Glass Passivated Standard Recovery Diodes (Stud Version), 85A

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

DO-203AB(DO-5)

TYPICAL APPLICATIONS

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

PRODUCT SUMMARY	
$I_{F(AV)}$	85A

MAJOR RATINGS AND CHARACTERISTICS				
PARAMETER	TEST CONDITIONS	85D(R)		UNIT
		02 TO 12	16	
$I_{F(AV)}$	T_C	85		A
		140	110	°C
$I_{F(RMS)}$		133		A
I_{FSM}	50 HZ	1700		A
	60 HZ	595		
I^2t	50 HZ	14450		A^2s
	60 HZ	13170		
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_{RRM},MAXIMUM TJ-TJ=Maximum mA
85D(R)	02	200	300	9
	04	400	500	
	06	600	700	
	08	800	900	
	10	1000	1100	
	12	1200	1300	
	16	1600	1700	4.5

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS			85D(R) 02 TO 12	85D(R) 16	UNIT
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			85		A
					140	110	°C
Maximum RMS forward current	$I_{F(RMS)}$				133		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	1700		A
		t = 8.3ms			1800		
		t = 10ms	100%V_{RRM} reapplied		1450		
		t = 8.3ms			1500		
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied		14450		A^2s
		t = 8.3ms			13170		
		t = 10ms	100%V_{RRM} reapplied		10230		
		t = 8.3ms			9340		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			144500		$A^2\sqrt{s}$
Maximum forward voltage drop	V_{FM}	I_{pk} = 267A, T_J = 25°C, t_p = 400µs rectangular wave			1.2	1.4	V

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS	85D(R) 02 TO 12	85D(R) 16	UNIT
Maximum junction operating and storage temperature range	T_J		- 65 to180	- 65 to150	°C
Maximum thermal resistace, junction to case	R_{thJC}	DC operation	0.35		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.

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGEL	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDUCTIONS	UNITS
180°	0.10	0.08	$T_J = T_J$ maximum	K/W
120°	0.11	0.11		
90°	0.13	0.13		
60°	0.17	0.17		
30°	0.26	0.26		

