BD505
BD507 • BD509

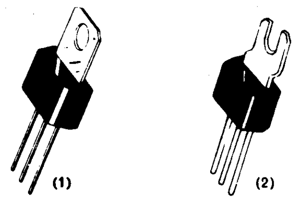
NPN SILICON
AUDIO TRANSISTORS

20 - 30 - 40 VOLTS
10 WATTS

NPN SILICON ANNULAR♦ TRANSISTORS

. . . designed for complementary symmetry audio circuits

- Excellent Current Gain Linearity — 1.0 mAdc to 1.0 Adc
- Low Collector-Emitter Saturation Voltage — $V_{CE(sat)}$ = 0.7 Vdc (Max) @ I_C = 1.0 Adc
- Complements to PNP BD506, BD508, BD510
- Uniwatt▲ Package for Excellent Thermal Properties —
  1.0 Watt @ T_A = 25°C
  10.0 Watts @ T_C = 25°C



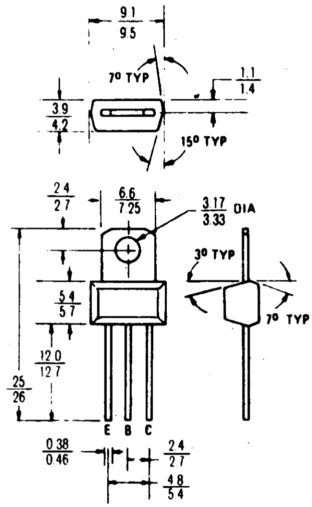
(1) Standard package: BD505, 507, 509
(2) Tab formed for flat mounting. BD505-1, 507-1, 509-1
Also available with leads formed to TO-5 configuration BD505-5, 507-5, 509-5

MAXIMUM RATINGS

Rating	Symbol	BD505	BD507	BD509	Unit
Collector-Emitter Voltage	V_{CEO}	20	30	40	Vdc
Collector-Base Voltage	V_{CB}	30	40	50	Vdc
Emitter-Base Voltage	V_{EB}		5.0		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

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)	BD505 BD507 BD509	BV_{CEO}	20 30 40	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		BV_{EBO}	5	—	—	Vdc
Collector Cutoff Current (VCB = 20, 30, 40 Vdc, I_E = 0)	BD505 BD507 BD509	I_{CBO}	— — —	— — —	100 100 100	nAdc
ON CHARACTERISTICS						
DC Current Gain (1) (I_C = 250 mAdc, V_{CE} = 2 Vdc) (I_C = 1.0 Adc, V_{CE} = 2 Vdc)		h_{FE}	60 40	160 90	— —	—
Collector-Emitter Saturation Voltage(1) (I_C = 1.0 Adc, I_B = 0.1 Adc)		$V_{CE(sat)}$	—	0.30	0.7	Vdc
Base-Emitter On Voltage (1) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)		$V_{BE(on)}$	—	0.91	1.2	Vdc
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain--Bandwidth Product (I_C = 50 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	50	250	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{ob}	—	—	30	pF

