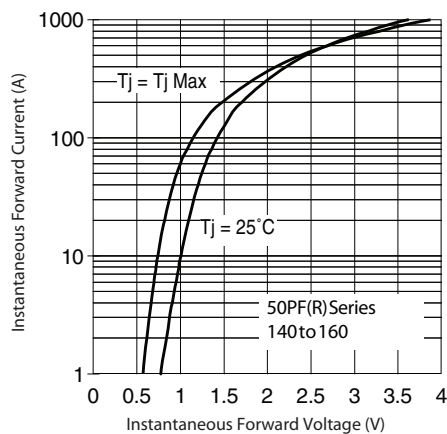


Fig. 4 - Forward Voltage Drop Characteristics

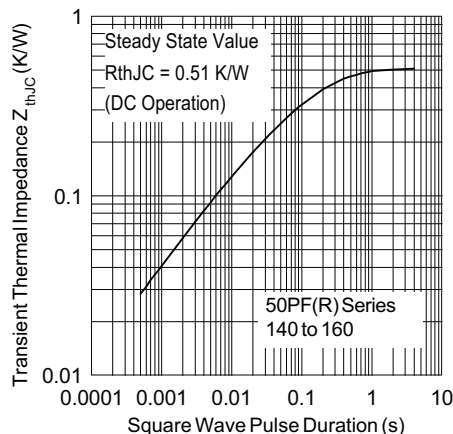


Fig. 5 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

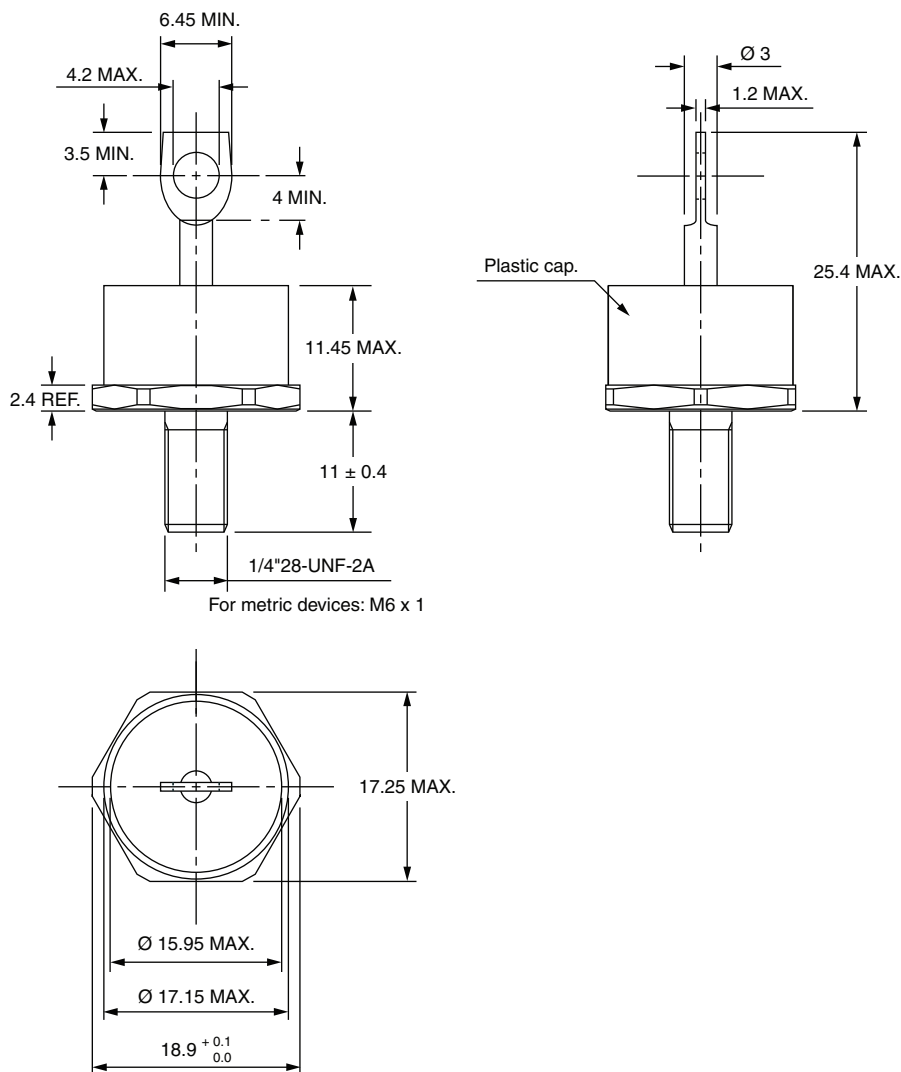
Device code	VS-	50	PF	R	160	W
	①	②	③	④	⑤	⑥
①	- Vishay Semiconductors product					
②	- 50 = Standard device					
③	- PF = Plastic package					
④	- • None = Stud normal polarity (cathode to stud) • R = Stud reverse polarity (anode to stud)					
⑤	- Voltage code x 10 = V_{RRM} (see Voltage Ratings table)					
⑥	- • None = Standard terminal (see dimensions for 50PF(R)... - link at the end of datasheet) • W = Wire terminal (see dimensions for 50PF(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

