

# BD435G, BD437G, BD439G, BD441G

## Plastic Medium-Power Silicon NPN Transistors

This series of plastic, medium-power silicon NPN transistors can be used for amplifier and switching applications.

### Features

- Complementary Types are BD438 and BD442
- These Devices are Pb-Free and are RoHS Compliant\*

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage BD435G BD437G BD439G BD441G	$V_{CEO}$	32 45 60 80	Vdc
Collector-Base Voltage BD435G BD437G BD439G BD441G	$V_{CBO}$	32 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 $25^\circ\text{C}$	$P_D$	36 288	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### THERMAL CHARACTERISTICS

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

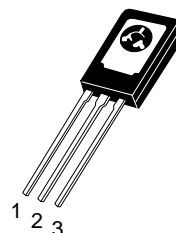
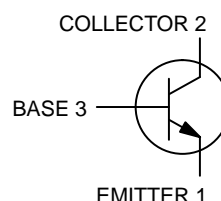
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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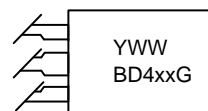
<http://onsemi.com>

## 4.0 AMPERES POWER TRANSISTORS NPN SILICON



TO-225  
CASE 77  
STYLE 1

### MARKING DIAGRAM



BD4xx = Device Code  
xx = 35, 37, 37T, 39, 41  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
BD435G	TO-225 (Pb-Free)	500 Units/Box
BD437G	TO-225 (Pb-Free)	500 Units/Box
BD437TG	TO-225 (Pb-Free)	50 Units/Rail
BD439G	TO-225 (Pb-Free)	500 Units/Box
BD441G	TO-225 (Pb-Free)	500 Units/Box

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## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Collector–Emitter Breakdown Voltage (I <sub>C</sub> = 100 mA, I <sub>B</sub> = 0) BD435G BD437G BD439G BD441G	V <sub>(BR)CEO</sub>	32 45 60 80	– – – –	– – – –	Vdc
Collector–Base Breakdown Voltage (I <sub>C</sub> = 100 μA, I <sub>B</sub> = 0) BD435G BD437G BD439G BD441G	V <sub>(BR)CBO</sub>	32 45 60 80	– – – –	– – – –	Vdc
Emitter–Base Breakdown Voltage (I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	5.0	–	–	Vdc
Collector Cutoff Current (V <sub>CB</sub> = 32 V, I <sub>E</sub> = 0) BD435G (V <sub>CB</sub> = 45 V, I <sub>E</sub> = 0) BD437G (V <sub>CB</sub> = 60 V, I <sub>E</sub> = 0) BD439G (V <sub>CB</sub> = 80 V, I <sub>E</sub> = 0) BD441G	I <sub>CBO</sub>	– – – –	– – – –	0.1 0.1 0.1 0.1	mAdc
Emitter Cutoff Current (V <sub>EB</sub> = 5.0 V)	I <sub>EBO</sub>	–	–	1.0	mAdc
DC Current Gain (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 5.0 V) BD435G BD437G BD439G BD441G	h <sub>FE</sub>	40 30 20 15	– – – –	– – – –	–
DC Current Gain (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 V) BD435G BD437G BD439G, BD441G	h <sub>FE</sub>	85 85 40	– – –	475 375 475	–
DC Current Gain (I <sub>C</sub> = 2.0 A, V <sub>CE</sub> = 1.0 V) BD435G BD437G BD439G BD441G	h <sub>FE</sub>	50 40 25 15	– – – –	– – – –	–
Collector Saturation Voltage (I <sub>C</sub> = 2.0 A, I <sub>B</sub> = 0.2 V) BD435G (I <sub>C</sub> = 3.0 A, I <sub>B</sub> = 0.3 A) BD437G, BD439G, BD441G	V <sub>CE(sat)</sub>	– –	– –	0.5 0.8	Vdc
Base–Emitter On Voltage (I <sub>C</sub> = 2.0 A, V <sub>CE</sub> = 1.0 V)	V <sub>BE(on)</sub>	–	–	1.1	Vdc
Current–Gain – Bandwidth Product (V <sub>CE</sub> = 1.0 V, I <sub>C</sub> = 250 mA, f = 1.0 MHz)	f <sub>T</sub>	3.0	–	–	MHz

