BD435, BD437, BD439, BD441

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 BD435 BD437 BD439 BD441	V_{CEO}	 32 45 60 80	Vdc
Collector−Base Voltage BD435 BD437 BD439 BD441	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°C Derate above 25°C	P_D	 36 288	 W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°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

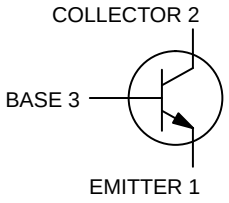
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	3.5	°C/W

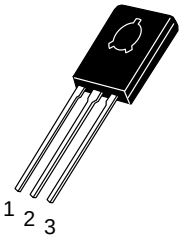
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

http://onsemi.com

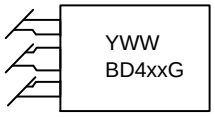
4.0 AMPERES POWER TRANSISTORS NPN SILICON





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

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)	$V_{(BR)CEO}$				Vdc
BD435		32	–	–	
BD437		45	–	–	
BD439		60	–	–	
BD441		80	–	–	
Collector−Base Breakdown Voltage (I_C = 100 μA, I_B = 0)	$V_{(BR)CBO}$				Vdc
BD435		32	–	–	
BD437		45	–	–	
BD439		60	–	–	
BD441		80	–	–	
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)	I_{CBO}				mAdc
BD435		–	–	0.1	
(V_{CB} = 45 V, I_E = 0)					
BD437		–	–	0.1	
(V_{CB} = 60 V, I_E = 0)					
BD439		–	–	0.1	
(V_{CB} = 80 V, I_E = 0)					
BD441		–	–	0.1	
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)	h_{FE}				–
BD435		40	–	–	
BD437		30	–	–	
BD439		20	–	–	
BD441		15	–	–	
DC Current Gain (I_C = 500 mA, V_{CE} = 1.0 V)	h_{FE}				–
BD435		85	–	475	
BD437		85	–	375	
BD439, BD441		40	–	475	
DC Current Gain (I_C = 2.0 A, V_{CE} = 1.0 V)	h_{FE}				–
BD435		50	–	–	
BD437		40	–	–	
BD439		25	–	–	
BD441		15	–	–	
Collector Saturation Voltage (I_C = 2.0 A, I_B = 0.2 V)	$V_{CE(sat)}$				Vdc
BD435		–	–	0.5	
(I_C = 3.0 A, I_B = 0.3 A)					
BD437, BD439, BD441		–	–	0.8	
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

