Glass Passivated Standard Recovery Diodes (Stud Version), 70A

FEATURES

- Glass passivated chips
- High surge current capability
- Stud cathode and stud anode version
- Wide current range
- Voltage up to 1600V V_{RRM}
- RoHS compliant

TYPICAL APPLICATIONS

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

DO-203AB(DO-5)

PRODUCT SUMMARY	
$I_{F(AV)}$	70A

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	70D(R)		UNIT
		02 TO 12	16	
$I_{F(AV)}$	T_C	70	70	A
		140	110	°C
$I_{F(RMS)}$		110		A
I_{FSM}	50 HZ	1200		A
	60 HZ	1250		
I^2t	50 HZ	7200		A^2s
	60 HZ	6540		
V_{RRM}	Range	200 to 1200	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 VOLTAGE V	$V_{R(BR)}$,MIMIMUM AVALANCHE VOLTAGE V(1)	V_{RRM},MAXIMUM AT TJ=175°C mA
70D(R)	02	200	300	300	15
	04	400	500	500	
	06	600	720	725	9
	08	800	960	950	
	10	1000	1200	1150	
	12	1200	1440	1350	
	16	1600	1900	1750	4.5

FORWARD CONDUCTION

PARAMETER	SYMBOL	TEST CONDITIONS			70D(R) 02 TO 12	70D(R) 16	UNIT
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			70	70	A
					140	110	°C
Maximum RMS forward current	$I_{F(RMS)}$				110		A
Maximum peak, one-cycle forward, non-reptitive surge current	I_{FSM}	t = 10ms	No voltage reapplied	Sinusoidal half wave, initial $T_J = T_J$ maximum	1200		A
		t = 8.3ms			1250		
		t = 10ms	100%V_{RRM} reapplied		1000		
		t = 8.3ms			1050		
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied		7200		A^2s
		t = 8.3ms			6540		
		t = 10ms	100%V_{RRM} reapplied		5070		
		t = 8.3ms			4610		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			72000		$A^2\sqrt{s}$
Maximum forward voltage drop	V_{FM}	I_{pk} = 220A, T_J = 25°C, t_p = 400μs rectangular wave			1.35	1.46	V

THERMAL AND MECHANICAL SPECIFCATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	70D(R) 02 TO 12	70D(R) 16	UNIT
Maximum junction operating and storage temperature range	T_J, T_{stg}		- 65 to180	- 65 to150	°C
Maximum thermal resistace, junction to case	R_{thJC}	DC operation	0.45		K/W
Maximum thermal resistance case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.25		
Maximum allowable mounting torque (+0% , -10%)		Not lubricated thread ,tighting on nut (1)	3.4(30)		N · m (lbf · in)
		Lubricated thread ,tighting on nut (1)	2.3(20)		
		Not lubricated thread ,tighting on hexagon (2)	4.2(37)		N · m (lbf · in)
		Lubricated thread ,tighting on hexagon (2)	3.2(28)		
Approximate weight			15		g
			0.53		oz.
Case style		See dimensions - link at the end of datasheet	DO-203AB (DO-5)		

Note

(1) Recommended for pass-through holes.

(2) Recommended for holed threaded heatsinks.

ΔRthJC CONDUCTION

CONDUCTION ANGEL	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDUCTIONS	UNITS
180°	0.08	0.06	$T_J = T_J$ 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 RthJC when devices operate at different conduction angles than DC

