

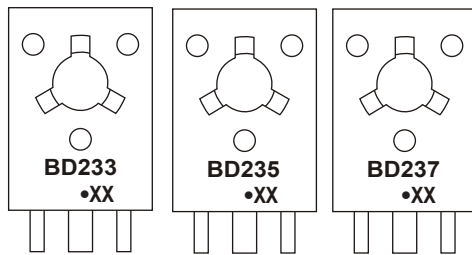
TO-126 Plastic-Encapsulate Transistors

BD233 / BD235 / BD237 TRANSISTOR (NPN)

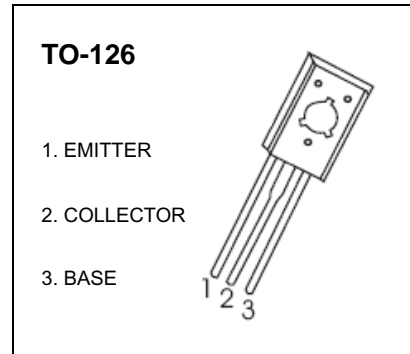
FEATURES

- Complement to BD234/BD236/BD238 respectively

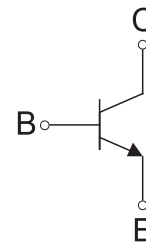
MARKING



BD233, BD235, BD237 = Device code
 Solid dot = Green molding compound device,
 if none, the normal device
 XX = Code



Equivalent Circuit



ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|-------------|---------|----------------|---------------|
| BD233 | TO-126 | Bulk | 200pcs/Bag |
| BD235 | TO-126 | Bulk | 200pcs/Bag |
| BD237 | TO-126 | Bulk | 200pcs/Bag |
| BD233-TU | TO-126 | Tube | 60pcs/Tube |
| BD235-TU | TO-126 | Tube | 60pcs/Tube |
| BD237-TU | TO-126 | Tube | 60pcs/Tube |

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

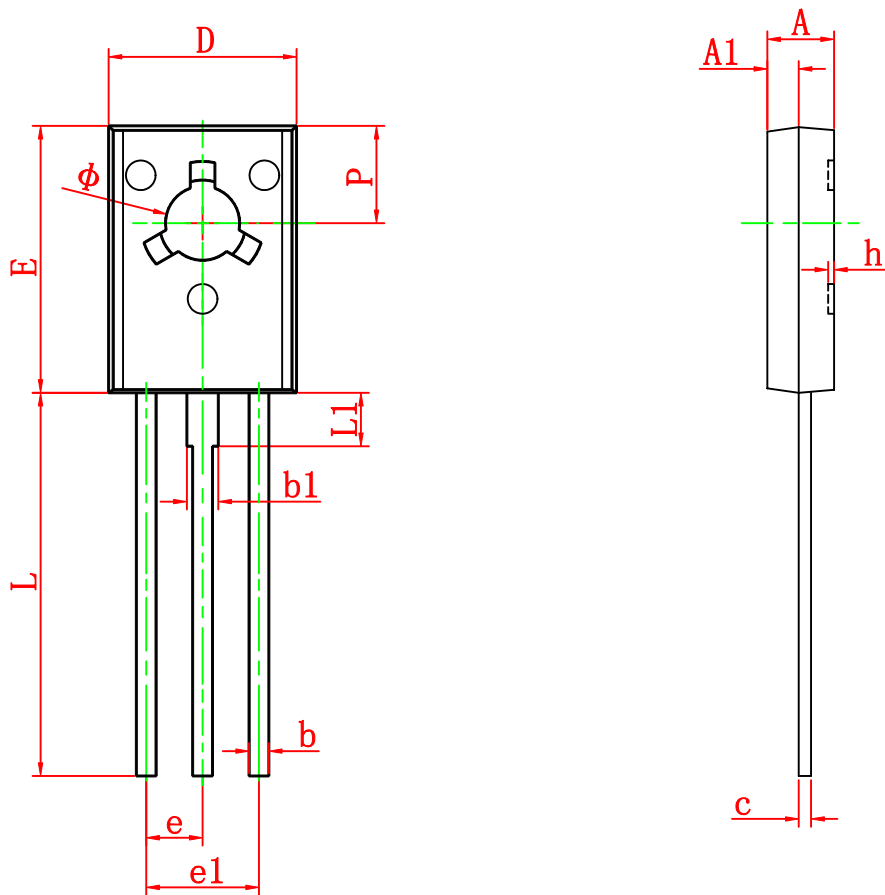
| Symbol | Parameter | | Value | Unit |
|------------------|----------------------------------------------|-------|----------|------|
| V _{CB0} | Collector-Base Voltage | BD233 | 45 | V |
| | | BD235 | 60 | |
| | | BD237 | 100 | |
| V _{CEO} | Collector-Emitter Voltage | BD233 | 45 | V |
| | | BD235 | 60 | |
| | | BD237 | 80 | |
| V _{EB0} | Emitter-Base Voltage | | 5 | V |
| I _c | Collector Current –Continuous | | 2 | A |
| P _c | Collector Dissipation | | 1.25 | W |
| P _c | Collector Dissipation (T _c =25°C) | | 25 | W |
| R _{θJA} | Thermal Resistance from Junction to Ambient | | 100 | °C/W |
| R _{θJC} | Thermal Resistance from Junction to Case | | 5 | °C/W |
| T _j | Junction Temperature | | 150 | °C |
| T _{stg} | Storage Temperature | | -55~+150 | °C |