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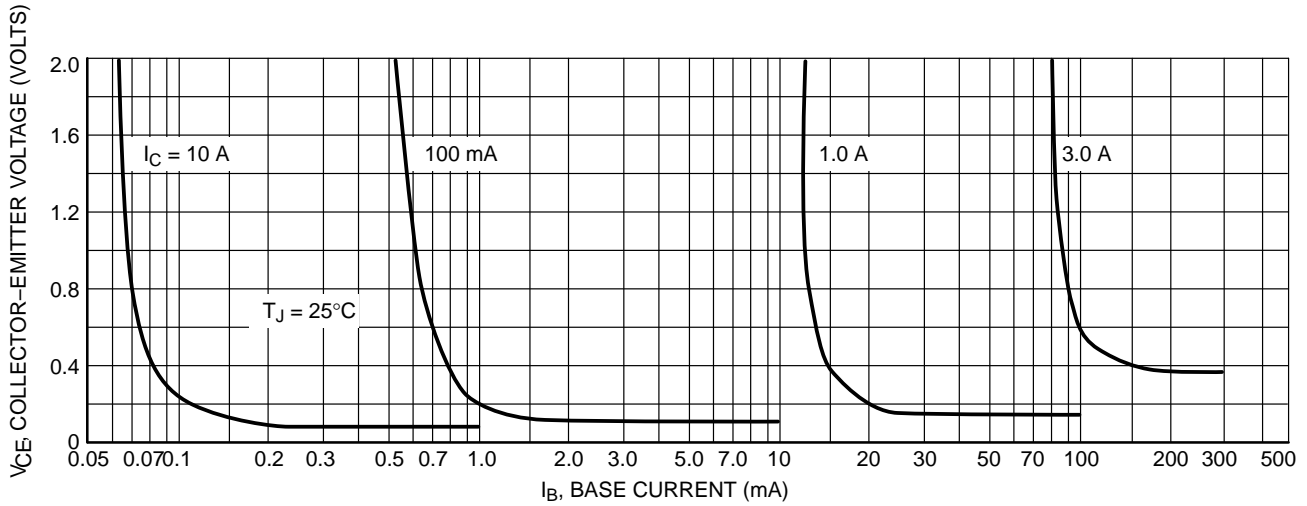


