

## 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 <sup>2</sup> s
	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	$V_{R(BR)}$ , MINIMUM AVALANCHE VOLTAGE V <sup>(1)</sup>	$V_{RRM}$ , MAXIMUM AT $T_J=175^\circ\text{C}$ 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 reappplied	350	A
		t = 8.3ms		370	
		t = 10ms	100% $V_{RRM}$ reappplied	295	
		t = 8.3ms		310	
Maximum $I^2t$ for fusing	$I^2t$	t = 10ms	No voltage reappplied	612	A <sup>2</sup> s
		t = 8.3ms		558	
		t = 10ms	100% $V_{RRM}$ reappplied	435	
		t = 8.3ms		395	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		6125	A <sup>2</sup> √s
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 50$ 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 16D

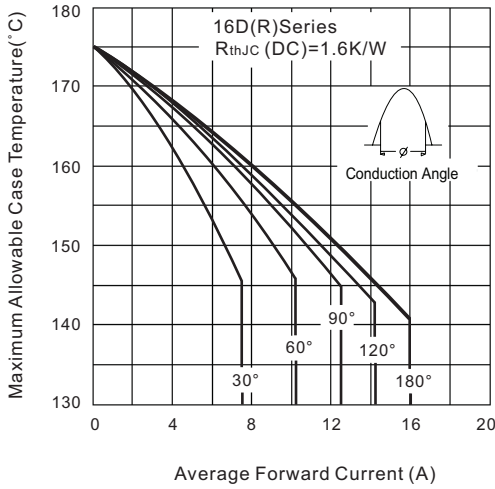
THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction operating temperature range	$T_J$			- 65 to 175	°C
Maximum storage temperature range	$T_{stg}$			- 65 to 200	
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation		1.6	K/W
Maximum thermal resistance case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased		0.5	
Allowable mounting torque		Not lubricated threads		1.5 <sup>+0</sup> <sub>-10%</sub> (13)	N · m (lbf · in)
		Lubricated threads		1.2 <sup>+0</sup> <sub>-10%</sub> (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)	

$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	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		

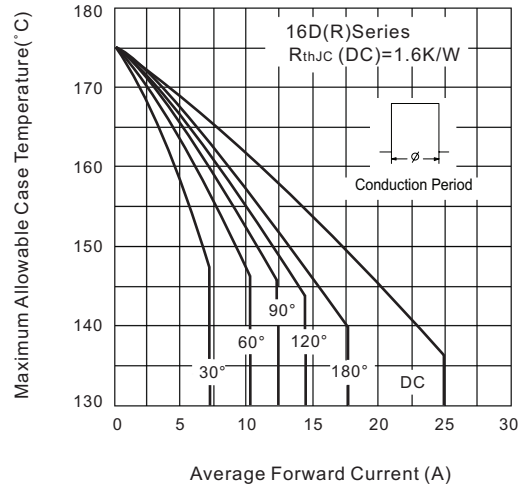
**Note**

The table above shows the increment of thermal resistance  $R_{thJC}$  when devices operate at different conduction angles than DC

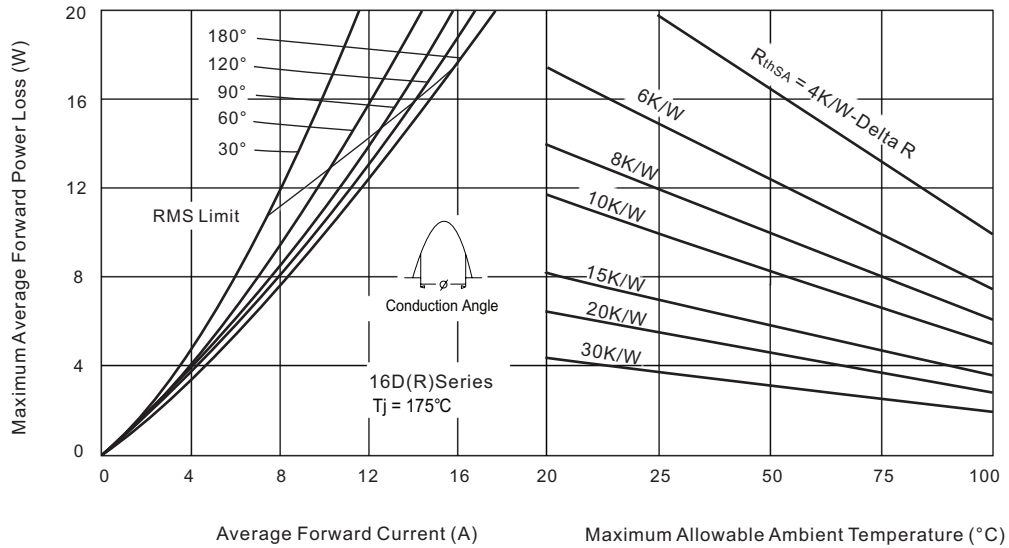
**Fig.1 Current Ratings Characteristics**



