

BD436, BD438, BD440, BD442

Plastic Medium Power Silicon PNP Transistor

... for amplifier and switching applications. Complementary types are BD437 and BD441.

MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Collector-Emitter Voltage	BD436	V_{CEO}	32	Vdc
	BD438		45	
	BD440		60	
	BD442		80	
Collector-Base Voltage	BD436	V_{CBO}	32	Vdc
	BD438		45	
	BD440		60	
	BD442		80	
Emitter-Base Voltage		V_{EBO}	5.0	Vdc
Collector Current		I_C	4.0	Adc
Base Current		I_B	1.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C		P_D	36 288	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range		T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

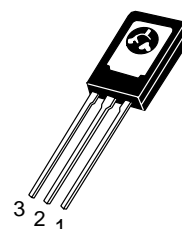
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	3.5	$^\circ\text{C/W}$



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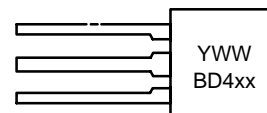
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4.0 AMPERES POWER TRANSISTORS PNP SILICON



TO-225AA
Case 77

MARKING DIAGRAM



xx = 36, 38, 40, 42
Y = Year
W = Work Week

ORDERING INFORMATION

Device	Package	Shipping
BD436	TO-225AA	500 Box
BD438	TO-225AA	500 Box
BD440	TO-225AA	500 Box
BD442	TO-225AA	500 Box

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

Characteristic		Symbol	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage (I _C = 100 mA, I _B = 0)	BD436 BD438 BD440 BD442	V _{(BR)CEO}	32 45 60 80	- - - -	- - - -	Vdc
Collector-Base Breakdown Voltage (I _C = 100 μA, I _B = 0)	BD436 BD438 BD440 BD442	V _{(BR)CBO}	32 45 60 80	- - - -	- - - -	Vdc
Emitter-Base Breakdown Voltage (I _E = 100 μA, I _C = 0)		V _{(BR)EBO}	5.0	-	-	Vdc
Collector Cutoff Current (V _{CB} = 32 V, I _E = 0) (V _{CB} = 45 V, I _E = 0) (V _{CB} = 60 V, I _E = 0) (V _{CB} = 80 V, I _E = 0)	BD436 BD438 BD440 BD442	I _{CBO}	- - - -	- - - -	0.1 0.1 0.1 0.1	mAdc
Emitter Cutoff Current (V _{EB} = 5.0 V)		I _{EBO}	-	-	1.0	mAdc
DC Current Gain (I _C = 10 mA, V _{CE} = 5.0 V)	BD436 BD438 BD440 BD442	h _{FE}	40 30 20 15	- - - -	- - - -	
DC Current Gain (I _C = 500 mA, V _{CE} = 1.0 V)	BD436 BD438 BD440 BD442	h _{FE}	85 85 40 40	- - - -	475 375 475 475	
DC Current Gain (I _C = 2.0 A, V _{CE} = 1.0 V)	BD436 BD438 BD440 BD442	h _{FE}	50 40 25 15	- - - -	- - - -	
Collector Saturation Voltage (I _C = 2.0 A, I _B = 0.2 A) (I _C = 3.0 A, I _B = 0.3 A)	BD436 BD438 BD440 BD442	V _{CE(sat)}	- - - -	- - - -	0.5 0.7 0.8 0.8	Vdc
Base-Emitter On Voltage (I _C = 2.0 A, V _{CE} = 1.0 V)	BD436/BD438 BD440/BD442	V _{BE(ON)}	- -	- -	1.1 1.5	Vdc
Current-Gain - Bandwidth Product (V _{CE} = 1.0 V, I _C = 250 mA, f = 1.0 MHz)		f _T	3.0	-	-	MHz

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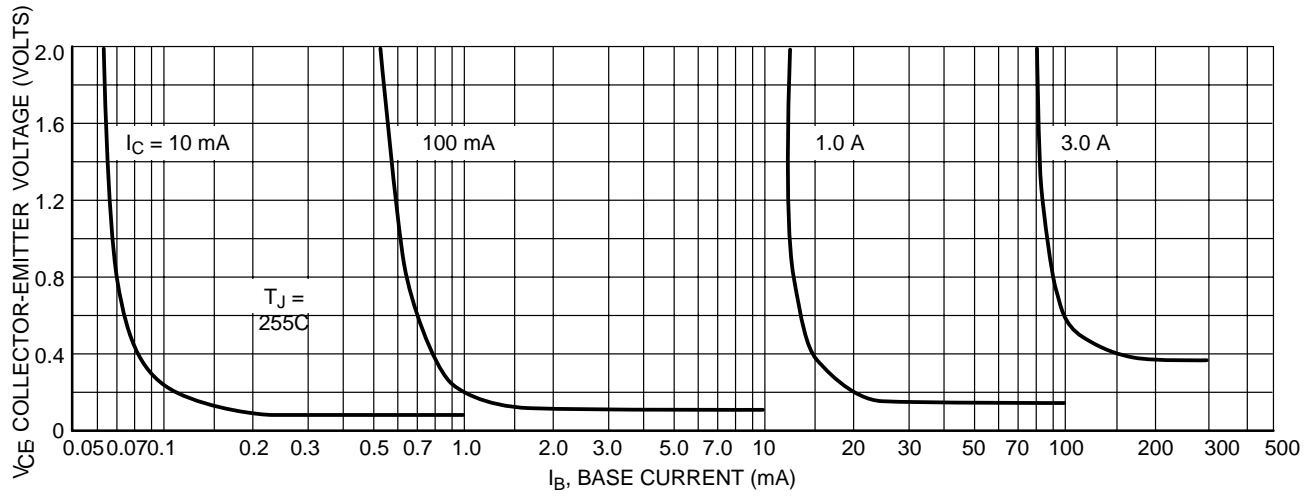


Figure 1. Collector Saturation Region

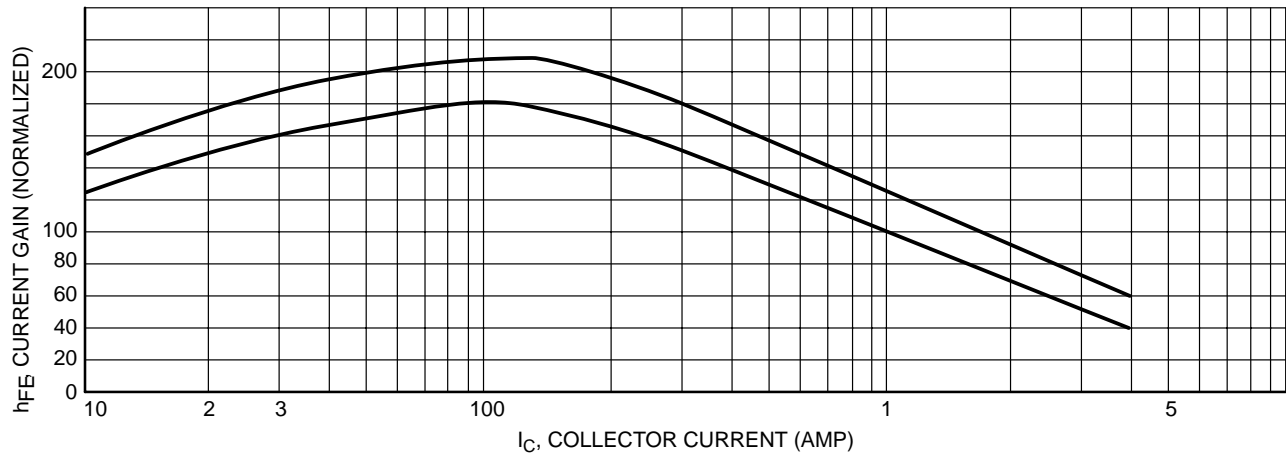


Figure 2. Current Gain

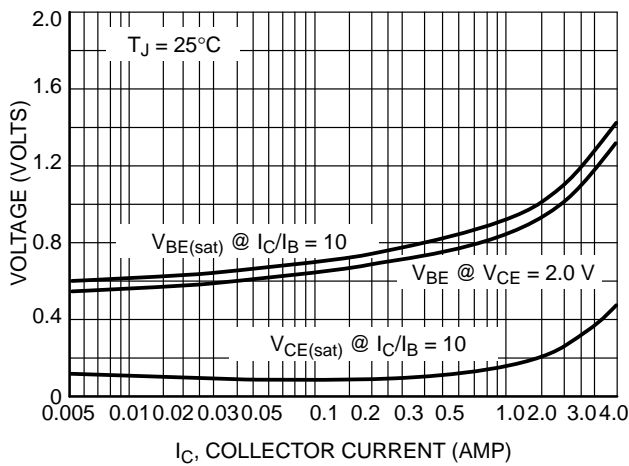


Figure 3. "On" Voltage

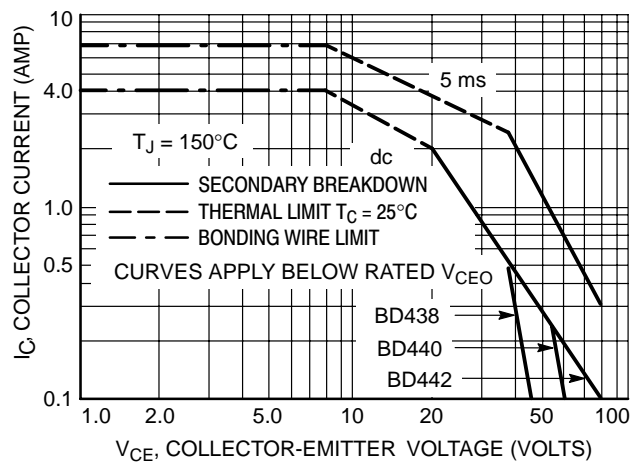
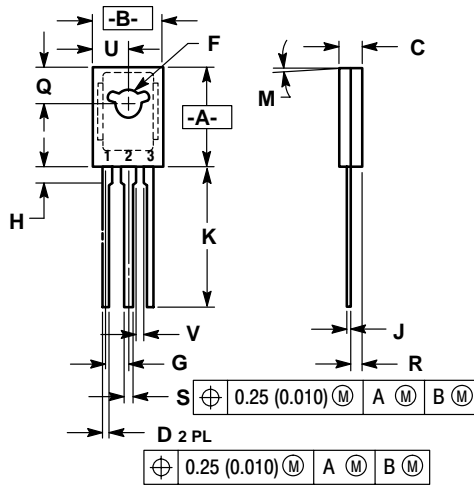


Figure 4. Active Region Safe Operating Area

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PACKAGE DIMENSIONS

TO-225AA CASE 77-09 ISSUE Z




NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077-01 THRU -08 OBSOLETE, NEW STANDARD 077-09.

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	0.065	1.15	1.65
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:

1. EMITTER
2. COLLECTOR
3. BASE

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