

STANDARD RECOVERY DIODES

Stud Version

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}

70 A

Typical Applications

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

Major Ratings and Characteristics

Parameters	70HF(R)		Units
	10 to 120	140 to 160	
$I_{F(AV)}$	70	70	A
@ T_C	140	110	°C
$I_{F(RMS)}$	110		A
I_{FSM} @ 50Hz	1200		A
@ 60Hz	1250		A
I^2t @ 50Hz	7100		A ² s
@ 60Hz	6450		A ² s
V_{RRM} range	100 to 1200	1400 to 1600	V
T_J range	- 65 to 180	- 65 to 150	°C



70HF(R) Series

Bulletin I20202 rev. E 03/04

International
IOR Rectifier

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	$V_{R(BR)}$, minimum avalanche voltage V	I_{RRM} max. @ $T_J = T_J$ max. mA
70HF(R)	10	100	200	200	15
	20	200	300	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	

Forward Conduction

Parameter		70HF(R)		Units	Conditions			
		10 to 120	140 to 160					
I _{F(AV)}	Max. average forward current @ Case temperature	70	70	A	180° conduction, half sine wave			
		140	110	°C				
I _{F(RMS)}	Max. RMS forward current	110		A				
I _{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	1200		A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.	
		1250			t = 8.3ms	reapplied		
		1000			t = 10ms	100% V _{RRM}		
		1050			t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	7100		A ² s	t = 10ms	No voltage		
		6450			t = 8.3ms	reapplied		
		5000			t = 10ms	100% V _{RRM}		
		4550			t = 8.3ms	reapplied		
I ² /t	Maximum I ² /t for fusing	71000		A ² /s	t = 0.1 to 10ms, no voltage reapplied			
V _{F(TO)1}	Low level value of threshold voltage	0.79		V	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	1.00			(I > π × I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	2.33		mΩ	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
r _{f2}	High level value of forward slope resistance	1.53			(I > π × I _{F(AV)}), T _J = T _J max.			
V _{FM}	Max. forward voltage drop	1.35	1.46	V	I _{pk} = 220A, T _J = 25°C, t _p = 400μs rectangular wave			

Thermal and Mechanical Specifications

Parameter		70HF(R)		Units	Conditions
		10 to 120	140 to 160		
T _J	Max. junction operating temperature range	-65 to 180	-65 to 150	°C	
T _{stg}	Max. storage temperature range	-65 to 180	-65 to 150		
R _{thJC}	Max. thermal resistance, junction to case	0.45		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 ±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°	0.08	0.06	K/W	$T_J = T_J \text{ max.}$
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