ELECTRICAL CHARACTERISTICS

$T_a=25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Test conditions | Min | Max | Unit |
|--------------------------------------|---------------|-----------------------------------------------------------|-----------------------------|-----|------|
| Collector-base breakdown voltage | BD233 | $I_C=1\text{mA}, I_E=0$ | 45 | | V |
| | BD235 | | 60 | | |
| | BD237 | | 100 | | |
| Collector-emitter breakdown voltage | BD233 | $I_C=100\text{mA}, I_B=0$ | 45 | | V |
| | BD235 | | 60 | | |
| | BD237 | | 80 | | |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=1\text{mA}, I_C=0$ | 5 | | V |
| Collector cut-off current | BD233 | I_{CBO} | $V_{CB}=45\text{V}, I_E=0$ | | 100 |
| | BD235 | | $V_{CB}=60\text{V}, I_E=0$ | | |
| | BD237 | | $V_{CB}=100\text{V}, I_E=0$ | | |
| Emitter cut-off current | I_{EBO} | $V_{EB}=5\text{V}, I_C=0$ | | 1 | mA |
| DC current gain | $H_{FE(1)}$ | $V_{CE}=2\text{V}, I_C=150\text{mA}$ | 40 | | |
| | $H_{FE(2)}$ | $V_{CE}=2\text{V}, I_C=1\text{A}$ | 25 | | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=1\text{A}, I_B=100\text{mA}$ | | 0.6 | V |
| Transition frequency | f_T | $V_{CE}=10\text{V}, I_C=250\text{mA}$ $f=10\text{MHz}$ | 3 | | MHz |

TO-126 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 2.500 | 2.900 | 0.098 | 0.114 |
| A1 | 1.100 | 1.500 | 0.043 | 0.059 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.450 | 0.600 | 0.018 | 0.024 |
| D | 7.400 | 7.800 | 0.291 | 0.307 |
| E | 10.600 | 11.000 | 0.417 | 0.433 |
| e | 2.290 TYP | | 0.090 TYP | |
| e1 | 4.480 | 4.680 | 0.176 | 0.184 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| L | 15.300 | 15.700 | 0.602 | 0.618 |
| L1 | 2.100 | 2.300 | 0.083 | 0.091 |
| P | 3.900 | 4.100 | 0.154 | 0.161 |
| Φ | 3.000 | 3.200 | 0.118 | 0.126 |