

## BC307/308/309

### Switching and Amplifier Applications

- Low Noise: BC309



### PNP Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
$V_{CES}$	Collector-Emitter Voltage		
	: BC307	-50	V
	: BC308/309	-30	V
$V_{CEO}$	Collector-Emitter Voltage		
	: BC307	-45	V
	: BC308/309	-25	V
$V_{EBO}$	Emitter-Base Voltage	-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 : BC307 : BC308/309	$I_C = -2\text{mA}, I_B = 0$	-45 -25			V V
$BV_{CES}$	Collector-Emitter Breakdown Voltage : BC307 : BC308/309	$I_C = -10\mu\text{A}, V_{BE} = 0$	-50 -30			V V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\mu\text{A}, I_C = 0$	-5			V
$I_{CES}$	Collector Cut-off Current : BC307 : BC308/309	$V_{CE} = -45\text{V}, V_{BE} = 0$ $V_{CE} = -25\text{V}, V_{BE} = 0$		-2 -2	-15 -15	nA 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	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$		-0.5	-0.3	V V
$V_{BE}(\text{sat})$	Collector-Base Saturation Voltage	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$		-0.7 -0.85		V 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	$V_{CE} = -5\text{V}, I_C = -10\text{mA}, f = 50\text{MHz}$		130		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$			6	pF
$C_{ib}$	Input Capacitance	$V_{EB} = -0.5\text{V}, I_C = 0, f = 1\text{MHz}$		12		pF
NF	Noise Figure : BC307/308 : BC309 : BC309	$V_{CE} = -5\text{V}, I_C = -0.2\text{mA},$ $R_G = 2\text{K}\Omega, f = 1\text{KHz}$ $V_{CE} = -5\text{V}, I_C = -0.2\text{mA},$ $R_G = 2\text{K}\Omega, f = 30\text{--}15\text{KHz}$			10 4 4	dB dB dB

