

2N3906-HF (PNP)

RoHS Device
Halogen Free



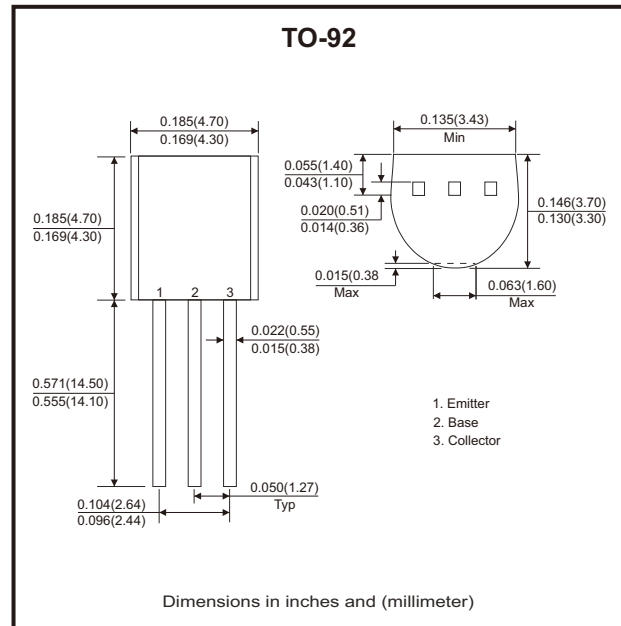
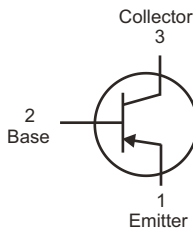
Features

- PNP silicon epitaxial planar transistor for switching and amplifier applications.

Mechanical Data

- Case: TO-92, molded plastic.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	-40	V
Collector-emitter voltage	V_{CEO}	-40	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current-continuous	I_C	-0.2	A
Collector power dissipation	P_C	0.625	W
Operation junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}, I_B = 0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -40\text{V}, I_E = 0$			-0.1	μA
Collector cut-off current	I_{CEX}	$V_{CE} = -30\text{V}, V_{BE(off)} = -3\text{V}$			-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$			-0.1	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	100		400	
	$h_{FE(2)}$	$V_{CE} = -1\text{V}, I_C = -50\text{mA}$	60			
	$h_{FE(3)}$	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-0.95	V
Transition frequency	f_T	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$	250			MHz
Delay time	t_d	$V_{CC} = -3\text{V}, V_{BE} = -0.5\text{V}, I_C = -10\text{mA}, I_{B1} = -1\text{mA}$			35	nS
Rise time	t_r				35	nS
Storage time	t_s	$V_{CC} = -3\text{V}, I_C = -10\text{mA}$			225	nS
Fall time	t_f	$I_{B1} = I_{B2} = -1\text{mA}$			75	nS

Classification of $h_{FE(1)}$

Rank	O	Y	G
Range	100-200	200-300	300-400

Rating and Characteristic Curves (2N3906-HF)

Fig.1 - Static Characteristic

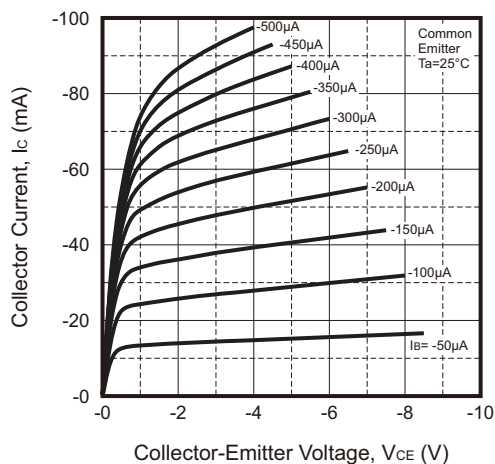
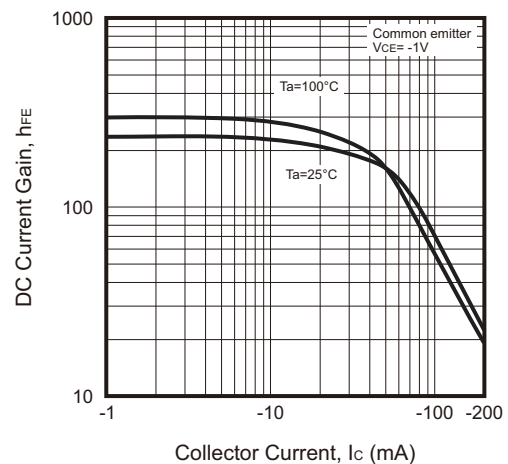


Fig.2 - $h_{FE} - I_C$



Rating and Characteristic Curves (2N3906-HF)

