



40HF(R) Series

Power Rectifiers
Reverse Voltage 100 to 1600 Volts Forward Current 40.0 Amperes

Features

- ◆ High surge current capability
- ◆ Designed for a wide range of applications
- ◆ Stud cathode and stud anode version
- ◆ Leaded version available
- ◆ Types up to 1600V V_{RRM}



case style
DO-203AB (DO-5)

Typical Applications

- ◆ Battery charges
- ◆ Converters
- ◆ Power supplies
- ◆ Machine tool controls

Major Ratings and Characteristics

Parameters	40HF(R)		Units
	10 to 120	140 to 160	
$I_{F(AV)}$	40	40	Amps
$I_{F(AV)}$ @ T_c	140	110	°C
$I_{F(RMS)}$	62		Amps
I_{FSM} @ 50Hz	570		Amps
I_{FSM} @ 60Hz	595		Amps
P_t @ 50Hz	1600		A ² s
P_t @ 60Hz	1450		A ² s
V_{RRM} range	100 to 1200	1400 to 1600	Volts
T_J range	-65 to +190	-65 to +160	°C

Electrical Specifications

Voltage Ratings

Type number	Voltage Code	V_{RRM} maximum repetitive peak reverse voltage (Volts)	V_{RSM} maximum non-repetitive peak reverse voltage (Volts)	$V_{R(BR)}$ minimum avalanche voltage (Volts) (1)	I_{RRM} max. @ $T_J=T_J$ max. (mA)
40HF(R)	10	100	200	-	15
	20	200	300	-	
	40	400	500	500	
	60	600	720	725	9
	80	800	960	950	
	100	1000	1200	1150	
	120	1200	1440	1350	
	140	1400	1650	1550	4.5
	160	1600	1900	1750	

Notes: 1. Avalanche version only available from V_{RRM} 400V to 1600V.

Forward Conduction

Parameters		40HF(R)		Units	Conditions		
		10 to 120	140 to 160				
$I_{F(AV)}$	Max. average forward current @ Case temperature	40	40	Amps	180° conduction, half sine wave		
		140	110	°C			
$I_{F(RMS)}$	Max. RMS forward current	62		Amps			
P_R	Maximum non-repetitive peak reverse power	11		K·W	10us square pulse, $T_J=T_J$ max. see note (2)		
I_{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	570		Amps	t=10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_J$ max.
		595			t=8.3ms		
		480			t=10ms	100% V_{RRM} reapplied	
		500			t=8.3ms		
I^2t	Maximum I^2t for fusing	1600		A ² s	t=10ms	No voltage reapplied	
		1450			t=8.3ms		
		1150			t=10ms	100% V_{RRM} reapplied	
		1050			t=8.3ms		
V_{FM}	Max. forward voltage drop	1.30		Volts	$I_{pk}=125A, T_J=25°C, t_p=400us$ rectangular wave		

Notes: 2. Available only for Avalanche version, all other parameters the same as 40HF.

Thermal and Mechanical Specifications

Parameters		40HF(R)		Units	Conditions
		10 to 120	140 to 160		
T_j	Max. junction operating temperature range	-65 to +190	-65 to +160	°C	
T_{sto}	Max. storage temperature range	-65 to +190	-65 to +160		
R_{thJC}	Max. thermal resistance, junction to case	1.0		K/W	DC operation
R_{thCS}	Max. thermal resistance, case to heatsink	0.25			Mounting surface, smooth, flat and greased
T	Max. allowed mounting torque $\pm 10\%$	2.3 - 3.4		Nm	Not lubricated threads
		20 - 30		lbf · in	
wt	Approximate weight	17 (0.6)		g (oz)	
	Case style	DO-203AB (DO5)			See Outline Table

