

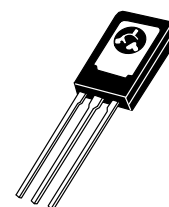
Plastic Medium Power Silicon PNP Transistor

... designed for use as audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

- DC Current Gain — $h_{FE} = 40$ (Min) @ $I_C = 0.15$ Adc
- BD 136, 138, 140 are complementary with BD 135, 137, 139

BD136
BD138
BD140
BD140-10

1.5 AMPERE
POWER TRANSISTORS
PNP SILICON
45, 60, 80 VOLTS
10 WATTS



CASE 77-08
TO-225AA TYPE

MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector-Emitter Voltage	V_{CEO}	BD 136 BD 138 BD 140	45 60 80	Vdc
Collector-Base Voltage	V_{CBO}	BD 136 BD 138 BD 140	45 60 100	Vdc
Emitter-Base Voltage	V_{EBO}		5	Vdc
Collector Current	I_C		1.5	Adc
Base Current	I_B		0.5	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D		1.25 10	Watts mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D		12.5 100	Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}		-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	10	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	θ_{JA}	100	$^\circ\text{C}/\text{W}$

BD136 BD138 BD140 BD140-10

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

Characteristic	Symbol	Type	Min	Max	Unit
Collector–Emitter Sustaining Voltage* ($I_C = 0.03\text{ Adc}$, $I_B = 0$)	BV_{CEO}	BD 136 BD 138 BD 140	45 60 80	— — —	Vdc
Collector Cutoff Current ($V_{CB} = 30\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 30\text{ Vdc}$, $I_E = 0$, $T_C = 125^\circ\text{C}$)	I_{CBO}		— —	0.1 10	μAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}		—	10	μAdc
DC Current Gain ($I_C = 0.005\text{ A}$, $V_{CE} = 2\text{ V}$) ($I_C = 0.15\text{ A}$, $V_{CE} = 2\text{ V}$) ($I_C = 0.5\text{ A}$, $V_{CE} = 2\text{ V}$)	h_{FE}^*	ALL ALL BD140–10	25 40 63 25	— 250 160 —	—
Collector–Emitter Saturation Voltage* ($I_C = 0.5\text{ Adc}$, $I_B = 0.05\text{ Adc}$)	$V_{CE(sat)}^*$		—	0.5	Vdc
Base–Emitter On Voltage* ($I_C = 0.5\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$)	$V_{BE(on)}^*$		—	1	Vdc

* Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

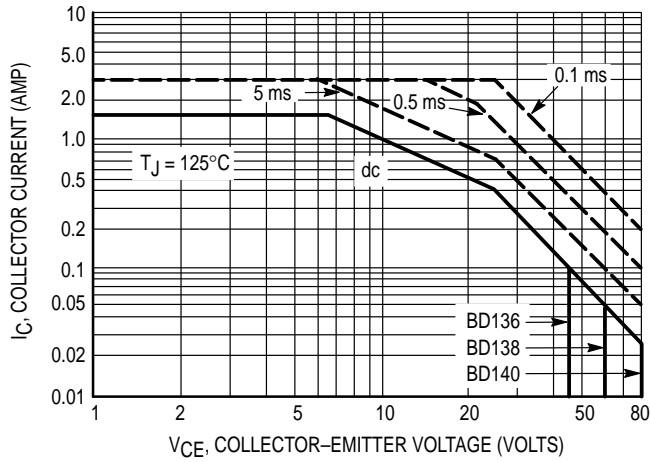
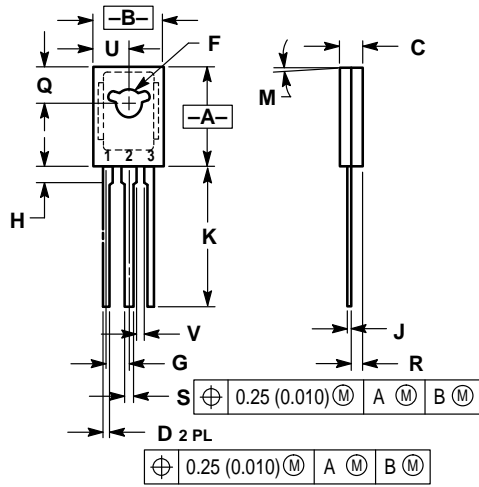


Figure 1. Active-Region Safe Operating Area

PACKAGE DIMENSIONS




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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.055	1.15	1.39
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	—	1.02	—

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

CASE 77-08
 TO-225AA TYPE
 ISSUE V

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