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

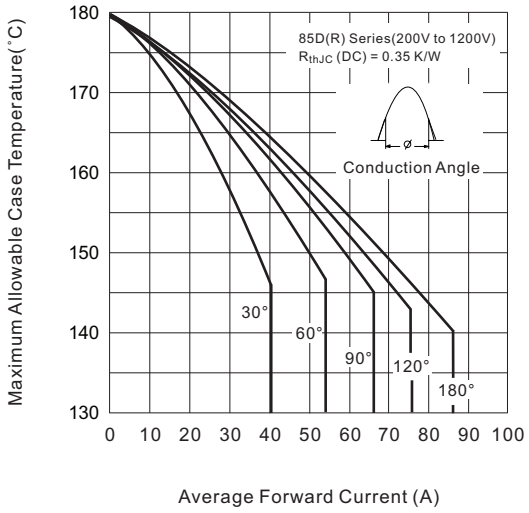


Fig.2 Current Ratings Characteristics

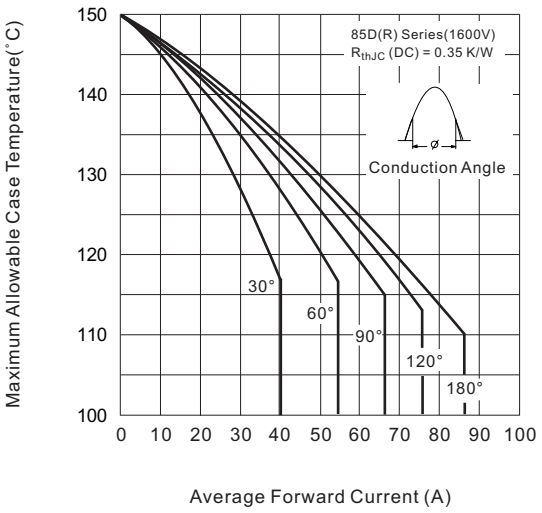


Fig.3 Current Ratings Characteristics

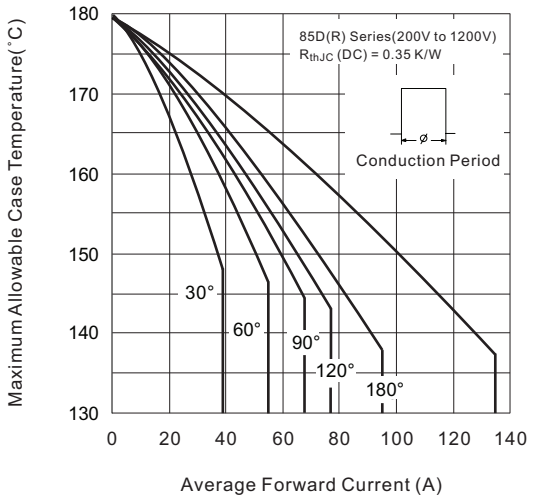


Fig.4 Current Ratings Characteristics

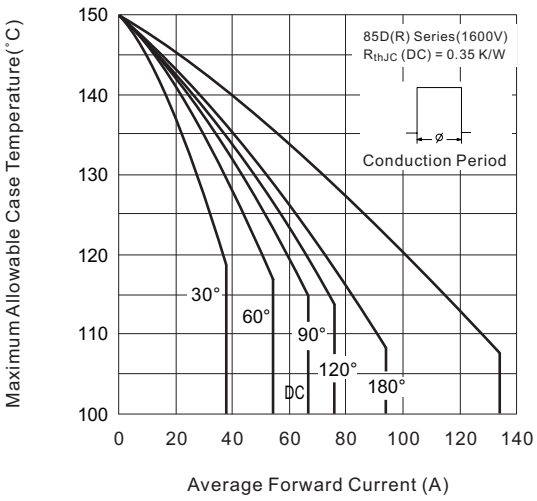


Fig.5 Forward Power Loss Characteristics