Fig.3 - $V_{CEsat} - I_c$

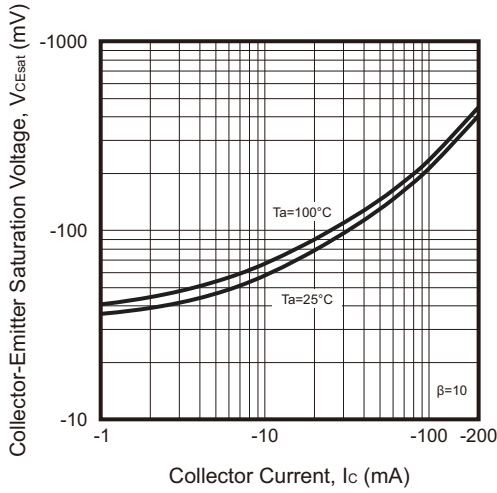


Fig.4 - $V_{BEsat} - I_c$

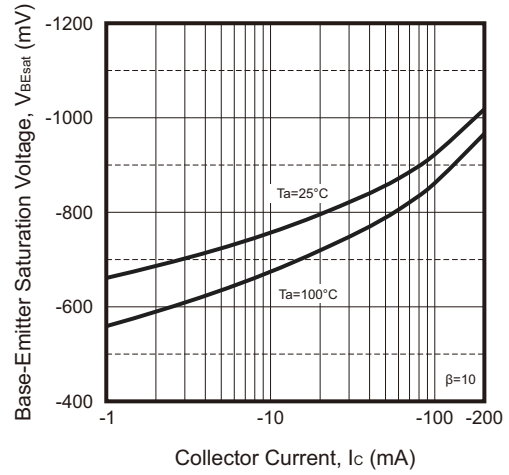


Fig.5 - $I_c - V_{BE}$

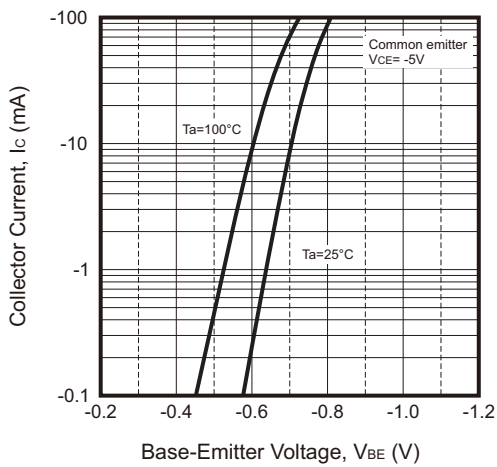


Fig.6 - $C_{ob}/C_{ib} - V_{CB}/V_{EB}$

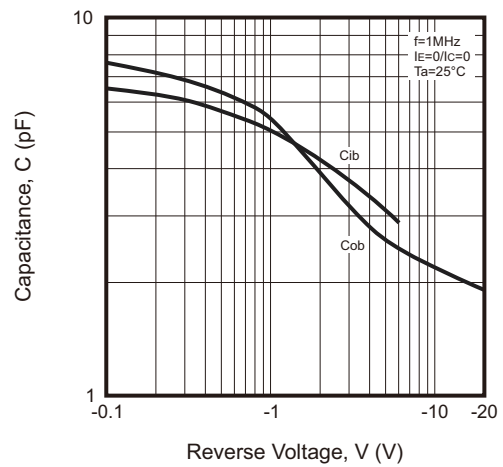


Fig.7 - $f_r - I_c$

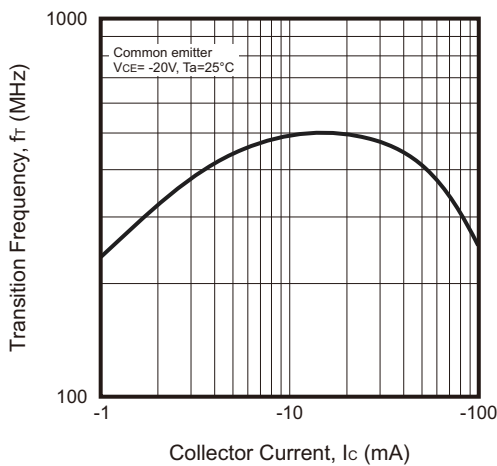
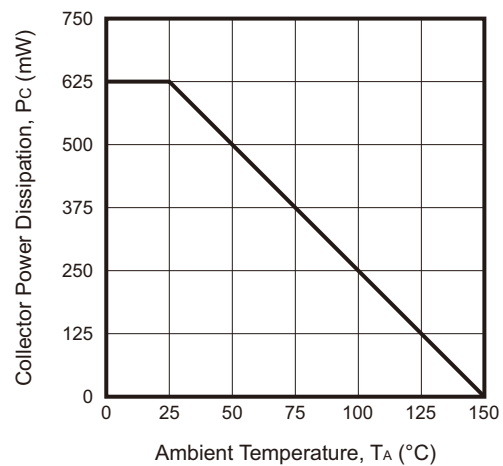
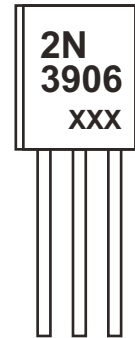


Fig.8 - $P_c - T_a$



Marking Code

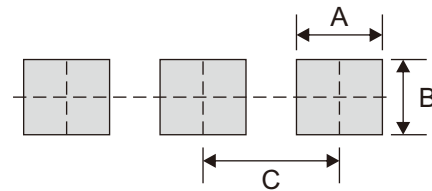
Part Number	Marking Code
2N3906-HF	2N3906



XXX = Control code

Suggested P.C.B. PAD Layout

SIZE	TO-92	
	(mm)	(inch)
A	0.80	0.031
B	0.70	0.028
C	1.27	0.050



Standard Packaging

Case Type	BULK PACK
	BAG (pcs)
TO-92	1,000