Plastic Medium-Power Silicon NPN Transistors

BD435G, BD437G, BD439G, BD441G

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°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

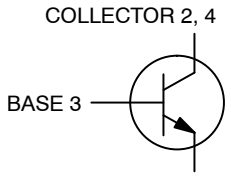
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

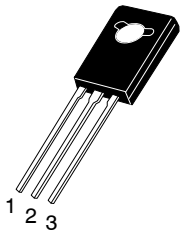
THERMAL CHARACTERISTICS

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 **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

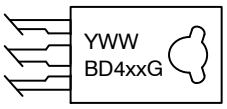
4.0 AMPERES POWER TRANSISTORS NPN SILICON





TO−225
CASE 77−09
STYLE 1

MARKING DIAGRAM



Y = Year
WW = Work Week
BD4xx = Device Code
xx = 35, 37, 37T, 39, 41
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_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
BD435G		32	–	–	
BD437G		45	–	–	
BD439G		60	–	–	
BD441G		80	–	–	
Collector−Base Breakdown Voltage (I_C = 100 μA, I_B = 0)	$V_{(BR)CBO}$				Vdc
BD435G		32	–	–	
BD437G		45	–	–	
BD439G		60	–	–	
BD441G		80	–	–	
Emitter−Base Breakdown Voltage (I_E = 100 μA, I_C = 0)	$V_{(BR)EBO}$	5.0	–	–	Vdc
Collector Cutoff Current	I_{CBO}				mAdc
(V_{CB} = 32 V, I_E = 0) BD435G		–	–	0.1	
(V_{CB} = 45 V, I_E = 0) BD437G		–	–	0.1	
(V_{CB} = 60 V, I_E = 0) BD439G		–	–	0.1	
(V_{CB} = 80 V, I_E = 0) BD441G		–	–	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}				–
BD435G		40	–	–	
BD437G		30	–	–	
BD439G		20	–	–	
BD441G		15	–	–	
DC Current Gain (I_C = 500 mA, V_{CE} = 1.0 V)	h_{FE}				–
BD435G		85	–	475	
BD437G		85	–	375	
BD439G, BD441G		40	–	475	
DC Current Gain (I_C = 2.0 A, V_{CE} = 1.0 V)	h_{FE}				–
BD435G		50	–	–	
BD437G		40	–	–	
BD439G		25	–	–	
BD441G		15	–	–	
Collector Saturation Voltage (I_C = 2.0 A, I_B = 0.2 V)	$V_{CE(sat)}$				Vdc
BD435G		–	–	0.5	
(I_C = 3.0 A, I_B = 0.3 A) BD437G, BD439G, BD441G		–	–	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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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Your Opinion Matters

