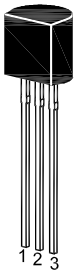
2N3905 / 2N3906

PNP Silicon Epitaxial Planar Transistor

for switching and amplifier applications.

As complementary types the NPN transistors 2N3903 and 2N3904 are recommended.

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



1. Emitter 2. Base 3. Collector
TO-92 Plastic Package

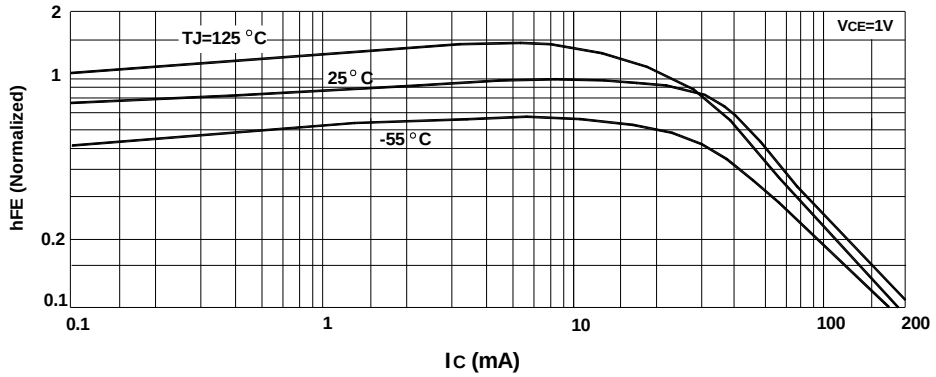
Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	40	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	°C
Storage Temperature Range	T_{stg}	- 55 to + 150	°C

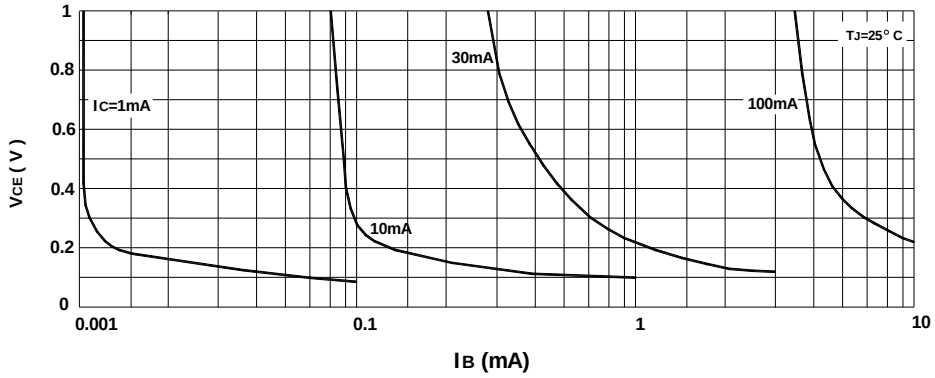
Characteristics at T_a = 25 °C

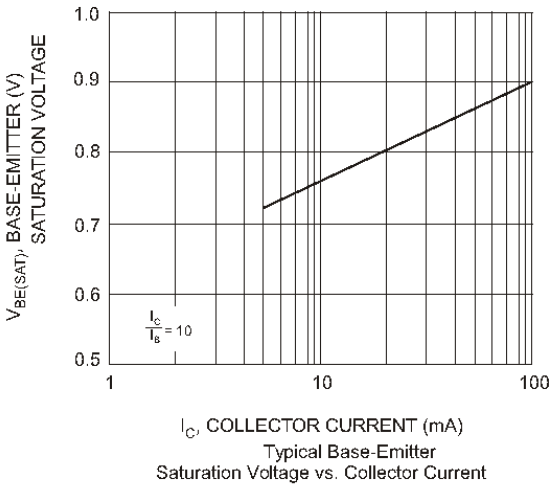
Parameter		Symbol	Min.	Max.	Unit
DC Current Gain					
at $-V_{CE}$ = 1 V, $-I_C$ = 0.1 mA	2N3905	h_{FE}	30	-	-
	2N3906	h_{FE}	60	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 1 mA	2N3905	h_{FE}	40	-	-
	2N3906	h_{FE}	80	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 10 mA	2N3905	h_{FE}	50	150	-
	2N3906	h_{FE}	100	300	-
at $-V_{CE}$ = 1 V, $-I_C$ = 50 mA	2N3905	h_{FE}	30	-	-
	2N3906	h_{FE}	60	-	-
at $-V_{CE}$ = 1 V, $-I_C$ = 100 mA	2N3905	h_{FE}	15	-	-
	2N3906	h_{FE}	30	-	-
Collector Base Cutoff Current at $-V_{CB}$ = 30 V		$-I_{CBO}$	-	50	nA
Emitter Base Cutoff Current at $-V_{EB}$ = 6 V		$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage at $-I_C$ = 10 µA		$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA		$-V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $-I_E$ = 10 µA		$-V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage					
at $-I_C$ = 10 mA, $-I_B$ = 1 mA		$-V_{CE(sat)}$	-	0.25	V
at $-I_C$ = 50 mA, $-I_B$ = 5 mA		$-V_{CE(sat)}$	-	0.4	
Base Emitter Saturation Voltage					
at $-I_C$ = 10 mA, $-I_B$ = 1 mA		$-V_{BE(sat)}$	-	0.85	V
at $-I_C$ = 50 mA, $-I_B$ = 5 mA		$-V_{BE(sat)}$	-	0.95	
Gain Bandwidth Product					
at $-V_{CE}$ = 20 V, $-I_C$ = 10 mA, f = 100 MHz	2N3905	f_T	200	-	MHz
	2N3906		250	-	
Collector Base Capacitance at $-V_{CB}$ = 5 V, f = 100 KHz		C_{ob}	-	4.5	pF
Delay Time at $-V_{CC}$ = 3 V, $-V_{BE}$ = 0.5 V, $-I_C$ = 10 mA, $-I_{B1}$ = 1 mA		t_d	-	35	ns
Rise Time at $-V_{CC}$ = 3 V, $-V_{BE}$ = 0.5 V, $-I_C$ = 10 mA, $-I_{B1}$ = 1 mA		t_r	-	35	ns
Storage Time at $-V_{CC}$ = 3 V, $-I_C$ = 10 mA, $-I_{B1}$ = I_{B2} = 1 mA		t_s	-	225	ns
Fall Time at $-V_{CC}$ = 3 V, $-I_C$ = 10 mA, $-I_{B1}$ = I_{B2} = 1 mA		t_f	-	75	ns

DC Current Gain

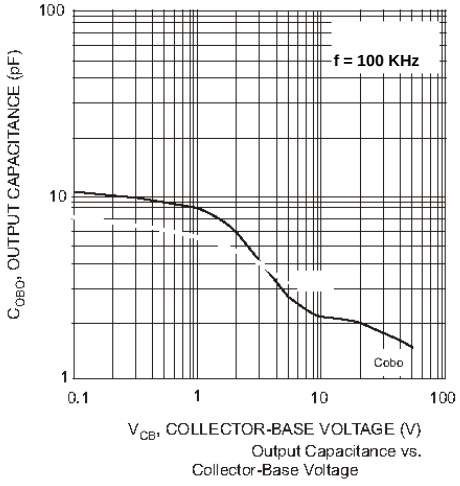


Collector Saturation Region





Typical Base-Emitter
Saturation Voltage vs. Collector Current



Output Capacitance vs.
Collector-Base Voltage