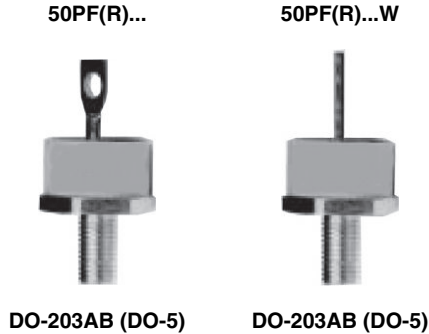


Standard Recovery Diodes Generation 2 DO-5 (Stud Version), 50 A



FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Wire version available
- Low thermal resistance
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for multiple level



TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

$I_{F(AV)}$	50 A
-------------	------

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
50PF(R)...(W)	140	1400	1650	4.5
	160	1600	1900	

50PF(R)...(W) High Voltage Series



Vishay Semiconductors

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

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 $T_J = 150\text{ °C}$	A
		t = 8.3 ms			
		t = 10 ms	100 % V_{RRM} reapplied		
		t = 8.3 ms			
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		A ² s
		t = 8.3 ms			
		t = 10 ms	100 % V_{RRM} reapplied		
		t = 8.3 ms			
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied		16 000	A ² √s
Low level value of threshold voltage	$V_{F(TO)}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J$ maximum		0.77	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		4.30	mΩ
Maximum forward voltage drop	V_{FM}	$I_{pk} = 125\text{ A}$, $T_J = 25\text{ °C}$, $t_p = 400\text{ }\mu\text{s}$ 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



