

2N3903
2N3904

SILICON
NPN TRANSISTORS



TO-92 CASE



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DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N3903 and 2N3904 devices are silicon NPN 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)

Collector-Base Voltage
Collector-Emitter Voltage
Emitter-Base Voltage
Continuous Collector Current
Power Dissipation
Operating and Storage Junction Temperature
Thermal Resistance

SYMBOL		UNITS
V _{CBO}	60	V
V _{CEO}	40	V
V _{EBO}	6.0	V
I _C	200	mA
P _D	625	mW
T _J , T _{stg}	-65 to +150	°C
θ _{JA}	200	°C/W

ELECTRICAL CHARACTERISTICS: (T_A=25°C)

SYMBOL	TEST CONDITIONS	2N3903		2N3904		UNITS
		MIN	MAX	MIN	MAX	
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	200	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

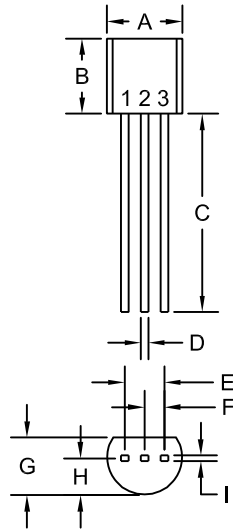
R3 (7-May 2021)

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TO-92 CASE - MECHANICAL OUTLINE



R1

SYMBOL	INCHES		MILLIMETERS	
	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

R3 (7-May 2021)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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