INTERNATIONAL RECTIFIER IOR

1N4044 SERIES

275 Amp Avg
Power Silicon Rectifier Diodes

Major Ratings and Characteristics

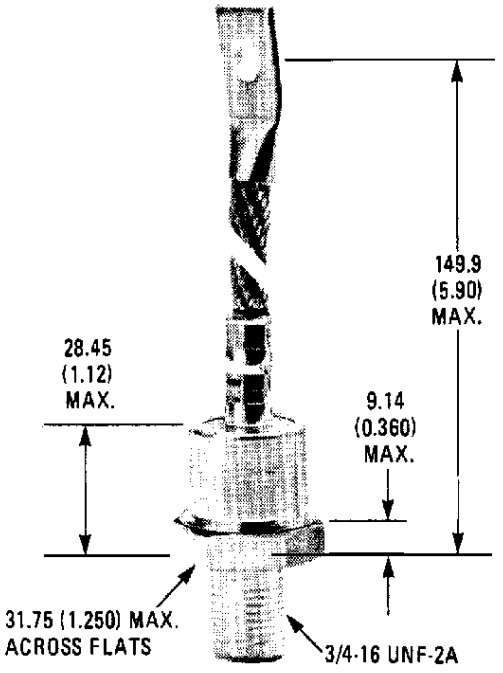
			1N4044	Units
$I_{F(AV)}$			275*	A
@ T_C			120	°C
I_{FSM}	@	50 Hz	4800	A
	@	60 Hz	5000*	
I^2t	@	50 Hz	115 000	A^2s
	@	60 Hz	105 000	
$I^2\sqrt{t}$			1,600,000	$A^2\sqrt{s}$
V_{RRM} Range			50-1000	V

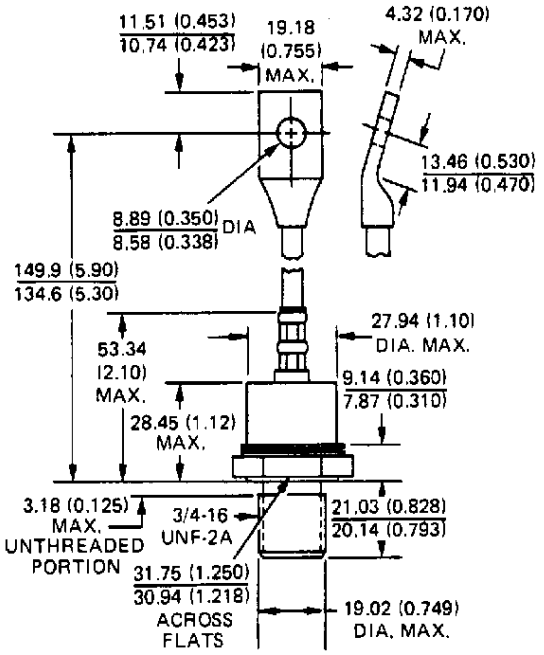
*JEDEC registered values

Description and Features

- Peak reverse voltage up to 1000V
- Popular series for rough service
- For many AC-to-DC circuit applications

CASE STYLE AND DIMENSIONS





Conforms to JEDEC
Outline DO-205AB (DO-9) (B13)
All Dimensions in (Millimeters) and (Inches)

VOLTAGE RATINGS

① Part Number	V_{RRM} – Max. Repetitive Peak Reverse Voltage (V)	V_{RSM} – Max. Non-repetitive Peak Reverse Voltage (V)	V_R – Max. Direct Reverse Voltage (V)	$I_{R(AV)}$ – Max. Average Reverse Current @ Max. Rated $I_{F(AV)}$ and V_{RRM}, T_C = 120°C (1 Phase Operation) (mA)
DO-205AB (DO-9) (B-13)	T_C = –65 to 190°C	T_C = 25 to 190°C	T_C = –65 to 190°C	
1N4044	50*	100*	50*	15*
1N4045	100*	200*	100*	15*
1N4046	150*	250*	150*	15*
1N4047	200*	300*	200*	15*
1N4048	250*	350*	250*	15*
1N4049	300*	400*	300*	15*
1N4050	400*	525*	400*	15*
1N4051	500*	650*	500*	15*
1N4052	600*	800*	600*	15*
1N4053	700*	925*	700*	15*
1N4054	800*	1050*	800*	15*
1N4055	900*	1175*	900*	15*
1N4056	1000*	1300*	1000*	15*

