Glass Passivated Standard Recovery Diodes (Stud Version), 16A

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

DO-203AA(DO-4)

PRODUCT SUMMARY	
$I_{F(AV)}$	16A

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$	T_C	16	A
		140	°C
$I_{F(RMS)}$		25	A
I_{FSM}	50 HZ	350	A
	60 HZ	370	
I^2t	50 HZ	612	A^2s
	60 HZ	558	
V_{RRM}	Range	200 to 1600	V
T_J		-65 to 175	°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
16D(R)	02	200	275	-	12
	04	400	500	500	
	06	600	725	750	
	08	800	950	950	
	10	1000	1200	1150	
	12	1200	1400	1350	
	16	1600	1800	1750	

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

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNIT
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave			16	A
					140	°C
Maximum RMS forward current	$I_{F(RMS)}$				25	A
Maximum on-repetitive peak reverse power	P_R(1)	10µs square pulse, $T_J = T_J$ maximum			15	K/W
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	350	A
		t = 8.3ms			370	
		t = 10ms	100%V_{RRM} reapplied		295	
		t = 8.3ms			310	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reapplied		612	A^2s
		t = 8.3ms			558	
		t = 10ms	100%V_{RRM} reapplied		435	
		t = 8.3ms			395	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied			6125	$A^2\sqrt{s}$
Maximum forward voltage drop	V_{FM}	I_{pk} = 50 A, T_J = 25°C, t_p = 400µs rectangular wave			1.25	V

Note
(1) Avalanche only for avalanche version, all other parameters the same as 16D

THERMAL AND MECHANICAL SPECIFCATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction operating temperature range	T_J		- 65 to175	°C
Maximum storage temperature range	T_{stg}		- 65 to 200	
Maximum thermal resistace, junction to case	R_{thJC}	DC operation	1.6	K/W
Maximum thermal resistance case to heatsink	R_{thCS}	Mounting surface, smooth, flat and greased	0.5	
Allowable mounting torque		Not lubricated threads	$1.5^{+0}_{-10\%}$ (13)	N · m (lbf · in)
		Lubricated threads	$1.2^{+0}_{-10\%}$ (10)	N · m (lbf · in)
Approximate weight			6	g
			0.21	oz.
Case style		See dimensions - link at the end of datasheet	DO-203AA (DO-4)	

ΔR_{thJC} CONDUCTION				
CONDUCTION ANGEL	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDUCTIONS	UNITS
180°	0.31	0.23	$T_J = T_J$ maximum	K/W
120°	0.38	0.40		
90°	0.49	0.54		
60°	0.72	0.75		
30°	1.20	1.21		

