2N3903
2N3904

NPN SILICON TRANSISTOR

TO-92 CASE

Central Semiconductor Corp.

www.centralsemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N3903 and 2N3904 types are NPN silicon transistors designed for general purpose amplifier and switching applications. PNP complementary types are 2N3905 and 2N3906.

MARKING: FULL PART NUMBER

MAXIMUM RATINGS: (T_A=25°C)	**SYMBOL**		**UNITS**
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Continuous Collector Current	I_C	200	mA
Power Dissipation	P_D	625	mW
Operating and Storage Junction Temperature	T_J, T_{stg}	-65 to +150	°C
Thermal Resistance	Θ_{JA}	200	°C/W

ELECTRICAL CHARACTERISTICS: (T_A=25°C)

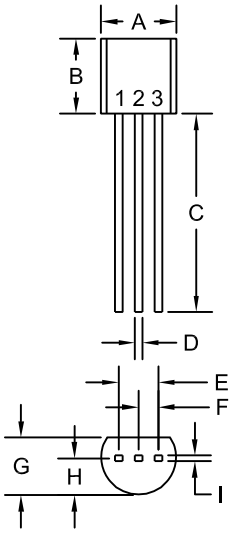
		2N3903		2N3904		
SYMBOL	**TEST CONDITIONS**	**MIN**	**MAX**	**MIN**	**MAX**	**UNITS**
I_{CEV}	V_{CE}=30V, V_{EB}=3.0V	-	50	-	50	nA
BV_{CBO}	I_C=10μA	60	-	60	-	V
BV_{CEO}	I_C=1.0mA	40	-	40	-	V
BV_{EBO}	I_E=10μA	6.0	-	6.0	-	V
$V_{CE(SAT)}$	I_C=10mA, I_B=1.0mA	-	0.2	-	0.2	V
$V_{CE(SAT)}$	I_C=50mA, I_B=5.0mA	-	0.3	-	0.3	V
$V_{BE(SAT)}$	I_C=10mA, I_B=1.0mA	0.65	0.85	0.65	0.85	V
$V_{BE(SAT)}$	I_C=50mA, I_B=5.0mA	-	0.95	-	0.95	V
h_{FE}	V_{CE}=1.0V, I_C=0.1mA	20	-	40	-	
h_{FE}	V_{CE}=1.0V, I_C=1.0mA	35	-	70	-	
h_{FE}	V_{CE}=1.0V, I_C=10mA	50	150	100	300	
h_{FE}	V_{CE}=1.0V, I_C=50mA	30	-	60	-	
h_{FE}	V_{CE}=1.0V, I_C=100mA	15	-	30	-	
h_{fe}	V_{CE}=10V, I_C=1.0mA, f=1.0kHz	50	200	100	400	
f_T	V_{CE}=20V, I_C=10mA, f=100MHz	250	-	300	-	MHz
C_{ob}	V_{CB}=5.0V, I_E=0, f=100kHz	-	4.0	-	4.0	pF
C_{ib}	V_{EB}=0.5V, I_C=0, f=100kHz	-	8.0	-	8.0	pF
NF	V_{CE}=5.0V, I_C=100μA, R_S=1.0kΩ f=10Hz to 15.7kHz	-	6.0	-	5.0	dB
t_{on}	V_{CC}=3.0V, $V_{BE(OFF)}$=0.5V, I_C=10mA I_{B1}=1.0mA	-	70	-	70	ns
t_{off}	V_{CC}=3.0V, I_C=10mA, I_{B1}=I_{B2}=1.0mA	-	225	-	250	ns

R2 (12-October 2011)

2N3903
2N3904

NPN SILICON TRANSISTOR

TO-92 CASE - MECHANICAL OUTLINE



R1

DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A (DIA)	0.175	0.205	4.45	5.21
B	0.170	0.210	4.32	5.33
C	0.500	-	12.70	-
D	0.016	0.022	0.41	0.56
E	0.100		2.54	
F	0.050		1.27	
G	0.125	0.165	3.18	4.19
H	0.080	0.105	2.03	2.67
I	0.015		0.38	

TO-92 (REV: R1)

LEAD CODE:
1) Emitter
2) Base
3) Collector

MARKING:
FULL PART NUMBER