50PF(R)...(W) High Voltage Series

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

Vishay Semiconductors

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

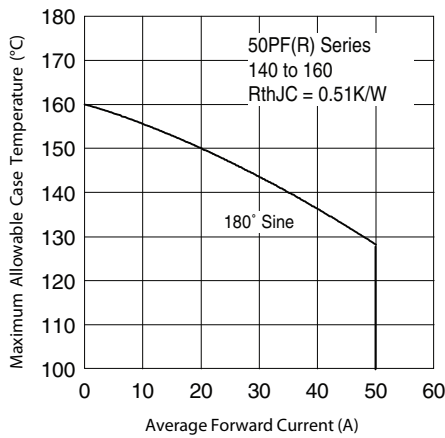


Fig. 1 - Current Ratings Characteristics

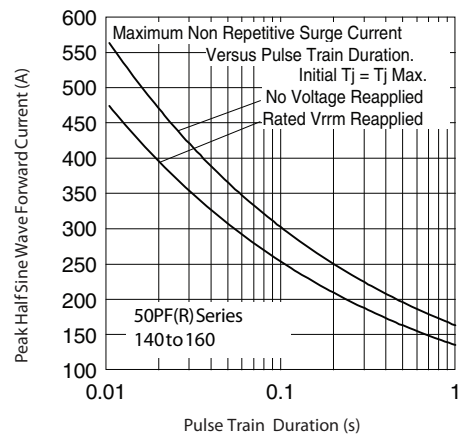


Fig. 3 - Maximum Non-Repetitive Surge Current

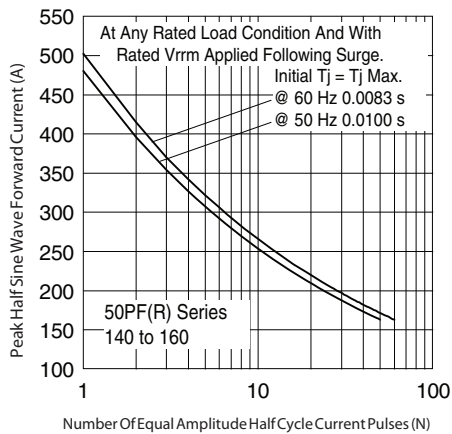


Fig. 2 - Maximum Non-Repetitive Surge Current

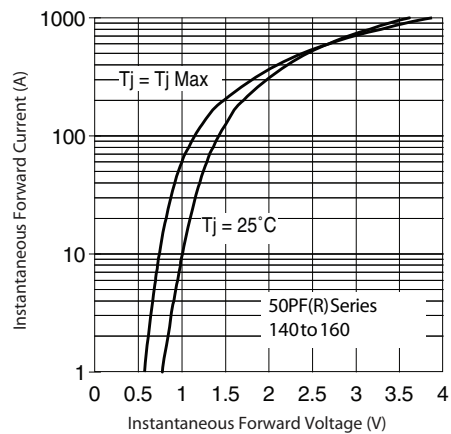


Fig. 4 - Forward Voltage Drop Characteristics

50PF(R)...(W) High Voltage Series



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

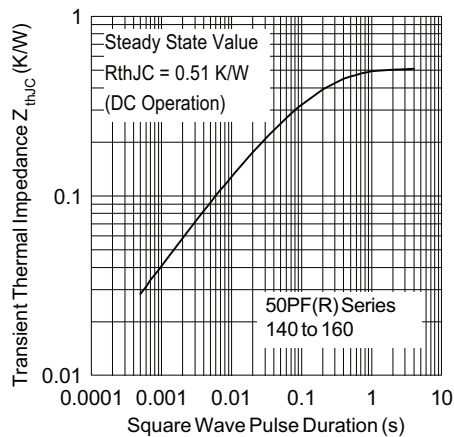


Fig. 5 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

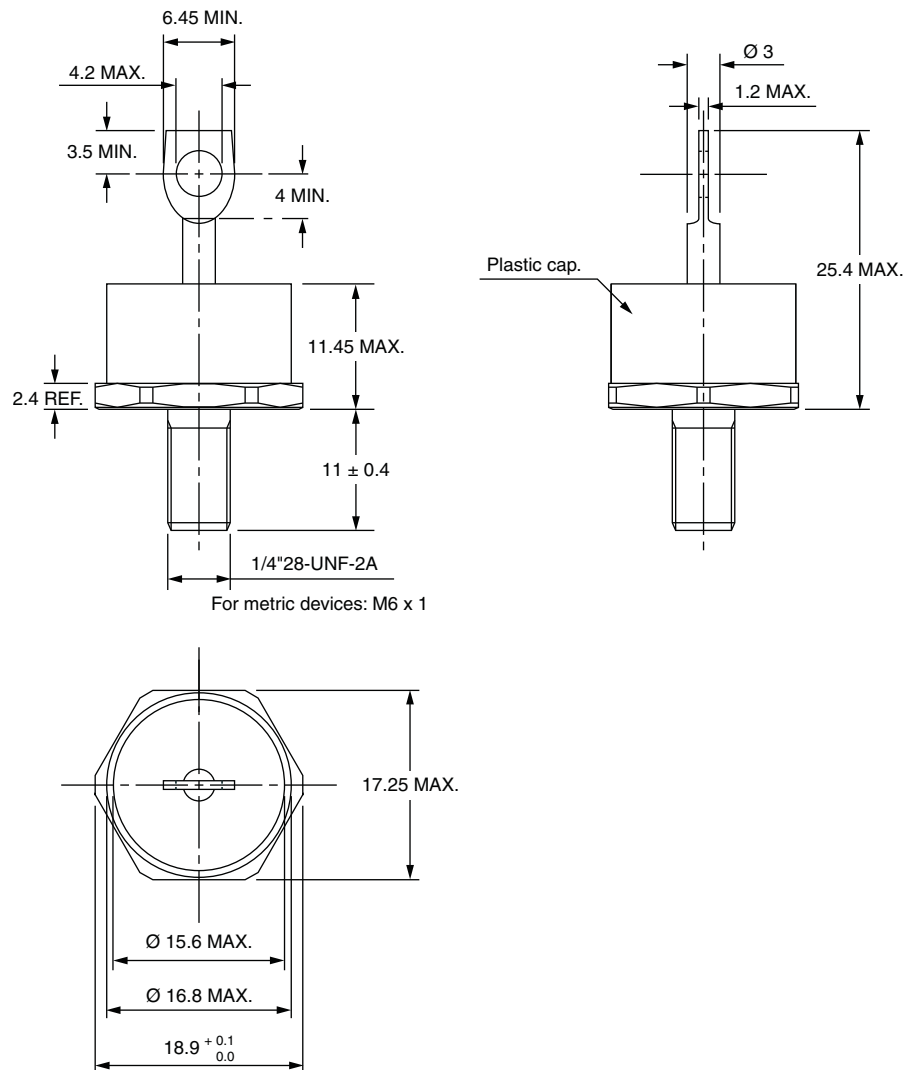
Device code	50	PF	R	160	W
	①	②	③	④	⑤

- 1** - 50 = Standard device
- 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 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

