

Plastic Medium Power Silicon PNP Transistor

... designed for use in 5.0 to 10 Watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

- DC Current Gain — $h_{FE} = 40$ (Min) @ $I_C = 0.15$ Adc
- BD180 is complementary with BD179

MAXIMUM RATINGS

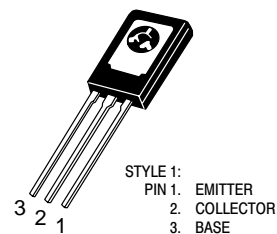
| Rating | Symbol | Value | Unit |
|---|----------------|-------------|-------------------------------|
| Collector–Emitter Voltage | V_{CEO} | 80 | Vdc |
| Collector–Base Voltage | V_{CBO} | 80 | Vdc |
| Emitter–Base Voltage | V_{EBO} | 5.0 | Vdc |
| Collector Current | I_C | 3.0 | Adc |
| Base Current | I_B | 1.0 | Adc |
| Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 30 240 | Watts mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -65 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--------------------------------------|---------------|------|--------------------|
| Thermal Resistance, Junction to Case | θ_{JC} | 4.16 | $^\circ\text{C/W}$ |

BD180

3.0 AMPERES
POWER TRANSISTOR
PNP SILICON
80 VOLTS
30 WATTS



CASE 77-09
TO-225AA TYPE

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

| Characteristic | Symbol | Min | Max | Unit |
|--|---------------|----------|----------|------|
| Collector–Emitter Sustaining Voltage* ($I_C = 0.1$ Adc, $I_B = 0$) | $V_{(BR)CEO}$ | 80 | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 45$ Vdc, $I_E = 0$) ($V_{CB} = 80$ Vdc, $I_E = 0$) | I_{CBO} | — — | — 1.0 | mAdc |
| Emitter Cutoff Current ($V_{BE} = 5.0$ Vdc, $I_C = 0$) | I_{EBO} | — | 1.0 | mAdc |
| DC Current Gain ($I_C = 0.15$ A, $V_{CE} = 2.0$ V) ($I_C = 1.0$ A, $V_{CE} = 2.0$ V) | h_{FE} | 40 15 | 250 — | — |
| Collector–Emitter Saturation Voltage* ($I_C = 1.0$ Adc, $I_B = 0.1$ Adc) | $V_{CE(sat)}$ | — | 0.8 | Vdc |
| Base–Emitter On Voltage* ($I_C = 1.0$ Adc, $V_{CE} = 2.0$ Vdc) | $V_{BE(on)}$ | — | 1.3 | Vdc |
| Current–Gain — Bandwidth Product ($I_C = 250$ mAdc, $V_{CE} = 10$ Vdc, $f = 1.0$ MHz) | f_T | 3.0 | — | MHz |

*Pulse Test: Pulse Width ≤ 300 μs , Duty Cycle $\leq 2.0\%$.

BD180

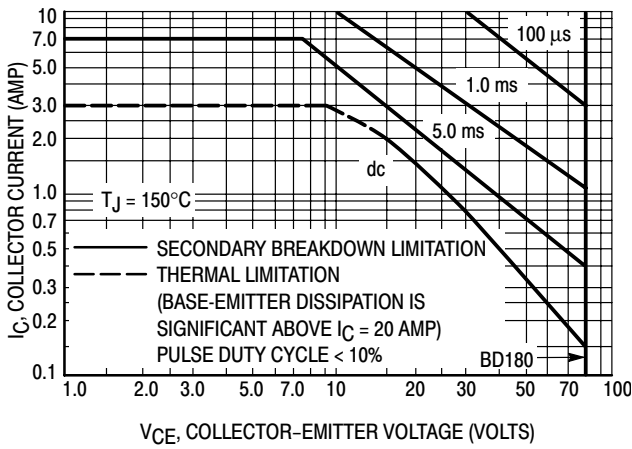


Figure 1. Active Region Safe Operating Area

The Safe Operating Area Curves indicate $I_C - V_{CE}$ limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.

