

Plastic Medium Power Silicon NPN Transistor

... for amplifier and switching applications. Complementary types are BD438 and BD442.

BD437
BD439
BD441

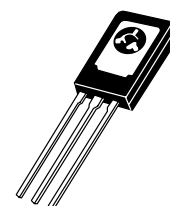
4.0 AMPERES
POWER TRANSISTORS
NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	BD437 BD439 BD441	V_{CEO} 45 60 80	Vdc
Collector–Base Voltage	BD437 BD439 BD441	V_{CBO} 45 60 80	Vdc
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	$^\circ\text{C}/\text{W}$



CASE 77–09
TO–225AA TYPE

BD437 BD439 BD441

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

Characteristic	Symbol	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage ($I_C = 100\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$ BD437 BD439 BD441	45 60 80	– – –	– – –	Vdc
Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{A}$, $I_B = 0$)	$V_{(BR)CBO}$ BD437 BD439 BD441	45 60 80	– – –	– – –	Vdc
Emitter–Base Breakdown Voltage ($I_E = 100\ \mu\text{A}$, $I_C = 0$)	$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector Cutoff Current ($V_{CB} = 45\text{ V}$, $I_E = 0$) ($V_{CB} = 60\text{ V}$, $I_E = 0$) ($V_{CB} = 80\text{ V}$, $I_E = 0$)	I_{CBO} BD437 BD439 BD441	– – –	– – –	0.1 0.1 0.1	mAdc
Emitter Cutoff Current ($V_{EB} = 5.0\text{ V}$)	I_{EBO}	–	–	1.0	mAdc
DC Current Gain ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	h_{FE} BD437 BD439 BD441	30 20 15	– – –	– – –	
DC Current Gain ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ V}$)	h_{FE} BD437 BD439, BD441	85 40	– –	375 475	
DC Current Gain ($I_C = 2.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)	h_{FE} BD437 BD439 BD441	40 25 15	– – –	– – –	
Collector Saturation Voltage ($I_C = 3.0\text{ A}$, $I_B = 0.3\text{ A}$)	$V_{CE(sat)}$ BD437, BD439, BD441	–	–	0.8	Vdc
Base–Emitter On Voltage ($I_C = 2.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)	$V_{BE(on)}$	–	–	1.1	Vdc
Current–Gain – Bandwidth Product ($V_{CE} = 1.0\text{ V}$, $I_C = 250\text{ mA}$, $f = 1.0\text{ MHz}$)	f_T	3.0	–	–	MHz