ΔR_{thJC} Conduction

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

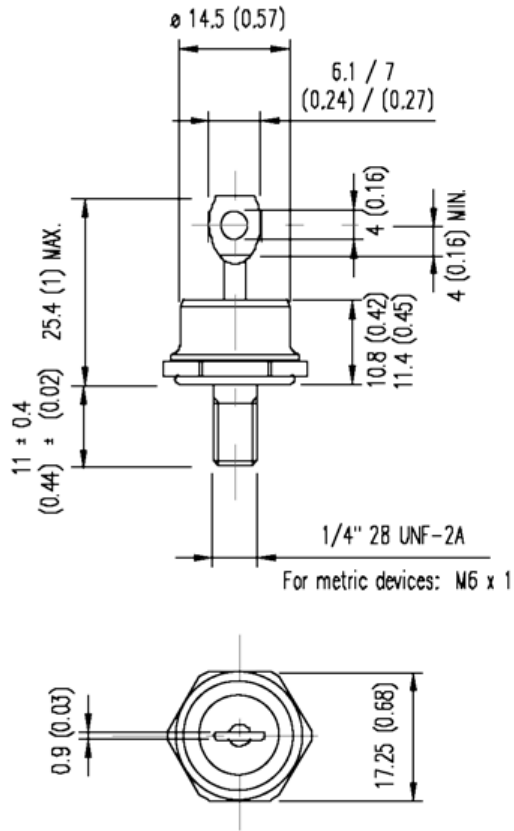
Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.14	0.10	K/W	$T_j = T_j \text{ max.}$
120°	0.16	0.17		
90°	0.21	0.22		
60°	0.30	0.31		
30°	0.50	0.50		

Ordering information Table

Device Code: 40 HF R 160 M A
 1 2 3 4 5 6

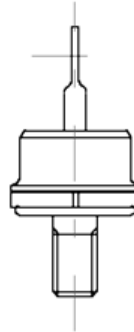
1. 40 - Standard device
2. HF - Standard diode
3. None - stud normal polarity (cathode to stud)
 R - stud reverse polarity (Anode to stud)
4. Voltage code: code x 10 = VRRM
5. None - stud base DO-203AB(DO5) 1/4" 28 UNF-2A
 R - stud base DO-203AB(DO5) M6 x 1
6. None - Standard pin
 A - Customizing pin

Outlines Table



40HF(R)

Case Style DO-203AB (DO-5)
All dimensions in millimeters (inches)