Figure 1. Collector Saturation Region

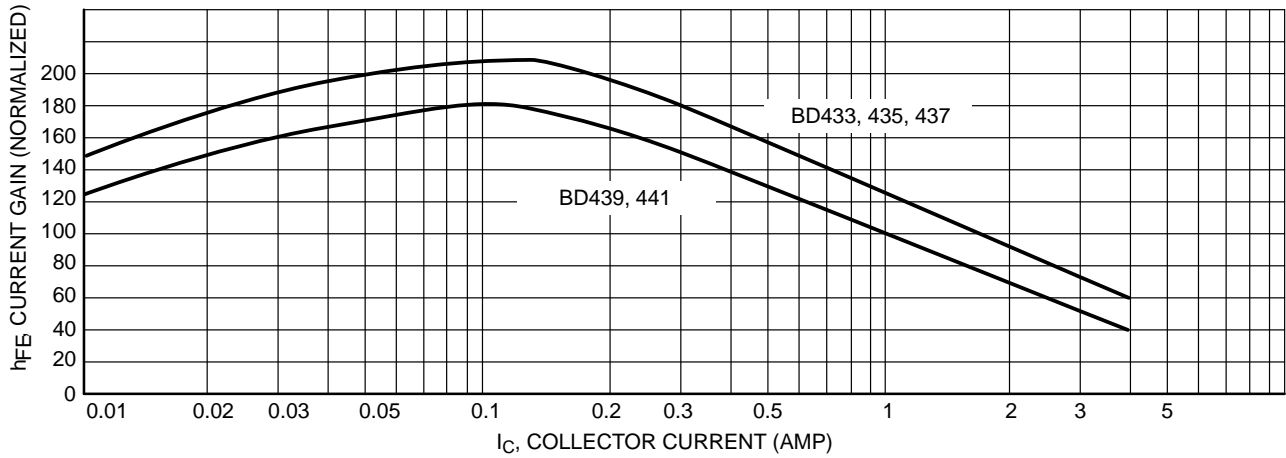


Figure 2. Current Gain

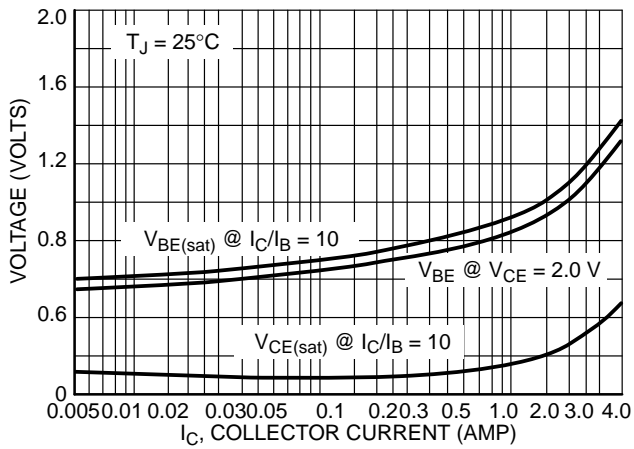


Figure 3. "On" Voltage

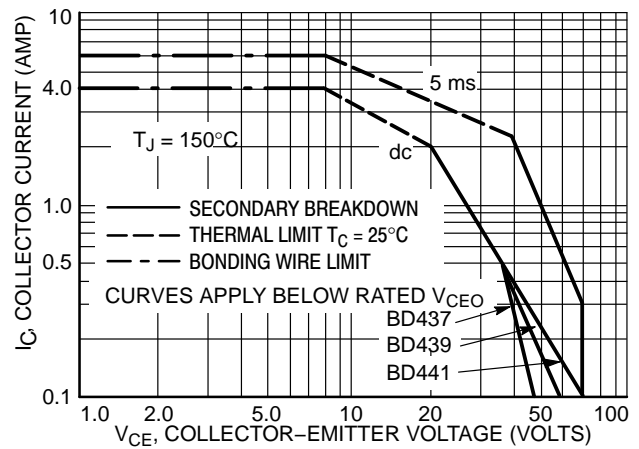
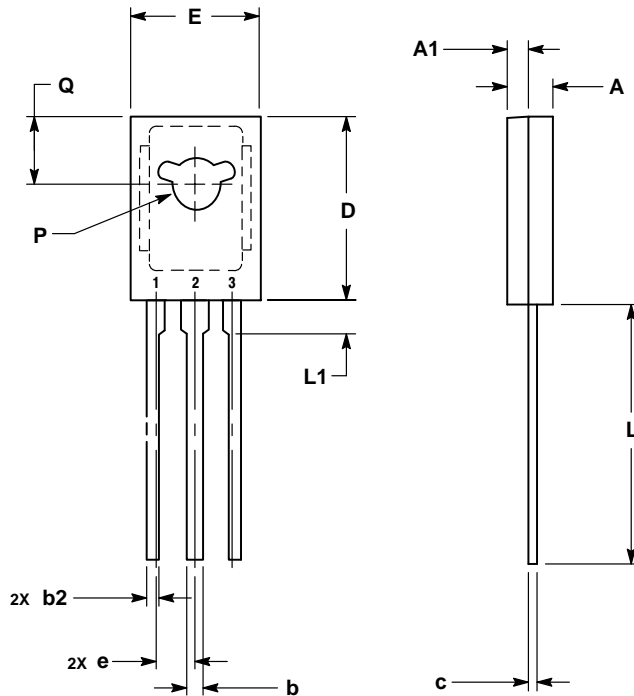


Figure 4. Active Region Safe Operating Area

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## PACKAGE DIMENSIONS

TO-225  
CASE 77-09  
ISSUE AB




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. NUMBER AND SHAPE OF LUGS OPTIONAL.

DIM	MILLIMETERS	
	MIN	MAX
A	2.40	3.00
A1	1.00	1.50
b	0.60	0.90
b2	0.51	0.88
c	0.39	0.63
D	10.60	11.10
E	7.40	7.80
e	2.04	2.54
L	14.50	16.63
L1	1.27	2.54
P	2.90	3.30
Q	3.80	4.20

### STYLE 1:

- PIN 1. EMITTER
- COLLECTOR
- BASE

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