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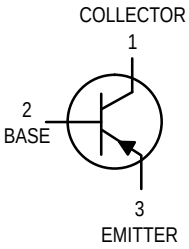
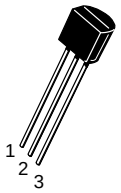
# Amplifier Transistors

## PNP Silicon

**BC327,-16,-25**
**BC328,-16,-25**




**CASE 29–04, STYLE 17**
**TO–92 (TO–226AA)**

### MAXIMUM RATINGS

| Rating | Symbol | BC327 | BC328 | Unit |
|---|---|---|---|---|
| Collector–Emitter Voltage | $V_{CEO}$ | –45 | –25 | Vdc |
| Collector–Base Voltage | $V_{CBO}$ | –50 | –30 | Vdc |
| Emitter–Base Voltage | $V_{EBO}$ | –5.0 | | Vdc |
| Collector Current — Continuous | $I_C$ | –800 | | mAdc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 625<br>5.0 | | mW<br>mW/°C |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 1.5<br>12 | | Watt<br>mW/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | –55 to +150 | | °C |

PDF Support

### THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 200 | °C/W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 83.3 | °C/W |

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

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector–Emitter Breakdown Voltage<br>($I_C$ = –10 mA, $I_B$ = 0) | <br>BC327<br>BC328 | $V_{(BR)CEO}$ | <br>–45<br>–25 | <br>—<br>— | <br>—<br>— | Vdc |
| Collector–Emitter Breakdown Voltage<br>($I_C$ = –100 μA, $I_E$ = 0) | <br>BC327<br>BC328 | $V_{(BR)CES}$ | <br>–50<br>–30 | <br>—<br>— | <br>—<br>— | Vdc |
| Emitter–Base Breakdown Voltage<br>($I_E$ = –10 μA, $I_C$ = 0) | | $V_{(BR)EBO}$ | –5.0 | — | — | Vdc |
| Collector Cutoff Current<br>($V_{CB}$ = –30 V, $I_E$ = 0)<br>($V_{CB}$ = –20 V, $I_E$ = 0) | <br>BC327<br>BC328 | $I_{CBO}$ | <br>—<br>— | <br>—<br>— | <br>–100<br>–100 | nAdc |
| Collector Cutoff Current<br>($V_{CE}$ = –45 V, $V_{BE}$ = 0)<br>($V_{CE}$ = –25 V, $V_{BE}$ = 0) | <br>BC327<br>BC328 | $I_{CES}$ | <br>—<br>— | <br>—<br>— | <br>–100<br>–100 | nAdc |
| Emitter Cutoff Current<br>($V_{EB}$ = –4.0 V, $I_C$ = 0) | | $I_{EBO}$ | — | — | –100 | nAdc |

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

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **ON CHARACTERISTICS** | | | | | | |
| DC Current Gain | | $h_{FE}$ | | | | — |
| ($I_C$ = –100 mA, $V_{CE}$ = –1.0 V) | BC327/BC328 | | 100 | — | 630 | |
| | BC327–16/BC328–16 | | 100 | — | 250 | |
| | BC327–25/BC328–25 | | 160 | — | 400 | |
| ($I_C$ = –300 mA, $V_{CE}$ = –1.0 V) | | | 40 | — | — | |
| Base–Emitter On Voltage ($I_C$ = –300 mA, $V_{CE}$ = –1.0 V) | | $V_{BE(on)}$ | — | — | –1.2 | Vdc |
| Collector–Emitter Saturation Voltage ($I_C$ = –500 mA, $I_B$ = –50 mA) | | $V_{CE(sat)}$ | — | — | –0.7 | Vdc |
| **SMALL–SIGNAL CHARACTERISTICS** | | | | | | |
| Output Capacitance ($V_{CB}$ = –10 V, $I_E$ = 0, f = 1.0 MHz) | | $C_{ob}$ | — | 11 | — | pF |
| Current–Gain — Bandwidth Product ($I_C$ = –10 mA, $V_{CE}$ = –5.0 V, f = 100 MHz) | | $f_T$ | — | 260 | — | MHz |

