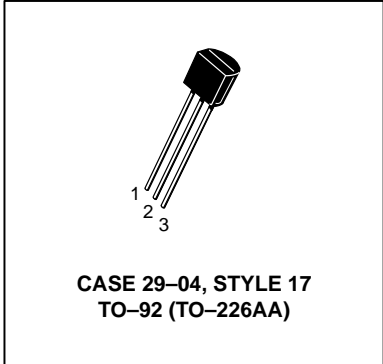
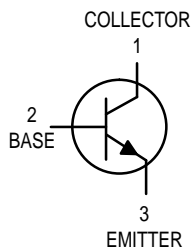


# Amplifier Transistors

## NPN Silicon

**BC182,A,B**  
**BC183**  
**BC184**



### MAXIMUM RATINGS

| Rating   | Symbol         | BC 182      | BC 183 | BC 184 | Unit                 |
|--|----------------|-------------|--------|--------|----------------------|
| Collector–Emitter Voltage  | $V_{CEO}$      | 50          | 30     | 30     | Vdc                  |
| Collector–Base Voltage   | $V_{CBO}$      | 60          | 45     | 45     | Vdc                  |
| Emitter–Base Voltage   | $V_{EBO}$      | 6.0         |        |        | Vdc                  |
| Collector Current — Continuous   | $I_C$          | 100         |        |        | mAdc                 |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 350         |        |        | mW                   |
|  |                | 2.8         |        |        | mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 1.0         |        |        | Watts                |
|  |                | 8.0         |        |        | mW/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>Temperature Range                                    | $T_J, T_{stg}$ | –55 to +150 |        |        | $^\circ\text{C}$     |

### THERMAL CHARACTERISTICS

| Characteristic                          | Symbol          | Max | Unit                      |
|---|-----------------|-----|---------------------------|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Case    | $R_{\theta JC}$ | 125 | $^\circ\text{C}/\text{W}$ |

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

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

### OFF CHARACTERISTICS

|  |                         |               |                |                   |                |    |
|--|-------------------------|---------------|----------------|-------------------|----------------|----|
| Collector–Emitter Breakdown Voltage<br>( $I_C = 2.0 \text{ mA}, I_B = 0$ )                                     | BC182<br>BC183<br>BC184 | $V_{(BR)CEO}$ | 50<br>30<br>30 | —<br>—<br>—       | —<br>—<br>—    | V  |
| Collector–Base Breakdown Voltage<br>( $I_C = 10 \mu\text{A}, I_E = 0$ )  | BC182<br>BC183<br>BC184 | $V_{(BR)CBO}$ | 60<br>45<br>45 | —<br>—<br>—       | —<br>—<br>—    | V  |
| Emitter–Base Breakdown Voltage<br>( $I_E = 100 \mu\text{A}, I_C = 0$ )   |                         | $V_{(BR)EBO}$ | 6.0            | —                 | —              | V  |
| Collector Cutoff Current<br>( $V_{CB} = 50 \text{ V}, V_{BE} = 0$ )<br>( $V_{CB} = 30 \text{ V}, V_{BE} = 0$ ) | BC182<br>BC183<br>BC184 | $I_{CBO}$     | —<br>—<br>—    | 0.2<br>0.2<br>0.2 | 15<br>15<br>15 | nA |
| Emitter–Base Leakage Current<br>( $V_{EB} = 4.0 \text{ V}, I_C = 0$ )  |                         | $I_{EBO}$     | —              | —                 | 15             | nA |