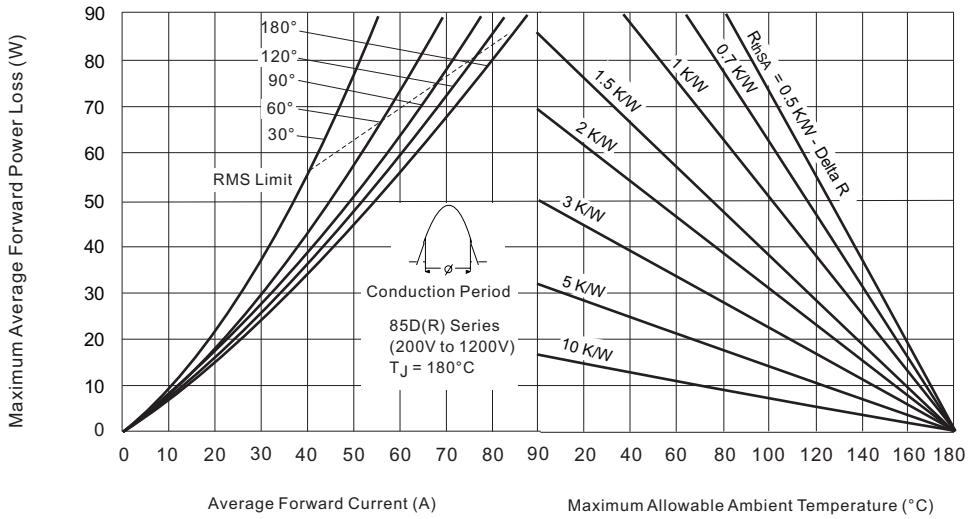


Fig.6 Forward Power Loss Characteristics

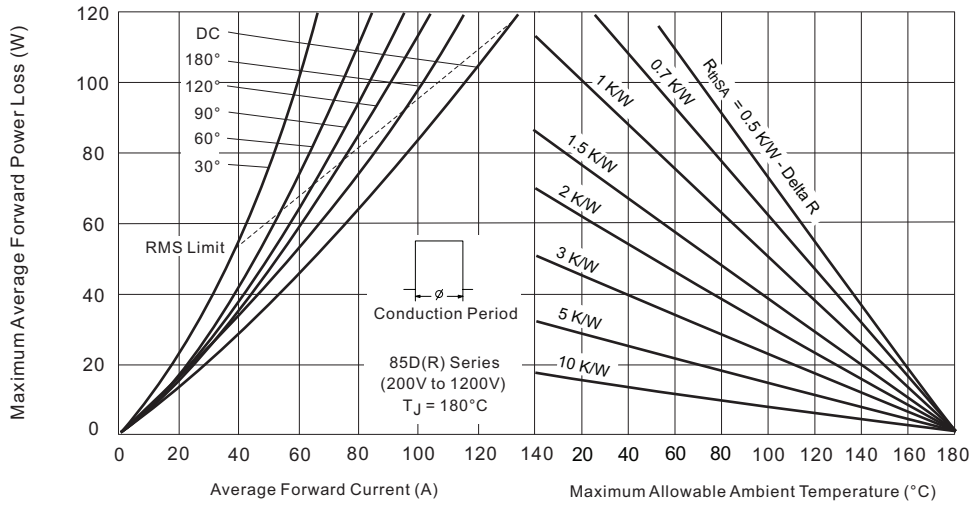


Fig.7 Forward Power Loss Characteristics

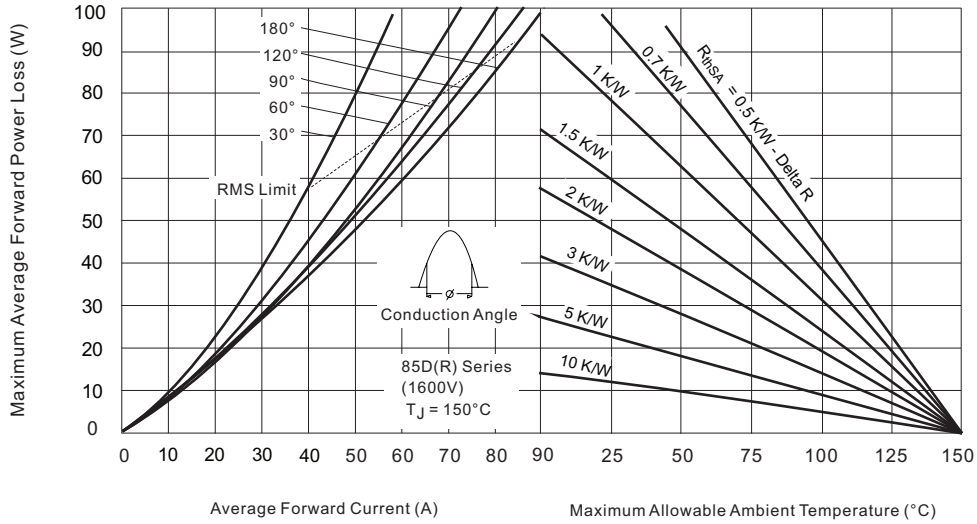


Fig.8 Forward Power Loss Characteristics

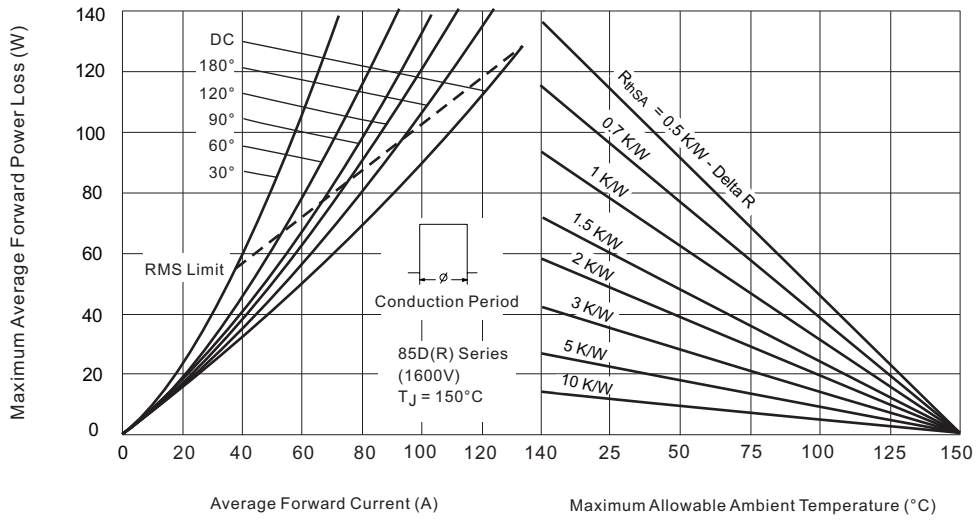


Fig.9 Maximum Non-Repetitive Surge Current

