

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 ² s
	60 Hz	240	
T_J		- 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 ($T_C = - 65\text{ °C TO } 200\text{ °C}$) V	$V_{R(RMS)}$, MAXIMUM RMS REVERSE VOLTAGE ($T_C = - 65\text{ °C TO } 200\text{ °C}$) V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE ($T_C = - 65\text{ °C TO } 200\text{ °C}$) V	V_{RM} , MAXIMUM DIRECT REVERSE VOLTAGE ($T_C = - 65\text{ °C TO } 200\text{ °C}$) V
VS-1N1199A	50	35	100	50
VS-1N1200A	100	70	200	100
VS-1N1201A	150	105	300	150
VS-1N1202A	200	140	350	200
VS-1N1203A	300	210	450	300
VS-1N1204A	400	280	600	400
VS-1N1205A	500	350	700	500
VS-1N1206A	600	420	800	600
VS-1N3670A	700	490	900	700
VS-1N3671A	800	560	1000	800
VS-1N3672A	900	630	1100	900
VS-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., 1N1199RA



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 ² t for fusing	I ² t	t = 10 ms	With rated V _{RRM} applied following surge, initial T _J = 200 °C	260	A ² s	
		t = 8.3 ms		240		
Maximum I ² t 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 √t for individual device fusing	I ² √t ⁽¹⁾	t = 0.1 ms to 10 ms, V _{RRM} = 0 V following surge		3715	A ² √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 $\approx 2 \times$ 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	°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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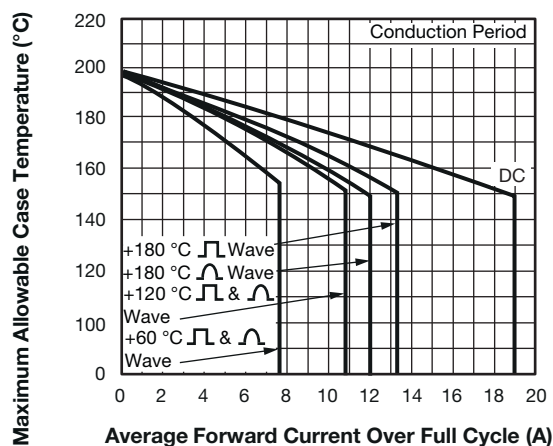