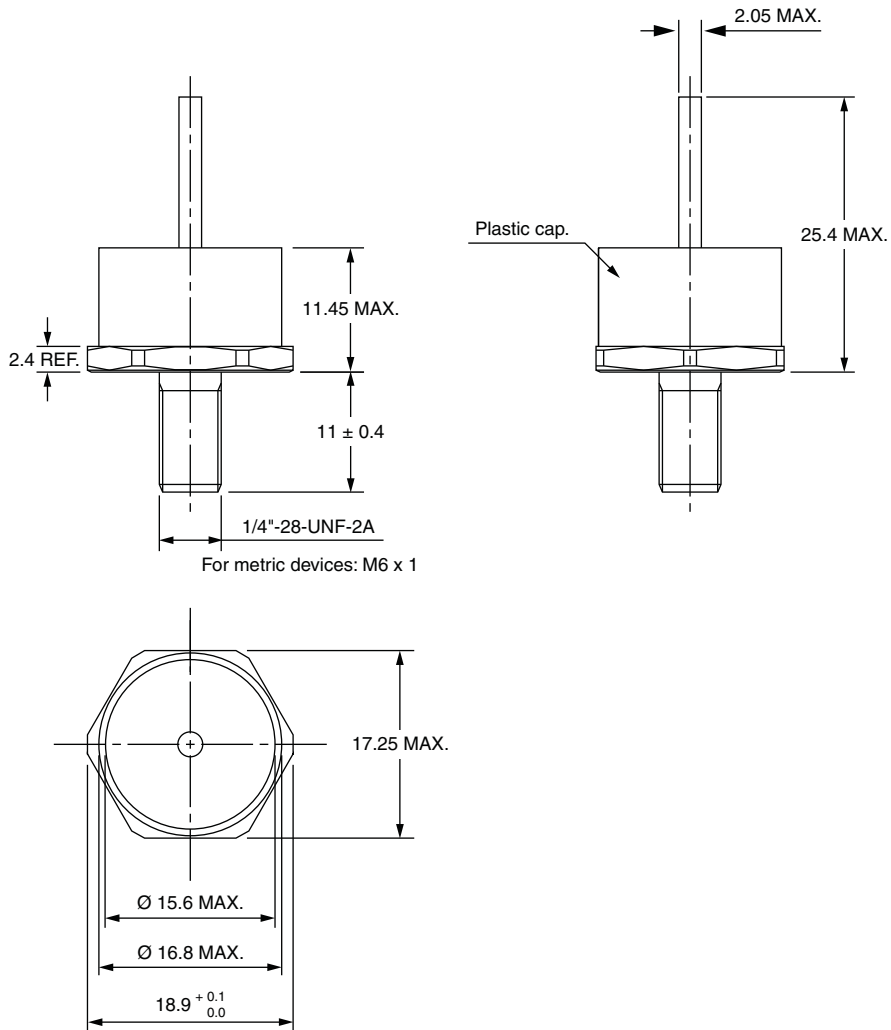
- For metric device please contact factory

Outline Dimensions



Vishay Semiconductors 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

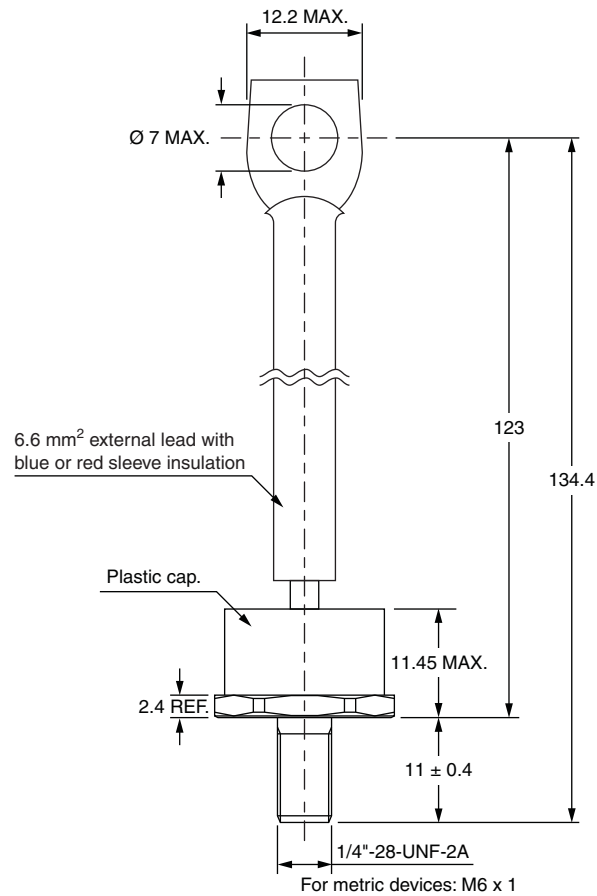


Note

- 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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