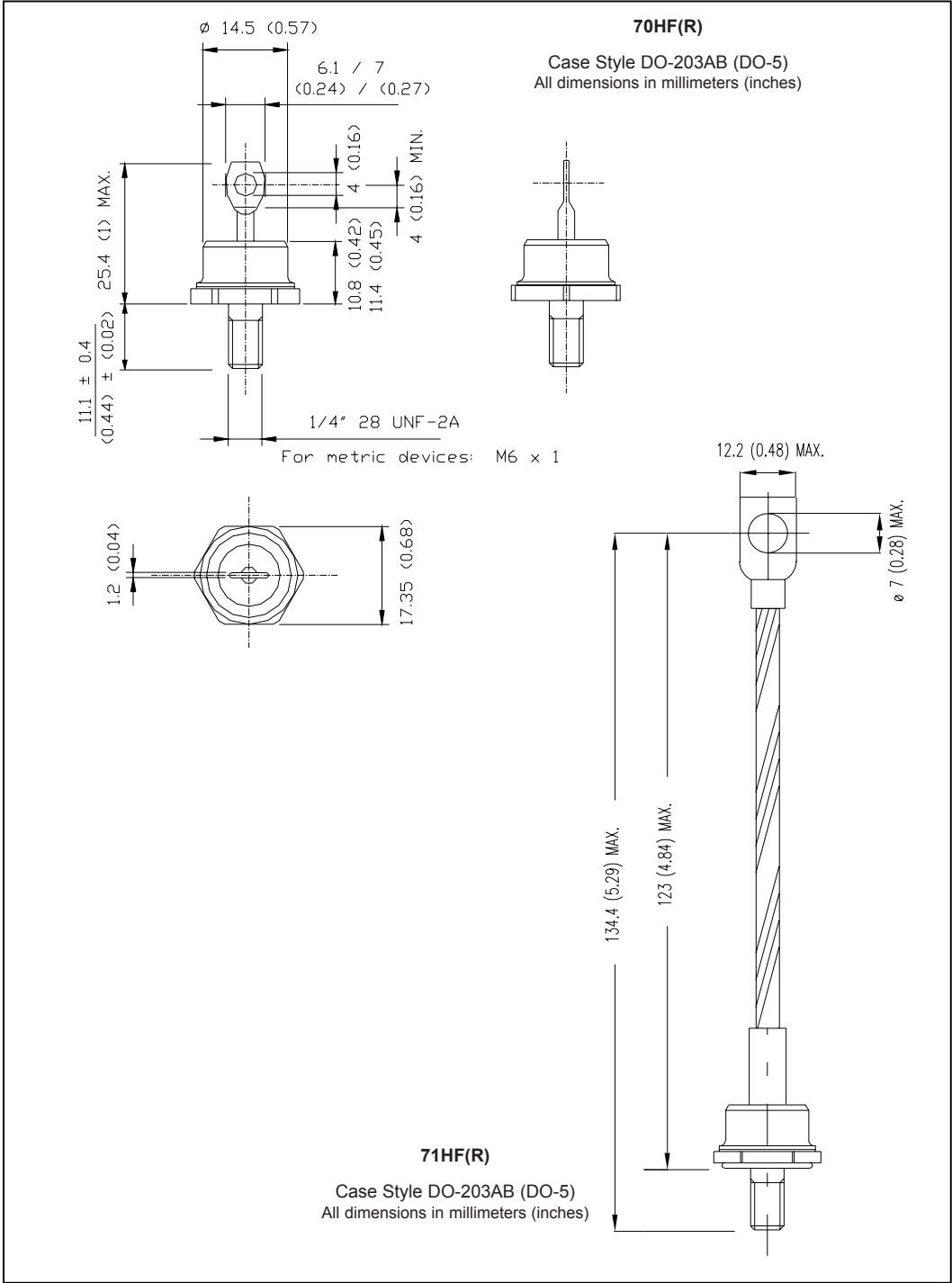
Ordering Information Table

Device Code				
70	HF	R	160	M
1	2	3	4	5
1 - 70 = Standard device 71 = Not isolated lead 72 = Isolated lead with silicone sleeve (Red = Reverse polarity) (Blue = Normal polarity) 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 = V_{RRM} (See Voltage Ratings table) 5 - None = Stud base DO-203AB (DO-5) 1/4" 28UNF-2A M = Stud base DO-203AB (DO-5) M6 X 1				