Fig.1 Current Ratings Characteristics

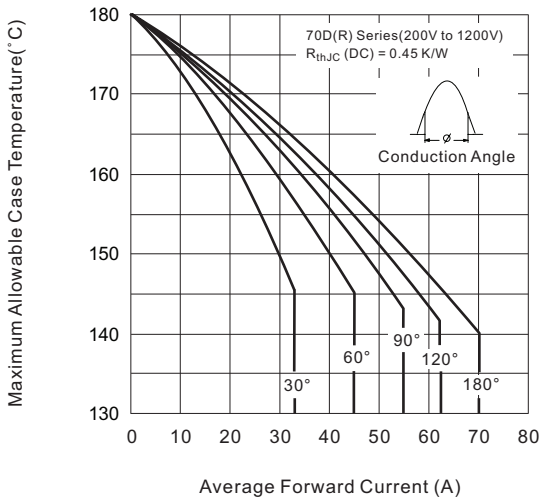


Fig.2 Current Ratings Characteristics

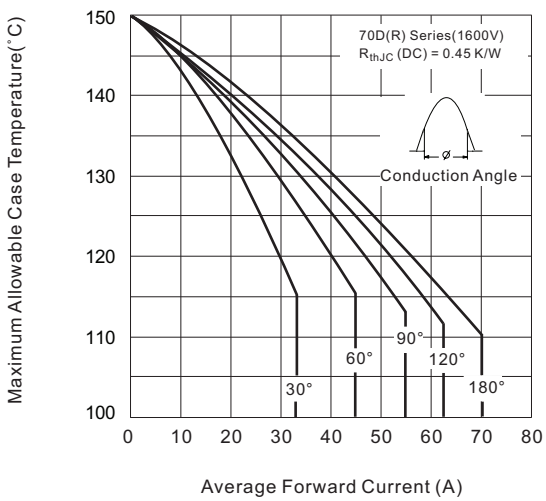


Fig.3 Current Ratings Characteristics

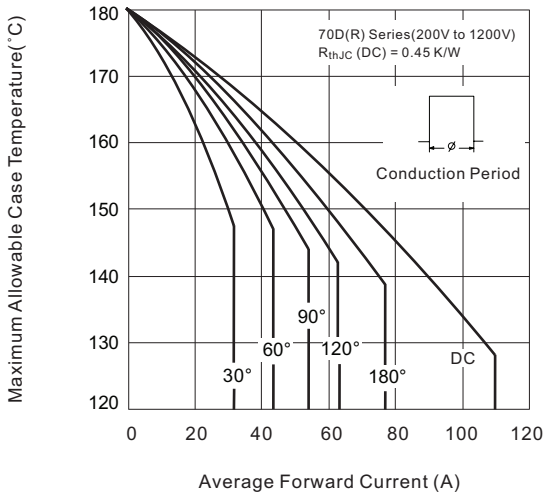


Fig.4 Current Ratings Characteristics

