## DESCRIPTION

The BD135, BD137 and BD139 are available in TO-126 (SOT32) Package.

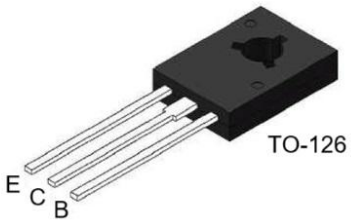
## FEATURE

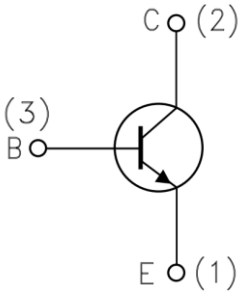
- Complementary with BD136, BD138 and BD140
- Available in TO-126 (SOT32) Package

## ORDERING INFORMATION

| Package Type | Part Number |
|---|---|
| TO-126 (SOT32) | BD135-6 |
| | BD135-10 |
| | BD135-16 |
| | BD137-6 |
| | BD137-10 |
| | BD137-16 |
| | BD139-6 |
| | BD139-10 |
| | BD139-16 |
| Note | SPQ: 500pcs/Bag |
| AiT provides all RoHS Compliant Products | |

## PIN DESCRIPTION




NPN

| PIN# | DESCRIPTION |
|---|---|
| 1 | EMITTER |
| 2 | COLLECTOR |
| 3 | BASE |

## $h_{FE}$ TABLE

| Range | BD135-6<br>BD137-6<br>BD139-6 | BD135-10<br>BD137-10<br>BD139-10 | BD135-16<br>BD137-16<br>BD139-16 |
|---|---|---|---|
| $h_{FE}$ | 40~100 | 63~160 | 100~250 |

## ABSOLUTE MAXIMUM RATINGS

$T_A$ = 25°C, unless otherwise specified

| | | |
|---|---|---|
| $BV_{CBO}$, Collector-Base Voltage | BD135 | 45V |
| | BD137 | 60V |
| | BD139 | 80V |
| $BV_{CEO}$, Collector-Emitter Voltage | BD135 | 45V |
| | BD137 | 60V |
| | BD139 | 80V |
| $BV_{EBO}$, Emitter-Base Voltage | | 5V |
| $I_C$, Collector Current | | 1.5A |
| $P_C$, Collector Power Dissipation | | 12.5W |
| $T_{STG}$, Storage Temperature | | -55℃ ~ + 150℃ |
| $T_J$, Junction Temperature | | +150℃ |

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

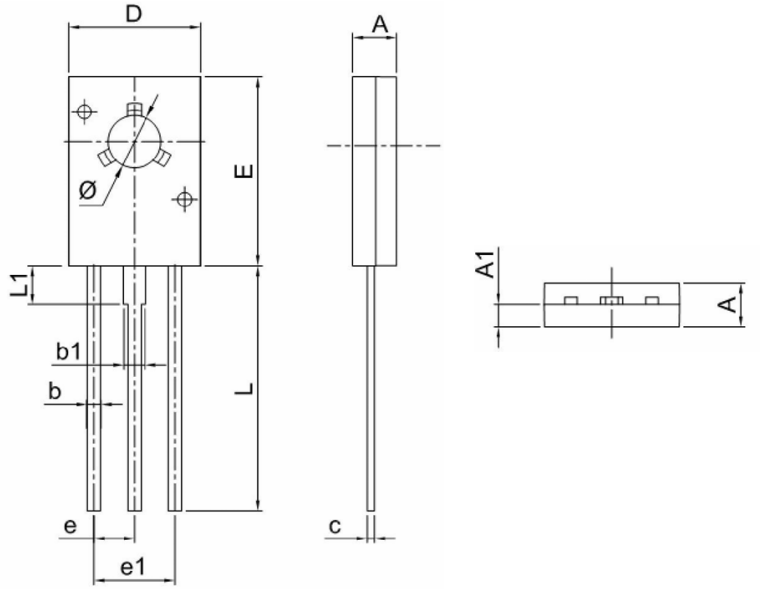
## ELECTRICAL CHARACTERISTICS

$T_A$ = 25°C, unless otherwise specified

| Parameter | | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | BD135 | $BV_{CBO}$ | $I_C$=100μA, $I_E$=0 | 45 | - | - | V |
| | BD137 | | | 60 | - | - | |
| | BD139 | | | 80 | - | - | |
| Collector-Emitter Breakdown Voltage | BD135 | $BV_{CEO}$ | $I_C$=10mA, $I_B$=0 | 45 | - | - | V |
| | BD137 | | | 60 | - | - | |
| | BD139 | | | 80 | - | - | |
| Emitter-Base Breakdown Voltage | | $BV_{EBO}$ | $I_E$=100μA, $I_C$=0 | 5 | | - | V |
| Collector Cut-Off Current | BD135 | $I_{CBO}$ | $I_E$=0, $V_{CB}$= 30V | - | - | 100 | μA |
| | BD137 | | | - | - | 100 | |
| | BD139 | | | - | - | 100 | |
| Emitter Cut-Off Current | | $I_{EBO}$ | $I_C$=0, $V_{EB}$=5V | - | - | 10 | μA |
| DC Current Gain | All Device | $h_{FE}$ | $I_C$=5mA, $V_{CE}$=2V | 25 | - | - | - |
| | All Device | | $I_C$=0.5A, $V_{CE}$=2V | 25 | - | - | |
| | BD135<br>BD137 | | $I_C$=150mA, $V_{CE}$=2V | 40 | - | 250 | |
| | BD139 | | | 40 | - | 160 | |
| Collector-Emitter Saturation Voltage | | $V_{CE(SAT)}$ | $I_B$=50mA, $I_C$=500mA | - | - | 0.5 | V |
| Base-Emitter Saturation Voltage | | $V_{BE(ON)}$ | $I_C$=0.5A, $V_{CE}$=2V | - | - | 1.0 | V |

## PACKAGE INFORMATION

Dimension in TO-126 (SOT32) Package (Unit: mm)




| DIM | MILLIMETERS | |
|---|---|---|
| | MIN | MAX |
| A | 2.400 | 2.800 |
| A1 | 1.000 | 1.400 |
| b | 0.660 | 0.860 |
| b1 | 1.170 | 1.370 |
| c | 0.400 | 0.600 |
| D | 7.300 | 7.700 |
| E | 10.600 | 11.000 |
| e | 2.250 | 2.330 |
| e1 | 4.500 | 4.660 |
| L | 14.000 | 15.000 |
| L1 | 1.900 | 2.500 |
| Φ | 3.100 | 3.300 |

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