

VS-70HF120 Datasheet



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DiGi Electronics Part Number	VS-70HF120-DG
Manufacturer	Vishay General Semiconductor - Diodes Division
Manufacturer Product Number	VS-70HF120
Description	DIODE GEN PURP 1.2KV 70A DO203AB
Detailed Description	Diode 1200 V 70A Chassis, Stud Mount DO-203AB (DO-5)

This model VS-70HF120 is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

VS-70HF120

Series:

-

Technology:

Standard

Current - Average Rectified (Io):

70A

Speed:

Standard Recovery >500ns, > 200mA (Io)

Capacitance @ Vr, F:

-

Package / Case:

DO-203AB, DO-5, Stud

Operating Temperature - Junction:

-65°C ~ 150°C

Manufacturer:

Vishay General Semiconductor - Diodes Division

Product Status:

Active

Voltage - DC Reverse (Vr) (Max):

1200 V

Voltage - Forward (Vf) (Max) @ If:

1.35 V @ 220 A

Current - Reverse Leakage @ Vr:

9 mA @ 1200 V

Mounting Type:

Chassis, Stud Mount

Supplier Device Package:

DO-203AB (DO-5)

Base Product Number:

70HF120

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99


www.vishay.com

VS-70HF(R) Series

Vishay Semiconductors

Standard Recovery Diodes, (Stud Version), 70 A



DO-5 (DO-203AB)

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

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS

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

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	110	A
I_{FSM}	50 Hz	1200	1200	A
	60 Hz	1250	1250	
I^2t	50 Hz	7100	7100	A ² s
	60 Hz	6450	6450	
V_{RRM}	Range	100 to 1200	1400 to 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
VS-70HF(R)	10	100	200	200	15
	20	200	300	300	
	30	300	400	400	
	40	400	500	500	
	60	600	720	725	9
	80	800	960	950	
	100	1000	1200	1150	
	120	1200	1440	1350	
	140	1400	1650	1550	
160	1600	1900	1750	4.5	



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VS-70HF(R) Series

Vishay Semiconductors

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^2t for fusing	I^2t	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 $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	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 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$, $T_J = T_J$ maximum)		0.79		V	
High level value of threshold voltage	$V_{F(TO)2}$	(I $> \pi \times I_{F(AV)}$, $T_J = T_J$ maximum)		1.00			
Low level value of forward slope resistance	r_{f1}	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$, $T_J = T_J$ maximum)		2.33		mΩ	
High level value of forward slope resistance	r_{f2}	(I $> \pi \times I_{F(AV)}$, $T_J = T_J$ 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-5 (DO-203AB)		

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	$T_J = T_J$ 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