ELECTRICAL SPECIFICATIONS

		1N4044	Units	Conditions
$I_{F(AV)}$	Max. average forward current	275*	A	180° sinusoidal conduction Max. T_C = 120°C
I_{FSM}	Max. peak one-cycle non-repetitive surge current	4800	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse — Following any rated load condition and with rated V_{RRM} applied
		5000*		Half cycle 60 Hz sine wave or 5 ms rectangular pulse
		5700		Half cycle 50 Hz sine wave or 6 ms rectangular pulse — Following any rated load condition and with V_{RRM} applied following surge = 0
		5950		Half cycle 60 Hz sine wave or 5 ms rectangular pulse
I^2t	Max. I^2t for fusing	115,000	A^2s	t = 10 ms — With rated V_{RRM} applied following surge, initial T_J
		105,000		t = 8.3 ms
	Max. I^2t for individual device fusing	160,000		t = 10 ms — With V_{RRM} = 0 following surge, initial T_J
		145,000		t = 8.3 ms
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual device fusing ②	1,600,000	$A^2\sqrt{s}$	t = 0.1 to 10 ms, V_{RRM} = 0 following surge
V_{FM}	Max. peak forward voltage	1.35*	V	$I_{F(AV)}$ = 275A (864A peak), T_C = 180°C

THERMAL-MECHANICAL SPECIFICATIONS

T_C	Max. operating case temperature range	–65 to 190*	°C	
T_{stg}	Max. storage temperature range	–65 to 190	°C	
R_{thJC}	Max. internal thermal resistance, junction-to-case	0.18	deg C/W	DC operation
R_{thCS}	Thermal resistance, case-to-sink	0.08	deg C/W	Mounting surface flat, smooth, and greased.
T	Mounting torque	31.1–36.7 (275–325)	Nm (lbf-in)	
wt	Approximate weight	213 (7.5)	g (oz)	
	Case style	DO-205AB (DO-9)		JEDEC

*JEDEC registered values.

① Basic number indicates cathode-to-case. For anode-to-case add "R" to part number, e.g. 1N4045R.

