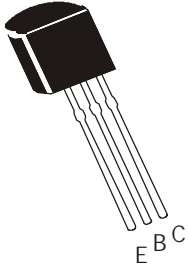


PNP SILICON PLANAR EPITAXIAL SWITCHING TRANSISTORS

2N3905 / 2N3906



TO-92
Plastic Package
For Lead Free Parts, Device
Part # will be Prefixed with
"T"

General Purpose Switching And Amplifier Applications

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Emitter Voltage	V_{CEO}	40	V
Collector Base Voltage	V_{CBO}	40	V
Emitter Base Voltage	V_{EBO}	5.0	V
Collector Current Continuous	I_C	200	mA
Power Dissipation $T_a=25^\circ\text{C}$	P_D	625	mW
Derate Above 25°C		5.0	mW/ $^\circ\text{C}$
Power Dissipation $T_a=60^\circ\text{C}$	P_D	250	mW
Power Dissipation $T_c=25^\circ\text{C}$	P_D	1.5	W
Derate Above 25°C		12	mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

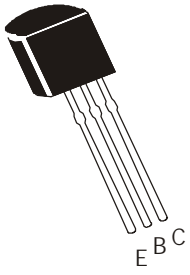
Junction to Case	$R_{th(j-c)}$	83.3	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$	200	$^\circ\text{C/W}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	2N3905	2N3906	UNITS
Collector Emitter Voltage	V_{CEO}	$I_C=1\text{mA}, I_B=0$	>40	>40	V
Collector Base Voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	>40	>40	V
Emitter Base Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	>5.0	>5.0	V
Collector Cut Off Current	I_{CEX}	$V_{CE}=30\text{V}, V_{EB}=3\text{V}$	< 50	< 50	nA
Base Cut Off Current	I_{BL}	$V_{CE}=30\text{V}, V_{EB}=3\text{V}$	< 50	< 50	nA
DC Current Gain	h_{FE}	$I_C=0.1\text{mA}, V_{CE}=1\text{V}$	>30	>60	
		$I_C=1\text{mA}, V_{CE}=1\text{V}$	>40	>80	
		$I_C=10\text{mA}, V_{CE}=1\text{V}$	50-150	100-300	
		$I_C=50\text{mA}, V_{CE}=1\text{V}$	>30	>60	
		$I_C=100\text{mA}, V_{CE}=1\text{V}$	>15	>30	
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	< 0.25	< 0.25	V
		$I_C=50\text{mA}, I_B=5\text{mA}$	< 0.40	< 0.40	V
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	0.65 - 0.85	0.65 - 0.85	V
		$I_C=50\text{mA}, I_B=5\text{mA}$	< 0.95	< 0.95	V

*Pulse Condition: =300ms, Duty Cycle=2%

2N3905_3906Rev_1 071105E

**TO-92****Plastic Package**

For Lead Free Parts, Device
Part # will be Prefixed with
"T"

ELECTRICAL CHARACTERISTICS (T_a=25°C unless specified otherwise)**SMALL SIGNAL CHARACTERISTICS**

DESCRIPTION	SYMBOL	TEST CONDITION	2N3905	2N3906	UNITS
Transistors Frequency	f _T	I _C =10mA, V _{CE} =20V, f=100MHz	>200	>250	MHz
Output Capacitance	C _{ob}	V _{CB} =5V, I _E =0, f=100KHz	< 4.5	<4.5	pF
Input Capacitance	C _{ib}	V _{EB} =0.5V, I _C =0, f=100KHz	<10	<10	pF
		ALL f=1kHz			
Small Signal Current Gain	h _{fe}	I _C =1mA, V _{CE} =10V	50 - 200	100 - 400	
Input Impedence	h _{ie}	I _C =1mA, V _{CE} =10V	0.5 - 8.0	2.0 - 12	kΩ
Out put Adimttance	h _{oe}	I _C =1mA, V _{CE} =10V	1.0 - 40	3.0 - 60	μmhos
Voltage Feedback Ratio	h _{re}	I _C =1mA, V _{CE} =10V	0.1 - 5.0	0.1 - 10	x10 ⁻⁴
Noise Figure	NF	I _C =100μA, V _{CE} =5V, f=10Hz to 15.7 KHz, R _S =1KΩ	< 5.0	< 4.0	dB

