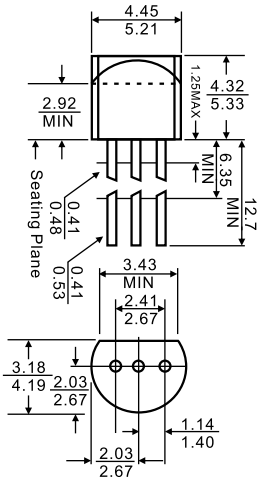
BC237/BC238/BC239

TO-92 Bipolar Transistors(NPN)

1. COLLECTOR
2. BASE
3. EMITTER

TO-92



Dimensions in inches and (millimeters)

Features

✧ Amplifier dissipation NPN Silicon

MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage BC237 BC238/239	45 25	V
V_{EBO}	Emitter-Base Voltage BC237 BC238/239	6 5	V
I_C	Collector Current -Continuous	0.1	A
P_C	Collector Power Dissipation	350	mW
RθJA	Thermal Resistance, Junction to Ambient	357	℃/W
RθJC	Thermal Resistance, Junction to Case	125	℃/W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55-150	℃

ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0 BC237	50			V
		BC238/239	30			
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=2mA, I_B=0 BC237	45			V
		BC238/239	25			
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0 BC237	6			V
		BC238/239	5			
Collector cut-off current	I_{CBO}	V_{CE}=50V, V_{BE}=0 BC237			15	nA
		V_{CB}=30V,I_E=0 BC238/239				
DC current gain	$h_{FE(1)}$	V_{CE}=5V, I_C=10μA BC237A		90		
		BC237B/238B		150		
		BC237C/238C/239C		270		
	$h_{FE(2)}$	V_{CE}=5V, I_C=2mA BC237	120		800	
		BC239	120		800	
		BC237A	120		220	
		BC237B/238B	200		460	
		BC237C/238C/239C	380		800	
	$h_{FE(3)}$	V_{CE}=5V, I_C=100mA BC237A		120		
		BC237B/238B		180		
		BC237C/238C/239C		300		
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10mA, I_B=0.5mA BC237/238/239			0.2	V
		I_C=100mA, I_B=5mA BC237/239			0.6	
		BC238			0.8	
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=10mA,I_B=0.5mA			0.83	V
		I_C=100mA,I_B=5mA			1.05	
Base-emitter voltage	V_{BE}	V_{CE}=5V, I_C=0.1mA		0.5		V
		V_{CE}=5V, I_C=2mA	0.55		0.7	
		V_{CE}=5V, I_C=100mA		0.83		
Transition frequency	f_T	V_{CE}=3V,I_C=0.5mA,f=100MHz BC237		100		MHz
		BC238		120		
		BC239		140		
		V_{CE}=5V,I_C=10mA,f=100MHz BC237	150	200		
		BC238	150	240		
		BC239	150	280		
Collector output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz			4.5	pF
Emitter-base capacitance	C_{ib}	V_{EB}=0.5V, I_C=0, f=1MHz		8		Pf
Noise figure	NF	V_{CE}=5V, I_c=0.2mA, f=1kHZ, Rs=2KΩ BC239		2	4	dB
		V_{CE}=5V, I_c=0.2mA, f=1kHZ, Rs=2KΩ, Δf=200Hz BC237		2	10	
		BC238		2	10	
		BC239		2	4	

