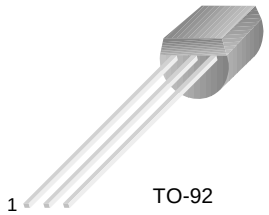
FAIRCHILD
SEMICONDUCTOR®

BC237/238/239

Switching and Amplifier Applications

- Low Noise: BC239



TO-92

1. Collector 2. Base 3. Emitter

NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings T_a=25°C unless otherwise noted

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

Electrical Characteristics T_a=25°C unless otherwise noted

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

h_{FE} Classification

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

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Typical Characteristics

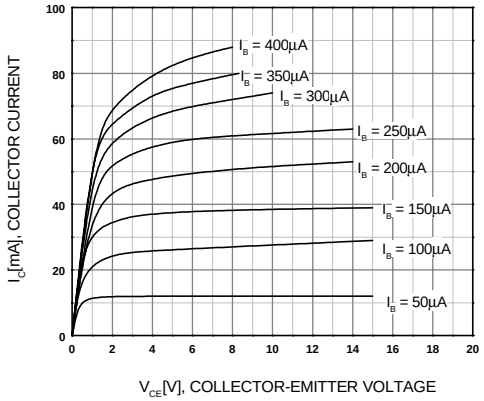

Figure 1. Static Characteristic

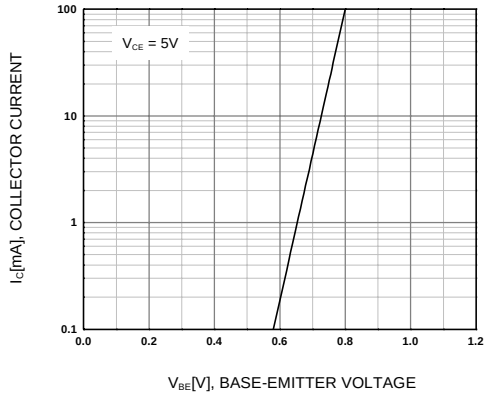

Figure 2. Transfer Characteristic

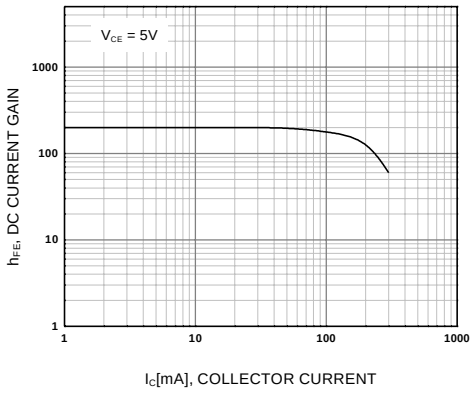

Figure 3. DC current Gain

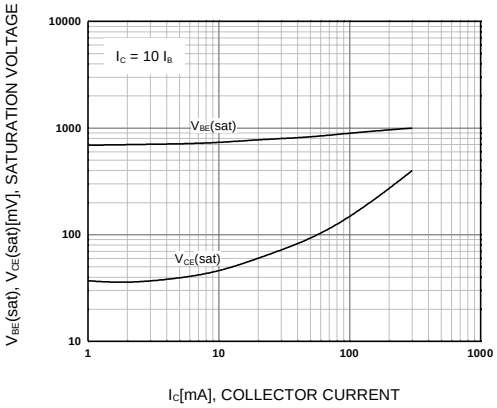

Figure 4. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

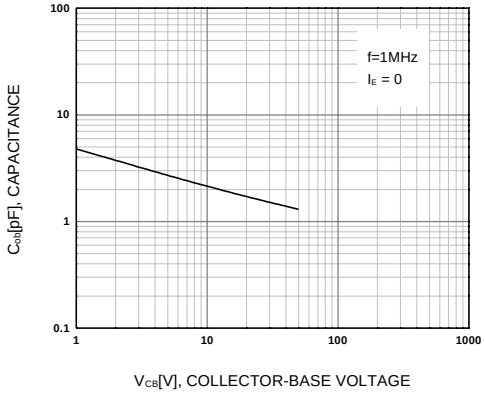

Figure 5. Output Capacitance

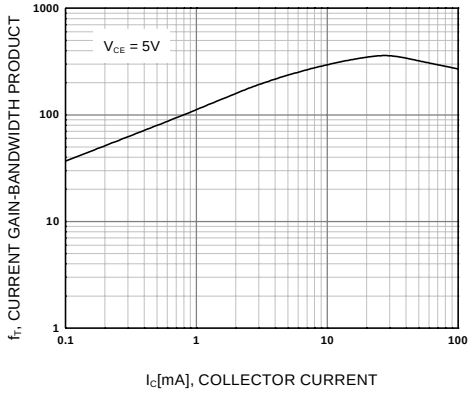

Figure 6. Current Gain Bandwidth Product

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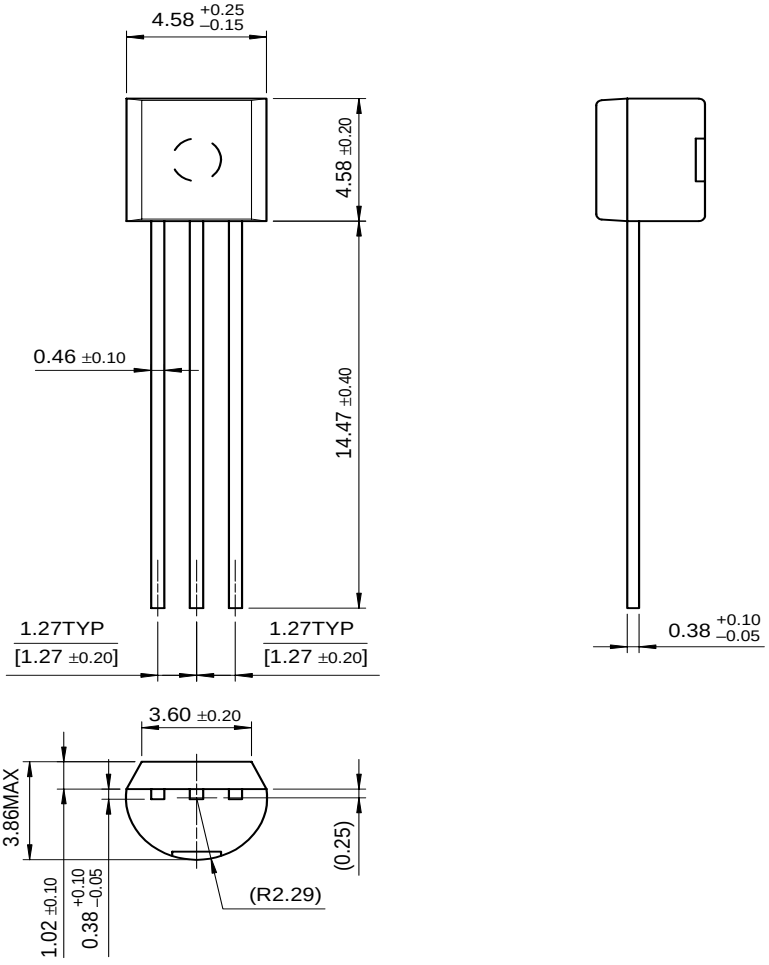
Package Demensions

TO-92



Dimensions in Millimeters

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