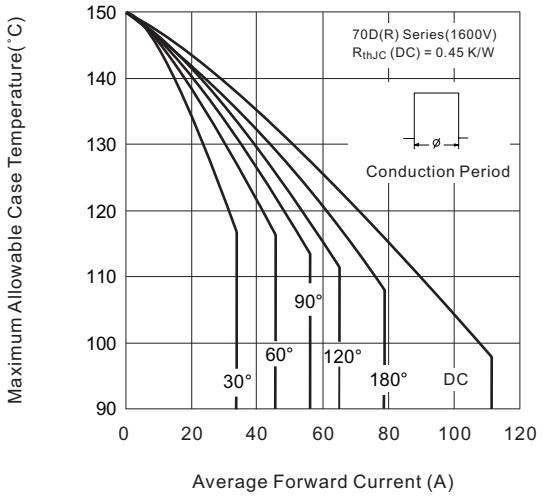


Fig.5 Forward Power Loss Characteristics

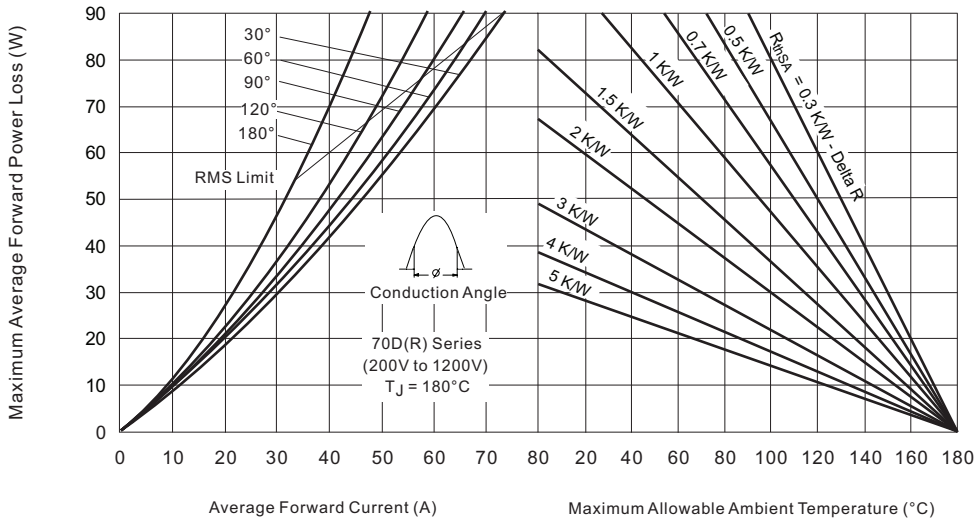


Fig.6 Forward Power Loss Characteristics

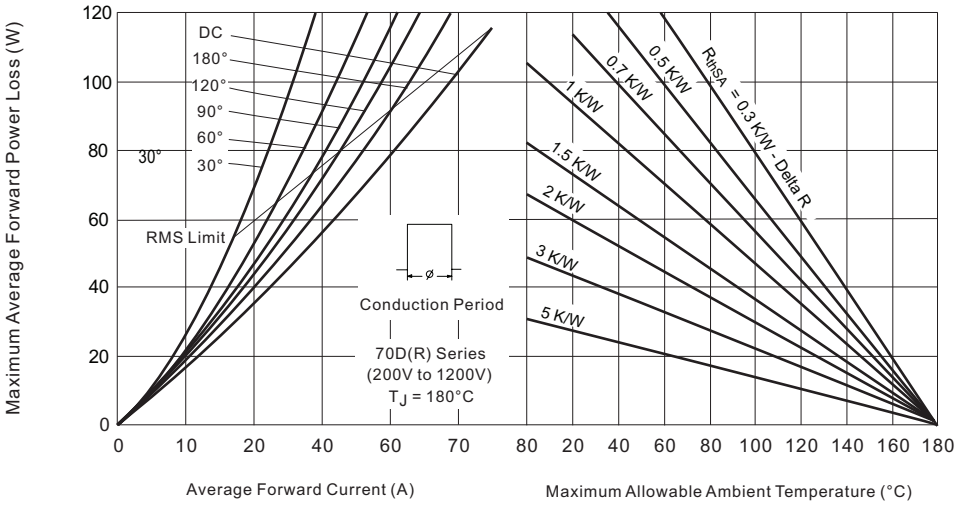


Fig.7 Forward Power Loss Characteristics

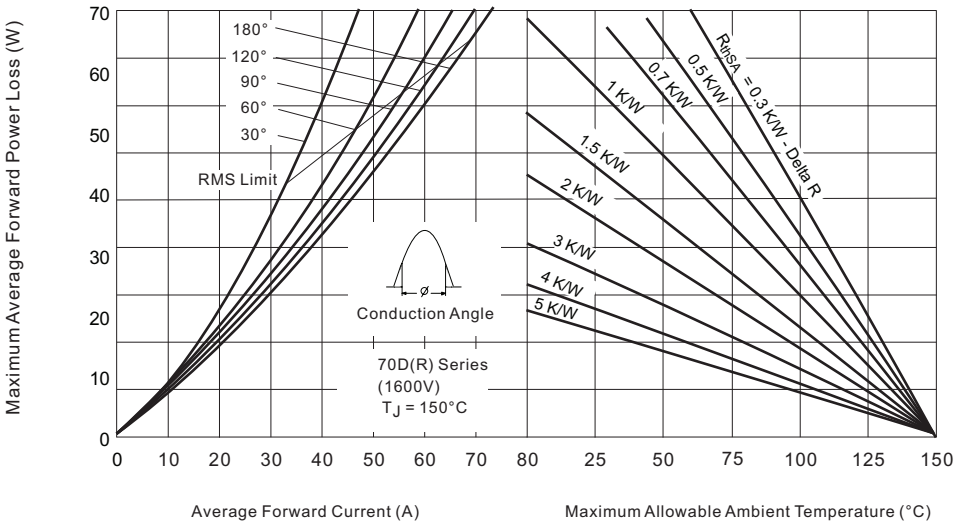


