

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 400 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

PRODUCT SUMMARY

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

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 ² s
	60 Hz	13 500	
V_{RRM}	Range	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 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 ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		14 500	A ² s
		t = 8.3 ms			13 500	
		t = 10 ms	100 % V _{RRM} reapplied		10 500	
		t = 8.3 ms			9400	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			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	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 allowable mounting torque + 0 %, - 10 %		Not lubricated thread, tightening on nut	3.4 (30)	N · m (lbf · in)
		Lubricated thread, tightening on nut	2.3 (20)	
		Not lubricated thread, tightening on hexagon	4.2 (37)	
		Lubricated thread, tightening 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-203AB (DO-5)	

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

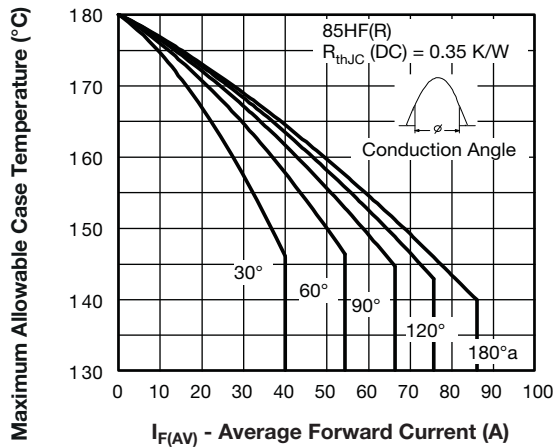


Fig. 1 - Current Ratings Characteristics

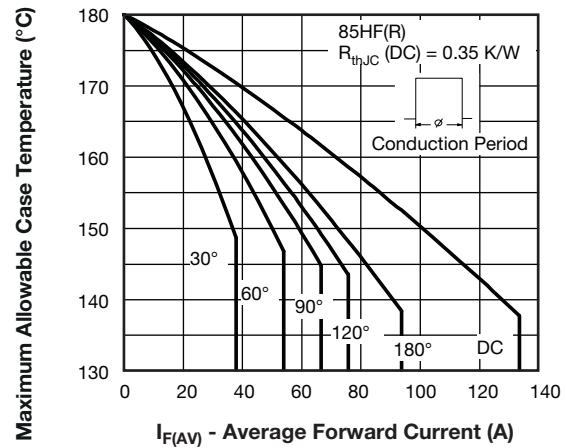


Fig. 2 - Current Ratings Characteristics

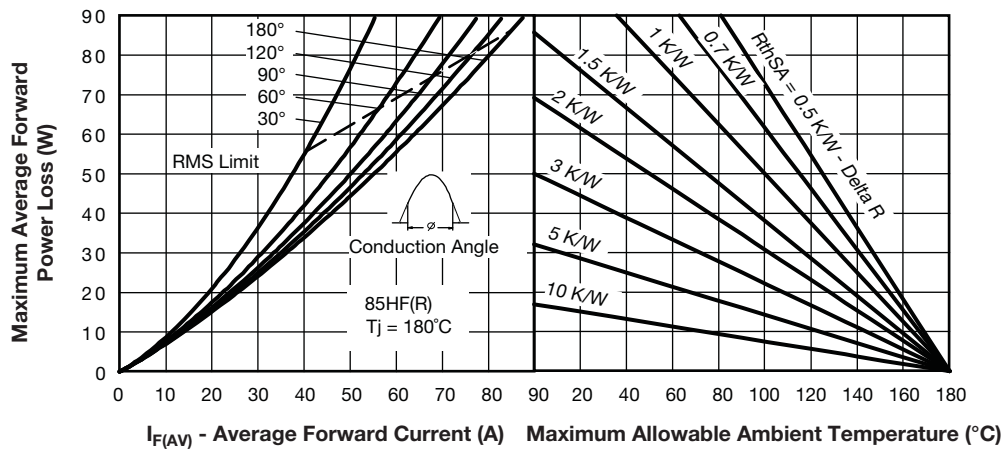


Fig. 3 - Forward Power Loss Characteristics

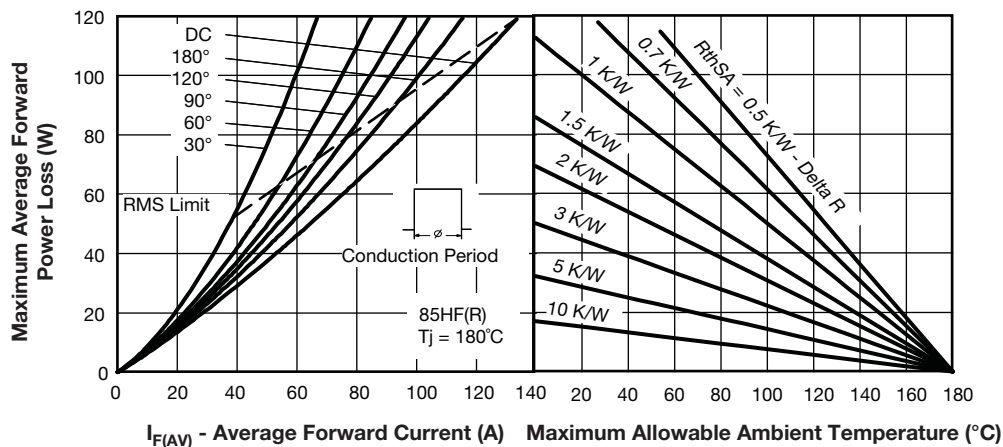


Fig. 4 - Forward Power Loss Characteristics

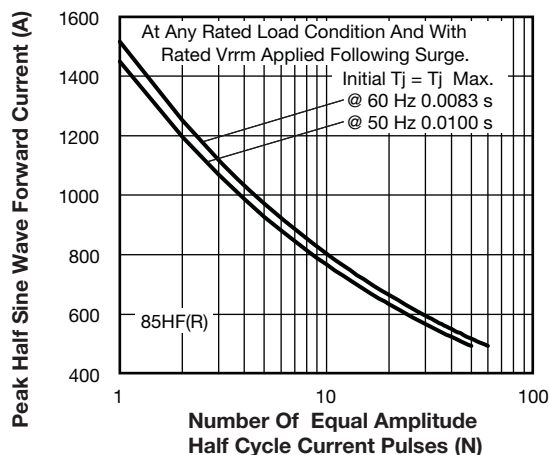


Fig. 5 - Maximum Non-Repetitive Surge Current

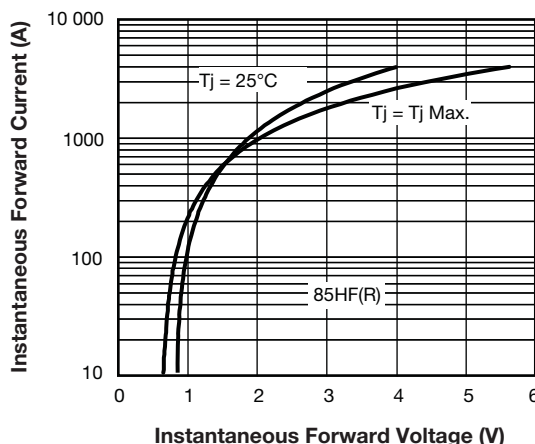


Fig. 7 - Forward Voltage Drop Characteristics

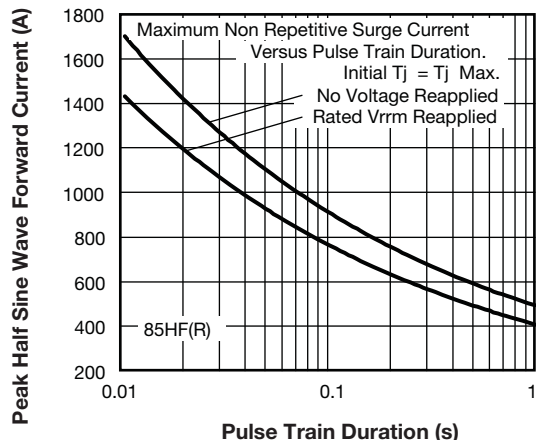
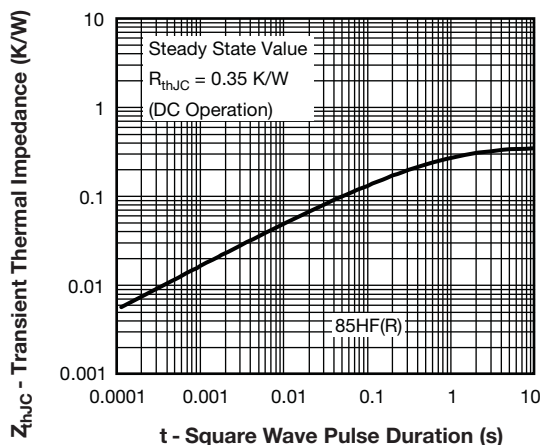


Fig. 6 - Maximum Non-Repetitive Surge Current


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-203AB (DO-5) M8 x 1.25				

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95342
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DO-203AB (DO-5) for 85HF(R) Series

DIMENSIONS in millimeters (inches)





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