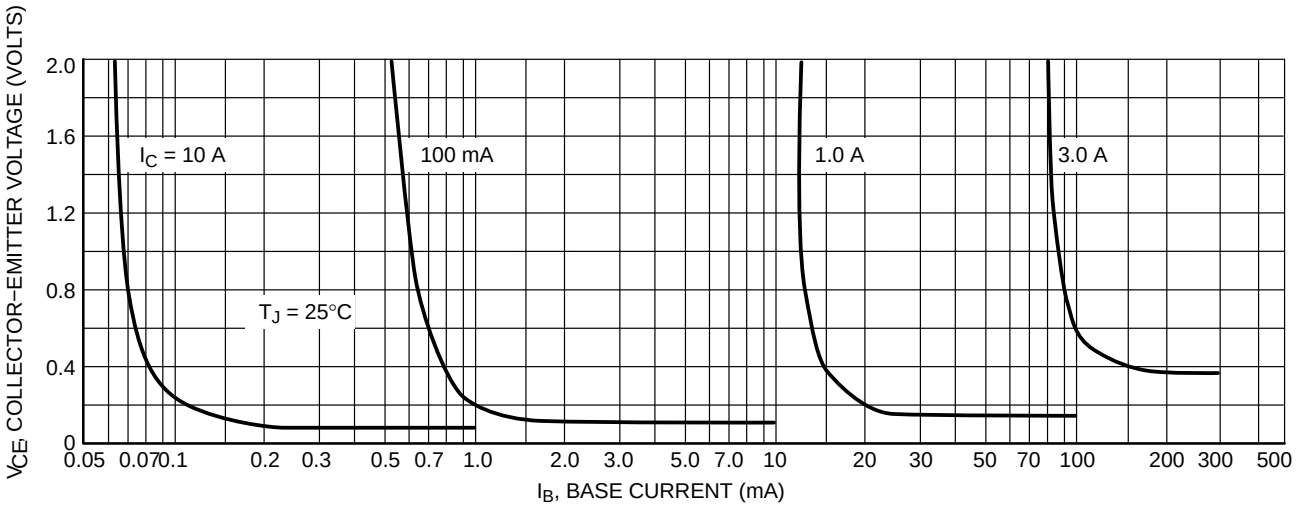


Figure 1. Collector Saturation Region

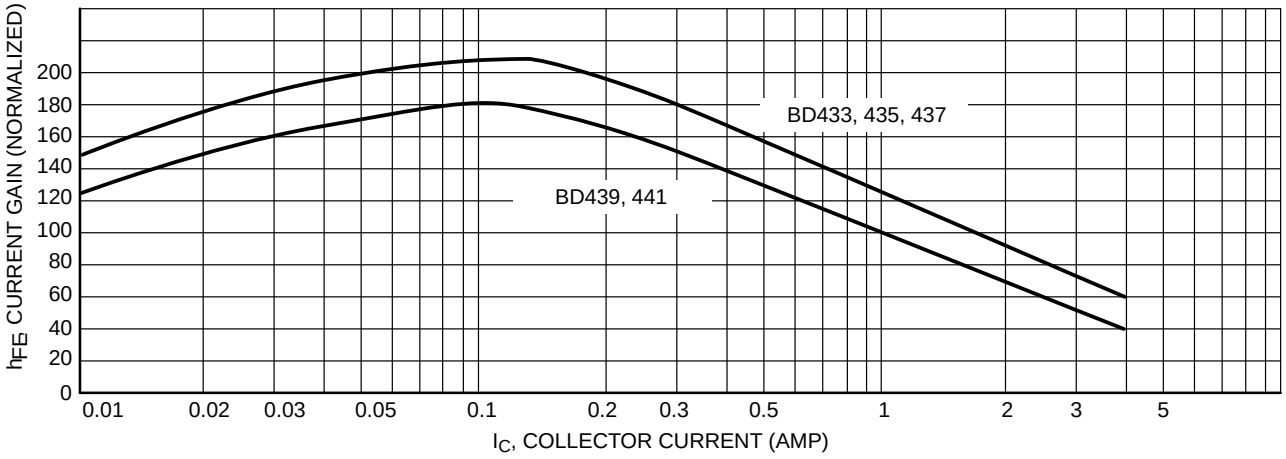


Figure 2. Current Gain

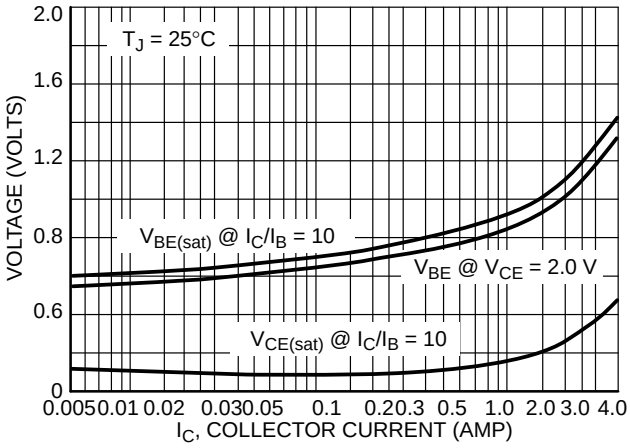


Figure 3. “On” Voltage

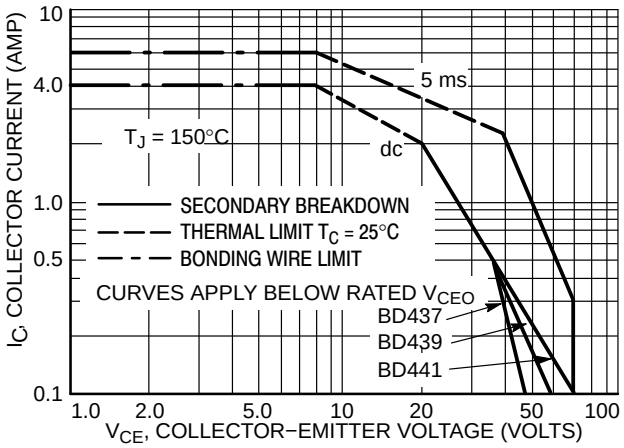
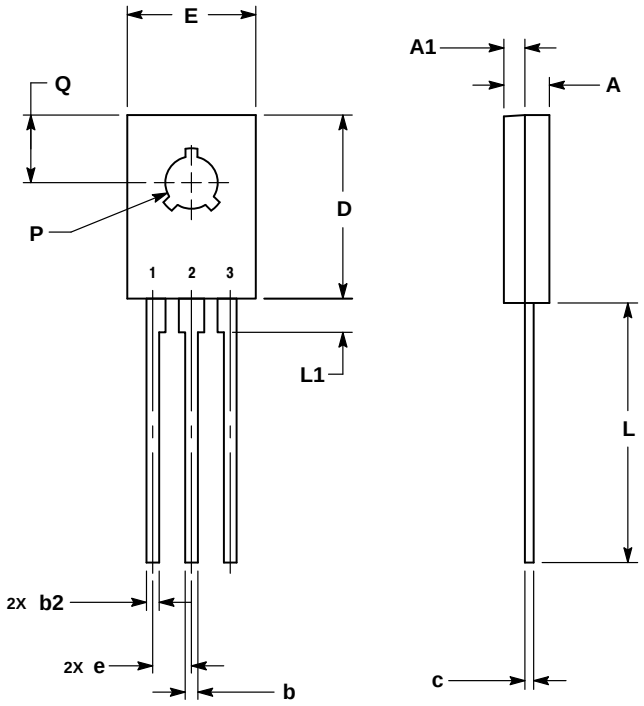


Figure 4. Active Region Safe Operating Area

PACKAGE DIMENSIONS

TO−225
CASE 77−09
ISSUE AA



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

	MILLIMETERS	
DIM	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
2. COLLECTOR
3. BASE

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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BD437/D