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

FIGURE 1 — DC CURRENT GAIN

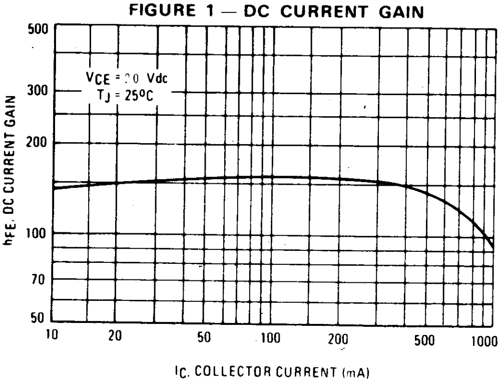


FIGURE 2 — "ON" VOLTAGES

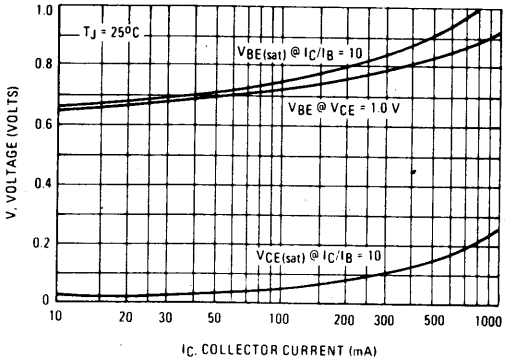
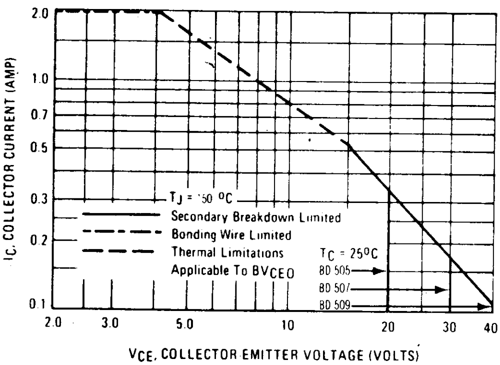


FIGURE 3 — DC SAFE OPERATING AREA



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.

BD506
BD508 • BD510

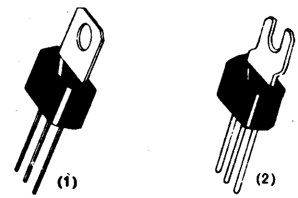
PNP SILICON ANNULAR♦ TRANSISTORS

. . . designed for complementary symmetry audio circuits

- Excellent Current Gain Linearity — 1.0 mAdc to 1.0 Adc
- Low Collector-Emitter Saturation Voltage —
  $V_{CE(sat)}$ = 0.7 Vdc (Max) @ I_C = 1.0 Adc
- Complements to NPN BD505, BD507, BD509
- Uniwatt▲ Package for Excellent Thermal Properties —
  1.0 Watt @ T_A = 25°C
  10.0 Watts @ T_C = 25°C

PNP SILICON AUDIO TRANSISTORS

20 - 30 - 40 VOLTS
10 WATTS



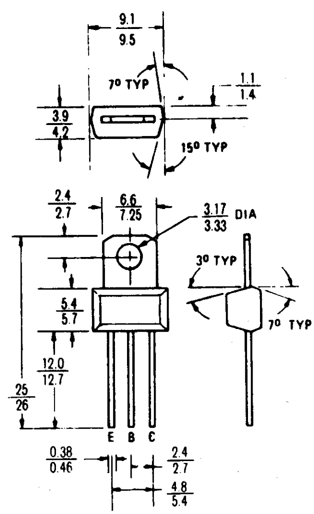
(1) Standard package: BD506, 508, 510
(2) Tab formed for flat mounting: BD506-1, 508-1, 510-1
Also available with leads formed to TO-5 configuration: BD506-5, 508-5, 510-5

MAXIMUM RATINGS

Rating	Symbol	BD506	BD508	BD510	Unit
Collector-Emitter Voltage	V_{CEO}	20	30	40	Vdc
Collector-Base Voltage	V_{CB}	30	40	50	Vdc
Emitter-Base Voltage	V_{EB}		5.0		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

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)	BD506 BD508 BD510	BV_{CEO}	20 30 40	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		BV_{EBO}	5.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 20, 30, 40 Vdc, I_E = 0)	BD506 BD508 BD510	I_{CBO}	— — —	— — —	100 100 100	nAdc
ON CHARACTERISTICS						
DC Current Gain (1) (I_C = 250 mAdc, V_{CE} = 2.0 Vdc) (I_C = 1.0 Adc, V_{CE} = 2.0 Vdc)		h_{FE}	 60 40	 135 90	 — —	—
Collector-Emitter Saturation Voltage(1) (I_C = 1.0 Adc, I_B = 0.1 Adc)		$V_{CE(sat)}$	—	0.40	0.7	Vdc
Base-Emitter On Voltage (1) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)		$V_{BE(on)}$	—	0.92	1.2	Vdc
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain--Bandwidth Product (I_C = 50 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)		f_T	50	180	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{ob}	—	—	30	pF

