

INTERNATIONAL RECTIFIER 

# 1N4044 SERIES

## 275 Amp Avg Power Silicon Rectifier Diodes

### Major Ratings and Characteristics

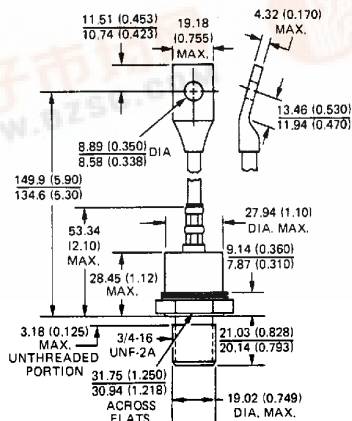
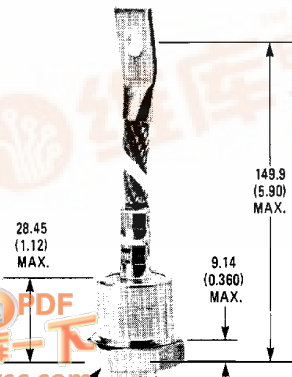
	1N4044	Units
$I_{F(AV)}$	275*	A
@ $T_C$	120	°C
$I_{FSM}$	@ 50 Hz	4800
	@ 60 Hz	5000*
$I_{T}$	@ 50 Hz	115,000
	@ 60 Hz	105,000
$I_{T}^2 t$	1,600,000	A <sup>2</sup> /s
$V_{RRM}$ Range	50-1000	V

\*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



Conforms to JEDEC  
Outline DO-205AB (DO-9) (813)



## VOLTAGE RATINGS

Part Number <sup>(1)</sup>	$V_{RRM}$ – Max. Repetitive Peak Reverse Voltage (V)	$V_{RSM}$ – Max. Non-repetitive Peak Reverse Voltage (V)	$V_p$ – Max. Direct Reverse Voltage (V)	$I_{R(AV)}$ – Max. Average Reverse 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 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 <sup>2</sup> s	$t = 10$ 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
$I^2t$	Max. $I^2t$ for individual device fusing <sup>(1)</sup>	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*	$^\circ\text{C}$	
$T_{stg}$	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)	
wt	Approximate weight	213 (7.5)	g (oz)	
		DO-205AB (DO-9)		JEDEC



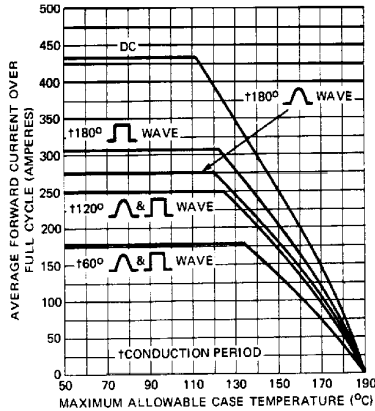


Fig. 1 – Average Forward Current Vs. Maximum Allowable Case Temperature

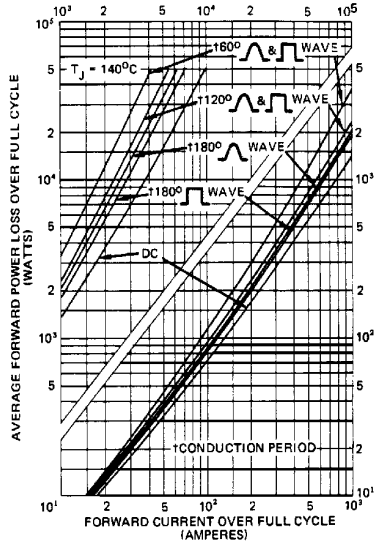
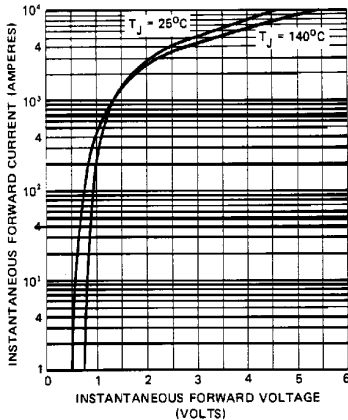


Fig. 3 – Maximum Forward Power Loss Vs. Average Forward Current



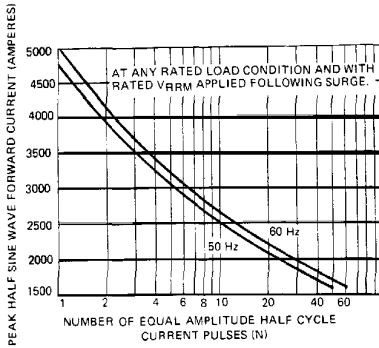


Fig. 4 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses

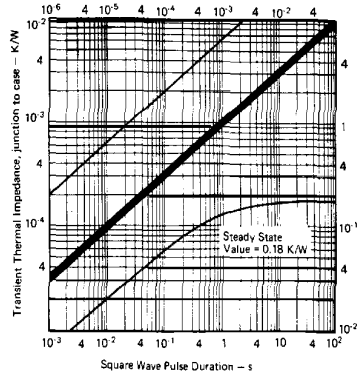


Fig. 5 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration

