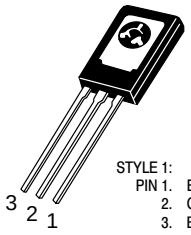
Plastic Medium Power Silicon NPN Transistor

BD437
BD439
BD441

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

4.0 AMPERES
POWER TRANSISTORS
NPN SILICON



CASE 77–09
TO–225AA TYPE

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°C Derate above 25°C		P_D	36 288	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}	3.5	°C/W

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)	BD437 BD439 BD441	$V_{(BR)CEO}$	 45 60 80	 – – –	 – – –	Vdc
Collector–Base Breakdown Voltage (I_C = 100 μA, I_B = 0)	BD437 BD439 BD441	$V_{(BR)CBO}$	 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} = 45 V, I_E = 0) (V_{CB} = 60 V, I_E = 0) (V_{CB} = 80 V, I_E = 0)	 BD437 BD439 BD441	I_{CBO}	 – – –	 – – –	 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)	BD437 BD439 BD441	h_{FE}	 30 20 15	 – – –	 – – –	
DC Current Gain (I_C = 500 mA, V_{CE} = 1.0 V)	BD437 BD439, BD441	h_{FE}	 85 40	 – –	 375 475	
DC Current Gain (I_C = 2.0 A, V_{CE} = 1.0 V)	BD437 BD439 BD441	h_{FE}	 40 25 15	 – – –	 – – –	
Collector Saturation Voltage (I_C = 3.0 A, I_B = 0.3 A)	BD437, BD439, BD441	$V_{CE(sat)}$	 –	 –	 0.8	Vdc
Base–Emitter On Voltage (I_C = 2.0 A, V_{CE} = 1.0 V)		$V_{BE(on)}$	–	–	1.1	Vdc
Current–Gain – Bandwidth Product (V_{CE} = 1.0 V, I_C = 250 mA, f = 1.0 MHz)		f_T	3.0	–	–	MHz

