Standard Recovery Diodes, (Stud Version), 85 A



DO-5 (DO-203AB)

FEATURES

- High surge current capability
- 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

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	85 A
Package	DO-5 (DO-203AB)
Circuit configuration	Single

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	85HF(R)	UNITS
		400	
$I_{F(AV)}$		85	A
	T_C	140	°C
$I_{F(RMS)}$		133	A
I_{FSM}	50 Hz	1700	A
	60 Hz	1800	
I^2t	50 Hz	14 500	A^2s
	60 Hz	13 500	
V_{RRM}		400	V
T_J		-65 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 $T_J = T_J$ MAXIMUM mA
VS-85HF(R)	40	400	500	9

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FORWARD CONDUCTION						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**			**85HF(R)**	**UNITS**
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			85	A
					140	°C
Maximum RMS forward current	$I_{F(RMS)}$				133	A
Maximum peak, one-cycle forward, non-repetitive surge current	I_{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	1700	A
		t = 8.3 ms			1800	
		t = 10 ms	100 % V_{RRM} reapplied		1450	
		t = 8.3 ms			1500	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reapplied		14 500	A^2s
		t = 8.3 ms			13 500	
		t = 10 ms	100 % V_{RRM} reapplied		10 500	
		t = 8.3 ms			9400	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reapplied			16 000	$A^2\sqrt{s}$
Value of threshold voltage (up to 1200 V)	$V_{F(TO)}$	$T_J = T_J$ maximum			0.68	V
Value of threshold voltage (for 1400 V, 1600 V)					0.69	
Value of forward slope resistance (up to 1200 V)	r_f	$T_J = T_J$ maximum			1.62	mW
Value of forward slope resistance (for 1400 V, 1600 V)					1.75	
Maximum forward voltage drop	V_{FM}	I_{pk} = 267 A, T_J = 25 °C, t_p = 400 µs rectangular wave			1.2	V

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**85HF(R)**	**UNITS**
Maximum junction operating and storage temperature range	T_J, T_{Stg}		-65 to +180	°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.35	K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.25	
Maximum shock			1500	g
Maximum constant vibration		50 Hz	20	
Maximum constant acceleration		Stud outwards	5000	
Maximum allowable mounting torque +0 %, -10 %		Not lubricated thread, tighting on nut	3.4 (30)	N · m (lbf · in)
		Lubricated thread, tighting on nut	2.3 (20)	
		Not lubricated thread, tighting on hexagon	4.2 (37)	
		Lubricated thread, tighting on hexagon	3.2 (28)	
Approximate weight		Unleaded device	17	g
			0.6	oz.
Case style		See dimensions - link at the end of datasheet	DO-5 (DO-203AB)	

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	**SINUSOIDAL CONDUCTION**	**RECTANGULAR CONDUCTION**	**TEST CONDITIONS**	**UNITS**
180°	0.10	0.08	$T_J = T_J$ maximum	K/W
120°	0.11	0.11		
90°	0.13	0.13		
60°	0.17	0.17		
30°	0.26	0.26		

Note

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

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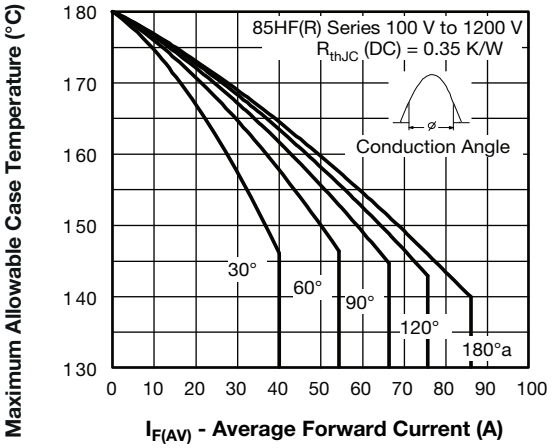


