Data Sheet No. PD-2.084

INTERNATIONAL RECTIFIER IOR

1N1199A, 1N3670A SERIES

12 Amp Medium Power Silicon Rectifier Diodes

Major Ratings and Characteristics

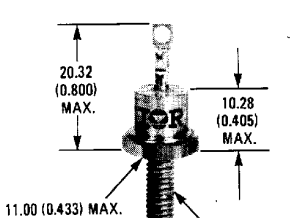
Series	1N1199A 1N3670A	Units
$I_{F(AV)}$	12*	A
@ MAX. T_C	150*	°C
I_{FSM}		
@ 50 Hz	230	A
@ 60 Hz	240*	
I^2t		
@ 50 Hz	260	A^2s
@ 60 Hz	240	
T_C	−65°C* to 200°C	°C
V_{RRM} range	50* – 1000*	V

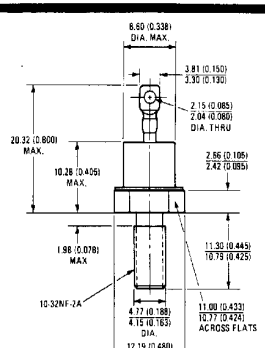
*JEDEC registered value.

Description/Features

- Voltage ratings from 50 to 1,000 volts
- 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

CASE STYLE AND DIMENSIONS





Conforms to JEDEC Outline DO-203AA (DO-4)

All Dimensions in Millimeters and (Inches)

VOLTAGE RATINGS

	V_{RRM} – Max. Repetitive Peak Reverse Voltage (V)	$V_{R(RMS)}$ – Max. RMS Reverse Voltage (V)	V_{RSM} – Max. Non-Repetitive Peak Reverse Voltage (V)	V_R – Max. Direct Reverse Voltage (V)
Part Number ①	T_C = –65°C to 200°C	T_C = –65°C to 200°C	T_C = 0°C to 200°C	T_C = –65°C to 200°C
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*

① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, e.g., 1N1199RA.

ELECTRICAL SPECIFICATIONS

		1N1199A 1N3670A	Units	Conditions
$I_{F(AV)}$	Max. average forward current	12*	A	180° sinusoidal conduction
	@ T_C max. =	150*	°C	
I_{FSM}	*Max. peak one-cycle non-repetitive surge* current	230	A	Half cycle 50 Hz sine wave *or 6 ms rectangular pulse* — *Following any rated load condition and with rated* V_{RRM} reapplied
		240*		Half cycle 60 Hz sine wave or 5 ms rectangular pulse — *Following any rated load condition and with rated* V_{RRM} reapplied
		275		Half cycle 50 Hz sine wave or 6 ms rectangular pulse — Following any rated load *condition and with* V_{RRM} applied following surge = 0
		285		Half cycle 60 Hz sine wave or 5 ms rectangular pulse — Following any rated load *condition and with* V_{RRM} applied following surge = 0
I^2t	Max. I^2t for fusing	260	A^2s	t = 10ms — With rated V_{RRM} applied following surge, initial T_J = 200°C
		240		t = 8.3ms — With rated V_{RRM} applied following surge, initial T_J = 200°C
	Max. I^2t for individual device fusing	370		t = 10ms — With V_{RRM} = 0 following surge, initial T_J = 200°C
		340		t = 8.3ms — With V_{RRM} = 0 following surge, initial T_J = 200°C
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual device fusing ①	3715	$A^2\sqrt{s}$	t = 0.1 to 10ms, V_{RRM} = 0 following surge
V_{FM}	Max. peak forward voltage	1.35*	V	$I_{F(AV)}$ = 12A (38A peak), T_C = 25°C
$I_{R(AV)}$	Max. average reverse current V_{RRM} = 50	3.0*	mA	Max. rated $I_{F(AV)}$ and T_C
	= 100	2.5*		Note: Max. peak reverse current, I_{RM}, under same conditions ≈ 2 x rated $I_{R(AV)}$.
	= 150	2.25*		
	= 200	2.0*		
	= 300	1.75*		

*JEDEC registered value.

