SEMELAB LIMITED BD232

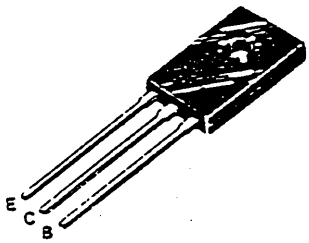
NPN SILICON MEDIUM POWER TRANSISTORS

- For Power Ouput Stages and Line Driver in Television Receivers

0.5 AMPERES

NPN SILICON POWER TRANSISTOR

300 VOLTS
20 WATTS



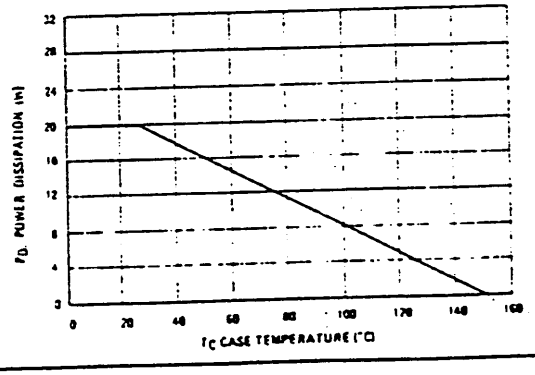
MAXIMUM RATINGS

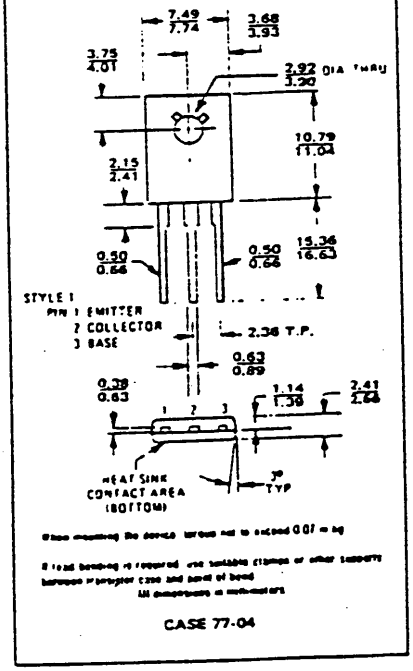
Rating	Symbol	Value	Unit*
Collector-Emitter Voltage	V_{CEO}	300	Vdc
Collector-Emitter Voltage	V_{CES}	500	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current – Continuous	I_C	0.5	Adc
Base Current	I_B	0.25	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	20 160	Watts W/°C
Operating 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}	6.25	°C/W

FIGURE 1 – POWER DERATING





CASE 77-04

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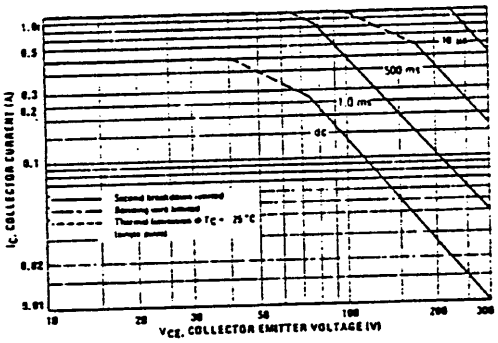
SEMELAB LIMITED **BD232**

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

Characteristic	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS (1)				
Collector-Emitter Sustaining Voltage (I_C = 10 mAdc, I_B = 0)	$V_{CEO(sus)}$	300	–	Vdc
Collector Cutoff Current (V_{CE} = 500 Vdc, V_{BE} = 0)	I_{CES}	–	0.1	mAdc
Base-Emitter Voltage (V_{CE} = 5 Vdc, I_C = 150 mA)	V_{BE}	-	1.0	Vdc
DC Current Gain (V_{CE} = 5 V, I_C = 50 mA) (V_{CE} = 5 V, I_C = 150 mA)	h_{FE}	25 20	150	
Collector Emitter Saturation Voltage (I_C = 150 mA, I_B = 15 mA)	$V_{CE(sat)}$	–	1.0	Vdc

FIGURE 2 – 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 6 is based on $T_{J(pk)}$ = 150°C. T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)}$ < 150°C. $T_{J(pk)}$ may be calculated from the data in figure 7. 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 3 – "ON" VOLTAGES