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

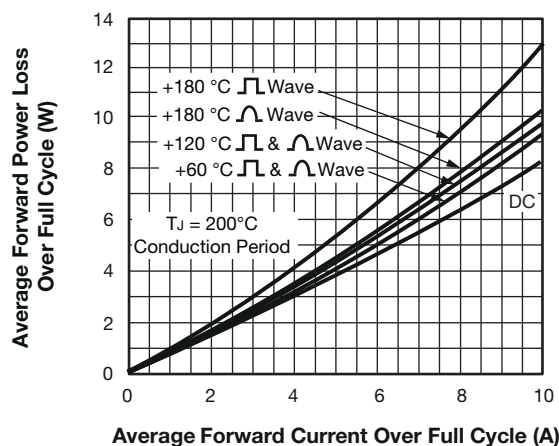


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

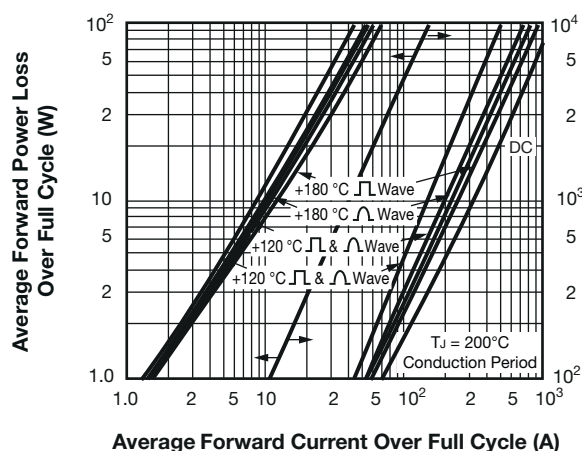


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

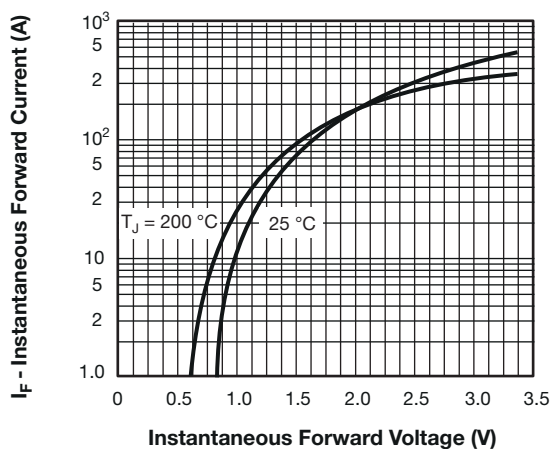


Fig. 4 - Maximum Forward Voltage vs. Forward Current

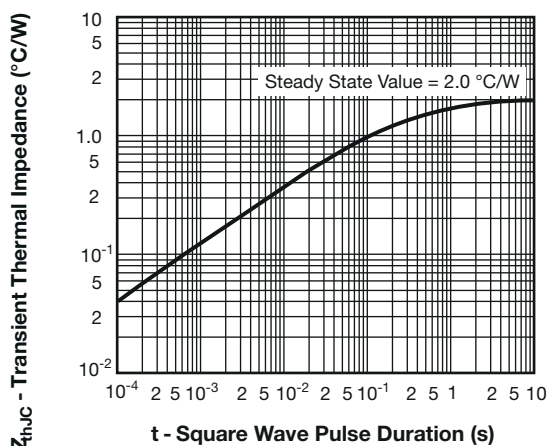


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

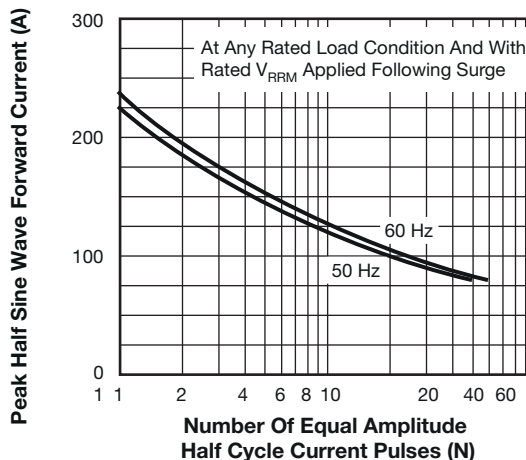


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

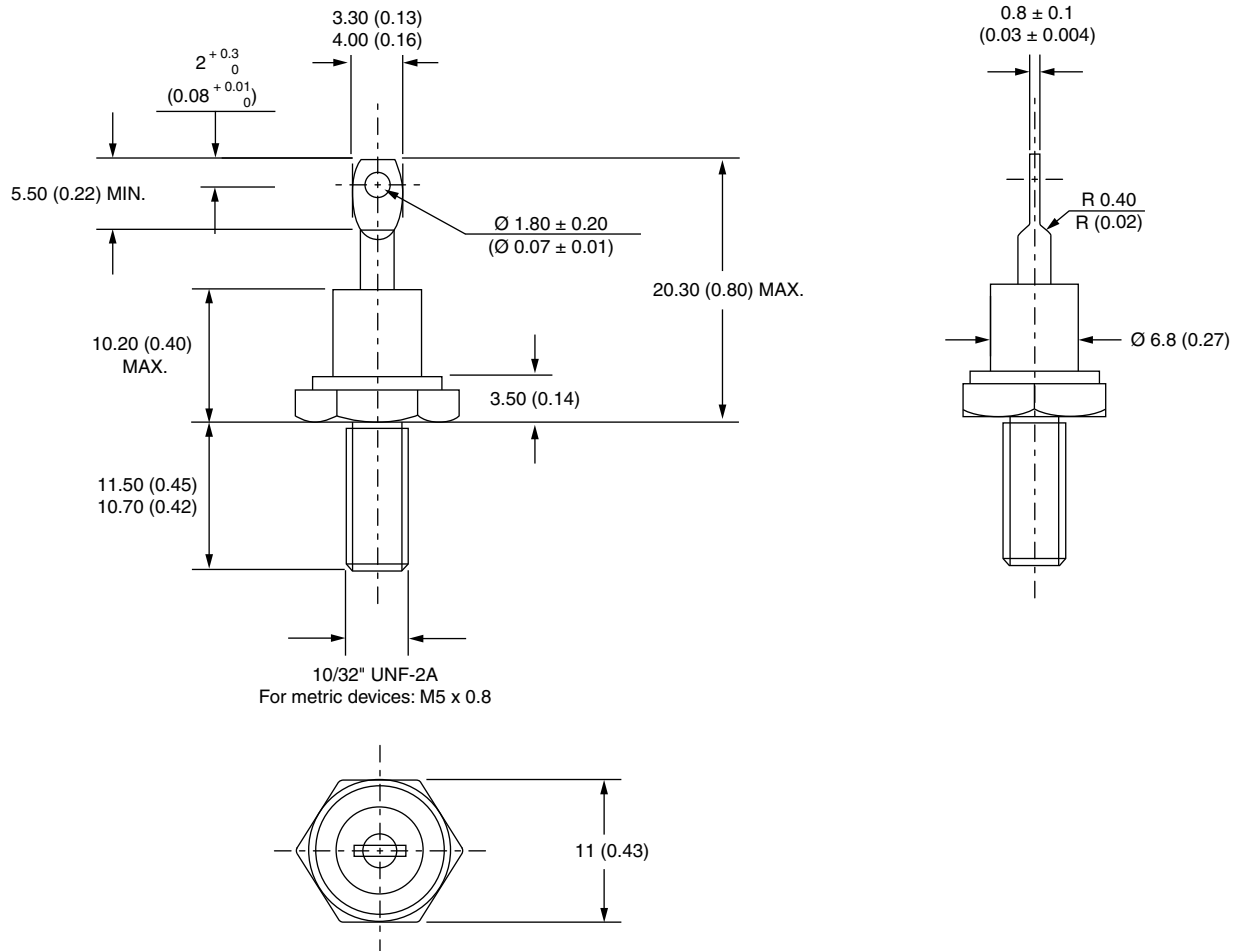
LINKS TO RELATED DOCUMENTS

Dimensions

www.vishay.com/doc?95311

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)





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