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

FIGURE 1 — DC CURRENT GAIN

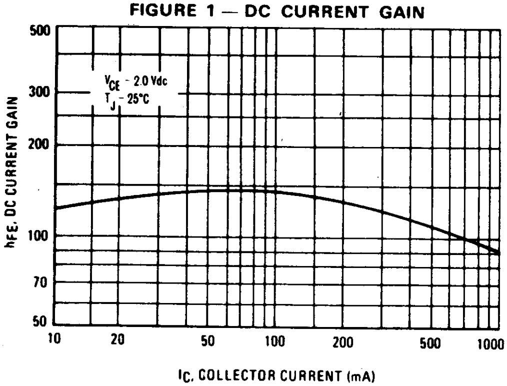


FIGURE 2 — "ON" VOLTAGES

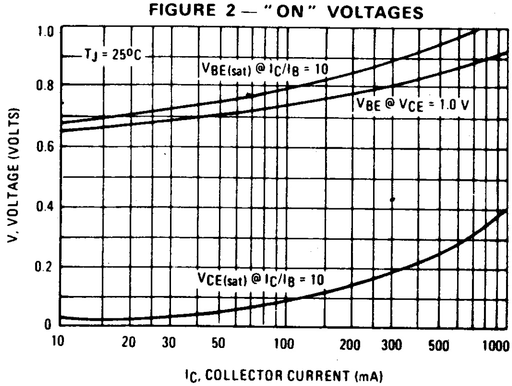
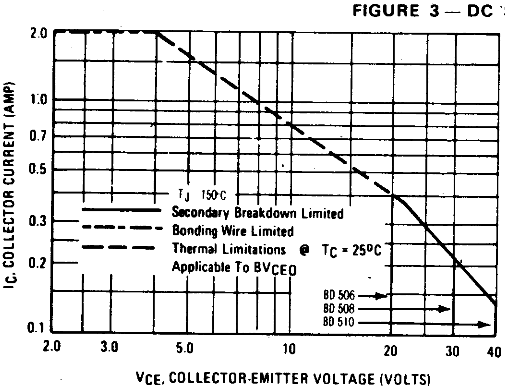


FIGURE 3 — DC SAFE OPERATING AREA



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.

BD515
BD517 • BD519

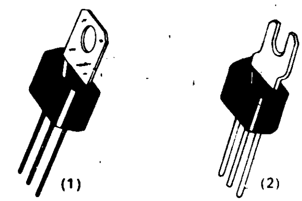
NPN SILICON ANNULAR AMPLIFIER TRANSISTORS

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

- High Collector-Emitter Breakdown Voltage —
  BV_{CEO} = 45 Vdc (Min) @ I_C = 1 mAdc — BD515
  60 Vdc (Min) @ I_C = 1 mAdc — BD517
  80 Vdc (Min) @ I_C = 1 mAdc — BD519
- High Power Dissipation — P_D = 10 W @ T_C = 25°C
- Complements to BD516, BD518, BD520

NPN SILICON AMPLIFIER TRANSISTORS

45 - 60 - 80 VOLTS
10 WATTS



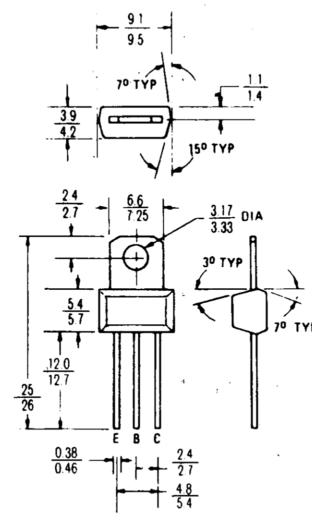
(1) **Standard package:** BD515, 517, 519
(2) Tab formed for flat mounting: BD515-1, 517-1, 519-1
Also available with leads formed to TO-5 configuration: BD515-5, 517-5, 519-5

MAXIMUM RATINGS

Rating	Symbol	BD515	BD517	BD519	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	Vdc
Collector-Base Voltage	V_{CB}	45	60	80	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

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)	BD515 BD517 BD519	BV_{CEO}	45 60 80	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		BV_{EBO}	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0) (V_{CB} = 40 Vdc, I_E = 0) (V_{CB} = 60 Vdc, I_E = 0)	 BD515 BD517 BD519	I_{CBO}	 — — —	 — — —	 100 100 100	nAdc
ON CHARACTERISTICS						
DC Current Gain (1) (I_C = 10 mAdc, V_{CE} = 2.0 Vdc) (I_C = 150 mAdc, V_{CE} = 2.0 Vdc) (I_C = 500 mAdc, V_{CE} = 2.0 Vdc)		h_{FE}	 — 60 25	 115 125 55	 — 350 —	—
Collector-Emitter Saturation Voltage (1) (I_C = 500 mAdc, I_B = 50 mAdc) (I_C = 500 mAdc, I_B = 25 mAdc)		$V_{CE(sat)}$	 — —	 0.18 0.24	 0.5 —	Vdc
Base-Emitter On Voltage (1) (I_C = 500 mAdc, V_{CE} = 2.0 Vdc)		$V_{BE(on)}$	—	0.74	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	160	—	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