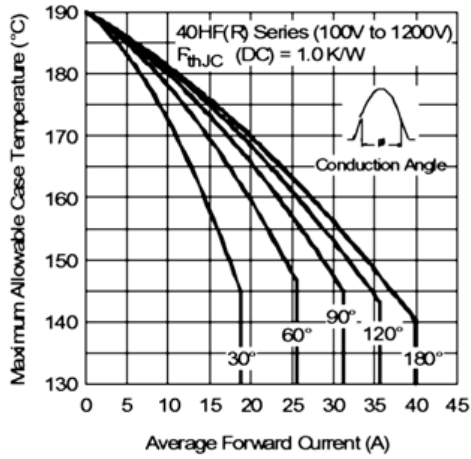


Fig. 1 - Current Ratings Characteristics

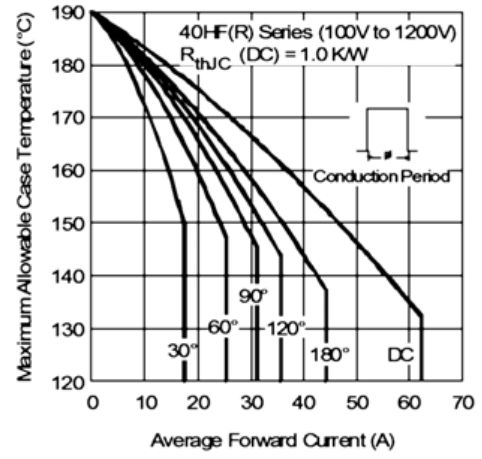


Fig. 2 - Current Ratings Characteristics

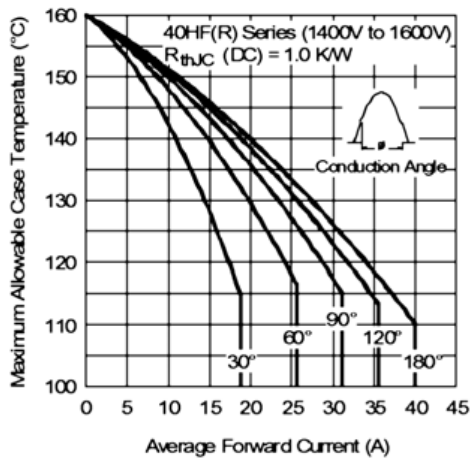


Fig. 3 - Current Ratings Characteristics

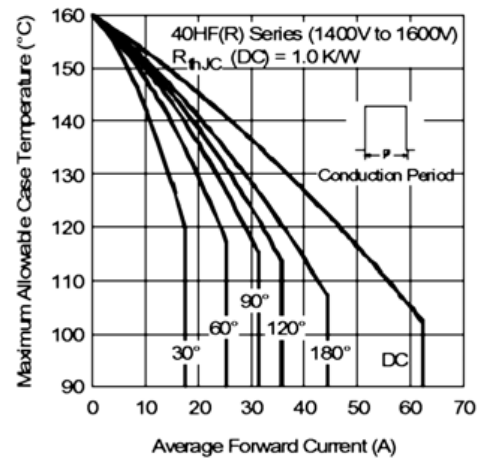


Fig. 4 - Current Ratings Characteristics

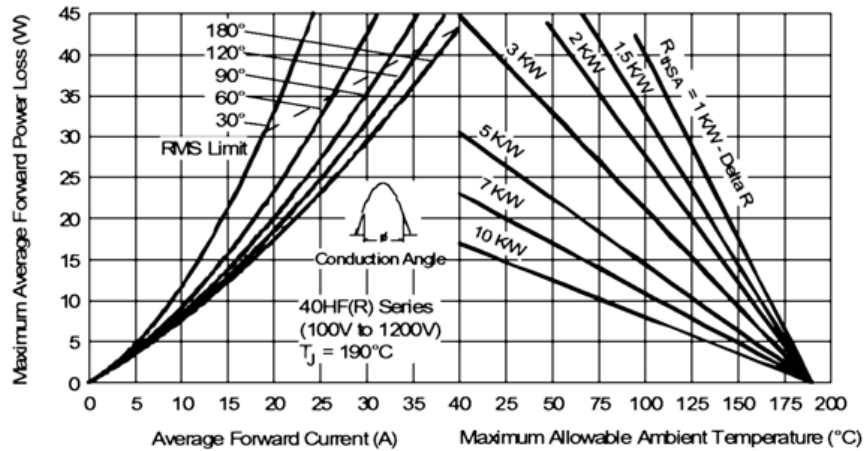


Fig. 5 - Forward Power Loss Characteristics

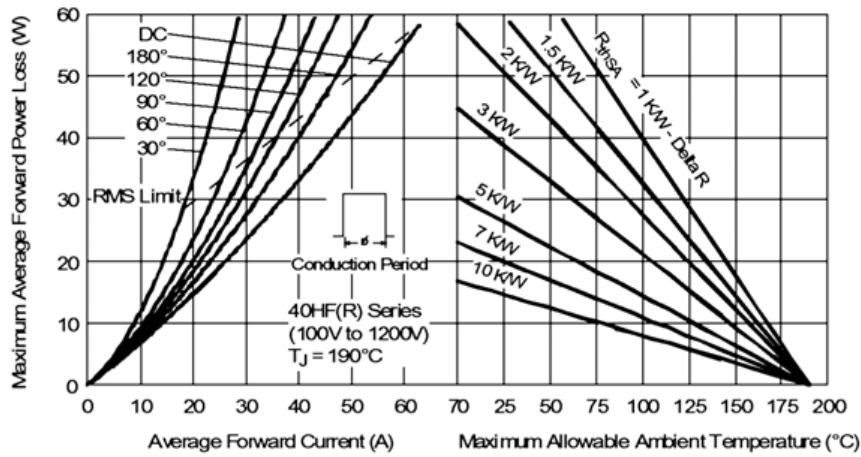


Fig. 6 - Forward Power Loss Characteristics