VS-70HF(R) Series

Vishay Semiconductors

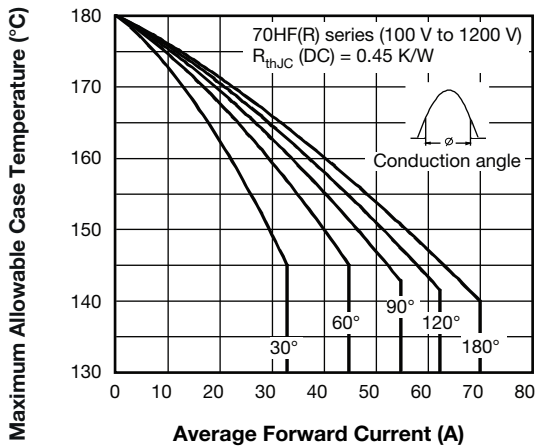


Fig. 1 - Current Ratings Characteristics

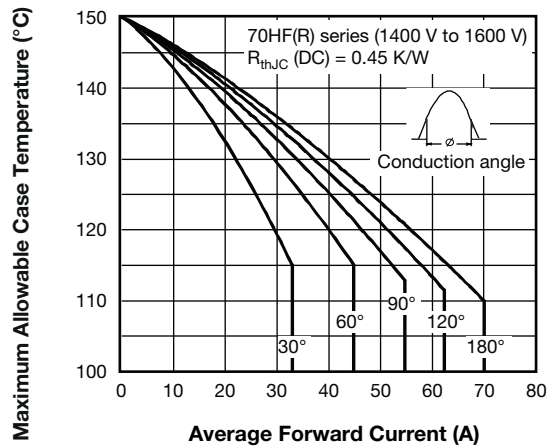


Fig. 3 - Current Ratings Characteristics

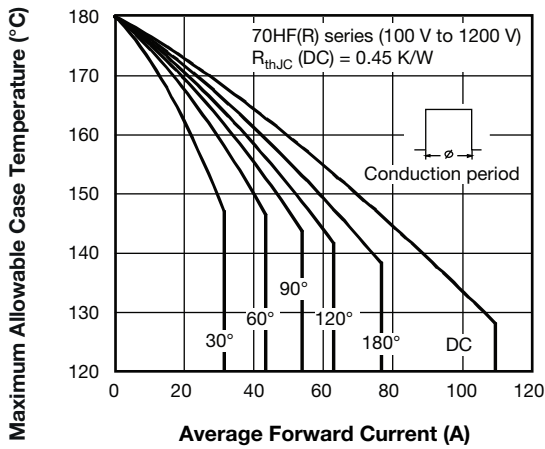


Fig. 2 - Current Ratings Characteristics

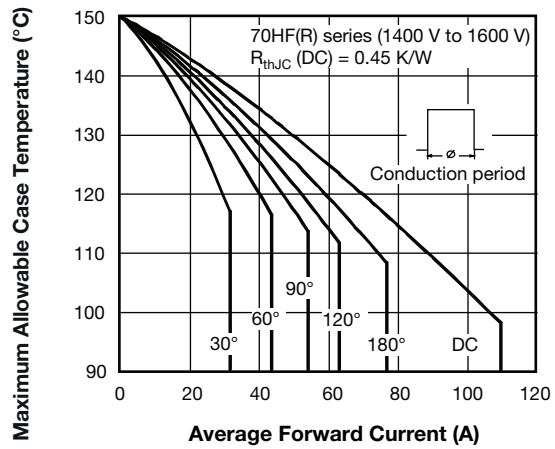


Fig. 4 - Current Ratings Characteristics

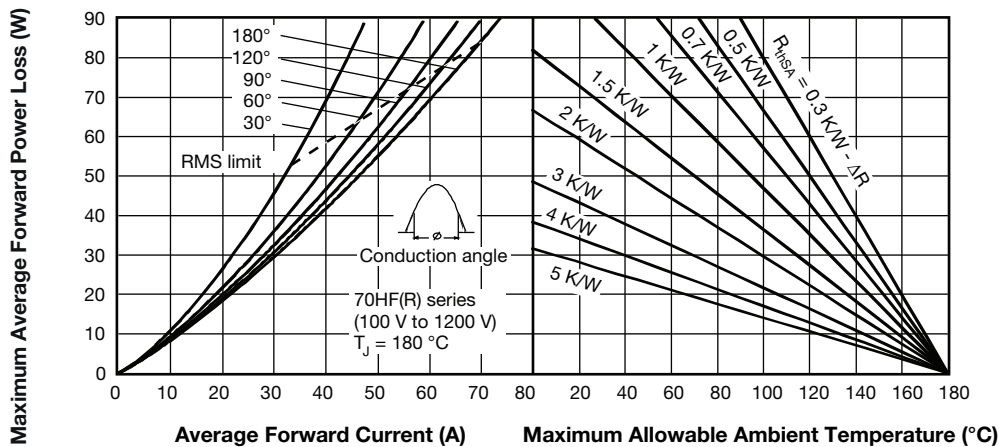


Fig. 5 - Forward Power Loss Characteristics

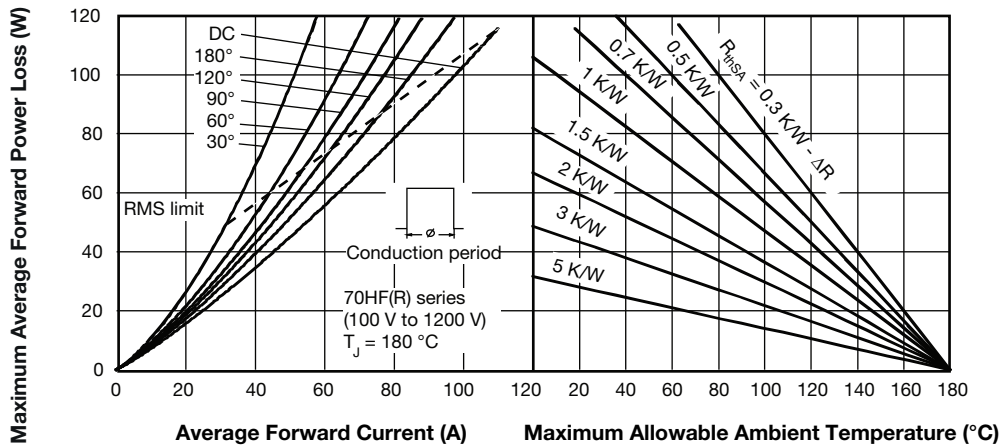


Fig. 6 - Forward Power Loss Characteristics