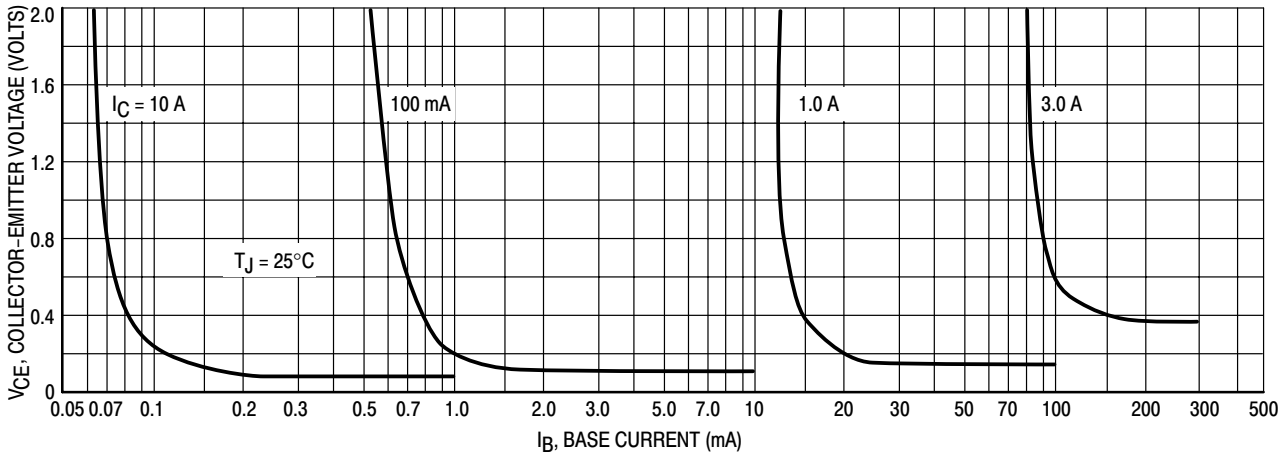


Figure 1. Collector Saturation Region

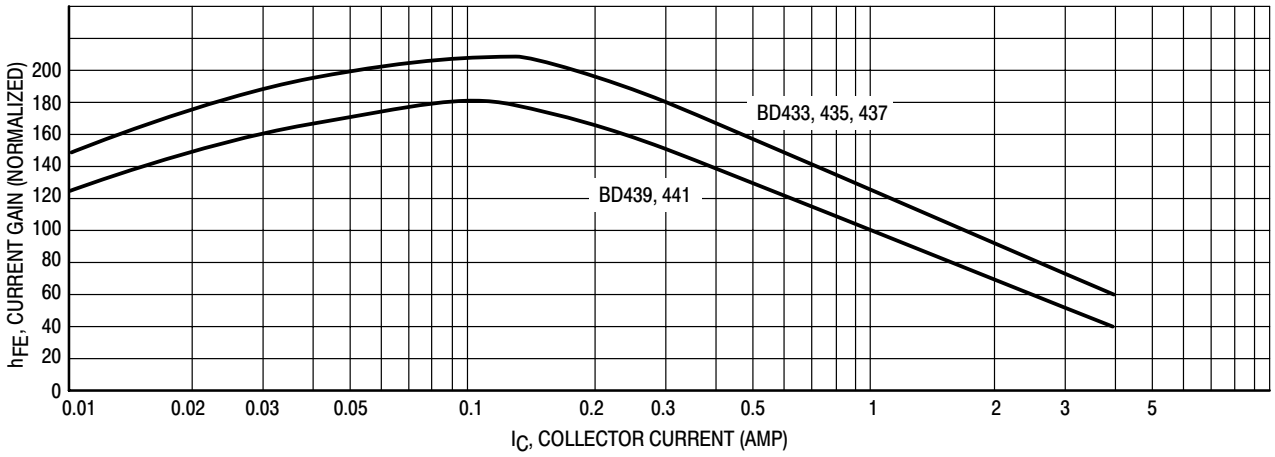


Figure 2. Current Gain

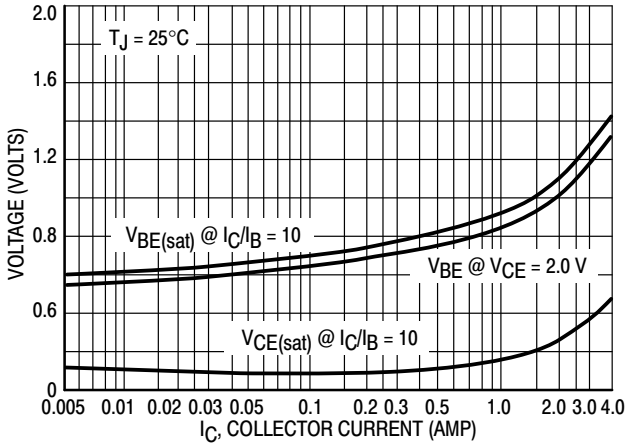


Figure 3. “On” Voltage

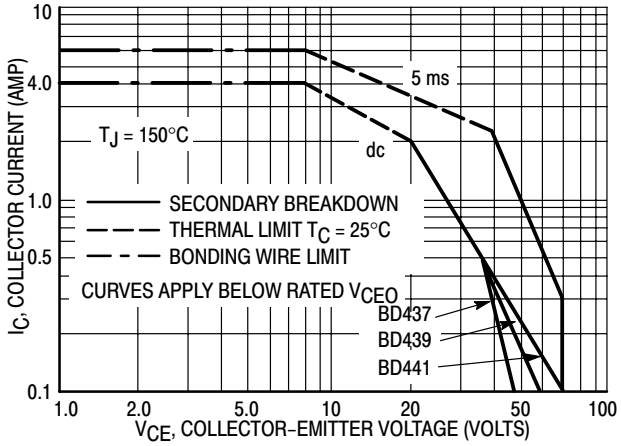
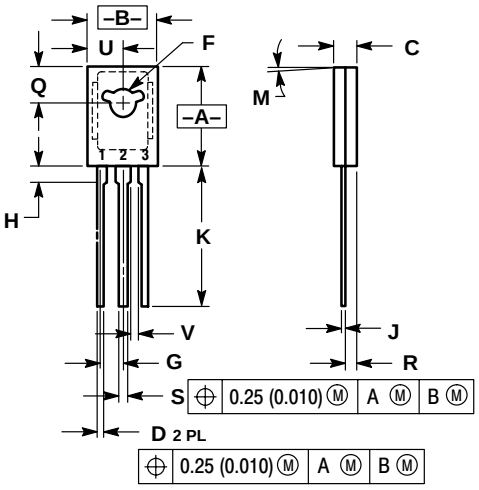


Figure 4. Active Region Safe Operating Area

PACKAGE DIMENSIONS

TO–225AA
CASE 77–09
ISSUE W



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

	INCHES		MILLIMETERS	
DIM	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:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

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