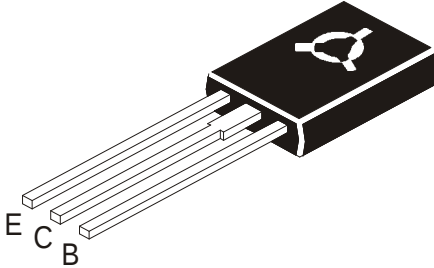


## PNP EPITAXIAL SILICON POWER TRANSISTORS

**BD136 BD138  
BD140**

**TO126  
Plastic Package**



Designed for use as Audio Amplifier and Drivers Utilizing

Complementary BD135, BD137, BD139

### ABSOLUTE MAXIMUM RATINGS

| DESCRIPTION                                      | SYMBOL         | BD136        | BD138 | BD140 | UNIT           |
|--------------------------------------------------|----------------|--------------|-------|-------|----------------|
| Collector -Emitter Voltage                       | $V_{CEO}$      | 45           | 60    | 80    | V              |
| Collector -Emitter Voltage ( $R_{BE}=1kW$ )      | $V_{CER}$      | 45           | 60    | 100   | V              |
| Collector -Base Voltage                          | $V_{CBO}$      | 45           | 60    | 100   | V              |
| Emitter Base Voltage                             | $V_{EBO}$      | 5.0          |       |       | V              |
| Collector Current                                | $I_C$          | 1.5          |       |       | A              |
| Collector Peak Current                           | $I_{CM}$       | 2.0          |       |       | A              |
| Base Current                                     | $I_B$          | 0.5          |       |       | A              |
| Power Dissipation @ $T_a=25^\circ C$             | $P_D$          | 1.25         |       |       | W              |
| Derate above $25^\circ C$                        |                | 10           |       |       | mW/ $^\circ C$ |
| Power Dissipation @ $T_c=25^\circ C$             | $P_D$          | 12.5         |       |       | W              |
| Derate above $25^\circ C$                        |                | 100          |       |       | mW/ $^\circ C$ |
| Power Dissipation @ $T_c=70^\circ C$             | $P_D$          | 8.0          |       |       | W              |
| Operating and Storage Junction Temperature Range | $T_j, T_{stg}$ | - 55 to +150 |       |       | $^\circ C$     |

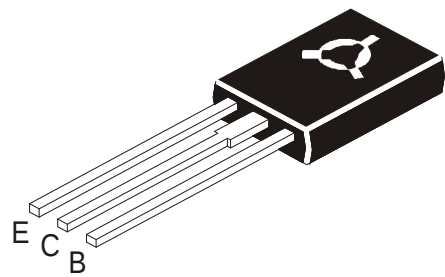
### THERMAL CHARACTERISTICS

|                                 |               |     |              |
|---------------------------------|---------------|-----|--------------|
| Junction to Ambient in free air | $R_{th(j-a)}$ | 100 | $^\circ C/W$ |
| Junction to Case                | $R_{th(j-c)}$ | 10  | $^\circ C/W$ |

### ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ C$ unless specified otherwise)

| DESCRIPTION                          | SYMBOL          | TEST CONDITION                                                             | MIN            | MAX | UNIT        |
|--------------------------------------|-----------------|----------------------------------------------------------------------------|----------------|-----|-------------|
| Collector Emitter Sustaining Voltage | $*V_{CEO(sus)}$ | $I_C=30mA, I_B=0$<br><b>BD136</b><br><b>BD138</b><br><b>BD140</b>          | 45<br>60<br>80 |     | V<br>V<br>V |
| Collector Cut Off Current            | $I_{CBO}$       | $V_{CB}=30V, I_E=0$                                                        |                | 0.1 | $\mu A$     |
|                                      |                 | $V_{CB}=30V, I_E=0, T_c=125^\circ C$                                       |                | 10  | $\mu A$     |
| Emitter Cut Off Current              | $I_{EBO}$       | $V_{EB}=5V, I_C=0$                                                         |                | 10  | $\mu A$     |
| DC Current Gain                      | $*h_{FE}$       | $I_C=0.005A, V_{CE}=2V$<br>$I_C=0.15A, V_{CE}=2V$<br>$I_C=0.5A, V_{CE}=2V$ | 25<br>40<br>25 | 250 |             |

\*Pulse test:- Pulse width=300ms, duty cycle=2%

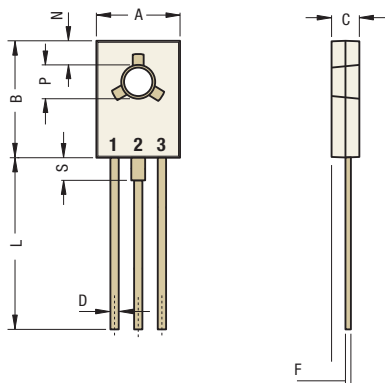
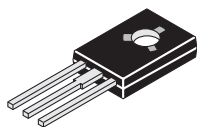