Fig.8 Forward Power Loss Characteristics

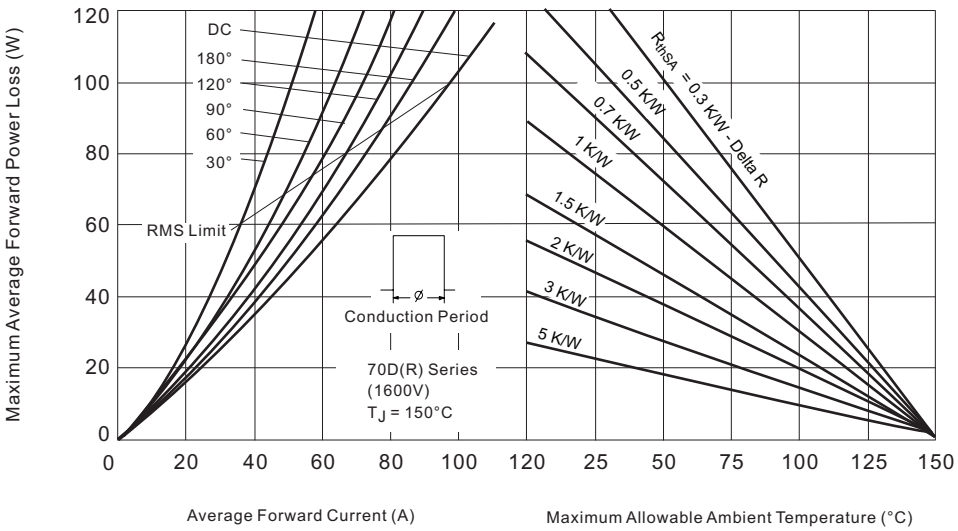


Fig.9 Maximum Non-Repetitive Surge Current

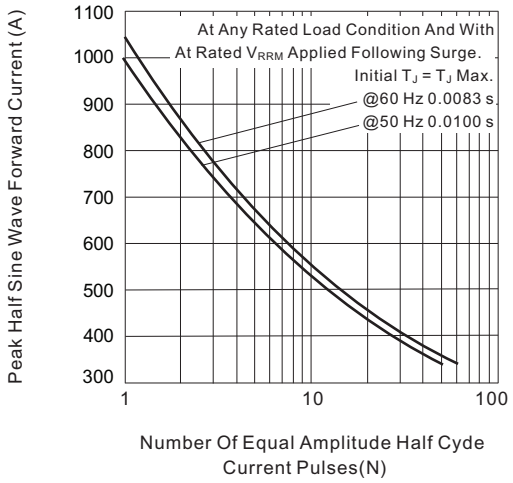


Fig.10 maximum Non-Repetitive Surge Current

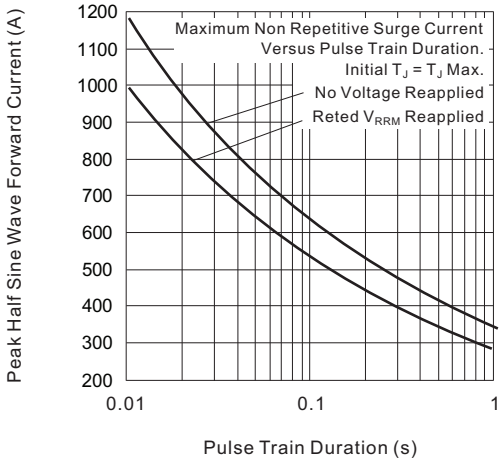


Fig.11 Forward Voltage Drop Characterisics
(Up to 1200V)