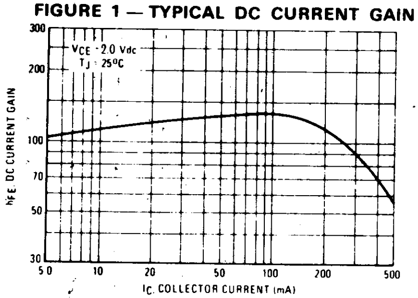


FIGURE 2 — "SATURATION" AND "ON" VOLTAGES

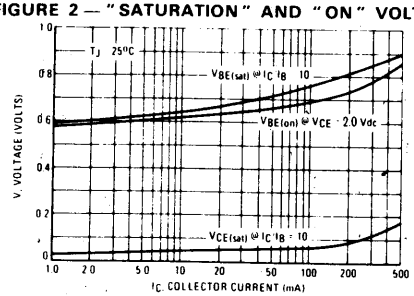


FIGURE 3 — DC SAFE OPERATING AREA

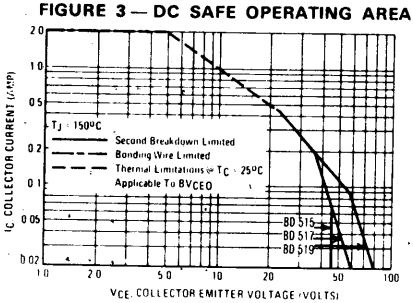
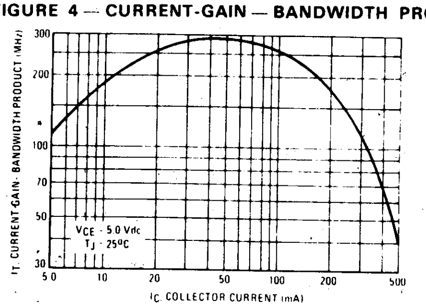


FIGURE 4 — CURRENT-GAIN — BANDWIDTH PRODUCT



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.

BD516
BD518 • BD520

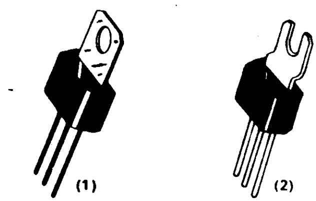
PNP SILICON ANNULAR AMPLIFIER TRANSISTORS

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

- High Collector-Emitter Breakdown Voltage —
  BV_{CEO} = 45 Vdc (Min) @ I_C = 1 mAdc — BD516
  60 Vdc (Min) @ I_C = 1 mAdc — BD518
  80 Vdc (Min) @ I_C = 1 mAdc — BD520
- High Power Dissipation — P_D = 10 W @ T_C = 25°C
- Complements to BD515, BD517, BD519

PNP SILICON ANNULAR AMPLIFIER TRANSISTORS

45 - 60 - 80 VOLTS
10 WATTS



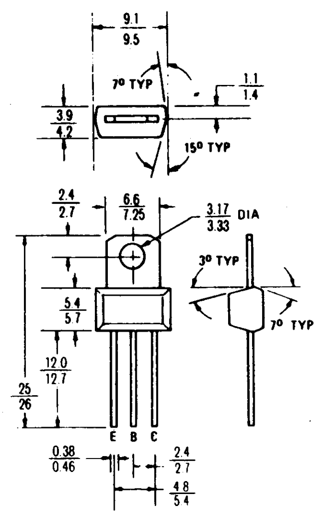
(1) **Standard package: BD516, 518, 520**
(2) Tab formed for flat mounting: BD516-1, 518-1, 520-1
Also available with leads formed to TO-5 configuration: BD516-5, 518-5, 520-5

MAXIMUM RATINGS

Rating	Symbol	BD516	BD518	BD520	Unit
Collector-Emitter Voltage	V_{CEO}	45	60	80	Vdc
Collector-Base Voltage	V_{CB}	45	60	80	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

