

Standard Recovery Diodes, (Stud Version), 85 A



DO-5 (DO-203AB)

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

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 <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	85HF(R)		
	TEST CONDITIONS	400	UNITS	
I _{F(AV)}		85	A	
	T _C	140	°C	
F(RMS)		133	A	
I _{FSM}	50 Hz	1700	٨	
	60 Hz	1800	A	
l ² t	50 Hz	14 500	A ² s	
	60 Hz	13 500	A-S	
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		



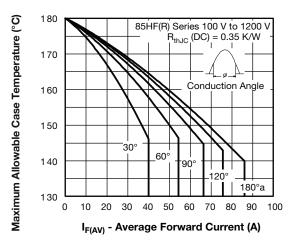
FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		85HF(R)	UNITS	
Maximum average forward current	le(a) a	180° conduction, half sine wave		85	Α	
at case temperature I _{F(AV)} 180° conduction, half sine wave		wave	140	°C		
Maximum RMS forward current	I _{F(RMS)}				133	Α
		t = 10 ms	No voltage		1700	
Maximum peak, one-cycle forward,	1	t = 8.3 ms	reapplied		1800	Α
non-repetitive surge current	I _{FSM}	t = 10 ms	100 % V _{RRM}	ı	1450	
		t = 8.3 ms	reapplied	Sinusoidal half wave,	1500	
		t = 10 ms	No voltage	initial $T_J = T_J$ maximum	14 500	- A ² s
Maximum 12t for fuoing	l ² t	t = 8.3 ms	reapplied		13 500	
Maximum I ² t for fusing		t = 10 ms	100 % V _{RRM}		10 500	
		t = 8.3 ms	reapplied		9400	
Maximum I²√t for fusing	I²√t	t = 0.1 ms to 10 ms, no voltage reapplied		16 000	A²√s	
Value of threshold voltage (up to 1200 V)	- V _{F(TO)}	V _{F(TO)}	$T_J = T_J$ maximum		0.68	V
Value of threshold voltage (for 1400 V, 1600 V)					0.69	V
Value of forward slope resistance (up to 1200 V)	_	$T_J = T_J$ maximum		1.62	\A/	
Value of forward slope resistance (for 1400 V, 1600 V)	- r _f			1.75	mW	
Maximum forward voltage drop	V_{FM}	I_{pk} = 267 A, T_J = 25 °C, t_p = 400 μ s 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 0.3		K/W	
Maximum thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth, flat and greased	0.25	IV VV	
Maximum shock			1500		
Maximum constant vibration		50 Hz	20	g	
Maximum constant acceleration		Stud outwards	5000		
		Not lubricated thread, tighting on nut	3.4 (30)		
Maximum allowable mounting torque		Lubricated thread, tighting on nut	2.3 (20)	N · m	
+0 %, -10 %		Not lubricated thread, tighting on hexagon	4.2 (37)	(lbf · in)	
		Lubricated thread, tighting on hexagon	3.2 (28)		
Approximate weight		Unleaded device		g	
Approximate weight		Officaded device	0.6	oz.	
Case style		See dimensions - link at the end of datasheet DO-5 (DO-200		203AB)	

△R _{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.10	0.08		
120°	0.11	0.11		
90°	0.13	0.13	$T_J = T_J$ maximum	K/W
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





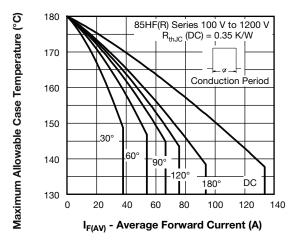


Fig. 2 - Current Ratings Characteristics

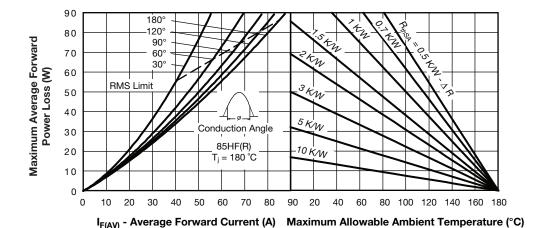


Fig. 3 - Forward Power Loss Characteristics

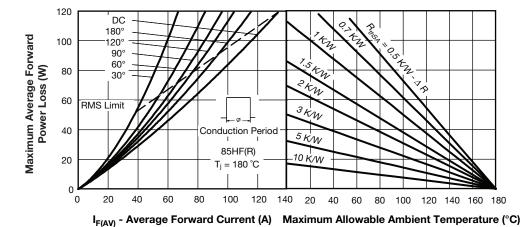


Fig. 4 - Forward Power Loss Characteristics

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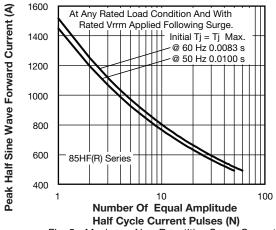


