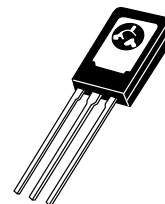


# Plastic Medium Power Silicon NPN Transistor

... for amplifier and switching applications. Complementary types are BD438 and BD442.

**BD437**  
**BD441**

**4.0 AMPERES**  
**POWER TRANSISTORS**  
**NPN SILICON**



**CASE 77-08**  
**TO-225AA TYPE**

## MAXIMUM RATINGS

| Rating   | Symbol         | Value       | Unit                         |
|--|----------------|-------------|------------------------------|
| Collector-Emitter Voltage<br>BD437<br>BD441  | $V_{CEO}$      | 45<br>80    | Vdc                          |
| Collector-Base Voltage<br>BD437<br>BD441   | $V_{CBO}$      | 45<br>80    | Vdc                          |
| Emitter-Base Voltage   | $V_{EBO}$      | 5.0         | Vdc                          |
| Collector Current  | $I_C$          | 4.0         | Adc                          |
| Base Current   | $I_B$          | 1.0         | Adc                          |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 36<br>288   | Watts<br>W/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range                                       | $T_J, T_{stg}$ | -55 to +150 | $^\circ\text{C}$             |

## THERMAL CHARACTERISTICS

| Characteristic                       | Symbol        | Max | Unit               |
|--------------------------------------|---------------|-----|--------------------|
| Thermal Resistance, Junction to Case | $\theta_{JC}$ | 3.5 | $^\circ\text{C/W}$ |

**BD437 BD441****ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

| Characteristic   | Symbol        | Min      | Typ    | Max        | Unit |
|--|---------------|----------|--------|------------|------|
| Collector–Emitter Breakdown Voltage<br>( $I_C = 100\text{ mA}$ , $I_B = 0$ )   | $V_{(BR)CEO}$ | 45<br>80 | —<br>— | —<br>—     | Vdc  |
| Collector–Base Breakdown Voltage<br>( $I_C = 100\text{ }\mu\text{A}$ , $I_B = 0$ )   | $V_{(BR)CBO}$ | 45<br>80 | —<br>— | —<br>—     | Vdc  |
| Emitter–Base Breakdown Voltage<br>( $I_E = 100\text{ }\mu\text{A}$ , $I_C = 0$ )   | $V_{(BR)EBO}$ | 5.0      | —      | —          | Vdc  |
| Collector Cutoff Current<br>( $V_{CB} = 45\text{ V}$ , $I_E = 0$ )<br>( $V_{CB} = 80\text{ V}$ , $I_E = 0$ )                       | $I_{CBO}$     | —<br>—   | —<br>— | 0.1<br>0.1 | mAdc |
| Emitter Cutoff Current<br>( $V_{EB} = 5.0\text{ V}$ )  | $I_{EBO}$     | —        | —      | 1.0        | mAdc |
| DC Current Gain<br>( $I_C = 10\text{ mA}$ , $V_{CE} = 5.0\text{ V}$ )  | $h_{FE}$      | 30<br>15 | —<br>— | —<br>—     |      |
| DC Current Gain<br>( $I_C = 500\text{ mA}$ , $V_{CE} = 1.0\text{ V}$ )   | $h_{FE}$      | 85<br>40 | —<br>— | 375<br>475 |      |
| DC Current Gain<br>( $I_C = 2.0\text{ A}$ , $V_{CE} = 1.0\text{ V}$ )  | $h_{FE}$      | 40<br>15 | —<br>— | —<br>—     |      |
| Collector Saturation Voltage<br>( $I_C = 2.0\text{ A}$ , $I_B = 0.2\text{ A}$ )<br>( $I_C = 3.0\text{ A}$ , $I_B = 0.3\text{ A}$ ) | $V_{CE(sat)}$ | —<br>—   | —<br>— | 0.7<br>0.8 | Vdc  |
| Base–Emitter On Voltage<br>( $I_C = 2.0\text{ A}$ , $V_{CE} = 1.0\text{ V}$ )  | $V_{BE(on)}$  | —        | —      | 1.1        | Vdc  |
| Current–Gain — Bandwidth Product<br>( $V_{CE} = 1.0\text{ V}$ , $I_C = 250\text{ mA}$ , $f = 1.0\text{ MHz}$ )                     | $f_T$         | 3.0      | —      | —          | MHz  |