Fig. 1 - Current Ratings Characteristics

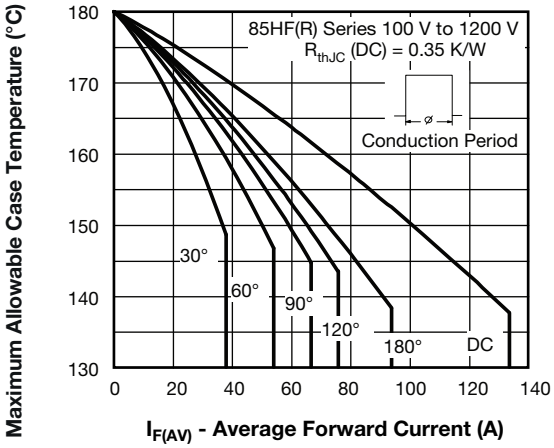


Fig. 2 - Current Ratings Characteristics

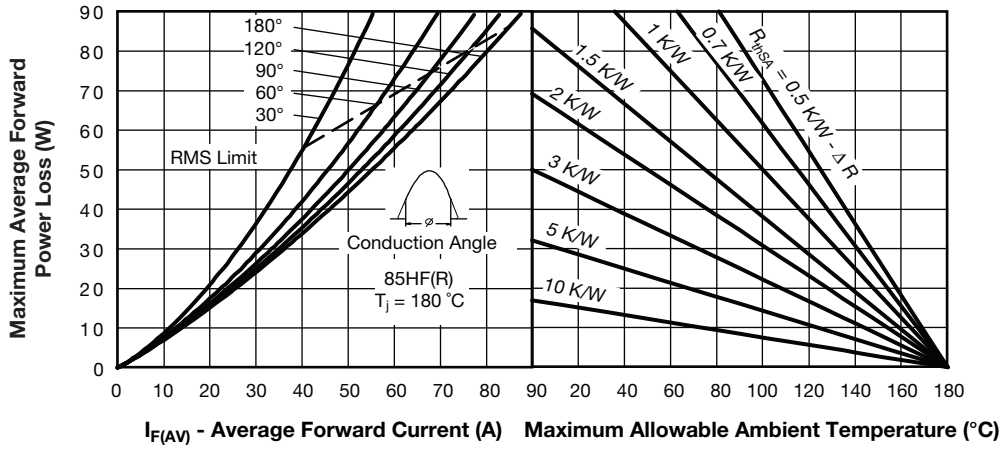


Fig. 3 - Forward Power Loss Characteristics

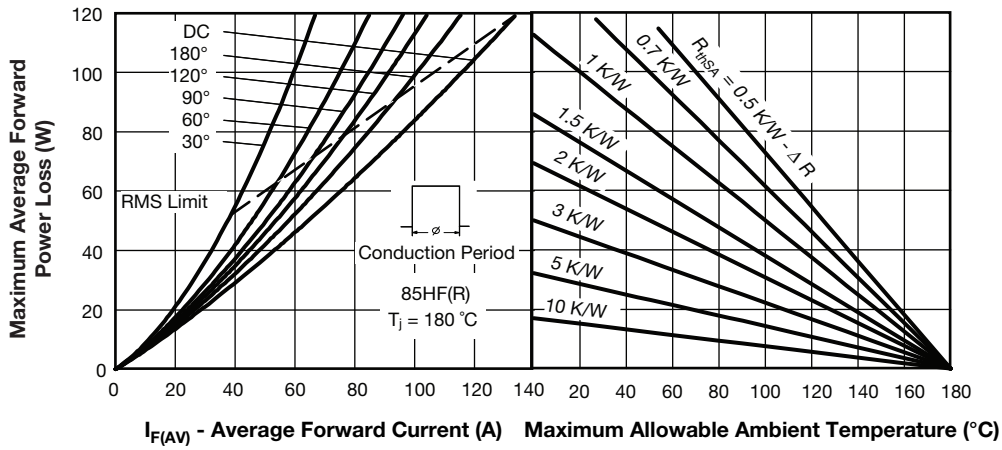


Fig. 4 - Forward Power Loss Characteristics

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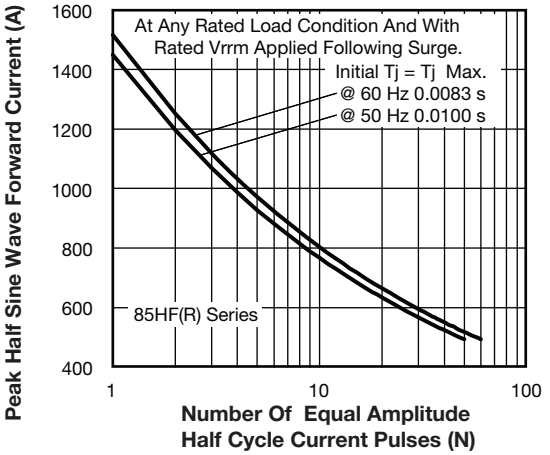


