



**THE DATASHEET OF
BD237G**



BD237G (NPN), BD234G, BD238G (PNP)

Plastic Medium Power Bipolar Transistors

Designed for use in 5.0 to 10 W audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

Features

- High DC Current Gain
- Epoxy Meets UL 94 V0 @ 0.125 in
- These Devices are Pb-Free and are RoHS Compliant*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|------------------|
| Collector-Emitter Voltage BD234G DB237G, BD238G | V_{CEO} | 45 80 | Vdc |
| Collector-Base Voltage BD234G DB237G, BD238G | V_{CBO} | 60 100 | Vdc |
| Emitter-Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current | I_C | 2.0 | Adc |
| Base Current | I_B | 1.0 | Adc |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ | P_D | 25 | W |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |
| ESD - Human Body Model | HBM | 3B | V |
| ESD - Machine Model | MM | C | V |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

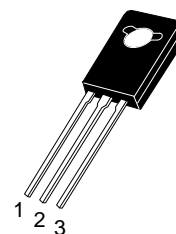
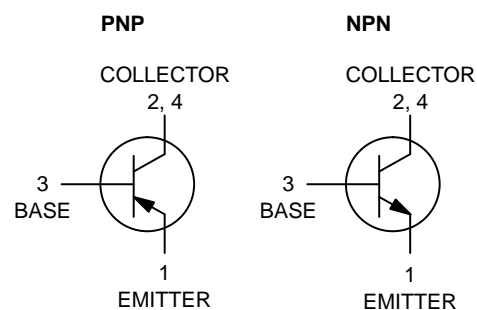
| Characteristic | Symbol | Max | Unit |
|--------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 5.0 | $^\circ\text{C/W}$ |



ON Semiconductor®

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2.0 AMPERES POWER TRANSISTORS 25 WATTS



TO-225
CASE 77-09
STYLE 1

MARKING DIAGRAM



Y = Year
WW = Work Week
BD23x = Device Code
x = 4, 7 or 8
G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|---|------------------------|----------|------------|------|
| Collector–Emitter Sustaining Voltage (Note 1) ($I_C = 0.1\text{ Adc}$, $I_B = 0$) BD237G, BD238G BD234G | $V_{(BR)CEO}$ | 80 45 | – – | Vdc |
| Collector Cutoff Current ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$) BD237G, BD238G ($V_{CB} = 60\text{ Vdc}$, $I_E = 0$) BD234G | I_{CBO} | – – | 0.1 0.1 | mAdc |
| Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$) | I_{EBO} | – | 1.0 | mAdc |
| DC Current Gain ($I_C = 0.15\text{ A}$, $V_{CE} = 2.0\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 2.0\text{ V}$) | h_{FE1} h_{FE2} | 40 25 | – – | – |
| Collector–Emitter Saturation Voltage (Note 1) ($I_C = 1.0\text{ Adc}$, $I_B = 0.1\text{ Adc}$) | $V_{CE(sat)}$ | – | 0.6 | Vdc |
| Base–Emitter On Voltage (Note 1) ($I_C = 1.0\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$) | $V_{BE(on)}$ | – | 1.3 | Vdc |
| Current–Gain – Bandwidth Product ($I_C = 250\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$) | f_T | 3.0 | – | MHz |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

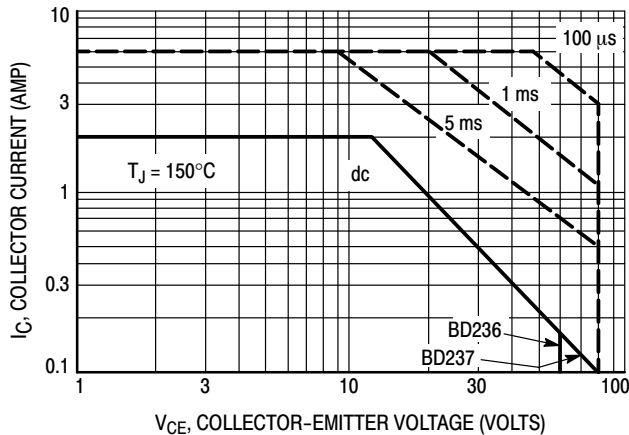


Figure 1. Active Region Safe Operating Area

The Safe Operating Area Curves indicate I_C - V_{CE} limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.