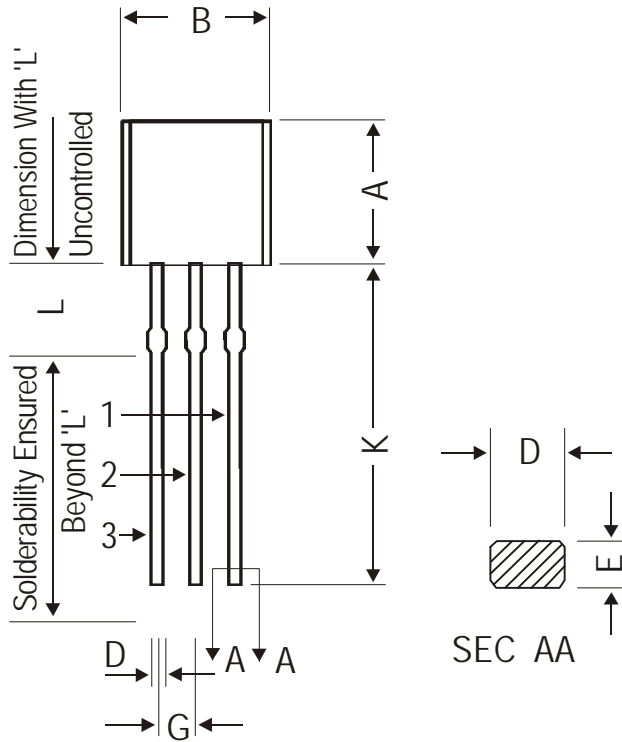
SWITCHING Time

Delay time	t _d	V _{CC} =3V, V _{BE} =0.5V	< 35	< 35	ns
Rise time	t _r	I _C =10mA, I _{B1} =1mA	< 35	< 35	ns
Storage time	t _s	V _{CC} =3V, I _C =10mA	< 200	< 225	ns
Fall time	t _f	I _{B1} =1mA, I _{B2} =1mA	< 60	< 75	ns

2N3905_3906Rev_1 071105E

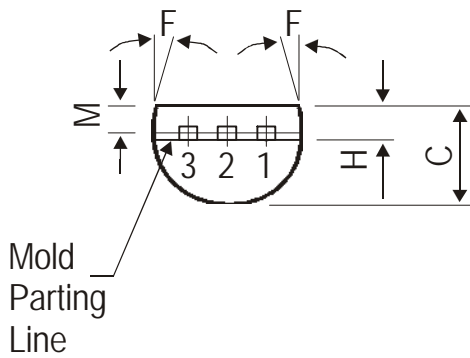
TO-92
Plastic Package
 For Lead Free Parts, Device
 Part # will be Prefixed with
 "T"

TO-92 Plastic Package

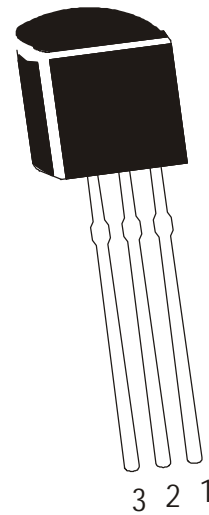


DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.20	1.40
K	12.70	—
L	1.982	2.082
M	1.03	1.20

All dimensions are in mm



PIN CONFIGURATION
 1. COLLECTOR
 2. BASE
 3. EMITTER



The TO-92 Package, Tape and Ammo Pack Drawings are correct as on the date of issue/revision of this Data Sheet.

The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

Packing Details

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

TO-92**Plastic Package**

For Lead Free Parts, Device
Part # will be Prefixed with
"T"

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of
Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119

email@cdil.com www.cdilsemi.com