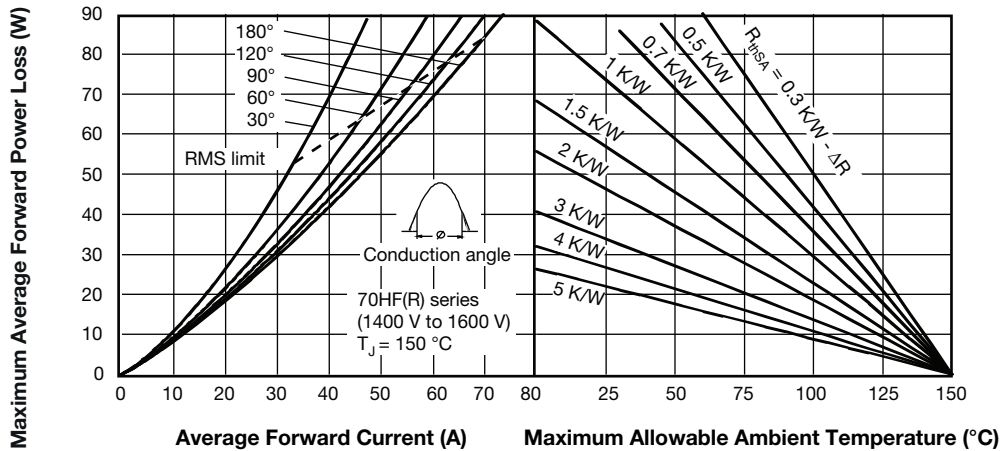


Fig. 7 - Forward Power Loss Characteristics

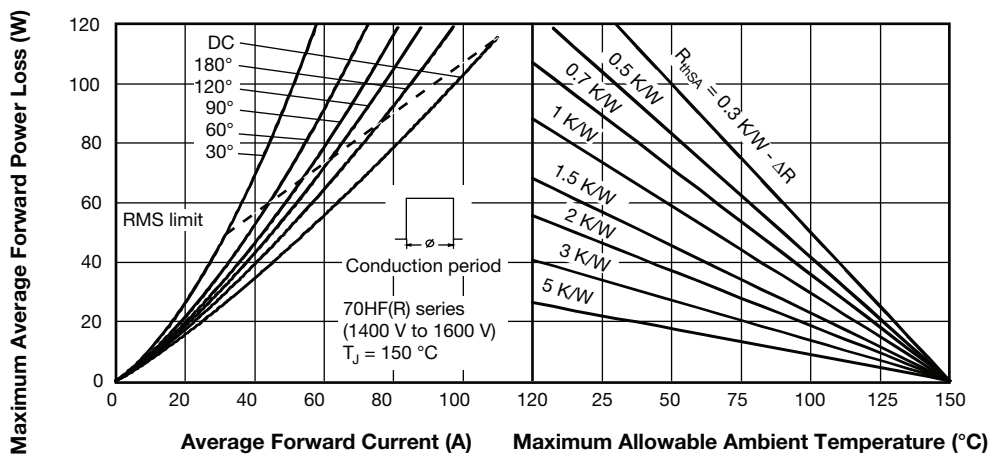


Fig. 8 - Forward Power Loss Characteristics

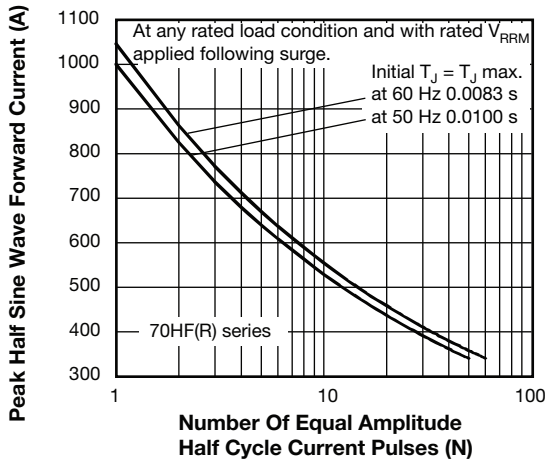


Fig. 9 - Maximum Non-Repetitive Surge Current

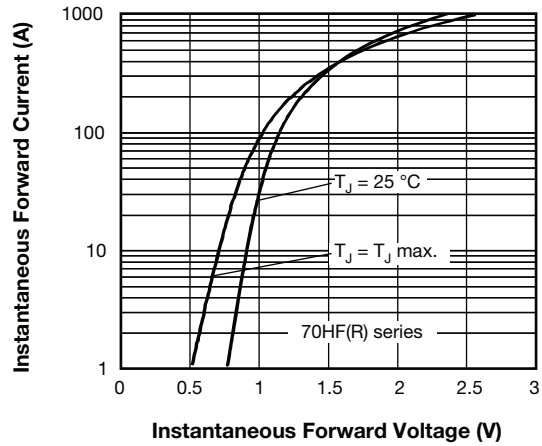


Fig. 11 - Forward Voltage Drop Characteristics

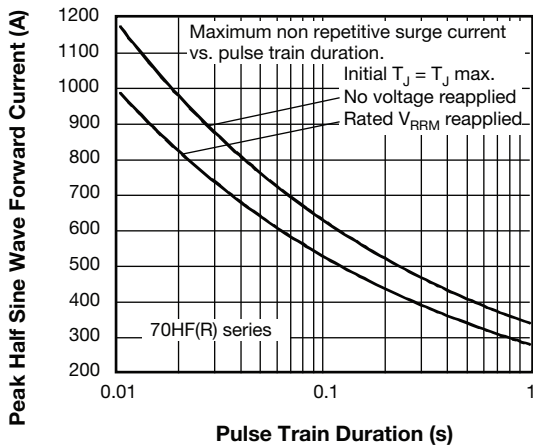


Fig. 10 - Maximum Non-Repetitive Surge Current

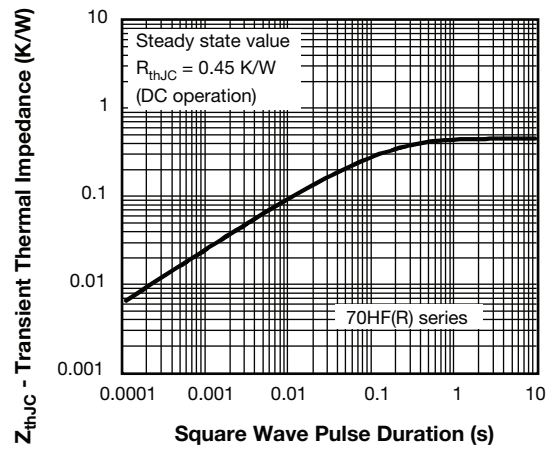


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

