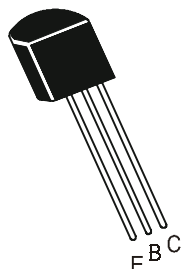


## PNP/NPN EPITAXIAL PLANAR SILICON TRANSISTORS

**CSA709 PNP**  
**CSC1009 NPN**  
**TO-92**  
**CBE**



### High Voltage Amplifier.

#### ABSOLUTE MAXIMUM RATINGS(Ta=25deg C )

| DESCRIPTION                                      | SYMBOL   | CSA709      | CSC1009     | UNIT  |
|--------------------------------------------------|----------|-------------|-------------|-------|
| Collector -Base Voltage                          | VCBO     | 160         | 160         | V     |
| Collector -Emitter Voltage                       | VCEO     | 150         | 140         | V     |
| Emitter -Base Voltage                            | VEBO     | 8.0         | 8.0         | V     |
| Collector Current                                | IC       | 700         | 700         | mA    |
| Collector Dissipation                            | PC       | 800         | 800         | mW    |
| Operating And Storage Junction Temperature Range | Tj, Tstg | -55 to +150 | -55 to +150 | deg C |

#### ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified)

| DESCRIPTION                          | SYMBOL     | TEST CONDITION    | CSA709 | CSC1009 | UNIT |
|--------------------------------------|------------|-------------------|--------|---------|------|
| Collector -Base Voltage              | VCBO       | IC=100uA, IE=0    | >160   | >160    | V    |
| Collector -Emitter Voltage           | VCEO       | IC=10mA, IB=0     | >150   | >140    | V    |
| Emitter-Base Voltage                 | VEBO       | IE=100uA, IC=0    | >8.0   | >8.0    | V    |
| Collector-Cut off Current            | ICBO       | VCB=60V, IE=0     | -      | <100    | nA   |
|                                      |            | VCB=100V, IE=0    | <100   | -       | nA   |
| Emitter-Cut off Current              | IEBO       | VEB=5V, IC=0      | <100   | <100    | nA   |
| DC Current Gain                      | hFE*       | IC=50mA, VCE=2V   | 40-400 | 40-400  |      |
| Collector Emitter Saturation Voltage | VCE(Sat)*  | IC=200mA, IB=20mA | <0.4   | <0.7    | V    |
| Base Emitter Saturation Voltage      | VBE(Sat) * | IC=200mA, IB=20mA | <1.1   | <1.1    | V    |

#### DYNAMIC CHARACTERISTICS

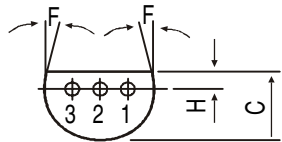
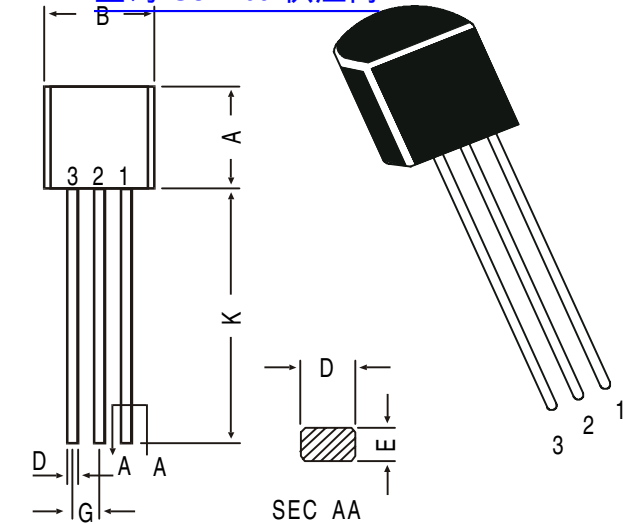
|                      |     |                         |       |        |     |
|----------------------|-----|-------------------------|-------|--------|-----|
| Transition Frequency | ft  | IC=50mA, VCE=10V        | typ50 | >30    | MHz |
| Out-Put Capacitance  | Cob | VCB=10V, IE=0<br>f=1MHz | <10   | typ8.0 | pF  |

|                     |         |             |             |             |            |
|---------------------|---------|-------------|-------------|-------------|------------|
| *hFE CLASSIFICATION | CSC1009 | R : 40 - 80 | O : 70 -140 | Y : 120-240 | G: 200-400 |
|                     | CSA709  | -           | O : 70 -140 | Y : 120-240 | G: 200-400 |

\*Pulse Test: PW=350us, Duty Cycle=2%

## TO-92 Plastic Package

[查询"CSA709"供应商](#)



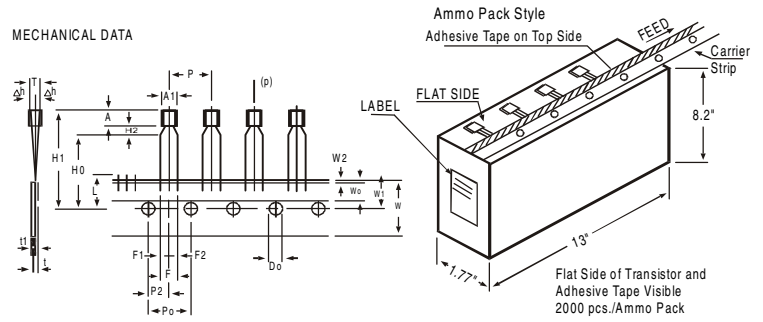
### PIN CONFIGURATION

1. COLLECTOR
2. BASE
3. EMITTER

All dimensions in mm.

| 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 | —    |

## 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         |                |
| FEED HOLE CENTRE TO COMPONENT CENTRE | P2     |               | 6.35  |      | ±0.4         |                |
| DISTANCE BETWEEN OUTER LEADS         | F      | 5.08          |       |      | +0.6<br>-0.2 |                |
| COMPONENT ALIGNMENT                  | Δh     | 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<br>-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 DISTANCE F1,        | F2     | 2.54          |       |      | +0.4<br>-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"  | 5.0K | 17" x 15" x 13.5" | 80.0K | 23 kgs   |
| TO-92 T&A  | 2K/ammo box   | 645 gm/2K pcs  | 12.5" x 8" x 1.8" | 2.0K | 17" x 15" x 13.5" | 32.0K | 12.5 kgs |

### Disclaimer

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