

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N3903  
2N3904

NPN SILICON TRANSISTOR

JEDEC TO-92 CASE



## DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N3903, 2N3904 types are molded epoxy Silicon NPN Transistors designed for general purpose amplifier and switching applications. The PNP complementary types are 2N3905, 2N3906.

## MAXIMUM RATINGS (T<sub>A</sub>=25°C)

	SYMBOL		UNIT
Collector-Base Voltage	V <sub>CB0</sub>	60	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	6.0	V
Collector Current	I <sub>C</sub>	200	mA
Power Dissipation	P <sub>D</sub>	625	mW
Operating & Storage Junction Temperature	T <sub>J</sub> , T <sub>stg</sub>	-55 TO +150	°C
Thermal Resistance	θ <sub>JA</sub>	0.357	°C/mW

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

SYMBOL	TEST CONDITIONS	2N3903		2N3904		UNIT
		MIN	MAX	MIN	MAX	
I <sub>CEV</sub>	V <sub>CE</sub> =30V, V <sub>BE</sub> (off)=3.0V		50		50	nA
BV <sub>CB0</sub>	I <sub>C</sub> =10μA	60		60		V
BV <sub>CEO</sub>	I <sub>C</sub> =1.0mA	40		40		V
BV <sub>EBO</sub>	I <sub>E</sub> =10μA	6.0		6.0		V
V <sub>CE</sub> (SAT)	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA		0.2		0.2	V
V <sub>CE</sub> (SAT)	I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA		0.3		0.3	V
V <sub>BE</sub> (SAT)	I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA	0.65	0.85	0.65	0.85	V
V <sub>BE</sub> (SAT)	I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA		0.95		0.95	V
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =0.1mA	20		40		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =1.0mA	35		70		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =10mA	50	150	100	300	
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =50mA	30		60		
h <sub>FE</sub>	V <sub>CE</sub> =1.0V, I <sub>C</sub> =100mA	15		30		
h <sub>fe</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =1.0mA, f=1.0kHz	50	200	100	400	
f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz	250		300		MHz
C <sub>ob</sub>	V <sub>CB</sub> =5.0V, f=100kHz		4.0		4.0	pF
C <sub>ib</sub>	V <sub>BE</sub> =0.5V, f=100kHz		8.0		8.0	pF
NF	V <sub>CE</sub> =5.0V, I <sub>C</sub> =100μA, R <sub>S</sub> =1.0KΩ f=10Hz TO 15.7kHz		6.0		5.0	dB
t <sub>off</sub>	V <sub>CC</sub> =3.0V, I <sub>C</sub> =10mA, I <sub>B1</sub> =I <sub>B2</sub> =1.0mA		225		250	ns
t <sub>on</sub>	V <sub>CC</sub> =3.0V, V <sub>BE</sub> (OFF)=0.5V, I <sub>C</sub> =10mA I <sub>B1</sub> =1.0mA		70		70	ns