

40HF(R) Series

STANDARD RECOVERY DIODES 40 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	40HF(R)		Units
			10 to 120	140 to 160	
Maximum average forward current	$I_{F(AV)}$		40 @ $T_c = 140^\circ\text{C}$	40 @ $T_c = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$		62		Amps
Maximum peak, on cycle, non-repetitive forward surge current	I_{FSM}	@ 50Hz @ 60Hz	570 595		Amps
Maximum I^2t for fusing	I^2t	@ 50Hz @ 60Hz	1600 1450		A^2s
Maximum repetitive peak reverse voltage	V_{RRM}		100-1200	1400-1600	Volts
Junction temperature range	T_j		-65 to +190	-65 to +160	$^\circ\text{C}$

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

Part number	Maximum repetitive peak reverse voltage	Maximum non-repetitive peak reverse voltage	Maximum reverse current at $T_j = T_j$ maximum
	V_{RRM}	V_{RSM}	I_{RRM}
	Volts	Volts	mA
40HF10(R)	100	200	9
40HF20(R)	200	300	
40HF40(R)	400	500	
40HF60(R)	600	700	
40HF80(R)	800	900	
40HF100(R)	1000	1100	
40HF120(R)	1200	1300	
40HF140(R)	1400	1500	4.5
40HF160(R)	1600	1700	

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FORWARD CONDUCTION

Parameter	Symbol	Test Conditions		40HF(R)		Units
				10 to 120	140 to 160	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		40 @ $T_C = 140^\circ\text{C}$	40 @ $T_C = 110^\circ\text{C}$	Amps
Maximum RMS forward current	$I_{F(RMS)}$			62		
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	570	Amps
		t = 8.3ms			595	
		t = 10ms	100% V_{RRM} reapplied		480	
		t = 8.3ms			500	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	1600	A^2s
		t = 8.3ms			1450	
		t = 10ms	100% V_{RRM} reapplied		1150	
		t = 8.3ms			1050	
Maximum I^2vt for fusing	I^2vt	T = 0.1ms to 10ms, no voltage reapplied		16000		A^2Vs
Value of threshold voltage (up to 1200V)	$V_{F(TO)}$	$T_J = T_J$ maximum		0.65		Volts
Value of threshold voltage (up to 1400V, 1600V)				0.76		
Value of forward slope resistance (up to 1200V)	r_{f1}	$T_J = T_J$ maximum		4.29		mΩ
Value of forward slope resistance (up to 1400V, 1600V)				3.8		
Maximum forward voltage drop	V_{FM}	$I_{pk} = 125A, T_J = 25^\circ\text{C}, t_p = 400\mu s$ rectangular wave		1.30	1.50	Volts
THERMAL CHARACTERISTICS						
Maximum junction and storage temperature range	T_J, T_{stg}			-65 to 190	-65 to 160	°C
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.95		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 ⁽¹⁾		3.4 (30)		N-m (lbf-in)
		Lubricated thread, tightening on nut ⁽¹⁾		2.3 (20)		
		Not lubricated thread, tightening on hexagon ⁽²⁾		4.2 (37)		
		Lubricated thread, tightening on hexagon ⁽²⁾		3.2 (28)		

Note 1: Recommended for pass through-holes.

Note 2: Recommended for holed threaded heatsinks.

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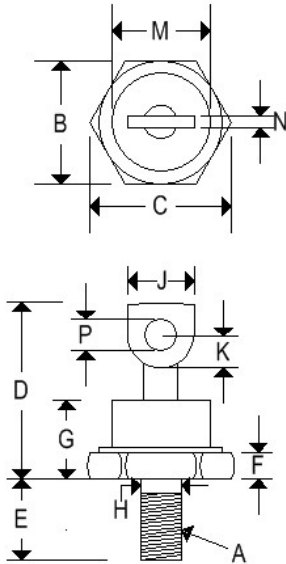
ΔR_{thJC} Conduction

Conduction angle	Sinusoidal conduction	Rectangular conduction	Test conditions	Units
180°	0.14	0.10	$T_J = T_{J \text{ maximum}}$	K/W
120°	0.16	0.17		
90°	0.21	0.22		
60°	0.30	0.31		
30°	0.50	0.50		

