

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

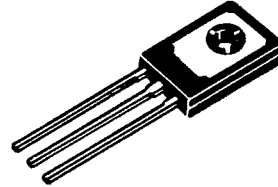
**NPN
BD785, BD787
PNP
BD786, BD788**

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**

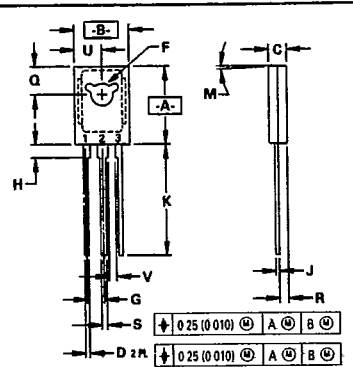


***MAXIMUM RATINGS**

Rating	Symbol	BD785 BD786	BD787 BD788	Unit
Collector-Emitter Voltage	V _{CEO}	45	60	Vdc
Collector-Base Voltage	V _{CB0}	60	80	Vdc
Emitter-Base Voltage	V _{EB0}	6.0		Vdc
Collector Current – Continuous	I _C	4.0		Adc
– Peak		8.0		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



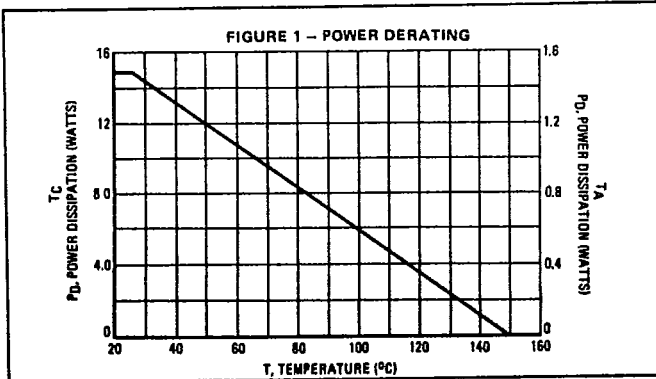
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	10.80	11.04	0.425	0.435
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	3.69	3.93	0.145	0.155
V	1.02	—	0.040	—

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

CASE 77-06
TO-225AA TYPE

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BD785, BD787 NPN
BD786, BD788 PNP

T-33-07

T-33-17

FIGURE 4 - THERMAL RESPONSE

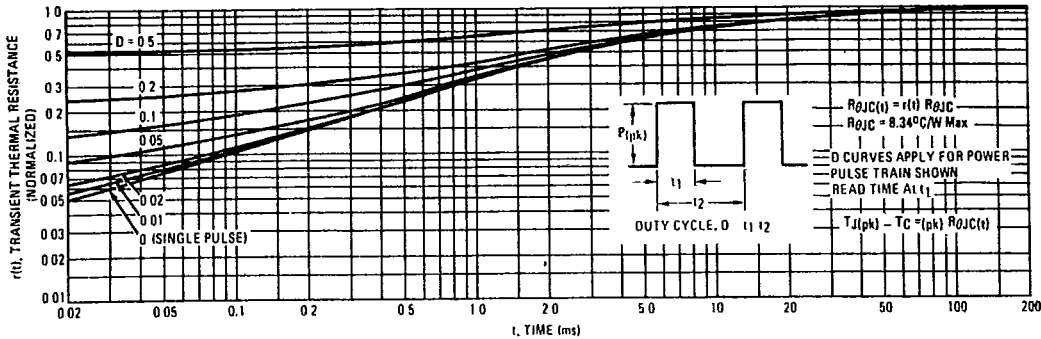
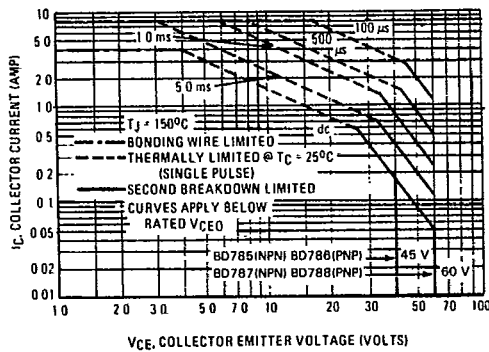


FIGURE 5 - ACTIVE-REGION SAFE OPERATING AREA



There are two limitations on the power handling ability of a transistor - average junction temperature and second 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 5 is based on $T_{J(pk)} = 150^{\circ}\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^{\circ}\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 4. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown (See AN 415A).