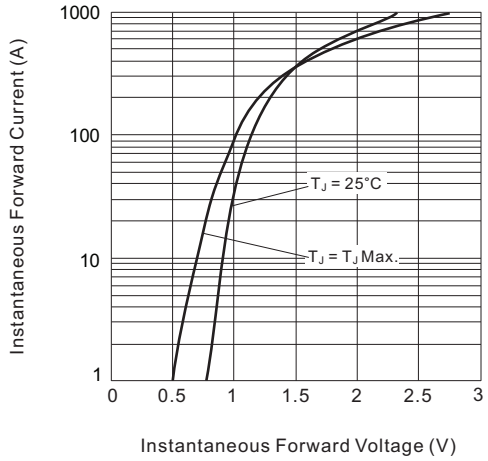


Fig.12 Forward Voltage Drop Characteristics
(For 1600V)

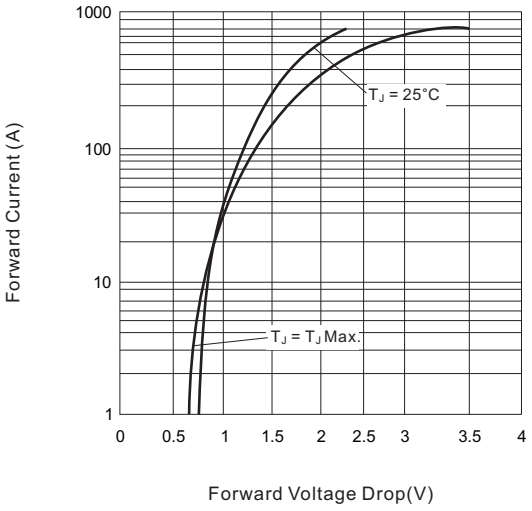
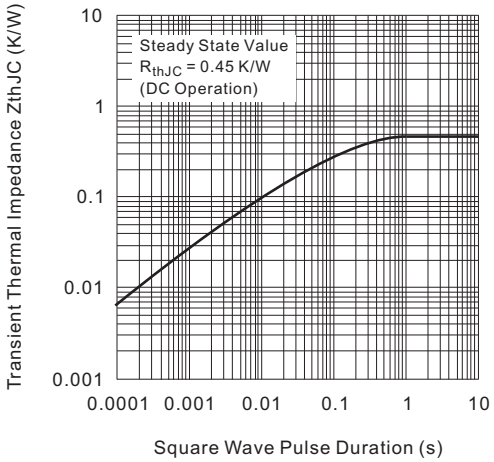


