

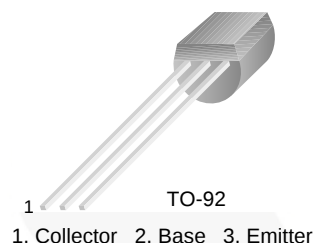


April 2014

## BC556 / BC557 / BC558 / BC559 / BC560 PNP Epitaxial Silicon Transistor

### Features

- Switching and Amplifier
- High-Voltage: BC556,  $V_{CEO} = -65\text{ V}$
- Low-Noise: BC559, BC560
- Complement to BC546, BC547, BC548, BC549, and BC550



### Ordering Information

| Part Number | Marking | Package  | Packing Method |
|-------------|---------|----------|----------------|
| BC556ABU    | BC556A  | TO-92 3L | Bulk           |
| BC556ATA    | BC556A  | TO-92 3L | Ammo           |
| BC556BTA    | BC556B  | TO-92 3L | Ammo           |
| BC556BTF    | BC556B  | TO-92 3L | Tape and Reel  |
| BC556BTFR   | BC556B  | TO-92 3L | Tape and Reel  |
| BC557ATA    | BC557A  | TO-92 3L | Ammo           |
| BC557BTA    | BC557B  | TO-92 3L | Ammo           |
| BC557BTF    | BC557B  | TO-92 3L | Tape and Reel  |
| BC558BTA    | BC558B  | TO-92 3L | Ammo           |
| BC559BTA    | BC559B  | TO-92 3L | Ammo           |
| BC559CTA    | BC559C  | TO-92 3L | Ammo           |
| BC560CTA    | BC560C  | TO-92 3L | Ammo           |

BC556 / BC557 / BC558 / BC559 / BC560 — PNP Epitaxial Silicon Transistor

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                   | Value         | Unit             |
|-----------|-----------------------------|---------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage      | BC556         | V                |
|           |                             | BC557 / BC560 |                  |
|           |                             | BC558 / BC559 |                  |
| $V_{CEO}$ | Collector-Emitter Voltage   | BC556         | V                |
|           |                             | BC557 / BC560 |                  |
|           |                             | BC558 / BC559 |                  |
| $V_{EBO}$ | Emitter-Base Voltage        | -5            | V                |
| $I_C$     | Collector Current (DC)      | -100          | mA               |
| $P_C$     | Collector Power Dissipation | 500           | mW               |
| $T_J$     | Junction Temperature        | 150           | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature Range   | -65 to +150   | $^\circ\text{C}$ |

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol        | Parameter                            | Conditions                                                     | Min. | Typ. | Max. | Unit |
|---------------|--------------------------------------|----------------------------------------------------------------|------|------|------|------|
| $I_{CBO}$     | Collector Cut-Off Current            | $V_{CB} = -30\text{ V}, I_E = 0$                               |      |      | -15  | nA   |
| $h_{FE}$      | DC Current Gain                      | $V_{CE} = -5\text{ V}, I_C = -2\text{ mA}$                     | 110  |      | 800  |      |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$                    |      | -90  | -300 | mV   |
|               |                                      | $I_C = -100\text{ mA}, I_B = -5\text{ mA}$                     |      | -250 | -650 |      |
| $V_{BE(sat)}$ | Collector-Base Saturation Voltage    | $I_C = -10\text{ mA}, I_B = -0.5\text{ mA}$                    |      | -700 |      | mV   |
|               |                                      | $I_C = -100\text{ mA}, I_B = -5\text{ mA}$                     |      | -900 |      |      |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $V_{CE} = -5\text{ V}, I_C = -2\text{ mA}$                     | -600 | -660 | -750 | mV   |
|               |                                      | $V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$                    |      |      | -800 |      |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE} = -5\text{ V}, I_C = -10\text{ mA}, f = 10\text{ MHz}$ |      | 150  |      | MHz  |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$             |      |      | 6    | pF   |
| NF            | Noise Figure                         | BC556 / BC557 / BC558                                          |      | 2    | 10   | dB   |
|               |                                      | BC559 / BC560                                                  |      | 1    | 4    |      |
|               |                                      | BC559                                                          |      | 1.2  | 4.0  |      |
|               |                                      | BC560                                                          |      | 1.2  | 2.0  |      |