**BC182,A,B BC183 BC184**
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

| Characteristic  | Symbol        | Min            | Typ                 | Max           | Unit |
|---|---------------|----------------|---------------------|---------------|------|
| <b>ON CHARACTERISTICS</b>   |               |                |                     |               |      |
| DC Current Gain<br>( $I_C = 10\ \mu\text{A}$ , $V_{CE} = 5.0\ \text{V}$ )<br><br>( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )<br><br>( $I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )     | BC182         | 40             | —                   | —             | —    |
|   | BC183         | 40             | —                   | —             | —    |
|   | BC184         | 100            | —                   | —             | —    |
|   | BC182         | 120            | —                   | 500           | —    |
|   | BC183         | 120            | —                   | 800           | —    |
|   | BC184         | 250            | —                   | 800           | —    |
|   | BC182         | 80             | —                   | —             | —    |
|   | BC183         | 80             | —                   | —             | —    |
|   | BC184         | 130            | —                   | —             | —    |
| Collector–Emitter On Voltage<br>( $I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$ )<br>( $I_C = 100\ \text{mA}$ , $I_B = 5.0\ \text{mA}$ )(1)  | $V_{CE(sat)}$ | —              | 0.07<br>0.2         | 0.25<br>0.6   | V    |
| Base–Emitter Saturation Voltage<br>( $I_C = 100\ \text{mA}$ , $I_B = 5.0\ \text{mA}$ )(1)   | $V_{BE(sat)}$ | —              | —                   | 1.2           | V    |
| Base–Emitter On Voltage<br>( $I_C = 100\ \mu\text{A}$ , $V_{CE} = 5.0\ \text{V}$ )<br>( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )<br>( $I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )(1) | $V_{BE(on)}$  | —<br>0.55<br>— | 0.5<br>0.62<br>0.83 | —<br>0.7<br>— | V    |
| <b>DYNAMIC CHARACTERISTICS</b>  |               |                |                     |               |      |
| Current–Gain — Bandwidth Product<br>( $I_C = 0.5\ \text{mA}$ , $V_{CE} = 3.0\ \text{V}$ , $f = 100\ \text{MHz}$ )<br><br>( $I_C = 10\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $f = 100\ \text{MHz}$ )   | BC182         | —              | 100                 | —             | MHz  |
|   | BC183         | —              | 120                 | —             |      |
|   | BC184         | —              | 140                 | —             |      |
|   | BC182         | 150            | 200                 | —             |      |
|   | BC183         | 150            | 240                 | —             |      |
|   | BC184         | 150            | 280                 | —             |      |
| Common Base Output Capacitance<br>( $V_{CB} = 10\ \text{V}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )   | $C_{ob}$      | —              | —                   | 5.0           | pF   |
| Common Base Input Capacitance<br>( $V_{EB} = 0.5\ \text{V}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )   | $C_{ib}$      | —              | 8.0                 | —             | pF   |
| Small–Signal Current Gain<br>( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $f = 1.0\ \text{kHz}$ )  | BC182         | 125            | —                   | 500           | —    |
|   | BC183         | 125            | —                   | 900           |      |
|   | BC184         | 240            | —                   | 900           |      |
|   | BC182A        | 125            | —                   | 260           |      |
|   | BC182B        | 240            | —                   | 500           |      |
|   | BC182         | —              | 2.0                 | 4.0           |      |
| BC184   | —             | 2.0            | 10                  |               |      |
| BC183   | —             | 2.0            | 10                  |               |      |
| BC184   | —             | 2.0            | 4.0                 |               |      |