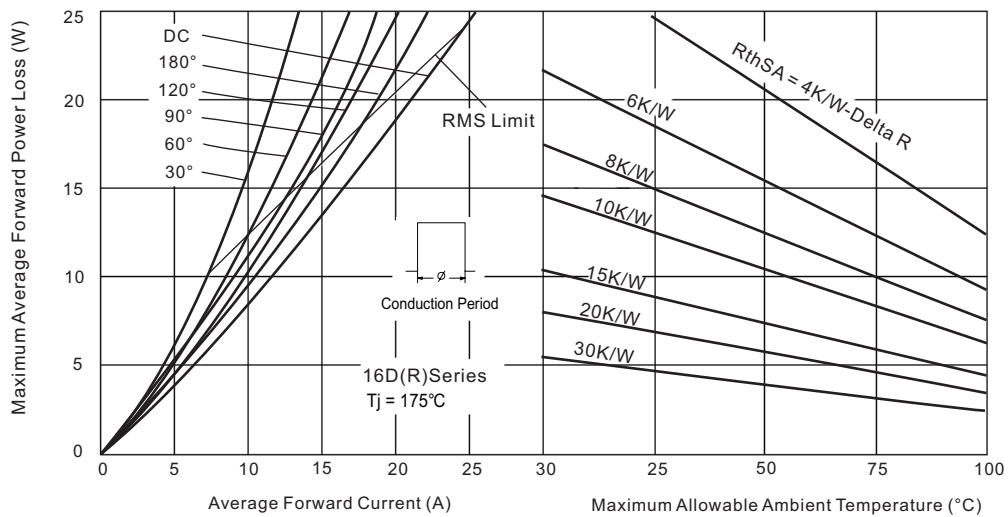
**Fig.2 Current Ratings Characteristics**



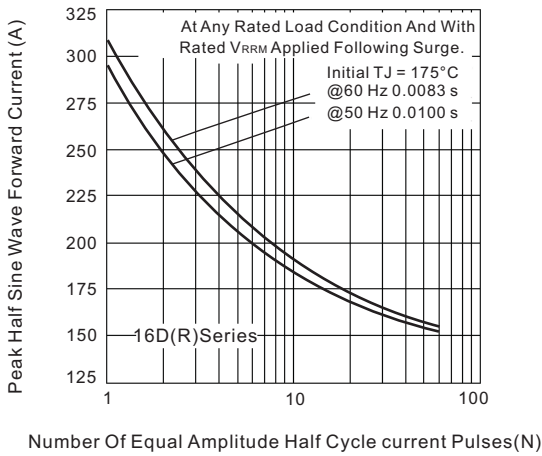
**Fig. 3 Forward Power Loss Characteristics**



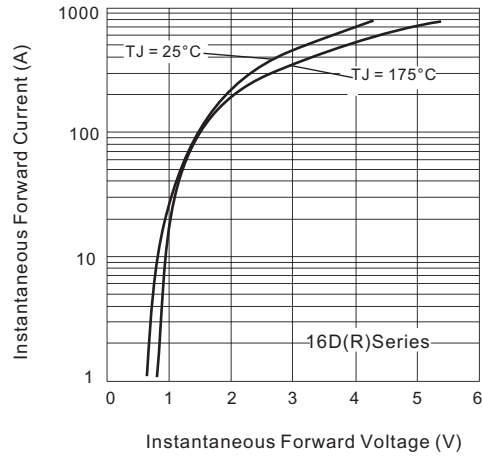
**Fig. 4 Forward Power Loss Characteristics**



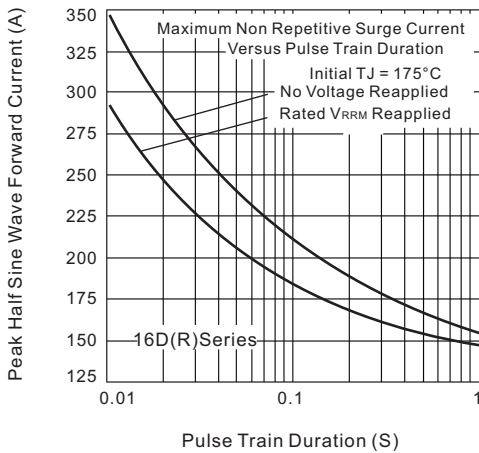
**Fig. 5 Maximum Non-Repetitive Surge Current**



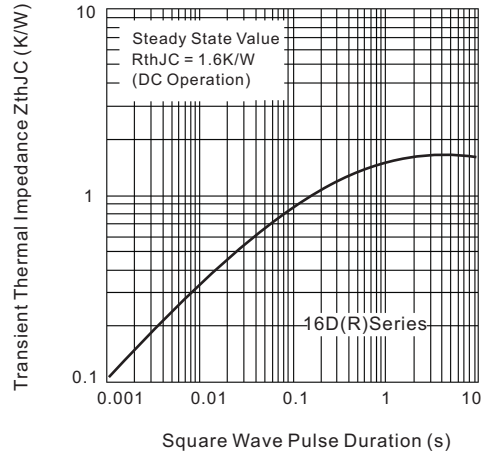
**Fig. 6 Forward Voltage Drop Characteristics**



**Fig.7 Maximum Non-Repetitive Surge Current**



**Fig.8 Thermal Impedance  $Z_{thJC}$  Characteristics**



### ORDERING INFORMATION TABLE

Device code	<b>16</b>	<b>D</b>	<b>R</b>	<b>12</b>	<b>M</b>
	①	②	③	④	⑤
<b>1</b>	-	Current rating: Code = $I_{F(AV)}$			
<b>2</b>	-	D = Standard recovery device			
<b>3</b>	-	None = Stud normal polarity (cathode to stud) R = Stud reverse polarity (anode to stud)			
<b>4</b>	-	Voltage code 100 = $V_{RRM}$ (see Voltage Ratings table)			
<b>5</b>	-	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)			