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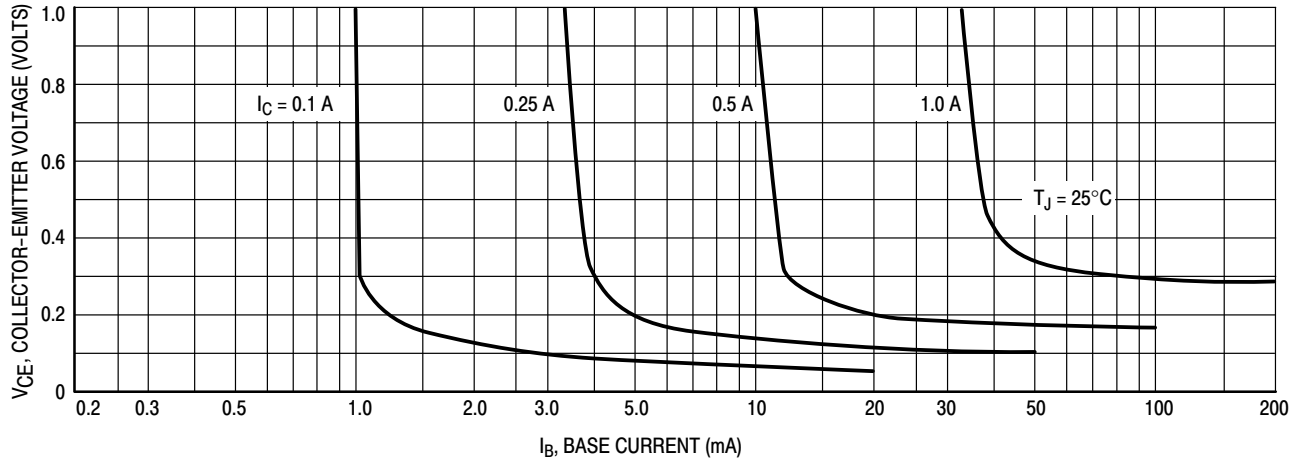


