

2N3906

Low Power Bipolar Transistors

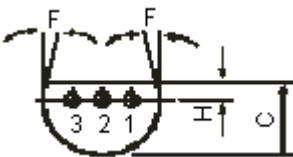
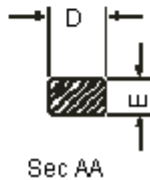
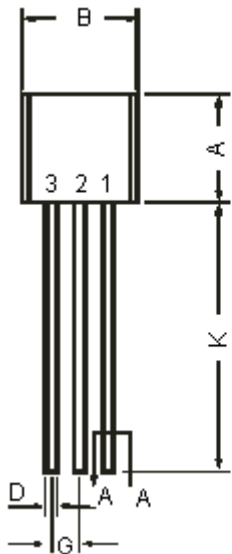


Features:

- PNP Silicon Planar Switching Transistors.
- General Purpose Switching and Amplifier Applications.

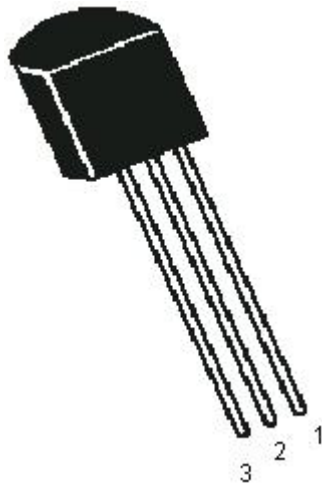


TO-92 Plastic Package



Dimensions	Minimum	Maximum
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5°	
G	1.14	1.40
H		1.53
K	12.70	-

Dimensions : Millimetres



Pin Configuration:

1. Collector
2. Base
3. Emitter



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

Description	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	V
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}		
Collector Current Continuous	I_C	200	mA
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above 25°C	P_D	625	mW
Power Dissipation at $T_c = 25^\circ\text{C}$ Derate above 25°C		5.0	mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	$^\circ\text{C}$
Thermal Resistance			
Junction to Case	$R_{th(j-c)}$	125	$^\circ\text{C/W}$
Junction to Ambient	$R_{th(j-a)}$	200	

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Description	Symbol	Test Condition	T2N3906	Unit
Collector-Emitter Voltage	V_{CEO}	$I_C = 1\text{mA}, I_B = 0$	>40	V
Collector-Base Voltage	V_{CBO}	$I_C = 10\mu\text{A}, I_E = 0$		
Emitter-Base Voltage	V_{EBO}	$I_E = 10\mu\text{A}, I_C = 0$		
Collector-Cut off Current	I_{CEX}	$V_{CE} = 30\text{V}, V_{EB} = 3\text{V}$	<50	nA
Emitter-Cut off Current	I_{BL}	$V_{CE} = 30\text{V}, V_{EB} = 3\text{V}$		
DC Current Gain	h_{FE}^*	$I_C = 0.1\text{mA}, V_{CE} = 1\text{V}$ $I_C = 1\text{mA}, V_{CE} = 1\text{V}$ $I_C = 10\text{mA}, V_{CE} = 1\text{V}$ $I_C = 50\text{mA}, V_{CE} = 1\text{V}$ $I_C = 100\text{mA}, V_{CE} = 1\text{V}$	>60 >80 100 -300 >60 >30	-
Collector Emitter Saturation Voltage	$V_{CE(sat)}^*$	$I_C = 10\text{mA}, I_B = 1\text{mA}$ $I_C = 50\text{mA}, I_B = 5\text{mA}$	<0.25 <0.4	V
Base Emitter Saturation Voltage	$V_{BE(sat)}^*$		0.65 - 0.85 <0.95	

*Pulse Condition : Pulse Width = 300 μs , Duty Cycle = 2%.



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Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Description	Symbol	Test Condition	T2N3906	Unit
Small Signal Characteristics				
Transistors Frequency	f_t	$I_C = 10\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}$	>250	MHz
Output Capacitance	C_{ob}	$V_{CB} = 5\text{V}, I_E = 0, f = 100\text{kHz}$	<4.5	pF
Input Capacitance	C_{ib}	$V_{BE} = 0.5\text{V}, I_C = 0, f = 100\text{kHz}$	<10	
Small Signal Current Gain	h_{fe}	All $f = 1\text{kHz}$ $I_C = 1\text{mA}, V_{CE} = 10\text{V}$	100 - 400	-
Input Impedance	h_{ie}		2.0 - 12	k Ω
Output Admittance	h_{oe}		3.0 - 60	$\mu\Omega$
Voltage Feedback Ratio	h_{re}		0.1 - 10	$\times 10^{-4}$
Noise Figure	NF	$I_C = 100\mu\text{A}, V_{CE} = 5\text{V}$ $R_s = 1\text{k}\Omega$ $f = 10\text{Hz to } 15.7\text{kHz}$	<40	dB
Switching Time				
Delay Time	t_d	$V_{CC} = 3\text{V}, V_{BE} = 0.5\text{V}$	<35	nS
Rise Time	t_r	$I_C = 10\text{mA}, I_{B1} = 1\text{mA}$		
Storage time	t_s	$V_{CC} = 3\text{V}, I_C = 10\text{mA}$	<225	
Fall Time	t_f	$I_{B1} = I_{B2} = 1\text{mA}$	<75	

Part Number Table

Package	Part Number
TO-92	2N3906



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Notes:

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