

BC237, BC237B, BC237C, BC239C

Amplifier Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	45	Vdc
BC237		25	
BC239			
Collector – Emitter Voltage	V_{CES}	50	Vdc
BC237		30	
BC239			
Collector – Emitter Voltage	V_{EBO}	6.0	Vdc
BC237		5.0	
BC239			
Collector Current – Continuous	I_C	100	mAdc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	P_D	350	mW
		2.8	mW/ $^\circ\text{C}$
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $T_A = 25^\circ\text{C}$	P_D	1.0	W
		8.0	mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	125	$^\circ\text{C/W}$

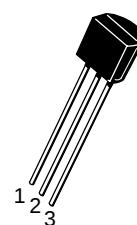
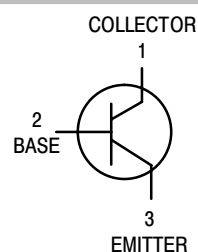
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

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



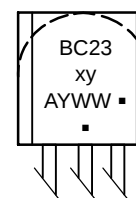
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29
STYLE 17

MARKING DIAGRAM



BC23xy = Device Code

x = 7 or 9

y = B or C

A = Assembly Location

Y = Year

WW = Work Week

▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
BC237	TO-92	5000 Units / Bulk
BC237G	TO-92 (Pb-Free)	5000 Units / Bulk
BC237B	TO-92	5000 Units / Bulk
BC237BG	TO-92 (Pb-Free)	5000 Units / Bulk
BC237BRL1	TO-92	2000/Tape & Reel
BC237BRL1G	TO-92 (Pb-Free)	2000/Tape & Reel
BC237BZL1	TO-92	2000/Ammo Pack
BC237BZL1G	TO-92 (Pb-Free)	2000/Ammo Pack
BC237C	TO-92	5000 Units / Bulk
BC237CG	TO-92 (Pb-Free)	5000 Units / Bulk

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage ($I_C = 2.0\text{ mA}$, $I_B = 0$)	BC237 BC239 $V_{(BR)CEO}$	45 25	– –	– –	V
Emitter–Base Breakdown Voltage ($I_E = 100\text{ }\mu\text{A}$, $I_C = 0$)	BC237 BC239 $V_{(BR)EBO}$	6.0 5.0	– –	– –	V
Collector Cutoff Current ($V_{CE} = 30\text{ V}$, $V_{BE} = 0$) ($V_{CE} = 50\text{ V}$, $V_{BE} = 0$) ($V_{CE} = 30\text{ V}$, $V_{BE} = 0$) $T_A = 125^\circ\text{C}$ ($V_{CE} = 50\text{ V}$, $V_{BE} = 0$) $T_A = 125^\circ\text{C}$	BC239 BC237 BC239 BC237 I_{CES}	– – – –	0.2 0.2 0.2 0.2	15 15 4.0 4.0	nA μA
ON CHARACTERISTICS					
DC Current Gain ($I_C = 10\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 2.0\text{ mA}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 100\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	BC237B BC237C/239C BC237 BC237B BC237C/239C BC237B BC237C/239C h_{FE}	– – 120 200 380 – –	150 270 – 290 500 180 300	– – 800 460 800 – –	–
Collector–Emitter On Voltage ($I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$) ($I_C = 100\text{ mA}$, $I_B = 5.0\text{ mA}$)	BC237/BC239 BC237/BC239 $V_{CE(sat)}$	– –	0.07 0.2	0.2 0.6	V
Base–Emitter Saturation Voltage ($I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$) ($I_C = 100\text{ mA}$, $I_B = 5.0\text{ mA}$)	$V_{BE(sat)}$	– –	0.6 –	0.83 1.05	V
Base–Emitter On Voltage ($I_C = 100\text{ }\mu\text{A}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 2.0\text{ mA}$, $V_{CE} = 5.0\text{ V}$) ($I_C = 100\text{ mA}$, $V_{CE} = 5.0\text{ V}$)	$V_{BE(on)}$	– 0.55 –	0.5 0.62 0.83	– 0.7 –	V
DYNAMIC CHARACTERISTICS					
Current–Gain — Bandwidth Product ($I_C = 0.5\text{ mA}$, $V_{CE} = 3.0\text{ V}$, $f = 100\text{ MHz}$) ($I_C = 10\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $f = 100\text{ MHz}$)	BC237 BC239 BC237 BC239 f_T	– – 150 150	100 140 200 280	– – – –	MHz
Collector–Base Capacitance ($V_{CB} = 10\text{ V}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{obo}	–	–	4.5	pF
Emitter–Base Capacitance ($V_{EB} = 0.5\text{ V}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	–	8.0	–	pF
Noise Figure ($I_C = 0.2\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$) ($I_C = 0.2\text{ mA}$, $V_{CE} = 5.0\text{ V}$, $R_S = 2.0\text{ k}\Omega$, $f = 1.0\text{ kHz}$, $\Delta f = 200\text{ Hz}$)	BC239 BC237 BC239 NF	– – –	2.0 2.0 2.0	4.0 10 4.0	dB

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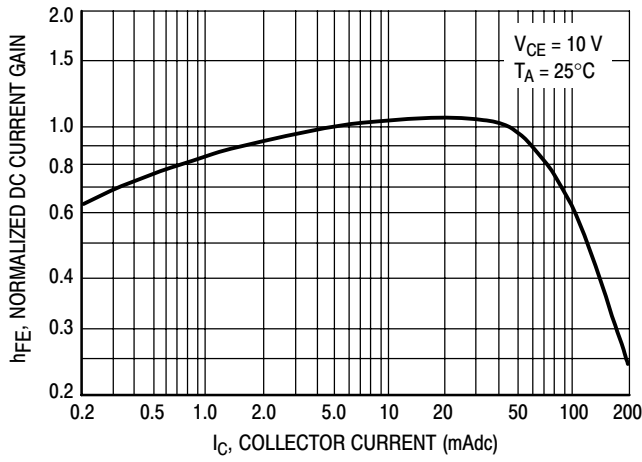


