

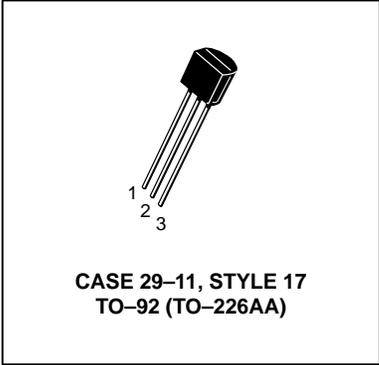
# Amplifier Transistors

## NPN Silicon

**BC182  
BC182A  
BC182B**

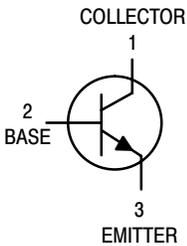
**MAXIMUM RATINGS**

| Rating   | Symbol         | BC182       | Unit                          |
|--|----------------|-------------|-------------------------------|
| Collector–Emitter Voltage  | $V_{CEO}$      | 50          | Vdc                           |
| Collector–Base Voltage   | $V_{CBO}$      | 60          | 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<br>2.8  | mW<br>mW/ $^\circ\text{C}$    |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 1.0<br>8.0  | Watts<br>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>( $I_C = 2.0\text{ mA}, I_B = 0$ )      | $V_{(BR)CEO}$ | 50  | —   | —  | V  |
| Collector–Base Breakdown Voltage<br>( $I_C = 10\text{ }\mu\text{A}, I_E = 0$ ) | $V_{(BR)CBO}$ | 60  | —   | —  | V  |
| Emitter–Base Breakdown Voltage<br>( $I_E = 100\text{ }\mu\text{A}, I_C = 0$ )  | $V_{(BR)EBO}$ | 6.0 | —   | —  | V  |
| Collector Cutoff Current<br>( $V_{CB} = 50\text{ V}, V_{BE} = 0$ )             | $I_{CBO}$     | —   | 0.2 | 15 | nA |
| Emitter–Base Leakage Current<br>( $V_{EB} = 4.0\text{ V}, I_C = 0$ )           | $I_{EBO}$     | —   | —   | 15 | nA |

# BC182

## 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>( $I_C = 10\ \mu\text{A}$ , $V_{CE} = 5.0\ \text{V}$ )   | BC182<br>$h_{FE}$                     | 40                | —                   | —                 | —    |
| ( $I_C = 2.0\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )   | BC182                                 | 120               | —                   | 500               |      |
|   | BC182A                                | 120               | —                   | 220               |      |
|   | BC182B                                | 180               | —                   | 500               |      |
| ( $I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ )   | BC182                                 | 80                | —                   | —                 |      |
| Collector–Emitter On Voltage<br>( $I_C = 10\ \text{mA}$ , $I_B = 0.5\ \text{mA}$ )<br>( $I_C = 100\ \text{mA}$ , $I_B = 5.0\ \text{mA}$ ) <sup>(1)</sup>  | $V_{CE(sat)}$                         | —                 | 0.07<br>0.2         | 0.25<br>0.6       | V    |
| Base–Emitter Saturation Voltage<br>( $I_C = 100\ \text{mA}$ , $I_B = 5.0\ \text{mA}$ ) <sup>(1)</sup>   | $V_{BE(sat)}$                         | —                 | —                   | 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>( $I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ ) <sup>(1)</sup> | $V_{BE(on)}$                          | —<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>( $I_C = 10\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $f = 100\ \text{MHz}$ )               | $f_T$                                 | —<br>150          | 100<br>200          | —<br>—            | MHz  |
| 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<br>BC182A<br>BC182B<br>$h_{fe}$ | 125<br>125<br>240 | —<br>—<br>—         | 500<br>260<br>500 | —    |
| Noise Figure<br>( $I_C = 0.2\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ , $R_S = 2.0\ \text{k}\Omega$ , $f = 1.0\ \text{kHz}$ )   | NF                                    | —                 | 2.0                 | 10                | dB   |

