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BC307B, BC307C

Amplifier Transistors

PNP Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|----------------|-------------|----------------------------|
| Collector – Emitter Voltage | V_{CEO} | -45 | Vdc |
| Collector – Base Voltage | V_{CBO} | -50 | Vdc |
| Emitter – Base Voltage | V_{EBO} | -5.0 | Vdc |
| Collector Current – Continuous | I_C | -100 | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 350 2.8 | mW mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.0 8.0 | W mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

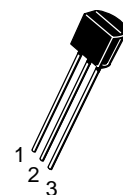
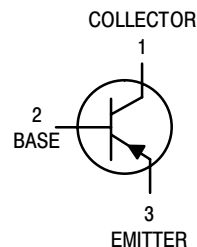
| Characteristic | Symbol | Max | Unit |
|--|-----------------|-----|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 125 | $^\circ\text{C}/\text{W}$ |

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



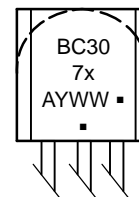
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29
STYLE 17

MARKING DIAGRAM



BC307x = Device Code
x = B or C
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|--------------------|--------------------|
| BC307B | TO-92 | 5000 Units / Box |
| BC307BG | TO-92 (Pb-Free) | 5000 Units / Box |
| BC307BRL1 | TO-92 | 2000 / Tape & Reel |
| BC307BRL1G | TO-92 (Pb-Free) | 2000 / Tape & Reel |
| BC307BZL1 | TO-92 | 2000 / Ammo Box |
| BC307BZL1G | TO-92 (Pb-Free) | 2000 / Ammo Box |
| BC307C | TO-92 | 5000 Units / Box |
| BC307CG | TO-92 (Pb-Free) | 5000 Units / Box |

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

BC307B, BC307C

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|----------------------|------|------|-----|------------------------|
| OFF CHARACTERISTICS | | | | | |
| Collector–Emitter Breakdown Voltage (I _C = –2.0 mA _{dc} , I _B = 0) | V _{(BR)CEO} | –45 | – | – | V _{dc} |
| Emitter–Base Breakdown Voltage (I _E = –100 μA _{dc} , I _C = 0) | V _{(BR)EBO} | –5.0 | – | – | V _{dc} |
| Collector–Emitter Leakage Current (V _{CE} S = –50 V, V _{BE} = 0) (V _{CE} S = –50 V, V _{BE} = 0) T _A = 125°C | I _{CES} | – | –0.2 | –15 | nA _{dc} μA |

ON CHARACTERISTICS

| | | | | | |
|--|----------------------|-------|-------------------------|-------------------|-----------------|
| DC Current Gain (I _C = –10 μA _{dc} , V _{CE} = –5.0 V _{dc}) | h _{FE} | – | 150 | – | – |
| BC307B BC307C | | – | 270 | – | – |
| (I _C = –2.0 mA _{dc} , V _{CE} = –5.0 V _{dc}) | BC307 | 120 | – | 800 | |
| | BC307B | 200 | 290 | 460 | |
| | BC307C | 420 | 500 | 800 | |
| (I _C = –100 mA _{dc} , V _{CE} = –5.0 V _{dc}) | BC307B | – | 180 | – | |
| | BC307C | – | 300 | – | |
| Collector–Emitter Saturation Voltage (I _C = –10 mA _{dc} , I _B = –0.5 mA _{dc}) (I _C = –10 mA _{dc} , I _B = see Note 1) (I _C = –100 mA _{dc} , I _B = –5.0 mA _{dc}) | V _{CE(sat)} | – | –0.10 –0.30 –0.25 | –0.3 –0.6 – | V _{dc} |
| Base–Emitter Saturation Voltage (I _C = –10 mA _{dc} , I _B = –0.5 mA _{dc}) (I _C = –100 mA _{dc} , I _B = –5.0 mA _{dc}) | V _{BE(sat)} | – | –0.7 –1.0 | – – | V _{dc} |
| Base–Emitter On Voltage (I _C = –2.0 mA _{dc} , V _{CE} = –5.0 V _{dc}) | V _{BE(on)} | –0.55 | –0.62 | –0.7 | V _{dc} |

DYNAMIC CHARACTERISTICS

| | | | | | |
|---|------------------|---|-----|-----|-----|
| Current–Gain – Bandwidth Product (I _C = –10 mA _{dc} , V _{CE} = –5.0 V _{dc} , f = 100 MHz) | f _T | – | 280 | – | MHz |
| Common Base Capacitance (V _{CB} = –10 V _{dc} , I _C = 0, f = 1.0 MHz) | C _{cbo} | – | – | 6.0 | pF |
| Noise Figure (I _C = –0.2 mA _{dc} , V _{CE} = –5.0 V _{dc} , R _S = 2.0 kΩ, f = 1.0 kHz) | NF | – | 2.0 | 10 | dB |

1. I_C = –10 mA_{dc} on the constant base current characteristic, which yields the point I_C = –11 mA_{dc}, V_{CE} = –1.0 V.

TYPICAL CHARACTERISTICS

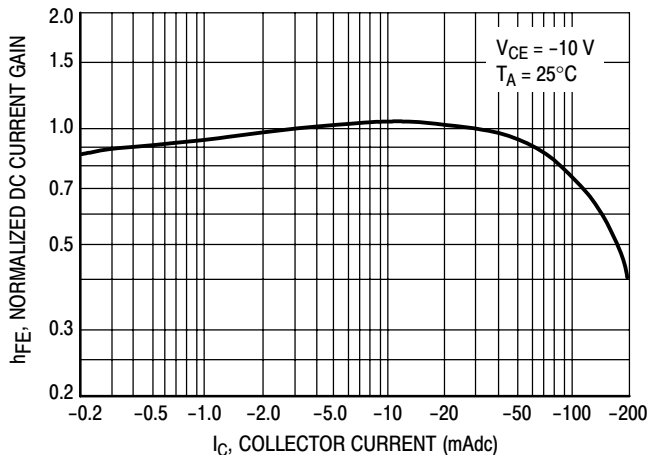


Figure 1. Normalized DC Current Gain

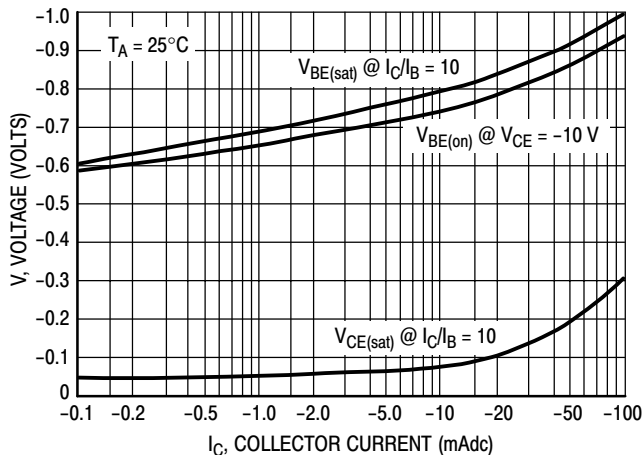