ELECTRICAL CHARACTERISTICS (T<sub>c</sub>=25°C unless specified otherwise)

| DESCRIPTION                          | SYMBOL                 | TEST CONDITION                              | MIN | MAX | UNIT |
|--------------------------------------|------------------------|---------------------------------------------|-----|-----|------|
| DC Current Gain                      | *h <sub>FE</sub> Group | I <sub>C</sub> =0.15A, V <sub>CE</sub> =2V  |     |     |      |
|                                      |                        | - 6                                         | 40  | 100 |      |
|                                      |                        | - 10                                        | 63  | 160 |      |
|                                      |                        | - 16                                        | 100 | 250 |      |
|                                      |                        | - 25                                        | 160 | 400 |      |
| Collector Emitter Saturation Voltage | *V <sub>CE (sat)</sub> | I <sub>C</sub> =0.5A, I <sub>B</sub> =0.05A |     | 0.5 | V    |
| Base Emitter On Voltage              | *V <sub>BE(on)</sub>   | *I <sub>C</sub> =0.5A, V <sub>CE</sub> =2V  |     | 1.0 | V    |

\*Pulse test:- Pulse width=300ms, duty cycle=2%

TO-126  
Leaded Plastic  
Package

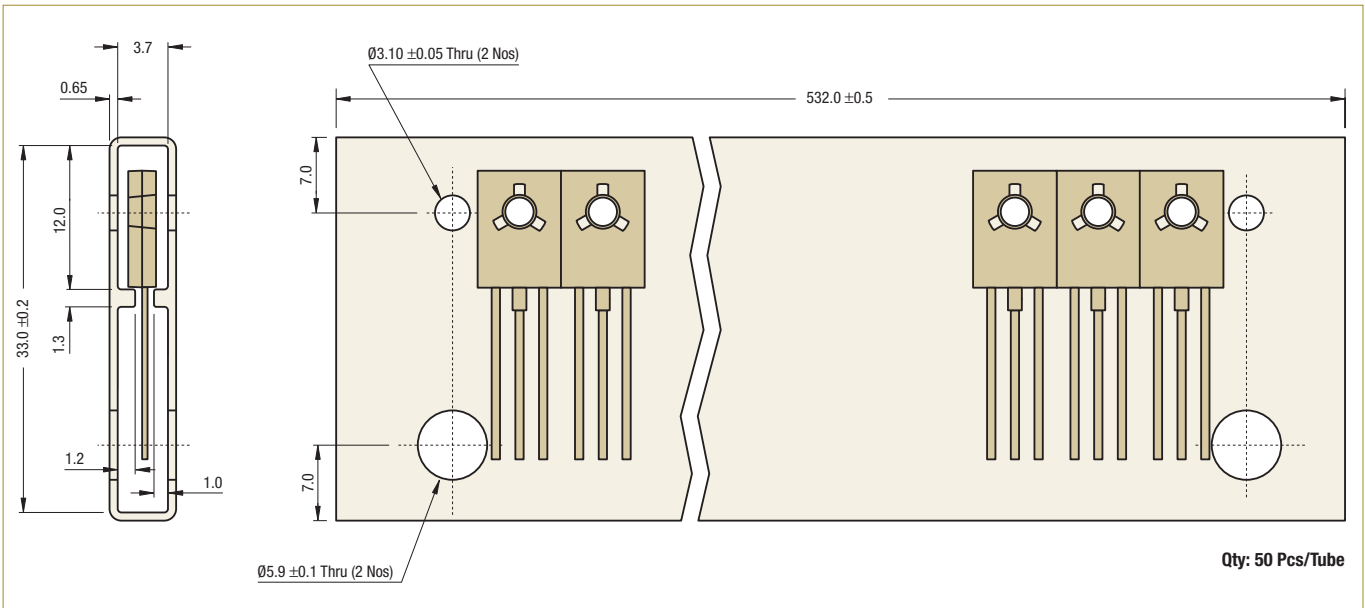


| DIM | Min   | Max   |
|-----|-------|-------|
| A   | 7.12  | 8.38  |
| B   | 10.16 | 11.43 |
| C   | 2.29  | 3.04  |
| D   | 0.64  | 0.88  |
| E   | 2.040 | 2.285 |
| F   | 0.39  | 0.63  |

| DIM | Min   | Max   |
|-----|-------|-------|
| G   | 4.07  | 5.08  |
| L   | 15.00 | 16.63 |
| M   | 0.89  | 1.65  |
| N   | 3.31  | 4.44  |
| P   | 2.54  | 3.30  |
| S   | —     | 2.54  |

Pin Configurations  
Pin 1: Emitter Pin 2: Collector Pin 3: Base

TO-126 Series Packaging Tube



| Packaging Specifications ...                                                                               |                |                     |              |                     |                   |              |                     |                   |
|------------------------------------------------------------------------------------------------------------|----------------|---------------------|--------------|---------------------|-------------------|--------------|---------------------|-------------------|
| T & A: Tape and Ammo Pack; T & R: Tape and Reel; Bulk: Loose in Poly Bags; Tube: Tube and Carton; K: 1,000 |                |                     |              |                     |                   |              |                     |                   |
| Package / Case Type                                                                                        | Packaging Type | Std. Packing        | Inner Carton |                     |                   | Outer Carton |                     |                   |
|                                                                                                            |                |                     | Qty          | Size L x W x H (cm) | Gross Weight (Kg) | Qty          | Size L x W x H (cm) | Gross Weight (Kg) |
| TO-126                                                                                                     | Bulk           | 2,000               | 2K           | 19 x 19 x 8         | 1.4               | 20K          | 46 x 38 x 22        | 15.6              |
|                                                                                                            | Tube           | 1,000 (50 pcs/tube) | 1K           | 55 x 8 x 10         | 1.5               | 10K          | 55 x 35 x 27        | 16.3              |

**Component Disposal Instructions**

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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