Figure 2. Collector Saturation Region

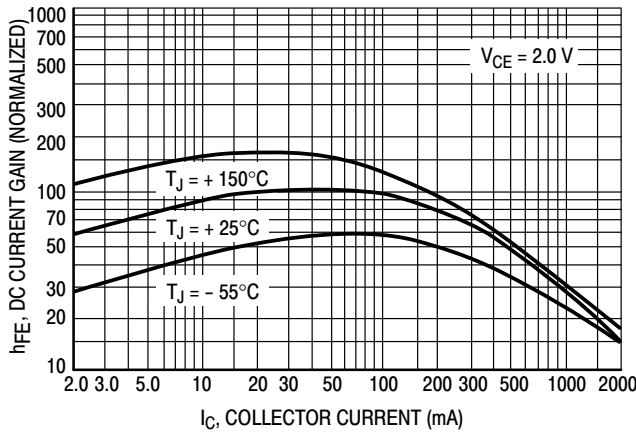


Figure 3. Current Gain

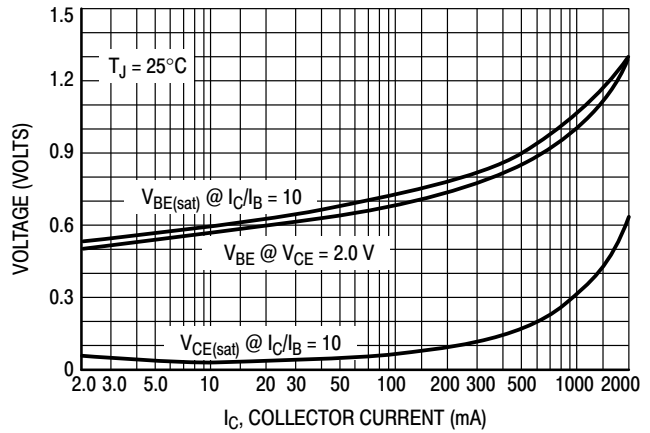


Figure 4. "On" Voltages

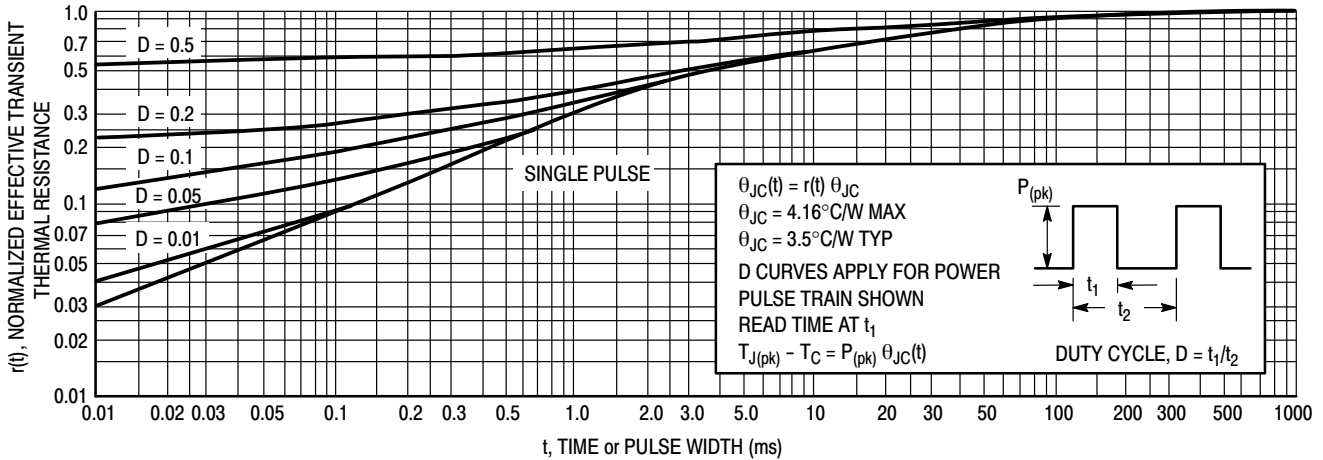


Figure 5. Thermal Response

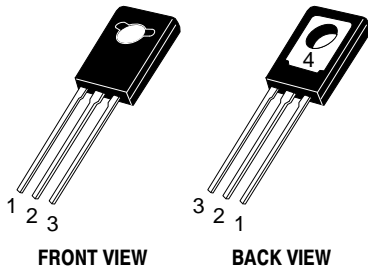
BD237G (NPN), BD234G, BD238G (PNP)

ORDERING INFORMATION

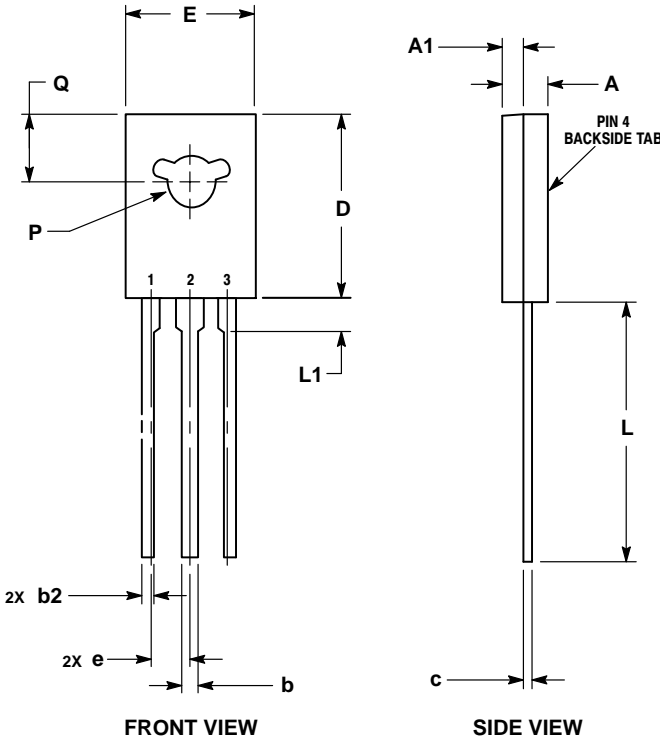
| Device | Package | Shipping |
|--------|---------------------|-----------------|
| BD234G | TO-225 (Pb-Free) | 500 Units / Box |
| BD237G | TO-225 (Pb-Free) | 500 Units / Box |
| BD238G | TO-225 (Pb-Free) | 500 Units / Box |

BD237G (NPN), BD234G, BD238G (PNP)

PACKAGE DIMENSIONS



TO-225
CASE 77-09
ISSUE AC



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. NUMBER AND SHAPE OF LUGS OPTIONAL.

| DIM | MILLIMETERS | |
|-----|-------------|-------|
| | MIN | MAX |
| A | 2.40 | 3.00 |
| A1 | 1.00 | 1.50 |
| b | 0.60 | 0.90 |
| b2 | 0.51 | 0.88 |
| c | 0.39 | 0.63 |
| D | 10.60 | 11.10 |
| E | 7.40 | 7.80 |
| e | 2.04 | 2.54 |
| L | 14.50 | 16.63 |
| L1 | 1.27 | 2.54 |
| P | 2.90 | 3.30 |
| Q | 3.80 | 4.20 |

- STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE

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