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)	BD516 BD518 BD520	BV_{CEO}	45 60 80	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)		BV_{EBO}	4.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0) (V_{CB} = 40 Vdc, I_E = 0) (V_{CB} = 60 Vdc, I_E = 0)	 BD516 BD518 BD520	I_{CBO}	— — —	— — —	100 100 100	nAdc
ON CHARACTERISTICS						
DC Current Gain (1) (I_C = 10 mAdc, V_{CE} = 2.0 Vdc) (I_C = 150 mAdc, V_{CE} = 2.0 Vdc) (I_C = 500 mAdc, V_{CE} = 2.0 Vdc)		h_{FE}	— 60 25	150 130 80	— 350 —	—
Collector-Emitter Saturation Voltage (1) (I_C = 500 mAdc, I_B = 50 mAdc) (I_C = 500 mAdc, I_B = 25 mAdc)		$V_{CE(sat)}$	— —	0.24 0.32	0.5 —	Vdc
Base-Emitter On Voltage (1) (I_C 500 mAdc, V_{CE} 2.0 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	125	—	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

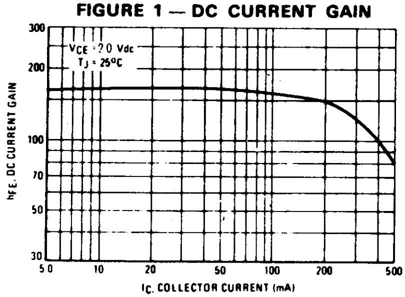


FIGURE 2 — "ON" VOLTAGES

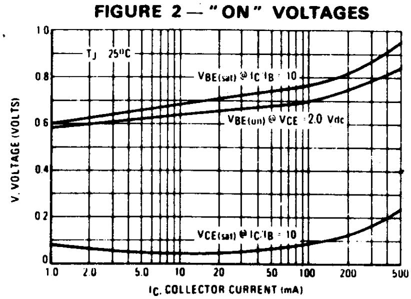


FIGURE 3 — DC SAFE OPERATING AREA

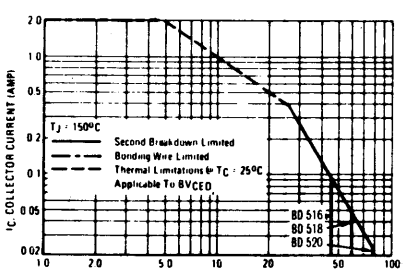
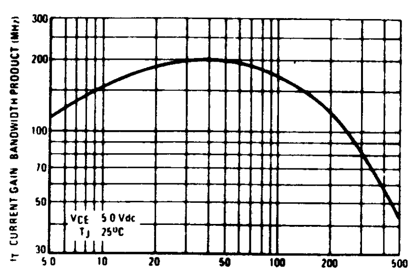


FIGURE 4 — CURRENT-GAIN–BANDWIDTH PRODUCT



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.

BD525
BD527 • BD529

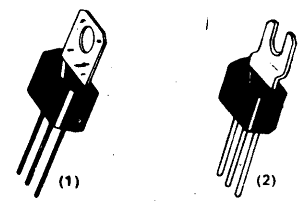
NPN SILICON ANNULAR♦ AMPLIFIER TRANSISTORS

. . . 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



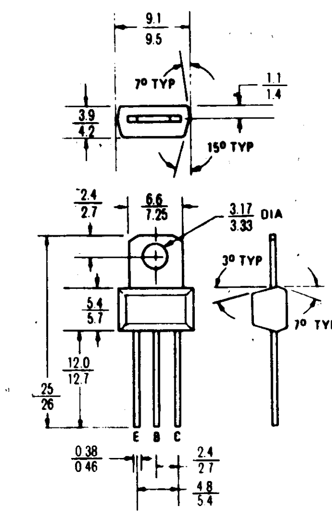
(1) **Standard package: BD525, 527, 529**
(2) Tab formed for flat mounting: BD525-1, 527-1, 529-1
Also available with leads formed to TO-5 configuration: BD525-5, 527-5, 529-5

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

ELECTRICAL CHARACTERISTICS ($T_C = 25^oC$ 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

