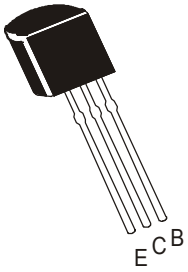
Continental Device India Limited

An ISO/TS16949 and ISO 9001 Certified Company

# PNP SILICON PLANAR EPITAXIAL TRANSISTOR

**CSA950**




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

## Complementary CSC2120

## Audio Power Amplifier Application.

### ABSOLUTE MAXIMUM RATINGS (Ta=25ºC unless specified otherwise)

| DESCRIPTION | SYMBOL | | | VALUE | | UNIT |
|---|---|---|---|---|---|---|
| | | | | | | |
| Collector Emitter Voltage | $V_{CEO}$ | | | 30 | | V |
| Collector Base Voltage | $V_{CBO}$ | | | 35 | | V |
| Emitter Base Voltage | $V_{EBO}$ | | | 5 | | V |
| Collector Current | $I_C$ | | | 800 | | mA |
| Emitter Current | $I_E$ | | | 800 | | mA |
| Collector Power Dissipation | $P_C$ | | | 600 | | mW |
| Operating And Storage Junction Temperature Range | $T_j$, $T_{stg}$ | | | -55 to +150 | | ºC |

### ELECTRICAL CHARACTERISTICS (Ta=25ºC unless specified otherwise)

| DESCRIPTION | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| | | | | | | |
| Collector Emitter Voltage | $V_{(BR)CEO}$ | $I_C$=10mA,$I_B$=0 | 30 | | | V |
| Collector Cut off Current | $I_{CBO}$ | $V_{CB}$=35V, $I_E$ = 0 | | | 0.1 | µA |
| Emitter Cut off Current | $I_{EBO}$ | $V_{EB}$=5V, $I_C$ = 0 | | | 0.1 | µA |
| DC Current Gain | $h_{FE\ (1)}$ | $V_{CE}$=1V,$I_C$=100mA | 100 | | 320 | |
| | $h_{FE\ (2)}$ | $V_{CE}$=1V,$I_C$=700mA | 35 | | | |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}$* | $I_C$=500mA,$I_B$=20mA | | | | |
| CSA950 | | | | | 0.7 | V |
| CSC2120 | | | | | 0.5 | V |
| | | | | | | |
| Base Emitter On Voltage | $V_{BE\ (on)}$ | $V_{CE}$ = 5V, $I_C$= 10mA | 0.5 | | 0.8 | V |
| | | | | | | |
| Transition Frequency | $f_T$ | $I_C$=10mA, $V_{CE}$=5V | | 120 | | MHz |
| | | | | | | |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$=10V, $I_E$=0 | | | | |
| CSA950 | | f=1MHz | | 19 | | pF |
| CSC2120 | | | | 13 | | pF |

**CLASSIFICATION $h_{FE\ (1)}$** **O : 100-200** **Y : 160-320**

***Pulse Condition: Width ≤ 300ms, Duty Cycle ≤ 2%.**

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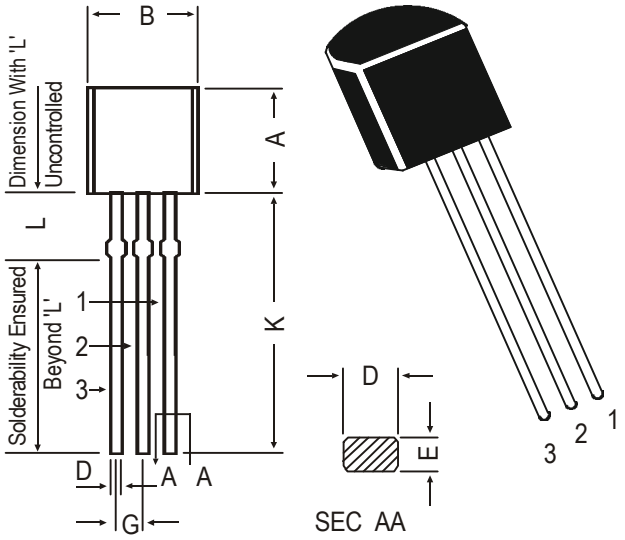
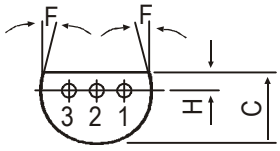
# TO-92 Plastic Package



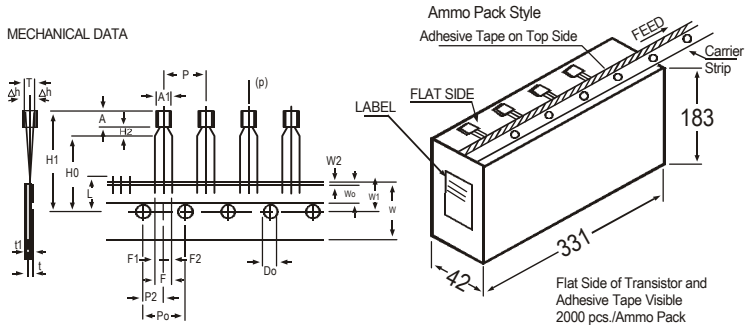




PIN CONFIGURATION
1. BASE
2. COLLECTOR
3. EMITTER

| 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 | 1.14 | 1.53 |
| K | 12.70 | — |
| L | 1.982 | 2.082 |

All diminsions in mm.

## TO-92 Transistors on Tape and Ammo Pack




**All dimensions in mm unless specified otherwise**

| ITEM | SYMBOL | SPECIFICATION | | | | REMARKS |
|---|---|---|---|---|---|---|
| | | 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 | |
| FEED HOLE PITCH | Po | | 12.7 | | ±0.3 | CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH |
| FEED HOLE CENTRE TO COMPONENT CENTRE | P2 | | 6.35 | | ±0.4 | TO BE MEASURED AT BOTTOM OF CLINCH |
| DISTANCE BETWEEN OUTER LEADS | F | | 5.08 | | +0.6 -0.2 | |
| COMPONENT ALIGNMENT | △h | | 0 | 1 | | AT TOP OF BODY |
| TAPE WIDTH | W | | 18 | | ±0.5 | |
| HOLD-DOWN TAPE WIDTH | Wo | | 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 | |
| TOTAL TAPE THICKNESS | t | | | 1.2 | | t1 0.3 - 0.6 |
| LEAD - TO - LEAD DISTANCEF1, | F2 | | 2.54 | | +0.4 -0.1 | |
| CLINCH HEIGHT | H2 | | | 3 | | |
| PULL - OUT FORCE | (P) | 6N | | | | |

**NOTES**
1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

## Packing Detail

| 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**

## 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 is 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).

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