## $h_{FE}$ Classification

| Classification | A         | B         | C         |
|----------------|-----------|-----------|-----------|
| $h_{FE}$       | 110 ~ 220 | 200 ~ 450 | 420 ~ 800 |

## Typical Performance Characteristics

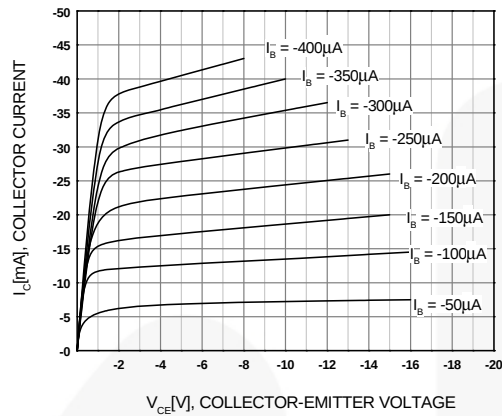


Figure 1. Static Characteristic

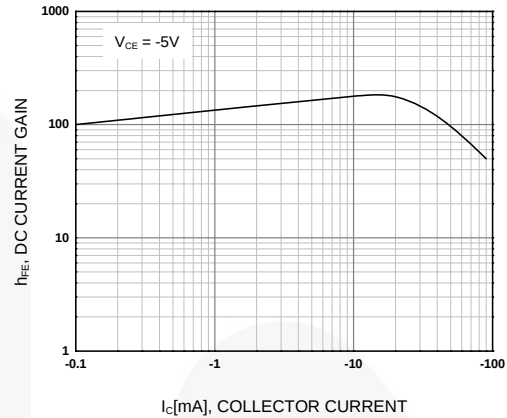


Figure 2. DC Current Gain

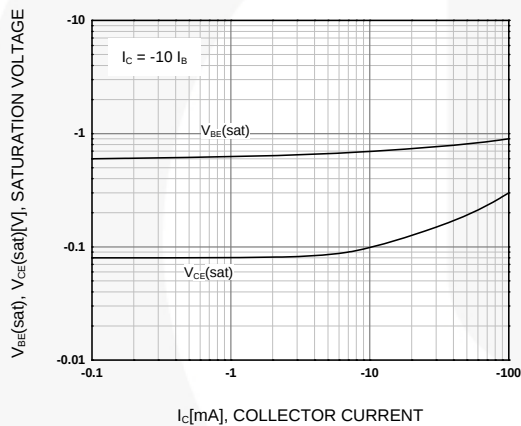


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

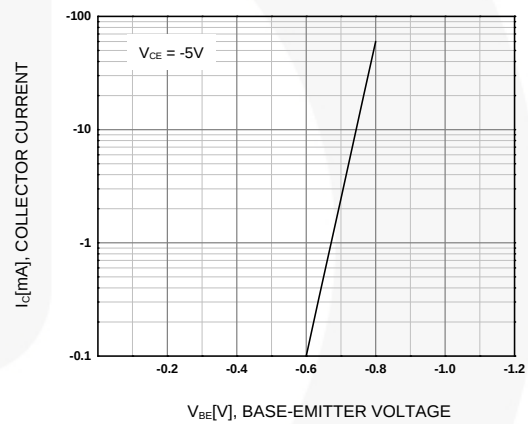


Figure 4. Base-Emitter On Voltage

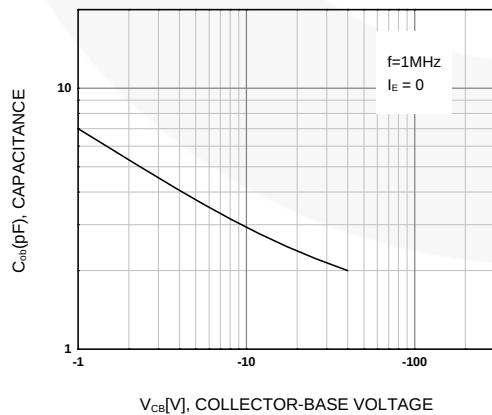


Figure 5. Collector Output Capacitance

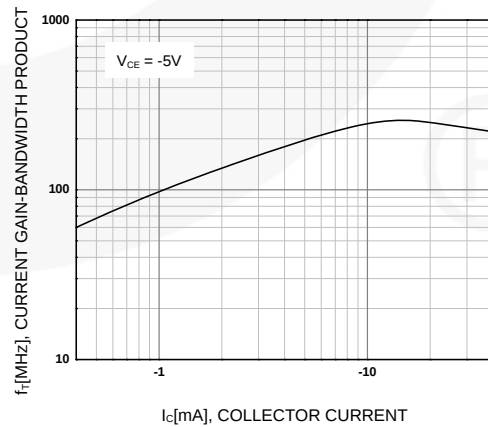
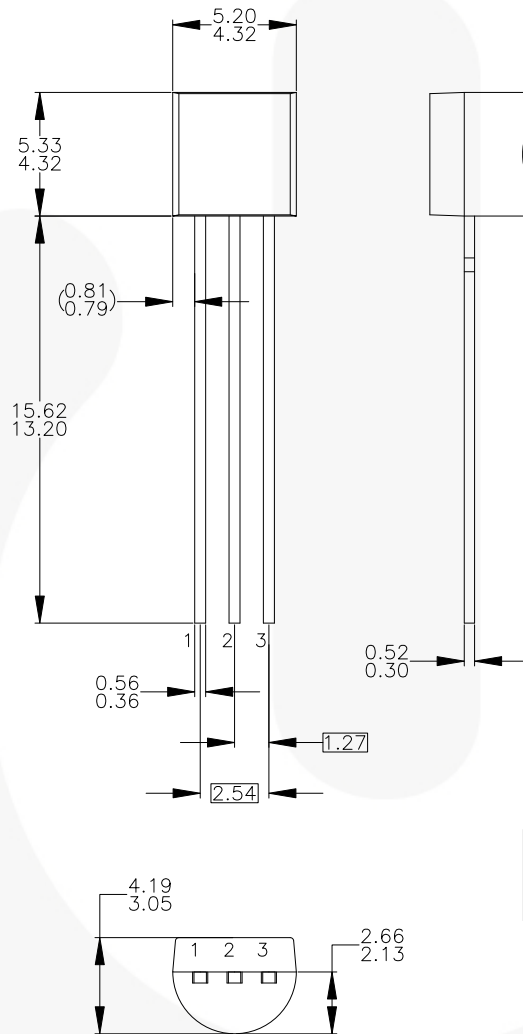


Figure 6. Current Gain Bandwidth Product

## Physical Dimensions

### TO-92 (Bulk)



NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994.
- D) TO-92 (92,94,96,97,98) PIN CONFIGURATION:

| PIN | 92    | 94    | 96    | 97    | 98    |
|-----|-------|-------|-------|-------|-------|
| 1   | P F M | P F M | B F M | P F M | P F M |
| 2   | E S S | E S S | B D G | C G D | C G D |
| 3   | B D G | C G D | E S S | B D G | E S S |
| 3   | C G D | B D G | C G D | E S S | B D G |

LEGEND:

P - BIPOLAR E - EMITTER D - DRAIN  
F - JFET B - BASE S - SOURCE  
M - DMOS C - COLLECTOR G - GATE

- E) FOR PACKAGE 92, 94, 96, 97 AND 98:  
PIN CONFIGURATION DRAIN "D" AND SOURCE "S"  
ARE INTERCHANGEABLE AT JFET "F" OPTION.
- F) DRAWING FILENAME: MKT-ZA03DREV3.

