

Standard Recovery Diodes (Stud Version), 70 A



DO-203AB (DO-5)

FEATURES

- High surge current capability
- Designed for a wide range of applications
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600 V V_{RRM}
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

PRODUCT SUMMARY

$I_{F(AV)}$	70 A
Package	DO-203AB (DO-5)
Circuit configuration	Single diode

TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	70HF(R)		UNITS
		10 TO 120	140/160	
I _{F(AV)}		70	70	A
	T _C	140	110	°C
I _{F(RMS)}		110		A
I _{FSM}	50 Hz	1200		A
	60 Hz	1250		
I ² t	50 Hz	7100		A ² s
	60 Hz	6450		
V _{RRM}	Range	100 to 1200	1400/1600	V
T _J		-65 to 180	-65 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	$V_{R(BR)}$, MINIMUM AVALANCHE VOLTAGE V	I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
70HF(R)	10	100	200	200	15
	20	200	300	300	
	40	400	500	500	
	60	600	720	725	
	80	800	960	950	9
	100	1000	1200	1150	
	120	1200	1440	1350	
	140	1400	1650	1550	4.5
	160	1600	1900	1750	



FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			70HF(R)		UNITS
					10 TO 120	140/160	
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave			70		A
					140	110	°C
Maximum RMS forward current	I _{F(RMS)}				110		A
Maximum peak, one cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reappplied	Sinusoidal half wave, initial T _J = T _J maximum	1200		A
		t = 8.3 ms			1250		
		t = 10 ms	100 % V _{RRM} reappplied		1000		
		t = 8.3 ms			1050		
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reappplied		7100		A ² s
		t = 8.3 ms			6450		
		t = 10 ms	100 % V _{RRM} reappplied		5000		
		t = 8.3 ms			4550		
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reappplied			71 000		A ² √s
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J maximum			0.79		V
High level value of threshold voltage	V _{F(TO)2}	(I > π × I _{F(AV)}), T _J = T _J maximum			1.00		
Low level value of forward slope resistance	r _{f1}	(16.7 % × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J maximum			2.33		mΩ
High level value of forward slope resistance	r _{f2}	(I > π × I _{F(AV)}), T _J = T _J maximum			1.53		
Maximum forward voltage drop	V _{FM}	I _{pk} = 220 A, T _J = 25 °C, t _p = 400 μs rectangular wave			1.35	1.46	V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	70HF(R)		UNITS
			10 TO 120	140/160	
Maximum junction and storage temperature range	T _J , T _{Stg}		-65 to 180	-65 to 150	°C
Maximum thermal resistance, junction to case	R _{thJC}	DC operation	0.45		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			17		g
			0.6		oz.
Case style		See dimensions - link at the end of datasheet	DO-203AB (DO-5)		

Notes

- (1) Recommended for pass-through holes
(2) Recommended for holed threaded heatsinks



ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.08	0.06	$T_J = T_J \text{ maximum}$	K/W
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

Note

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

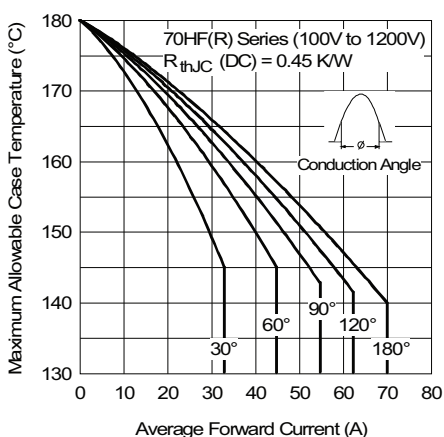


Fig. 1 - Current Ratings Characteristics

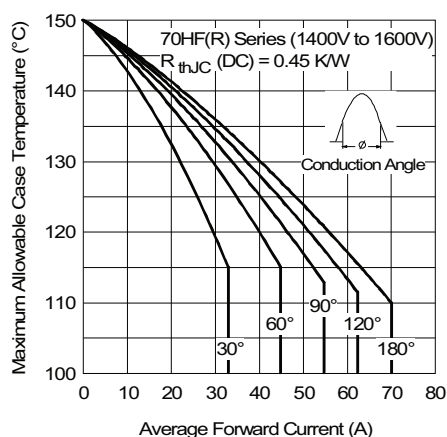


Fig. 3 - Current Ratings Characteristics

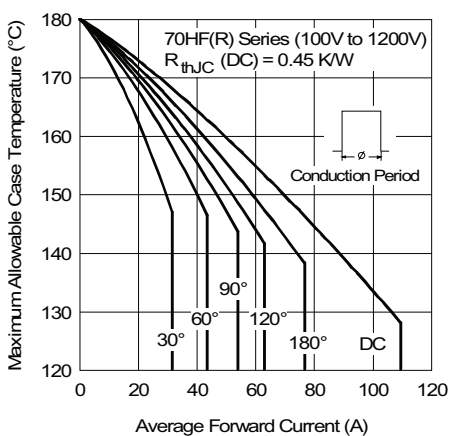


Fig. 2 - Current Ratings Characteristics

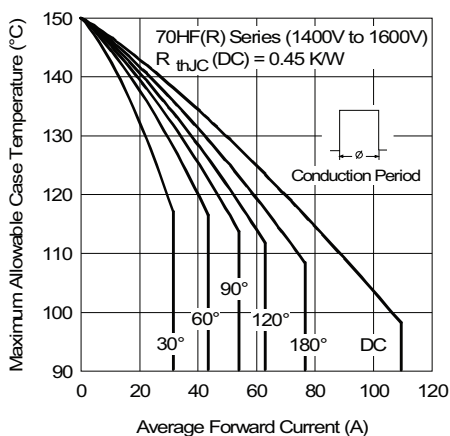


Fig. 4 - Current Ratings Characteristics

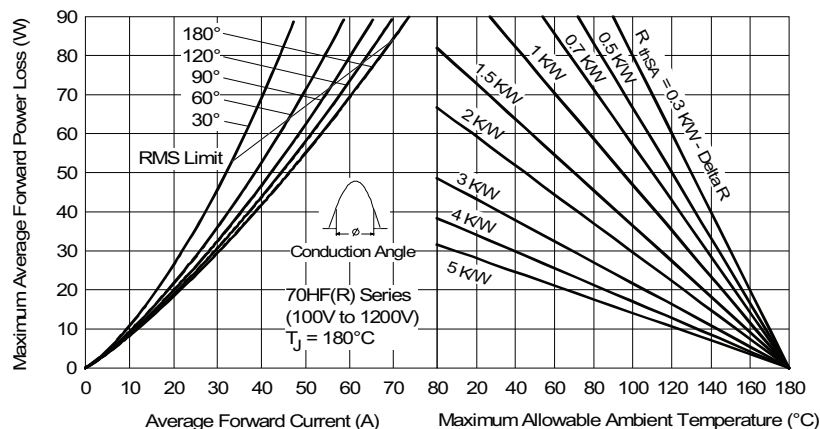


Fig. 5 - Forward Power Loss Characteristics