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

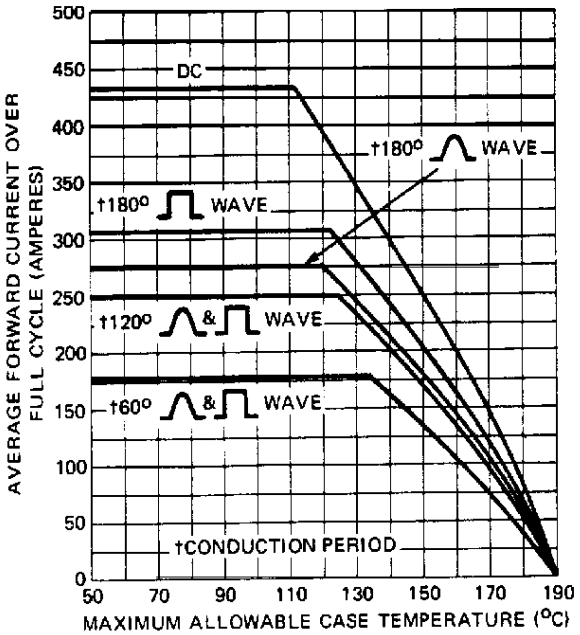


Fig. 1 – Average Forward Current Vs. Maximum Allowable Case Temperature

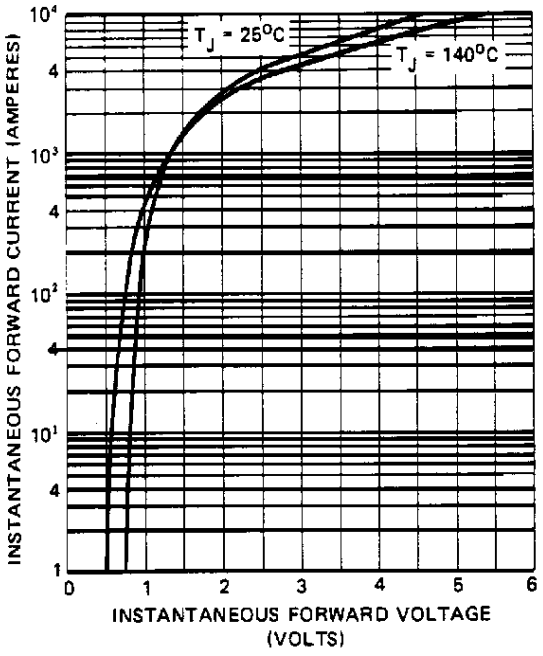


Fig. 2 – Maximum Forward Voltage Vs. Forward Current

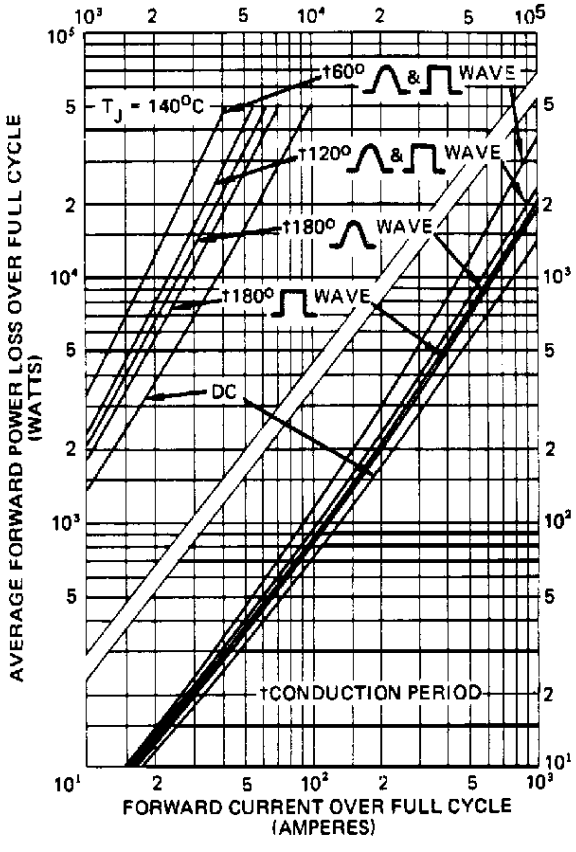


Fig. 3 – Maximum Forward Power Loss Vs. Average Forward Current

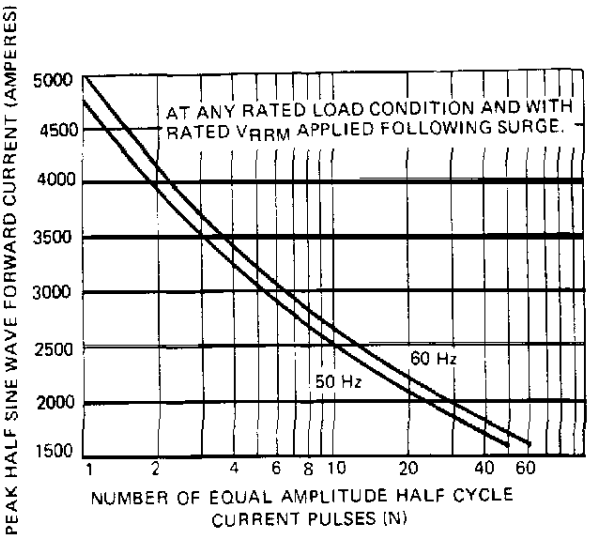


Fig. 4 – Maximum Non-Repetitive Surge Current
Vs. Number of Current Pulses

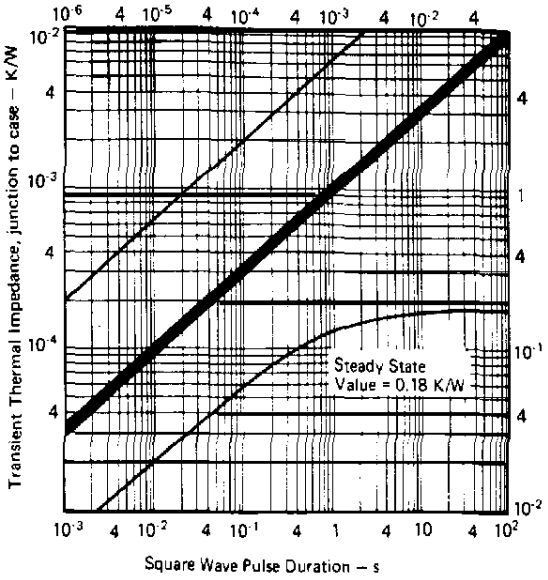


Fig. 5 – Maximum Transient Thermal Impedance,
Junction-to-Case Vs. Pulse Duration