

Standard Recovery Diodes (Stud Version), 70 A



DO-203AB (DO-5)

FEATURES

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



RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY

$I_{F(AV)}$	70 A
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MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	70HF(R)		UNITS
		10 TO 120	140/160	
I _{F(AV)}		70	70	A
	T _C	140	110	°C
I _{F(RMS)}		110		A
I _{FSM}	50 Hz	1200		A
	60 Hz	1250		
I ² _t	50 Hz	7100		A ² s
	60 Hz	6450		
V _{RRM}	Range	100 to 1200	1400/1600	V
T _J		- 65 to 180	- 65 to 150	°C

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} MAXIMUM AT $T_J = T_J$ MAXIMUM 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	SYMBOL	TEST CONDITIONS			70HF(R)		UNITS	
					10 TO 120	140/160		
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave			70		A	
					140	110	°C	
Maximum RMS forward current	I _{F(RMS)}				110		A	
Maximum peak, one cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	1200		A	
		t = 8.3 ms			1250			
		t = 10 ms	100 % V _{RRM} reapplied		1000			
		t = 8.3 ms			1050			
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		7100		A ² s	
		t = 8.3 ms			6450			
		t = 10 ms	100 % V _{RRM} reapplied		5000			
		t = 8.3 ms			4550			
Maximum I ² √t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			71 000		A ² √s	
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum			0.79		V	
High level value of threshold voltage	V _{F(TO)2}	(I > π × I _{F(AV)}), T _J = T _J maximum			1.00			
Low level value of forward slope resistance	r _{f1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum			2.33		mΩ	
High level value of forward slope resistance	r _{f2}	(I > π × I _{F(AV)}), T _J = T _J maximum			1.53			
Maximum forward voltage drop	V _{FM}	I _{pk} = 220 A, T _J = 25 °C, t _p = 400 μs rectangular wave			1.35	1.46	V	

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS			70HF(R)	
					10 TO 120	140/160
Maximum junction and storage temperature range	T_J, T_{Stg}				- 65 to 180	- 65 to 150
Maximum thermal resistance, junction to case	R_{thJC}	DC operation			0.45	
Thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased			0.25	
Allowable mounting torque		Not lubricated threads			3.4 + 0 - 10 % (30)	
		Lubricated threads			2.3 + 0 - 10 % (20)	
Approximate weight					17	
					0.6	
Case style		See dimensions - link at the end of datasheet			DO-203AB (DO-5)	



ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.08	0.06	$T_J = T_J \text{ maximum}$	K/W
120°	0.10	0.11		
90°	0.13	0.14		
60°	0.19	0.20		
30°	0.30	0.30		

Note

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

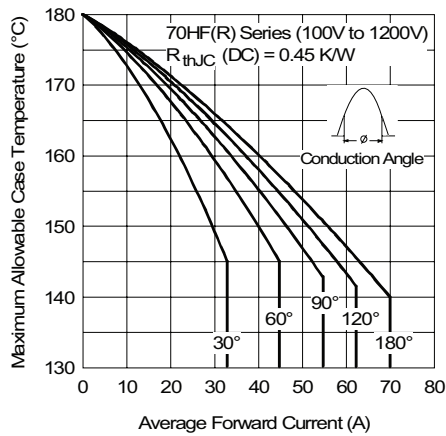


Fig. 1 - Current Ratings Characteristics

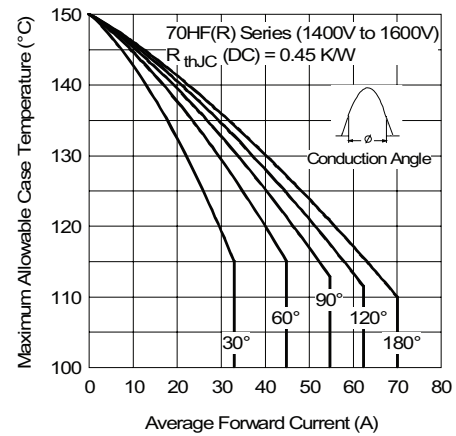


Fig. 3 - Current Ratings Characteristics

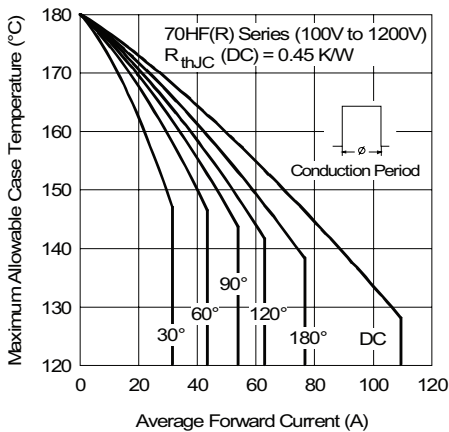


Fig. 2 - Current Ratings Characteristics

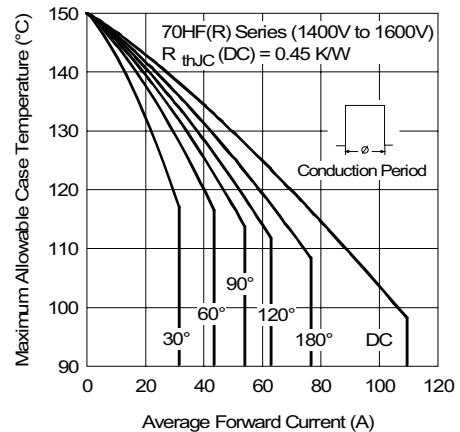


Fig. 4 - Current Ratings Characteristics

70HF(R) Series



Vishay High Power Products Standard Recovery Diodes
(Stud Version), 70 A

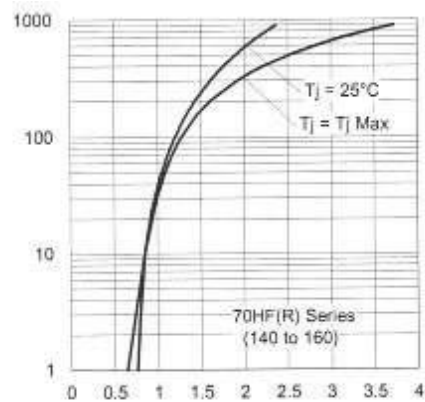


Fig. 13 - Forward Voltage Drop Characteristics

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 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				



DO-203AB (DO-5) for 70HF(R) and 71HF(R) Series

DIMENSIONS FOR 70HF(R) SERIES in millimeters (inches)