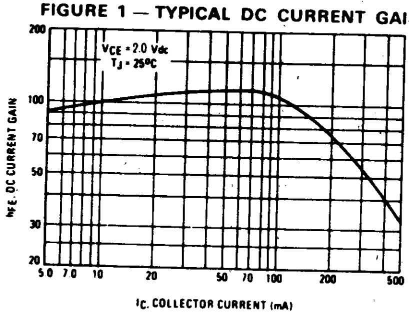


FIGURE 2 — "SATURATION" AND "ON" VOLTAGES

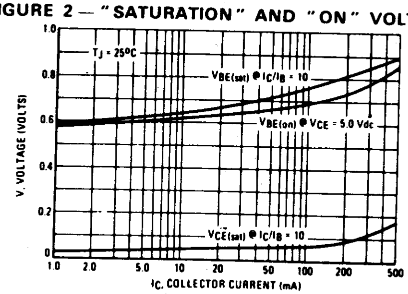


FIGURE 3 — SAFE OPERATING AREA

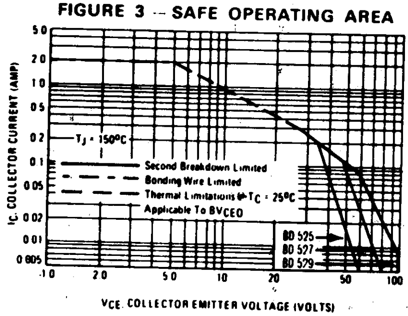
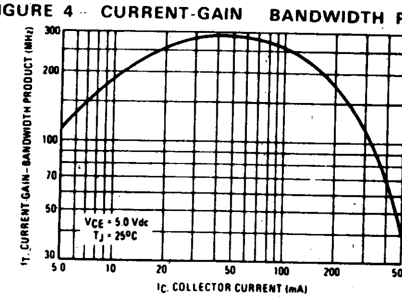


FIGURE 4 — CURRENT-GAIN — BANDWIDTH PRODUCT



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.

BD526
BD528 • BD530

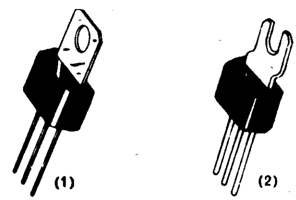
PNP SILICON ANNULAR♦ AMPLIFIER TRANSISTORS

. . . 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



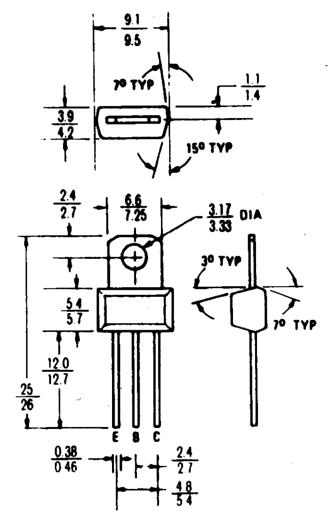
(1) Standard package: BD526, 528, 530
(2) Tab formed for flat mounting: BD526-1, 528-1, 530-1
Also available with leads formed to TO-5 configuration: BD526-5, 528-5, 530-5

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 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



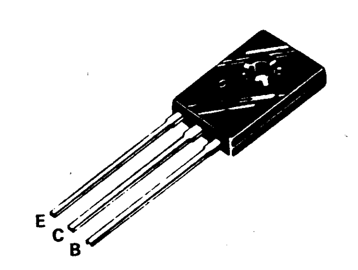
All dimensions in millimeters
Collector connected to tab

CASE 152

BD561

PRELIMINARY DATA SHEET

4 AMPERE
POWER TRANSISTOR
NPN SILICON
40 VOLTS
40 WATTS



NPN SILICON MEDIUM-POWER TRANSISTOR

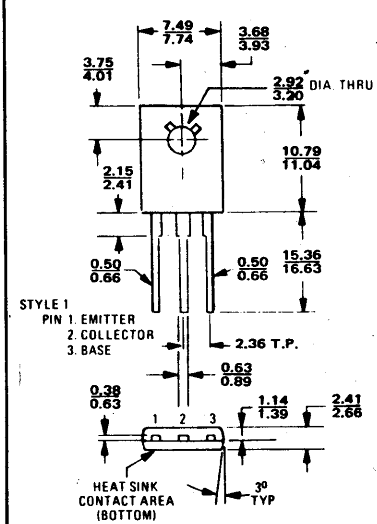
- Designed for 5 to 10W Audio Amplifiers
- BD561 is complementary to BD562
- P_D of 40W with T_j of 150° C
- Case 77 package is Pin compatible with SOT-9

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current	I_C	4	Adc
Base Current	I_B	2	Adc
Total Device Dissipation $T_C = 25°$ C Derate above 25° C	P_D	40 320	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	—65 to +150	° C

THERMAL CHARACTERISTICS

	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.12	° C/W



When mounting the device, torque not to exceed 0.07 m-kg

If lead bending is required, use suitable clamps or other supports between transistor case and point of bend.

