

Glass Passivated Standard Recovery Diodes (Stud Version), 40A

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

$I_{F(AV)}$	40A
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MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	40D(R)		UNIT
		02 TO 12	16	
I _{F(AV)}	T _C	40	40	A
		140	110	°C
I _{F(RMS)}		63		A
I _{FSM}	50 HZ	570		A
	60 HZ	595		
I ² t	50 HZ	1625		A ² s
	60 HZ	1473		
V _{RRM}	Range	200 to 1200	1600	V
T _J		-65 to 190	-65 to 160	°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 $T_J - T_J = \text{Maximum}$ mA
40D(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			40D(R)		UNIT
					02 TO 12	16	
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave			40	40	A
					140	110	°C
Maximum RMS forward current	I _{F(RMS)}				63		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	570		A
		t = 8.3ms			595		
		t = 10ms	100% V _{RRM} reapplied		480		
		t = 8.3ms			500		
Maximum I ² t for fusing	I ² t	t = 10ms	No voltage reapplied		1625		A ² s
		t = 8.3ms			1473		
		t = 10ms	100% V _{RRM} reapplied		1150		
		t = 8.3ms			1050		
Maximum I ² /t for fusing	I ² √t	t = 0.1 to 10 ms, no voltage reapplied			16250		A ² √s
Maximum forward voltage drop	V _{FM}	I _{pk} = 125A, T _J = 25°C, t _p = 400μs rectangular wave			1.30	1.50	V

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS	40D(R)		UNIT
			02 TO 12	16	
Maximum junction operating and storage temperature range	T _J		- 65 to190	- 65 to160	°C
Maximum thermal resistace, junction to case	R _{thJC}	DC operation	0.95		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°	0.14	0.10	T _J = T _J maximum	K/W
120°	0.16	0.17		
90°	0.21	0.22		
60°	0.30	0.31		
30°	1.50	0.50		