Fig.13 Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

Device code	70	D	R	12	M
	①	②	③	④	⑤

1 - Current rating: Code = $I_{F(AV)}$

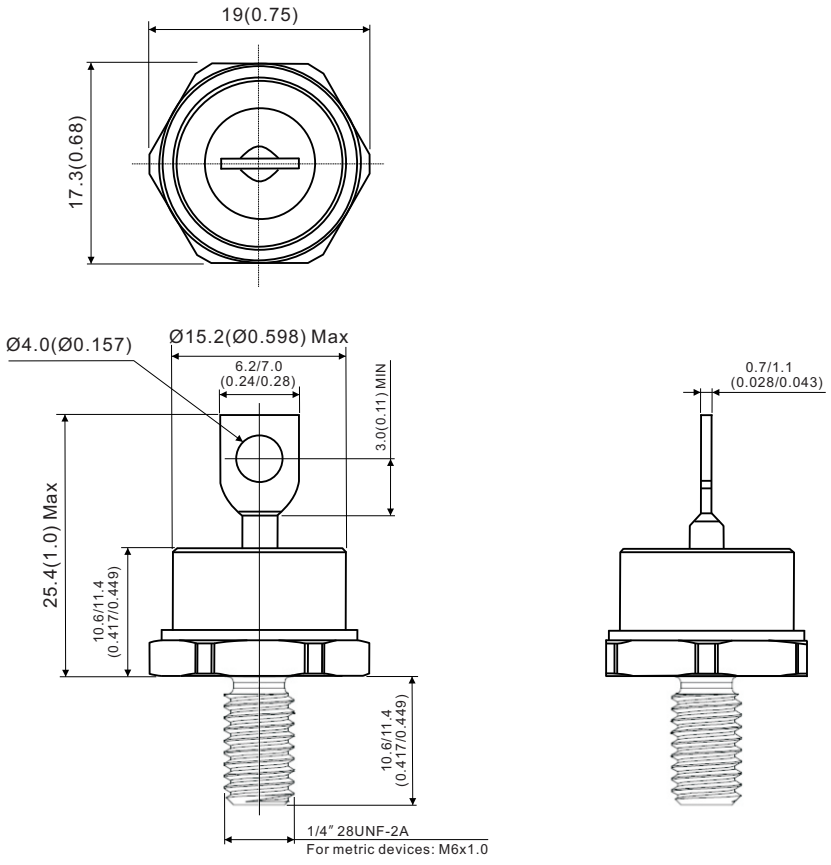
2 - D = Standard recovery device

3 - None = Stud normal polarity (cathode to stud)
R = Stud reverse polarity (anode to stud)

4 - Voltage code × 100 = V_{RRM} (see Voltage Ratings table)

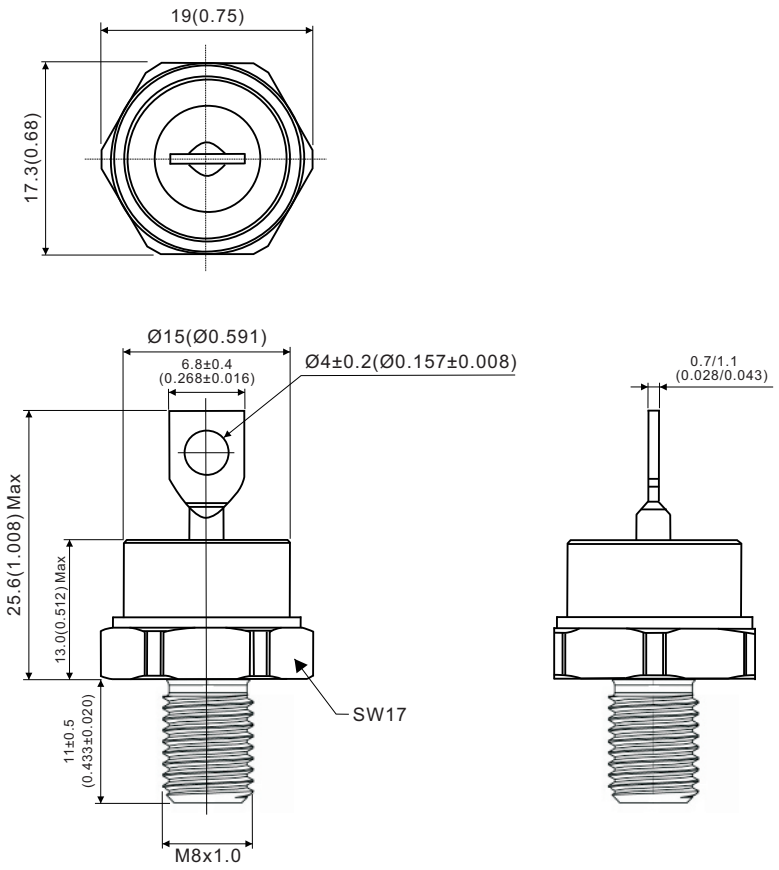
5 - None = Stud base DO-203AB (DO-5) 1/4"-28 UNF-2A, standard type
M = Stud base DO-203AB (DO-5) M6×1.0, standard type
S = Stud base DO-203AB (DO-5) M8×1.0, "Semikron" type

DO-203AB(DO-5), standard type
Glass-Metal Seal



All dimensions in millimeters (inches)

DO-203AB(DO-5), "Semikron" type
Glass-Metal Seal



All dimensions in millimeters (inches)