

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}

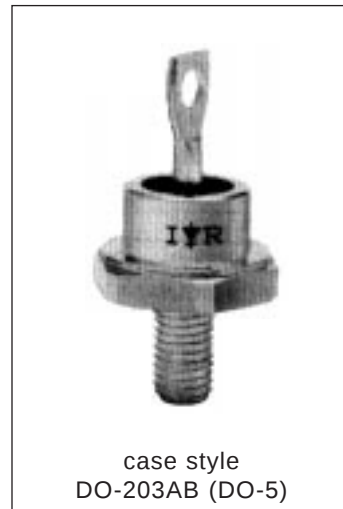
70 A

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	6540		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. A 05/98

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 (1)	I_{RRM} max. @ $T_J = T_J$ max. mA
70HF(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	

(1) Avalanche version only available from V_{RRM} 400V to 1600V.

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	DC @ T _C = 25°C		
P _R	Maximum non-repetitive peak reverse power	20		K · W	10μs square pulse, T _J = T _J max. see note (2)		
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		Initial T _J = T _J max.
		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		V	I _{pk} = 220A, T _J = 25°C, t _p = 10ms sinusoidal wave		

(2) Available only for Avalanche version, all other parameters the same as 70HF.

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 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 HA = Avalanche 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 - (Not available for Avalanche diodes)			

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70HF(R)
Case Style DO-203AB (DO-5)
All dimensions in millimeters (inches)

Top View: $\phi 14.5 (0.57)$, $6.1 / 7 (0.24) / (0.27)$, $11 \pm 0.4 (0.44) \pm (0.02)$, $25.4 (1) \text{ MAX.}$, $4 (0.16) \text{ MIN.}$, $4 (0.16)$, $10.8 (0.42)$, $11.4 (0.45)$, $1/4'' 28 \text{ UNF-2A}$, For metric devices: M6 x 1

Side View: $11 \pm 0.4 (0.44) \pm (0.02)$, $25.4 (1) \text{ MAX.}$, $4 (0.16) \text{ MIN.}$, $4 (0.16)$, $10.8 (0.42)$, $11.4 (0.45)$

Front View: $0.9 (0.03)$, $17.25 (0.68)$

71HF(R)
Case Style DO-203AB (DO-5)
All dimensions in millimeters (inches)

