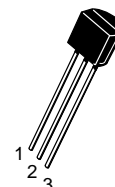
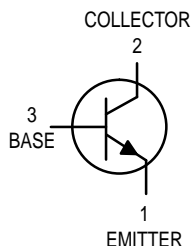


High Current Transistors

NPN Silicon

BC635
BC637
BC639



CASE 29-04, STYLE 14
TO-92 (TO-226AA)

MAXIMUM RATINGS

| Rating | Symbol | BC 635 | BC 637 | BC 639 | Unit |
|--|----------------|-------------|--------|--------|---------------|
| Collector–Emitter Voltage | V_{CEO} | 45 | 60 | 80 | Vdc |
| Collector–Base Voltage | V_{CBO} | 45 | 60 | 80 | Vdc |
| Emitter–Base Voltage | V_{EBO} | 5.0 | | | Vdc |
| Collector Current — Continuous | I_C | 0.5 | | | Adc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 5.0 | | | mW mW/°C |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.5 12 | | | Watt mW/°C |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | –55 to +150 | | | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | | |
|--|-------------------------|---------------|----------------|-------------|-------------|-------------------------|
| Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 10 \text{ mAdc}$, $I_E = 0$) | BC635 BC637 BC639 | $V_{(BR)CEO}$ | 45 60 80 | — — — | — — — | Vdc |
| Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$) | BC635 BC637 BC639 | $V_{(BR)CBO}$ | 45 60 80 | — — — | — — — | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}$, $I_C = 0$) | | $V_{(BR)EBO}$ | 5.0 | — | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 30 \text{ Vdc}$, $I_E = 0$) ($V_{CB} = 30 \text{ Vdc}$, $I_E = 0$, $T_A = 125^\circ\text{C}$) | | I_{CBO} | — — | — — | 100 10 | nAdc μAdc |

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle 2.0%.

BC635 BC637 BC639**ELECTRICAL CHARACTERISTICS** ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Continued)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|---------------|----------------------------|-----------------------|-----------------------------|------|
| ON CHARACTERISTICS⁽¹⁾ | | | | | |
| DC Current Gain ($I_C = 5.0\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 150\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 500\text{ mA}$, $V_{CE} = 2.0\text{ V}$) | h_{FE} | 25 40 40 40 25 | — — — — — | — 250 160 160 — | — |
| Collector–Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$) | $V_{CE(sat)}$ | — | — | 0.5 | Vdc |
| Base–Emitter On Voltage ($I_C = 500\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$) | $V_{BE(on)}$ | — | — | 1.0 | Vdc |
| DYNAMIC CHARACTERISTICS | | | | | |
| Current–Gain — Bandwidth Product ($I_C = 50\text{ mA}$, $V_{CE} = 2.0\text{ Vdc}$, $f = 100\text{ MHz}$) | f_T | — | 200 | — | MHz |
| Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$) | C_{ob} | — | 7.0 | — | pF |
| Input Capacitance ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$) | C_{ib} | — | 50 | — | pF |

1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle 2.0%.