All dimensions in millimeters

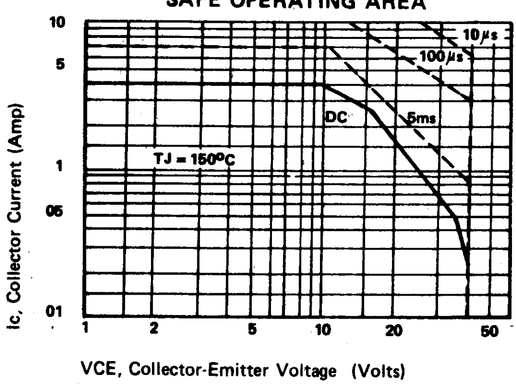
CASE 77-04

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

Characteristics	Symbol	Min.	Max.	Unit
Collector-Emitter Sustaining Voltage ($I_C = 0.1$ Adc, $I_B = 0$)	$V_{CEO(sus)}$	40	—	Vdc
Collector Cutoff Current ($V_{CB} = 45$ V, $I_E = 0$)	I_{CBO}	—	0.1	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0$ V, $I_C = 0$)	I_{EBO}	—	0.1	mAdc
DC Current Gain ($I_C = 50$ mA $V_{CE} = 1.0$ V) * ($I_C = 500$ mA $V_{CE} = 1.0$ V) * ($I_C = 2.0$ A $V_{CE} = 1.0$ V) *	h_{FE}	 40 60 40	 — — —	—
Collector-Emitter Saturation Voltage ($I_C = 1.0$ A $I_B = 0.1$ A) *	$V_{CE(sat)}$	—	0.5	Vdc
Base-Emitter On Voltage ($I_C = 2.0$ A $V_{CE} = 1.0$ V) *	$V_{BE(on)}$	—	1.2	Vdc

* Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0 %

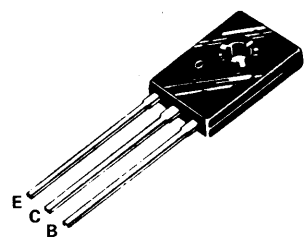
ACTIVE REGION
SAFE OPERATING AREA



BD562

PRELIMINARY DATA SHEET

4 AMPERE
POWER TRANSISTOR
PNP SILICON
40 VOLTS
40 WATTS



PNP SILICON MEDIUM-POWER TRANSISTOR

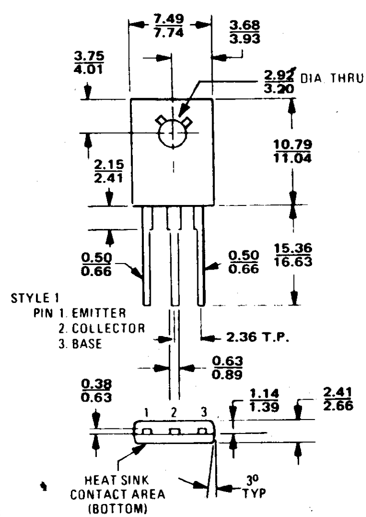
- Designed for 5 to 10W Audio Amplifiers
- BD562 is complementary to BD561
- P_D of 40W with T_j of 150° C
- Case 77 package is Pin compatible with SOT-9

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current	I_C	4	Adc
Base Current	I_B	2	Adc
Total Device Dissipation $T_C = 25°$ C Derate above 25° C	P_D	40 320	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	—65 to +150	° C

THERMAL CHARACTERISTICS

	Symbol	Max.	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.12	° C/W



When mounting the device, torque not to exceed 0.07 m-kg

If lead bending is required, use suitable clamps or other supports between transistor case and point of bend.
All dimensions in millimeters

CASE 77-04