

PNP Epitaxial Silicon Transistor

BC556, BC557, BC558, BC559, BC560

Features

- Switching and Amplifier
- High-Voltage: BC556, $V_{CEO} = -65$ V
- Low-Noise: BC559, BC560
- Complement to BC546, BC547, BC548, BC549, and BC550
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------------|------------------|
| Collector - Base Voltage BC556 BC557 / BC560 BC558 / BC559 | V_{CBO} | -80 -50 -30 | V |
| Collector - Emitter Voltage BC556 BC557 / BC560 BC558 / BC559 | V_{CEO} | -65 -45 -30 | V |
| Emitter - Base Voltage | V_{EBO} | -5 | V |
| Collector Current (DC) | I_C | -100 | mA |
| Peak Collector Current (Pulse) | I_{CP} | -200 | mA |
| Peak Base Current (Pulse) | I_{BP} | -200 | mA |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -65 to +150 | $^\circ\text{C}$ |

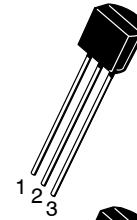
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Note 1)

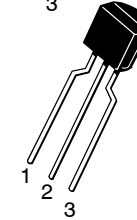
($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Max. | Unit |
|---|-----------------|------------|----------------------------|
| Total Device Dissipation Derate above 25°C | P_D | 500 4.0 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 250 | $^\circ\text{C}/\text{W}$ |

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



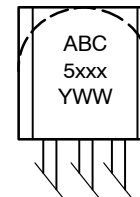
TO-92-3
CASE 135AN
Straight Lead
Bulk Packing



TO-92-3
CASE 135AR
Bent Lead
Tape & Reel
Fan-Fold

1. Collector
2. Base
3. Emitter

MARKING DIAGRAM



A = Assembly Location
BC5xxx = Specific Device Code
xxx = 56A, 56B, 57A, 57B,
58B, 59B, 59C, 60C
Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

NOTE: Some of the devices on this data sheet have been **DISCONTINUED**. Please refer to the table on page 2.

BC556, BC557, BC558, BC559, BC560

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------------------|--------------------------------------|---|---|------|------|------|
| I _{CBO} | Collector Cut-Off Current | V _{CB} = -30 V, I _E = 0 | | | -15 | nA |
| h _{FE} | DC Current Gain | V _{CE} = -5 V, I _C = -2 mA | 110 | | 800 | |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage | I _C = -10 mA, I _B = -0.5 mA | | -90 | -300 | mV |
| | | I _C = -100 mA, I _B = -5 mA | | -250 | -650 | |
| V _{BE(sat)} | Collector-Base Saturation Voltage | I _C = -10 mA, I _B = -0.5 mA | | -700 | | mV |
| | | I _C = -100 mA, I _B = -5 mA | | -900 | | |
| V _{BE(on)} | Base-Emitter On Voltage | V _{CE} = -5 V, I _C = -2 mA | -600 | -660 | -750 | mV |
| | | V _{CE} = -5 V, I _C = -10 mA | | | -800 | |
| f _T | Current Gain Bandwidth Product | V _{CE} = -5 V, I _C = -10 mA, f = 10 MHz | | 150 | | MHz |
| C _{ob} | Output Capacitance | V _{CB} = -10 V, I _E = 0, f = 1 MHz | | | 6 | pF |
| NF | Noise Figure | BC556 / BC557 / BC558 | V _{CE} = -5 V, I _C = -200 μA, f = 1 kHz, R _G = 2 kΩ | 2 | 10 | dB |
| | | BC559 / BC560 | | 1 | 4 | |
| | | BC559 | | 1.2 | 4.0 | |
| | | BC560 | | 1.2 | 2.0 | |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

h_{FE} CLASSIFICATION

| Classification | A | B | C |
|------------------|-----------|-----------|-----------|
| h _{FE2} | 110 ~ 220 | 200 ~ 450 | 420 ~ 800 |

ORDERING INFORMATION

| Part Number | Marking | Package | Shipping [†] |
|-------------|---------|-------------------------------|-----------------------|
| BC559CTA | BC559C | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |

DISCONTINUED (Note 2)

| | | | |
|-----------|--------|-------------------------------|--------------------------|
| BC556ABU | BC556A | TO-92-3, case 135AN (Pb-Free) | 10,000 Units/ Bulk Box |
| BC556ATA | BC556A | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC556BTA | BC556B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC556BTF | BC556B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Tape & Reel |
| BC556BTFR | BC556B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Tape & Reel |
| BC557ATA | BC557A | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC557BTA | BC557B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC557BTF | BC557B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Tape & Reel |
| BC558BTA | BC558B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC559BTA | BC559B | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |
| BC560CTA | BC560C | TO-92-3, case 135AR (Pb-Free) | 2,000 Units/ Fan-Fold |

