

Standard Recovery Diodes, (Stud Version), 85 A



DO-203AB (DO-5)

FEATURES

- High surge current capability
- Stud cathode and stud anode version
- Leaded version available
- Types up to 1600 V V_{RRM}
- RoHS compliant
- Designed and qualified for industrial level


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

$I_{F(AV)}$	85 A
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MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	85HF(R)		UNITS
		10 TO 120	140/160	
$I_{F(AV)}$		85		A
	T_C	140	110	°C
$I_{F(RMS)}$		133		A
I_{FSM}	50 Hz	1700		A
	60 Hz	1800		
I^2t	50 Hz	14 500		A ² s
	60 Hz	13 500		
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	I_{RRM} MAXIMUM AT $T_J = T_J$ MAXIMUM mA
85HF(R)	10	100	200	9
	20	200	300	
	40	400	500	
	60	600	700	
	80	800	900	
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	4.5
160	1600	1700		

85HF(R) Series



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FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS		85HF(R)		UNITS	
				10 to 120	140/160		
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		85		A	
				140	110	°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 reappplied	Sinusoidal half wave, initial $T_J = T_J$ maximum		1700	A
		t = 8.3 ms					
		t = 10 ms	100 % V_{RRM} reappplied			1450	
		t = 8.3 ms				1500	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reappplied			14 500	A ² s
		t = 8.3 ms					
		t = 10 ms	100 % V_{RRM} reappplied			10 500	
		t = 8.3 ms				9400	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		16 000		A ² √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		mΩ	
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	1.4	V	

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		85HF(R)		UNITS
				10 to 120	140/160	
Maximum junction operating 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		0.35		K/W
Maximum thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased		0.25		
Maximum shock ⁽¹⁾				1500		g
Maximum constant vibration ⁽¹⁾		50 Hz		20		
Maximum constant acceleration ⁽¹⁾		Stud outwards		5000		
Allowable mounting torque		Not lubricated threads		3.4 + 0 - 10 % (30)		N · m (lbf · in)
		Lubricated threads		2.3 + 0 - 10 % (20)		
Approximate weight		Unleaded device		17		g
				0.6		oz.
Case style		See dimensions - link at the end of datasheet		DO-203AB (DO-5)		

