

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 ⁽¹⁾	A
	T_C	150 ⁽¹⁾	°C
I_{FSM}	50 Hz	230	A
	60 Hz	240 ⁽¹⁾	
I^2t	50 Hz	260	A ² s
	60 Hz	240	
T_C		- 65 to 200	°C
V_{RRM}	Range	50 to 1000 ⁽¹⁾	V

Note

⁽¹⁾ JEDEC registered values

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

TYPE NUMBER ⁽²⁾	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 ⁽¹⁾	35 ⁽¹⁾	100 ⁽¹⁾	50 ⁽¹⁾
1N1200A	100 ⁽¹⁾	70 ⁽¹⁾	200 ⁽¹⁾	100 ⁽¹⁾
1N1201A	150 ⁽¹⁾	105 ⁽¹⁾	300 ⁽¹⁾	150 ⁽¹⁾
1N1202A	200 ⁽¹⁾	140 ⁽¹⁾	350 ⁽¹⁾	200 ⁽¹⁾
1N1203A	300 ⁽¹⁾	210 ⁽¹⁾	450 ⁽¹⁾	300 ⁽¹⁾
1N1204A	400 ⁽¹⁾	280 ⁽¹⁾	600 ⁽¹⁾	400 ⁽¹⁾
1N1205A	500 ⁽¹⁾	350 ⁽¹⁾	700 ⁽¹⁾	500 ⁽¹⁾
1N1206A	600 ⁽¹⁾	420 ⁽¹⁾	800 ⁽¹⁾	600 ⁽¹⁾
1N3670A	700 ⁽¹⁾	490	900 ⁽¹⁾	700 ⁽¹⁾
1N3671A	800 ⁽¹⁾	560	1000 ⁽¹⁾	800 ⁽¹⁾
1N3672A	900 ⁽¹⁾	630	1100 ⁽¹⁾	900 ⁽¹⁾
1N3673A	1000 ⁽¹⁾	700	1200 ⁽¹⁾	1000 ⁽¹⁾

Notes

⁽¹⁾ JEDEC registered values

⁽²⁾ 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 ⁽¹⁾	A
				150 ⁽¹⁾	°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 ⁽¹⁾	
		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 ² 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	$I^2\sqrt{t}$ ⁽²⁾	t = 0.1 to 10 ms, $V_{RRM} = 0$ 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 ⁽¹⁾	V
Maximum average reverse current	$I_{R(AV)}$ ⁽³⁾	Maximum rated $I_{F(AV)}$ and T_C		$V_{RRM} = 50$	3.0 ⁽¹⁾
				$V_{RRM} = 100$	2.5 ⁽¹⁾
				$V_{RRM} = 150$	2.25 ⁽¹⁾
				$V_{RRM} = 200$	2.0 ⁽¹⁾
				$V_{RRM} = 300$	1.75 ⁽¹⁾
				$V_{RRM} = 400$	1.5 ⁽¹⁾
				$V_{RRM} = 500$	1.25 ⁽¹⁾
				$V_{RRM} = 600$	1.0 ⁽¹⁾
				$V_{RRM} = 700$	0.9 ⁽¹⁾
				$V_{RRM} = 800$	0.8 ⁽¹⁾
				$V_{RRM} = 900$	0.7 ⁽¹⁾
				$V_{RRM} = 1000$	0.6 ⁽¹⁾

Notes

⁽¹⁾ JEDEC registered values

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

⁽³⁾ 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 ⁽¹⁾	°C
Maximum internal thermal resistance, junction to case	R_{thJC}	DC operation	2.0 ⁽¹⁾	°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

⁽¹⁾ JEDEC registered values

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

Vishay High Power Products

Medium Power
Silicon Rectifier Diodes, 12 A



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

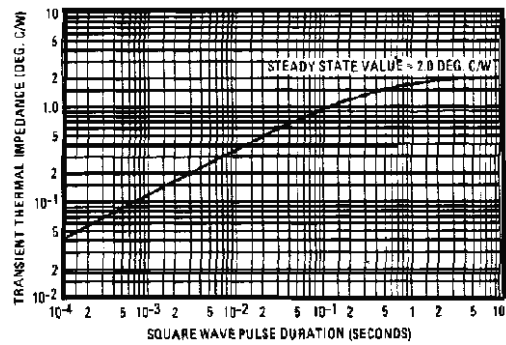


Fig. 5 - Maximum Transient Thermal Impedance, Junction to Case vs. Pulse Duration

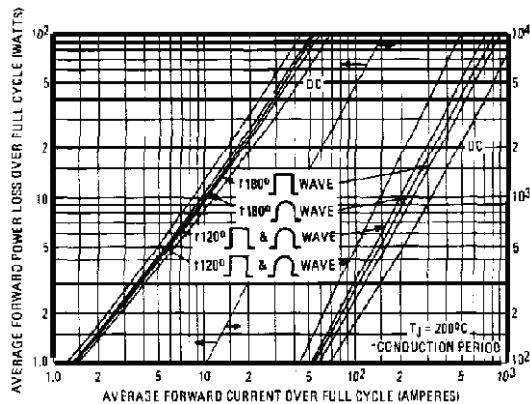


Fig. 3 - Maximum High Level Forward Power Loss vs. Average Forward Current

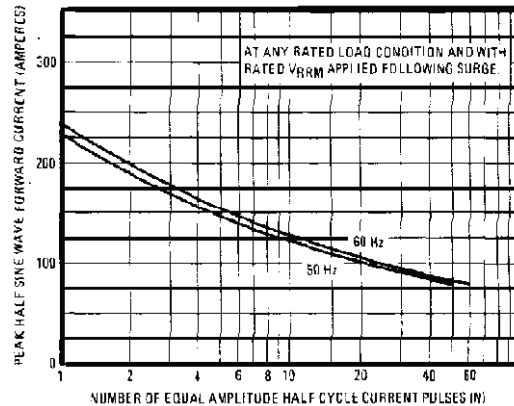


Fig. 6 - Maximum Non-Repetitive 50 Hz Surge Current vs. Number of Current Pulses

LINKS TO RELATED DOCUMENTS

Dimensions

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

DO-203AA (DO-4)

DIMENSIONS in millimeters (inches)





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