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

2. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

BC556, BC557, BC558, BC559, BC560

TYPICAL PERFORMANCE CHARACTERISTICS

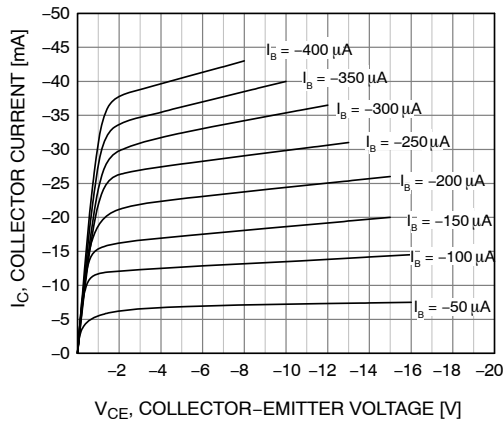


Figure 1. Static Characteristic

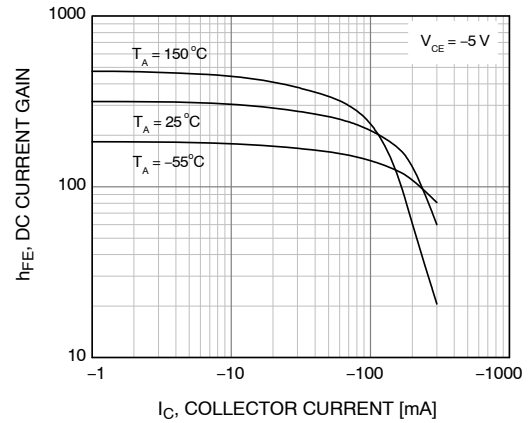


Figure 2. DC Current Gain

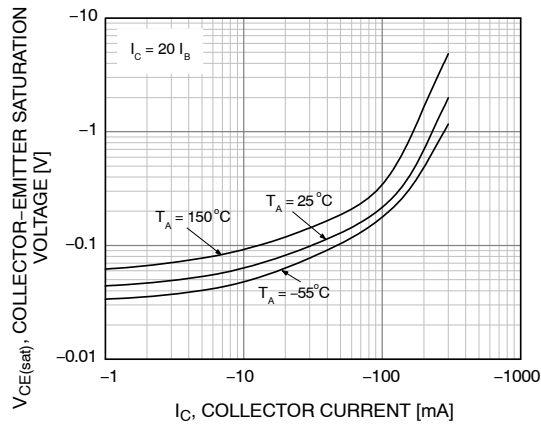


Figure 3. Collector-Emitter Saturation Voltage

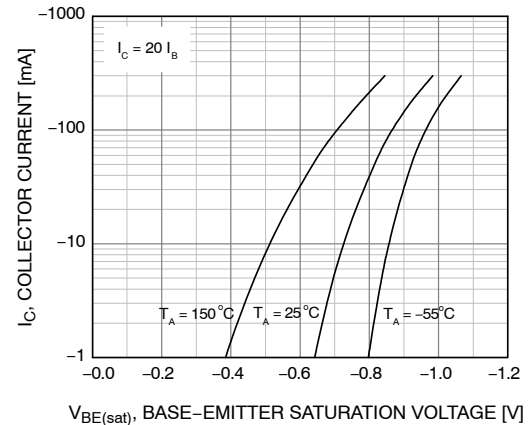


Figure 4. Base-Emitter Saturation Voltage

