

Amplifier Transistors

NPN Silicon

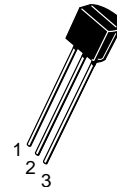
MAXIMUM RATINGS

| Rating | Symbol | BC337 | BC338 | Unit |
|--|----------------|-------------|-------|------------------------------|
| Collector–Emitter Voltage | V_{CEO} | 45 | 25 | Vdc |
| Collector–Base Voltage | V_{CBO} | 50 | 30 | Vdc |
| Emitter–Base Voltage | V_{EBO} | 5.0 | | Vdc |
| Collector Current – Continuous | I_C | 800 | | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 | 5.0 | mW mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.5 | 12 | Watt mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | –55 to +150 | | $^\circ\text{C}$ |

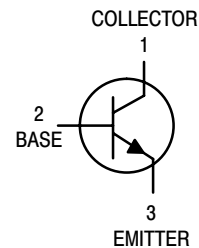
THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|------|---------------------------|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 200 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 83.3 | $^\circ\text{C}/\text{W}$ |

**BC337,
BC337-16,
BC337-25,
BC337-40,
BC338-25**



CASE 29–04, STYLE 17
TO–92 (TO–226AA)



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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | | |
|--|----------------|---------------|----------|--------|------------|------|
| Collector–Emitter Breakdown Voltage ($I_C = 10\text{ mA}, I_B = 0$) | BC337 BC338 | $V_{(BR)CEO}$ | 45 25 | – – | – – | Vdc |
| Collector–Emitter Breakdown Voltage ($I_C = 100\text{ }\mu\text{A}, I_E = 0$) | BC337 BC338 | $V_{(BR)CES}$ | 50 30 | – – | – – | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{A}, I_C = 0$) | | $V_{(BR)EBO}$ | 5.0 | – | – | Vdc |
| Collector Cutoff Current ($V_{CB} = 30\text{ V}, I_E = 0$) ($V_{CB} = 20\text{ V}, I_E = 0$) | BC337 BC338 | I_{CBO} | – – | – – | 100 100 | nAdc |
| Collector Cutoff Current ($V_{CE} = 45\text{ V}, V_{BE} = 0$) ($V_{CE} = 25\text{ V}, V_{BE} = 0$) | BC337 BC338 | I_{CES} | – – | – – | 100 100 | nAdc |
| Emitter Cutoff Current ($V_{EB} = 4.0\text{ V}, I_C = 0$) | | I_{EBO} | – | – | 100 | nAdc |

BC337, BC337-16, BC337-25, BC337-40, BC338-25

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|-------------------|-----|-----|-----|------|
| ON CHARACTERISTICS | | | | | |
| DC Current Gain ($I_C = 100\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | BC337 | 100 | — | 630 | — |
| | BC337-16 | 100 | — | 250 | — |
| | BC337-25/BC338-25 | 160 | — | 400 | — |
| | BC337-40 | 250 | — | 630 | — |
| ($I_C = 300\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | | 60 | — | — | — |
| Base-Emitter On Voltage ($I_C = 300\text{ mA}$, $V_{CE} = 1.0\text{ V}$) | $V_{BE(on)}$ | — | — | 1.2 | Vdc |
| Collector-Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$) | $V_{CE(sat)}$ | — | — | 0.7 | Vdc |

SMALL-SIGNAL CHARACTERISTICS

| | | | | | |
|---|----------|---|-----|---|-----|
| Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1.0\text{ MHz}$) | C_{ob} | — | 15 | — | pF |
| Current-Gain – Bandwidth Product ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $f = 100\text{ MHz}$) | f_T | — | 210 | — | MHz |