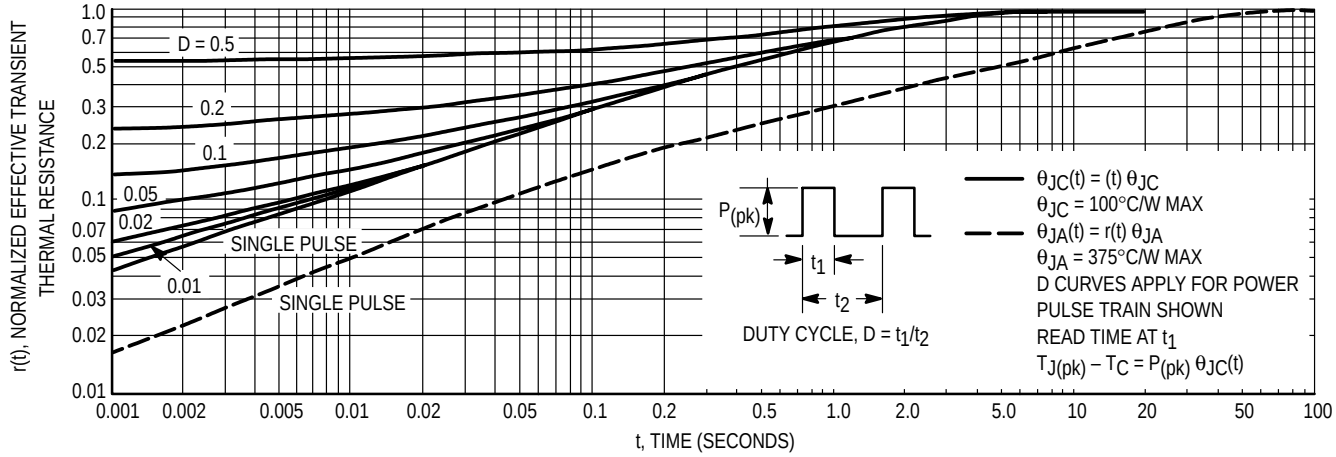



**Figure 1. Thermal Response**

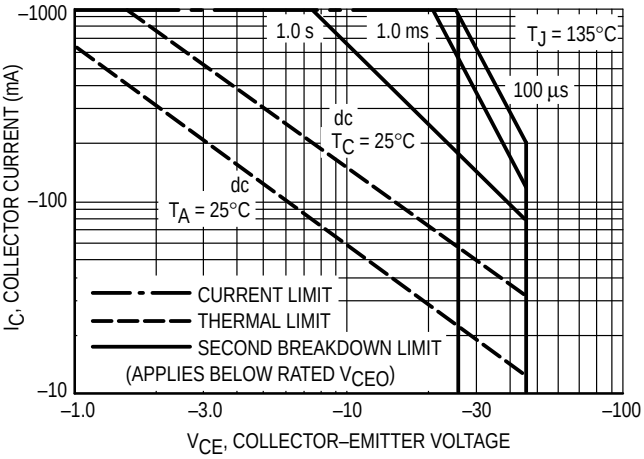



**Figure 2. Active Region — Safe Operating Area**

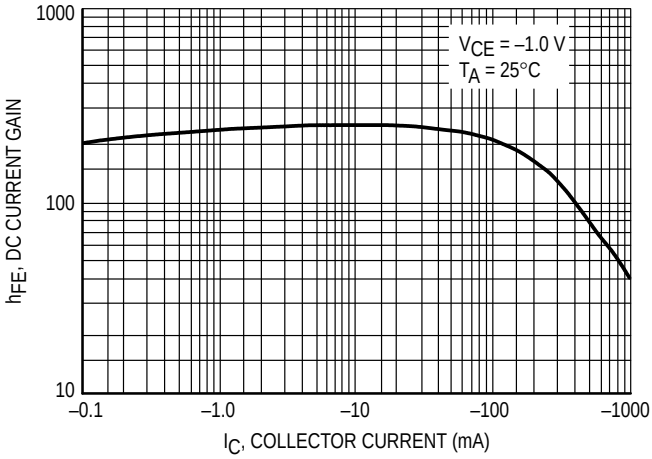



**Figure 3. DC Current Gain**

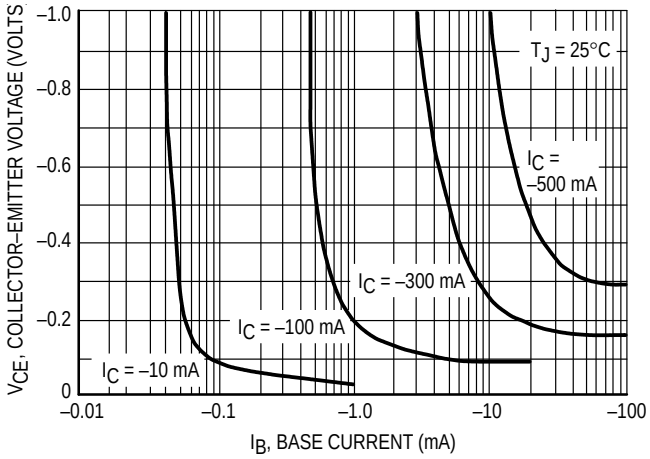



**Figure 4. Saturation Region**

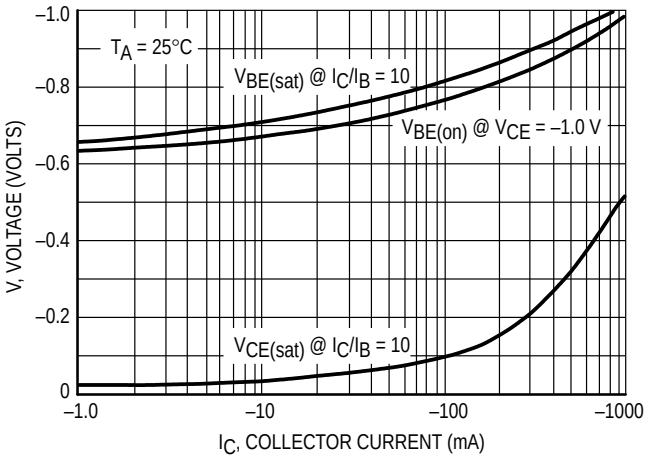



**Figure 5. “On” Voltages**

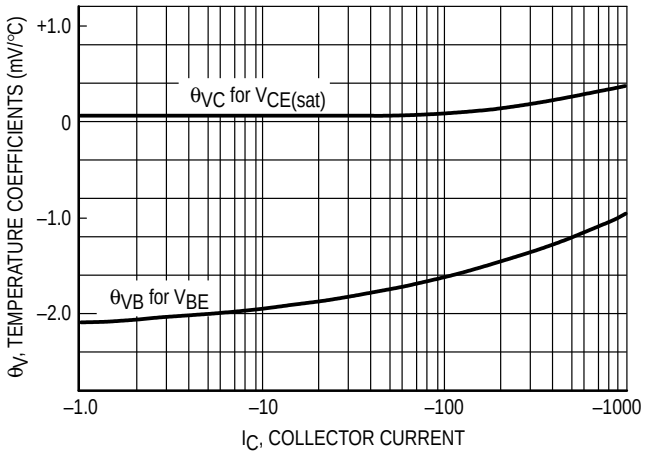



**Figure 6. Temperature Coefficients**

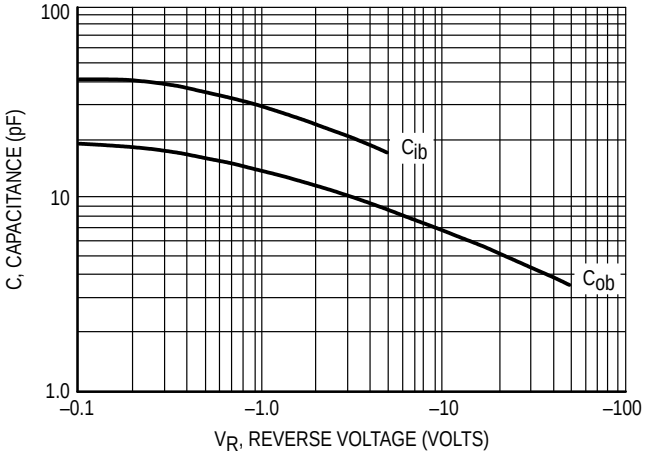
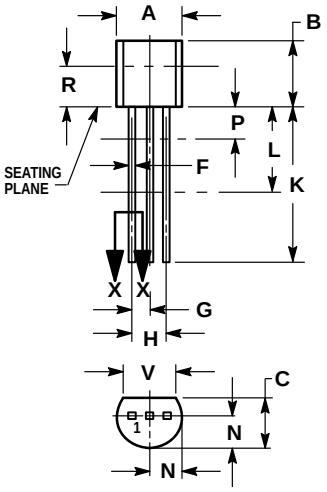
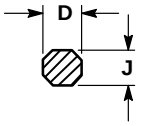



**Figure 7. Capacitances**

## PACKAGE DIMENSIONS




SECTION X–X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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 | 0.022 | 0.41 | 0.55 |
| F | 0.016 | 0.019 | 0.41 | 0.48 |
| 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 | — |

**CASE 029–04**
**(TO–226AA)**
**ISSUE AD**

STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER

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