

2N3903 / 2N3904

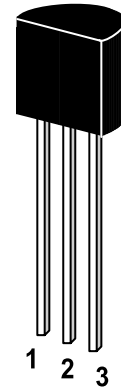


NPN Silicon Epitaxial Planar Transistor

for switching and amplifier applications.

As complementary types the PNP transistors 2N3905 and 2N3906 are recommended.

On special request, these transistors can be manufactured in different pin configurations.



1. Emitter 2. Base 3. Collector
TO-92 Plastic Package
Weight approx. 0.19g

Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	40	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Power Dissipation	P_{tot}	625	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_s	- 55 to + 150	$^\circ\text{C}$

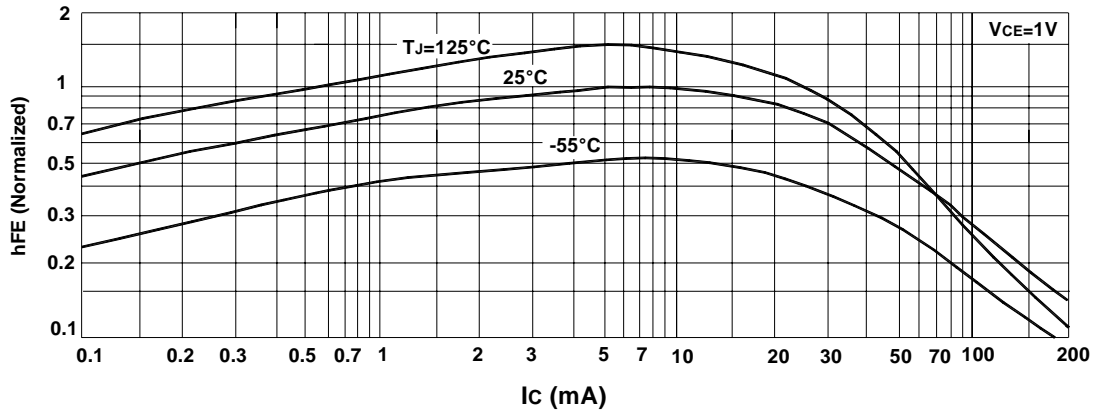


Characteristics at $T_a = 25\text{ }^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $V_{CE} = 1\text{ V}$, $I_C = 0.1\text{ mA}$	2N3903 h_{FE}	20	-	-
	2N3904 h_{FE}	40	-	-
at $V_{CE} = 1\text{ V}$, $I_C = 1\text{ mA}$	2N3903 h_{FE}	35	-	-
	2N3904 h_{FE}	70	-	-
at $V_{CE} = 1\text{ V}$, $I_C = 10\text{ mA}$	2N3903 h_{FE}	50	150	-
	2N3904 h_{FE}	100	300	-
at $V_{CE} = 1\text{ V}$, $I_C = 50\text{ mA}$	2N3903 h_{FE}	30	-	-
	2N3904 h_{FE}	60	-	-
at $V_{CE} = 1\text{ V}$, $I_C = 100\text{ mA}$	2N3903 h_{FE}	15	-	-
	2N3904 h_{FE}	30	-	-
Collector Cutoff Current at $V_{CB} = 30\text{ V}$	I_{CBO}	-	50	nA
Emitter Cutoff Current at $V_{EB} = 6\text{ V}$	I_{EBO}	-	50	nA
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 1\text{ mA}$	V_{CEsat}	-	0.2	V
at $I_C = 50\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat}	-	0.3	V
Base Emitter Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 1\text{ mA}$	V_{BEsat}	-	0.85	V
at $I_C = 50\text{ mA}$, $I_B = 5\text{ mA}$	V_{BEsat}	-	0.95	V
Gain Bandwidth Product at $V_{CE} = 20\text{ V}$, $I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	2N3903 f_T	250	-	MHz
	2N3904 f_T	300	-	MHz
Collector Base Capacitance at $V_{CB} = 5\text{ V}$, $f = 100\text{ KHz}$	C_{cb}	-	4	pF
Emitter Base Capacitance at $V_{EB} = 0.5\text{ V}$, $f = 100\text{ KHz}$	C_{eb}	-	8	pF
Thermal Resistance Junction to Ambient	R_{thA}	-	250 ¹⁾	K/W
¹⁾ Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case				



DC Current Gain



Collector Saturation Region

