BD237 (NPN), BD234 (PNP), BD238 (PNP)

Preferred Devices

Plastic Medium Power Bipolar Transistors

Designed for use in 5.0 to 10 W audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

Features

- DC Current Gain −
  h_{FE} = 40 (Min) @ I_C = 0.15 Adc
- Epoxy Meets UL 94 V0 @ 0.125 in
- ESD Ratings: Human Body Model, 3B; >8000 V
  Machine Model, C; >400 V
- Pb−Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	BD234	BD237 BD238	Unit
Collector−Emitter Voltage	V_{CEO}	45	80	Vdc
Collector−Base Voltage	V_{CBO}	60	100	Vdc
Emitter−Base Voltage	V_{EBO}	5.0		Vdc
Collector Current	I_C	2.0		Adc
Base Current	I_B	1.0		Adc
Total Device Dissipation @ T_C = 25°C	P_D	25		W
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	$R_{\theta JC}$	5.0	°C/W

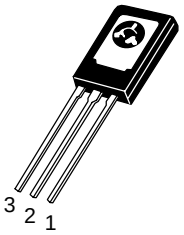
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*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®

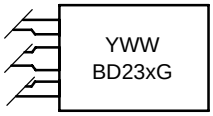
http://onsemi.com

2.0 AMPERES POWER TRANSISTORS 25 WATTS



TO−225
CASE 77
STYLE 1

MARKING DIAGRAM



BD23x = Device Code
x = 4, 7 or 8
Y = Year
WW = Work Week
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
BD234	TO−225	500 Units / Box
BD234G	TO−225 (Pb−Free)	500 Units / Box
BD237	TO−225	500 Units / Box
BD237G	TO−225 (Pb−Free)	500 Units / Box
BD238	TO−225	500 Units / Box
BD238G	TO−225 (Pb−Free)	500 Units / Box

Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Type	Min	Max	Unit
Collector−Emitter Sustaining Voltage (Note 1) (I_C = 0.1 Adc, I_B = 0)	$V_{(BR)CEO}$	BD237, BD238 BD234	80 45	– –	Vdc
Collector Cutoff Current (V_{CB} = 100 Vdc, I_E = 0) (V_{CB} = 60 Vdc, I_E = 0)	I_{CBO}	 BD237, BD238 BD234	 – –	 0.1 0.1	mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	–	–	1.0	mAdc
DC Current Gain (I_C = 0.15 A, V_{CE} = 2.0 V) (I_C = 1.0 A, V_{CE} = 2.0 V)	 h_{FE1} h_{FE2}	 – –	 40 25	 – –	–
Collector−Emitter Saturation Voltage (Note 1) (I_C = 1.0 Adc, I_B = 0.1 Adc)	$V_{CE(sat)}$	–	–	0.6	Vdc
Base−Emitter On Voltage (Note 1) (I_C = 1.0 Adc, V_{CE} = 2.0 Vdc)	$V_{BE(on)}$	–	–	1.3	Vdc
Current−Gain − Bandwidth Product (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 MHz)	f_T	–	3.0	–	MHz

1. Pulse Test: Pulse Width ≦ 300 μs, Duty Cycle ≦ 2.0%.

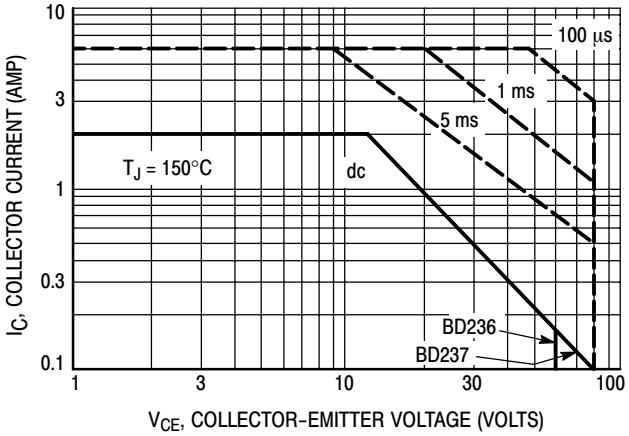


Figure 1. Active Region Safe Operating Area

The Safe Operating Area Curves indicate I_C–V_{CE} limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J, power−temperature derating must be observed for both steady state and pulse power conditions.

