Plastic Medium Power Silicon PNP Transistor

BD436G, BD438G, BD440G, BD442G

This series of plastic, medium−power silicon PNP transistors can be used for for amplifier and switching applications. Complementary types are BD437 and BD441.

Features

- These Devices are Pb−Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage BD436G BD438G BD440G BD442G	V_{CEO}	 32 45 60 80	Vdc
Collector−Base Voltage BD436G BD438G BD440G BD442G	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

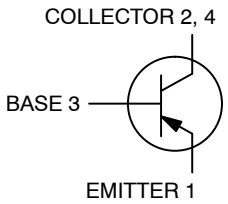
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

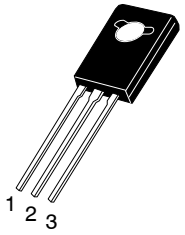
THERMAL CHARACTERISTICS

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.

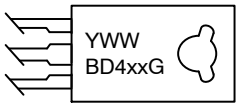
4.0 AMP POWER TRANSISTORS PNP SILICON





TO−225
CASE 77−09
STYLE 1

MARKING DIAGRAM



Y = Year
WW = Work Week
BD4xx = Device Code
xx = 36, 36T, 38, 38T, 40, 42
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
BD442G	TO−225 (Pb−Free)	500 Units/Box

DISCONTINUED (Note 1)

BD436G	TO−225 (Pb−Free)	500 Units/Box
BD436TG		50 Units/Rail
BD438G		500 Units/Box
BD438TG		50 Units/Rail
BD440G		500 Units/Box

1. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.

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
BD436G		32	–	–	
BD438G		45	–	–	
BD440G		60	–	–	
BD442G		80	–	–	
Collector−Base Breakdown Voltage (I_C = 100 μA, I_B = 0)	$V_{(BR)CBO}$				Vdc
BD436G		32	–	–	
BD438G		45	–	–	
BD440G		60	–	–	
BD442G		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) BD436G		–	–	0.1	
(V_{CB} = 45 V, I_E = 0) BD438G		–	–	0.1	
(V_{CB} = 60 V, I_E = 0) BD440G		–	–	0.1	
(V_{CB} = 80 V, I_E = 0) BD442G		–	–	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}				–
BD436G		40	–	–	
BD438G		30	–	–	
BD440G		20	–	–	
BD442G		15	–	–	
DC Current Gain (I_C = 500 mA, V_{CE} = 1.0 V)	h_{FE}				–
BD436G		85	–	475	
BD438G		85	–	475	
BD440G		40	–	475	
BD442G		40	–	475	
DC Current Gain (I_C = 2.0 A, V_{CE} = 1.0 V)	h_{FE}				–
BD436G		50	–	–	
BD438G		40	–	–	
BD440G		25	–	–	
BD442G		15	–	–	
Collector Saturation Voltage (I_C = 2.0 A, I_B = 0.2 A)	$V_{CE(sat)}$				Vdc
BD436G		–	–	0.5	
(I_C = 3.0 A, I_B = 0.3 A) BD438G		–	–	0.7	
BD440G		–	–	0.8	
BD442G		–	–	0.8	
Base−Emitter On Voltage (I_C = 2.0 A, V_{CE} = 1.0 V)	$V_{BE(ON)}$				Vdc
BD436G/BD438G		–	–	1.1	
BD440G/BD442G		–	–	1.5	
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.

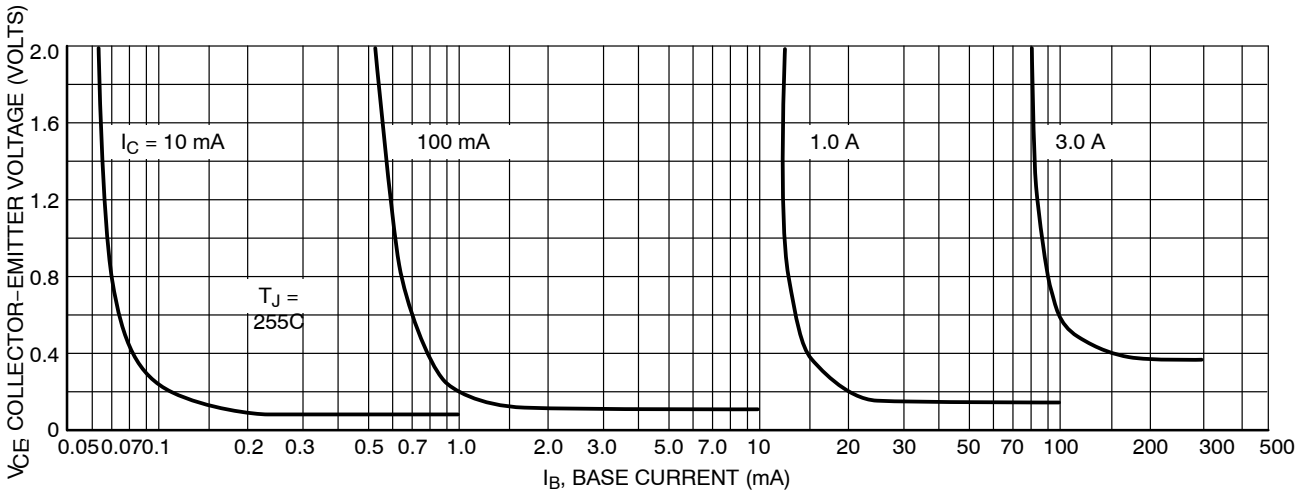


Figure 1. Collector Saturation Region

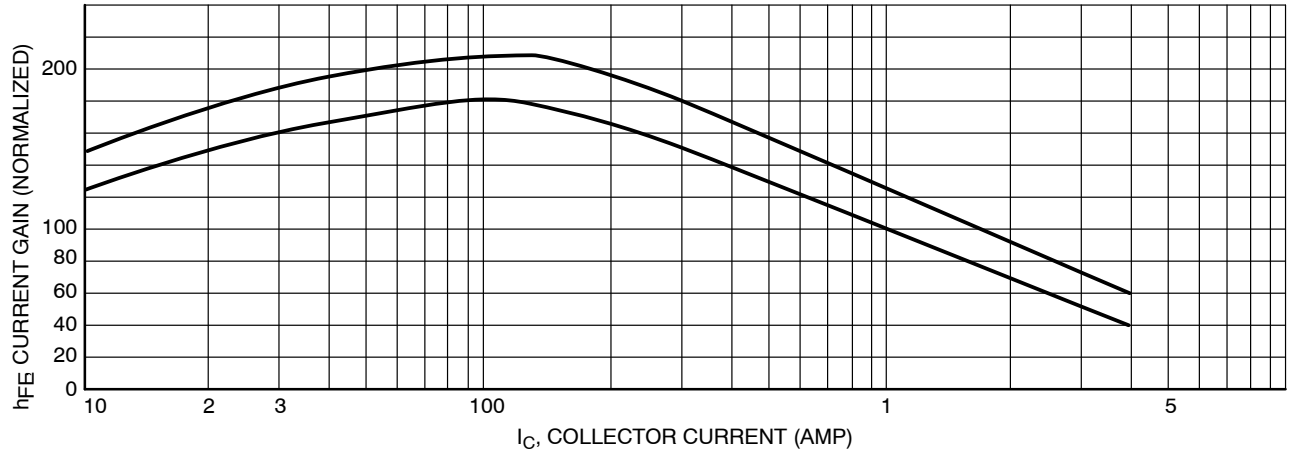


Figure 2. Current Gain

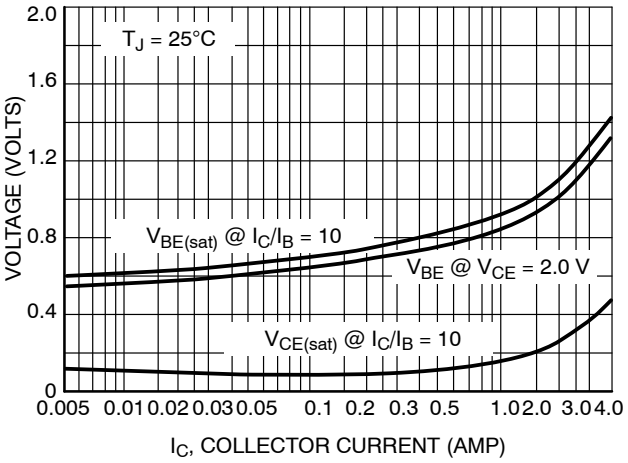


Figure 3. “On” Voltage

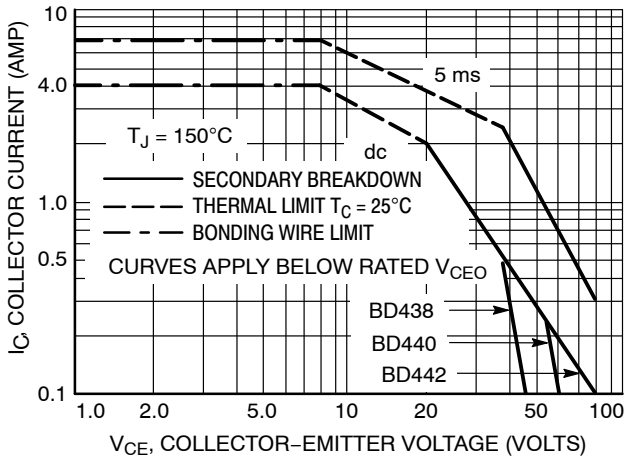


Figure 4. Active Region Safe Operating Area

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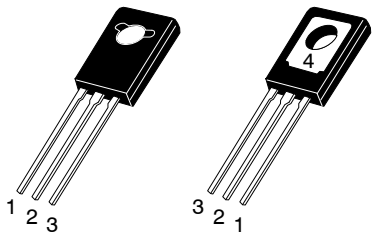
