

85HF(R) Series

STANDARD RECOVERY DIODES 85 AMP

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Parameter	Symbol	Test Conditions	85HF(R)		Units
			10 to 120	140 to 160	
Maximum average forward current	$I_{F(AV)}$		85 @ $T_C = 140^\circ\text{C}$	85 @ $T_C = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$		133		Amps
Maximum peak, on cycle, non-repetitive forward surge current	I_{FSM}	@ 50Hz @ 60Hz	1700 1800		Amps
Maximum I^2t for fusing	I^2t	@ 50Hz @ 60Hz	14500 13500		A ² s
Maximum repetitive peak reverse voltage	V_{RRM}		100-1200	1400-1600	Volts
Junction temperature range	T_J		-65 to 180	-65 to 150	°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Part number	Maximum repetitive peak reverse voltage	Maximum non-repetitive peak reverse voltage	Maximum repetitive reverse current at $T_J = T_J$ maximum
	V_{RRM}	V_{RSM}	I_{RRM}
	Volts	Volts	mA
85HF10(R)	100	200	9
85HF20(R)	200	300	
85HF40(R)	400	500	
85HF60(R)	600	700	
85HF80(R)	800	900	
85HF100(R)	1000	1100	
85HF120(R)	1200	1300	
85HF140(R)	1400	1500	4.5
85HF160(R)	1600	1700	

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FORWARD CONDUCTION

Parameter	Symbol	Test Conditions		85HF(R)		Units
				10 to 120	140 to 160	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave $T_C = 140^\circ\text{C}$		85 @ $T_C = 140^\circ\text{C}$	85 @ $T_C = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$			133		Amps
Maximum peak, one cycle, non-repetitive forward surge current	I_{FSM}	t = 10ms	No voltage reappplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	1700	Amps
		t = 8.3ms			1800	
		t = 10ms	100% V_{RRM} reappplied		1450	
		t = 8.3ms			1500	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reappplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	14500	A^2s
		t = 8.3ms			13500	
		t = 10ms	100% V_{RRM} reappplied		10500	
		t = 8.3ms			9400	
Maximum I^2Vt for fusing	I^2Vt	t = 0.1ms to 10ms, no voltage reappplied		16000		A^2Vs
Value of threshold voltage (up to 1200V)	$V_{F(TO)}$	$T_J = T_J$ maximum		0.68		Volts
Value of threshold voltage (1400V, 1600V)				0.69		Volts
Value of forward slope resistance (up to 1200V)	r_{FL}	$T_J = T_J$ maximum		1.62		$\text{m}\Omega$
Value of forward slope resistance (1400V, 1600V)				1.75		$\text{m}\Omega$
Maximum forward voltage drop	V_{FM}	$I_{pk} = 267\text{A}$, $T_J = 25^\circ\text{C}$, $t_p = 400\mu\text{s}$ rectangular wave		1.2	1.4	Volts
THERMAL CHARACTERISTICS						
Maximum junction and storage temperature range	T_J, T_{stg}			-65 to 180	-65 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.35		K/W
Thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased		0.25		K/W
Maximum allowable mounting torque (+0%, -10%)		Not lubricated threads		3.4 (20)		N-m (lbf-in)
		Lubricated threads		2.3 (20)		

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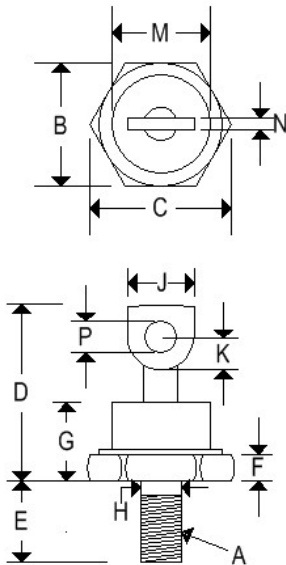
ΔR_{thJC} Conduction

Conduction angle	Sinusoidal conduction	Rectangular conduction	Test conditions	Units
180°	0.10	0.08	$T_J = T_{J \text{ maximum}}$	K/W
120°	0.11	0.11		
90°	0.13	0.13		
60°	0.17	0.17		
30°	0.26	0.26		