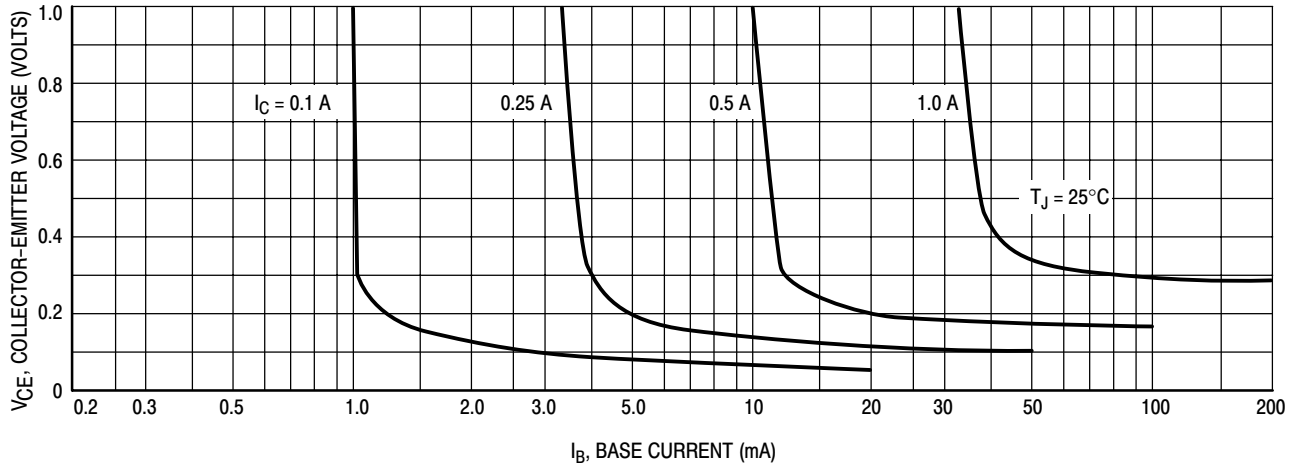


Figure 2. Collector Saturation Region

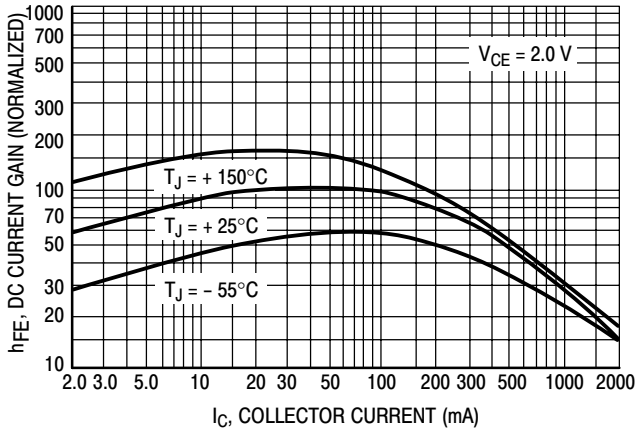


Figure 3. Current Gain

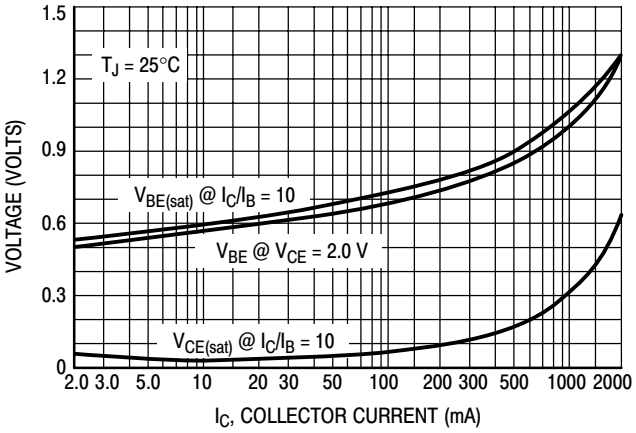


Figure 4. “On” Voltages

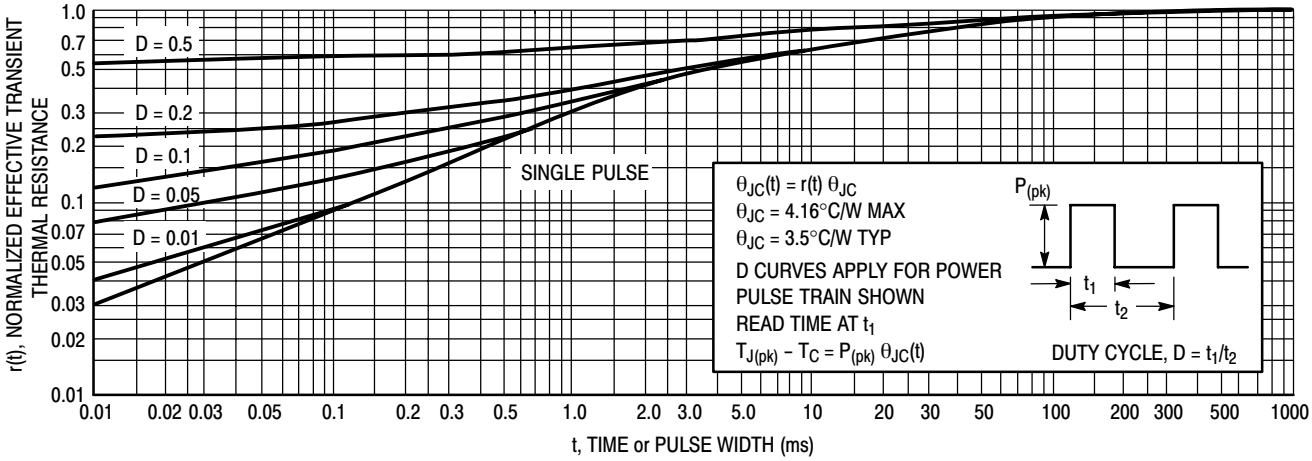
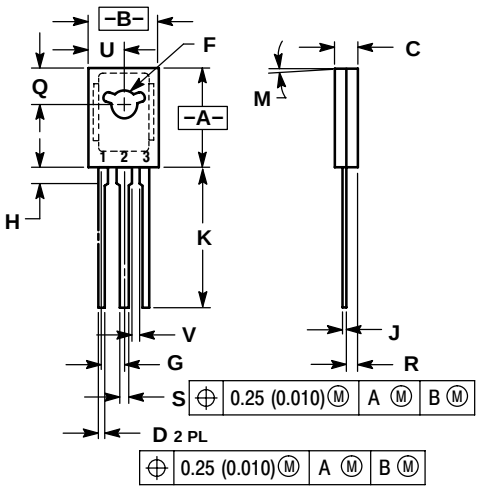


Figure 5. Thermal Response

PACKAGE DIMENSIONS

TO−225
CASE 77−09
ISSUE Z



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 077−01 THRU −08 OBSOLETE, NEW STANDARD 077−09.

	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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.