T-33-17

MOTOROLA
**SEMICONDUCTOR**
TECHNICAL DATA

# BD526
# BD528
# BD530

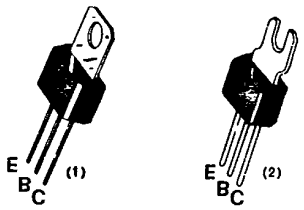
**PNP SILICON ANNULAR♦ AMPLIFIER TRANSISTORS**

. . . designed for general-purpose, high-voltage amplifier and driver applications.

- High Collector-Emitter Breakdown Voltage —
  $BV_{CEO}$ = 60 Vdc (Min) @ $I_C$ = 1.0 mAdc — BD526
  80 Vdc (Min) @ $I_C$ = 1.0 mAdc — BD528
  100 Vdc (Min) @ $I_C$ = 1.0 mAdc — BD530
- High Power Dissipation — $P_D$ = 10 W @ $T_C$ = 25°C
- Complements to NPN BD525, BD527 BD529

**PNP SILICON AMPLIFIER TRANSISTORS**

60 - 80 - 100 VOLTS
10 WATTS



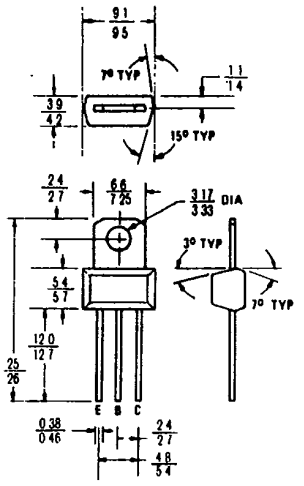

(1) **Standard package: BD526, 528, 530**
(2) Tab formed for flat mounting BD526-1, 528-1, 530-1
Also available with leads formed to TO-5 configuration BD526-5, 528-5, 530-5

MAXIMUM RATINGS

| Rating | Symbol | BD526 | BD528 | BD530 | Unit |
|---|---|---|---|---|---|
| Collector Emitter Voltage | $V_{CEO}$ | 60 | 80 | 100 | Vdc |
| Collector-Base Voltage | $V_{CB}$ | 60 | 80 | 100 | Vdc |
| Emitter Base Voltage | $V_{EB}$ | — 4.0 — | | | Vdc |
| Collector Current Continuous | $I_C$ | — 2.0 — | | | Adc |
| Total Device Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 1.0<br>8.0 | | | Watt<br>mW/°C |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 10<br>80 | | | Watts<br>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 Case | $\theta_{JC}$ | 12.5 | °C/W |
| Thermal Resistance, Junction to Ambient | $\theta_{JA}$ | 125 | °C/W |




All dimensions in millimeters
Collector connected to tab

CASE 152

3

## BD526, BD528, BD530

T-33-17

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

| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector-Emitter Breakdown Voltage ($I_C$ = 1.0 mAdc, $I_B$ = 0) | BD526 | $BV_{CEO}$ | 60 | — | — | Vdc |
| | BD528 | | 80 | — | — | |
| | BD530 | | 100 | — | — | |
| Emitter-Base Breakdown Voltage ($I_E$ = 100 μAdc, $I_C$ = 0) | | $BV_{EBO}$ | 4.0 | — | — | Vdc |
| Collector Cutoff Current | | | | | | nAdc |
| ($V_{CB}$ = 40 Vdc, $I_E$ = 0) | BD526 | $I_{CBO}$ | — | — | 100 | |
| ($V_{CB}$ = 60 Vdc, $I_E$ = 0) | BD528 | | — | — | 100 | |
| ($V_{CB}$ = 80 Vdc, $I_E$ = 0) | BD530 | | — | — | 100 | |
| **ON CHARACTERISTICS** | | | | | | |
| DC Current Gain (1) | | $h_{FE}$ | | | | — |
| ($I_C$ = 50 mAdc, $V_{CE}$ = 2.0 Vdc) | | | 60 | 153 | — | |
| ($I_C$ = 250 mAdc, $V_{CE}$ = 2.0 Vdc) | | | 30 | 98 | — | |
| Collector-Emitter Saturation Voltage(1) | | $V_{CE(sat)}$ | | | | Vdc |
| ($I_C$ = 250 mAdc, $I_B$ = 10 mAdc) | | | — | 0.22 | 0.5 | |
| ($I_C$ = 250 mAdc, $I_B$ = 25 mAdc) | | | — | 0.15 | — | |
| Base-Emitter On Voltage (1) ($I_C$ = 250 mAdc, $V_{CE}$ = 5.0 Vdc) | | $V_{BE(on)}$ | — | 0.78 | 1.0 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | | | |
| Current-Gain--Bandwidth Product ($I_C$ = 200 mAdc, $V_{CE}$ = 5.0 Vdc, f = 100 MHz) | | $f_T$ | 50 | 100 | — | MHz |
| Output Capacitance ($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 100 kHz) | | $C_{ob}$ | — | 10 | 15 | pF |

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

FIGURE 1 - DC CURRENT GAIN

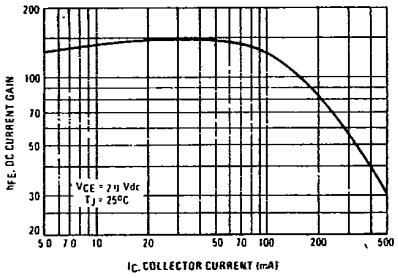



FIGURE 2 — "ON" VOLTAGES

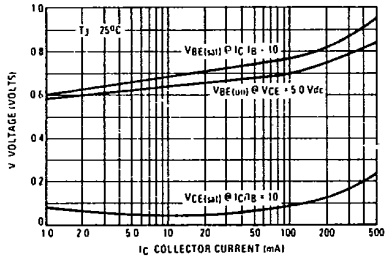



FIGURE 3 DC SAFE OPERATING AREA

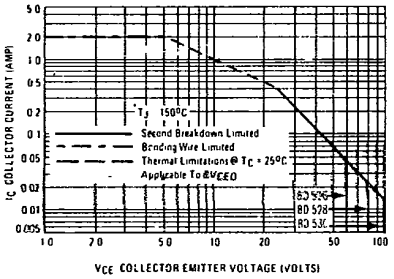
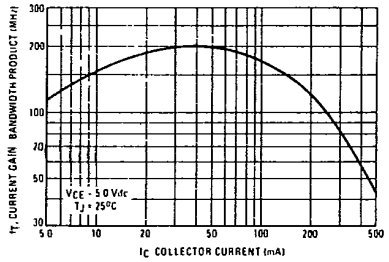



FIGURE 4 — CURRENT-GAIN--BANDWIDTH PRODUCT




There are two limitations on the power handling ability of a transistor junction temperature and secondary breakdown. Safe operating area curves indicate $I_C$ — $V_{CE}$ limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 3 is based on $T_{J(pk)}$ = 150°C; $T_C$ is variable depending on conditions. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown.