

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 ² _t	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			1800		
		t = 10 ms	100 % V _{RRM} reappplied		1450		
		t = 8.3 ms			1500		
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reappplied		14 500		A ² s
		t = 8.3 ms			13 500		
		t = 10 ms	100 % V _{RRM} reappplied		10 500		
		t = 8.3 ms			9400		
Maximum I ² √t for fusing	I ² √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

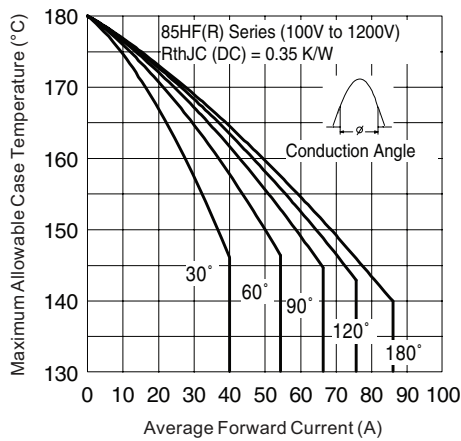


Fig. 1 - Current Ratings Characteristics

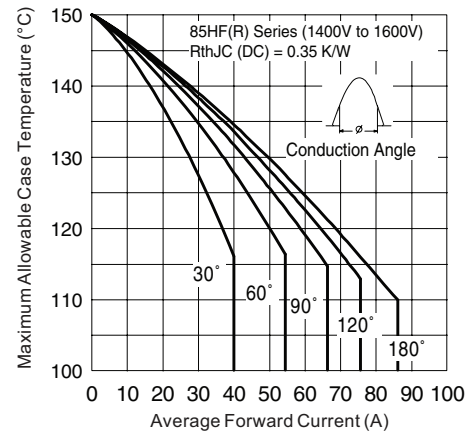


Fig. 3 - Current Ratings Characteristics

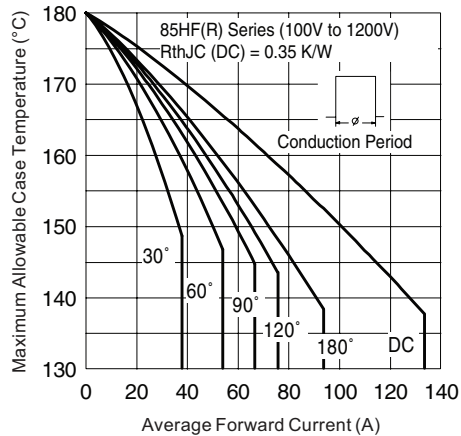


Fig. 2 - Current Ratings Characteristics

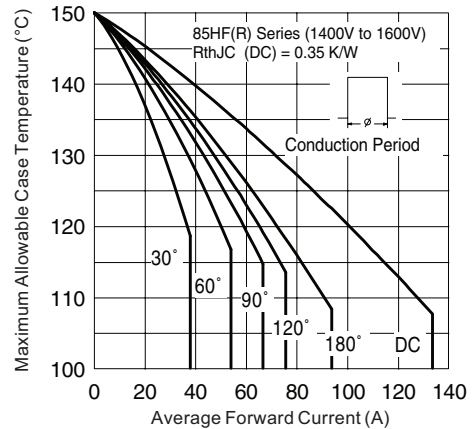


Fig. 4 - Current Ratings Characteristics

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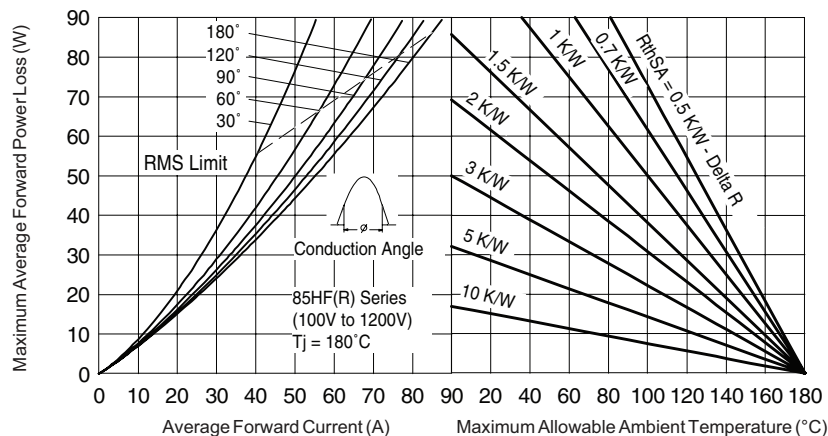


Fig. 5 - Forward Power Loss Characteristics

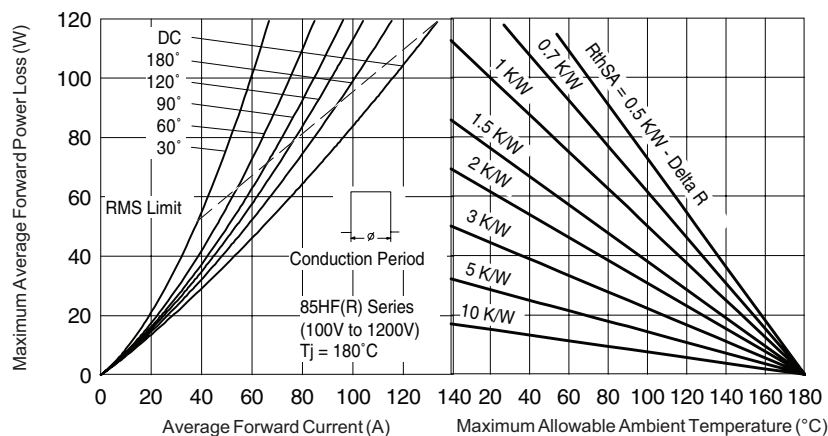


Fig. 6 - Forward Power Loss Characteristics

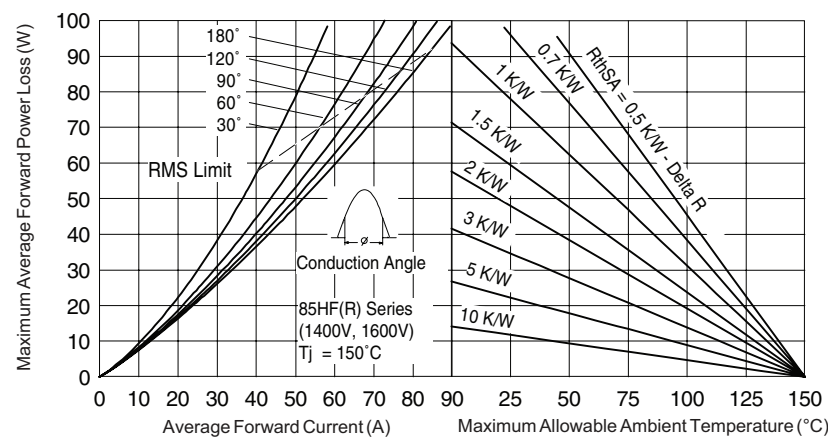


Fig. 7 - Forward Power Loss Characteristics

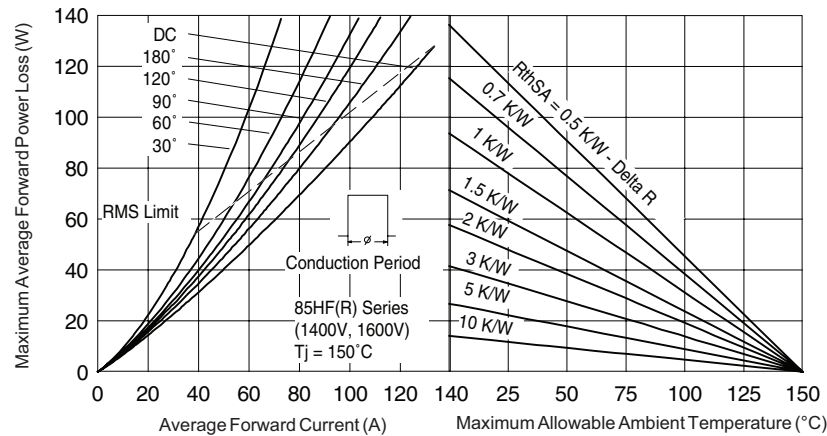


Fig. 8 - Forward Power Loss Characteristics

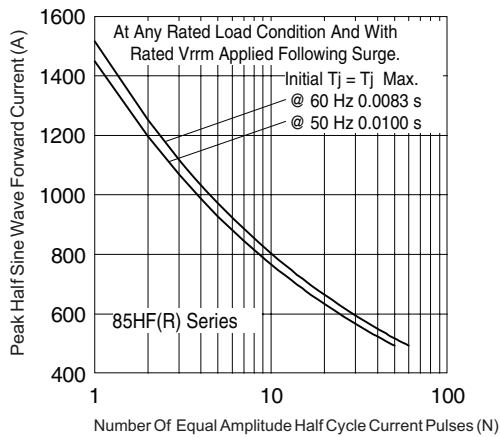


Fig. 9 - Maximum Non-Repetitive Surge Current

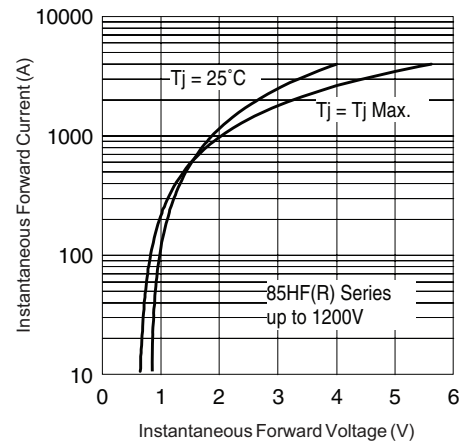


Fig. 11 - Forward Voltage Drop Characteristics
(up to 1200 V)

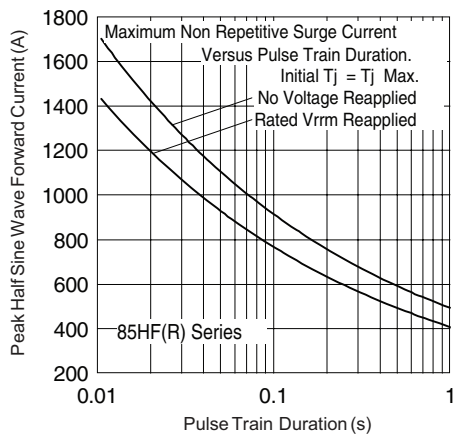


Fig. 10 - Maximum Non-Repetitive Surge Current

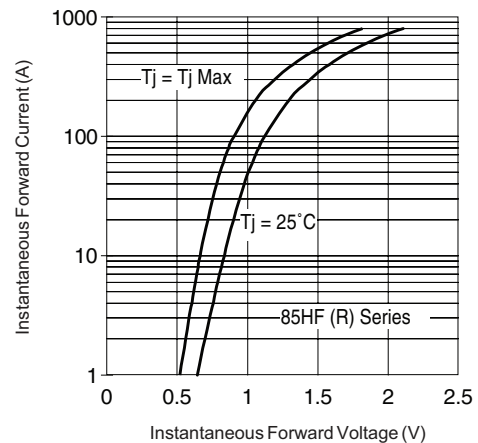


Fig. 12 - Forward Voltage Drop Characteristics
(for 1400 V, 1600 V)

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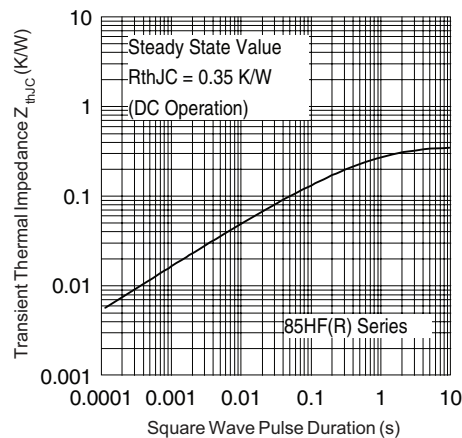


Fig. 13 - Thermal Impedance Z_{thJC} Characteristics

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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