Top View: $12.2 (0.48) \text{ MAX.}$, $\phi 7 (0.28) \text{ MAX.}$

Side View: $134.4 (5.29) \text{ MAX.}$, $123 (4.84) \text{ MAX.}$

Front View: $12.2 (0.48) \text{ MAX.}$, $\phi 7 (0.28) \text{ MAX.}$

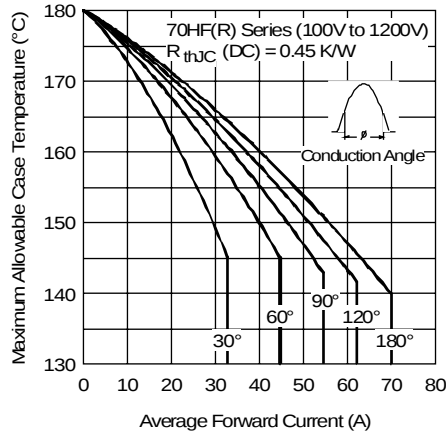


Fig. 1 - Current Ratings Characteristics

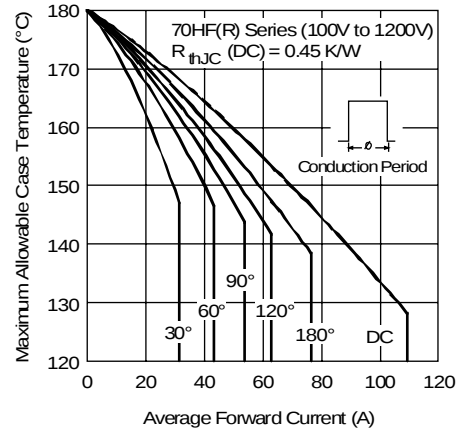


Fig. 2 - Current Ratings Characteristics

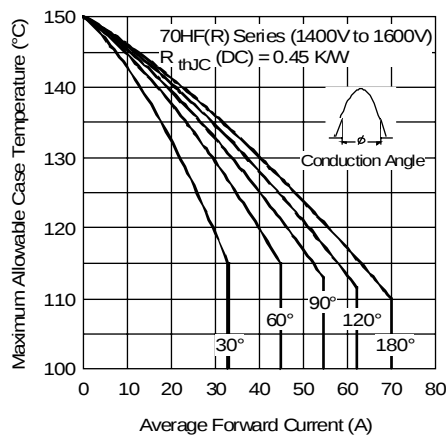


Fig. 3 - Current Ratings Characteristics

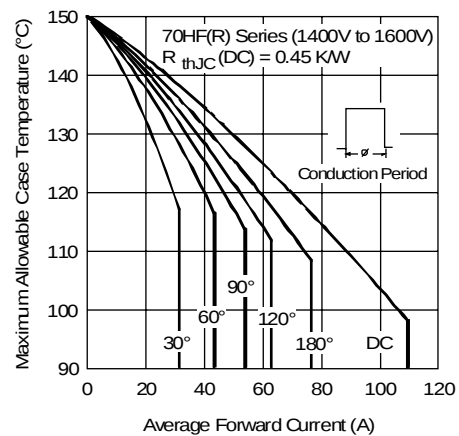


Fig. 4 - Current Ratings Characteristics

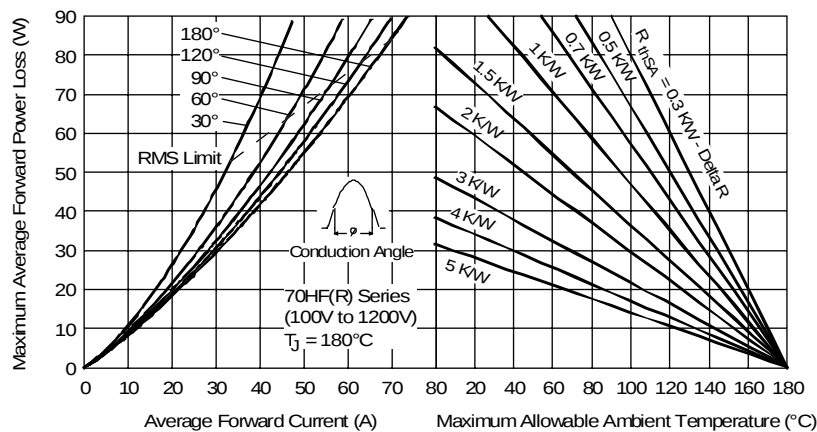


Fig. 5 - Forward Power Loss Characteristics

70HF(R) Series

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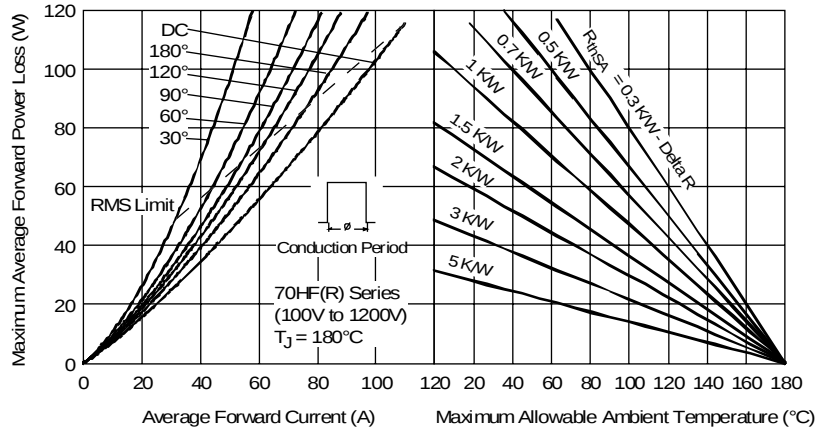


Fig. 6 - Forward Power Loss Characteristics

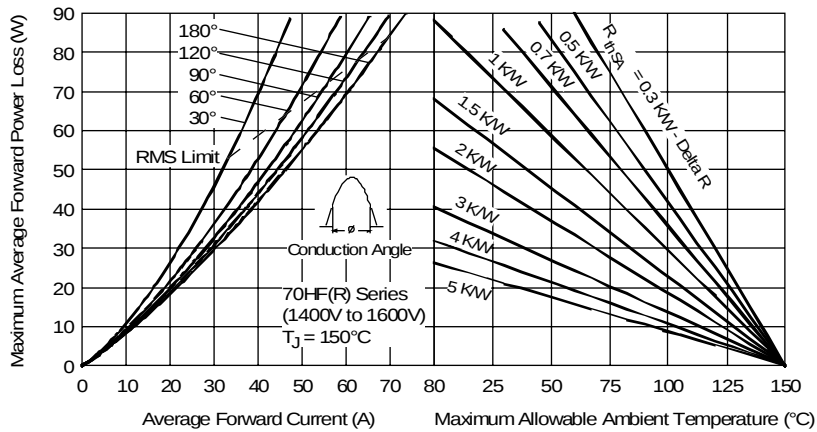


Fig. 7 - Forward Power Loss Characteristics

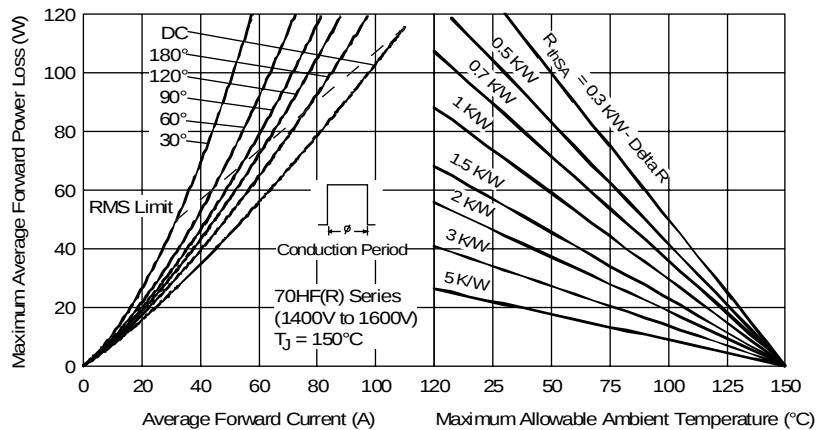


Fig. 8 - Forward Power Loss Characteristics

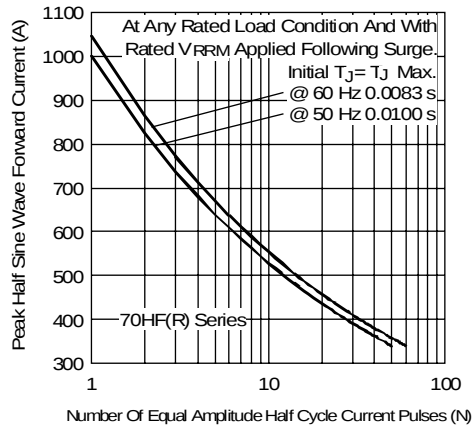


Fig. 9 - Maximum Non-Repetitive Surge Current

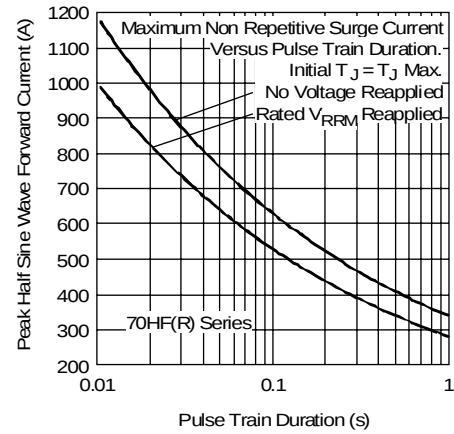


Fig. 10 - Maximum Non-Repetitive Surge Current

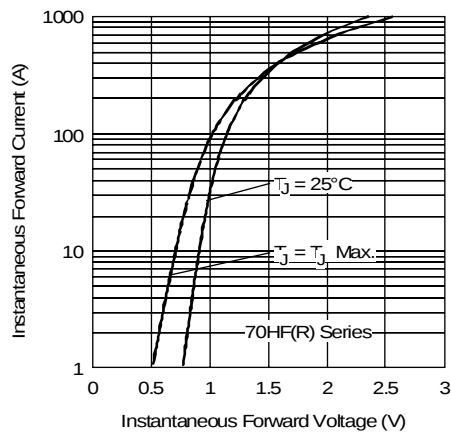


Fig. 11 - Forward Voltage Drop Characteristics

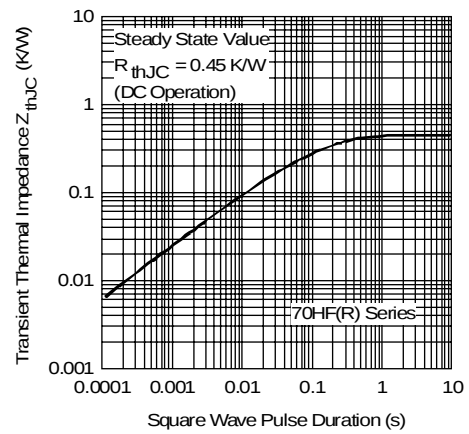


Fig. 12 - Thermal Impedance Z_{thJC} Characteristics