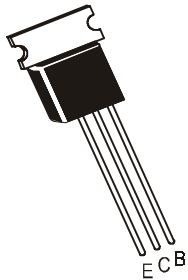


**PNP/NPN COMPLEMENTARY SILICON EPITAXIAL TRANSISTOR**

**CSA928A (PNP)  
CSC2328A (NPN)  
TO-237  
BCE**



**3W AUDIO Output Amplifier Application**

**ABSOLUTE MAXIMUM RATINGS(Ta=25deg C unless otherwise specified)**

| DESCRIPTION                                      | SYMBOL   | VALUE       | UNIT  |
|--|----------|-------------|-------|
| Collector -Base Voltage                          | VCBO     | 30          | V     |
| Collector -Emitter Voltage                       | VCEO     | 30          | V     |
| Emitter Base Voltage                             | VEBO     | 5.0         | V     |
| Collector Current Continuous                     | IC       | 1.5         | A     |
| Peak   | ICM      | 2.0         | A     |
| Power Dissipation                                | PD       | 1.0         | W     |
| Operating And Storage Junction Temperature Range | Tj, Tstg | -55 to +150 | deg C |

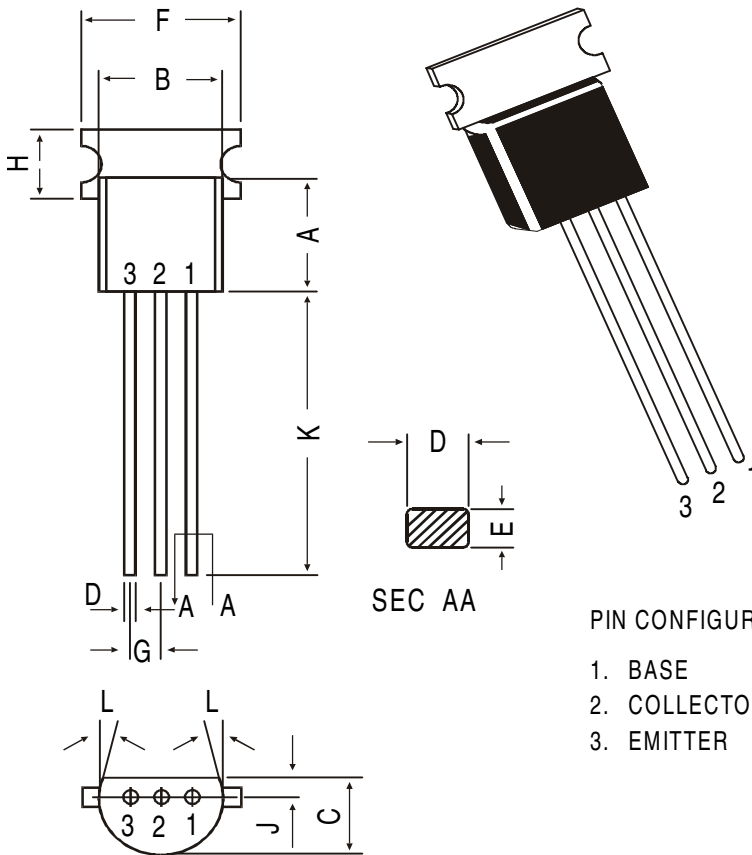
**ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified)**

| DESCRIPTION                          | SYMBOL     | TEST CONDITION    | MIN | TYP | MAX | UNIT |
|--------------------------------------|------------|-------------------|-----|-----|-----|------|
| Collector -Emitter Voltage           | VCEO       | IC=10mA, IB=0     | 30  | -   | -   | V    |
| Collector -Base Voltage              | VCBO       | IC=100uA, IE=0    | 30  | -   | -   | V    |
| Emitter Base Voltage                 | VEBO       | IE=1mA, IC=0      | 5.0 | -   | -   | V    |
| Collector Cut off Current            | ICBO       | VCB=30V, IE=0     | -   | -   | 100 | nA   |
| Emitter Cut off Current              | IEBO       | VEB=5V, IC=0      | -   | -   | 100 | nA   |
| DC Current Gain                      | hFE*       | IC=500mA, VCE=2V  | 100 | -   | 320 |      |
| Collector Emitter Saturation Voltage | VCE(Sat) * | IC=1.5A, IB=30mA  | -   | -   | 2.0 | V    |
| Base Emitter on Voltage              | VBE(on)*   | IC=500mA, VCE=2V  | -   | -   | 1.0 | V    |
| <b>Dynamic Characteristics</b>       |            |                   |     |     |     |      |
| Output Capacitance                   | Cob        | NPN VCB=10V, IE=0 | -   | 30  | -   | pF   |
|                                      |            | PNP f=1MHz        | -   | 48  | -   | pF   |
| Gain Bandwidth Product               | ft         | VCE=2V, IC=500mA, | -   | 120 | -   | MHz  |

| CLASSIFICATION | O       | Y       |
|----------------|---------|---------|
| hFE *          | 100-200 | 160-320 |

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

## TO-237 Plastic Package



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   | —     | 5.40 |
| G   | 1.14  | 1.40 |
| H   | —     | 2.54 |
| K   | 12.70 | —    |
| L   | 5 DEG |      |
| J   | 1.14  | 1.53 |

### PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER

## Packing Detail

| PACKAGE     | STANDARD PACK |                | INNER CARTON BOX  |      | OUTER CARTON BOX  |       |          |
|-------------|---------------|----------------|-------------------|------|-------------------|-------|----------|
|             | Details       | Net Weight/Qty | Size              | Qty  | Size              | Qty   | Gr Wt    |
| TO-237 Bulk | 1K/polybag    | 240 gm/1K pcs  | 3" x 7.5" x 7.5"  | 5.0K | 17" x 15" x 13.5" | 80.0K | 26.2 kgs |
| TO-237 T&A  | 2K/ammo box   | 725 gm/2K pcs  | 12.5" x 8" x 1.8" | 2.0K | 17" x 15" x 13.5" | 32.0K | 13.8 kgs |

## 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 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).

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