

Glass Passivated Standard Recovery Diodes (Stud Version), 12A

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	
$I_{F(AV)}$	12A

MAJOR RATINGS AND CHARACTERISTICS			
PARAMETER	TEST CONDITIONS	VALUES	UNIT
$I_{F(AV)}$	T_C	12	A
		140	°C
$I_{F(RMS)}$		19	A
I_{FSM}	50 HZ	265	A
	60 HZ	280	
I^2t	50 HZ	351	A ² s
	60 HZ	325	
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	$V_{R(BR)}$, MINIMUM AVALANCHE VOLTAGE V ⁽¹⁾	V_{RRM} , MAXIMUM AT $T_J=175^\circ\text{C}$ mA
12D(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		12	A
				140	°C
Maximum RMS forward current	$I_{F(RMS)}$			19	A
Maximum on-repetitive peak reverse power	$P_R^{(1)}$	10µs square pulse, $T_J = T_J$ maximum		7	K/W
Maximum peak, one-cycle forward, non-reptitive surge current	I_{FSM}	t = 10ms	No voltage reappplied	265	A
		t = 8.3ms		280	
		t = 10ms	100% V_{RRM} reappplied	225	
		t = 8.3ms		235	
Maximum I^2t for fusing	I^2t	t = 10ms	No voltage reappplied	351	A ² s
		t = 8.3ms		325	
		t = 10ms	100% V_{RRM} reappplied	249	
		t = 8.3ms		230	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		3511	A ² √s
Maximum forward voltage drop	V_{FM}	$I_{pk} = 38$ A, $T_J = 25^\circ$ C, $t_p = 400\mu$ s rectangular wave		1.25	V

Note

(1) Avalanche only for avalanche version, all other parameters the same as 12D

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction operating temperature range	T_J			- 65 to 175	°C
Maximum storage temperature range	T_{stg}			- 65 to 200	
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		2	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 ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDUCTIONS	UNITS
180°	0.33	0.26	$T_J = T_J$ maximum	K/W
120°	0.41	0.44		
90°	0.53	0.58		
60°	0.78	0.81		
30°	1.28	1.29		