70HF(R) Series

Bulletin I20202 rev. E 03/04

Outlines Table



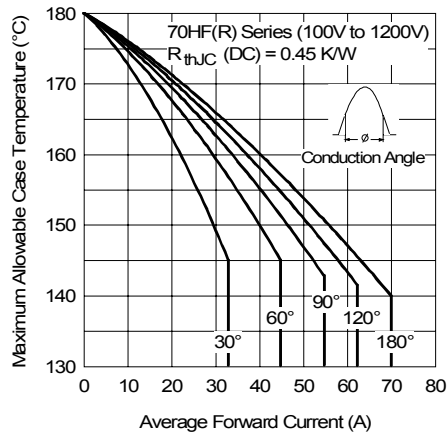


Fig. 1 - Current Ratings Characteristics

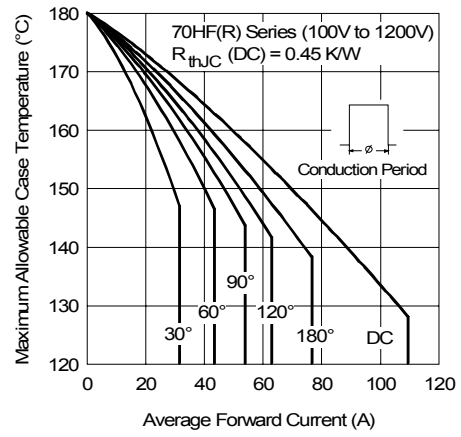


Fig. 2 - Current Ratings Characteristics

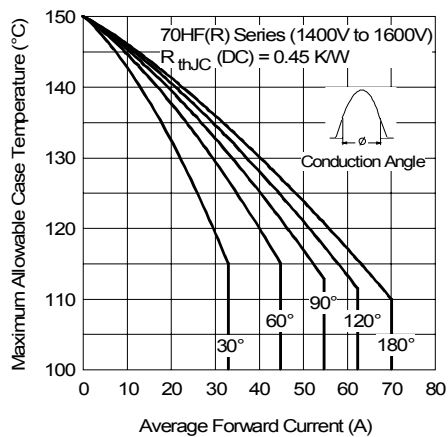


Fig. 3 - Current Ratings Characteristics

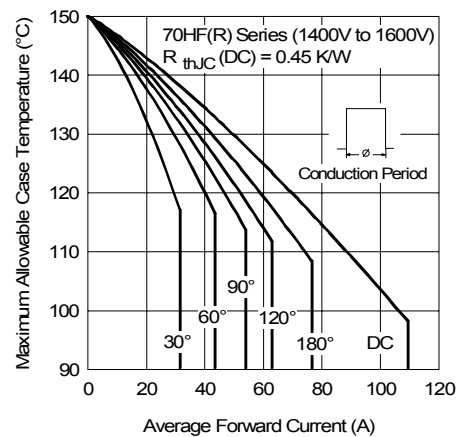


Fig. 4 - Current Ratings Characteristics

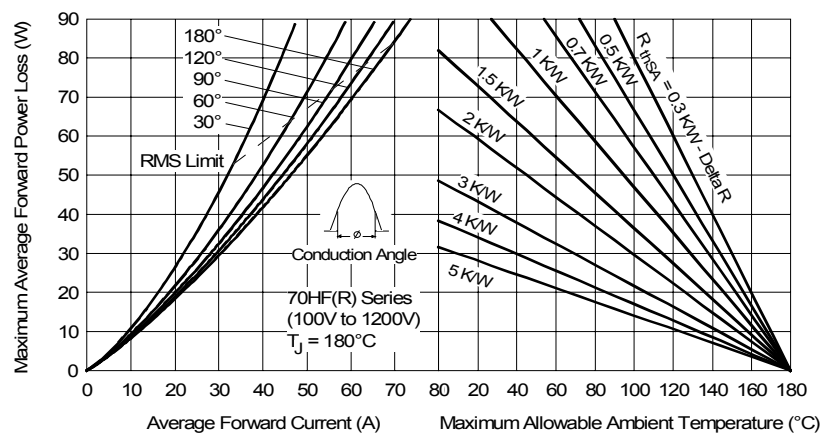


Fig. 5 - Forward Power Loss Characteristics

70HF(R) Series

Bulletin I20202 rev. E 03/04

International
IOR Rectifier

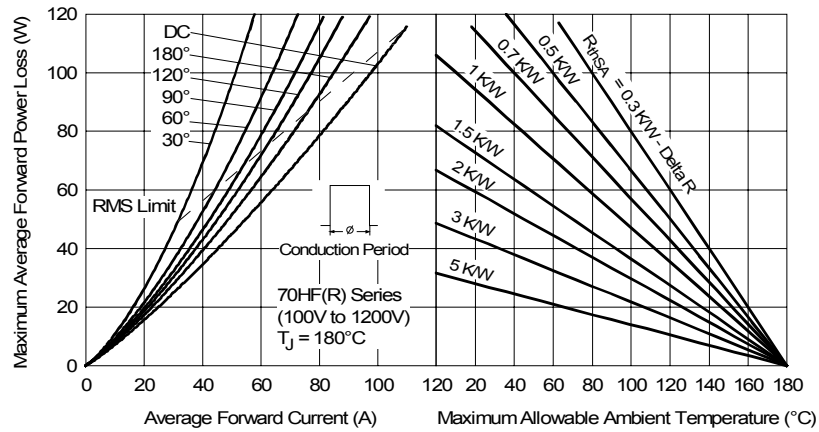


Fig. 6 - Forward Power Loss Characteristics

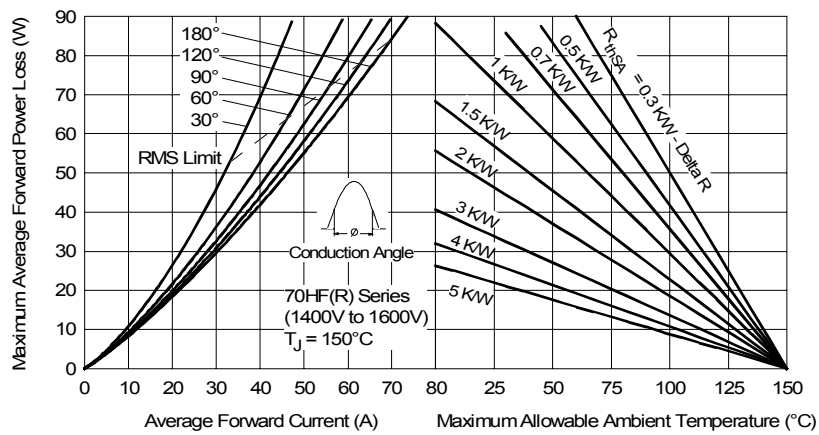


Fig. 7 - Forward Power Loss Characteristics