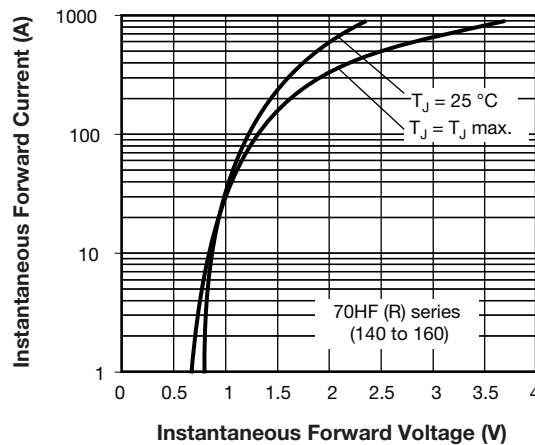
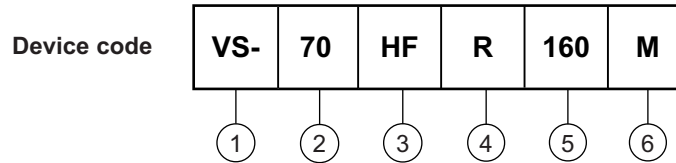


Fig. 13 - Forward Voltage Drop Characteristics



ORDERING INFORMATION TABLE



- | | |
|----------|---|
| 1 | - Vishay Semiconductors product |
| 2 | - 70 = standard device
71 = not isolated lead
72 = isolated lead with silicone sleeve
(red = reverse polarity)
(blue = normal polarity) |
| 3 | - HF = standard diode |
| 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 = stud base DO-5 (DO-203AB) 1/4" 28UNF-2A
• M = stud base DO-5 (DO-203AB) M6 x 1 |

