MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

BD525
BD527
BD529

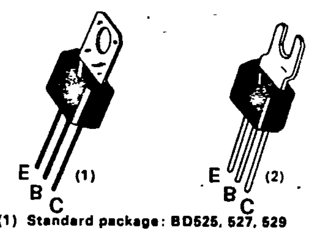
NPN SILICON ANNULAR♦
AMPLIFIER TRANSISTORS

. . . 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 — BD525
  80 Vdc (Min) @ I_C = 1.0 mAdc — BD527
  100 Vdc (Min) @ I_C = 1.0 mAdc — BD529
- High Power Dissipation — P_D = 10 W @ T_C = 25°C
- Complements to PNP BD526, BD528, BD530

NPN SILICON
AMPLIFIER TRANSISTORS

60 - 80 - 100 VOLTS
10 WATTS



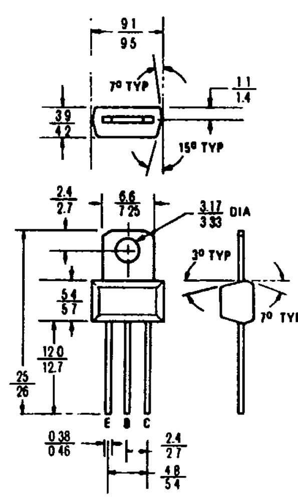
(1) Standard package: BD525, 527, 529
(2) Tab formed for flat mounting. BD525-1, 527-1, 529-1
Also available with leads formed to TO-5 configuration: BD525-5, 527-5, 529-5

MAXIMUM RATINGS

Rating	Symbol	BD525	BD527	BD529	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 Derate above 25°C	P_D		1.0 8.0		Watt mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D		10 80		Watts 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	θ_{JC}	12.5	°C/W
Thermal Resistance, Junction to Ambient	θ_{JA}	125	°C/W



All dimensions in millimeters
Collector connected to tab

CASE 152

3

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)	BD525 BD527 BD529	BV_{CEO}	60 80 100	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		BV_{EBO}	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 40 Vdc, I_E = 0) (V_{CB} = 60 Vdc, I_E = 0) (V_{CB} = 80 Vdc, I_E = 0)	BD525 BD527 BD529	I_{CBO}	— — —	— — —	100 100 100	nAdc
ON CHARACTERISTICS						
DC Current Gain (1) (I_C = 50 mAdc, V_{CE} = 2.0 Vdc) (I_C = 250 mAdc, V_{CE} = 2.0 Vdc)		h_{FE}	60 30	115 95	— —	—
Collector-Emitter Saturation Voltage(1) (I_C = 250 mAdc, I_B = 10 mAdc) (I_C = 250 mAdc, I_B = 25 mAdc)		$V_{CE(sat)}$	— —	0.18 0.1	0.5 —	Vdc
Base-Emitter On Voltage (1) (I_C = 250 mAdc, V_{CE} = 5.0 Vdc)		$V_{BE(on)}$	—	0.74	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain—Bandwidth Product (I_C = 250 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	50	150	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{ob}	—	6.0	12	pF

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

FIGURE 1 — TYPICAL DC CURRENT GAIN

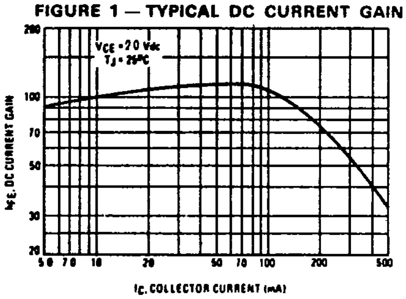


FIGURE 2 — "SATURATION" AND "ON" VOLTAGES

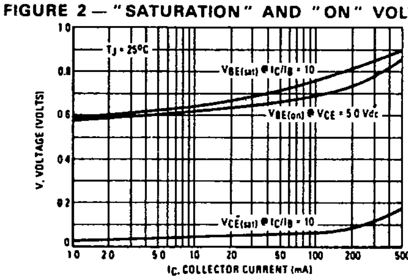


FIGURE 3 — SAFE OPERATING AREA

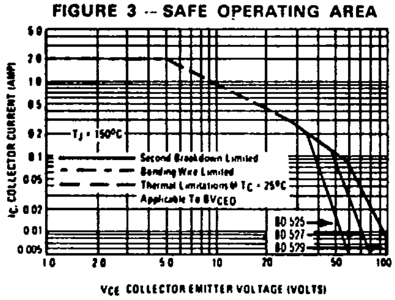
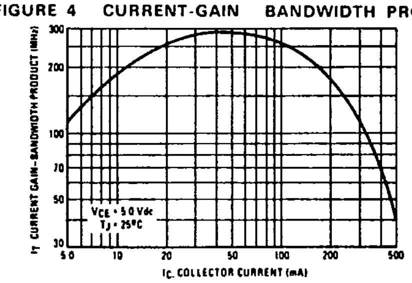


FIGURE 4 CURRENT-GAIN BANDWIDTH PRODUCT



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.