

# BC237/238/239

# NPN EPITAXIAL SILICON TRANSISTOR

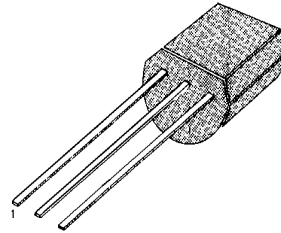
## SWITCHING AND AMPLIFIER APPLICATIONS

- LOW NOISE: BC239

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V <sub>CES</sub>		V
: BC237		50	V
: BC238/239		30	
Collector-Emitter Voltage	V <sub>CEO</sub>		V
: BC237		45	V
: BC238/239		25	V
Emitter-Base Voltage	V <sub>EBO</sub>		V
: BC237		6	V
: BC238/239		5	V
Collector Current (DC)	I <sub>C</sub>	100	mA
Collector Dissipation	P <sub>C</sub>	500	mW
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55 ~ 150	°C

TO-92



1. Collector 2. Base 3. Emitter

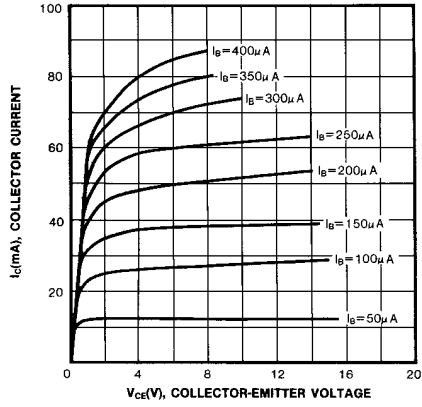
### ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> =2mA, I <sub>B</sub> =0	45			V
: BC237			25			V
: BC238/239						
Emitter Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> =1μA, I <sub>C</sub> =0	6			V
: BC237			5			V
: BC238/239						
Collector Cut-off Current	I <sub>CES</sub>	V <sub>CE</sub> =50V, I <sub>B</sub> =0		0.2	15	nA
: BC237		V <sub>CE</sub> =30V, I <sub>B</sub> =0		0.2	15	nA
: BC238/239		V <sub>CE</sub> =5V, I <sub>C</sub> =2mA	120		800	
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA		0.07	0.2	V
Collector-Emitter Saturation Voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> =100mA, I <sub>B</sub> =5mA		0.2	0.6	V
Collector Base Saturation Voltage	V <sub>BE</sub> (sat)	I <sub>C</sub> =10mA, I <sub>B</sub> =0.5mA		0.73	0.83	V
		I <sub>C</sub> =100mA, I <sub>B</sub> =5mA		0.87	1.05	V
Base Emitter On Voltage	V <sub>BE</sub> (on)	V <sub>CE</sub> =5V, I <sub>C</sub> =2mA	0.55	0.62	0.7	V
Current Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =3V, I <sub>C</sub> =0.5mA		85		MHz
		V <sub>CE</sub> =5V, I <sub>C</sub> =10mA	150	250		MHz
Collector Base Capacitance	C <sub>CBO</sub>	V <sub>CB</sub> =10V, f=1MHz		3.5	6	pF
Emitter Base Capacitance	C <sub>EBO</sub>	V <sub>EB</sub> =0.5V, f=1MHz		8		pF
Noise Figure	NF	V <sub>CE</sub> =5V, I <sub>C</sub> =0.2mA, f=1KHz R <sub>G</sub> =2kohm		2	10	dB
: BC237/238		V <sub>CE</sub> =5V, I <sub>C</sub> =0.2mA			4	dB
: BC239		R <sub>G</sub> =2kohm, f=30-15KHz			4	dB

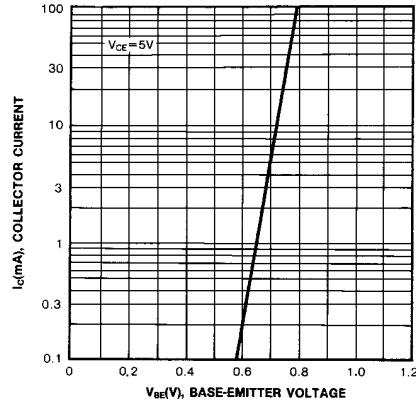
### h<sub>FE</sub> CLASSIFICATION

Classification	A	B	C
h <sub>FE</sub>	120-220	180-460	380-800

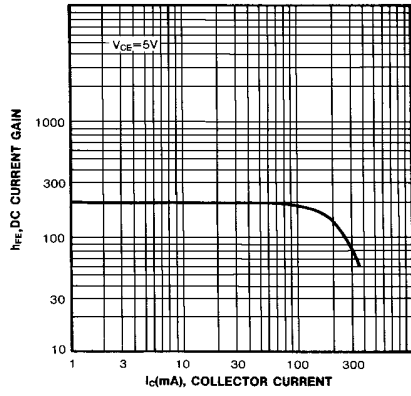
STATIC CHARACTERISTIC



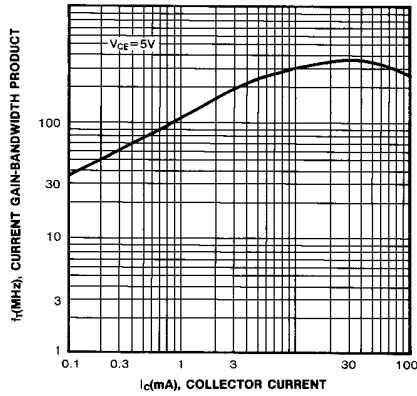
TRANSFER CHARACTERISTIC



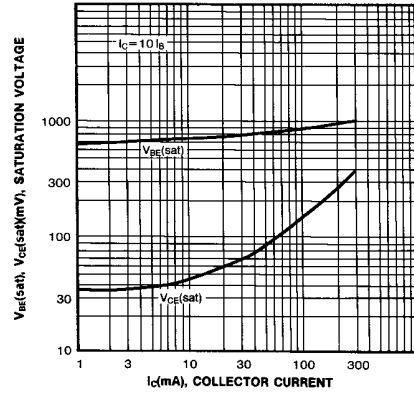
DC CURRENT GAIN



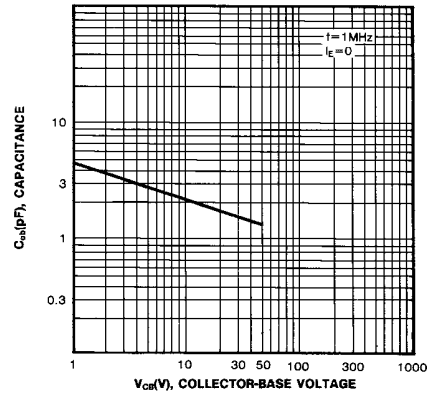
CURRENT GAIN BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



OUTPUT CAPACITANCE



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