

# 70HF(R) Series

## STANDARD RECOVERY DIODES 70 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	70HF(R)		Units
			10 to 120	140 to 160	
Maximum average forward current	$I_{F(AV)}$		70 @ $T_C = 140^\circ\text{C}$	70 @ $T_C = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$		110	110	Amps
Maximum peak, on cycle, non-repetitive forward surge current	$I_{FSM}$	@ 50Hz @ 60Hz	1200 1250	1200 1250	Amps
Maximum $I^2t$ for fusing	$I^2t$	@ 50Hz @ 60Hz	7100 6450	7100 6450	$\text{A}^2\text{s}$
Maximum repetitive peak reverse voltage	$V_{RRM}$		100-1200	1400 to 1600	Volts
Junction temperature range	$T_J$		-65 to +180	-65 to +150	$^\circ\text{C}$

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

Part number	Maximum repetitive peak reverse voltage	Maximum non-repetitive peak reverse voltage	Minimum avalanche voltage	Maximum reverse current at $T_J = T_J$ maximum
	$V_{RRM}$	$V_{RSM}$	$V_{R(BR)}$	$I_{RRM}$
	Volts	Volts	Volts	mA
70HF10(R)	100	200	200	15
70HF20(R)	200	300	300	
70HF40(R)	400	500	500	
70HF60(R)	600	720	725	9
70HF80(R)	800	960	950	
70HF100(R)	1000	1200	1150	
70HF120(R)	1200	1440	1350	
70HF140(R)	1400	1650	1550	4.5
70HF160(R)	1600	1900	1750	

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### FORWARD CONDUCTION

Parameter	Symbol	Test Conditions		70HF(R)		Units
				10 to 120	140 to 160	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		70 @ $T_C = 140^\circ\text{C}$	70 @ $T_C = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$			110	110	
Maximum peak, one cycle, non-repetitive forward surge current	$I_{FSM}$	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_j = T_j$ maximum	1200	Amps
		t = 8.3ms			1250	
		t = 10ms	100% $V_{RRM}$ reapplied		1000	
		t = 8.3ms			1050	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_j = T_j$ maximum	7100	$A^2s$
		t = 8.3ms			6450	
		t = 10ms	100% $V_{RRM}$ reapplied		5000	
		t = 8.3ms			4550	
Maximum $I^2vt$ for fusing	$I^2vt$	T = 0.1ms to 10ms, no voltage reapplied		71000		$A^2vs$
Low level value of threshold voltage	$V_{F(TO)1}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_j = T_j$ maximum		0.79		Volts
High level value of threshold voltage	$V_{F(TO)2}$	$(I > \pi \times I_{F(AV)})$ , $T_j = T_j$ maximum		1.00		Volts
Low level value of forward slope resistance	$r_{f1}$	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_j = T_j$ maximum		2.33		m $\Omega$
High level value of forward slope resistance	$r_{f2}$	$(I > \pi \times I_{F(AV)})$ , $T_j = T_j$ maximum		1.53		m $\Omega$
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 220A$ , $T_j = 25^\circ\text{C}$ , $t_p = 400\mu s$ rectangular wave		1.35	1.46	Volts
<b>THERMAL CHARACTERISTICS</b>						
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		0.45		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 thread, tightening on nut <sup>(1)</sup>		3.4 (30)		N-m (lbf-in)
		Lubricated thread, tightening on nut <sup>(1)</sup>		2.3 (20)		
		Not lubricated thread, tightening on hexagon <sup>(2)</sup>		4.2 (37)		
		Lubricated thread, tightening on hexagon <sup>(2)</sup>		3.2 (28)		

Note 1: Recommended for pass through-holes.

Note 2: Recommended for holed threaded heatsinks.

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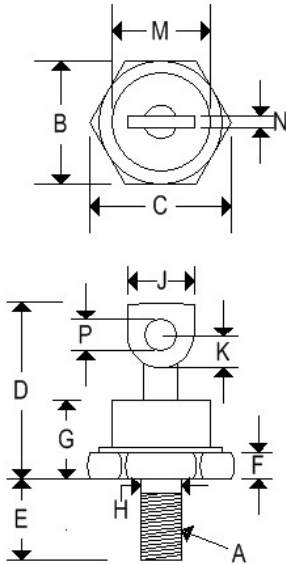
### ΔRthJC Conduction

Conduction angle	Sinusoidal conduction	Rectangular conduction	Test conditions	Units
180°	0.08	0.06	T <sub>J</sub> = T <sub>J maximum</sub>	K/W
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

\*The table above shows the increment of thermal resistance R<sub>thJC</sub> when devices operate at different conduction angles than DC

### MECHANICAL CHARACTERISTICS

Case	DO-5 (R)
Marking	Alpha numeric
Polarity	Cathode is stud
Reverse polarity	Anode is stud



