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BC307B

Amplifier Transistors

PNP Silicon

Features

- This is a Pb-Free Device*

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 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

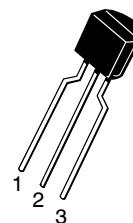
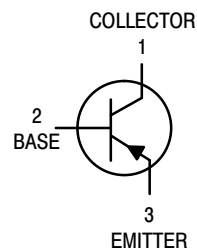
| Characteristic | Symbol | Max | Unit |
|---|-----------------|-----|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 357 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 125 | $^\circ\text{C}/\text{W}$ |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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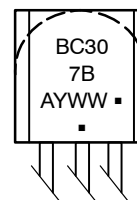
<http://onsemi.com>



TO-92
CASE 29
STYLE 17

BENT LEAD
TAPE & REEL
AMMO PACK

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|--------------------|--------------------|
| BC307BRL1G | TO-92 (Pb-Free) | 2000 / Tape & Reel |

†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.

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

BC307B

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---------------|------|------|-----|-----------------------|
| OFF CHARACTERISTICS | | | | | |
| Collector–Emitter Breakdown Voltage ($I_C = -2.0\text{ mAdc}$, $I_B = 0$) | $V_{(BR)CEO}$ | -45 | - | - | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{Adc}$, $I_C = 0$) | $V_{(BR)EBO}$ | -5.0 | - | - | Vdc |
| Collector–Emitter Leakage Current ($V_{CES} = -50\text{ V}$, $V_{BE} = 0$) ($V_{CES} = -50\text{ V}$, $V_{BE} = 0$) $T_A = 125^\circ\text{C}$ | I_{CES} | - | -0.2 | -15 | nAdc μA |

ON CHARACTERISTICS

| | | | | | |
|--|---------------|-------|-------|------|-----|
| DC Current Gain ($I_C = -10\text{ }\mu\text{Adc}$, $V_{CE} = -5.0\text{ Vdc}$) ($I_C = -2.0\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) ($I_C = -100\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) | h_{FE} | - | 150 | - | - |
| | | 200 | 290 | 460 | |
| | | - | 180 | - | |
| Collector–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -0.5\text{ mAdc}$) ($I_C = -10\text{ mAdc}$, $I_B = \text{see Note 1}$) ($I_C = -100\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$) | $V_{CE(sat)}$ | - | -0.10 | -0.3 | Vdc |
| | | - | -0.30 | -0.6 | |
| | | - | -0.25 | - | |
| Base–Emitter Saturation Voltage ($I_C = -10\text{ mAdc}$, $I_B = -0.5\text{ mAdc}$) ($I_C = -100\text{ mAdc}$, $I_B = -5.0\text{ mAdc}$) | $V_{BE(sat)}$ | - | -0.7 | - | Vdc |
| | | - | -1.0 | - | |
| Base–Emitter On Voltage ($I_C = -2.0\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$) | $V_{BE(on)}$ | -0.55 | -0.62 | -0.7 | Vdc |

DYNAMIC CHARACTERISTICS

| | | | | | |
|---|-----------|---|-----|-----|-----|
| Current–Gain–Bandwidth Product ($I_C = -10\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$) | f_T | - | 280 | - | MHz |
| Common Base Capacitance ($V_{CB} = -10\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$) | C_{cbo} | - | - | 6.0 | pF |
| Noise Figure ($I_C = -0.2\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$) | NF | - | 2.0 | 10 | dB |

1. $I_C = -10\text{ mAdc}$ on the constant base current characteristic, which yields the point $I_C = -11\text{ mAdc}$, $V_{CE} = -1.0\text{ V}$.