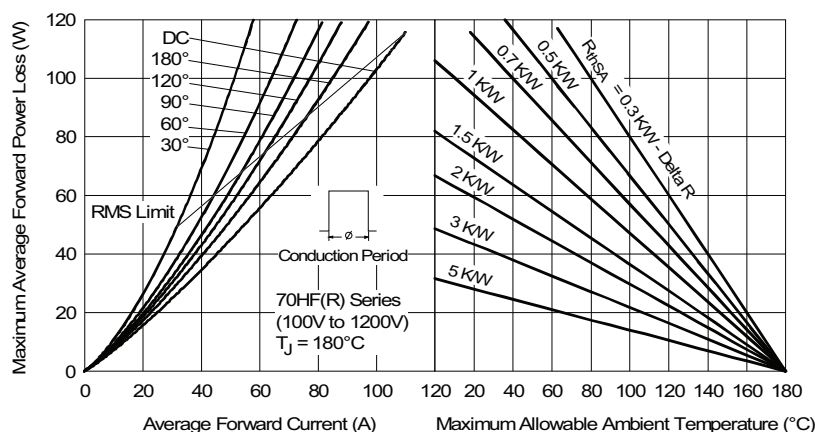


Fig. 6 - Forward Power Loss Characteristics

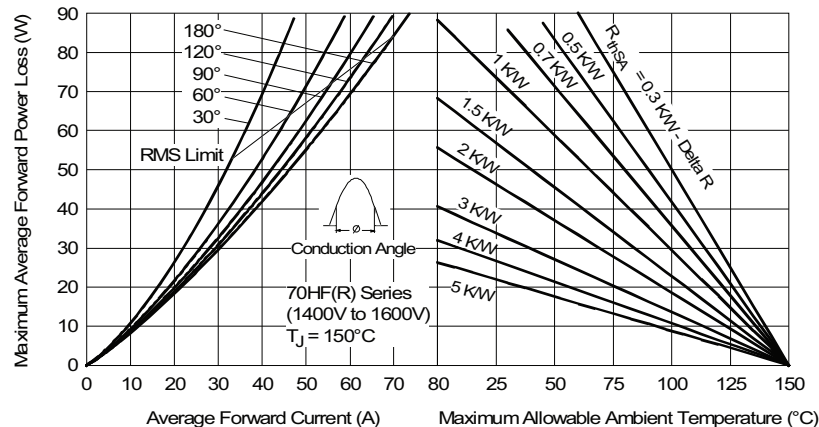


Fig. 7 - Forward Power Loss Characteristics

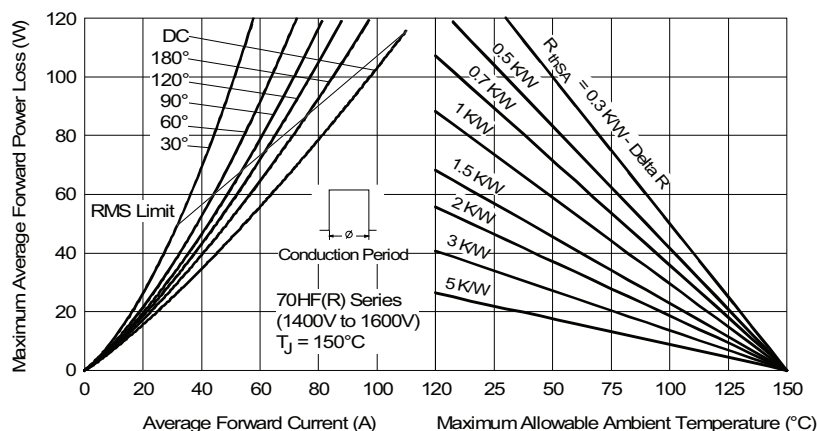


Fig. 8 - Forward Power Loss Characteristics

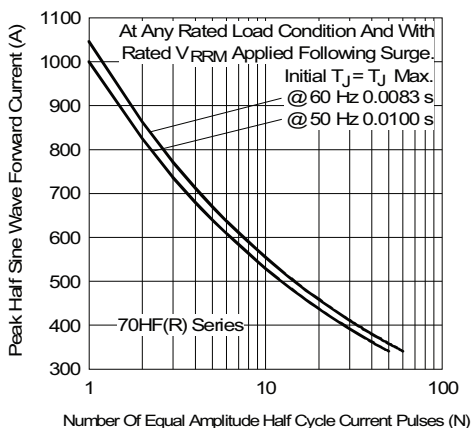


Fig. 9 - Maximum Non-Repetitive Surge Current

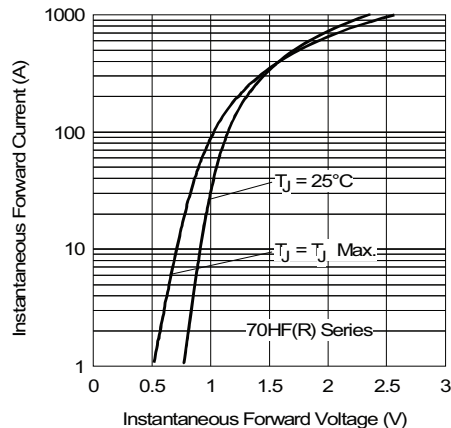


Fig. 11 - Forward Voltage Drop Characteristics

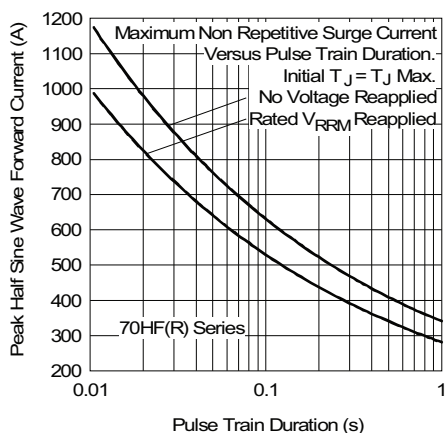


Fig. 10 - Maximum Non-Repetitive Surge Current