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

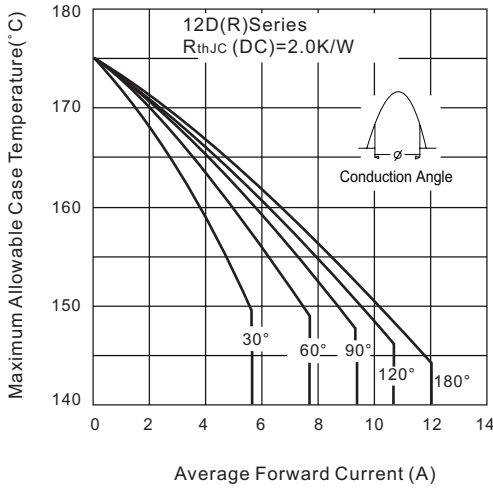


Fig.2 Current Ratings Characteristics

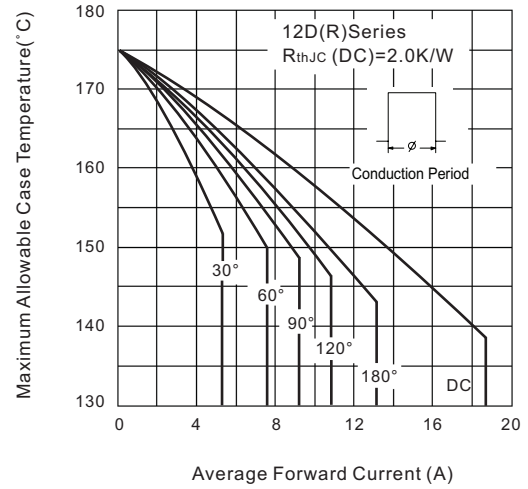


Fig. 3 Forward Power Loss Characteristics

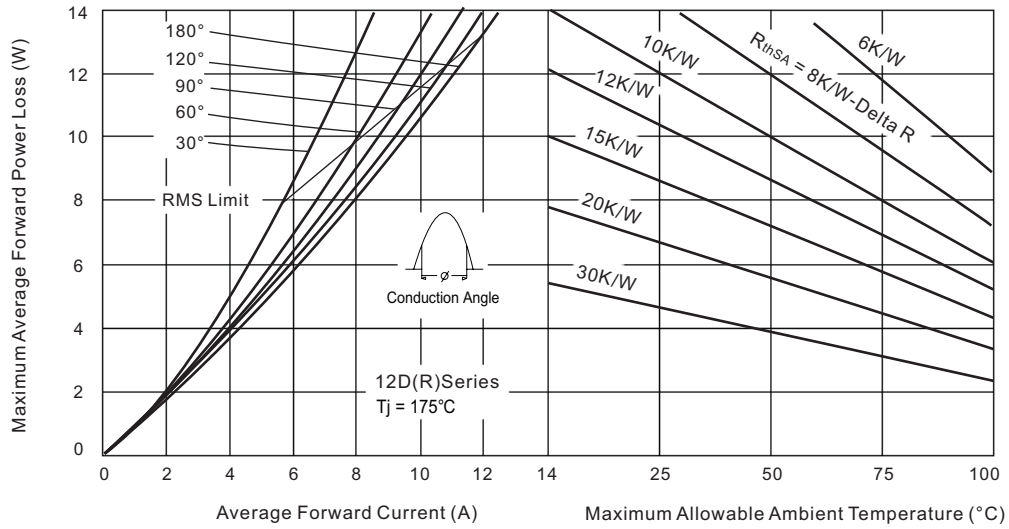


Fig. 4 Forward Power Loss Characteristics

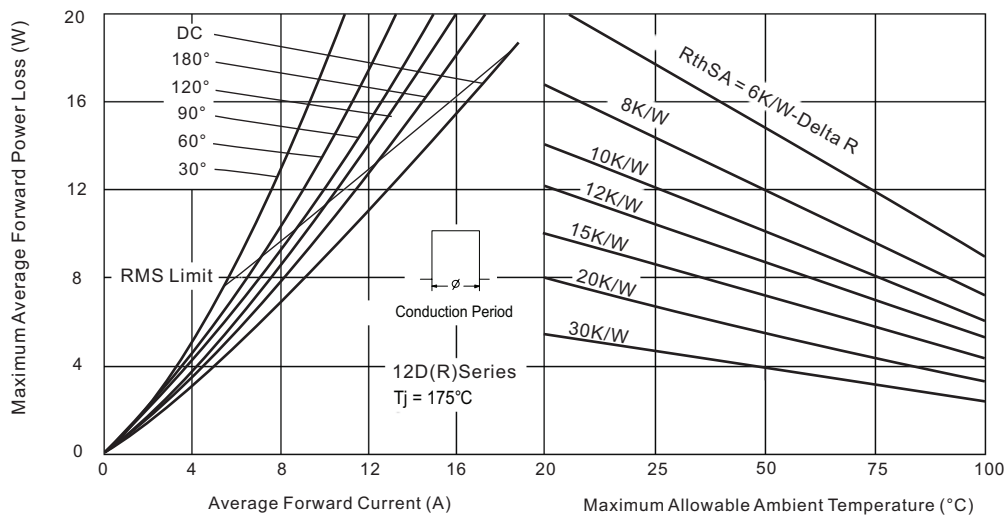


Fig. 5 Maximum Non-Repetitive Surge Current

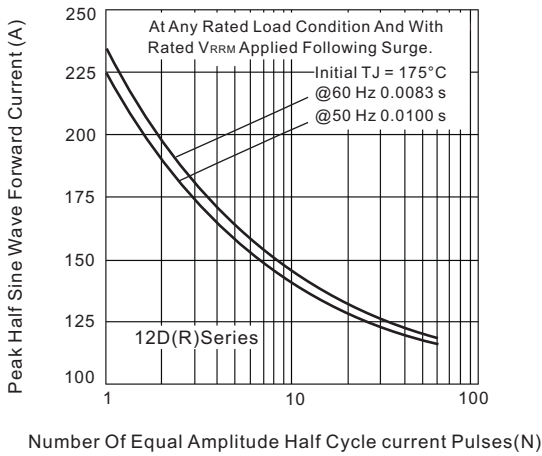


Fig. 6 Forward Voltage Drop Characteristics

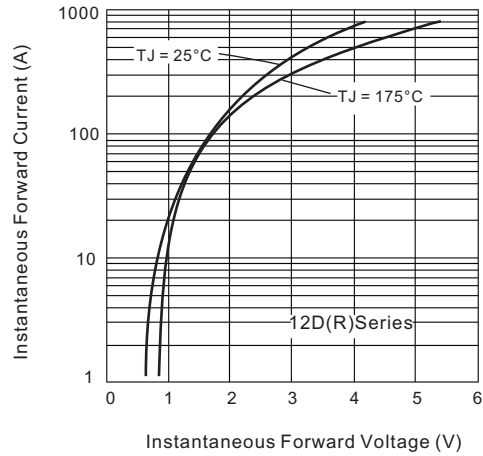


Fig.7 Maximum Non-Repetitive Surge Current

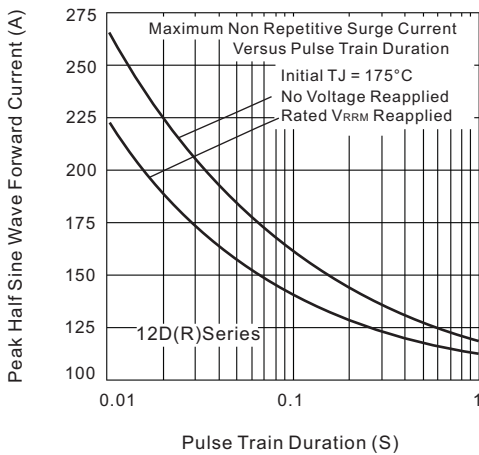
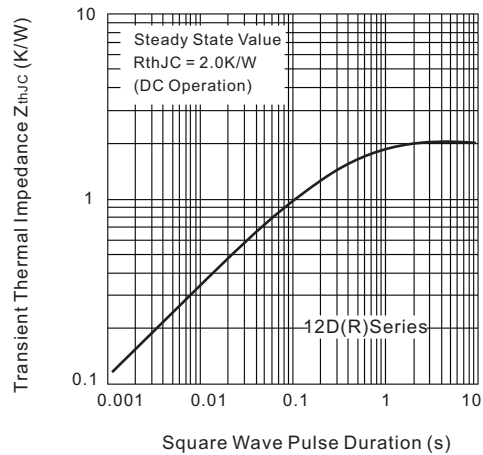


Fig.8 Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

Device code	12	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-230AA (DO-4) M5 0.8 (not available for avalanche diodes)			

