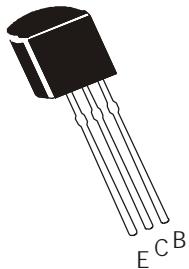


**NPN SILICON PLANAR EPITAXIAL TRANSISTOR**
**CSC945**

**TO-92  
Plastic Package**
**Audio Frequency General Purpose and Driver Stage Amplifier Application**
**Complimentary CSA733**
**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)**

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Base Voltage	V <sub>CBO</sub>	60	V
Collector Emitter Voltage	V <sub>CEO</sub>	50	V
Emitter Base Voltage	V <sub>EBO</sub>	5.0	V
Collector Current Continuous	I <sub>C</sub>	100	mA
Peak	I <sub>CM</sub>	200	mA
Base Current	I <sub>B</sub>	20	mA
Collector Power Dissipation	P <sub>C</sub>	250	mW
Derate Above 25°C		2.5	mW/°C
Operating And Storage Junction Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	- 55 to +125	°C

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless specified otherwise)**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Cut Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =60V, I <sub>E</sub> = 0			0.1	µA
Emitter Cut Off Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> = 0			0.1	µA
Collector Emitter Voltage	V <sub>CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> = 0	50			V
Collector Base Voltage	V <sub>CBO</sub>	I <sub>C</sub> =0.1mA, I <sub>E</sub> = 0	60			V
Emitter Base Voltage	V <sub>EBO</sub>	I <sub>E</sub> =10µA, I <sub>C</sub> = 0	5.0			V
DC Current Gain	h <sub>FE</sub>	*I <sub>C</sub> =0.1mA, V <sub>CE</sub> =6V **I <sub>C</sub> =1mA, V <sub>CE</sub> =6V	50 90		600	
Collector Emitter Saturation Voltage	*V <sub>CE (sat)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA			0.3	V
Base Emitter Saturation Voltage	*V <sub>BE (sat)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA			1.0	V
Base Emitter On Voltage	V <sub>BE (on)</sub>	I <sub>C</sub> =1mA, V <sub>CE</sub> =6V	0.55		0.65	V

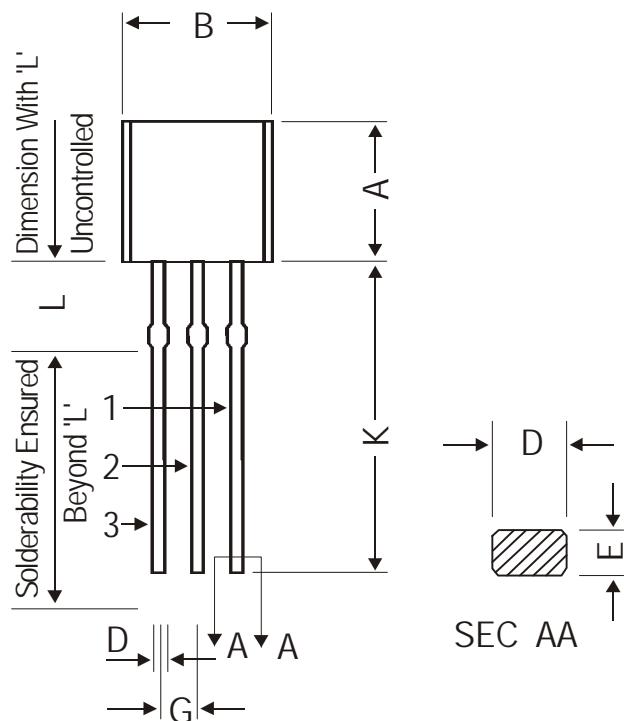
**DYNAMIC CHARACTERISTICS**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Output Capacitance	C <sub>ob</sub>	I <sub>E</sub> =0, V <sub>CB</sub> =6V, f=1MHz			4.0	pF
Transition Frequency	f <sub>T</sub>	I <sub>C</sub> =10mA, V <sub>CE</sub> =6V,	150		450	MHz
Noise Figure	NF	V <sub>CE</sub> =6V, I <sub>C</sub> =0.1mA, R <sub>g</sub> =2KΩ, f=1KHz			15	dB

**\*Pulse Test: Pulse Width < 350ms, Duty Cycle ≤ 2%**

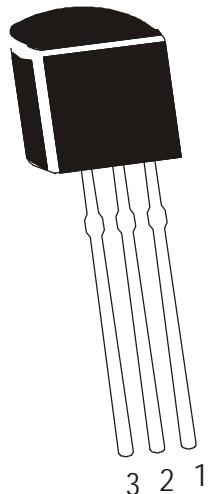
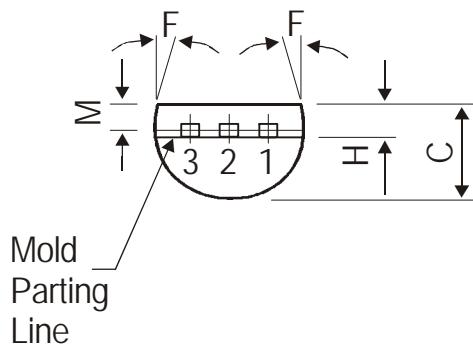
**h <sub>FE</sub> Classification	R : 90 - 180, Q : 135 - 270, P/G : 200 - 400, K : 300 - 600
----------------------------------	---