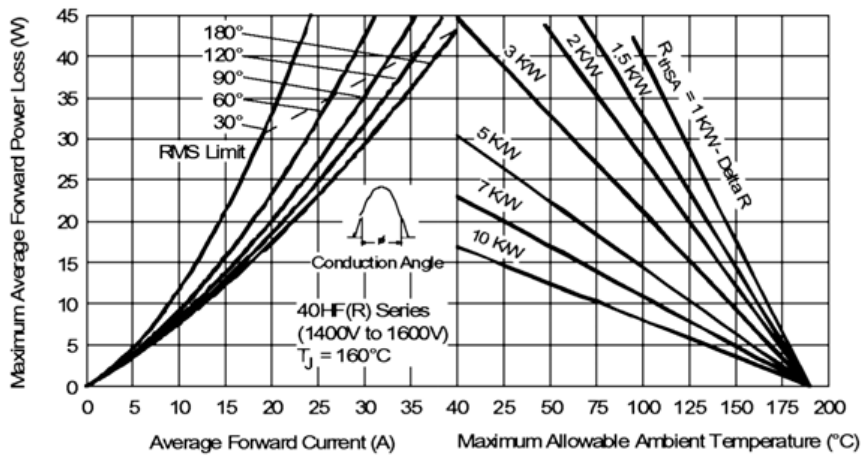


Fig. 7 - Forward Power Loss Characteristics

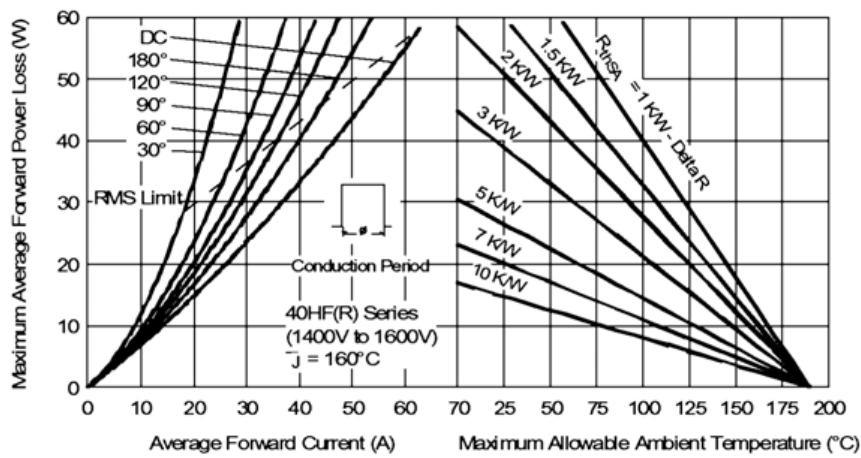


Fig. 8 - Forward Power Loss Characteristics

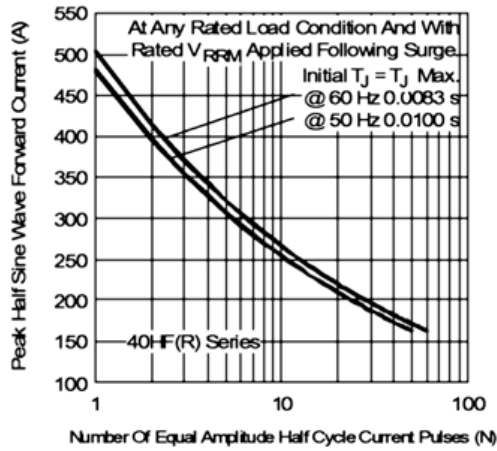


Fig. 9 - Maximum Non-Repetitive Surge Current

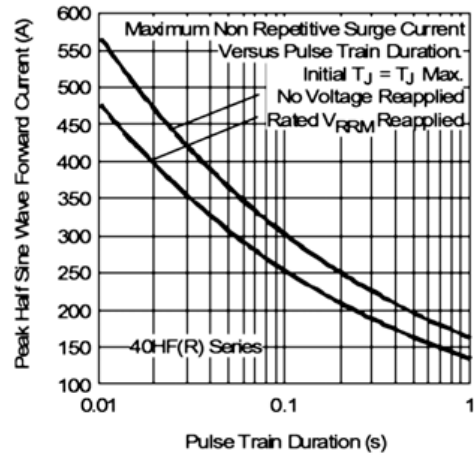


Fig. 10 - Maximum Non-Repetitive Surge Current

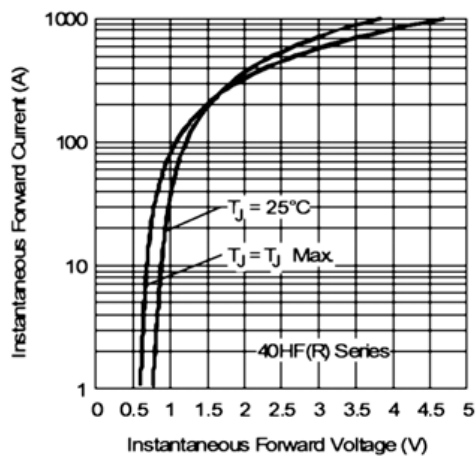


Fig. 11 - Forward Voltage Drop Characteristics

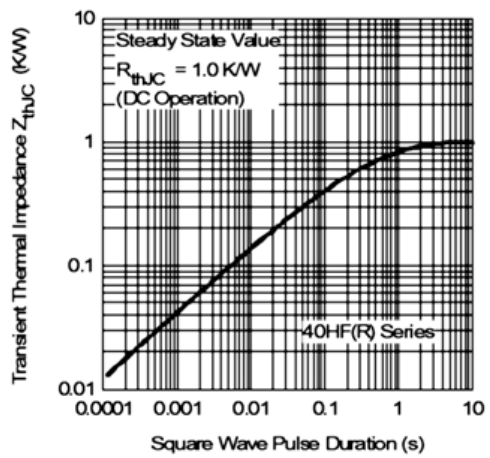


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics