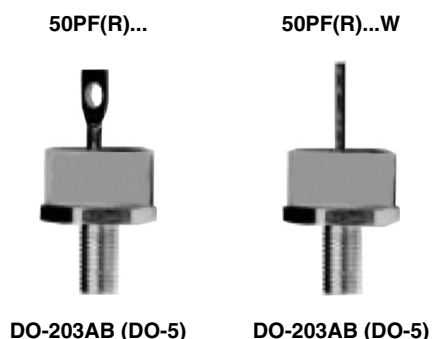


Standard Recovery Diodes, Generation 2 DO-5 (Stud Version), 50 A



FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Wire version available
- Low thermal resistance
- UL approval pending
- RoHS compliant
- Designed and qualified for multiple level



PRODUCT SUMMARY

$I_{F(AV)}$	50 A
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TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		50	A
	T_C	140	°C
$I_{F(RMS)}$		78	A
I_{FSM}	50 Hz	800	A
	60 Hz	830	
I^2t	50 Hz	3200	A ² s
	60 Hz	2900	
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 $T_J = 150\text{ °C}$ mA
50PF(R)...(W)	40	400	500	9
	80	800	960	
	120	1200	1440	

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

Vishay High Power Products

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
					140	°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	800	A
		t = 8.3 ms			830	
		t = 10 ms	100 % V _{RRM} reapplied		670	
		t = 8.3 ms			700	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		3200	A ² s
		t = 8.3 ms			2900	
		t = 10 ms	100 % V _{RRM} reapplied		2260	
		t = 8.3 ms			2050	
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			32 000	A ² √s
Low level value of threshold voltage	V _{F(TO)}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum			0.77	V
Low level value of forward slope resistance	r _f	(16.7 % × π × I _{F(AV)} < I < π × 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			1.40	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	0.51	K/W
Maximum 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 applicable only to Hexagon and not to plastic structure