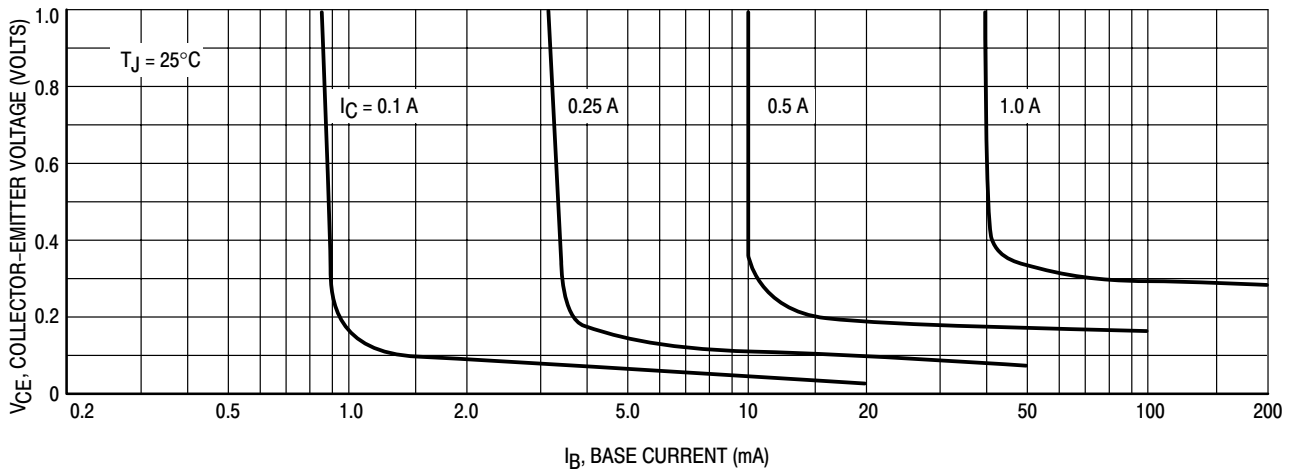


Figure 2. Collector Saturation Region

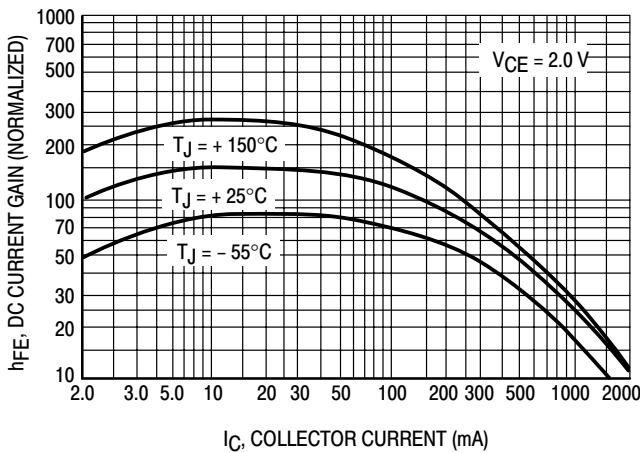


Figure 3. Current Gain

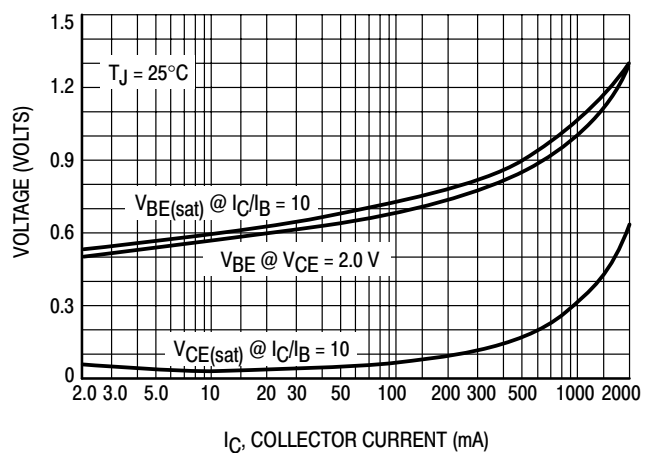
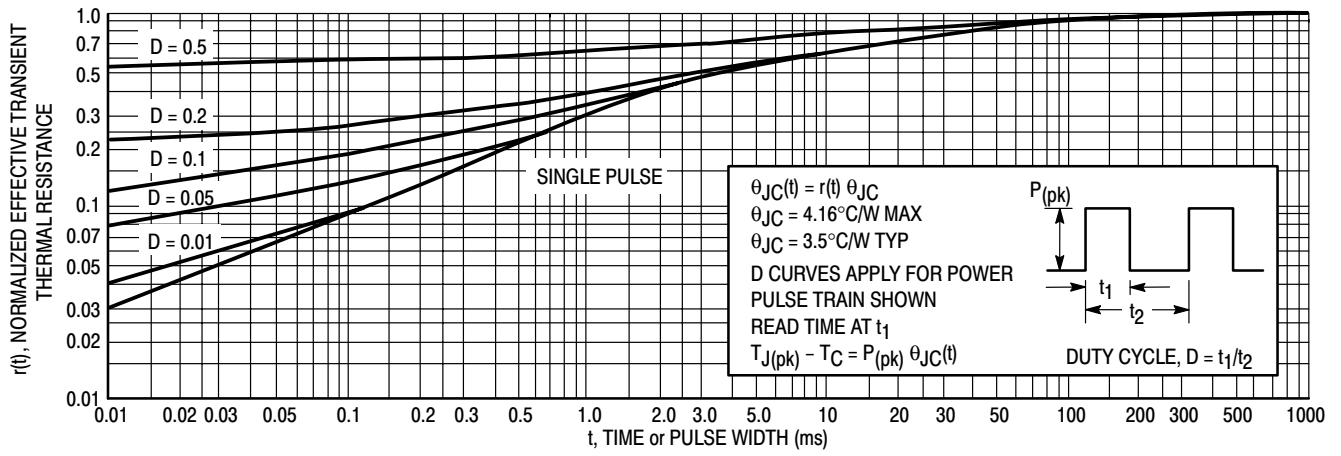


Figure 4. "On" Voltages

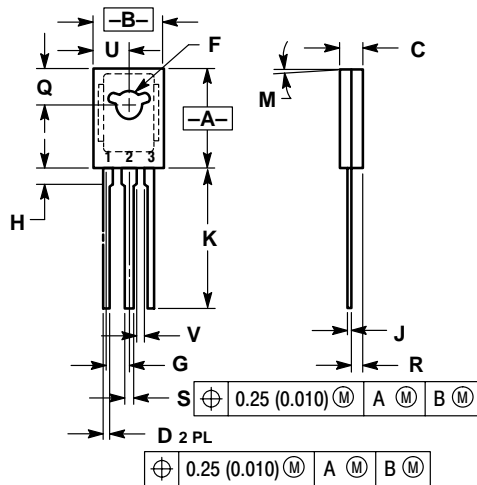
BD180



BD180

PACKAGE DIMENSIONS


TO-225AA CASE 77-09 ISSUE W



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.425 | 0.435 | 10.80 | 11.04 |
| B | 0.295 | 0.305 | 7.50 | 7.74 |
| C | 0.095 | 0.105 | 2.42 | 2.66 |
| D | 0.020 | 0.026 | 0.51 | 0.66 |
| F | 0.115 | 0.130 | 2.93 | 3.30 |
| G | 0.094 BSC | | 2.39 BSC | |
| H | 0.050 | 0.095 | 1.27 | 2.41 |
| J | 0.015 | 0.025 | 0.39 | 0.63 |
| K | 0.575 | 0.655 | 14.61 | 16.63 |
| M | 5° TYP | | 5° TYP | |
| Q | 0.148 | 0.158 | 3.76 | 4.01 |
| R | 0.045 | 0.065 | 1.15 | 1.65 |
| S | 0.025 | 0.035 | 0.64 | 0.88 |
| U | 0.145 | 0.155 | 3.69 | 3.93 |
| V | 0.040 | --- | 1.02 | --- |

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

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