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

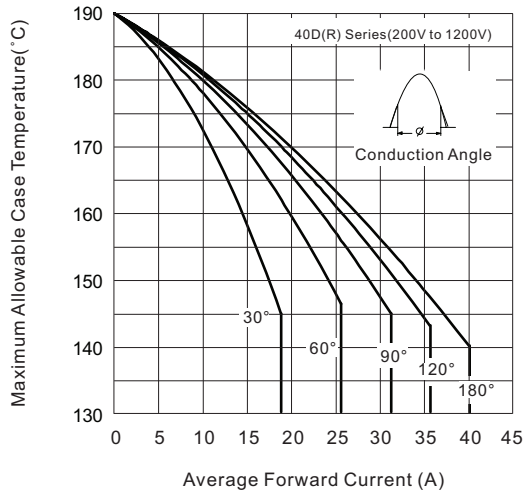


Fig.2 Current Ratings Characteristics

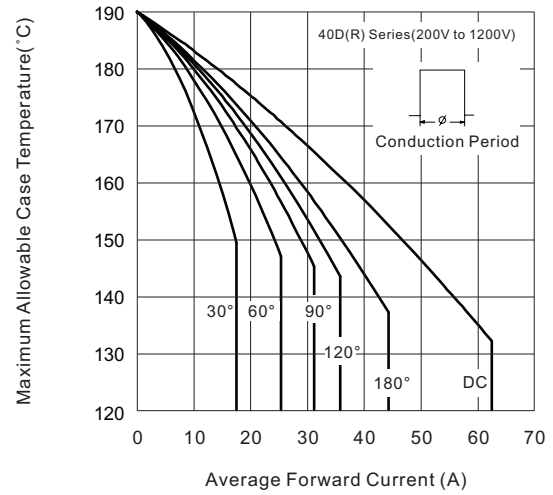


Fig.3 Current Ratings Characteristics

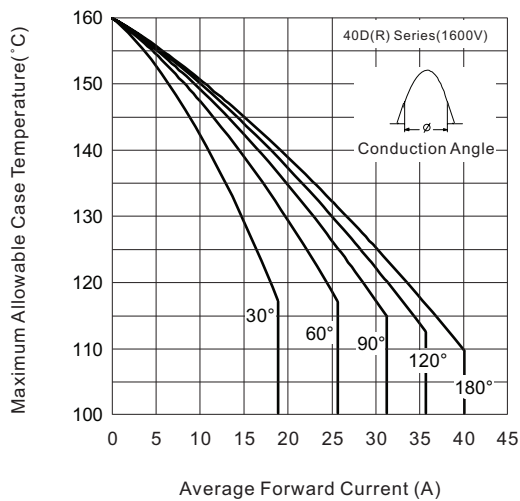


Fig.4 Current Ratings Characteristics

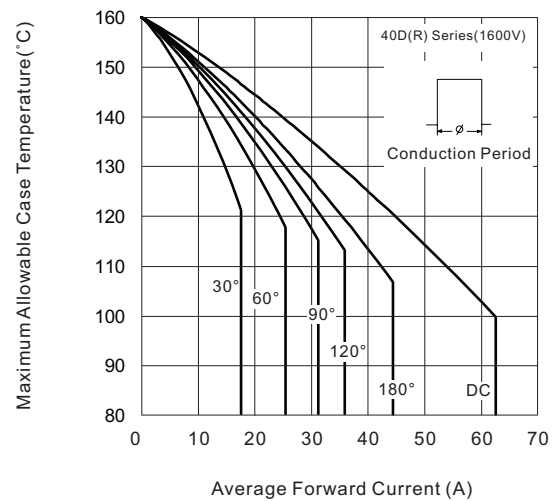


Fig.5 Forward Power Loss Characteristics