*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
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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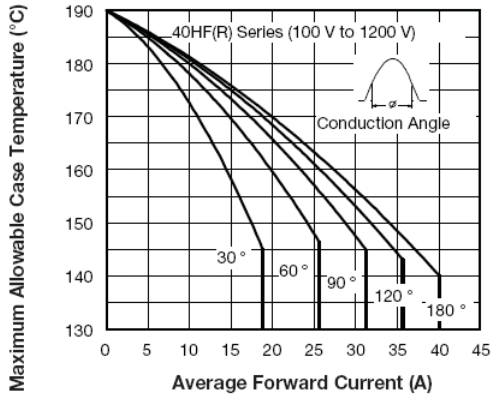


Fig. 1 - Current Ratings Characteristics

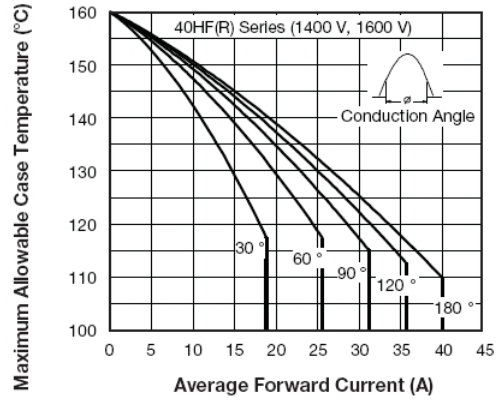


Fig. 3 - Current Ratings Characteristics

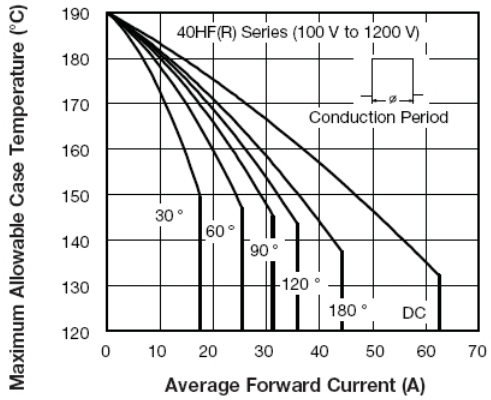


Fig. 2 - Current Ratings Characteristics

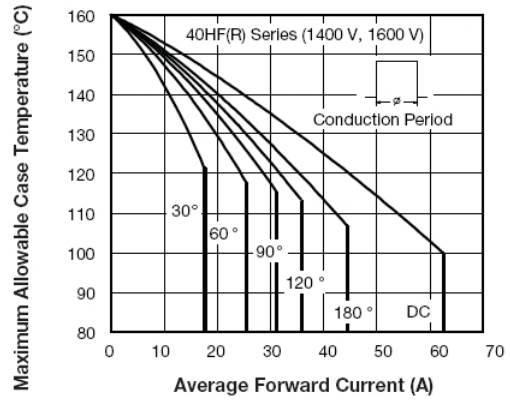


Fig. 4 - Current Ratings Characteristics

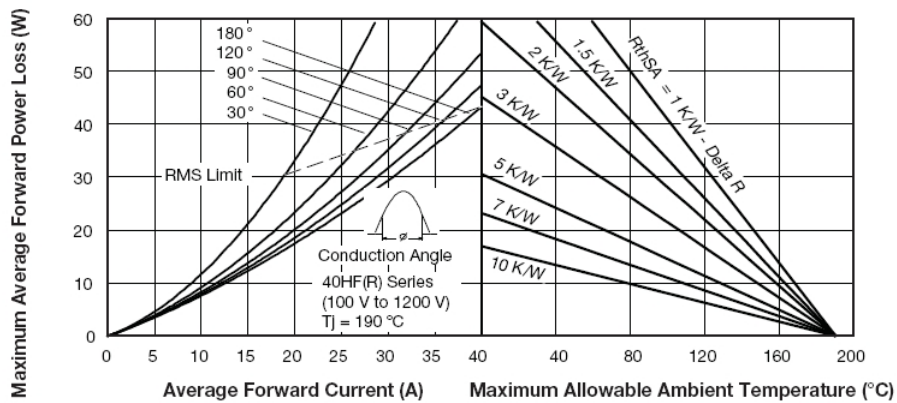


Fig. 5 - Forward Power Loss Characteristics

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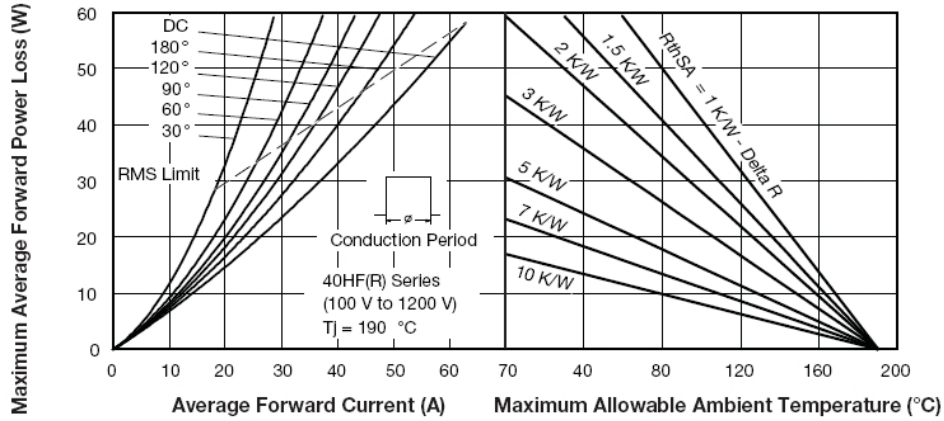