Fig. 5 - Maximum Non-Repetitive Surge Current

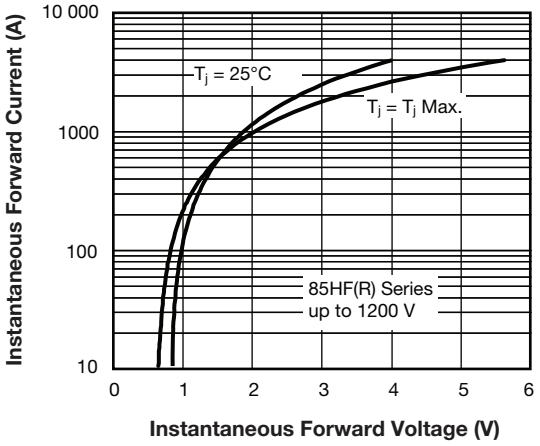


Fig. 7 - Forward Voltage Drop Characteristics

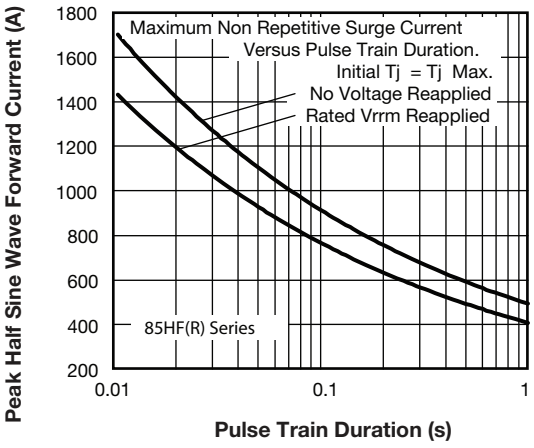


Fig. 6 - Maximum Non-Repetitive Surge Current

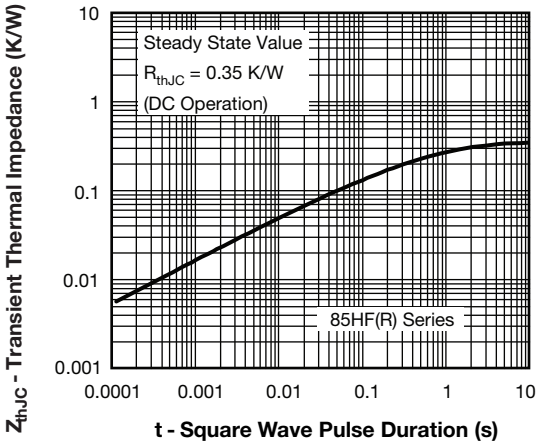


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-	85	HF	R	40	M8
	1	2	3	4	5	6