## 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. BASE
2. COLLECTOR
3. EMITTER

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

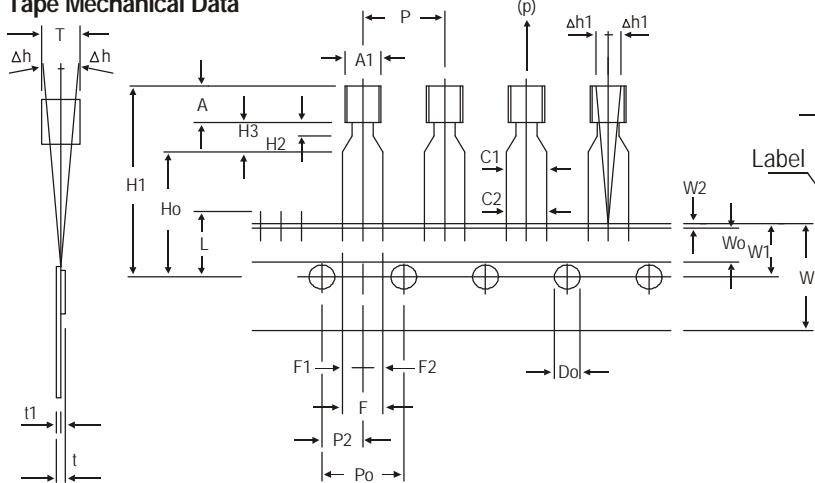
The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

## Packing Details

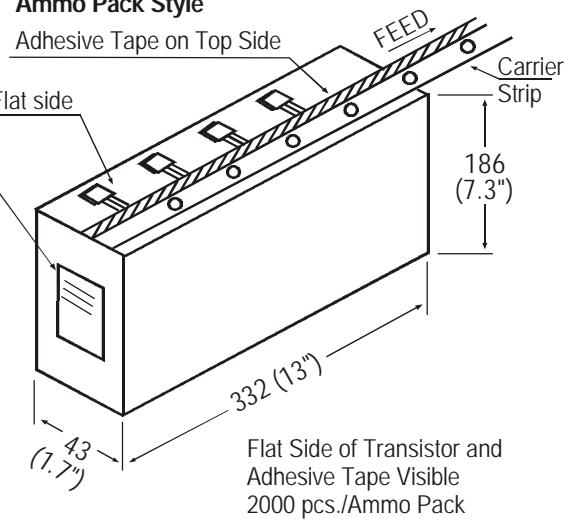
PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

## TO-92 Tape and Ammo Pack

## Tape Mechanical Data



## Ammo Pack Style



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		$\pm 1.0$
* <sup>1</sup> FEED HOLE PITCH	P <sub>0</sub>		12.7		$\pm 0.3$
* <sup>2</sup> FEED HOLE CENTRE TO COMPONENT CENTRE	P <sub>2</sub>		6.35		$\pm 0.4$
DISTANCE BETWEEN OUTER LEADS	F		5.08		$+0.6$ $-0.2$
* <sup>3</sup> COMPONENT ALIGNMENT SIDE VIEW	$\Delta h$	0	1.0		
* <sup>4</sup> COMPONENT ALIGNMENT FRONT VIEW	$\Delta h_1$	0	1.3		
TAPE WIDTH	W	18			$\pm 0.5$
HOLD-DOWN TAPE WIDTH	W <sub>0</sub>	6			$\pm 0.2$
HOLE POSITION	W <sub>1</sub>	9			$+0.7$ $-0.5$
HOLD-DOWN TAPE POSITION	W <sub>2</sub>	0.5			$\pm 0.2$
LEAD WIRE CLINCH HEIGHT	H <sub>0</sub>	16		23.25	$\pm 0.5$
COMPONENT HEIGHT	H <sub>1</sub>			11.0	
LENGTH OF SNIPPED LEADS	L				
FEED HOLE DIAMETER	D <sub>o</sub>	4			$\pm 0.2$
* <sup>5</sup> TOTAL TAPE THICKNESS	t		1.2		
LEAD - TO - LEAD DISTANCE	F <sub>1</sub> , F <sub>2</sub>	2.54			$+0.4$ $-0.1$
STAND OFF	O	0.45		1.45	
CLINCH HEIGHT	H <sub>2</sub>			3.0	
LEAD PARALLELISM	H <sub>3</sub>			0.22	
PULL - OUT FORCE	C <sub>1</sub> - C <sub>2</sub>   (p)	6N			

## NOTES

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

## REMARKS

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

### Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete 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