Fig. 6 - Forward Power Loss Characteristics

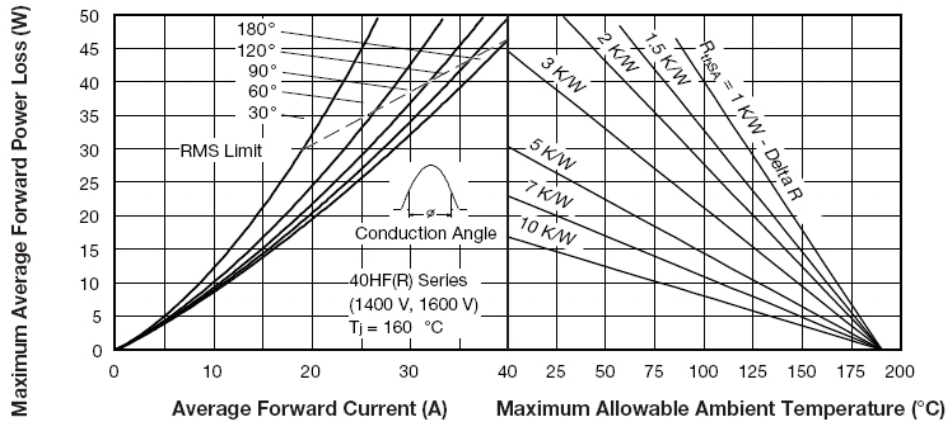


Fig. 7 - Forward Power Loss Characteristics

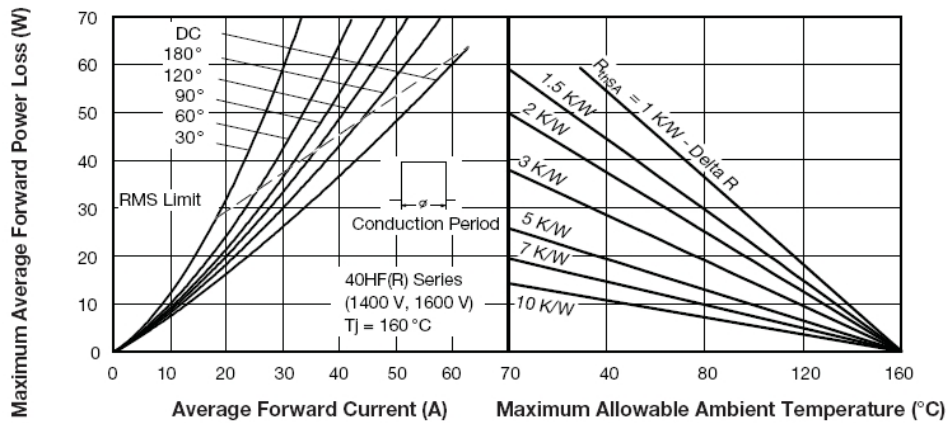


Fig. 8 - Forward Power Loss Characteristics

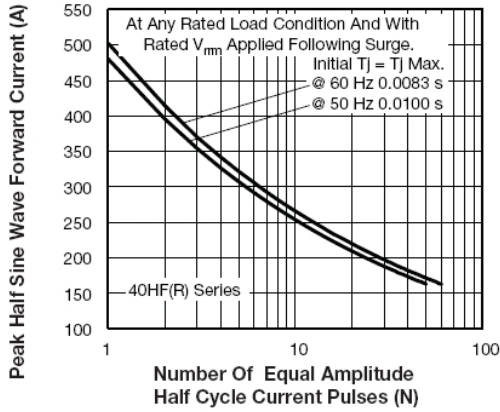


Fig. 9 - Maximum Non-Repetitive Surge Current

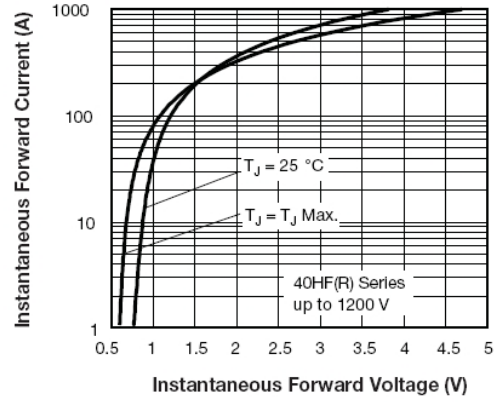