Figure 1. Normalized DC Current Gain

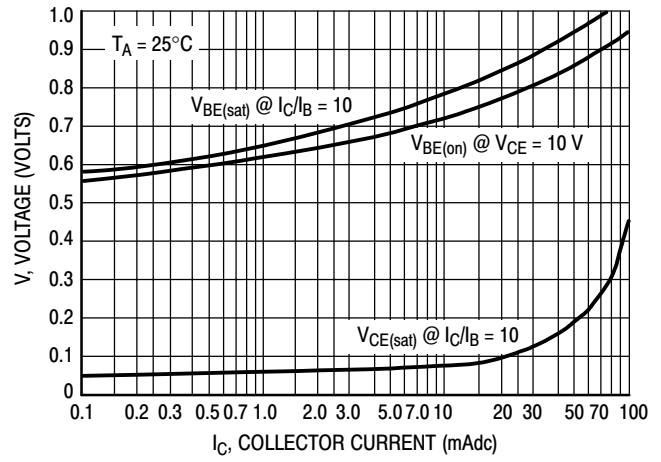


Figure 2. "Saturation" and "On" Voltages

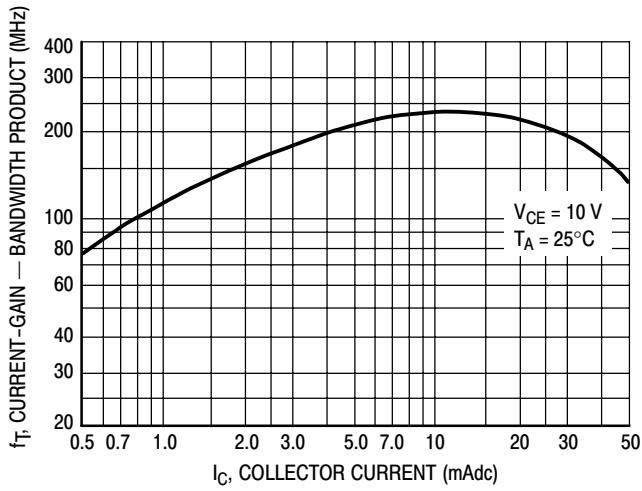


Figure 3. Current-Gain — Bandwidth Product

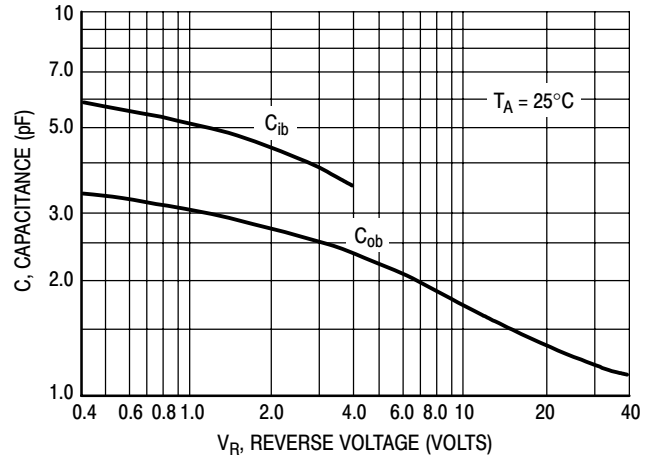


Figure 4. Capacitances

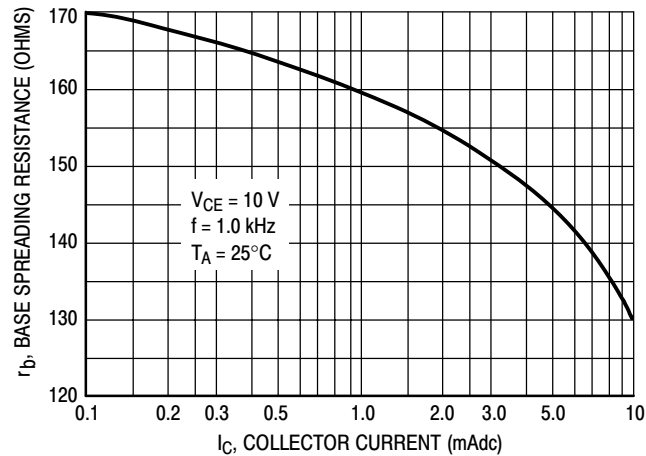
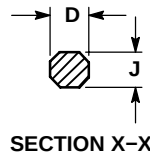
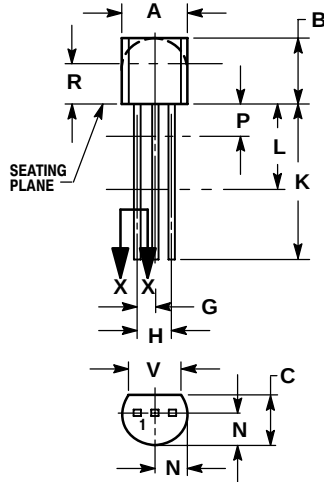


Figure 5. Base Spreading Resistance

BC237, BC237B, BC237C, BC239C

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 17:

- PIN 1. COLLECTOR
- BASE
- EMITTER

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