Medium Power Silicon Rectifier Diodes, 12 A

DO-203AA (DO-4)

FEATURES

- Voltage ratings from 50 V 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
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

PRODUCT SUMMARY	
$I_{F(AV)}$	12 A
Package	DO-203AA (DO-4)
Circuit configuration	Single diode

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

Note

- JEDEC registered values are in bold

ELECTRICAL SPECIFICATIONS

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

Notes

- JEDEC registered values are in bold
- Basic part number indicates cathode to case; for anode to case, add “R” to part number, e.g., 1N1199**R**A

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

Notes

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(1) I^2t for time $t_x = I^2\sqrt{t} \times \sqrt{t_x}$

(2) Maximum peak reverse current (I_{RM}) under same conditions ≈ 2 x 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**	°C
Maximum internal thermal resistance, junction to case		R_{thJC}	DC operation	**2.0**	°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

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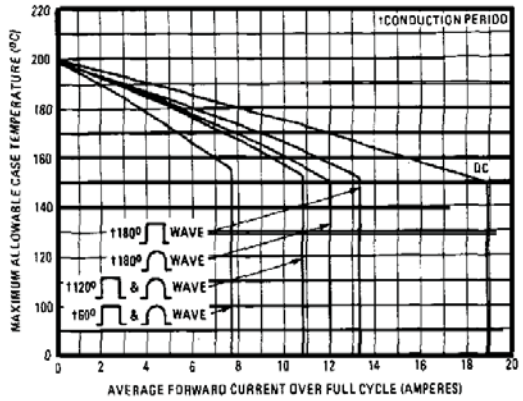