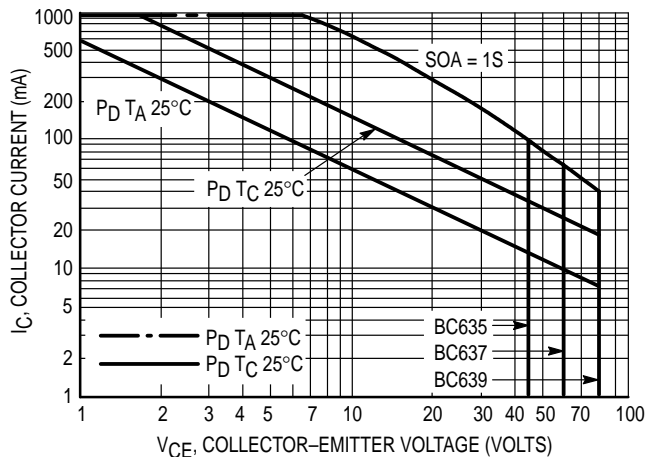


Figure 1. Active Region Safe Operating Area

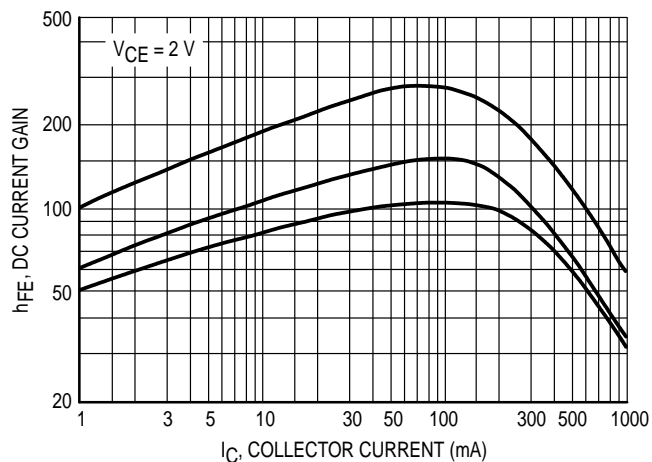


Figure 2. DC Current Gain

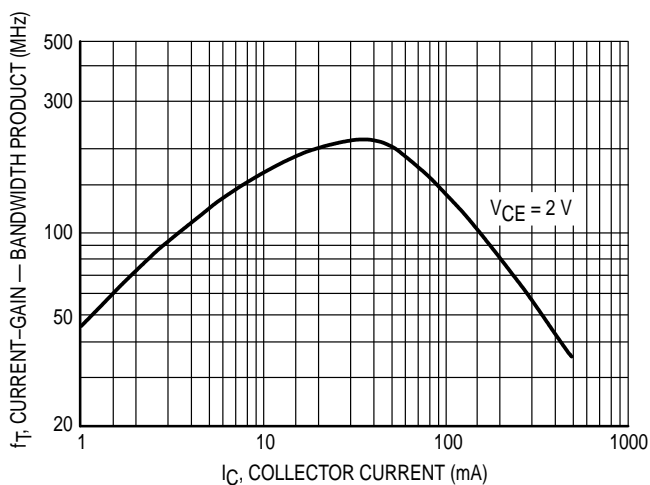


Figure 3. Current-Gain — Bandwidth Product

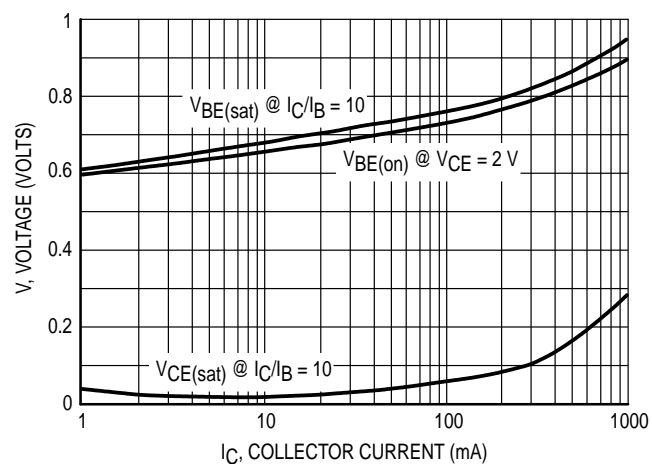


Figure 4. "Saturation" and "On" Voltages

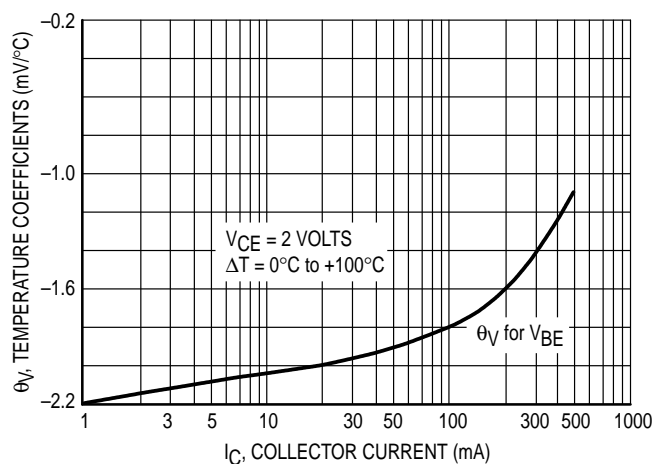
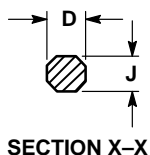
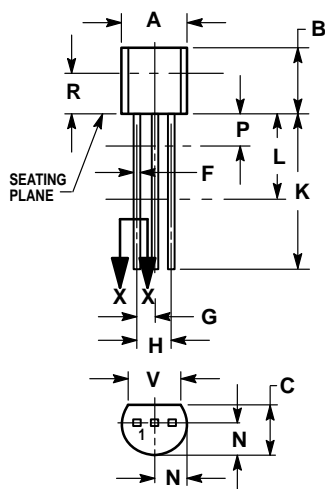


Figure 5. Temperature Coefficients

PACKAGE DIMENSIONS



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


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.

| 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 | 0.022 | 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 | — |

STYLE 14:

1. EMITTER
2. COLLECTOR
3. BASE

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