FIGURE 6 - TURN-OFF TIME

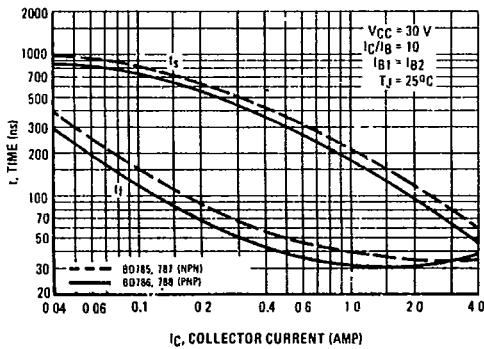
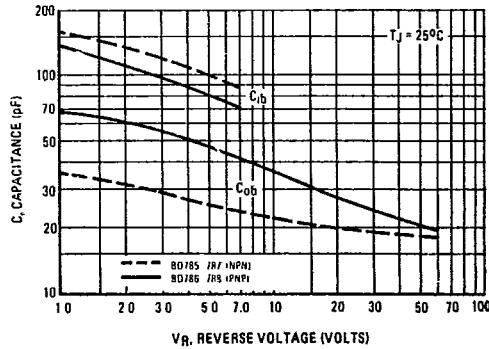


FIGURE 7 - CAPACITANCE



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FIGURE 8 - DC CURRENT GAIN

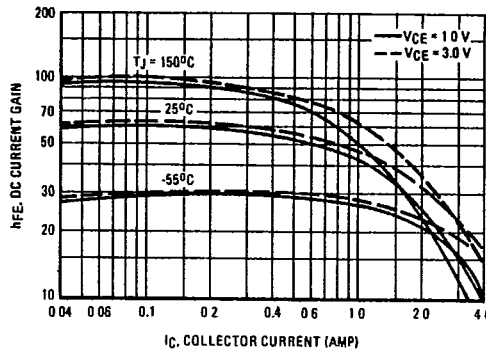
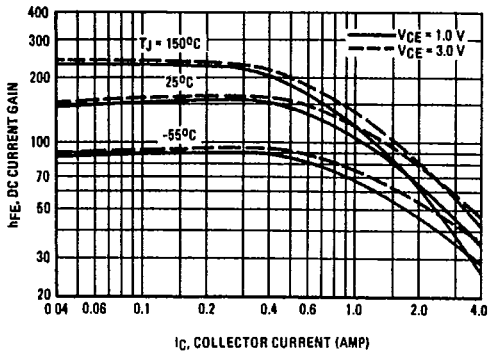
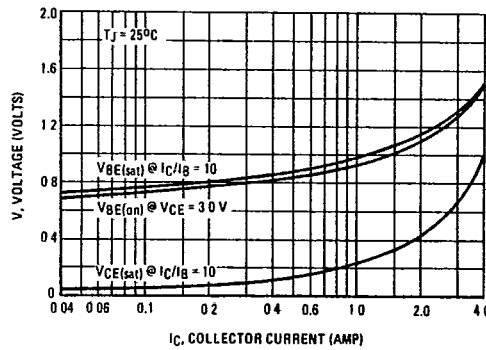
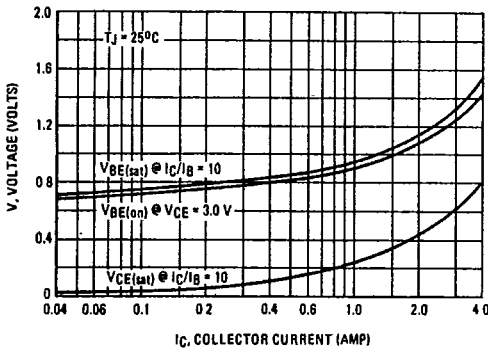


FIGURE 9 - "ON" VOLTAGES



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FIGURE 10 - TEMPERATURE COEFFICIENTS