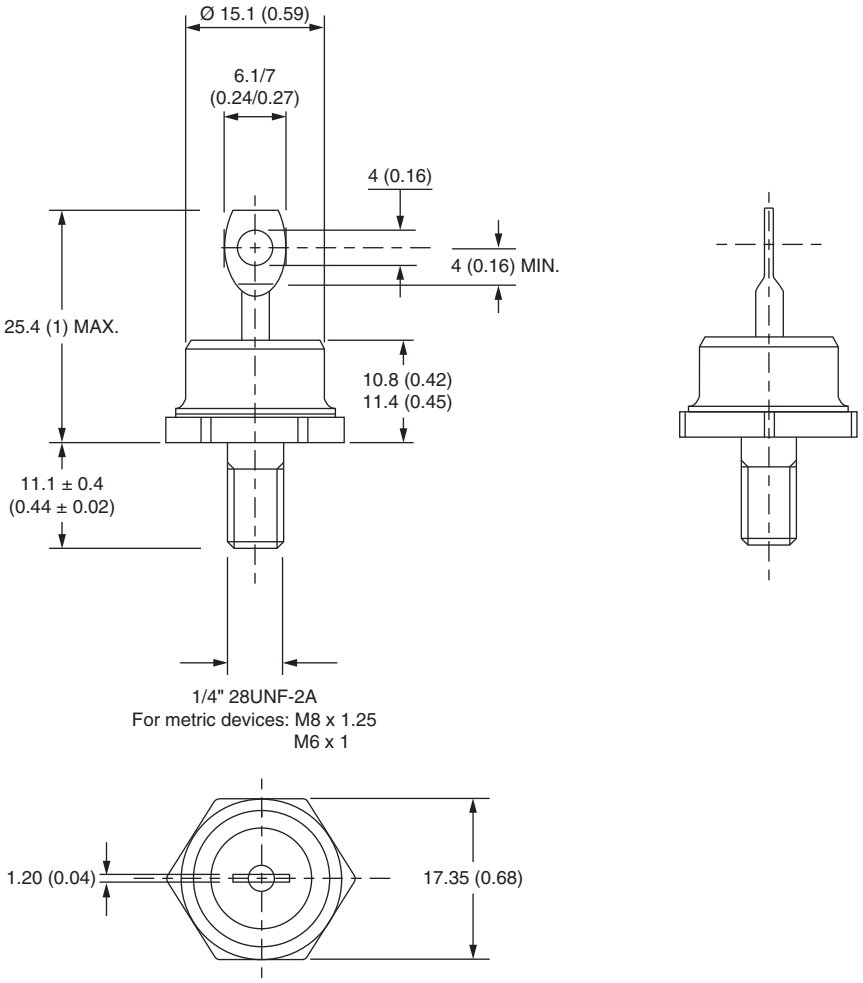
- 1 - Vishay Semiconductors product
- 2 - 85 = standard device
- 3 - HF = standard diode
- 4 - None = stud normal polarity (cathode to stud)
  R = stud reverse polarity (anode to stud)
- 5 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6 - M8 = stud base DO-5 (DO-203AB) M8 x 1.25

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95342

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DO-5 (DO-203AB) for 85HF(R), 86HF(R) and 88HF(R)Series