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

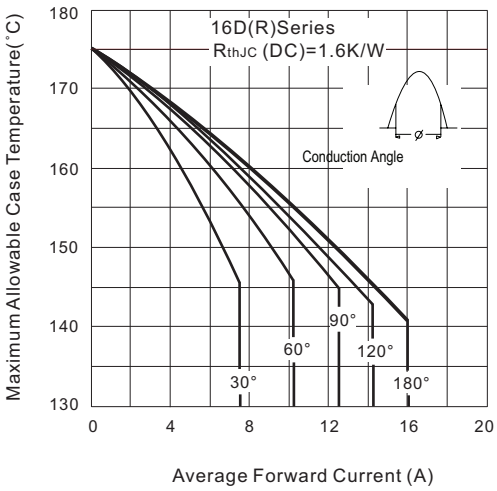


Fig.2 Current Ratings Characteristics

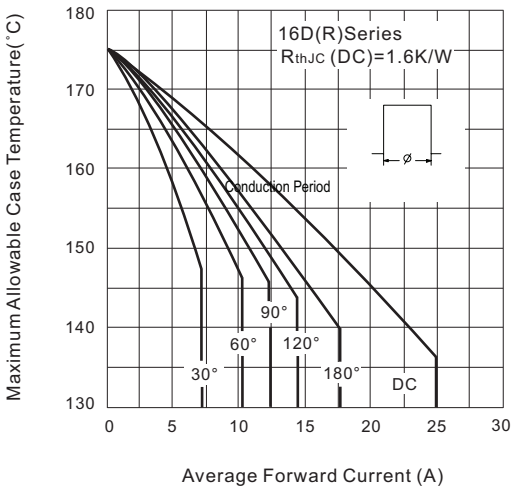


Fig. 3 Forward Power Loss Characteristics

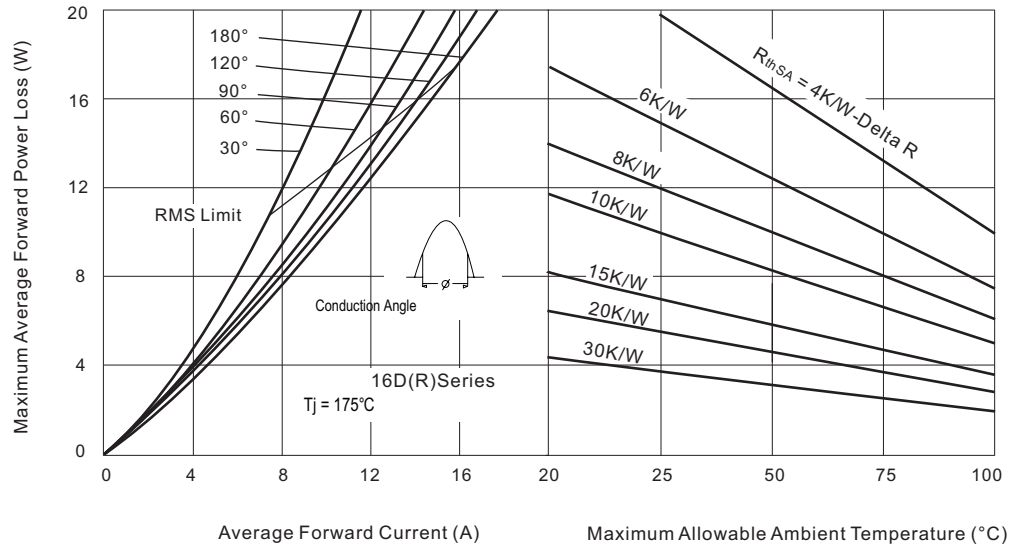


Fig. 4 Forward Power Loss Characteristics