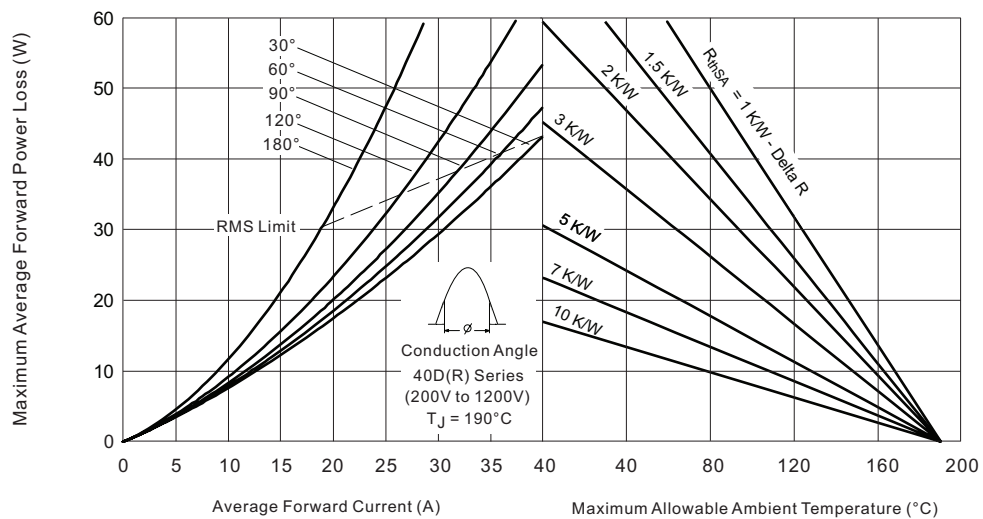


Fig.6 Forward Power Loss Characteristics

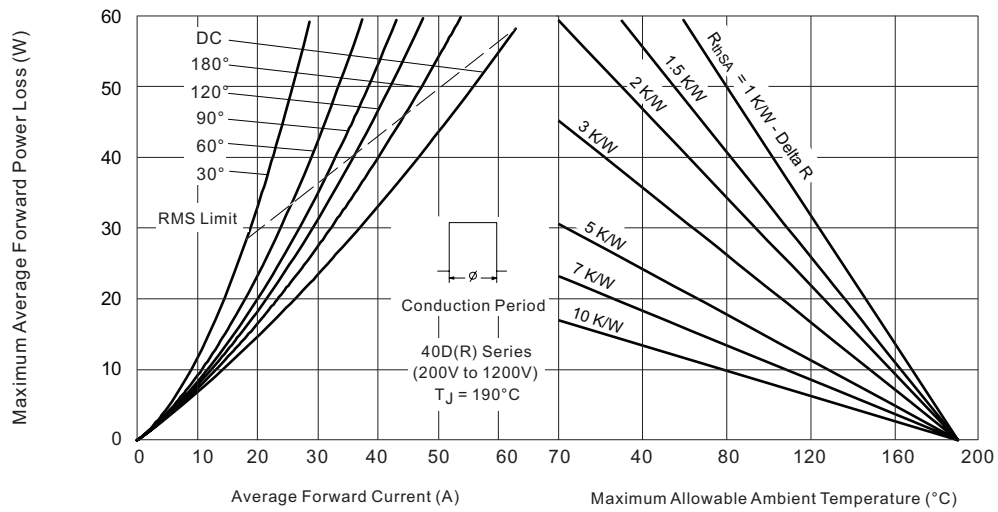


Fig.7 Forward Power Loss Characteristics

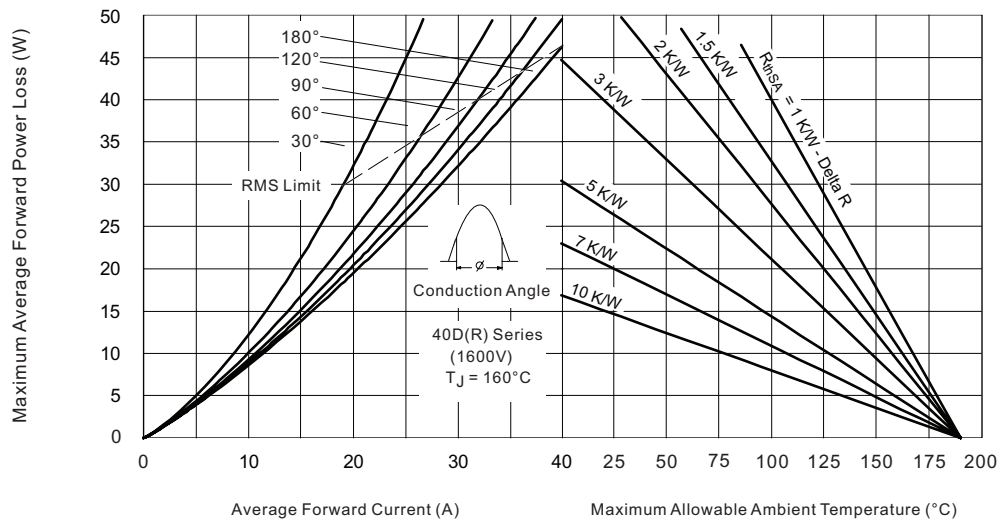


Fig.8 Forward Power Loss Characteristics

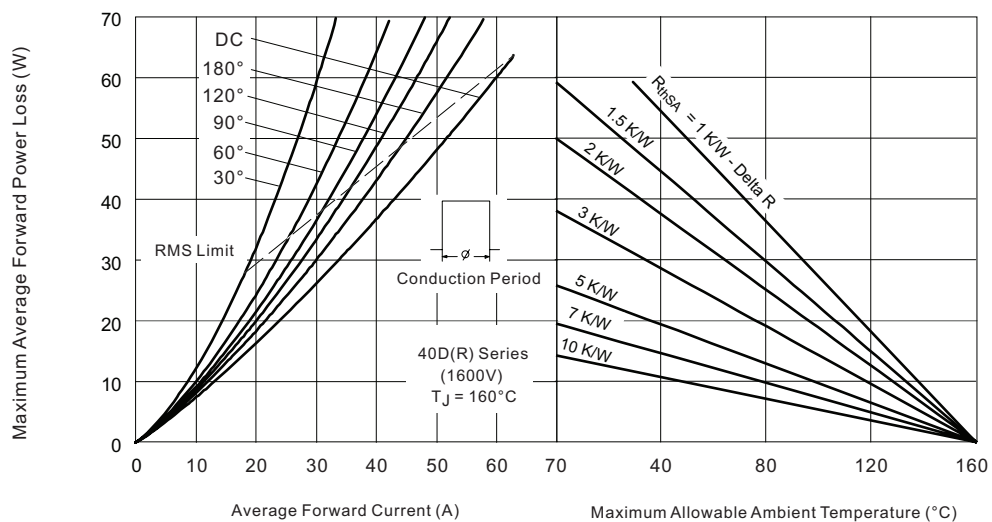


Fig.9 Maximum Non-Repetitive Surge Current

