BD 233
BD 235
BD 237

PLASTIC MEDIUM POWER
SILICON NPN TRANSISTOR

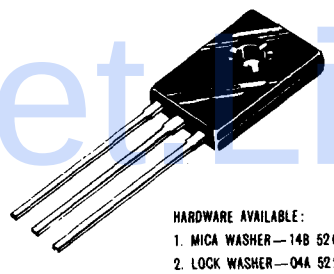
. . . designed for use in 5 to 10 Watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

- DC Current Gain—h_{FE} = 40 (Min) @ I_C = 0.15 Adc
- BD 233, 235, 237 are complementary with BD 234, 236, 238

2 AMPERE
POWER TRANSISTOR

NPN SILICON

45, 60, 80 VOLTS
25 WATTS



HARDWARE AVAILABLE:
1. MICA WASHER—14B 52600 F03
2. LOCK WASHER—04A 52200 F01

MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector-Emitter Voltage	V_{CEO}	BD 233 BD 235 BD 237	45 60 80	Vdc
Collector-Base Voltage	V_{CBO}	BD 233 BD 235 BD 237	45 60 80	Vdc
Emitter-Base Voltage	V_{EBO}		5	Vdc
Collector Current	I_C		2.0	Adc
Base Current	I_B		1.0	Adc
Total Device Dissipation T_C=25°C	P_D		25	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}		55 to +150	°C

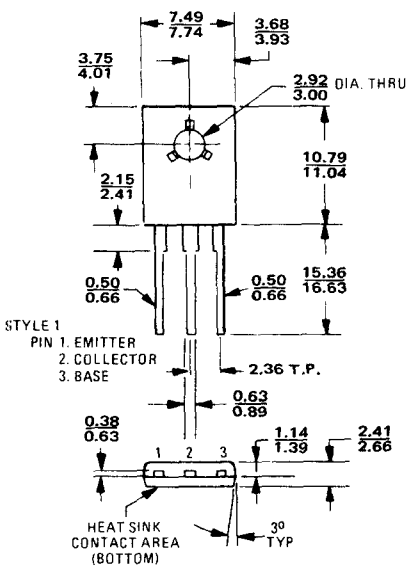
THERMAL CHARACTERISTICS

Characteristic	Symbol		Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}		5 0	° C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°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 233 BD 235 BD 237	45 60 80	— — —	Vdc
Collector Cutoff Current (V_{CB} = 45 Vdc, I_E = 0) (V_{CB} = 60 Vdc, I_E = 0) (V_{CB} = 80 Vdc, I_E = 0)	I_{CBO}	BD 233 BD 235 BD 237	— — —	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 = 0.15 A, V_{CE} = 2 V) (I_C = 1 A, V_{CE} = 2 V)	h_{FE1} h_{FE2}		40 25	— —	
Collector-Emitter Saturation Voltage* (I_C = 1 Adc, I_B = 0.1 Adc)	$V_{CE(sat)}$*		—	0.6	Vdc
Base-Emitter On Voltage* (I_C = 1 Adc, V_{CE} = 2.0 Vdc)	$V_{BE(on)}$*		—	1.3	Vdc
Current-Gain-Bandwidth Product (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 MHz)	f_T		3.0	—	MHz

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



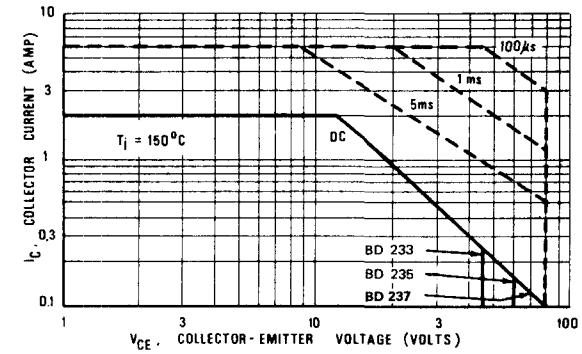
When mounting the device, torque not to exceed 0.07 m-kg

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

CASE 77-03

BD 233
BD 235
BD 237

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

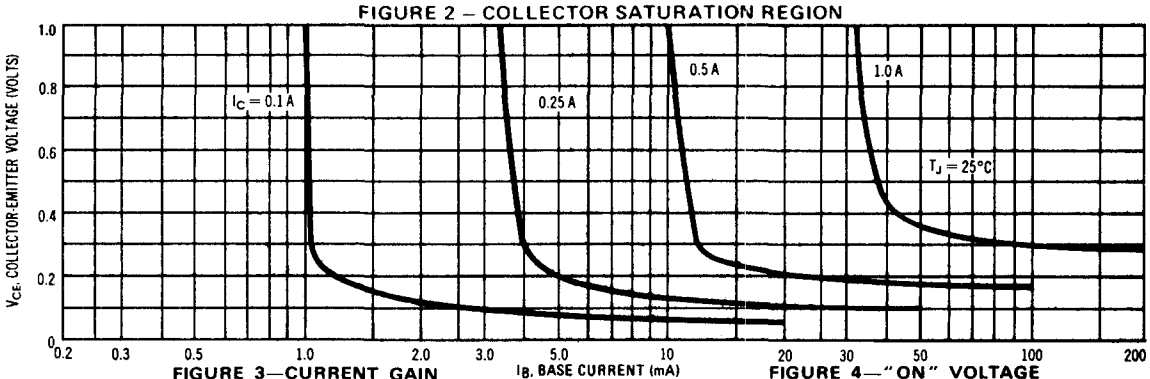


FIGURE 3—CURRENT GAIN

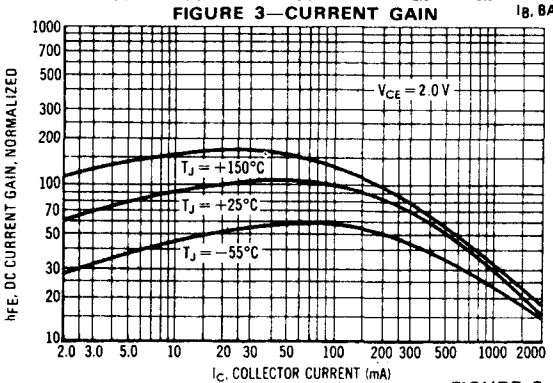


FIGURE 4—"ON" VOLTAGE

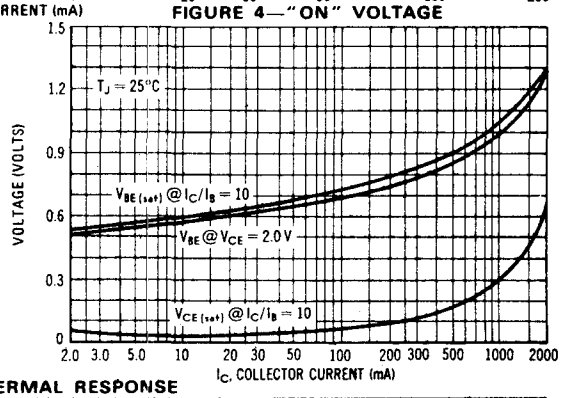


FIGURE 5—THERMAL RESPONSE