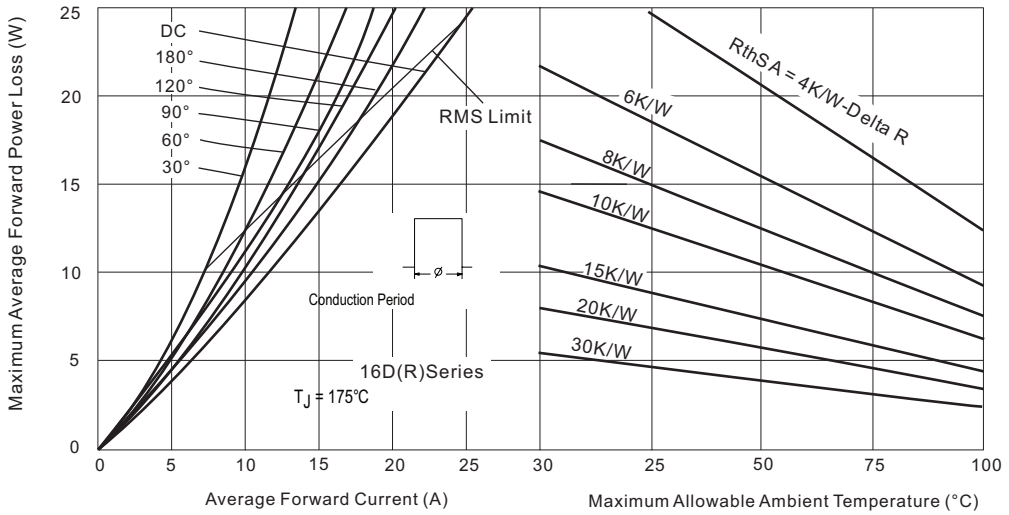


Fig. 5 Maximum Non-Repetitive Surge Current

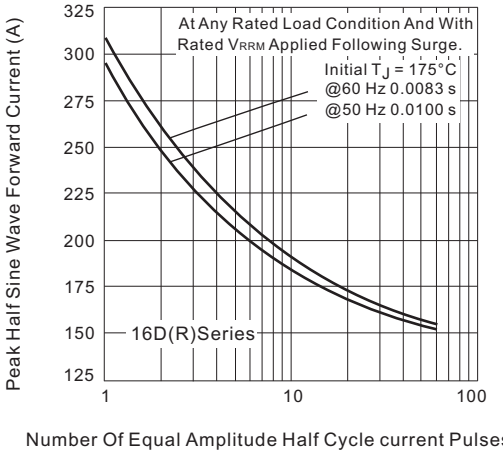


Fig. 6 Forward Voltage Drop Characteristics

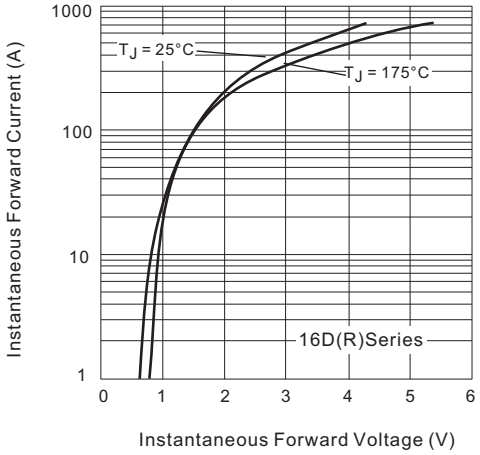


Fig.7 Maximum Non-Repetitive Surge Current

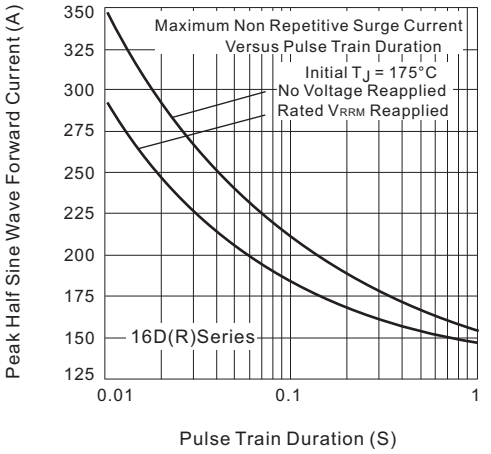
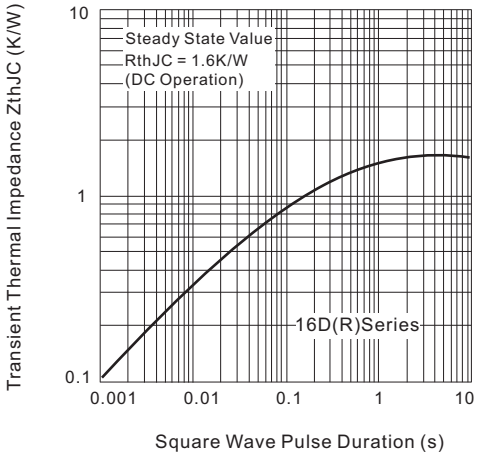


