

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
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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_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 ($T_C = -65\text{ °C TO }200\text{ °C}$) 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
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., 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^2t for fusing	I^2t	t = 10 ms	With rated V_{RRM} applied following surge, initial $T_J = 200\text{ °C}$	260	A ² s	
		t = 8.3 ms		240		
Maximum I^2t for individual device fusing	I^2t	t = 10 ms	With $V_{RRM} = 0\text{ V}$ following surge, initial $T_J = 200\text{ °C}$	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, $V_{RRM} = 0\text{ V}$ following surge		3715	A ² √s	
Maximum forward voltage drop	V_{FM}	$I_{F(AV)} = 12\text{ A}$ (38 A peak), $T_C = 25\text{ °C}$		1.35	V	
Maximum average reverse current	$I_{R(AV)}$ (2)	Maximum rated $I_{F(AV)}$ and T_C		$V_{RRM} = 50\text{ V}$	mA	
				$V_{RRM} = 100\text{ V}$		3.0
				$V_{RRM} = 150\text{ V}$		2.5
				$V_{RRM} = 200\text{ V}$		2.25
				$V_{RRM} = 300\text{ V}$		2.0
				$V_{RRM} = 400\text{ V}$		1.75
				$V_{RRM} = 500\text{ V}$		1.5
				$V_{RRM} = 600\text{ V}$		1.25
				$V_{RRM} = 700\text{ V}$		1.0
				$V_{RRM} = 800\text{ V}$		0.9
				$V_{RRM} = 900\text{ V}$		0.8
$V_{RRM} = 1000\text{ V}$	0.7					
			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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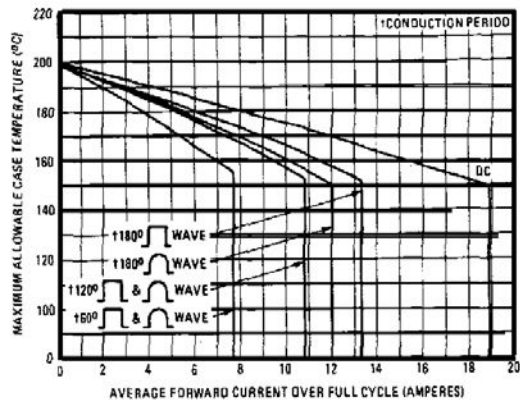


Fig. 1 - Average Forward Current vs. Maximum Allowable Case Temperature

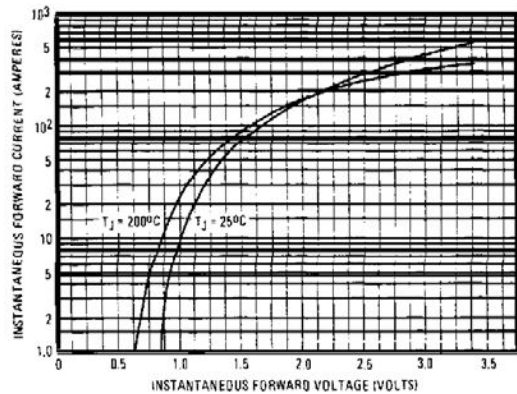


Fig. 4 - Maximum Forward Voltage vs. Forward Current

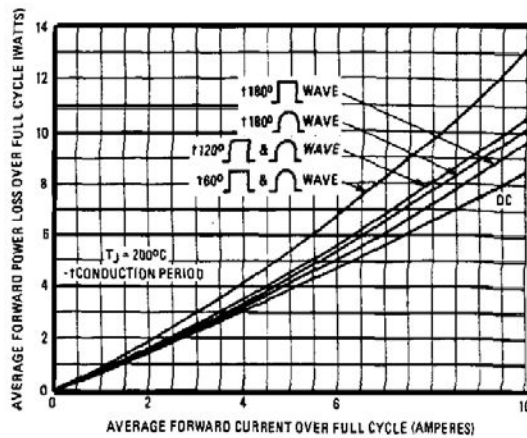


Fig. 2 - Maximum Low Level Forward Power Loss vs. Average Forward Current

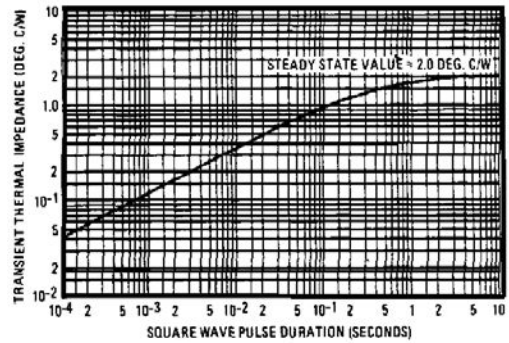


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

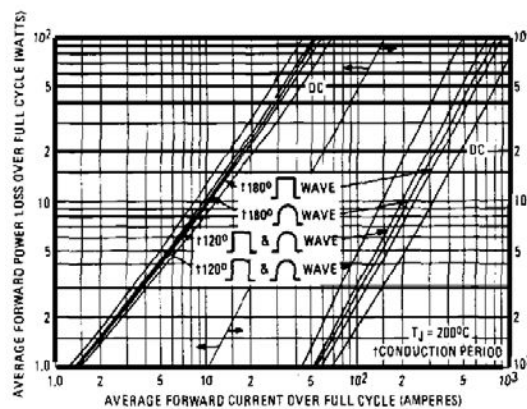


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

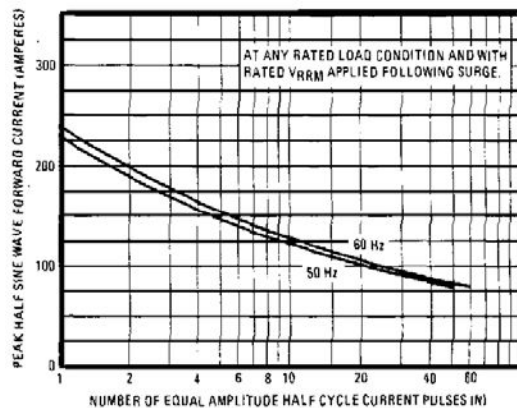


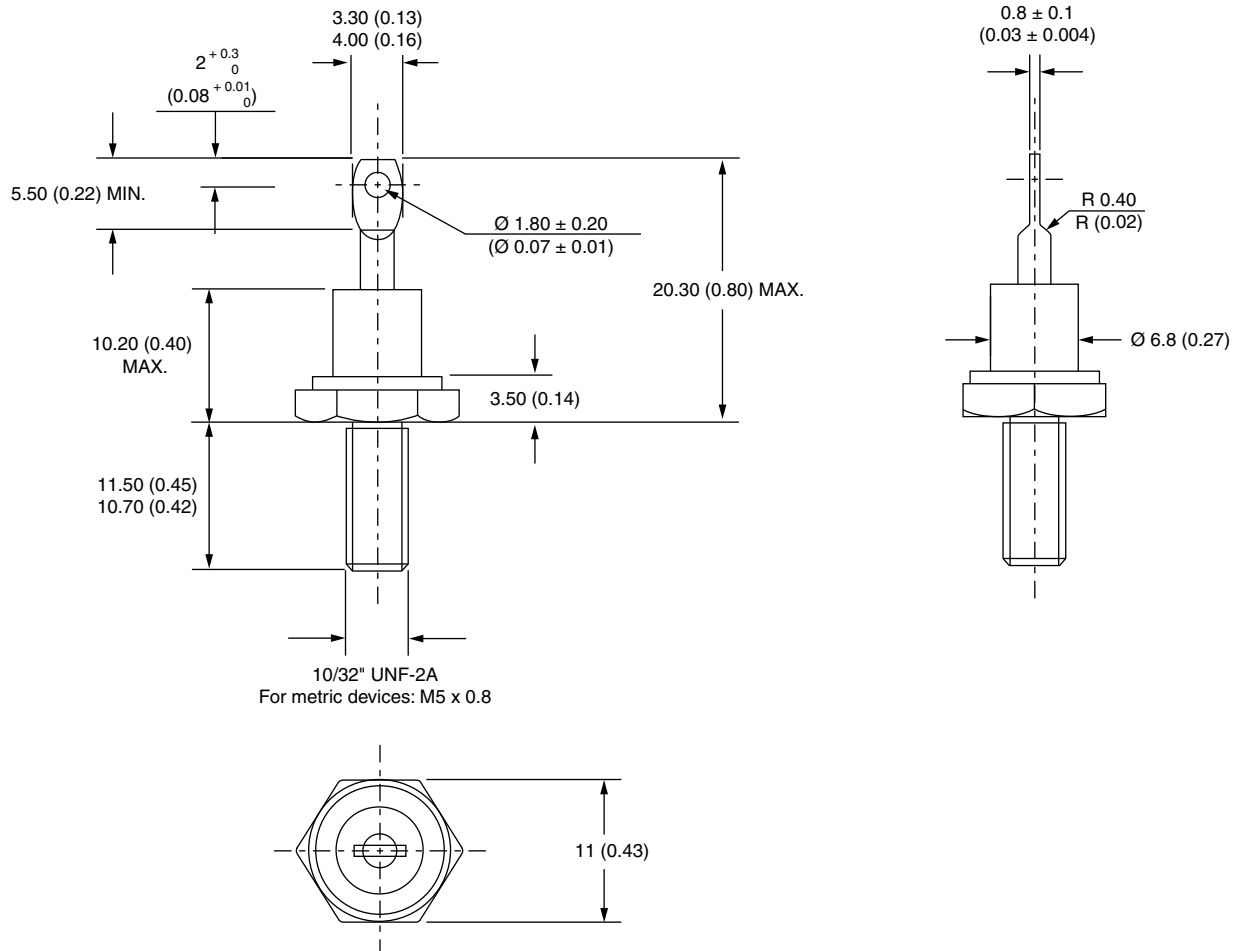
Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95311
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DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)





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