 1. Pulse Test:  $T_p$  300 s, Duty Cycle 2.0%.

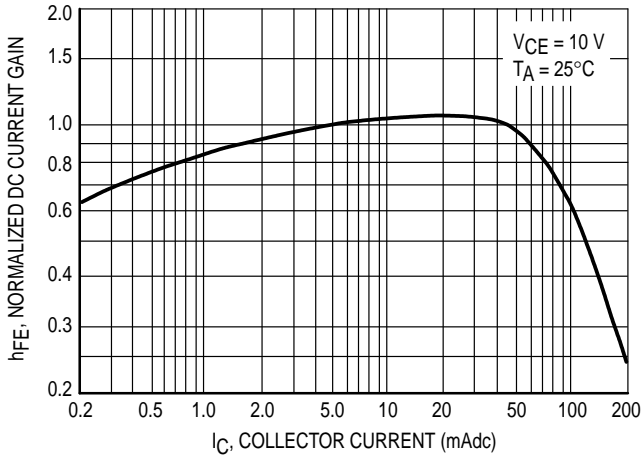


Figure 1. Normalized DC Current Gain

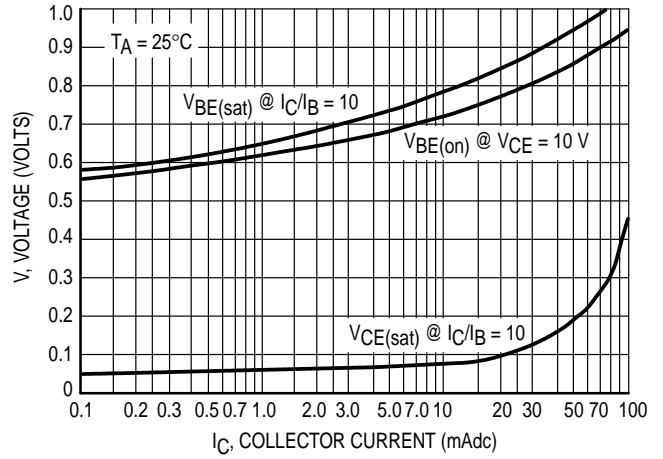


Figure 2. "Saturation" and "On" Voltages

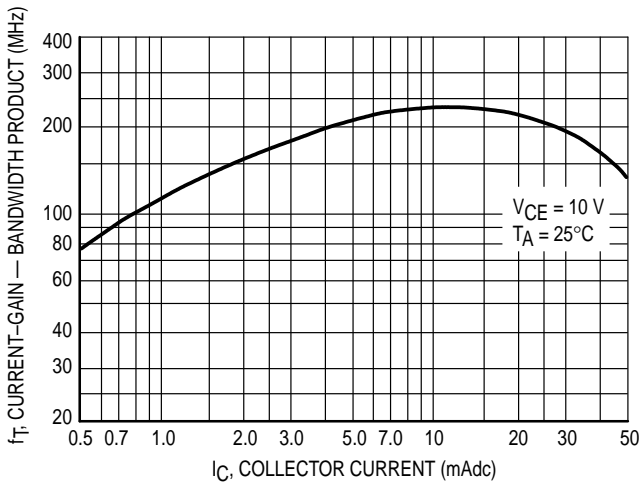


Figure 3. Current-Gain — Bandwidth Product

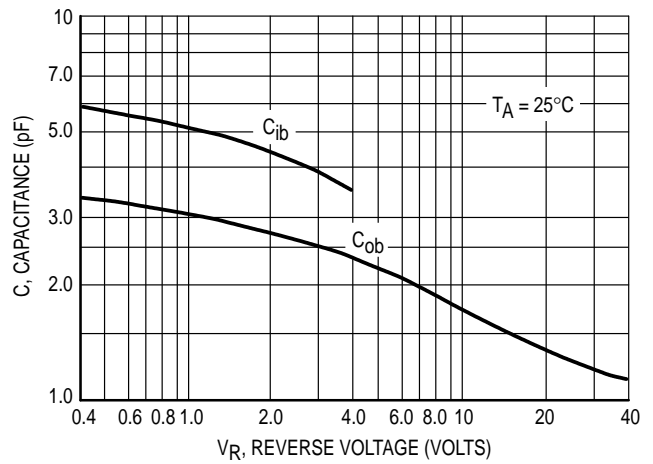


Figure 4. Capacitances

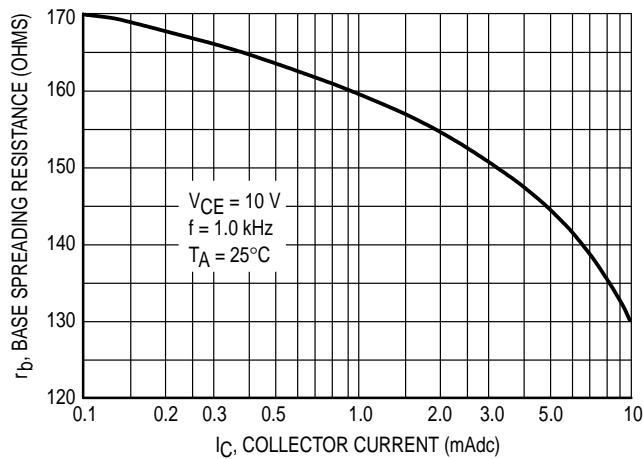


Figure 5. Base Spreading Resistance

PACKAGE DIMENSIONS



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

- 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        | —    |

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

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