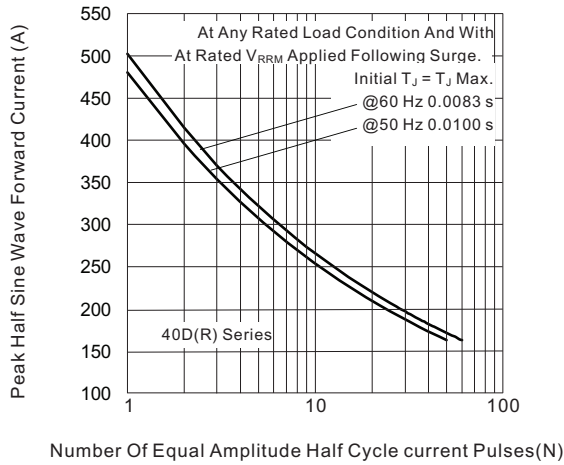


Fig.10 Maximum Non-Repetitive Surge Current

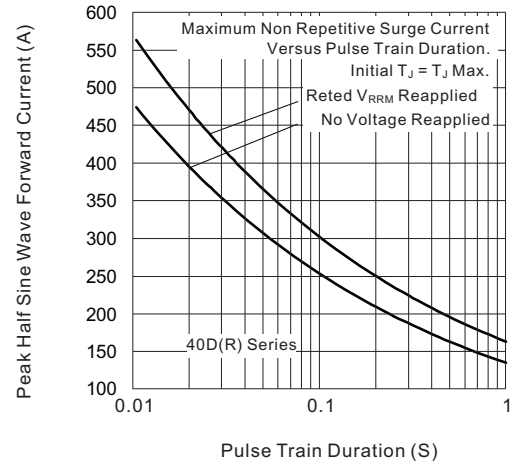


Fig.11 Thermal Impedance Z_{thJC} Characteristics (Up To 1200V)

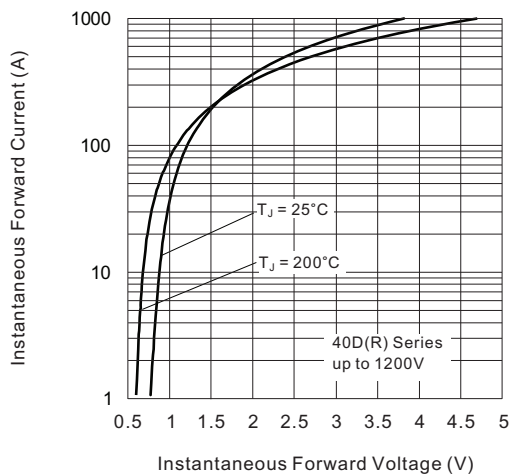


Fig.12 Forward Voltage Drop Characteristics (For 1600V)

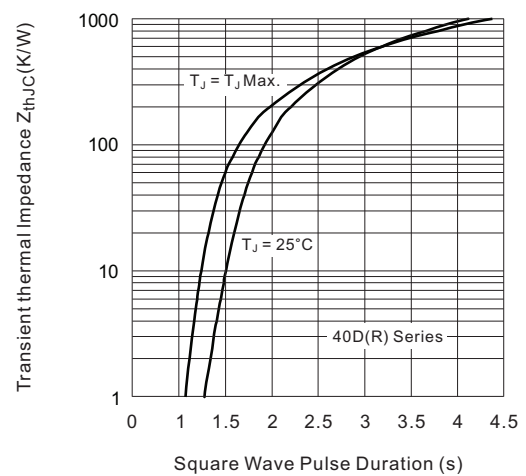
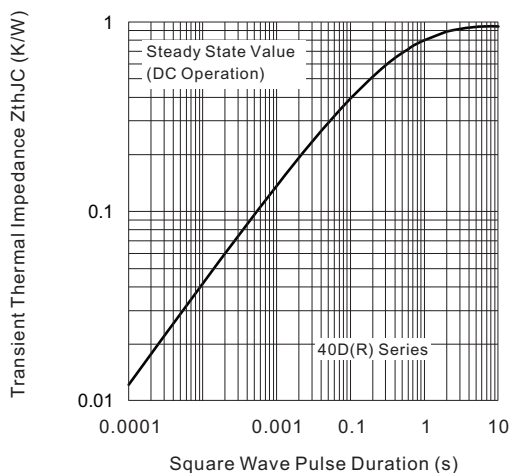