Fig. 11 - Forward Voltage Drop Characteristics (Up To 1200 V)

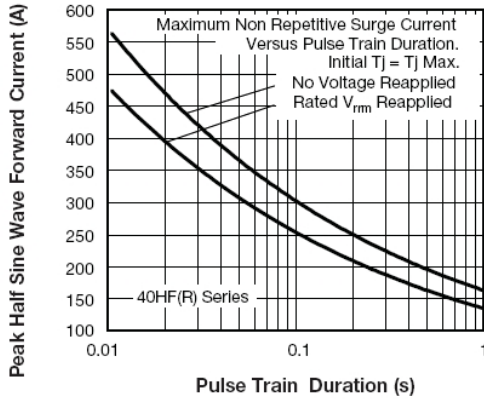


Fig. 10 - Maximum Non-Repetitive Surge Current

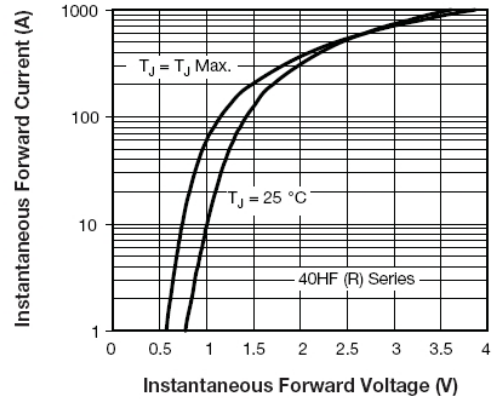


Fig. 12 - Forward Voltage Drop Characteristics (For 1400 V/1600 V)

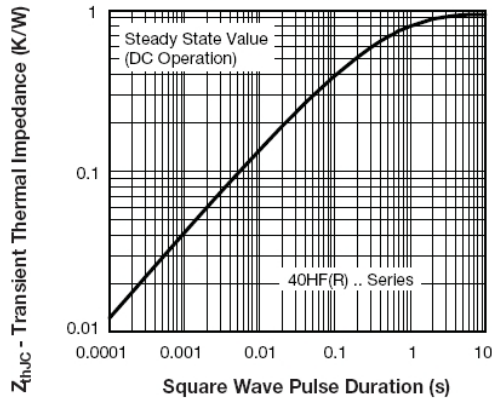


Fig. 13 - Thermal Impedance Z_{thJC} Characteristics