BD437 BD439 BD441

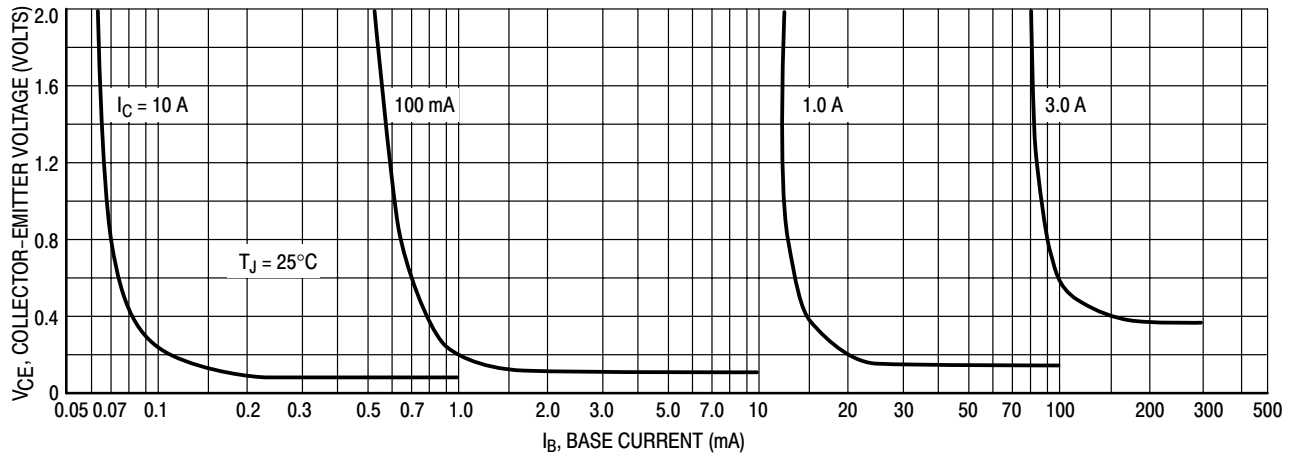


Figure 1. Collector Saturation Region

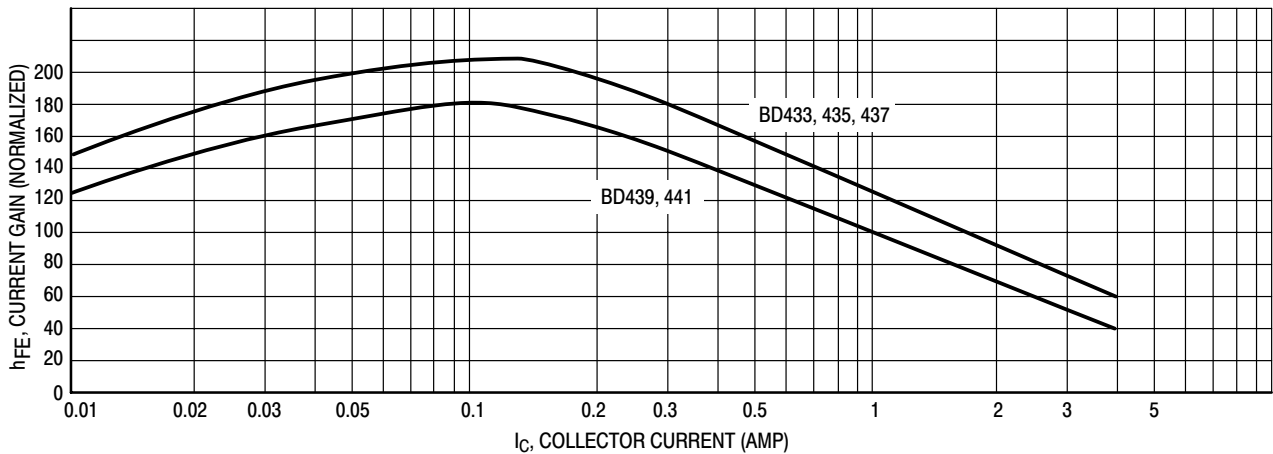


Figure 2. Current Gain

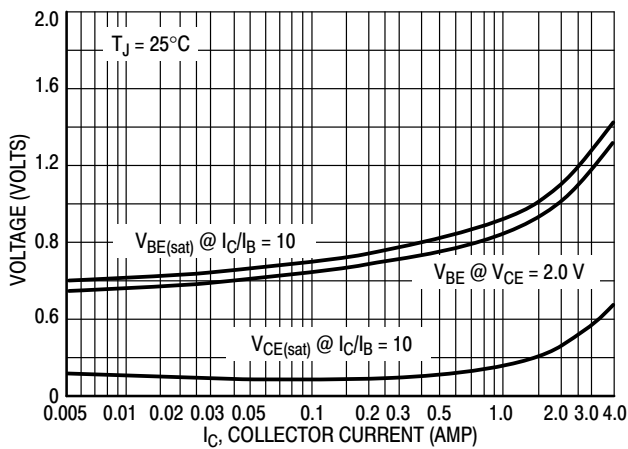


Figure 3. "On" Voltage

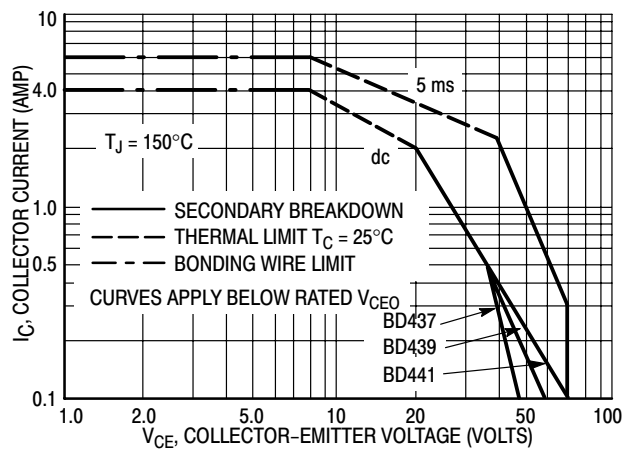
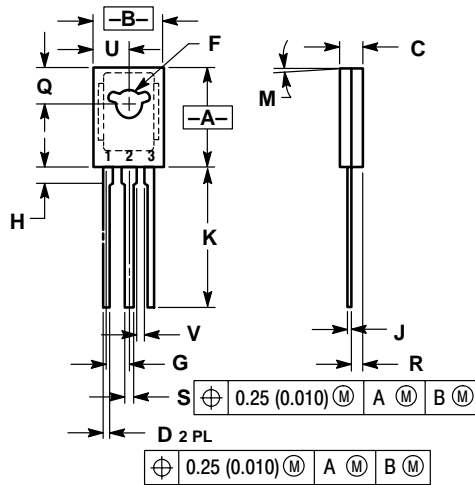


Figure 4. Active Region Safe Operating Area

BD437 BD439 BD441


PACKAGE DIMENSIONS

TO-225AA CASE 77-09 ISSUE W



- 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	0.065	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	---

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