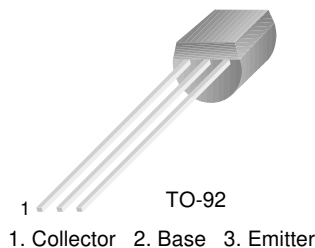


BC237/238/239

Switching and Amplifier Applications

- Low Noise: BC239



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units	
V_{CES}	Collector-Emitter Voltage	: BC237	50	V
		: BC238/239	30	V
V_{CEO}	Collector-Emitter Voltage	: BC237	45	V
		: BC238/239	25	V
V_{EBO}	Emitter-Base Voltage	: BC237	6	V
		: BC238/239	5	V
I_C	Collector Current (DC)	100	mA	
P_C	Collector Power Dissipation	500	mW	
T_J	Junction Temperature	150	$^\circ\text{C}$	
T_{STG}	Storage Temperature	-55 ~ 150	$^\circ\text{C}$	

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C=2\text{mA}, I_B=0$: BC237	45		V
			: BC238/239	25		V
BV_{EBO}	Emitter Base Breakdown Voltage	$I_E=1\mu\text{A}, I_C=0$: BC237	6		V
			: BC238/239	5		V
I_{CES}	Collector Cut-off Current	$V_{CE}=50\text{V}, V_{BE}=0$ $V_{CE}=30\text{V}, V_{BE}=0$: BC237	0.2	15	nA
			: BC238/239	0.2	15	nA
h_{FE}	DC Current Gain	$V_{CE}=5\text{V}, I_C=2\text{mA}$	120		800	
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5\text{mA}$		0.07	0.2	V
				0.2	0.6	V
$V_{BE}(\text{sat})$	Collector-Base Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5\text{mA}$		0.73	0.83	V
				0.87	1.05	V
$V_{BE}(\text{on})$	Base-Emitter On Voltage	$V_{CE}=5\text{V}, I_C=2\text{mA}$	0.55	0.62	0.7	V
f_T	Current Gain Bandwidth Product	$V_{CE}=3\text{V}, I_C=0.5\text{mA}, f=100\text{MHz}$ $V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$		85		MHz
				150	250	MHz
C_{ob}	Output Capacitance	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		3.5	6	pF
C_{ib}	Input Base Capacitance	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$		8		pF
NF	Noise Figure	$V_{CE}=5\text{V}, I_C=0.2\text{mA},$ $f=1\text{KHz}, R_G=2\text{K}\Omega$ $V_{CE}=5\text{V}, I_C=0.2\text{mA}$ $R_G=2\text{K}\Omega, f=30\sim 15\text{KHz}$: BC237/238	2	10	dB
			: BC239		4	dB
			: BC239		4	dB
			: BC239		4	dB