**Figure 7. 3-LEAD, TO92, JEDEC TO-92 COMPLIANT STRAIGHT LEAD CONFIGURATION (OLD TO92AM3)**

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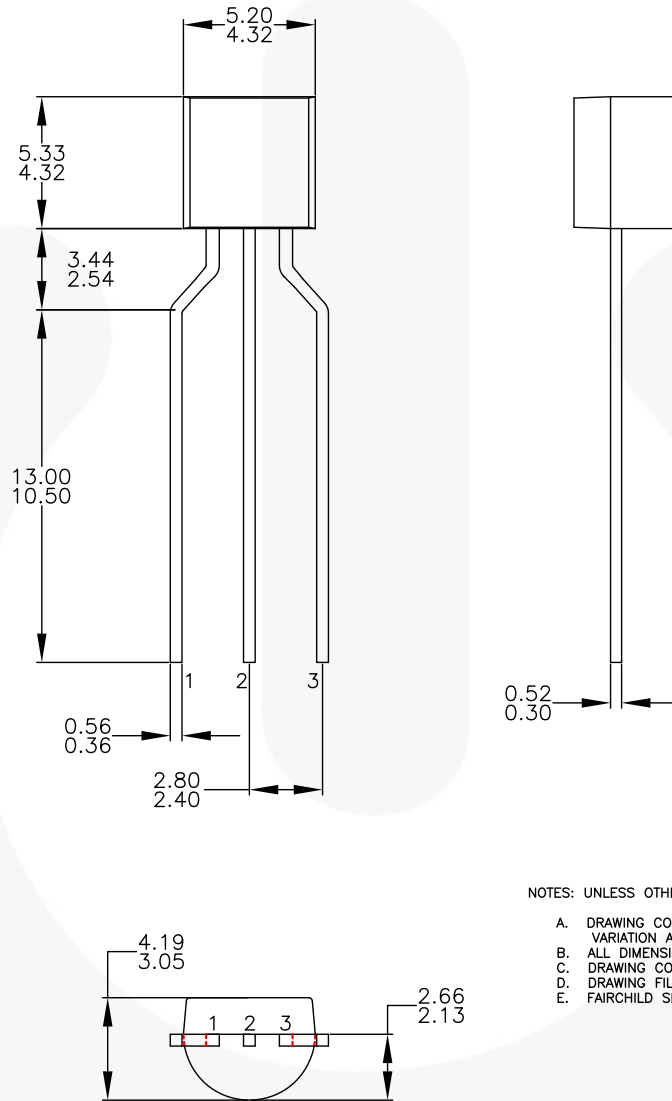
<http://www.fairchildsemi.com/dwg/ZA/ZA03D.pdf>

For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:

[http://www.fairchildsemi.com/packaging\\_dwg/PKG-ZA03D\\_BK.pdf](http://www.fairchildsemi.com/packaging_dwg/PKG-ZA03D_BK.pdf)

## Physical Dimensions (Continued)

## TO-92 (Ammo, Tape and Reel)



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
- D. DRAWING FILENAME: MKT-ZA03FREV3.
- E. FAIRCHILD SEMICONDUCTOR.

Figure 8. 3-LEAD, TO92, MOLDED 0.200 IN LINE SPACING LEAD FORM (J61Z OPTION)

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<http://www.fairchildsemi.com/dwg/ZA/ZA03F.pdf>.

For current tape and reel specifications, visit Fairchild Semiconductor's online packaging area:

[http://www.fairchildsemi.com/packing\\_dwg/PKG-ZA03F\\_BK.pdf](http://www.fairchildsemi.com/packing_dwg/PKG-ZA03F_BK.pdf).



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