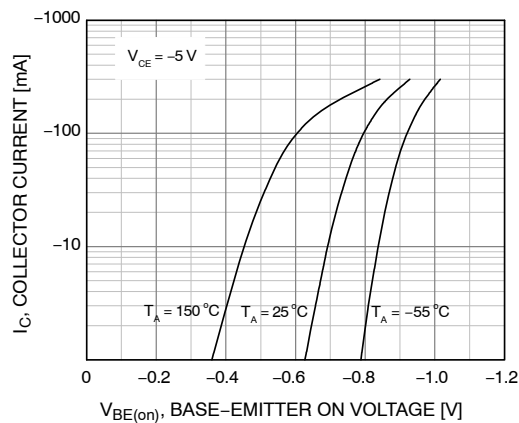


Figure 5. Base-Emitter On Voltage

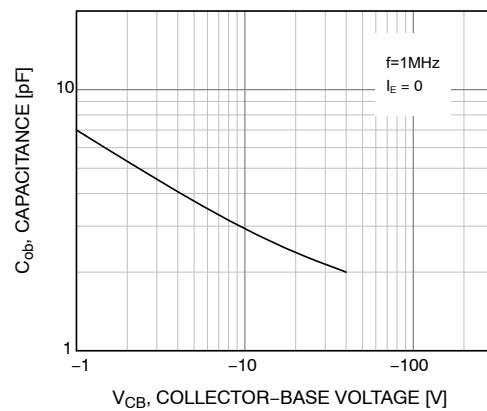


Figure 6. Collector Output Capacitance

BC556, BC557, BC558, BC559, BC560

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

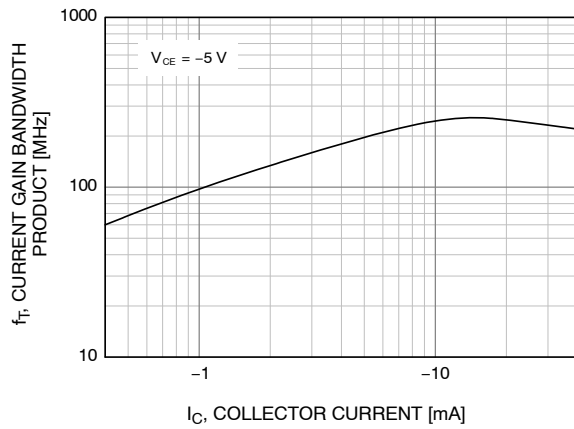


Figure 7. Current Gain Bandwidth Product

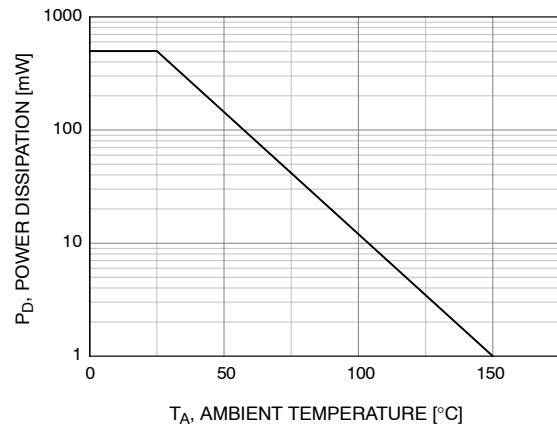


Figure 8. Power Deration

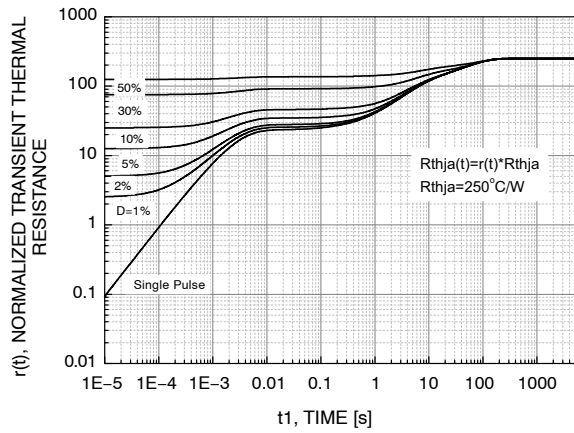
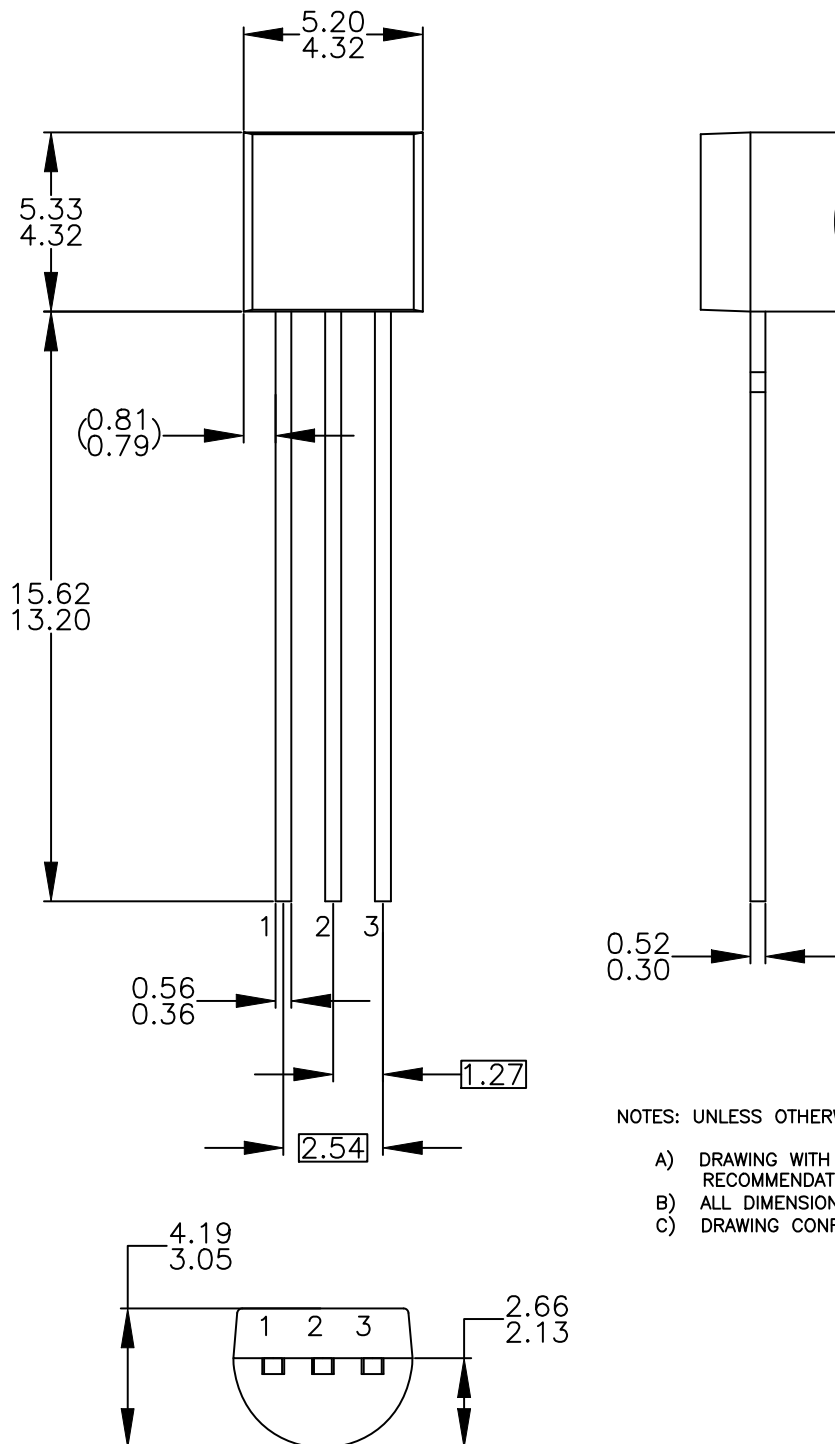