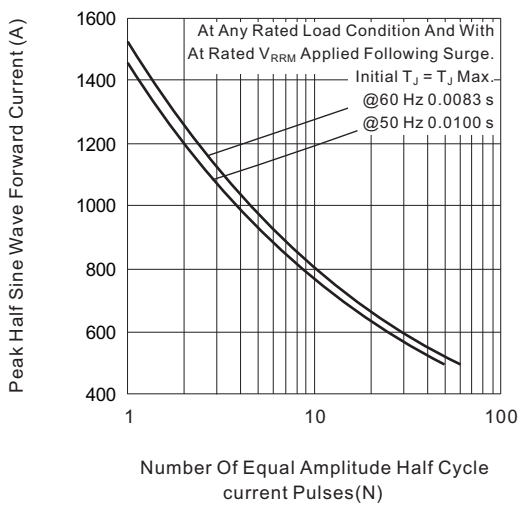


Fig.10 Maximum Non-Repetitive Surge Current

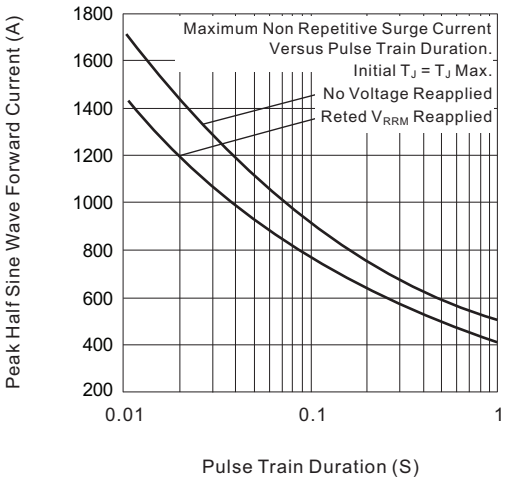


Fig.11 Forward Voltage Drop Characteristics (Up To 1200V)

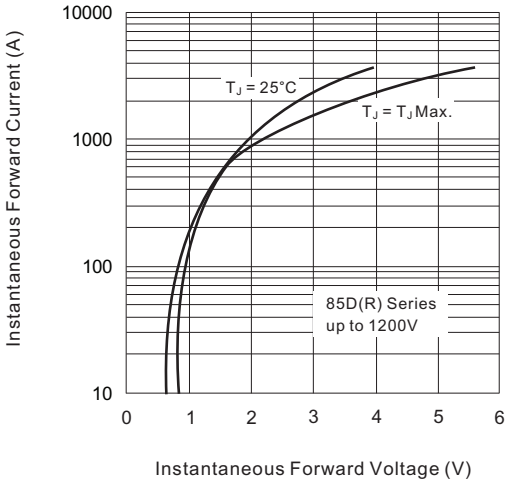


Fig.12 Forward Voltage Drop Characterisics (for 1600V)

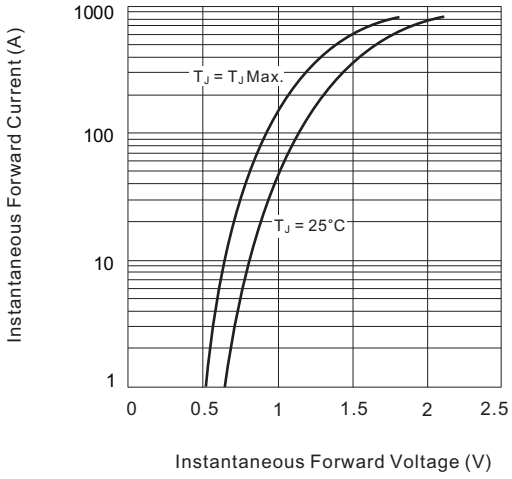
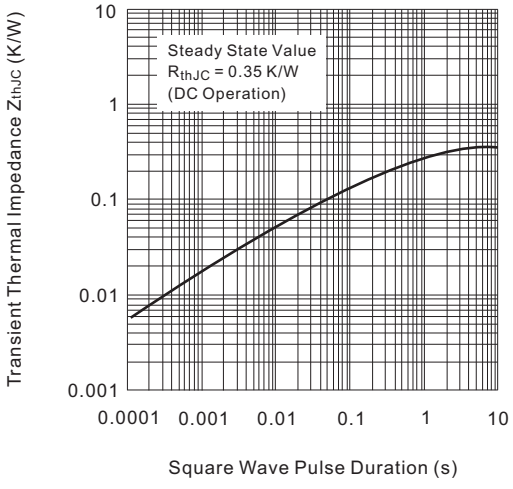