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

MECHANICAL CHARACTERISTICS

Case	DO-5 (R)
Marking	Alpha numeric 85HFR is an acceptable alternate prefix
Polarity	Cathode is stud
Reverse polarity	Anode is stud



	DO-5(R)			
	Inches		Millimeters	
	Min	Max	Min	Max
A	1/4-28 UNF2A threads			
B	0.669	0.688	16.990	17.480
C	-	0.794	-	20.160
D	-	1.000	-	25.400
E	0.422	0.453	10.720	11.510
F	0.115	0.200	2.920	5.080
G	-	0.450	-	11.430
H	0.220	0.249	5.580	6.320
J	0.250	0.375	6.350	9.530
K	0.156	-	3.960	-
M	-	0.667	-	16.940
N	0.030	0.080	0.760	2.030
P	0.140	0.175	3.560	4.450

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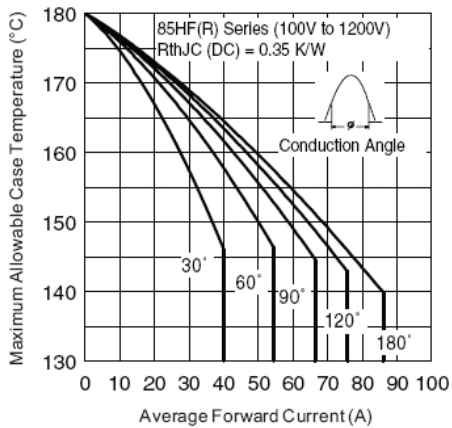