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

# BC182

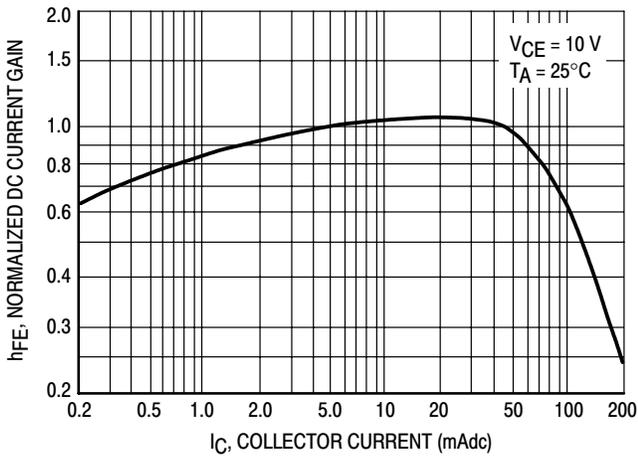


Figure 1. Normalized DC Current Gain

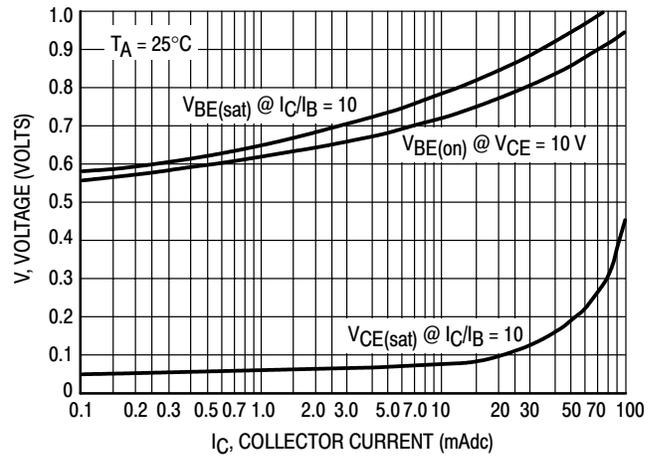


Figure 1. "Saturation" and "On" Voltages

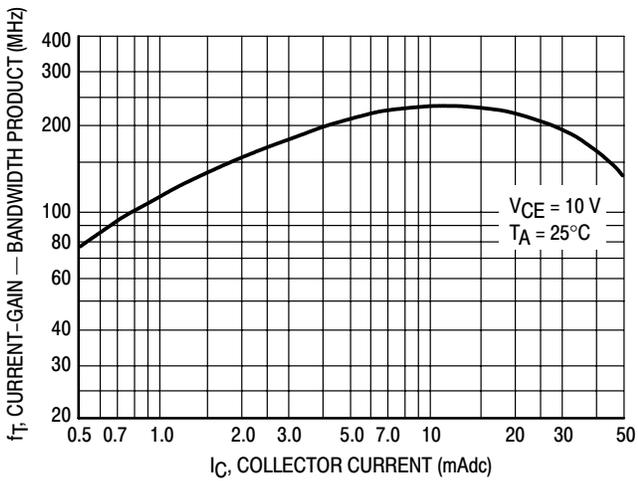


Figure 2. Current-Gain — Bandwidth Product

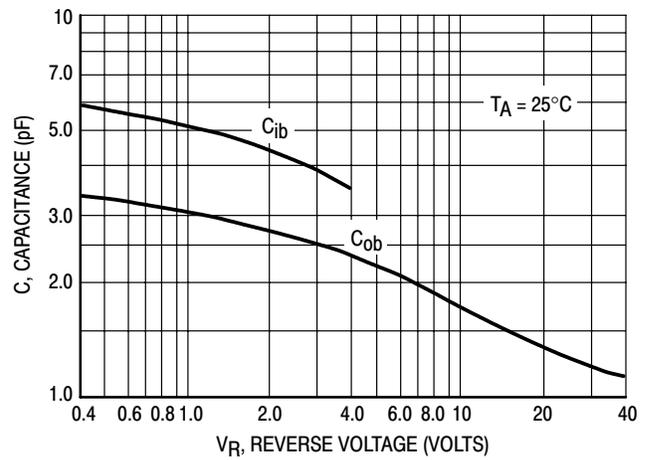


Figure 3. Capacitances

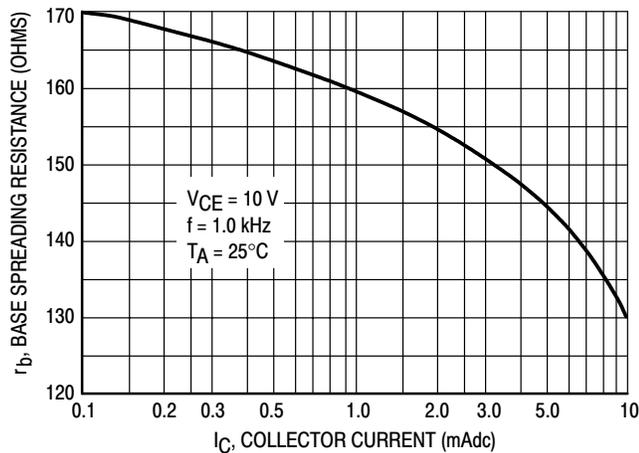
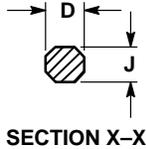
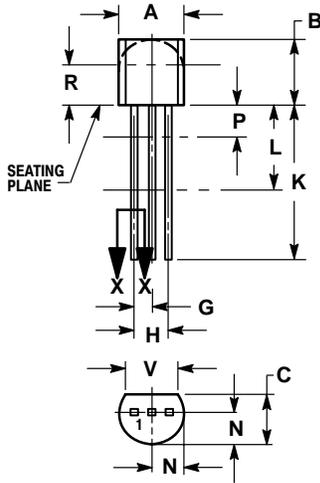


Figure 4. Base Spreading Resistance

## PACKAGE DIMENSIONS

# BC182

## TO-92 (TO-226) CASE 29-11 ISSUE AL



TYLE 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. 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  | 0.021 | 0.407       | 0.533 |
| 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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