

BC237/238/239

NPN EPITAXIAL SILICON TRANSISTOR

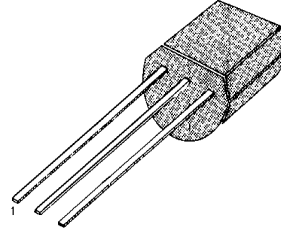
SWITCHING AND AMPLIFIER APPLICATIONS

- LOW NOISE: BC239

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CES}		V
: BC237		50	V
: BC238/239		30	
Collector-Emitter Voltage	V_{CEO}		V
: BC237		45	V
: BC238/239		25	V
Emitter-Base Voltage	V_{EBO}		V
: BC237		6	V
: BC238/239		5	V
Collector Current (DC)	I_C	100	mA
Collector Dissipation	P_C	500	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ 150	$^\circ\text{C}$

TO-92



1. Collector 2. Base 3. Emitter

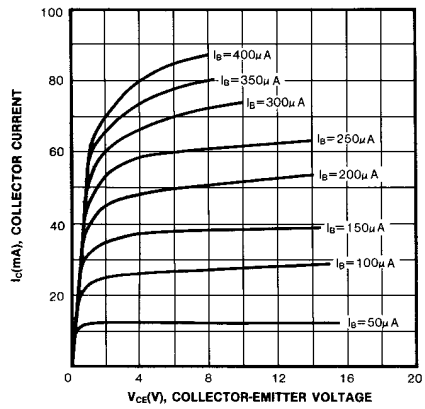
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

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

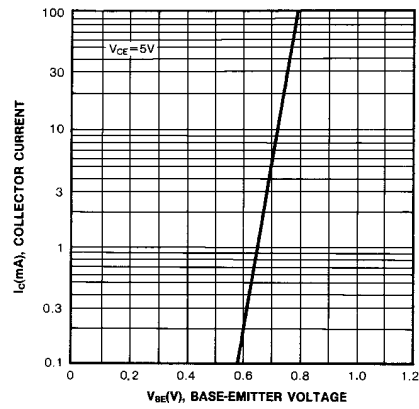
h_{FE} CLASSIFICATION

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

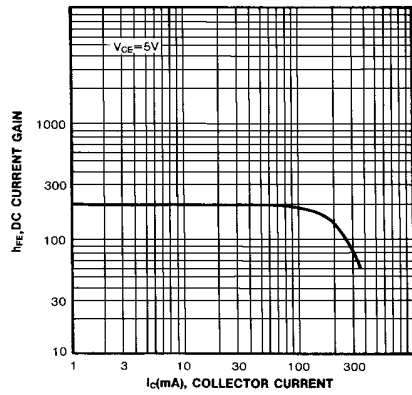
STATIC CHARACTERISTIC



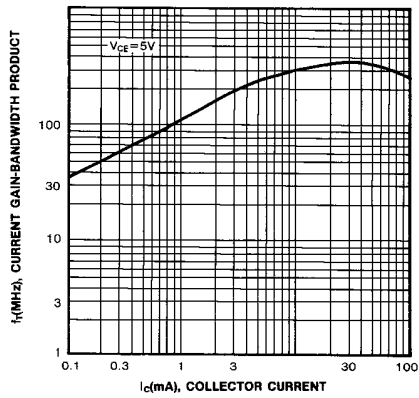
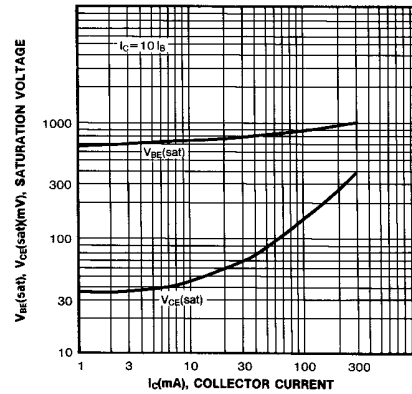
TRANSFER CHARACTERISTIC



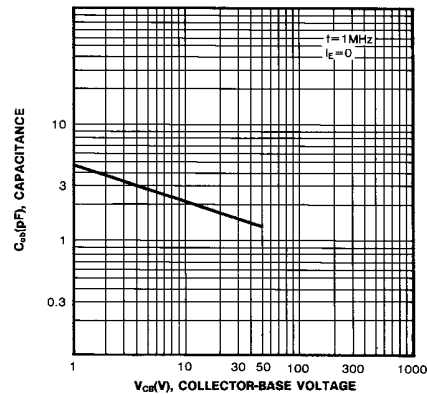
DC CURRENT GAIN



CURRENT GAIN BANDWIDTH PRODUCT

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

OUTPUT CAPACITANCE



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