Fig. 1 - Current Ratings Characteristics

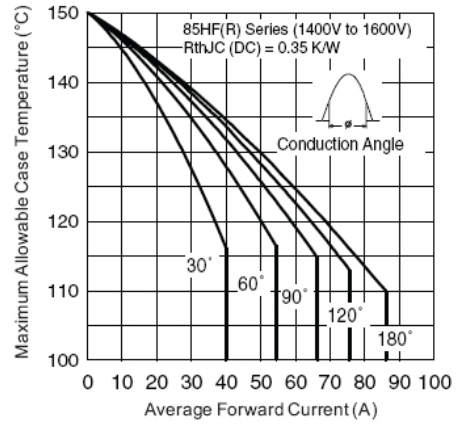


Fig. 3 - Current Ratings Characteristics

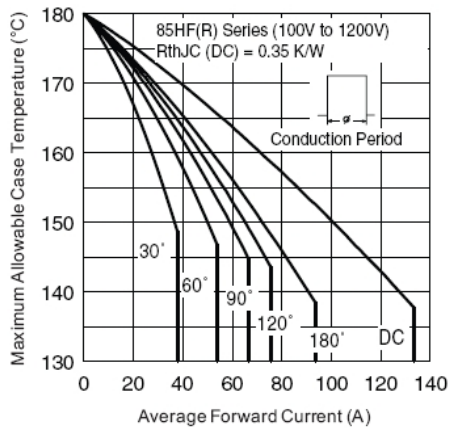


Fig. 2 - Current Ratings Characteristics

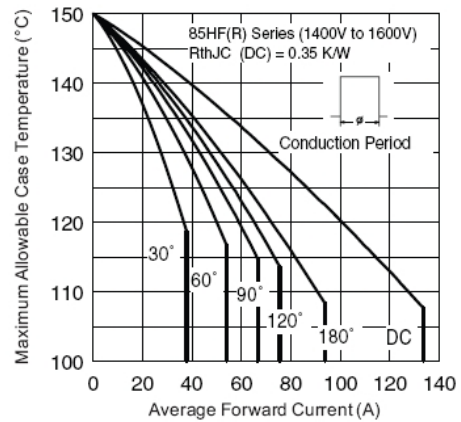


Fig. 4 - Current Ratings Characteristics

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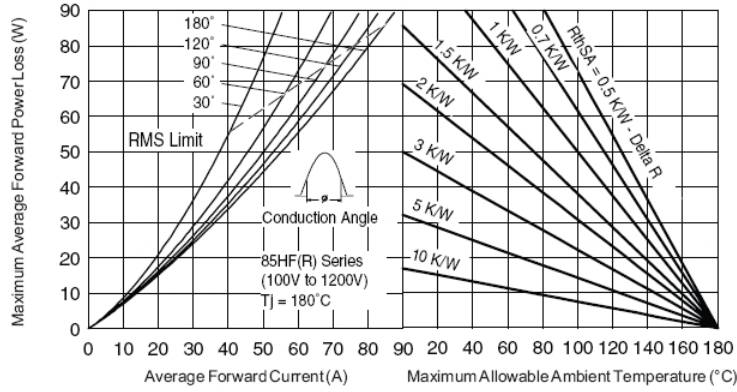