Fig.8 Thermal Impedance ZthJC Characteristics



ORDERING INFORMATION TABLE

Device code

16	D	R	12	M
1	2	3	4	5

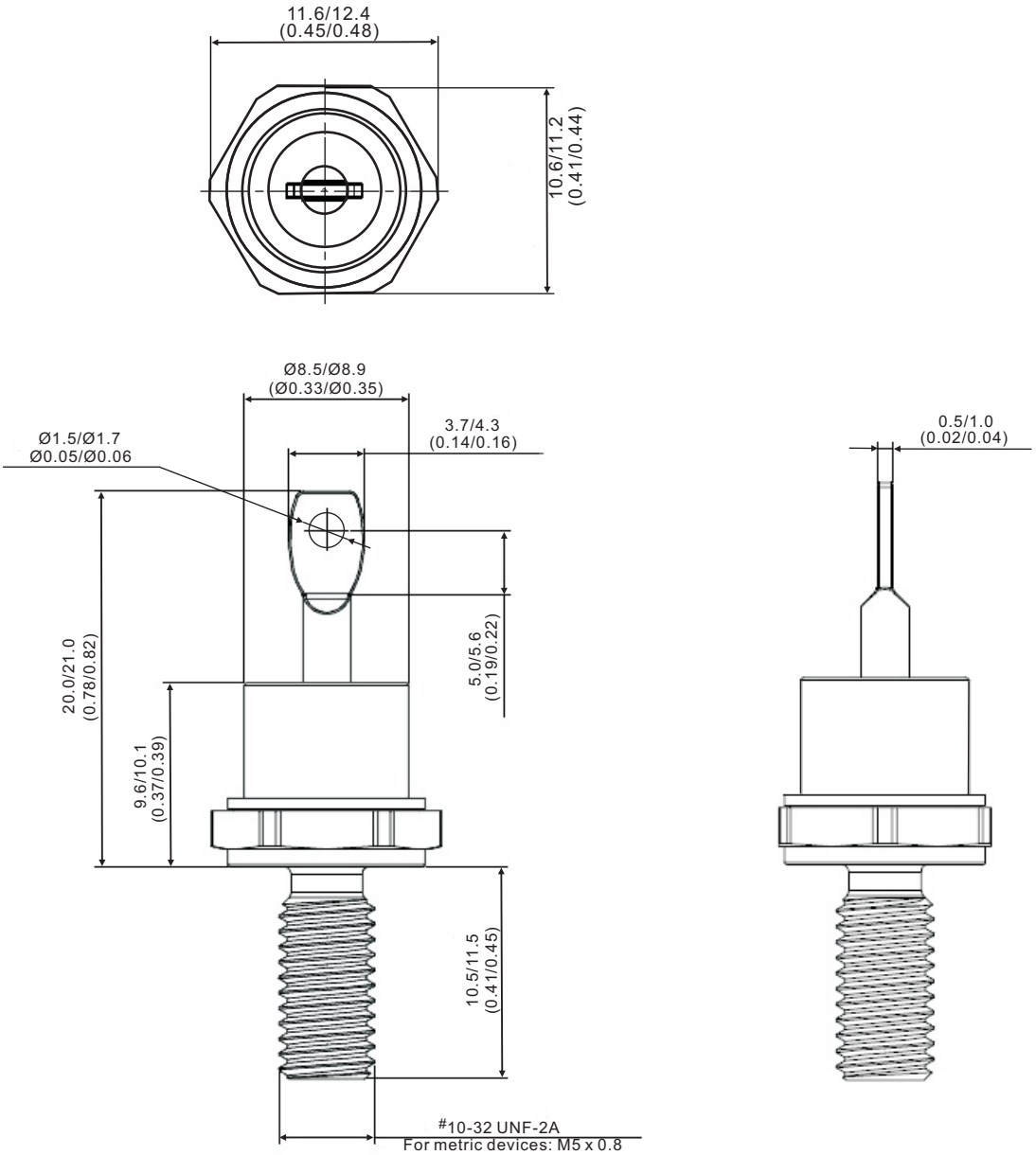
1 - Current rating: Code = $I_{F(AV)}$

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-203AA (DO-4) #10-32 UNF-2A
M = Stud base DO-203AA (DO-4) M5×0.8 (not available for avalanche diodes)


11.6/12.4
(0.45/0.48)
10.6/11.2
(0.41/0.44)
Ø8.5/Ø8.9
(Ø0.33/Ø0.35)
3.7/4.3
(0.14/0.16)
Ø1.5/Ø1.7
Ø0.05/Ø0.06
20.0/21.0
(0.78/0.82)
5.0/5.6
(0.19/0.22)
9.6/10.1
(0.37/0.39)
10.5/11.5
(0.41/0.45)
#10-32 UNF-2A
For metric devices: M5 x 0.8
0.5/1.0
(0.02/0.04)