Notes

⁽¹⁾ Available only for 88HF



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

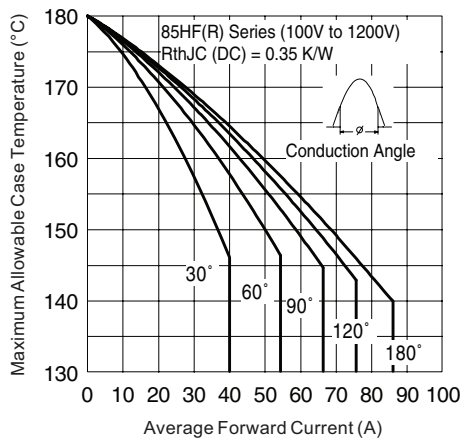


Fig. 1 - Current Ratings Characteristics

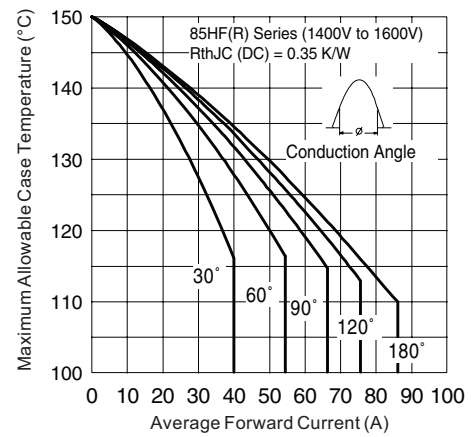


Fig. 3 - Current Ratings Characteristics

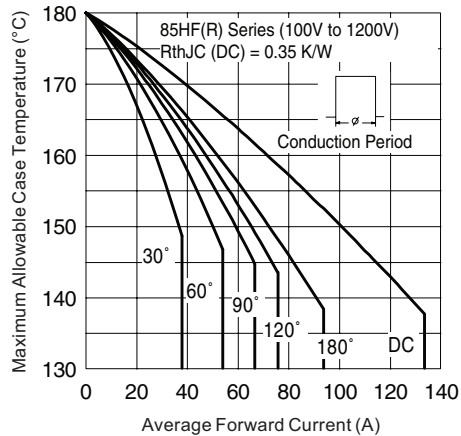


Fig. 2 - Current Ratings Characteristics

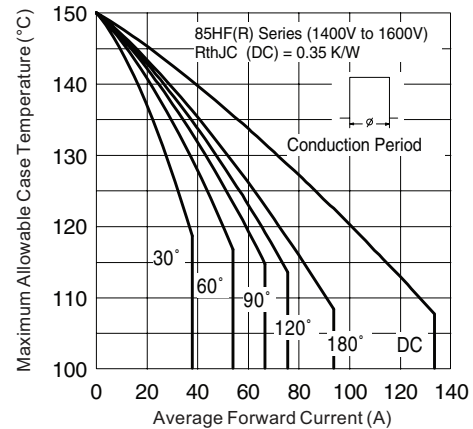


Fig. 4 - Current Ratings Characteristics

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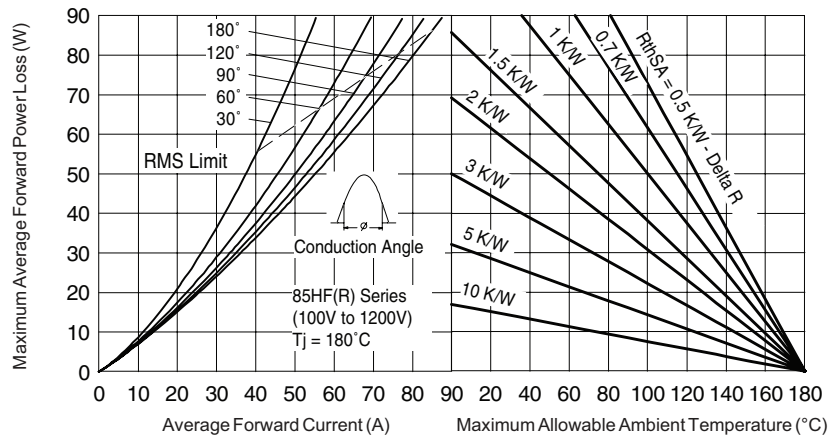


Fig. 5 - Forward Power Loss Characteristics

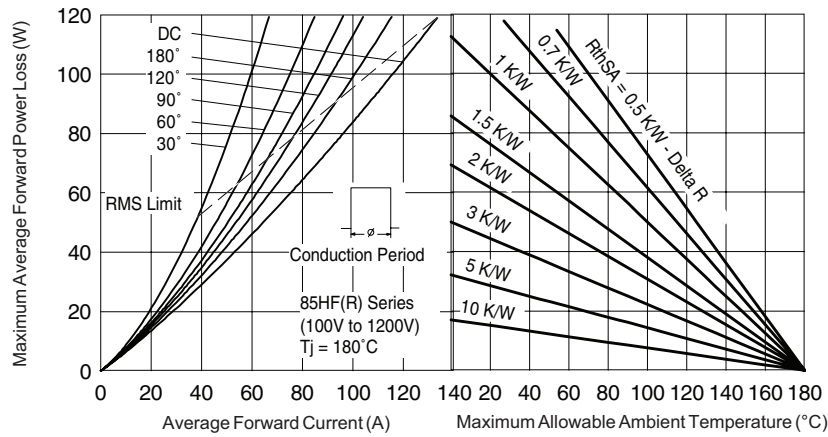


Fig. 6 - Forward Power Loss Characteristics

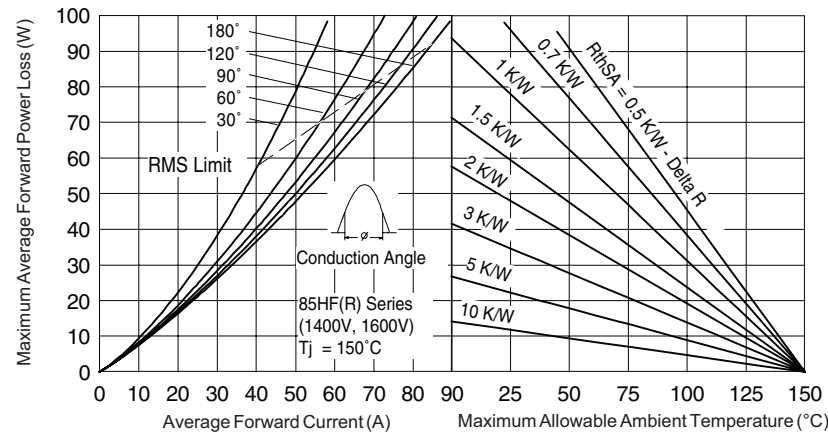


Fig. 7 - Forward Power Loss Characteristics



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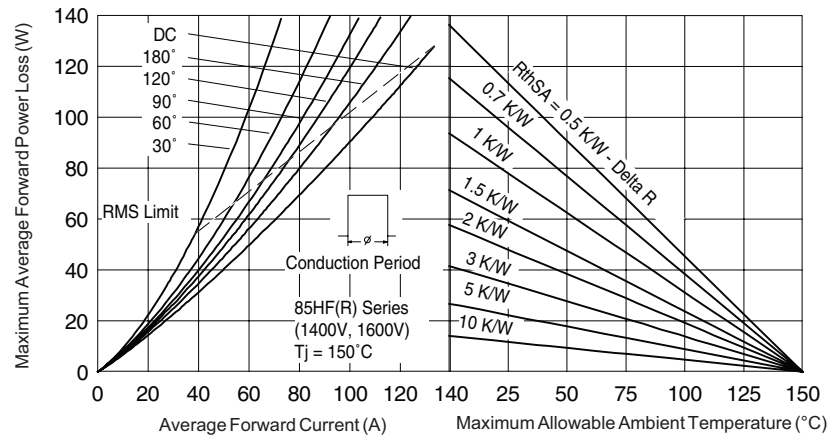