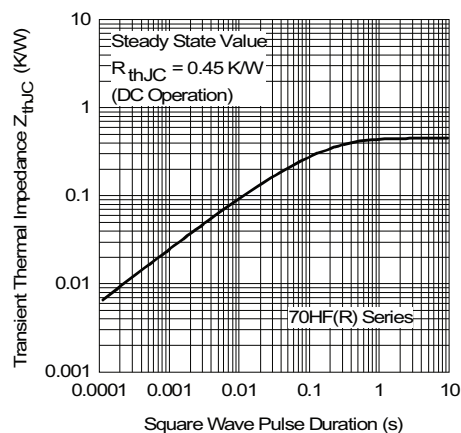


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

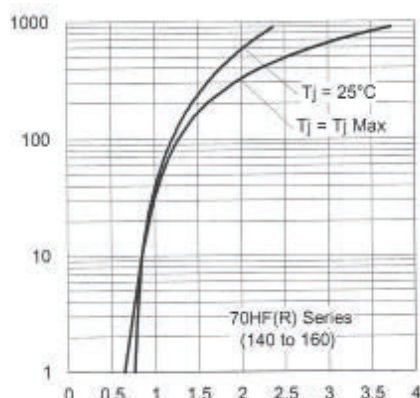


Fig. 13 - Forward Voltage Drop Characteristics

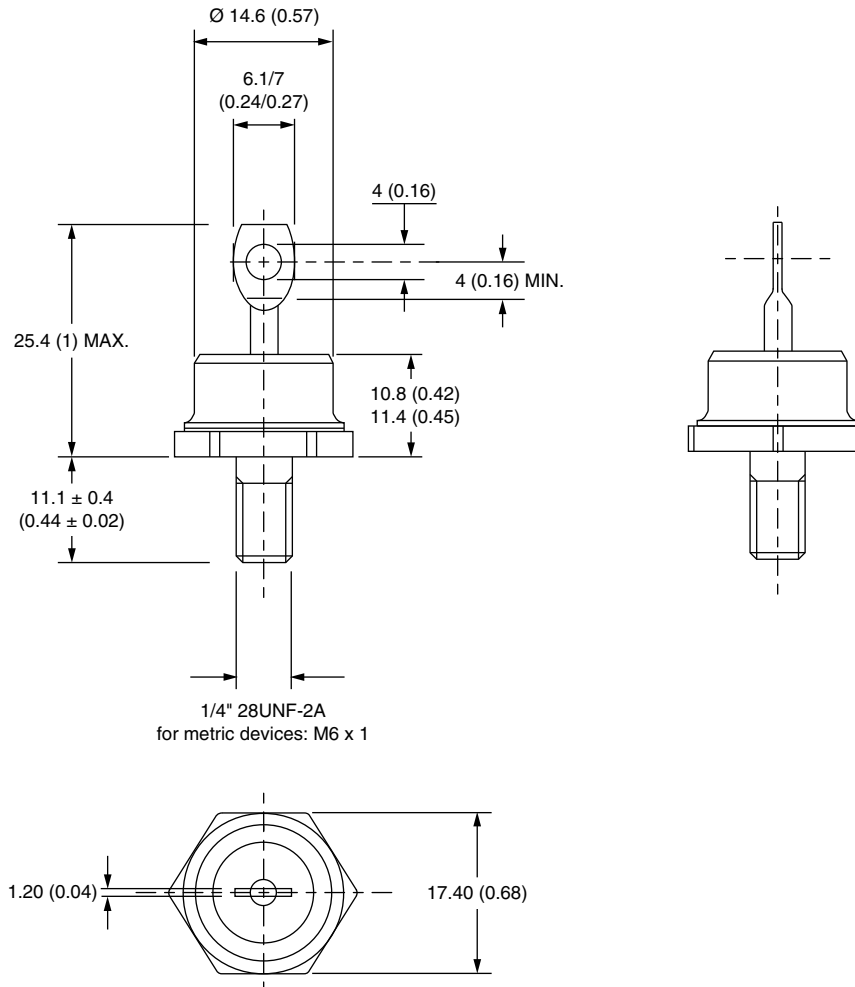
ORDERING INFORMATION TABLE

Device code	70	HF	R	160	M
	1	2	3	4	5
1	- 70 = Standard device 71 = Not isolated lead 72 = Isolated lead with silicone sleeve (red = Reverse polarity) (blue = Normal polarity)				
2	- HF = Standard diode				