Typical Characteristics

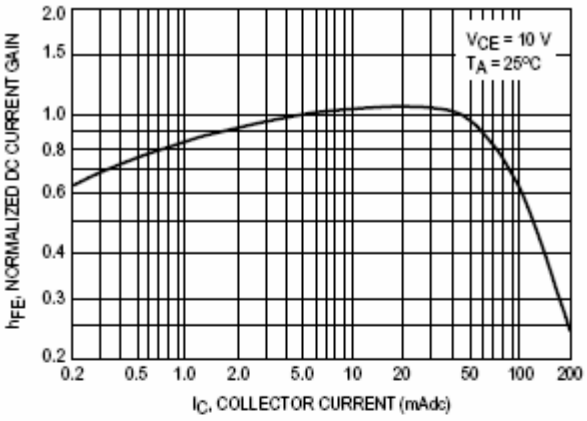


Figure 1. Normalized DC Current Gain

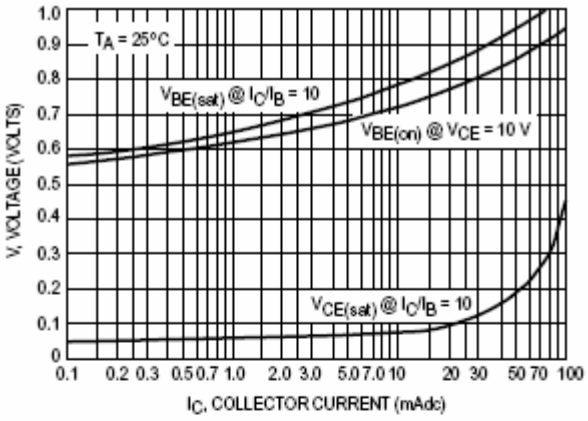


Figure 2. "Saturation" and "On" Voltages

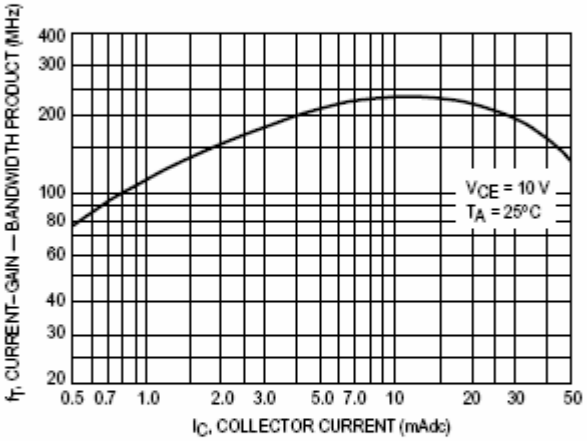


Figure 3. Current–Gain — Bandwidth Product

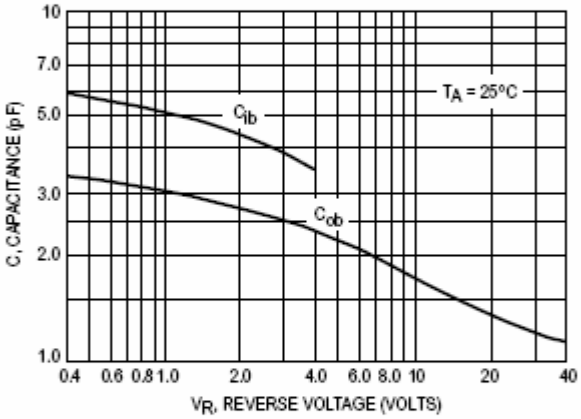


Figure 4. Capacitances

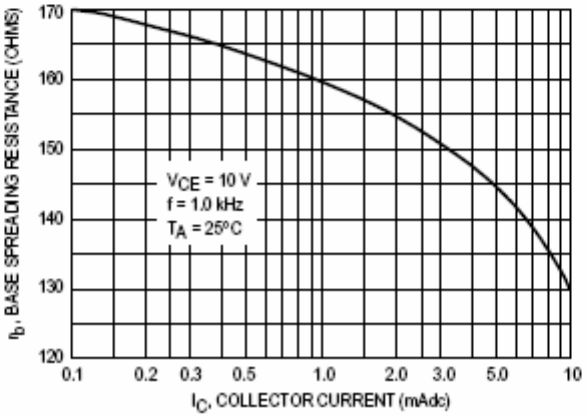


Figure 5. Base Spreading Resistance

Package	Packing	Quantity	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	Bulk	1000pcs/BP	10,000pcs	245×170×100	100,000pcs	525×375×270
TO-92	Tape	2000pcs/TP	2000pcs	333×162×43	20,000pcs	350×340×250