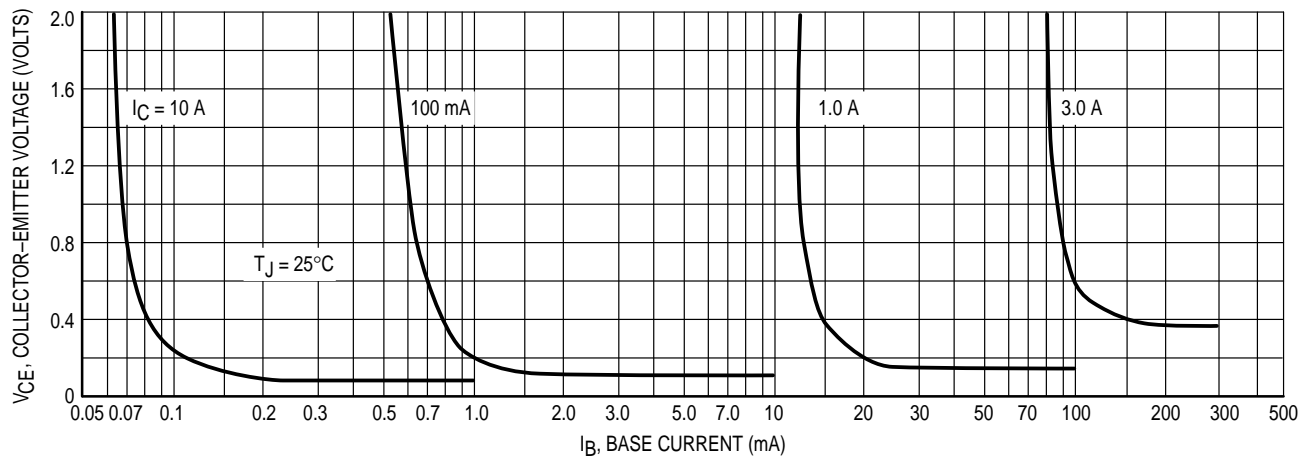


Figure 1. Collector Saturation Region

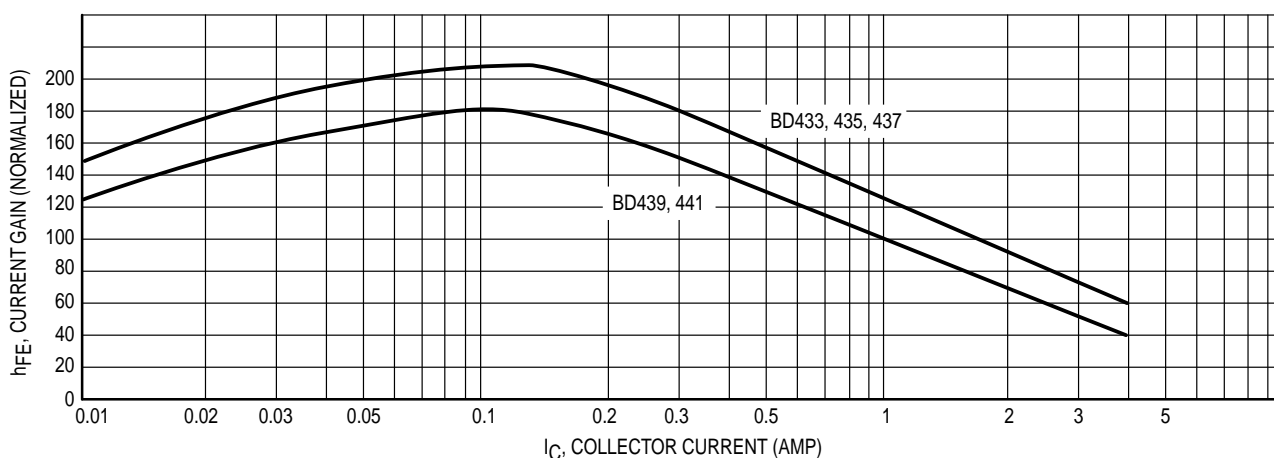


Figure 2. Current Gain

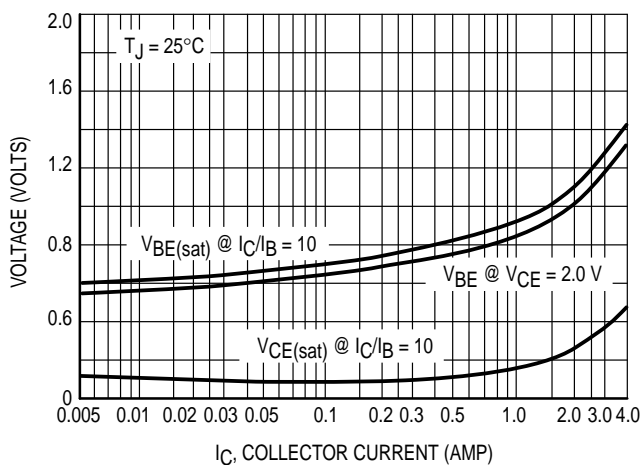


Figure 3. "On" Voltage

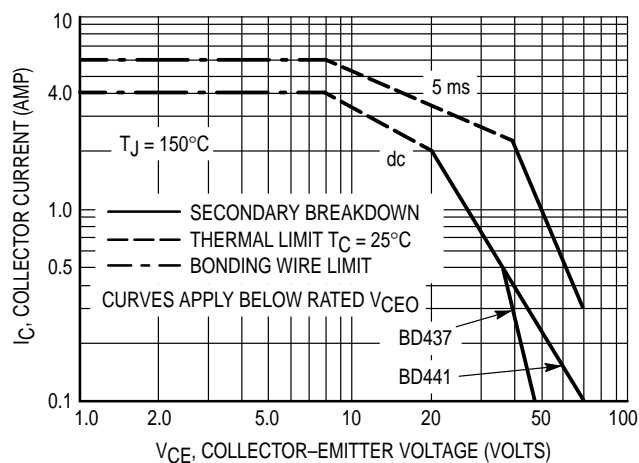
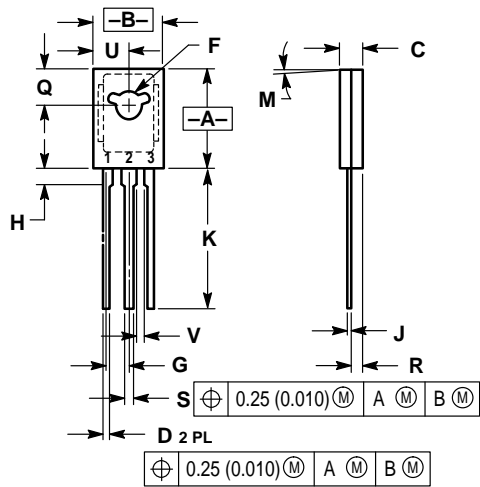


Figure 4. Active Region Safe Operating Area

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 0.425     | 0.435 | 10.80       | 11.04 |
| B   | 0.295     | 0.305 | 7.50        | 7.74  |
| C   | 0.095     | 0.105 | 2.42        | 2.66  |
| D   | 0.020     | 0.026 | 0.51        | 0.66  |
| F   | 0.115     | 0.130 | 2.93        | 3.30  |
| G   | 0.094 BSC |       | 2.39 BSC    |       |
| H   | 0.050     | 0.095 | 1.27        | 2.41  |
| J   | 0.015     | 0.025 | 0.39        | 0.63  |
| K   | 0.575     | 0.655 | 14.61       | 16.63 |
| M   | 5° TYP    |       | 5° TYP      |       |
| Q   | 0.148     | 0.158 | 3.76        | 4.01  |
| R   | 0.045     | 0.055 | 1.15        | 1.39  |
| S   | 0.025     | 0.035 | 0.64        | 0.88  |
| U   | 0.145     | 0.155 | 3.69        | 3.93  |
| V   | 0.040     | —     | 1.02        | —     |

- STYLE 1:
- PIN 1. EMITTER
  - COLLECTOR
  - BASE

CASE 77-08  
TO-225AA TYPE  
ISSUE V

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