h_{FE} Classification

Classification	A	B	C
h_{FE}	120 ~ 220	180 ~ 460	380 ~ 800

Typical Characteristics

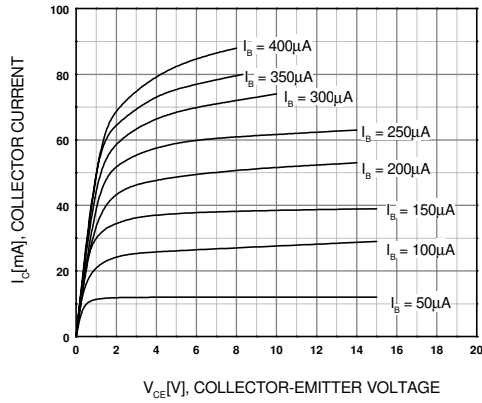


Figure 1. Static Characteristic

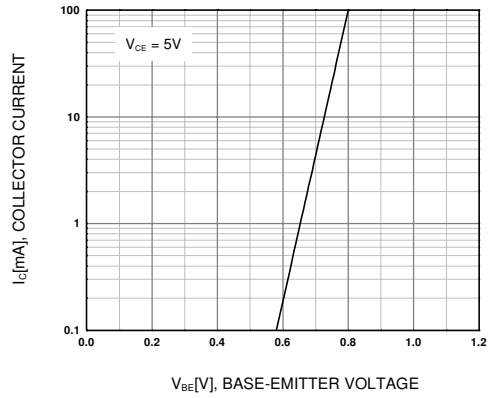


Figure 2. Transfer Characteristic

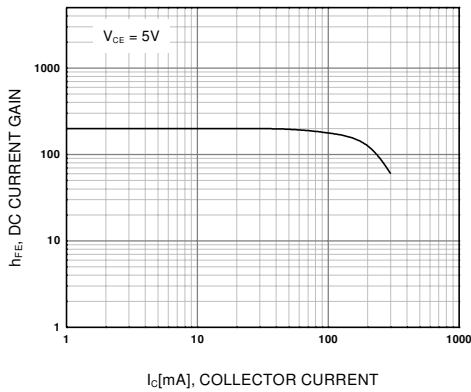


Figure 3. DC current Gain

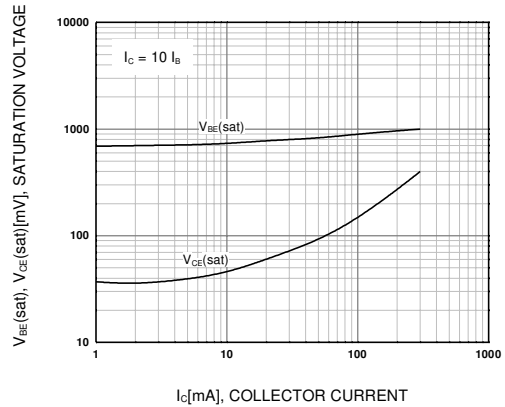


Figure 4. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

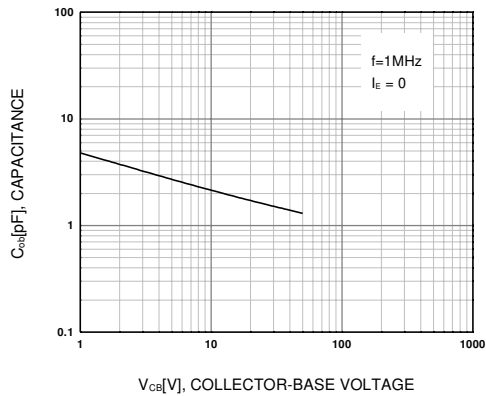


Figure 5. Output Capacitance

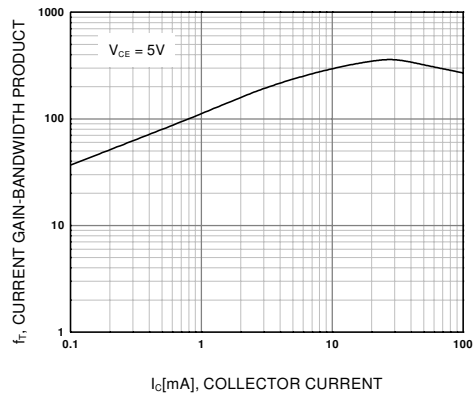
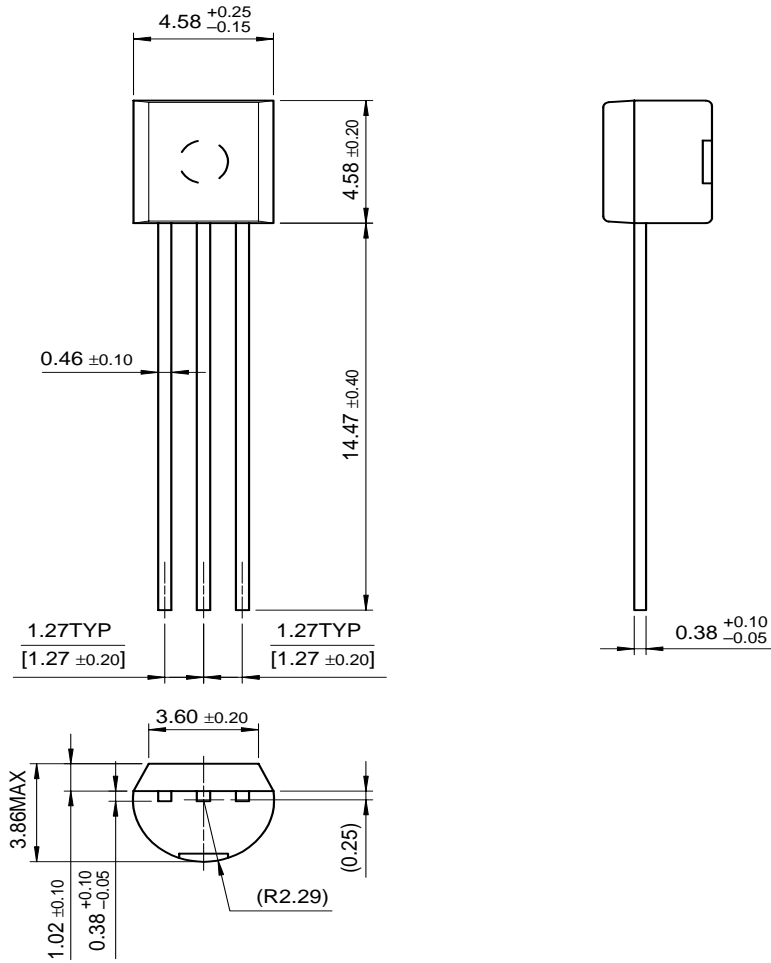