	DO-5(R)			
	Inches		Millimeters	
	Min	Max	Min	Max
A	¼-28 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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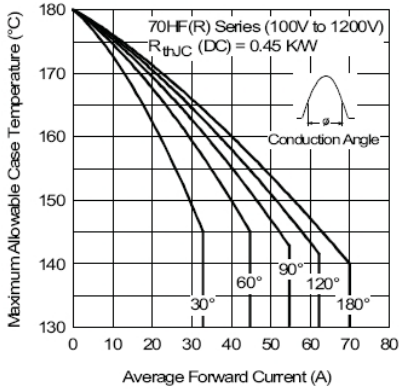


Fig. 1 - Current Ratings Characteristics

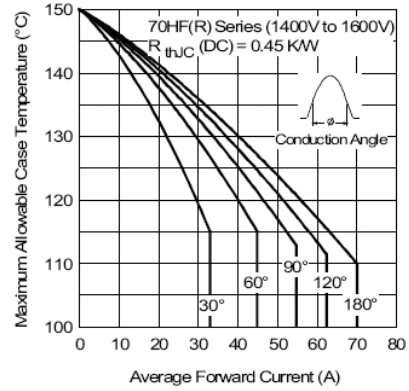


Fig. 3 - Current Ratings Characteristics

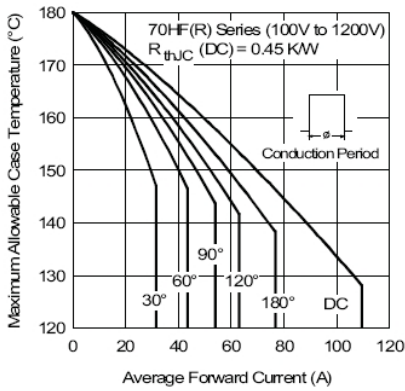


Fig. 2 - Current Ratings Characteristics

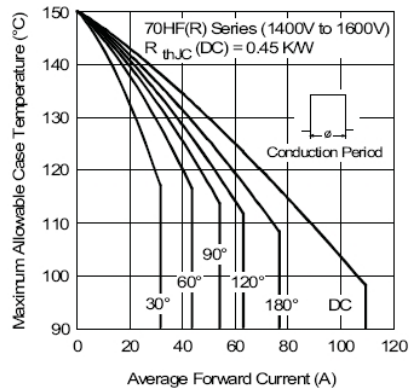


Fig. 4 - Current Ratings Characteristics

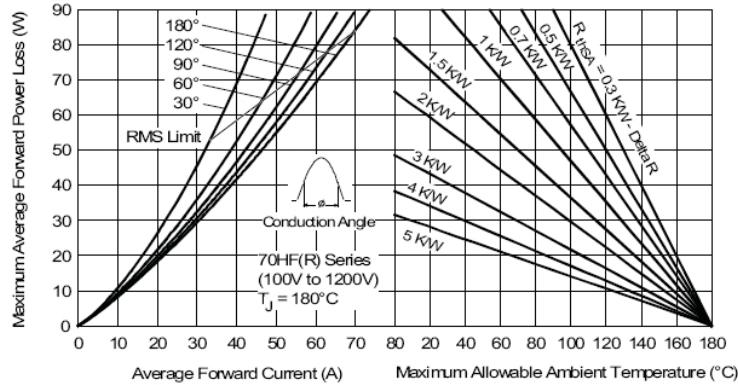


Fig. 5 - Forward Power Loss Characteristics

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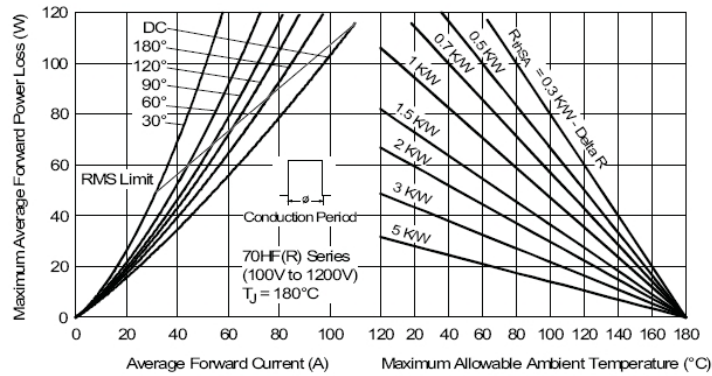


