

### Medium Power Silicon Rectifier Diodes, 12 A



DO-203AA (DO-4)

#### FEATURES

- Voltage ratings from 50 to 1000 V
- High surge capability
- Low thermal impedance
- High temperature rating
- Can be supplied as JAN and JAN-TX devices in accordance with MIL-S-19500/260
- RoHS compliant



#### PRODUCT SUMMARY

$I_{F(AV)}$	12 A
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#### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		12 <sup>(1)</sup>	A
	$T_C$	150 <sup>(1)</sup>	°C
$I_{FSM}$	50 Hz	230	A
	60 Hz	240 <sup>(1)</sup>	
$I^2t$	50 Hz	260	A <sup>2</sup> s
	60 Hz	240	
$T_C$		- 65 to 200	°C
$V_{RRM}$	Range	50 to 1000 <sup>(1)</sup>	V

#### Note

<sup>(1)</sup> JEDEC registered values

#### ELECTRICAL SPECIFICATIONS

##### VOLTAGE RATINGS

TYPE NUMBER <sup>(2)</sup>	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{R(RMS)}$ , MAXIMUM RMS REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RM}$ , MAXIMUM DIRECT REVERSE VOLTAGE V
	$T_C = - 65\text{ °C TO }200\text{ °C}$	$T_C = - 65\text{ °C TO }200\text{ °C}$	$T_C = - 65\text{ °C TO }200\text{ °C}$	$T_C = - 65\text{ °C TO }200\text{ °C}$
1N1199A	50 <sup>(1)</sup>	35 <sup>(1)</sup>	100 <sup>(1)</sup>	50 <sup>(1)</sup>
1N1200A	100 <sup>(1)</sup>	70 <sup>(1)</sup>	200 <sup>(1)</sup>	100 <sup>(1)</sup>
1N1201A	150 <sup>(1)</sup>	105 <sup>(1)</sup>	300 <sup>(1)</sup>	150 <sup>(1)</sup>
1N1202A	200 <sup>(1)</sup>	140 <sup>(1)</sup>	350 <sup>(1)</sup>	200 <sup>(1)</sup>
1N1203A	300 <sup>(1)</sup>	210 <sup>(1)</sup>	450 <sup>(1)</sup>	300 <sup>(1)</sup>
1N1204A	400 <sup>(1)</sup>	280 <sup>(1)</sup>	600 <sup>(1)</sup>	400 <sup>(1)</sup>
1N1205A	500 <sup>(1)</sup>	350 <sup>(1)</sup>	700 <sup>(1)</sup>	500 <sup>(1)</sup>
1N1206A	600 <sup>(1)</sup>	420 <sup>(1)</sup>	800 <sup>(1)</sup>	600 <sup>(1)</sup>
1N3670A	700 <sup>(1)</sup>	490	900 <sup>(1)</sup>	700 <sup>(1)</sup>
1N3671A	800 <sup>(1)</sup>	560	1000 <sup>(1)</sup>	800 <sup>(1)</sup>
1N3672A	900 <sup>(1)</sup>	630	1100 <sup>(1)</sup>	900 <sup>(1)</sup>
1N3673A	1000 <sup>(1)</sup>	700	1200 <sup>(1)</sup>	1000 <sup>(1)</sup>

#### Notes

<sup>(1)</sup> JEDEC registered values

<sup>(2)</sup> Basic part number indicates cathode to case; for anode to case, add "R" to part number, e.g., 1N1199RA

# 1N1...A, 1N36..A Series



Vishay High Power Products

Medium Power  
Silicon Rectifier Diodes, 12 A

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° sinusoidal conduction		12 <sup>(1)</sup>	A
				150 <sup>(1)</sup>	°C
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	Half cycle 50 Hz sine wave or 6 ms rectangular pulse	Following any rated load condition and with rated $V_{RRM}$ applied	230	A
		Half cycle 60 Hz sine wave or 5 ms rectangular pulse		240 <sup>(1)</sup>	
		Half cycle 50 Hz sine wave or 6 ms rectangular pulse	Following any rated load condition and with $V_{RRM}$ applied following surge = 0	275	
		Half cycle 60 Hz sine wave or 5 ms rectangular pulse		285	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	With rated $V_{RRM}$ applied following surge, initial $T_J = 200$ °C	260	A <sup>2</sup> s
		t = 8.3 ms		240	
Maximum $I^2t$ for individual device fusing	$I^2t$	t = 10 ms	With $V_{RRM} = 0$ following surge, initial $T_J = 200$ °C	370	
		t = 8.3 ms		340	
Maximum $I^2\sqrt{t}$ for individual device fusing	$I^2\sqrt{t}$ <sup>(2)</sup>	t = 0.1 to 10 ms, $V_{RRM} = 0$ following surge		3715	A <sup>2</sup> √s
Maximum forward voltage drop	$V_{FM}$	$I_{F(AV)} = 12$ A (38 A peak), $T_C = 25$ °C		1.35 <sup>(1)</sup>	V
Maximum average reverse current	$I_{R(AV)}$ <sup>(3)</sup>	Maximum rated $I_{F(AV)}$ and $T_C$		$V_{RRM} = 50$	3.0 <sup>(1)</sup>
				$V_{RRM} = 100$	2.5 <sup>(1)</sup>
				$V_{RRM} = 150$	2.25 <sup>(1)</sup>
				$V_{RRM} = 200$	2.0 <sup>(1)</sup>
				$V_{RRM} = 300$	1.75 <sup>(1)</sup>
				$V_{RRM} = 400$	1.5 <sup>(1)</sup>
				$V_{RRM} = 500$	1.25 <sup>(1)</sup>
				$V_{RRM} = 600$	1.0 <sup>(1)</sup>
				$V_{RRM} = 700$	0.9 <sup>(1)</sup>
				$V_{RRM} = 800$	0.8 <sup>(1)</sup>
				$V_{RRM} = 900$	0.7 <sup>(1)</sup>
				$V_{RRM} = 1000$	0.6 <sup>(1)</sup>

