

BD 185 BD 187 BD 189

PLASTIC MEDIUM POWER SILICON NPN TRANSISTOR

... designed for use in 5 to 10 Watt audio amplifiers utilizing complementary or quasi complementary circuits.

- DC Current Gain— $h_{FE} = 40$ (Min) @ $I_C = 0.5$ Adc
- BD 185, 187, 189 are complementary with BD 186, 188, 190

MAXIMUM RANGS

Rating	Symbol	Type	Value	Unit
Collector-Emitter Voltage	V_{CEO}	BD 185	30	Vdc
		BD 187	45	
		BD 189	60	
Collector-Base Voltage	V_{CBO}	BD 185	40	Vdc
		BD 187	55	
		BD 189	70	
Emitter-Base Voltage	V_{EBO}		5	Vdc
Collector Current	I_C		4.0	Adc
Base Current	I_B		2.0	Adc
Total Device Dissipation $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D		40 320	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}		-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.12	$^\circ\text{C/W}$

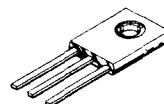
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Type	Min	Max	Unit
Collector-Emitter Sustaining Voltage* ($I_C = 0.1$ Adc, $I_B = 0$)	BV_{CEO}^*	BD 185 BD 187 BD 189	30 45 60	— — —	Vdc
Collector Cutoff Current ($V_{CB} = 40$ Vdc, $I_E = 0$) ($V_{CB} = 55$ Vdc, $I_E = 0$) ($V_{CB} = 70$ Vdc, $I_E = 0$)	I_{CBO}	BD 185 BD 187 BD 189	— — —	0.1 0.1 0.1	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0$ Vdc, $I_C = 0$)	I_{EBO}		—	1.0	mAdc
DC current Gain ($I_C = 0.5$ A, $V_{CE} = 2$ V) ($I_C = 2$ A, $V_{CE} = 2$ V)	h_{FE}^*		40 15	— —	
Collector-Emitter Saturation Voltage* ($I_C = 2$ Adc, $I_B = 0.2$ Adc)	$V_{CE(sat)}^*$		—	1.0	Vdc
Base-Emitter On Voltage* ($I_C = 2$ Adc, $V_{CE} = 2.0$ Vdc)	$V_{BE(on)}^*$		—	1.5	Vdc
Current-Gain-Bandwidth Product ($I_C = 1.0$ Adc, $V_{CE} = 10$ Vdc, $f = 1.0$ MHz)	f_T		2.0	—	MHz

* Pulse Test: Pulse Width ≤ 300 μs , Duty Cycle $\leq 2.0\%$.

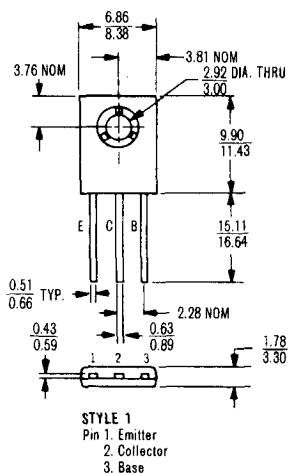
4 AMPERE POWER TRANSISTOR NPN SILICON

30, 45, 60 VOLTS
40 WATTS



HARDWARE AVAILABLE:

1. MICA WASHER—14B 52 600 F03
2. LOCK WASHER—04A 52 200 F01



When mounting the device, torque not to exceed 0.01 m.-kg.

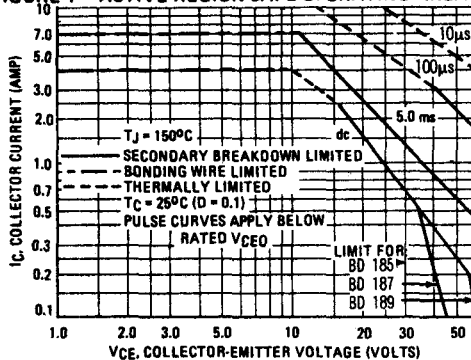
If lead bending is required, use suitable clamps or other supports between transistor case and point of bend.

All dimensions in millimeters

CASE 77

BD 185
BD 187
BD 189

FIGURE 1 – ACTIVE-REGION SAFE OPERATING AREA



The Safe Operating Area Curves indicate I_C - V_{CE} limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.

FIGURE 2 – COLLECTOR SATURATION REGION

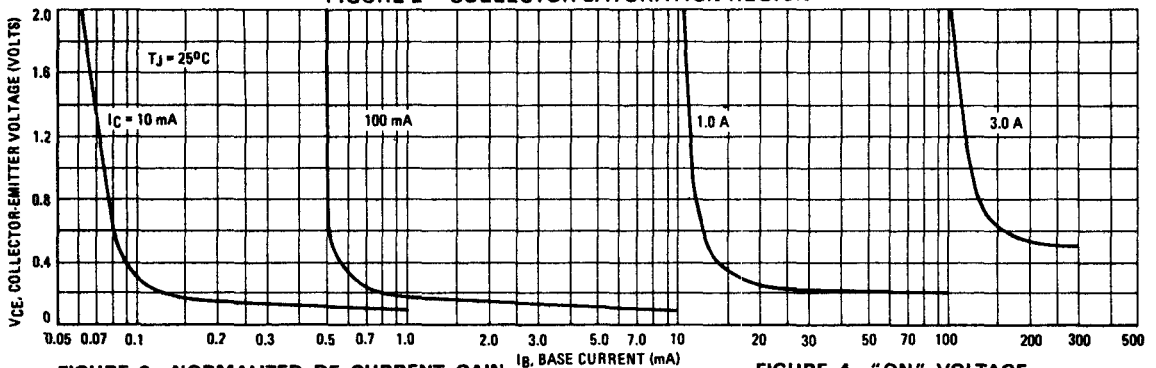


FIGURE 3 – NORMALIZED DC CURRENT GAIN

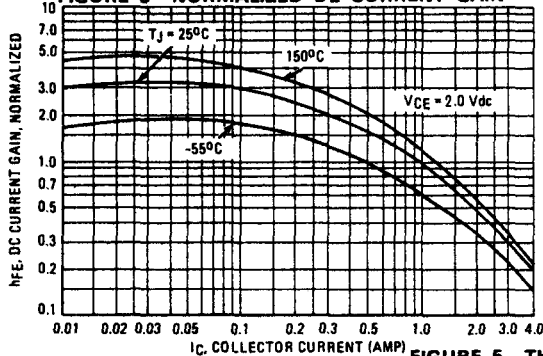


FIGURE 4 – "ON" VOLTAGE

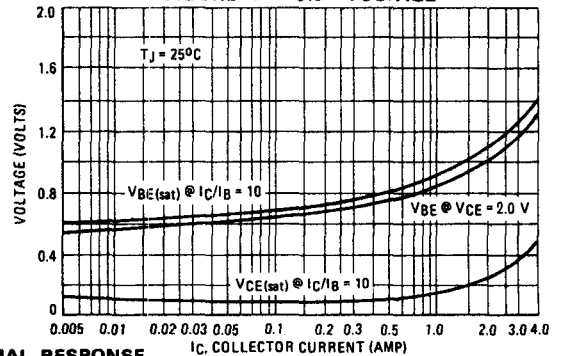


FIGURE 5 – THERMAL RESPONSE