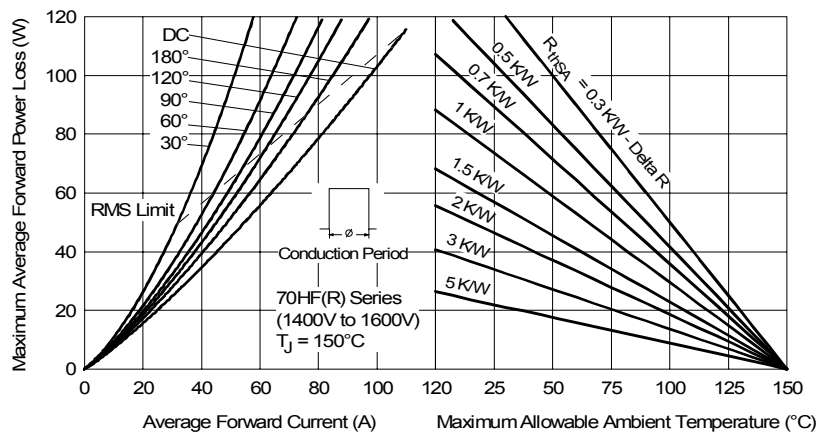


Fig. 8 - Forward Power Loss Characteristics

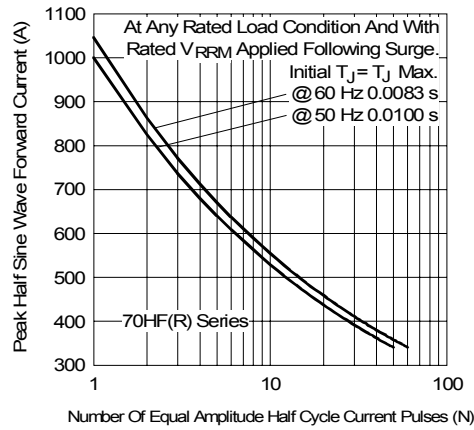


Fig. 9 - Maximum Non-Repetitive Surge Current

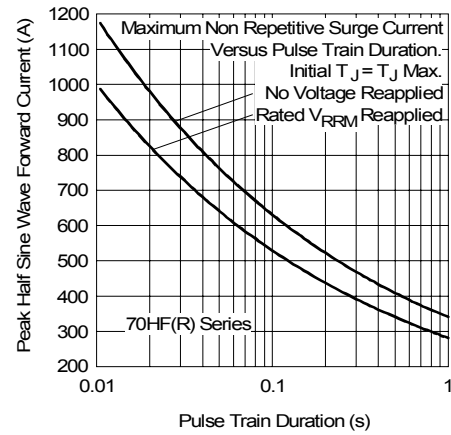


Fig. 10 - Maximum Non-Repetitive Surge Current

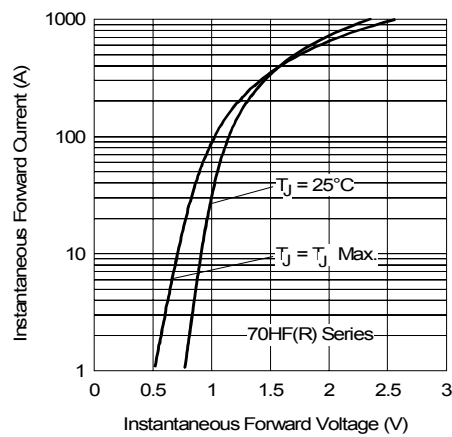


Fig. 11 - Forward Voltage Drop Characteristics

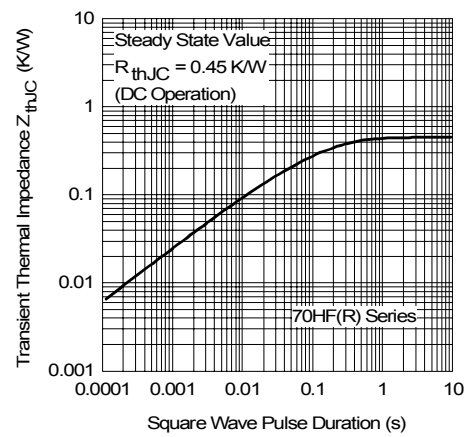


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics

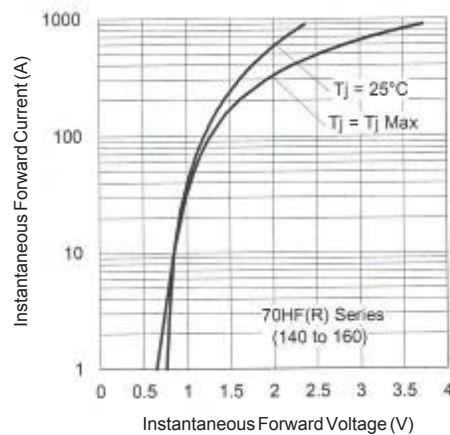


Fig. 13 - Forward Voltage Drop Characteristics

70HF(R) Series

Bulletin I20202 rev. E 03/04

International
IOR Rectifier

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309

Visit us at www.irf.com for sales contact information. 03/04