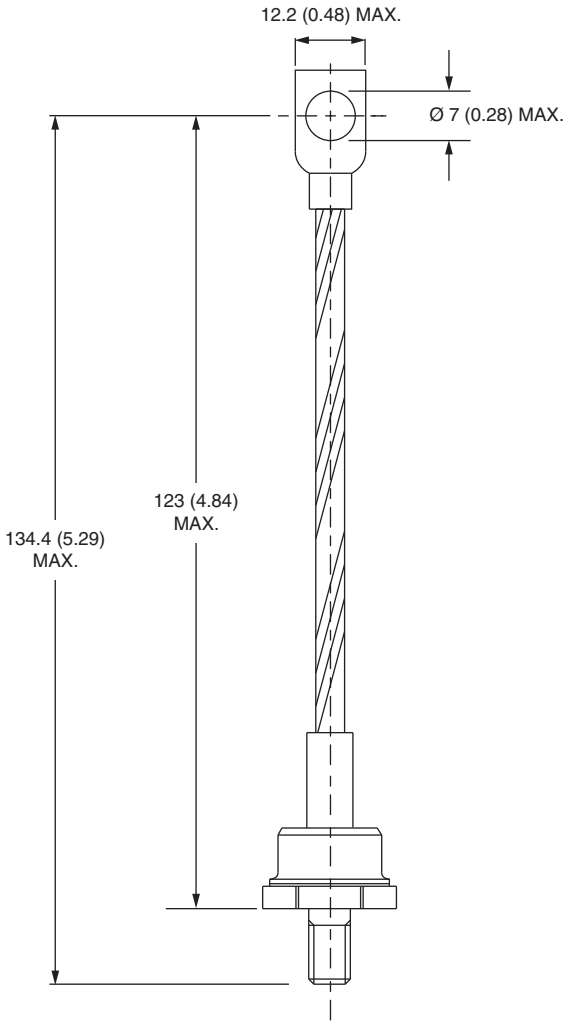
DIMENSIONS FOR 85HF(R) SERIES in millimeters (inches)



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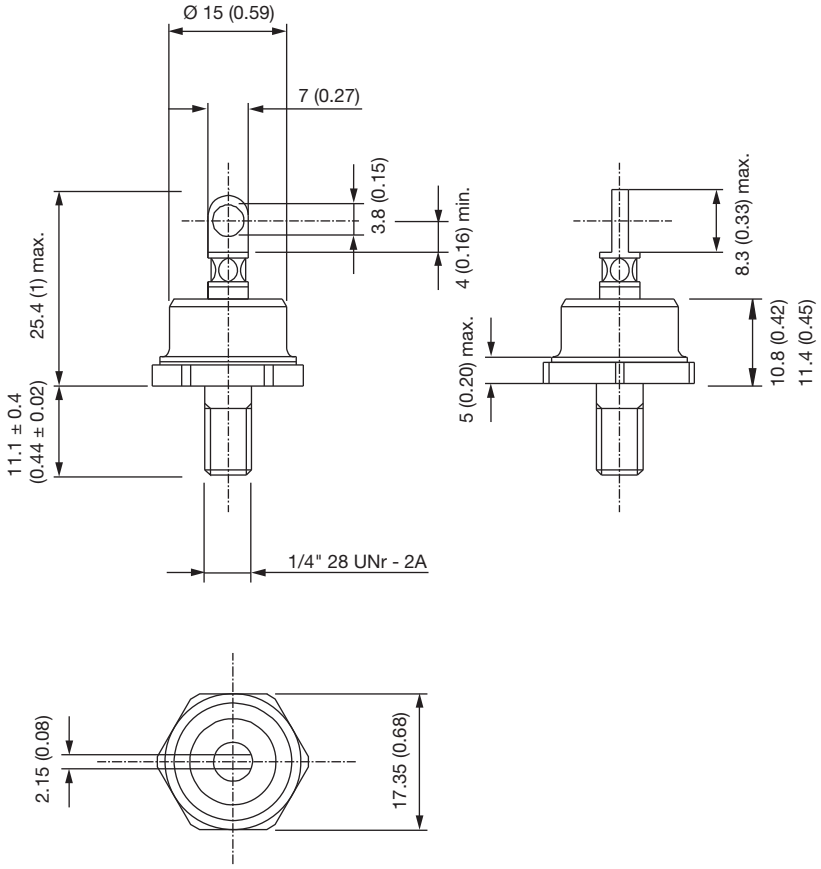
DIMENSIONS FOR 86HF(R) SERIES in millimeters (inches)



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DIMENSIONS 88HF(R) SERIES in millimeters (inches)



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