

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 @ $T_C = 25^\circ\text{C}$	P_D	25		W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	5.0	$^\circ\text{C/W}$

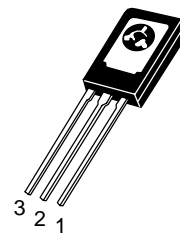
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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



ON Semiconductor®

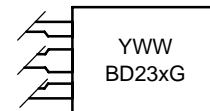
<http://onsemi.com>

**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.

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

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

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 _{CB0}	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%.

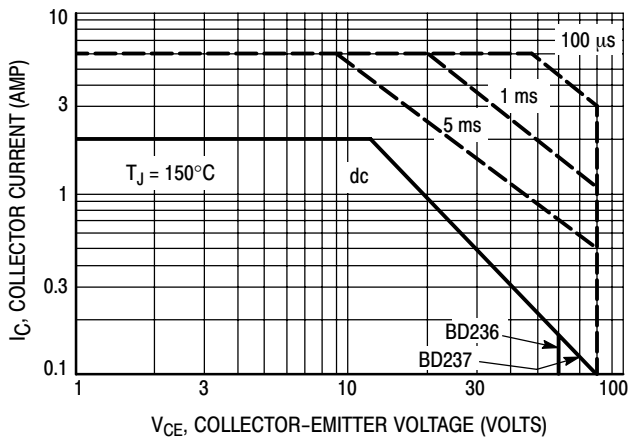


Figure 1. Active Region Safe Operating Area

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.