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

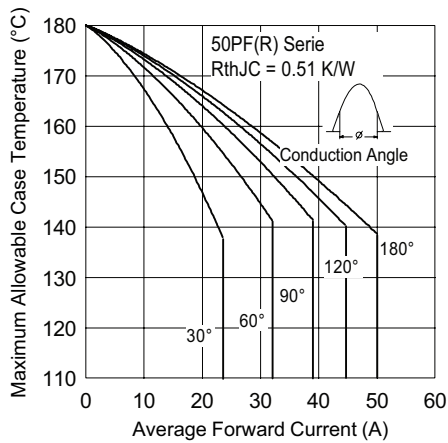


Fig. 1 - Current Ratings Characteristics

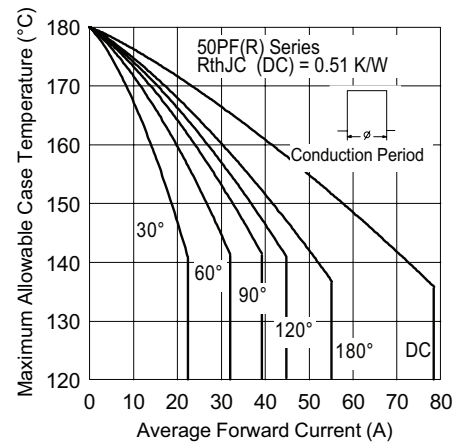


Fig. 2 - Current Ratings Characteristics

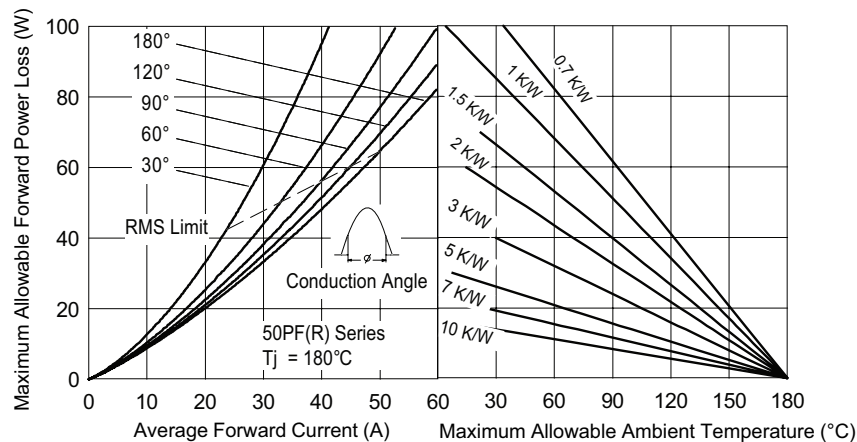


Fig. 3 - Forward Power Loss Characteristics

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

Vishay High Power Products

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

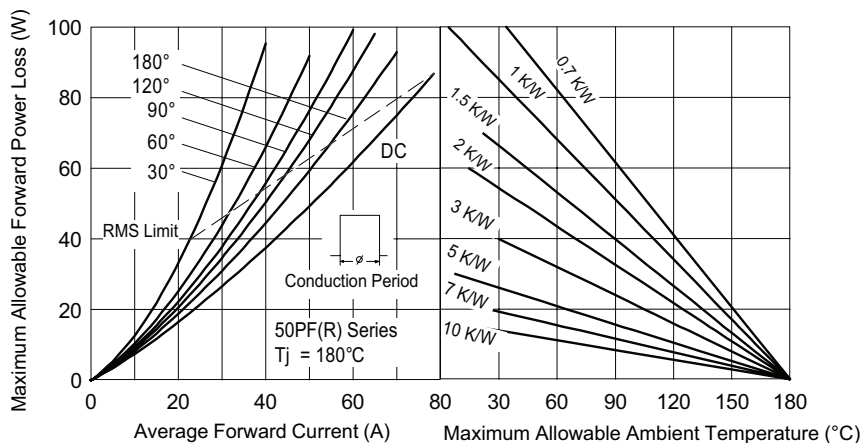


Fig. 4 - Forward Power Loss Characteristics

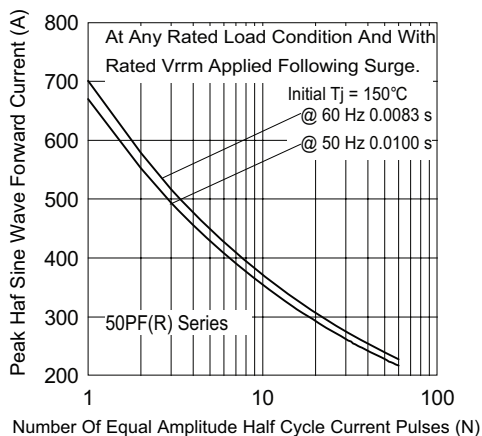


Fig. 5 - Maximum Non-Repetitive Surge Current

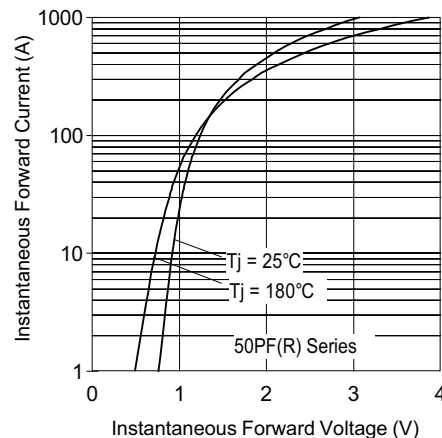


Fig. 7 - Forward Voltage Drop Characteristics

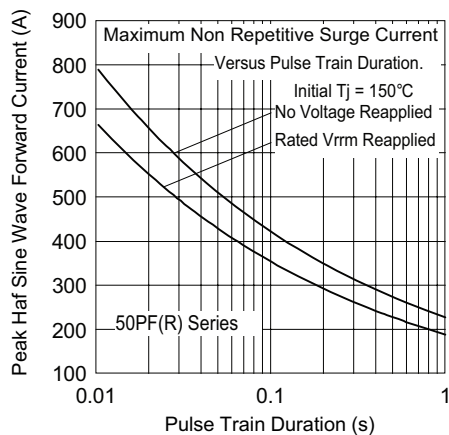


Fig. 6 - Maximum Non-Repetitive Surge Current

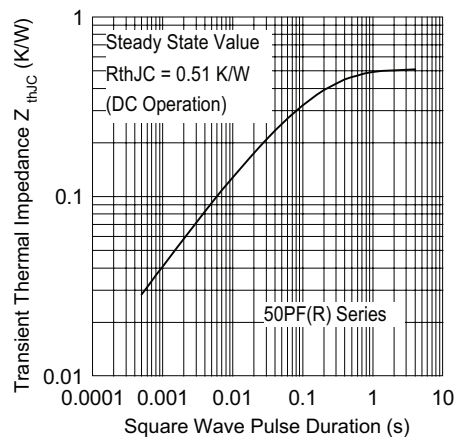


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

Device code	50	PF	R	120	W
	1	2	3	4	5

- | | | |
|--------------|---|---|
| <div>1</div> | - | <ul style="list-style-type: none">• 50 = Standard device• 52 = Isolated lead on standard terminal
with silicone sleeve available for 1200 V only
(red = Reverse polarity)
(blue = Normal polarity) |
| <div>2</div> | - | PF = Plastic package |
| <div>3</div> | - | <ul style="list-style-type: none">• None = Stud normal polarity (cathode to stud)• R = Stud reverse polarity (anode to stud) |
| <div>4</div> | - | Voltage code x 10 = V_{RRM} (see Voltage Ratings table) |
| <div>5</div> | - | <ul style="list-style-type: none">• 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	http://www.vishay.com/doc?95345



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