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

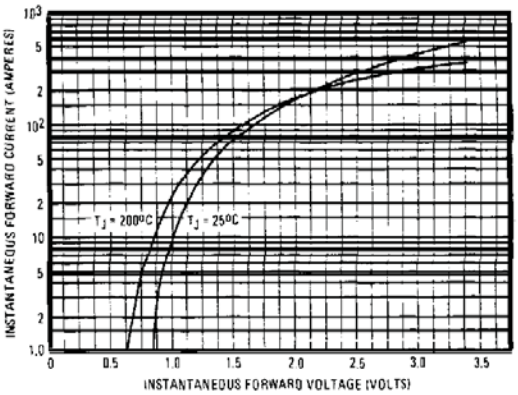


Fig. 4 - Maximum Forward Voltage vs. Forward Current

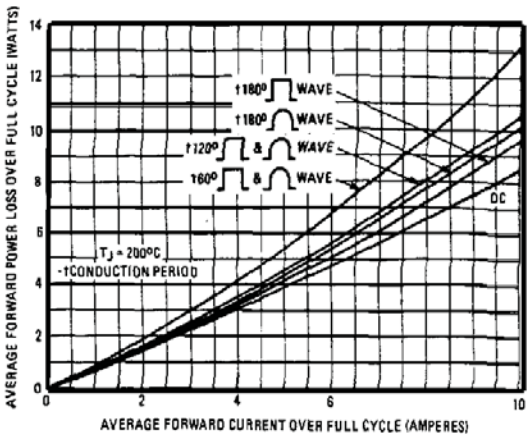


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

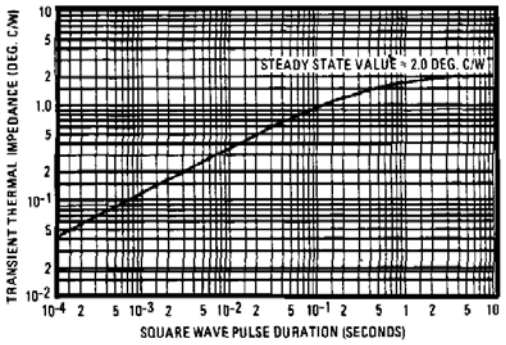


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

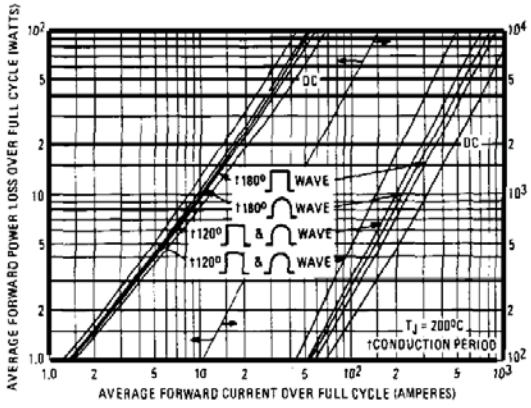


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

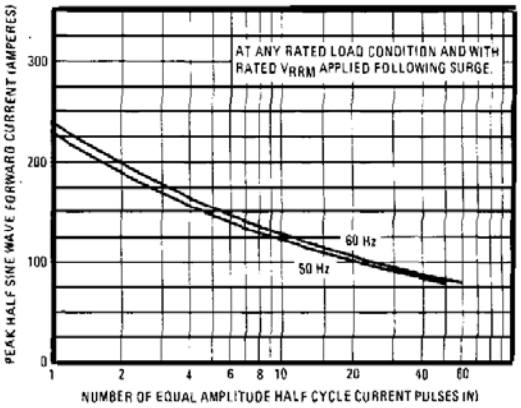
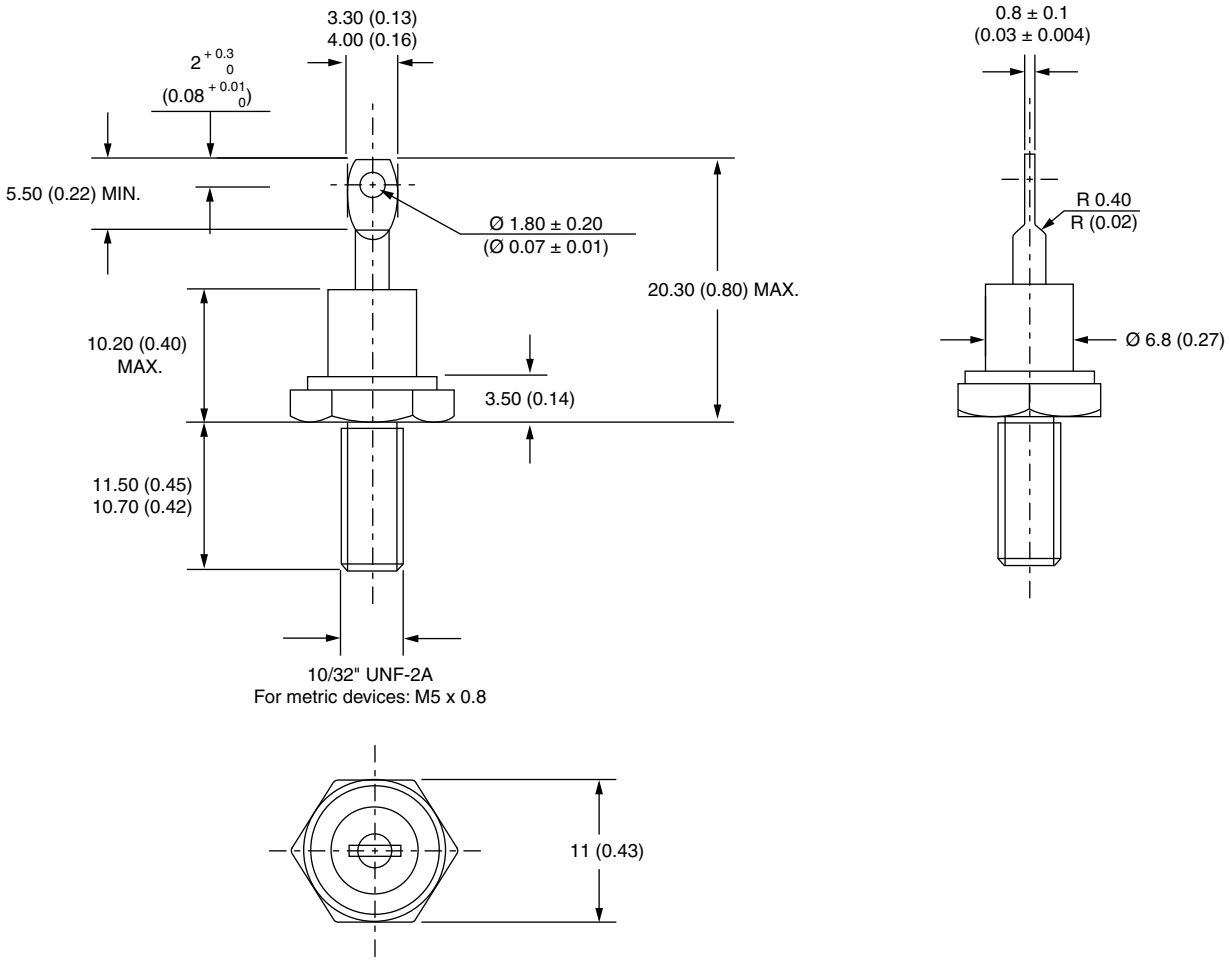


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95311

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)



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