

## TO-92 Plastic-Encapsulate Transistors

### BC237/238/239 TRANSISTOR (NPN)

#### FEATURES

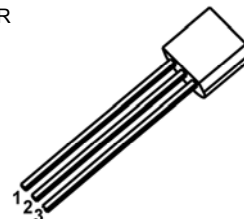
- Amplifier dissipation NPN Silicon

#### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CEO</sub>	Collector-Emitter Voltage BC237	45	V
	BC238/239	25	
V <sub>EBO</sub>	Emitter-Base Voltage BC237	6	V
	BC238/239	5	
I <sub>c</sub>	Collector Current -Continuous	0.1	A
P <sub>c</sub>	Collector Power Dissipation	350	mW
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	357	°C/W
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	125	°C/W
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55-150	°C

#### TO-92

1. COLLECTOR
2. BASE
3. EMITTER



**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =100μA, I <sub>E</sub> =0 BC237 BC238/239	50 30			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =2mA, I <sub>B</sub> =0 BC237 BC238/239	45 25			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =100μA, I <sub>C</sub> =0 BC237 BC238/239	6 5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CE</sub> =50V, V <sub>BE</sub> =0 BC237 V <sub>CB</sub> =30V, I <sub>E</sub> =0 BC238/239			15	nA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =10μA BC237A BC237B/238B BC237C/238C/239C		90 150 270		
		h <sub>FE(2)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =2mA BC237 BC239 BC237A BC237B/238B BC237C/238C/239C	120 120 120 200 380		800 800 220 460 800
			h <sub>FE(3)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =100mA BC237A BC237B/238B BC237C/238C/239C		120 180 300
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA BC237/238/239 I <sub>C</sub> =100mA, I <sub>B</sub> =5mA BC237/239 BC238			0.2 0.6 0.8	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA I <sub>C</sub> =100mA, I <sub>B</sub> =5mA			0.83 1.05	V
Base-emitter voltage	V <sub>BE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =0.1mA V <sub>CE</sub> =5V, I <sub>C</sub> =2mA V <sub>CE</sub> =5V, I <sub>C</sub> =100mA	0.55	0.5 0.83	0.7	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =3V, I <sub>C</sub> =0.5mA, f=100MHz BC237 BC238 BC239 V <sub>CE</sub> =5V, I <sub>C</sub> =10mA, f=100MHz BC237 BC238 BC239		100 120 140 150 150 150 200 240 280		MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz			4.5	pF
Emitter-base capacitance	C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> =0, f=1MHz		8		Pf
Noise figure	NF	V <sub>CE</sub> =5V, I <sub>C</sub> =0.2mA, f=1kHz, R <sub>s</sub> =2KΩ BC239 V <sub>CE</sub> =5V, I <sub>C</sub> =0.2mA, f=1kHz, R <sub>s</sub> =2KΩ, Δf=200Hz BC237 BC238 BC239		2 2 2	4 10 10 4	dB