 **$h_{FE}$  Classification**

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

# Typical Characteristics

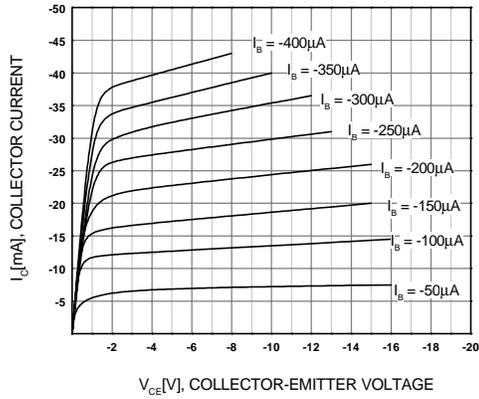


Figure 1. Static Characteristic

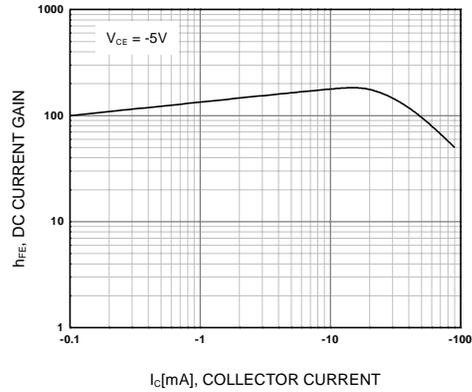


Figure 2. DC current Gain

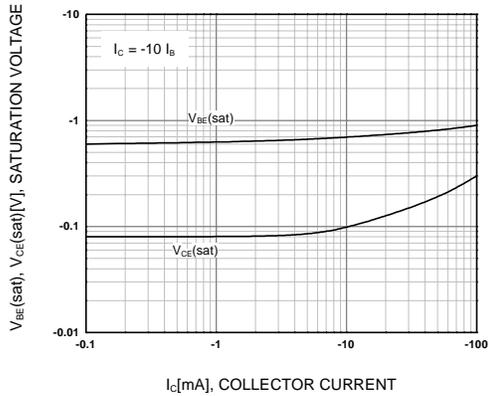


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

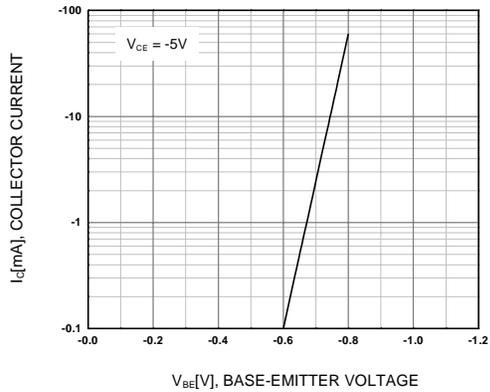


Figure 4. Base-Emitter Capacitance

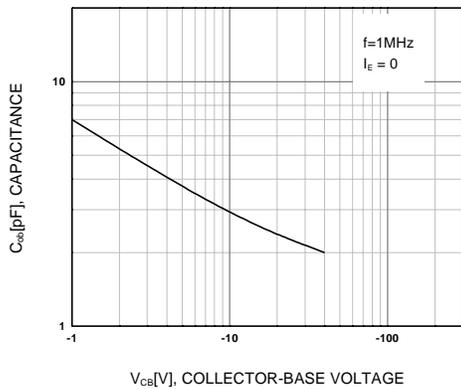


Figure 5. Collector Output Capacitance

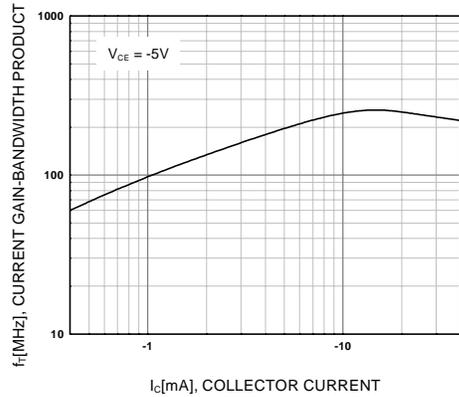
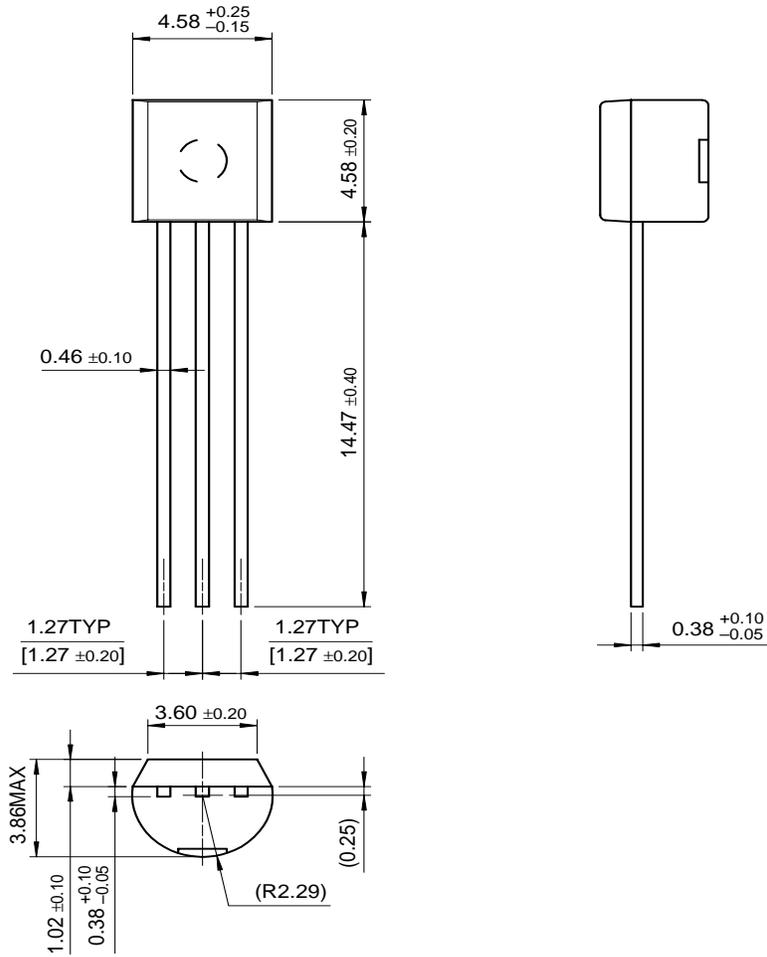


Figure 6. Current Gain Bandwidth Product

# Package Dimensions

BC307/308/309

## TO-92



Dimensions in Millimeters

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