Figure 2. "Saturation" and "On" Voltages

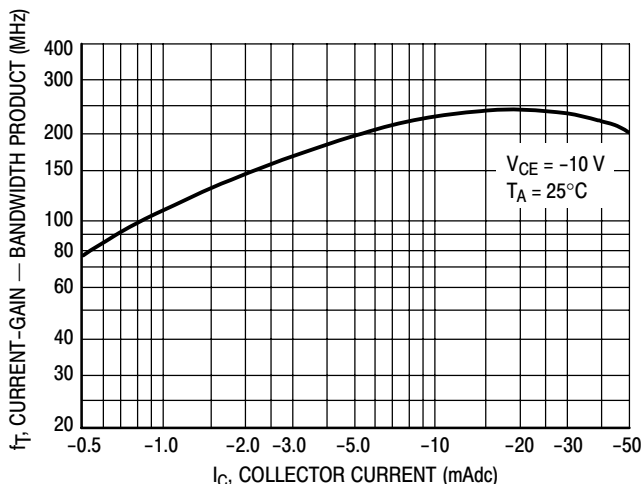


Figure 3. Current-Gain — Bandwidth Product

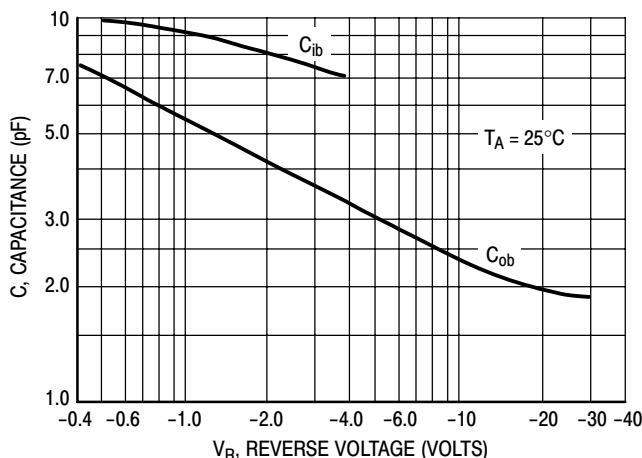


Figure 4. Capacitances

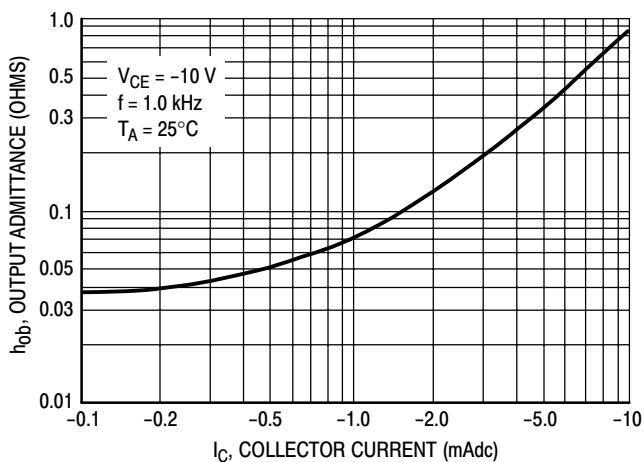


Figure 5. Output Admittance

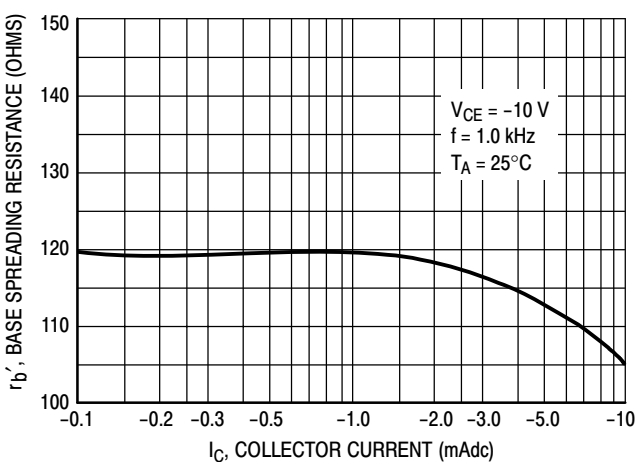
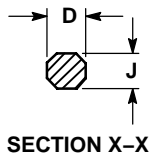
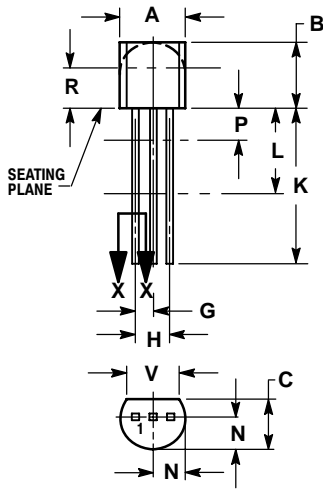


Figure 6. Base Spreading Resistance

BC307B, BC307C

PACKAGE DIMENSIONS

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



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 | --- |

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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