Fig. 5 - Forward Power Loss Characteristics

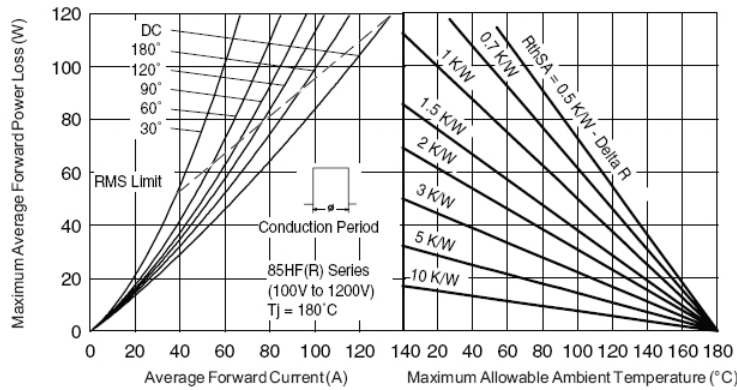


Fig. 6 - Forward Power Loss Characteristics

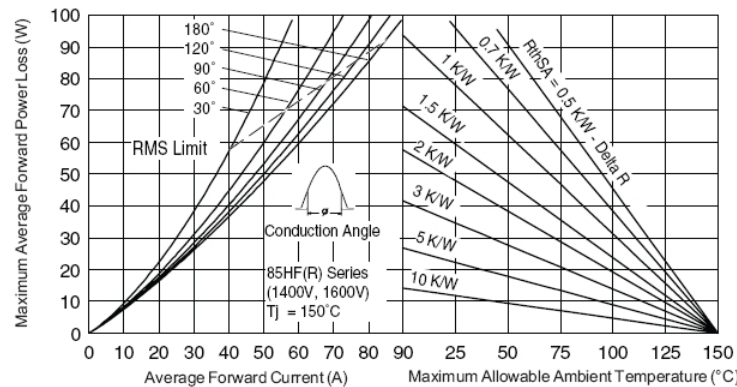


Fig. 7 - Forward Power Loss Characteristics

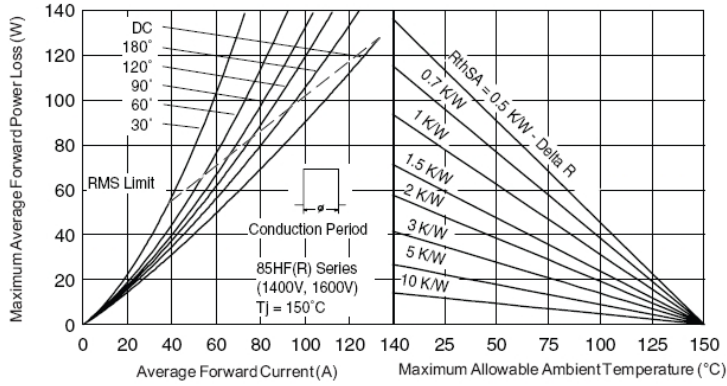


Fig. 8 - Forward Power Loss Characteristics

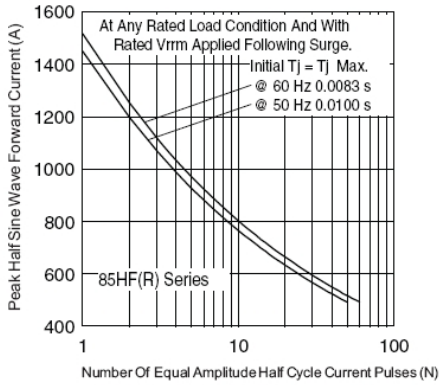


Fig. 9 - Maximum Non-Repetitive Surge Current

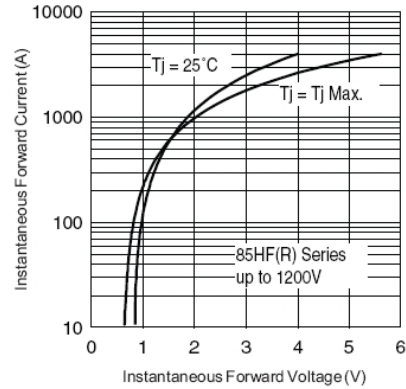


Fig. 11 - Forward Voltage Drop Characteristics (up to 1200 V)

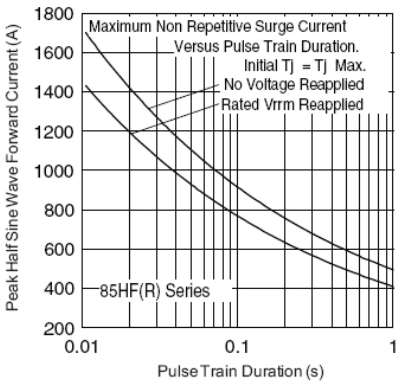


Fig. 10 - Maximum Non-Repetitive Surge Current

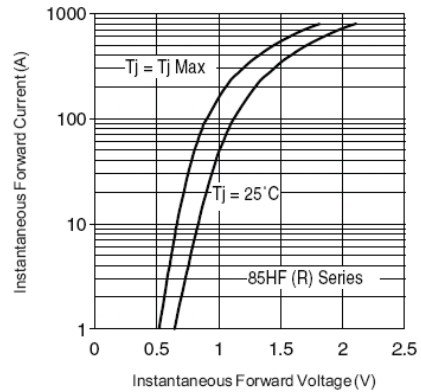


Fig. 12 - Forward Voltage Drop Characteristics (for 1400 V, 1600 V)

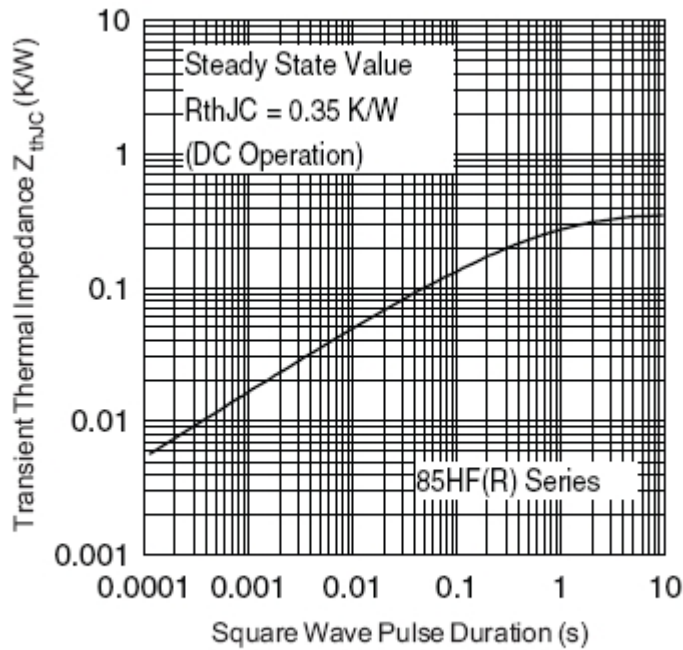


Fig. 13 - Thermal Impedance Z_{thJC} Characteristics