① I^2t for time $t_x = I^2\sqrt{t} * \sqrt{t_x}$

ELECTRICAL SPECIFICATIONS (Continued)

	1N1199A 1N3670A	Units	Conditions
$I_{R(AV)}$ Max. average reverse current (Continued)			
V_{RRM} = 400	1.5*		
= 500	1.25*		Max. rated $I_{F(AV)}$ and T_C
= 600	1.0*	mA	Note: Max. peak reverse current, I_{RM}, under
= 700	0.9*		same conditions ≈ 2 x rated $I_{R(AV)}$.
= 800	0.8*		
= 900	0.7*		
= 1000	0.6*		

THERMAL-MECHANICAL SPECIFICATIONS

T_C	Max. operating case temperature range	-65* to 200*	°C	
T_{stg}	Max. storage temperature range	-65* to 200*	°C	
R_{thJC}	Max. internal thermal resistance, junction-to-case	2.0*	deg. C/W	DC operation
R_{thCS}	Thermal resistance, case-to-sink	0.5	deg. C/W	Mounting surface flat, smooth, and greased.
T	Mounting torque		N • m (lbf-in)	
	Min.	1.36 (12)		Torque applied to nut. Non-lubricated threads.
	Max.	1.69 (15)		
	Min.	1.07 (9.45)		Torque applied to nut. Lubricated threads.
	Max.	1.30 (11.55)		
	Min.	1.17 (10.35)		Torque applied to device case. Lubricated threads.
	Max.	1.43 (12.65)		
wt	Approximate weight	7.0 (0.25)	g (oz.)	
	Case style	DO-203AA (DO-4)		JEDEC

*JEDEC registered value.

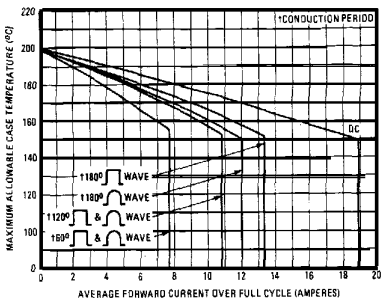


Fig. 1 – Average Forward Current Vs. Maximum Allowable Case Temperature

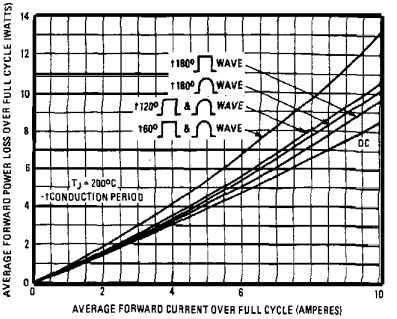


Fig. 2 – Maximum Low Level Forward Power Loss Vs. Average Forward Current

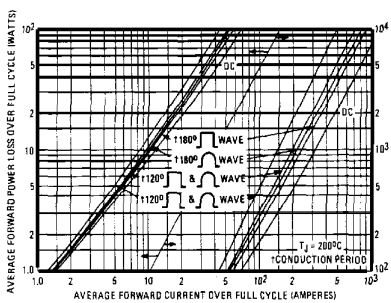


Fig. 3 – Maximum High Level Forward Power Loss Vs. Average Forward Current

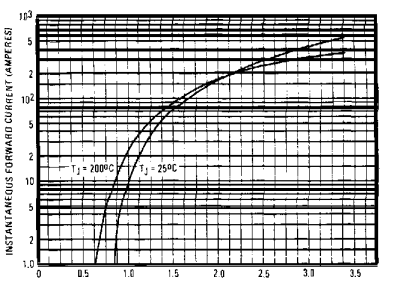


Fig. 4 – Maximum Forward Voltage Vs. Forward Current

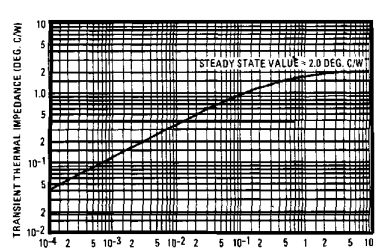


Fig. 5 – *Maximum Transient Thermal* Impedance, Junction-to-Case Vs. Pulse Duration

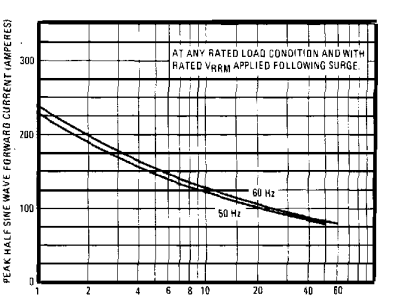


Fig. 6 – Maximum Non-Repetitive 50 Hz Surge Current Vs. Number of Current Pulses