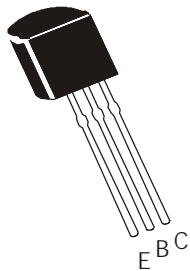


## PNP SILICON PLANAR EPITAXIAL TRANSISTOR

2N5400



TO-92  
Plastic Package

Amplifier Transistor

### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	$V_{CEO}$	120	V
Collector Base Voltage	$V_{CBO}$	130	V
Emitter Base Voltage	$V_{EBO}$	5.0	V
Collector Current Continuous	$I_C$	600	mA
Power Dissipation @ $T_a=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	625 5.0	mW mw/ $^\circ\text{C}$
Power Dissipation @ $T_c=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	1.5 12	W mw/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 55 to +150	$^\circ\text{C}$

### THERMAL RESISTANCE

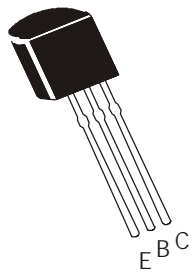
Junction to Case	$R_{th(j-c)}$	83.3	$^\circ\text{C/W}$
Junction to Ambient in free air	$R_{th(j-a)}$	200	$^\circ\text{C/W}$

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Collector Emitter Voltage	$*V_{CEO}$	$I_C=1\text{mA}, I_B=0$	120		V
Collector Base Voltage	$V_{CBO}$	$I_C=100\mu\text{A}, I_E=0$	130		V
Emitter Base Voltage	$V_{EBO}$	$I_E=10\mu\text{A}, I_C=0$	5.0		V
Collector Cut Off Current	$I_{CBO}$	$V_{CB}=100\text{V}, I_E=0$ $V_{CB}=100\text{V}, I_E=0,$ $T_a=100^\circ\text{C}$		100 100	nA $\mu\text{A}$
Emitter Cut Off Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$		50	nA
DC Current Gain	$*h_{FE}$	$I_C=1\text{mA}, V_{CE}=5\text{V}$ $I_C=10\text{mA}, V_{CE}=5\text{V}$ $I_C=50\text{mA}, V_{CE}=5\text{V}$	30 40 40	180	
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$ $I_C=50\text{mA}, I_B=5\text{mA}$		0.2 0.5	V V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$ $I_C=50\text{mA}, I_B=5\text{mA}$		1.0 1.0	V V

\*Pulse Test: Pulse Width=300ms, Duty Cycle=2%

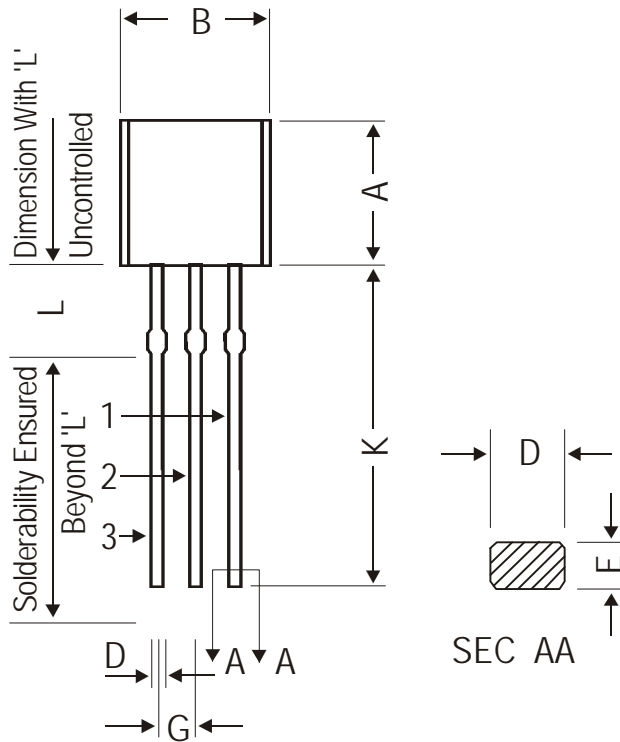
2N5400Rev100104E

**PNP SILICON PLANAR EPITAXIAL TRANSISTOR****2N5400****TO-92  
Plastic Package****ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$  unless specified otherwise)****Dynamic Characteristics**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Small Signal Current Gain	$h_{fe}$	$I_C=1\text{mA}$ , $V_{CE}=10\text{V}$ , $f=1\text{KHZ}$	30	200	
Transition Frequency	$f_T$	$V_{CE}=10\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	100	400	MHz
Output Capacitance	$C_{obo}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		6.0	pF
Noise Figure	NF	$V_{CE}=5\text{V}$ , $I_C=250\mu\text{A}$ , $R=1\text{K}\Omega$ , $f=10\text{Hz}$ to $15.7\text{KHZ}$		8.0	dB

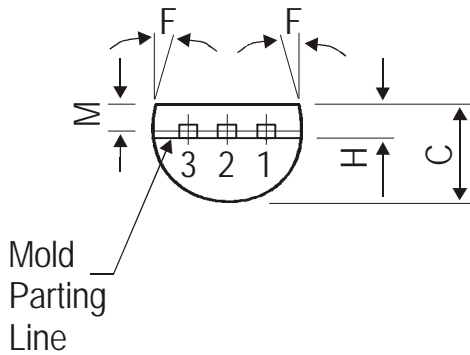
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TO-92 Plastic Package



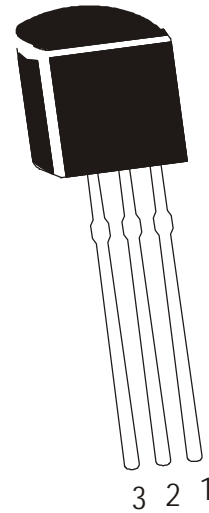
DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.20	1.40
K	12.70	—
L	1.982	2.082
M	1.03	1.20

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.

