

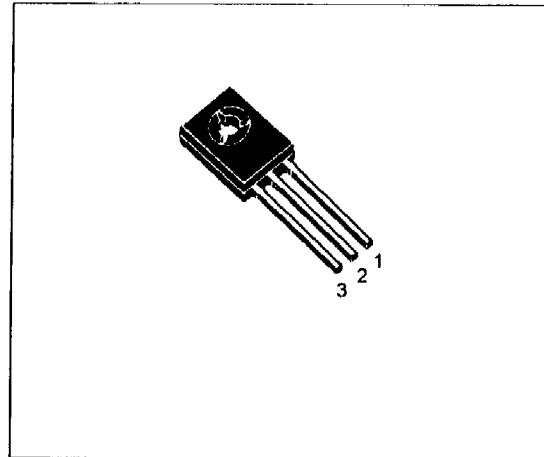
**BD235/BD236
 BD237/BD238**

COMPLEMENTARY SILICON POWER TRANSISTORS

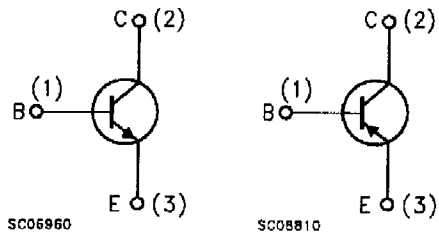
DESCRIPTION

The BD235 and BD237 are silicon epitaxial-base NPN power transistors in Jedec SOT-32 plastic package intended for use in medium power linear and switching applications.

The complementary PNP types are BD236 and BD238 respectively.



INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit | |
|-----------|--|------------|-------|------------|-------|
| | | NPN | BD235 | | BD237 |
| | | PNP | BD236 | | BD238 |
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 60 | 100 | V | |
| V_{CER} | Collector-Base Voltage ($R_{BE} = 1K\Omega$) | 60 | 100 | V | |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 60 | 80 | V | |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 5 | | V | |
| I_C | Collector Current | 2 | | A | |
| I_{CM} | Collector Peak Current | 6 | | A | |
| P_{tot} | Total Dissipation at $T_c = 25^\circ C$ | 25 | | W | |
| T_{stg} | Storage Temperature | -65 to 150 | | $^\circ C$ | |
| T_j | Max. Operating Junction Temperature | 150 | | $^\circ C$ | |

For PNP types voltage and current values are negative.

NJ Semi-Conductors reserves the right to change test conditions, parameters limits and package dimensions without notice information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



Quality Semi-Conductors

BD235/BD236/BD237/BD238

THERMAL DATA

| | | | | |
|----------------|----------------------------------|-----|---|---------------|
| $R_{thj-case}$ | Thermal Resistance Junction-case | Max | 5 | $^{\circ}C/W$ |
|----------------|----------------------------------|-----|---|---------------|

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---------------------|---|---|----------|------|----------|----------|
| I_{CBO} | Collector Cut-off Current ($I_E = 0$) | $V_{CE} = \text{rated } V_{CE0}$ $V_{CE} = \text{rated } V_{CE0} \quad T_c = 150^{\circ}C$ | | | 0.1 2 | mA mA |
| I_{EBO} | Emitter Cut-off Current ($I_C = 0$) | $V_{EB} = 5 V$ | | | 1 | mA |
| $V_{CE0(sus)}^*$ | Collector-Emitter Sustaining Voltage | $I_C = 100 \text{ mA}$ for BD235/BD236 for BD237/BD238 | 60 80 | | | V V |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage | $I_C = 1 A \quad I_B = 0.1 A$ | | | 0.6 | V |
| V_{BE}^* | Base-Emitter Voltage | $I_C = 1 A \quad V_{CE} = 2 V$ | | | 1.3 | V |
| h_{FE}^* | DC Current Gain | $I_C = 150 \text{ mA} \quad V_{CE} = 2 V$ $I_C = 1 A \quad V_{CE} = 2 V$ | 40 25 | | | |
| f_T | Transition frequency | $I_C = 250 \text{ mA} \quad V_{CE} = 10 V$ | 3 | | | MHz |
| h_{FE1}/h_{FE2}^* | Matched Pairs | $I_C = 150 \text{ mA} \quad V_{CE} = 2 V$ | | 1.6 | | |

* Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %

SOT-32 (TO-128) MECHANICAL DATA

| DIM. | mm | | | Inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 7.4 | | 7.8 | 0.291 | | 0.307 |
| B | 10.5 | | 10.8 | 0.413 | | 0.445 |
| b | 0.7 | | 0.9 | 0.028 | | 0.035 |
| b1 | 0.49 | | 0.75 | 0.019 | | 0.030 |
| C | 2.4 | | 2.7 | 0.040 | | 0.106 |
| c1 | 1.0 | | 1.3 | 0.039 | | 0.050 |
| D | 15.4 | | 16.0 | 0.606 | | 0.629 |
| e | | 2.2 | | | 0.087 | |
| e3 | 4.15 | | 4.65 | 0.163 | | 0.183 |
| F | | 3.8 | | | 0.150 | |
| G | 3 | | 3.2 | 0.118 | | 0.126 |
| H | | | 2.54 | | | 0.100 |
| H2 | | 2.15 | | | 0.084 | |

