

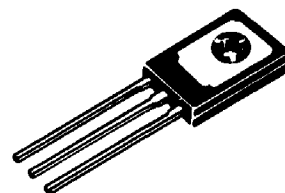
NPN
BD785, BD787
PNP
BD786, BD788

COMPLEMENTARY PLASTIC SILICON ANNULAR[♦]
POWER TRANSISTORS

... designed for low power audio amplifier and low current, high-speed switching applications.

- Low Collector-Emitter Sustaining Voltage –
V_{CEO} (sus) 45 Vdc (Min) – BD785, BD786
60 Vdc (Min) – BD787, BD788
- High Current Gain – Bandwidth Product –
f_T = 50 MHz (Min) @ I_C = 100 mAdc
- DC Current Gain Specified at 0.2, 1.0, 2.0 and 4.0 Adc
- Collector-Emitter Saturation Voltage Specified at 0.5, 1.0, 2.0 and 4.0 Adc

4 AMPERE
POWER TRANSISTORS
COMPLEMENTARY SILICON
45, 60VOLTS
15 WATTS



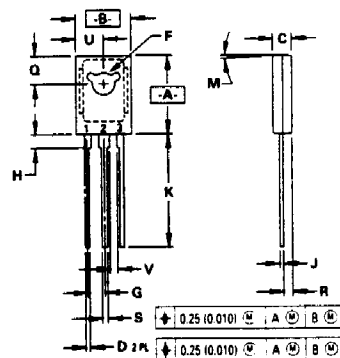
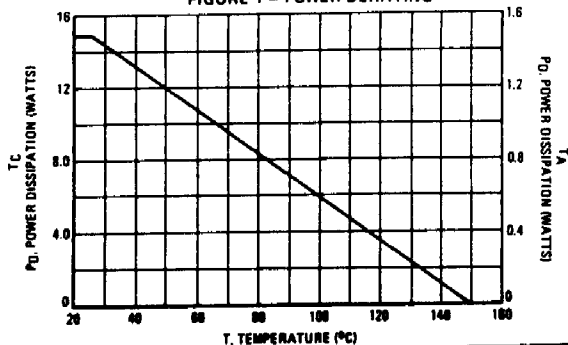
***MAXIMUM RATINGS**

Rating	Symbol	BD785 BD786	BD787 BD788	Unit
Collector-Emitter Voltage	V _{CEO}	45	60	Vdc
Collector-Base Voltage	V _{CBO}	60	80	Vdc
Emitter-Base Voltage	V _{EBO}	6.0		Vdc
Collector Current – Continuous	I _C	4.0	8.0	Adc
– Peak				Adc
Base Current	I _B	1.0		Adc
Total Power Dissipation @ T _C = 25°C	P _D	15		Watts
Derate Above 25°C		0.12		W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	8.34	°C/W

FIGURE 1 – POWER DERATING



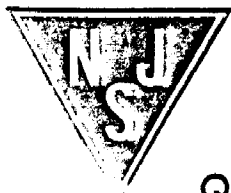
NOTES

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

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	10.80	11.04	0.425	0.433
B	7.50	7.74	0.295	0.305
C	2.42	2.66	0.095	0.105
D	0.51	0.66	0.020	0.026
F	2.93	3.17	0.115	0.125
G	2.39 BSC		0.094 BSC	
H	1.27	2.41	0.050	0.095
J	0.39	0.63	0.015	0.025
K	14.61	16.63	0.575	0.655
M	3° TYP		3° TYP	
Q	3.76	4.01	0.148	0.158
R	1.15	1.39	0.045	0.055
S	0.64	0.88	0.025	0.035
U	3.68	3.93	0.145	0.155
V	1.02	—	0.040	—

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

TO-225AA TYPE



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BD785, BD787 NPN BD786, BD788 PNP

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 10 \text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	45 60	— —	Vdc
Collector Cutoff Current ($V_{CE} = 20 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 30 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	— —	100 100	μAdc
Collector Cutoff Current ($V_{CE} = 60 \text{ Vdc}$, $V_{BE}(\text{off}) = 1.5 \text{ Vdc}$)	I_{CEX}	—	1.0	μAdc
($V_{CE} = 80 \text{ Vdc}$, $V_{BE}(\text{off}) = 1.5 \text{ Vdc}$)		—	1.0	
($V_{CE} = 30 \text{ Vdc}$, $V_{BE}(\text{off}) = 1.5 \text{ Vdc}$, $T_C = 125^\circ\text{C}$)		—	0.1	mAdc
($V_{CE} = 40 \text{ Vdc}$, $V_{BE}(\text{off}) = 1.5 \text{ Vdc}$, $T_C = 125^\circ\text{C}$)		—	0.1	
Emitter Cutoff Current ($V_{EB} = 6.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	1.0	μAdc
ON CHARACTERISTICS (1)				
DC Current Gain ($I_C = 200 \text{ mAdc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 2.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$) ($I_C = 4.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$)	h_{FE}	40 25 20 5.0	250 — — —	—
Collector-Emitter Saturation Voltage ($I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$) ($I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$) ($I_C = 2.0 \text{ Adc}$, $I_B = 200 \text{ mAdc}$) ($I_C = 4.0 \text{ Adc}$, $I_B = 800 \text{ mAdc}$)	$V_{CE(sat)}$	— — — —	0.4 0.6 0.8 2.5	Vdc
Base-Emitter Saturation Voltage ($I_C = 2.0 \text{ Adc}$, $I_B = 200 \text{ mAdc}$)	$V_{BE(sat)}$	—	2.0	Vdc
Base-Emitter on Voltage ($I_C = 2.0 \text{ Adc}$, $V_{CE} = 3.0 \text{ Vdc}$)	$V_{BE(on)}$	—	1.8	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain — Bandwidth Product ($I_C = 100 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 10 \text{ MHz}$)	f_T	50	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_C = 0$) ($f = 0.1 \text{ MHz}$)	C_{ob}	— —	50 70	pF
Small-Signal Current Gain ($I_C = 200 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	10	—	—

*Indicates JEDEC Registered Data.

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

FIGURE 2 — SWITCHING TIME TEST CIRCUIT

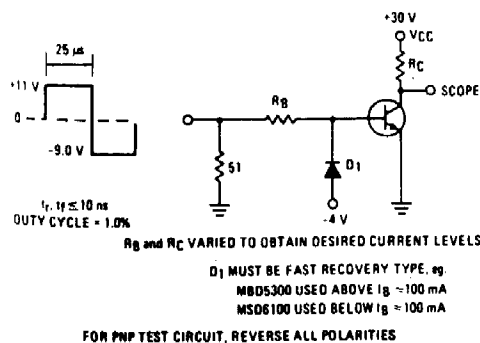


FIGURE 3 — TURN-ON TIME