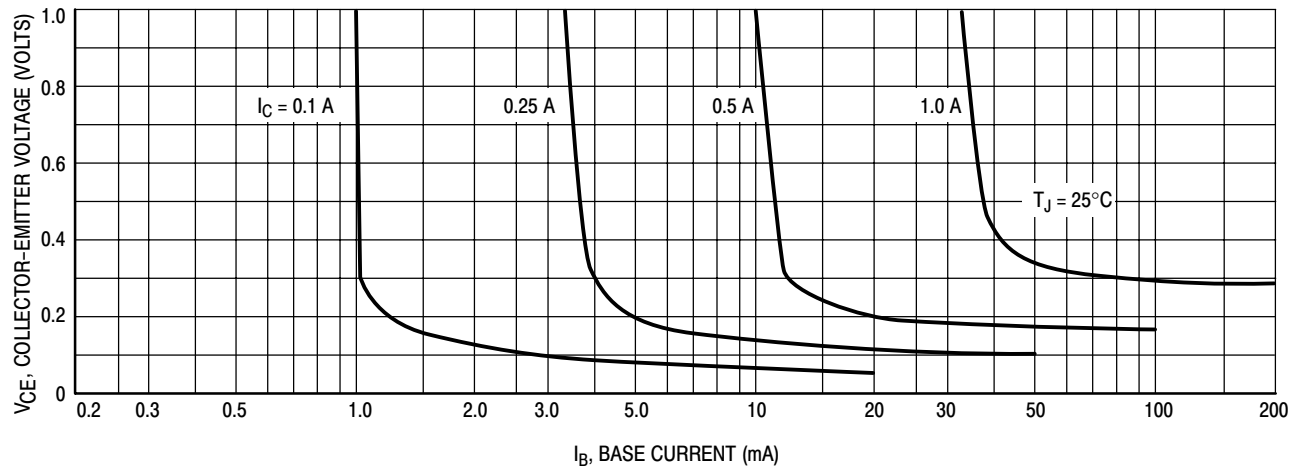


Figure 2. Collector Saturation Region

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

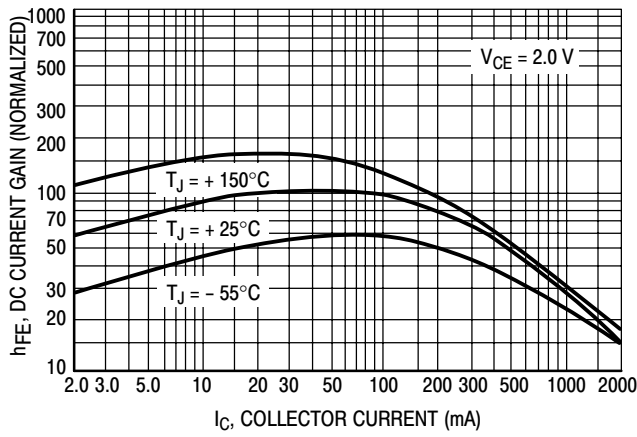


Figure 3. Current Gain

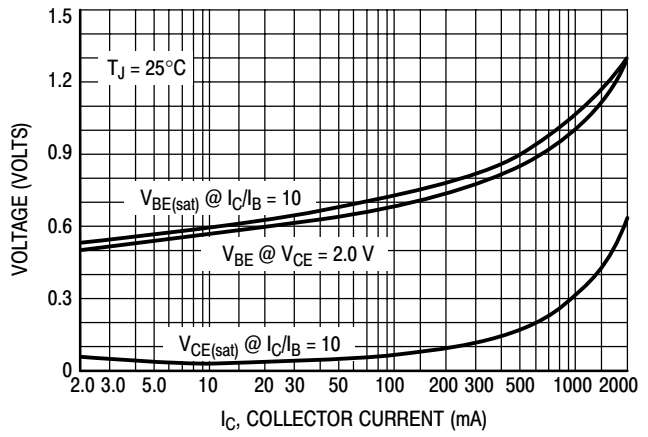


Figure 4. "On" Voltages

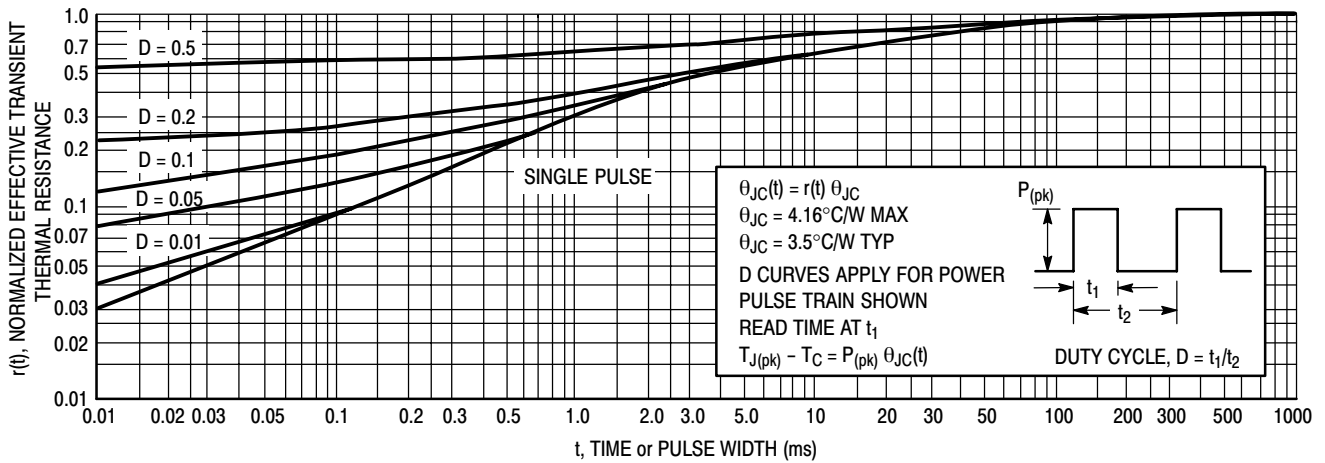
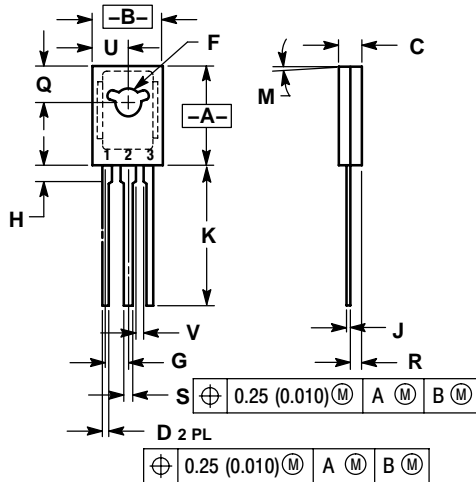


Figure 5. Thermal Response

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

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.

DIM	INCHES		MILLIMETERS	
	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:

1. EMITTER
2. COLLECTOR
3. BASE

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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.

www.BDTIC.com/ON/

BD237/D