Fig.13 Thermal Impedance Z_{thJC} characteristic

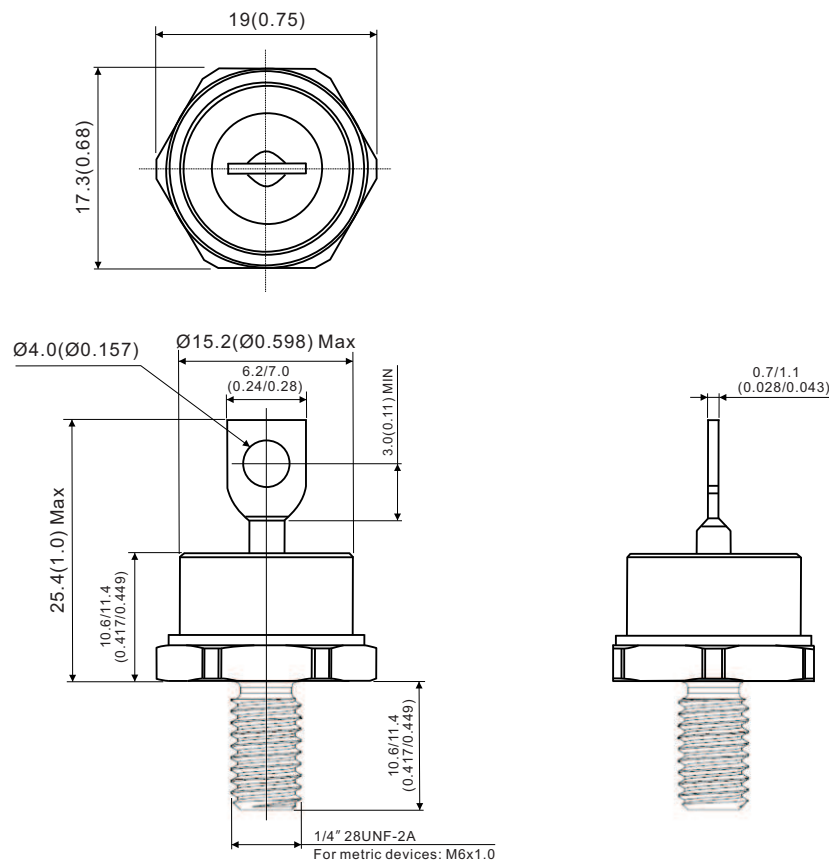


ORDERING INFORMATION TABLE

Device code	40	D	R	12	M
	①	②	③	④	⑤

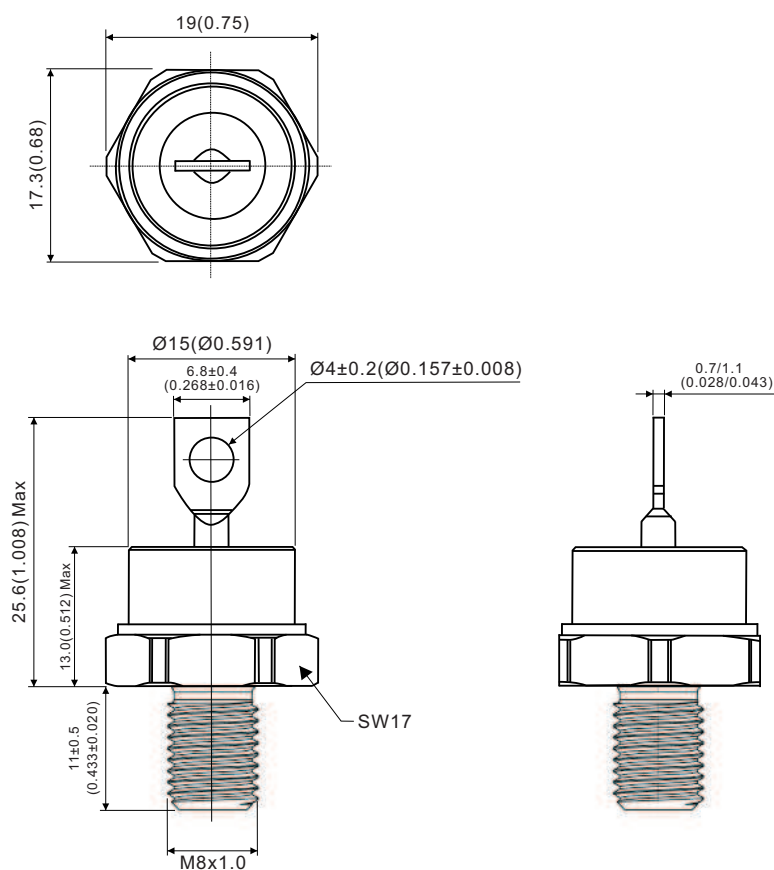
- ① - Current rating: Code = $I_{F(AV)}$
- ② - D = Standard recovery device
- ③ - None = Stud normal polarity (cathode to stud)
R = Stud reverse polarity (anode to stud)
- ④ - Voltage code $\times 100 = V_{RRM}$ (see Voltage Ratings table)
- ⑤ - None = Stud base DO-203AB (DO-5) 1/4"-28 UNF-2A, standard type
M = Stud base DO-203AB (DO-5) M6 $\times$ 1.0, standard type
S = Stud base DO-203AB (DO-5) M8 $\times$ 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)