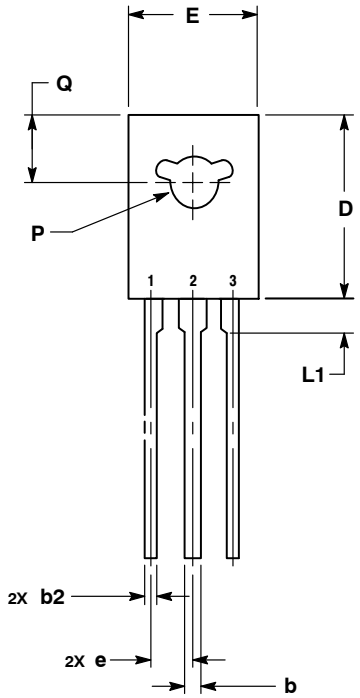
DATE 25 MAR 2015

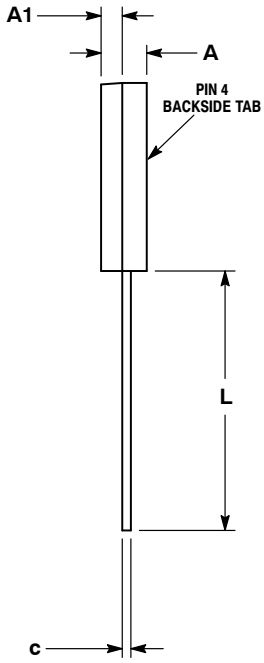


FRONT VIEW **BACK VIEW**

SCALE 1:1



FRONT VIEW

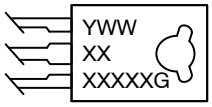


SIDE VIEW

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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