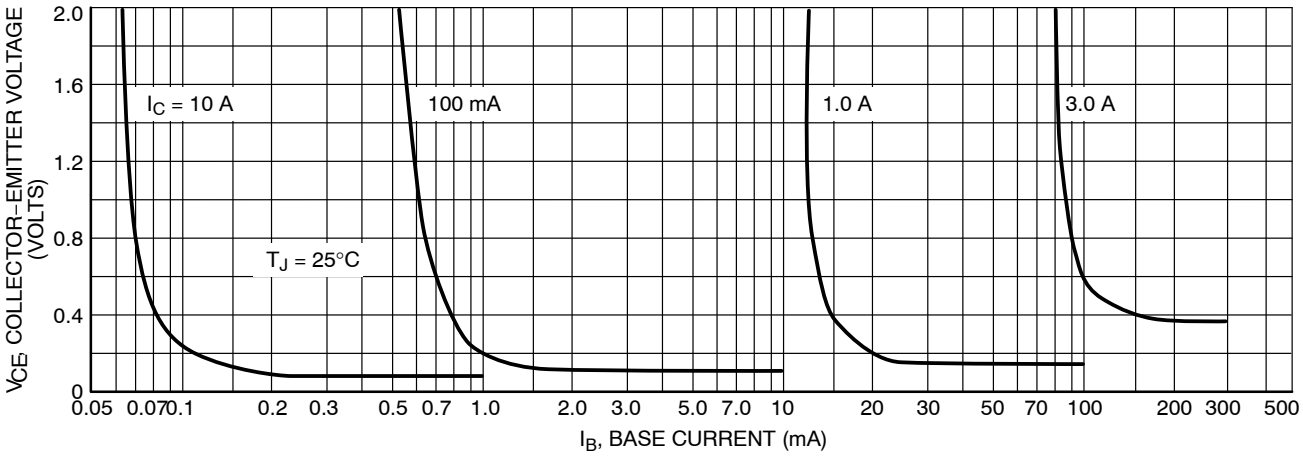


Figure 1. Collector Saturation Region

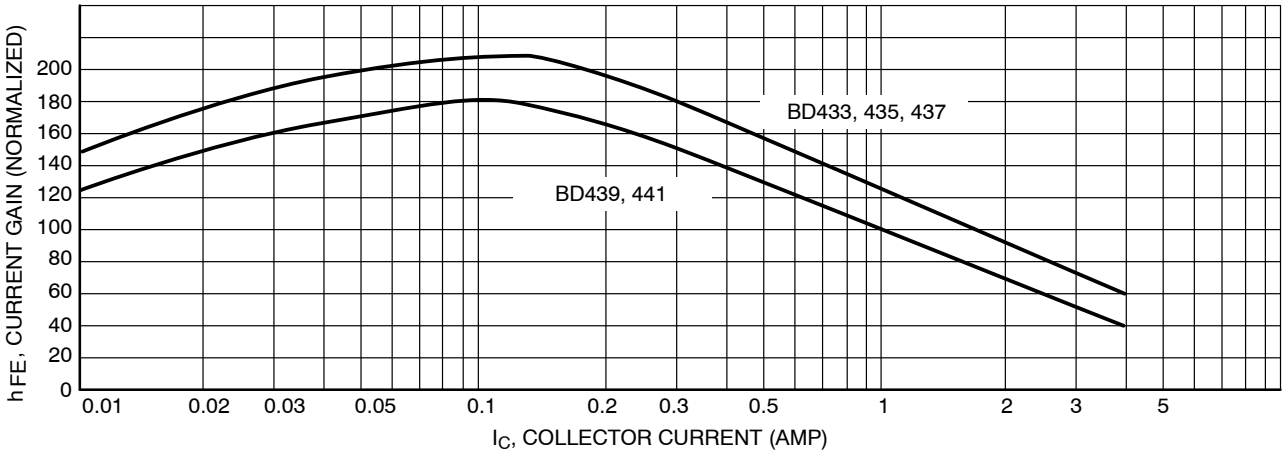


Figure 2. Current Gain

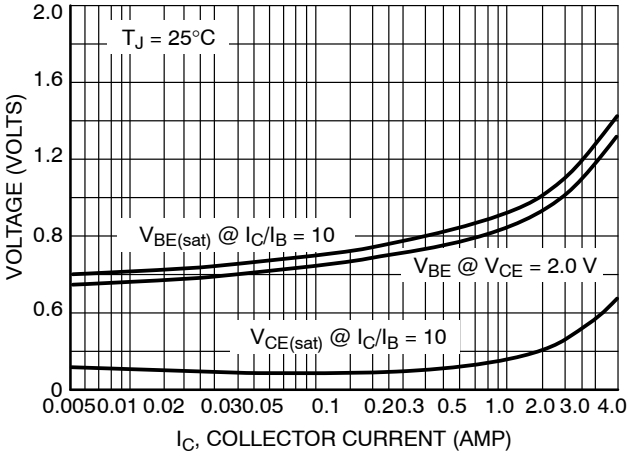


Figure 3. “On” Voltage

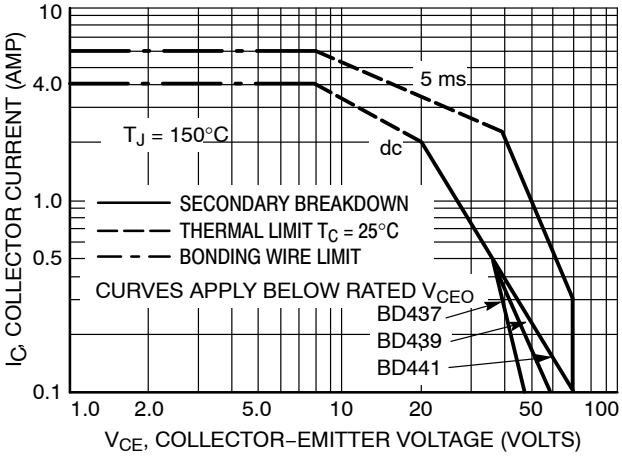
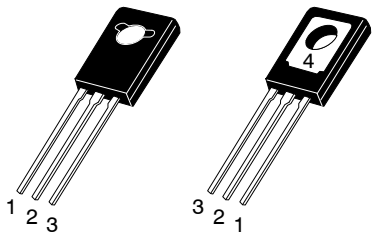


Figure 4. Active Region Safe Operating Area

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Your Opinion Matters

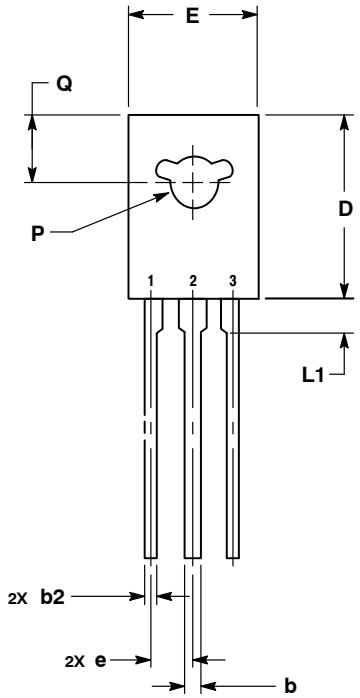


FRONT VIEW **BACK VIEW**

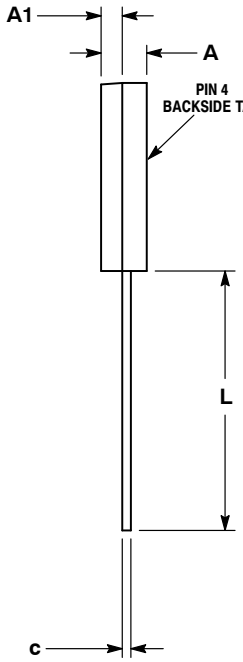
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CASE 77−09
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DATE 25 MAR 2015

SCALE 1:1



FRONT VIEW

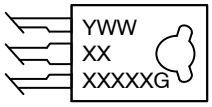


SIDE VIEW

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

GENERIC MARKING DIAGRAM*



Y = Year
WW = Work Week
XXXXX = Device Code
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. EMITTER
2., 4. COLLECTOR
3. BASE

STYLE 2:
PIN 1. CATHODE
2., 4. ANODE
3. GATE

STYLE 3:
PIN 1. BASE
2., 4. COLLECTOR
3. EMITTER

STYLE 4:
PIN 1. ANODE 1
2., 4. ANODE 2
3. GATE

STYLE 5:
PIN 1. MT 1
2., 4. MT 2
3. GATE

STYLE 6:
PIN 1. CATHODE
2., 4. GATE
3. ANODE

STYLE 7:
PIN 1. MT 1
2., 4. GATE
3. MT 2

STYLE 8:
PIN 1. SOURCE
2., 4. GATE
3. DRAIN

STYLE 9:
PIN 1. GATE
2., 4. DRAIN
3. SOURCE

STYLE 10:
PIN 1. SOURCE
2., 4. DRAIN
3. GATE

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