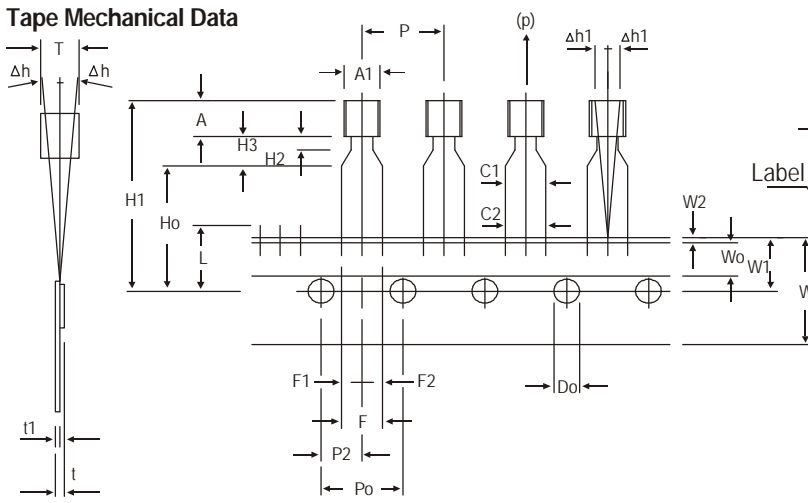
The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

Packing Details

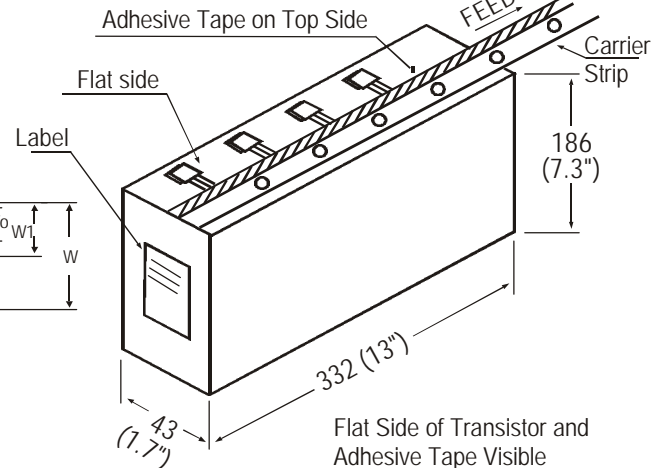
PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

TO-92 Tape and Ammo Pack

Tape Mechanical Data



Ammo Pack Style



Flat Side of Transistor and Adhesive Tape Visible  
2000 pcs./Ammo Pack

All dimensions are in mm

ITEM	SYMBOL	SPECIFICATION			
		MIN.	NOM.	MAX.	TOL.
BODY WIDTH	A1	4.0		4.8	
BODY HEIGHT	A	4.8		5.2	
BODY THICKNESS	T	3.9		4.2	
PITCH OF COMPONENT	P		12.7		± 1.0
*1 FEED HOLE PITCH	Po		12.7		± 0.3
*2 FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		± 0.4
DISTANCE BETWEEN OUTER LEADS	F		5.08		+ 0.6 - 0.2
*3 COMPONENT ALIGNMENT SIDE VIEW	Δh		0	1.0	
*4 COMPONENT ALIGNMENT FRONT VIEW	Δh1		0	1.3	
TAPE WIDTH	W		18		± 0.5
HOLD-DOWN TAPE WIDTH	W0		6		± 0.2
HOLE POSITION	W1		9		+ 0.7 - 0.5
HOLD-DOWN TAPE POSITION	W2		0.5		± 0.2
LEAD WIRE CLINCH HEIGHT	Ho		16		± 0.5
COMPONENT HEIGHT	H1			23.25	
LENGTH OF SNIPPED LEADS	L			11.0	
FEED HOLE DIAMETER	Do		4		± 0.2
*5 TOTAL TAPE THICKNESS	t			1.2	
LEAD - TO - LEAD DISTANCE	F1, F2		2.54		+ 0.4 - 0.1
STAND OFF	H2	0.45		1.45	
CLINCH HEIGHT	H3			3.0	
LEAD PARALLELISM	C1 - C2			0.22	
PULL - OUT FORCE	(p)	6N			

NOTES

- Maximum alignment deviation between leads will not to be greater than 0.2mm.
- Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
- Holddown tape will not exceed beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
- There will be no more than three (3) consecutive missing components in a tape.
- A tape trailer, having at least three feed holes are provided after the last component in a tape.
- Splices should not interfere with the sprocket feed holes.

REMARKS

- \*1 Cumulative pitch error 1.0 mm/20 pitch
- \*2 To be measured at bottom of clinch
- \*3 At top of body
- \*4 At top of body
- \*5 t1 0.3 – 0.6 mm

### **Disclaimer**

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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