

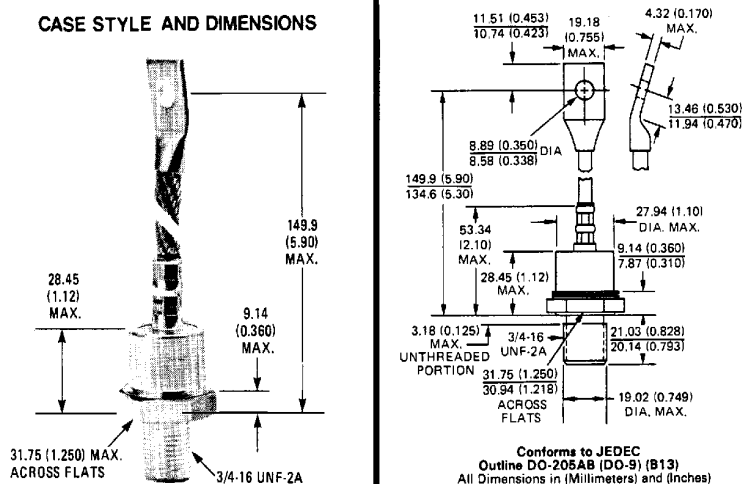
INTERNATIONAL RECTIFIER **1N4044 SERIES****275 Amp Avg  
Power Silicon Rectifier Diodes****Major Ratings and Characteristics**

	1N4044	Units
$I_{FAV}$	275*	A
@ $T_C$	120	$^{\circ}$ C
$I_{FSM}$	@ 50 Hz	4800
	@ 60 Hz	5000*
t <sub>rr</sub>	@ 50 Hz	115 000
	@ 60 Hz	105 000
$I_{TAV}^2$	1,600,000	A <sup>2</sup> /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**

## 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 Current & Max. Rated $I_{F(AV)}$ and $V_{RRM}$ . $T_C = 120^\circ\text{C}$ (1 Phase Operation) (mA)
DO-205AB (DO-9) (B-13)	$T_C = -65$ to $190^\circ\text{C}$	$T_C = 25$ to $190^\circ\text{C}$	$T_C = -65$ to $190^\circ\text{C}$	
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. $T_C = 120^\circ\text{C}$
$I_{FSM}$	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
		5950		Half cycle 60 Hz sine wave or 5 ms rectangular pulse applied following surge = 0
$I^2t$	Max. $I^2t$ for fusing	115,000	A <sup>2</sup> s	$t = 10$ ms With rated $V_{RRM}$ applied following surge, initial $T_J$
		105,000		$t = 8.3$ ms
		160,000		$t = 10$ ms With $V_{RRM} = 0$ following surge, initial $T_J$
		145,000		$t = 8.3$ ms
$I^2t_{10}$	Max. $I^2t_{10}$ for individual device fusing ①	1,600,000	A <sup>2</sup> s	$t = 0.1$ to $10$ ms, $V_{RRM} = 0$ following surge
$V_{FM}$	Max. peak forward voltage	1.35*	V	$I_{F(AV)} = 275\text{A}$ (864A peak), $T_C = 180^\circ\text{C}$

## THERMAL-MECHANICAL SPECIFICATIONS

$T_C$	Max. operating case temperature range	$-65$ to $190^\circ$	$^\circ\text{C}$	
$T_{stg}$	Max. storage temperature range	$-65$ to $190$	$^\circ\text{C}$	
$R_{thJC}$	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)	
wr	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  $t_x = I^2 \sqrt{t} \cdot \sqrt{t_x}$

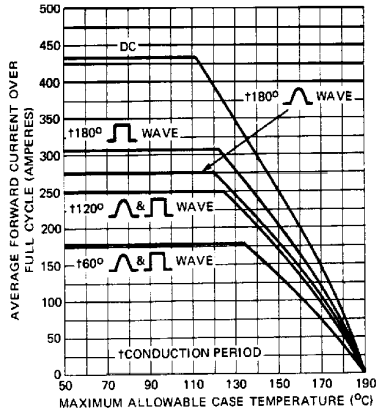


Fig. 1 - Average Forward Current Vs. Maximum Allowable Case Temperature

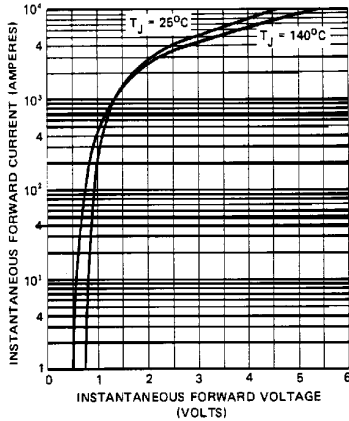


Fig. 2 - Maximum Forward Voltage Vs. Forward Current

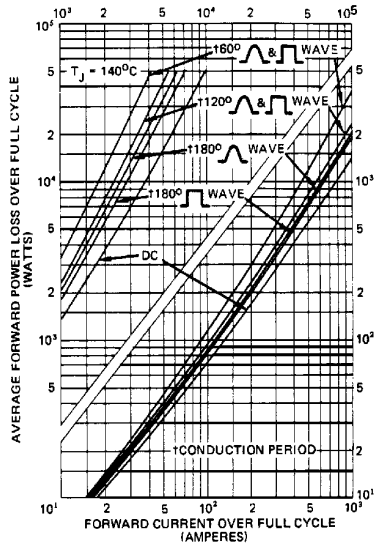


Fig. 3 - Maximum Forward Power Loss Vs. Average Forward Current

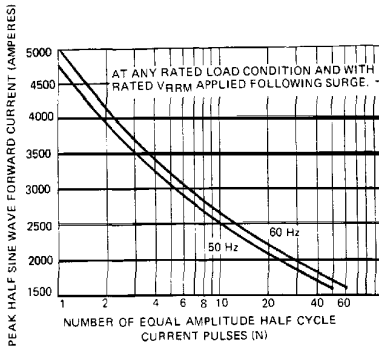


Fig. 4 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses

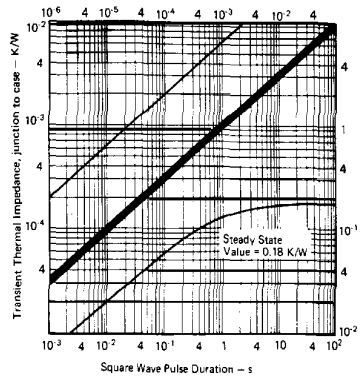


Fig. 5 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

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