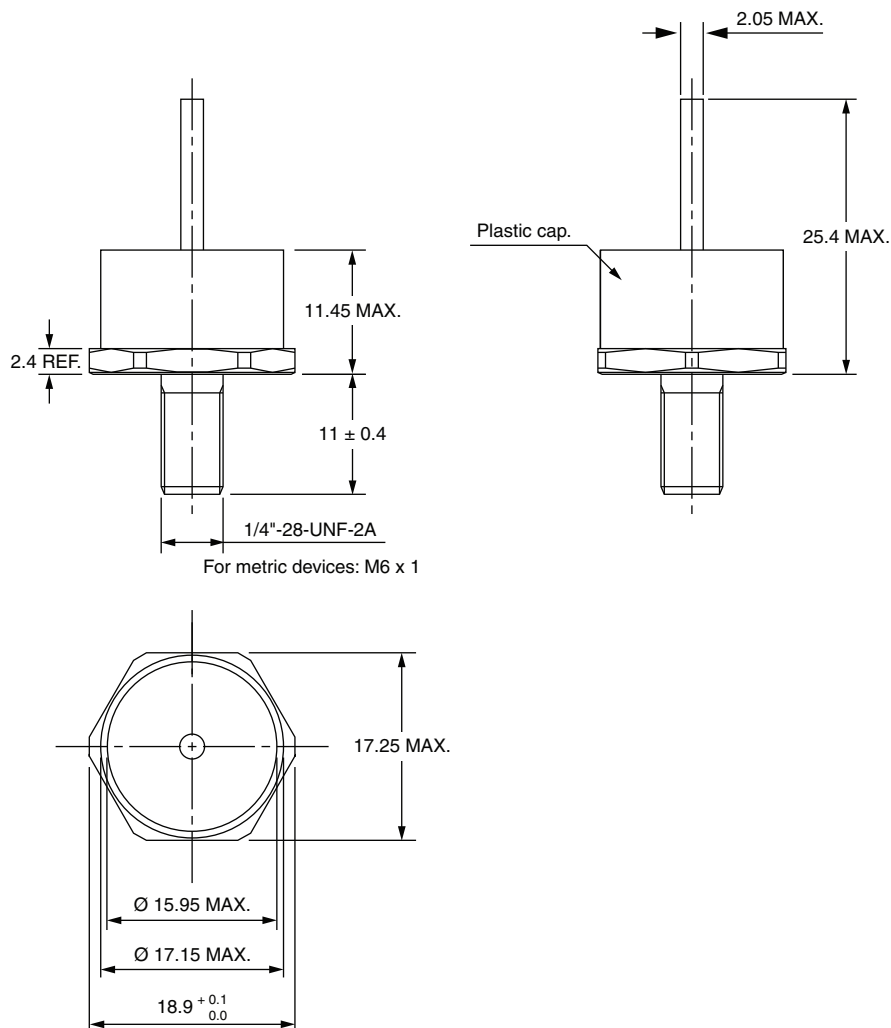


Note

- For metric device please contact factory



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

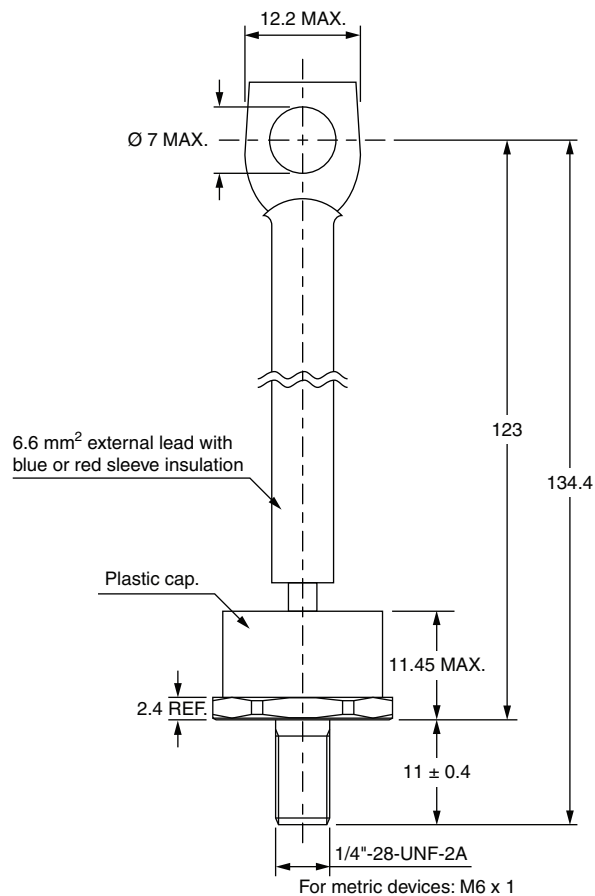


Note

- 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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