Fig. 8 - Forward Power Loss Characteristics

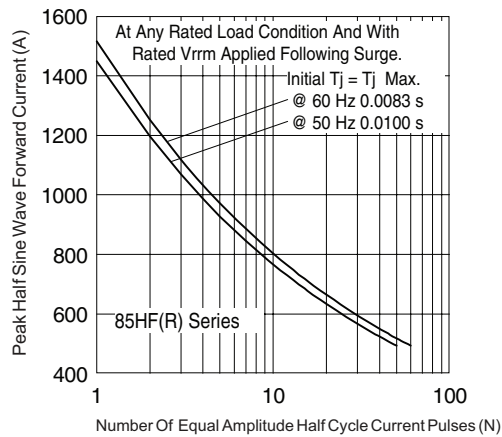


Fig. 9 - Maximum Non-Repetitive Surge Current

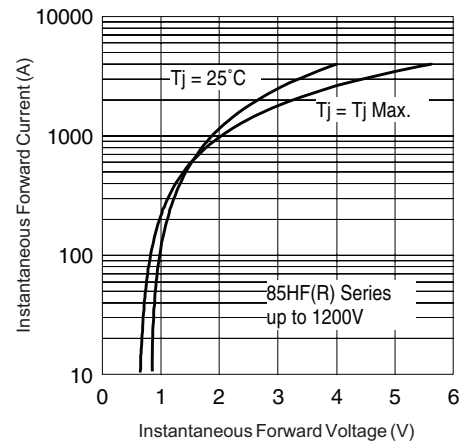


Fig. 11 - Forward Voltage Drop Characteristics (up to 1200 V)

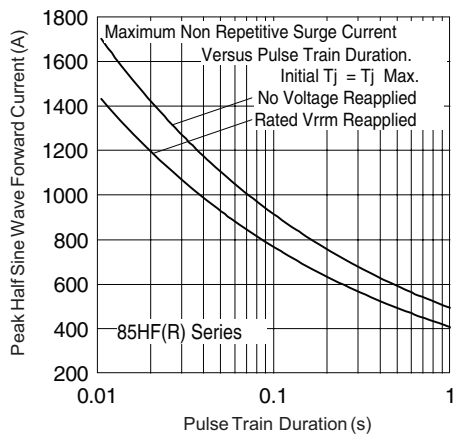


Fig. 10 - Maximum Non-Repetitive Surge Current

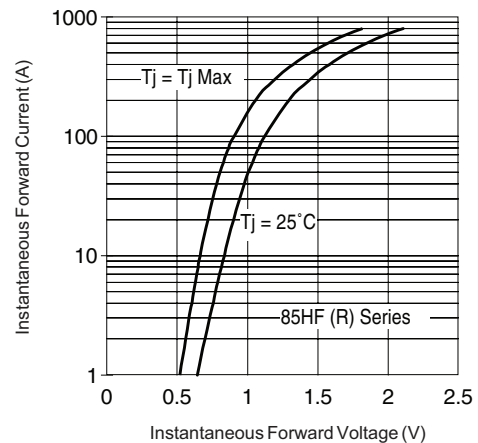


Fig. 12 - Forward Voltage Drop Characteristics (for 1400 V, 1600 V)

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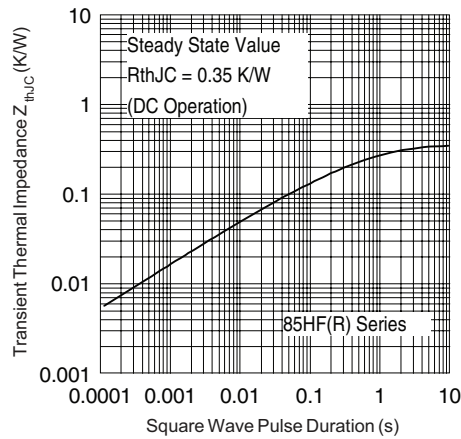


Fig. 13 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	85	HF	R	160	M
	①	②	③	④	⑤

- 1** - 85 = Standard device
86 = Not isolated lead
87 = Isolated lead with silicone sleeve
(red = Reverse polarity)
(blue = Normal polarity)
88 = Type for rotating application
- 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 (not available for 88HF)

LINKS TO RELATED DOCUMENTS

Dimensions	http://www.vishay.com/doc?95342
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