Fig. 6 - Forward Power Loss Characteristics

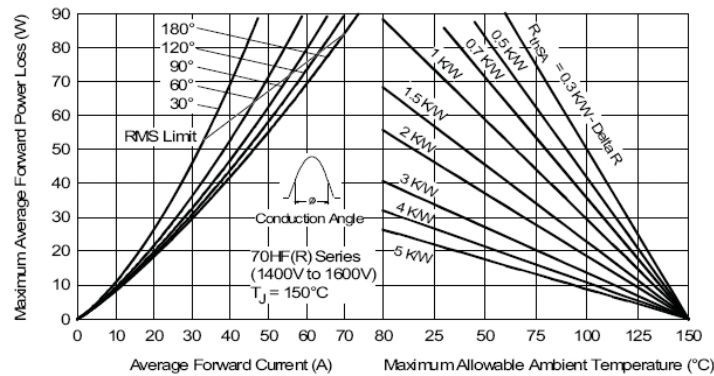


Fig. 7 - Forward Power Loss Characteristics

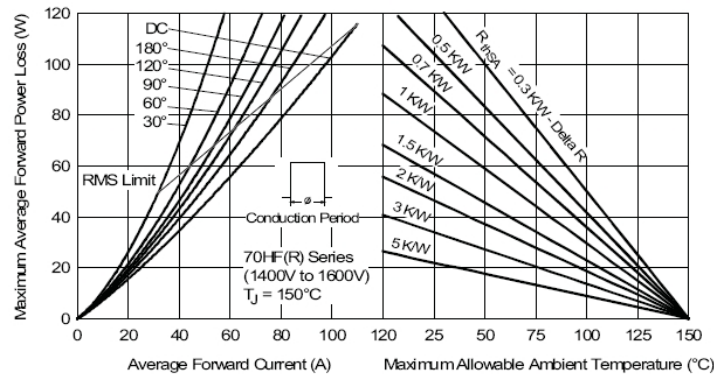


Fig. 8 - Forward Power Loss Characteristics

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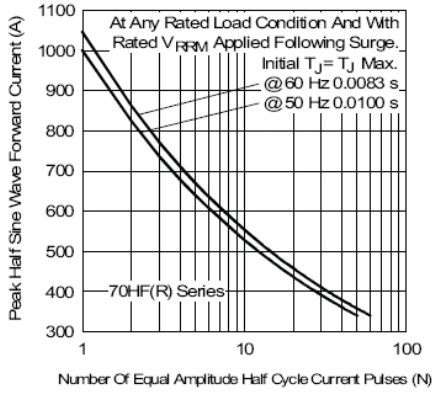


Fig. 9 - Maximum Non-Repetitive Surge Current

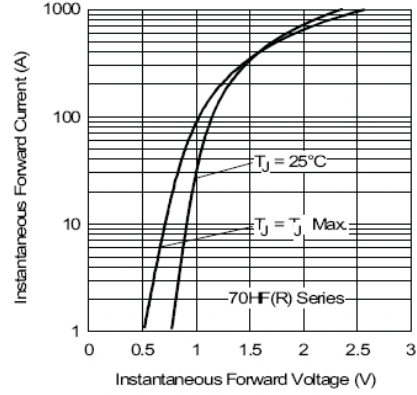


Fig. 11 - Forward Voltage Drop Characteristics

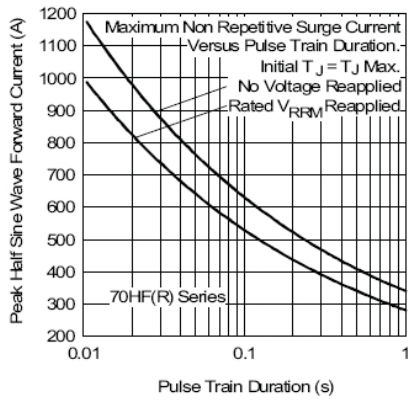


Fig. 10 - Maximum Non-Repetitive Surge Current

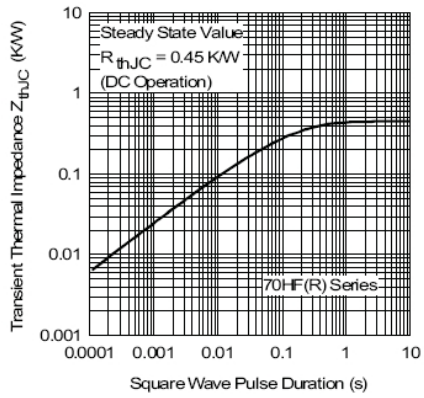


Fig. 12 - Thermal Impedance  $Z_{thJC}$  Characteristics

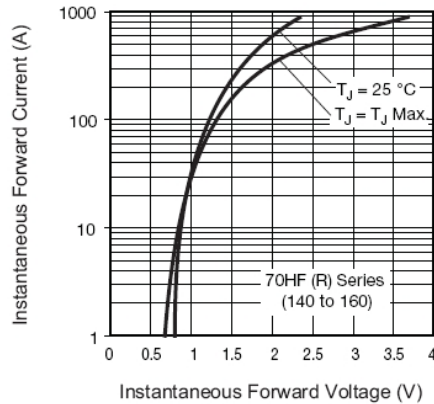


Fig. 13 - Forward Voltage Drop Characteristics