Fig. 5 - Maximum Non-Repetitive Surge Current

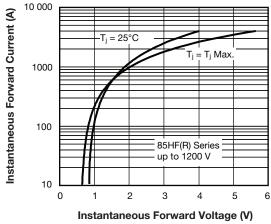


Fig. 7 - Forward Voltage Drop Characteristics

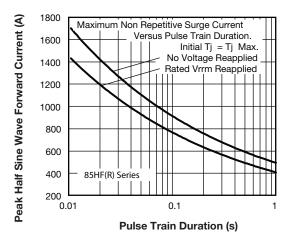


Fig. 6 - Maximum Non-Repetitive Surge Current

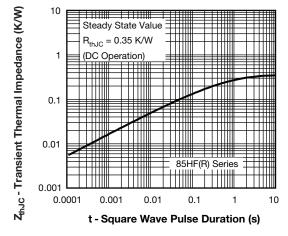
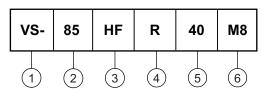


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code



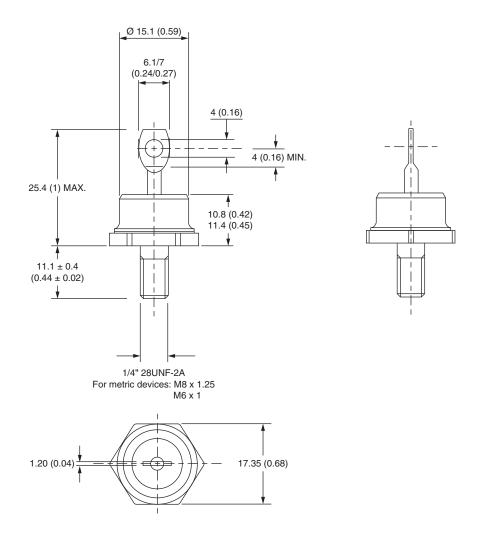
- 1 Vishay Semiconductors product
- 2 85 = standard device
- 3 HF = standard diode
 - None = stud normal polarity (cathode to stud)
 R = stud reverse polarity (anode to stud)
- 5 Voltage code x 10 = V_{RRM} (see Voltage Ratings table)
- 6 M8 = stud base DO-5 (DO-203AB) M8 x 1.25

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



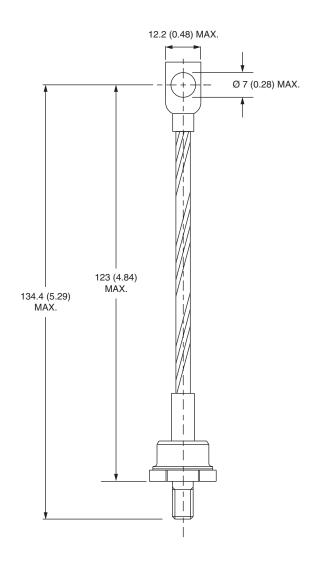
DO-5 (DO-203AB) for 85HF(R), 86HF(R) and 88HF(R)Series

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

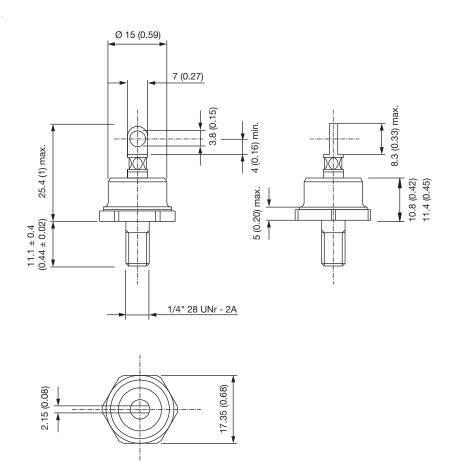




DIMENSIONS FOR 86HF(R) SERIES in millimeters (inches)



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





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