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 = Stud base DO-203AB (DO-5) 1/4" 28UNF-2A • M = Stud base DO-203AB (DO-5) M6 x 1				

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95343

DO-203AB (DO-5) for 70HF(R) and 71HF(R) Series

DIMENSIONS FOR 70HF(R) SERIES in millimeters (inches)



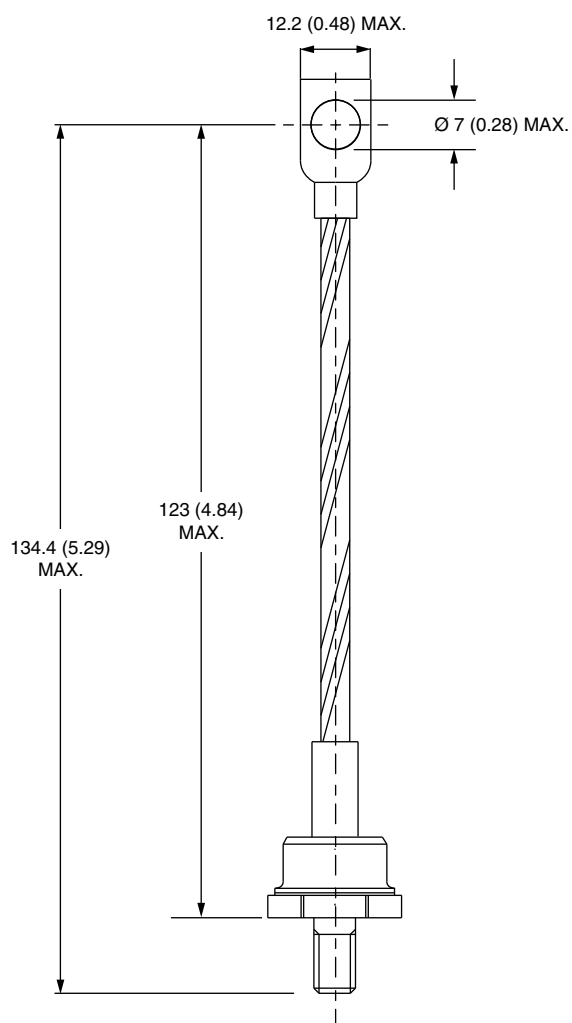
Outline Dimensions

Vishay Semiconductors

DO-203AB (DO-5) for 70HF(R)
and 71HF(R) Series



DIMENSIONS FOR 71HF(R) SERIES in millimeters (inches)





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