Figure 6. Current Gain Bandwidth Product

Package Dimensions

BC237/238/239

TO-92



Dimensions in Millimeters

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Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

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BC237

NPN Epitaxial Silicon Transistor

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Product	Product status	Pb-free Status	Pricing*	Package type	Leads	Packing method	Package Marking Convention**
BC237	Full Production	Full Production	\$0.0473	TO-92	3	BULK	Line 1: \$Y (Fairchild logo) &Z (Asm. Plant Code) &3 (3-Digit Date Code) Line 2: BC237
BC237A	Full Production	Full Production	\$0.0473	TO-92	3	BULK	Line 1: \$Y (Fairchild logo) &Z (Asm. Plant Code) &3 (3-Digit Date Code) Line 2: BC Line 3: 237A
BC237ABU	Full Production	Full Production	\$0.0238	TO-92	3	BULK	Line 1: BC237 Line 2: A Line 3: -&3
BC237ATA	Full Production		\$0.0238	TO-92	3	AMMO	Line 1: BC237 Line 2: A Line 3: -&3

		 Full Production					
BC237B	Full Production	 Full Production	\$0.0473	TO-92	3	BULK	Line 1: \$Y (Fairchild logo) & Z (Asm. Plant Code) & 3 (3-Digit Date Code) Line 2: BC Line 3: 237B
BC237BBU	Full Production	 Full Production	\$0.0238	TO-92	3	BULK	Line 1: BC237 Line 2: B Line 3: -&3
BC237BTA	Full Production	 Full Production	\$0.0238	TO-92	3	AMMO	Line 1: BC237 Line 2: B Line 3: -&3
BC237BTAR	Full Production	 Full Production	\$0.0238	TO-92	3	AMMO	Line 1: BC237 Line 2: B Line 3: -&3
BC237BTF	Full Production	 Full Production	\$0.0238	TO-92	3	TAPE REEL	Line 1: BC237 Line 2: B Line 3: -&3
BC237BTFR	Full Production	 Full Production	\$0.0238	TO-92	3	TAPE REEL	Line 1: BC237 Line 2: B Line 3: -&3
BC237BU	Full Production	 Full Production	\$0.0238	TO-92	3	BULK	Line 1: BC237 Line 2: B Line 3: -&3
BC237CBU	Full Production	 Full Production	\$0.0238	TO-92	3	BULK	Line 1: BC237 Line 2: C Line 3: -&3
BC237CTA	Full Production	 Full Production	\$0.0238	TO-92	3	AMMO	Line 1: BC237 Line 2: C Line 3: -&3
BC237TF	Full Production	 Full Production	\$0.0238	TO-92	3	TAPE REEL	Line 1: BC237 Line 3: -&3

BC237TFR	Full Production	 Full Production	\$0.0238	TO-92	3	TAPE REEL	Line 1: BC237 Line 3: -&3
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* Fairchild 1,000 piece Budgetary Pricing

** A sample button will appear if the part is available through Fairchild's on-line samples program. If there is no sample button, please contact a [Fairchild distributor](#) to obtain samples



Indicates product with Pb-free second-level interconnect. For more information [click here](#).

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Qualification Support

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Product
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