## Notes

<sup>(1)</sup> JEDEC registered values

<sup>(2)</sup>  $I^2t$  for time  $t_x = I^2\sqrt{t} \times \sqrt{t_x}$

<sup>(3)</sup> Maximum peak reverse current ( $I_{RM}$ ) under same conditions  $\approx 2 \times$  rated  $I_{R(AV)}$



THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum operating case and storage temperature range	$T_C, T_{Stg}$		- 65 to 200 <sup>(1)</sup>	°C
Maximum internal thermal resistance, junction to case	$R_{thJC}$	DC operation	2.0 <sup>(1)</sup>	°C/W
Thermal resistance, case to sink	$R_{thCS}$	Mounting surface, smooth, flat and greased	0.5	
Mounting torque	minimum	Torque applied to nut; non-lubricated threads	1.36 (12)	N · m (lbf · in)
	maximum		1.69 (15)	
	minimum	Torque applied to nut; lubricated threads	1.07 (9.45)	
	maximum		1.30 (11.55)	
	minimum	Torque applied to device case; lubricated threads	1.17 (10.35)	
	maximum		1.43 (12.65)	
Approximate weight			7.0	g
			0.25	oz.
Case style		JEDEC	DO-203AA (DO-4)	

**Note**

<sup>(1)</sup> JEDEC registered values

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Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature



Fig. 4 - Maximum Forward Voltage vs. Forward Current

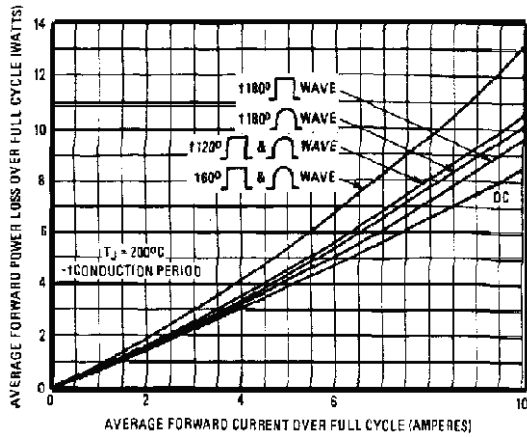


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

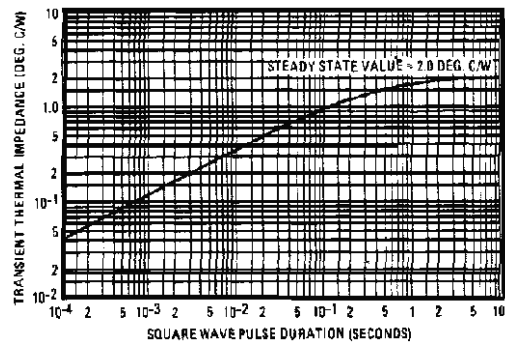


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

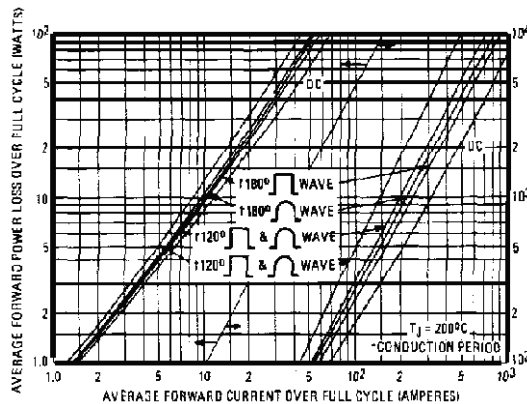


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

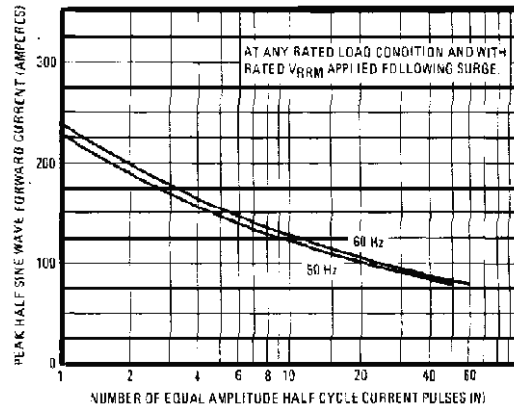


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

## LINKS TO RELATED DOCUMENTS

Dimensions

<http://www.vishay.com/doc?95311>

## DO-203AA (DO-4)

**DIMENSIONS** in millimeters (inches)





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