Fig.13 Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

Device code	85	D	R	12	M
	①	②	③	④	⑤

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

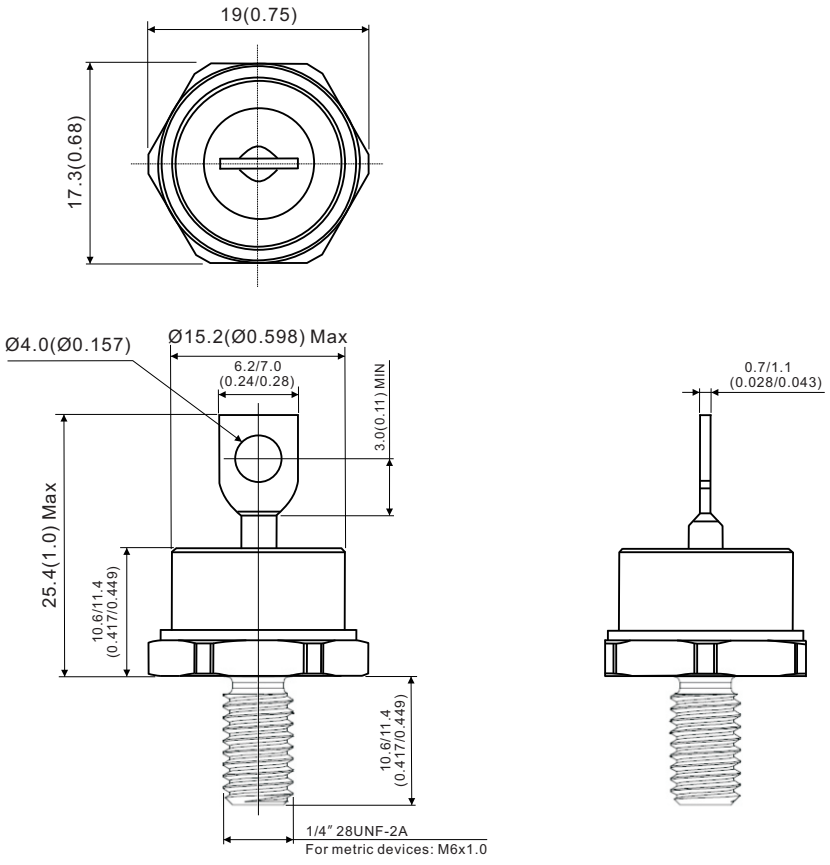
2 - D = Standard recovery device

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)

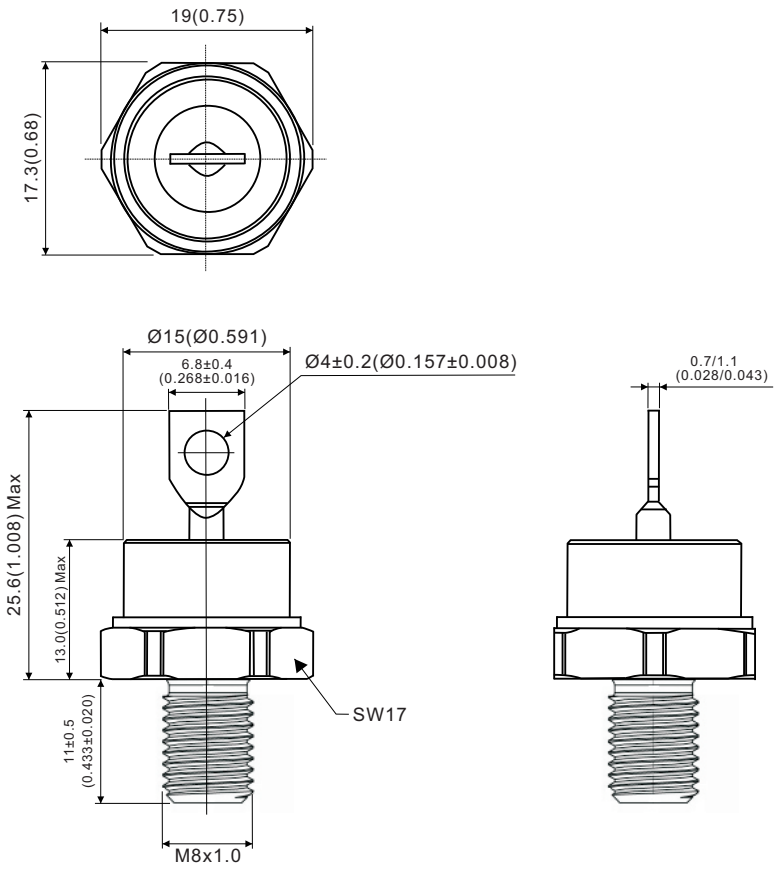
5 - None = Stud base DO-203AB (DO-5) 1/4"-28 UNF-2A, standard type
M = Stud base DO-203AB (DO-5) M6×1.0, standard type
S = Stud base DO-203AB (DO-5) M8×1.0, "Semikron" type

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)