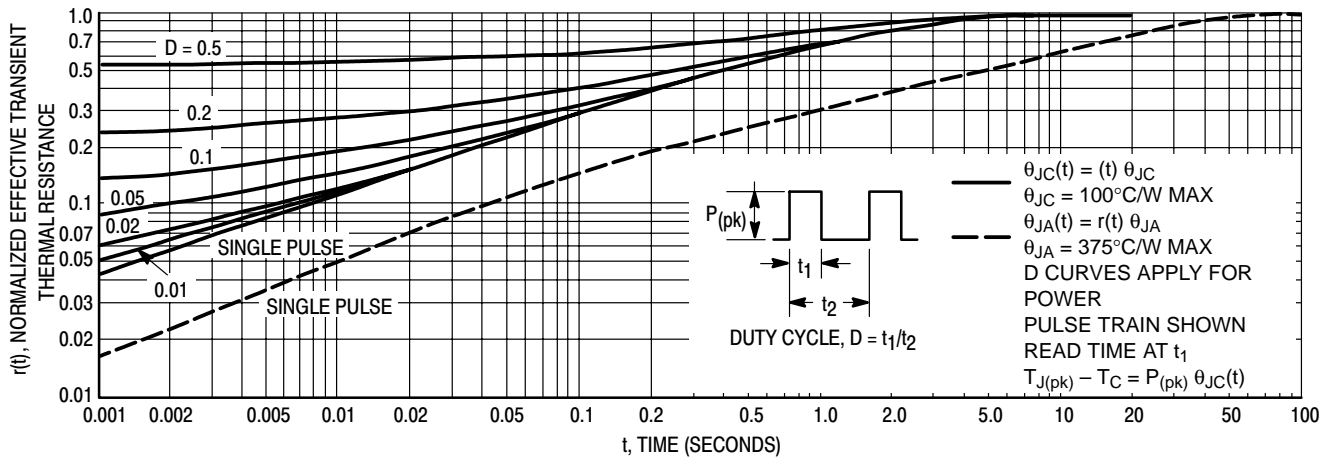


Figure 1. Thermal Response

BC337, BC337-16, BC337-25, BC337-40, BC338-25

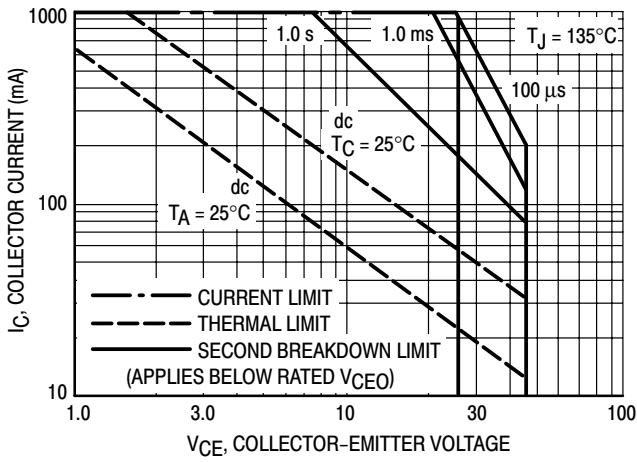


Figure 2. Active Region – Safe Operating Area

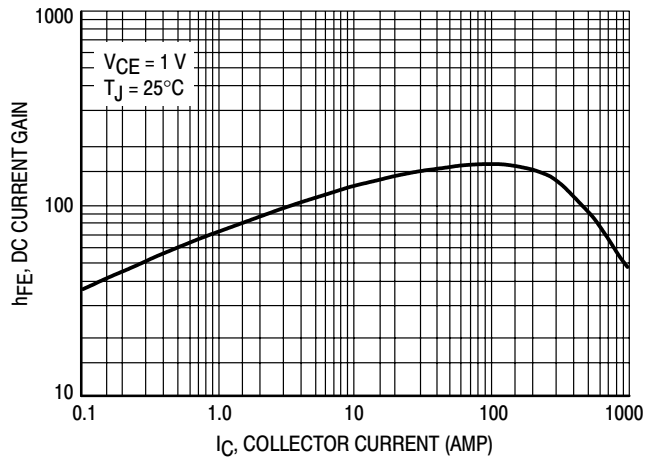


Figure 3. DC Current Gain

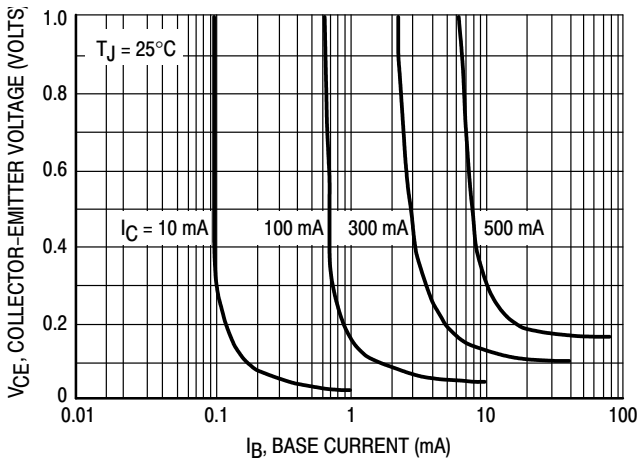


Figure 4. Saturation Region

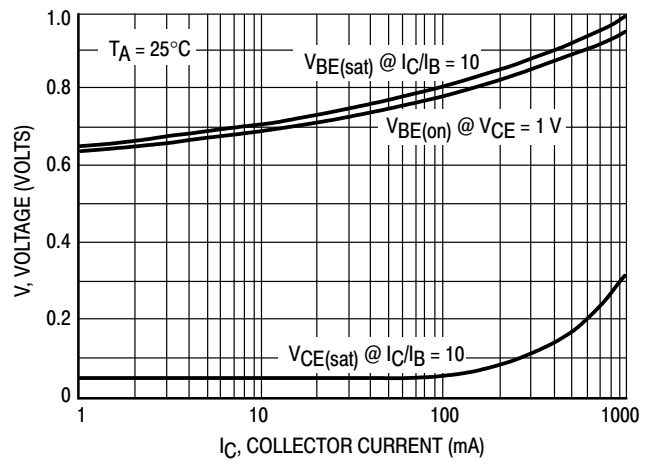


Figure 5. "On" Voltages

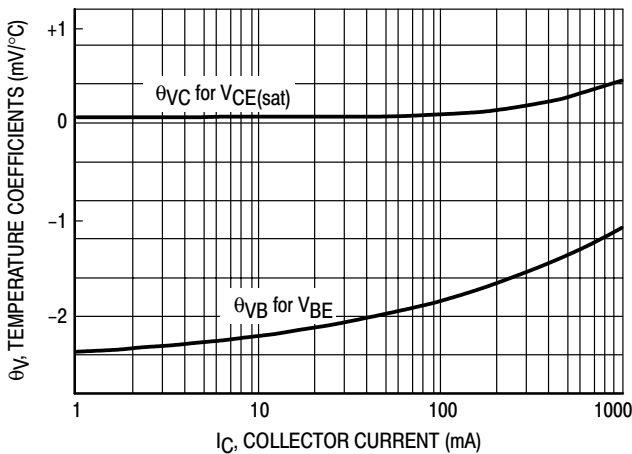


Figure 6. Temperature Coefficients

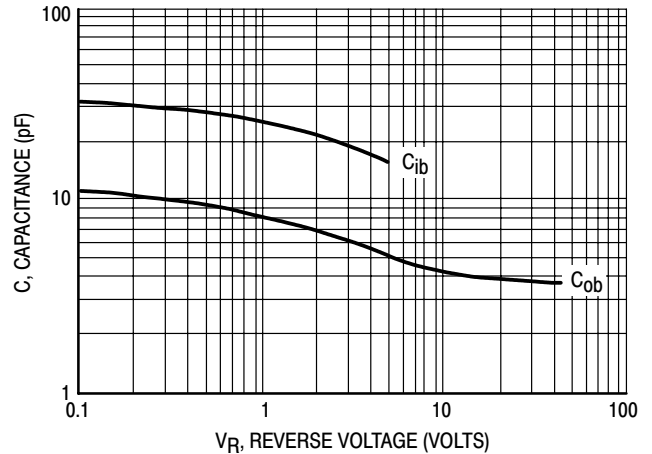
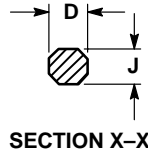
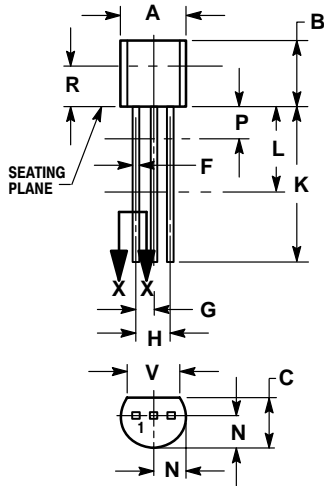


Figure 7. Capacitances

PACKAGE DIMENSIONS

CASE 029-04
(TO-226AA)
ISSUE AD




SECTION X-X

STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.45 | 5.20 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.125 | 0.165 | 3.18 | 4.19 |
| D | 0.016 | 0.022 | 0.41 | 0.55 |
| F | 0.016 | 0.019 | 0.41 | 0.48 |
| G | 0.045 | 0.055 | 1.15 | 1.39 |
| H | 0.095 | 0.105 | 2.42 | 2.66 |
| J | 0.015 | 0.020 | 0.39 | 0.50 |
| K | 0.500 | --- | 12.70 | --- |
| L | 0.250 | --- | 6.35 | --- |
| N | 0.080 | 0.105 | 2.04 | 2.66 |
| P | --- | 0.100 | --- | 2.54 |
| R | 0.115 | --- | 2.93 | --- |
| V | 0.135 | --- | 3.43 | --- |

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