Figure 9. Normalized Transient Thermal Resistance

TO-92 3 4.825x4.76
CASE 135AN
ISSUE O

DATE 31 JUL 2016



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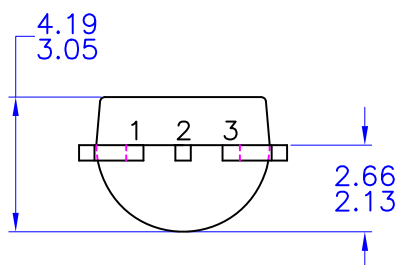
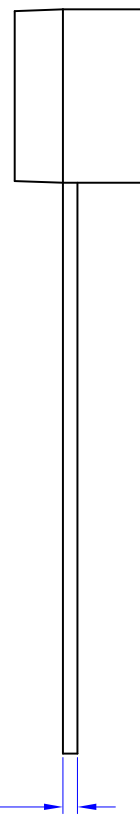
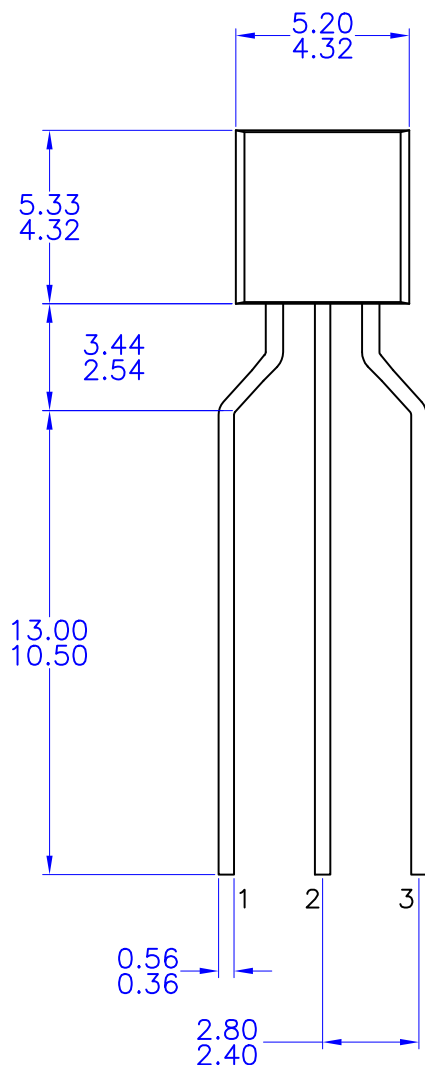
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CASE 135AR
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DATE 30 SEP 2016



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