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95343
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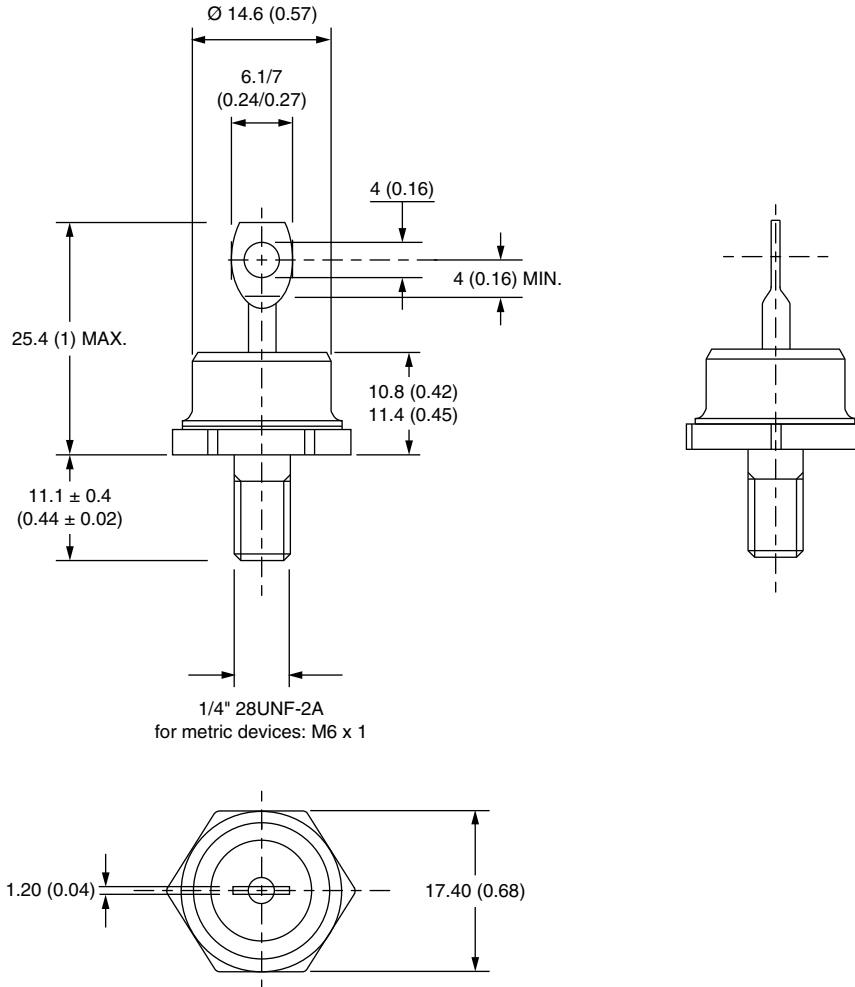


Outline Dimensions

Vishay Semiconductors

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

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



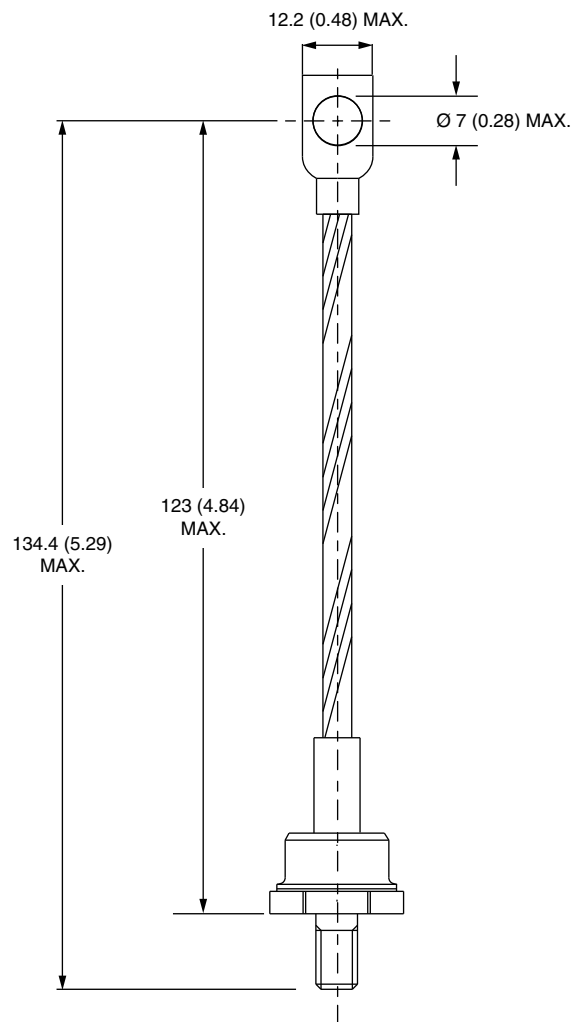
Outline Dimensions



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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