TYPICAL CHARACTERISTICS

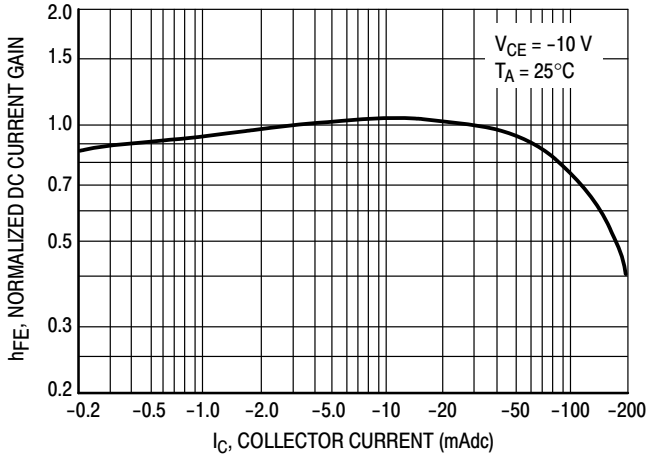


Figure 1. Normalized DC Current Gain

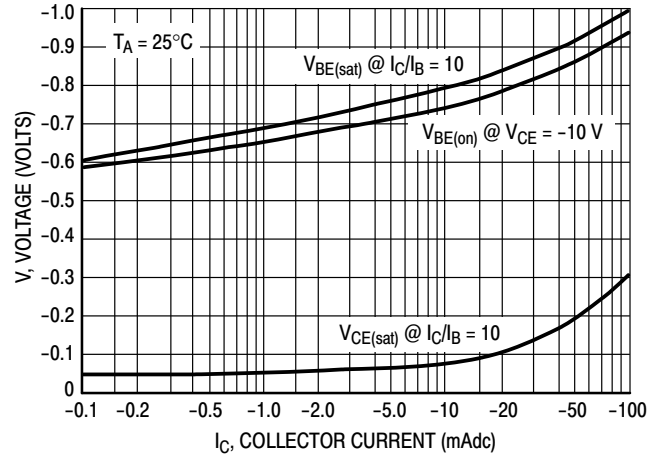


Figure 2. "Saturation" and "On" Voltages

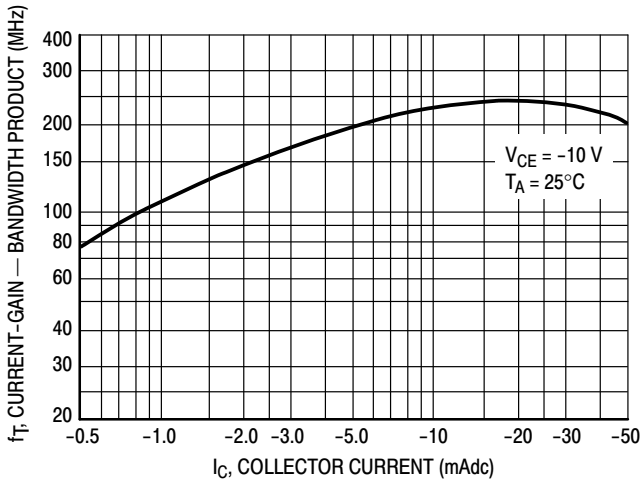


Figure 3. Current-Gain — Bandwidth Product

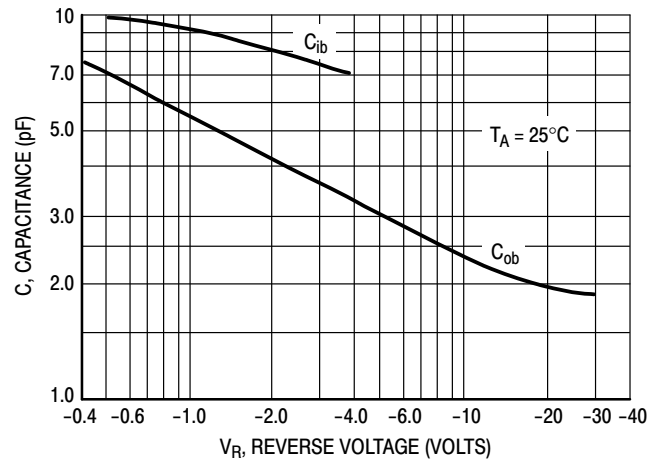


Figure 4. Capacitances

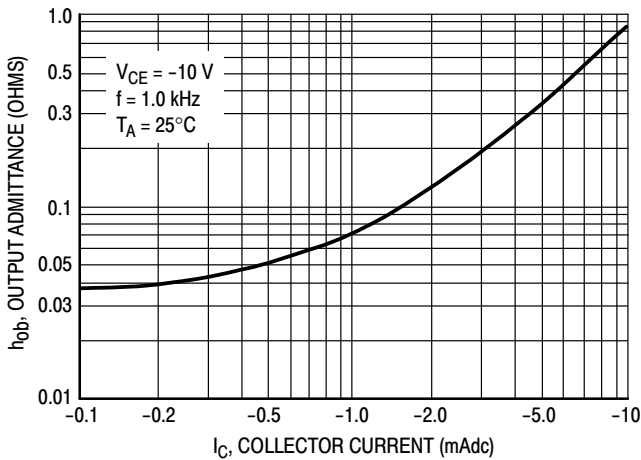


Figure 5. Output Admittance

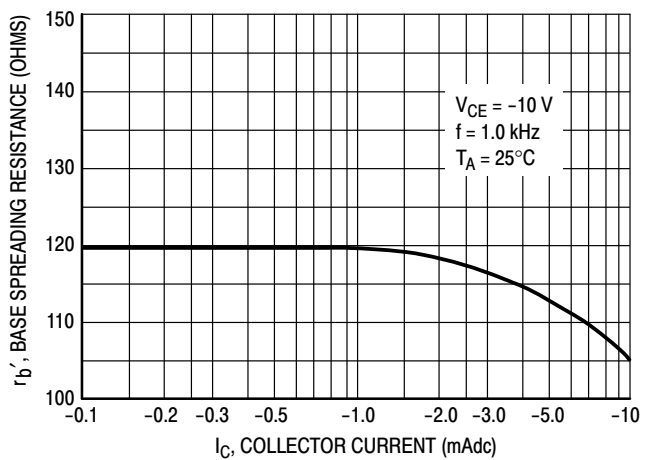
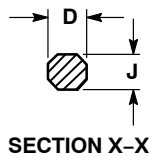
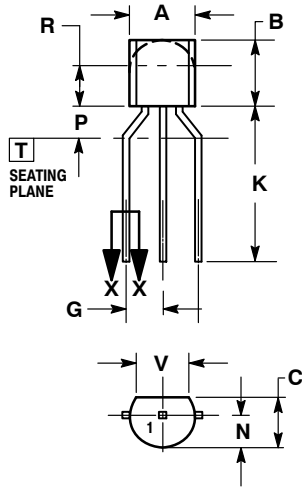


Figure 6. Base Spreading Resistance

BC307B

PACKAGE DIMENSIONS

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



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | MILLIMETERS | |
|-----|-------------|------|
| | MIN | MAX |
| A | 4.45 | 5.20 |
| B | 4.32 | 5.33 |
| C | 3.18 | 4.19 |
| D | 0.40 | 0.54 |
| G | 2.40 | 2.80 |
| J | 0.39 | 0.50 |
| K | 12.70 | --- |
| N | 2.04 | 2.66 |
| P | 1.50 | 4.00 |
| R | 2.93 | --- |
| V | 3.43 | --- |

STYLE 17:

1. COLLECTOR
2. BASE
3. EMITTER

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