

BC237/238/239

Switching and Amplifier Applications

- Low Noise: BC239

1 TO-92
1. Collector 2. Base 3. Emitter

NPN Epitaxial Silicon Transistor

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

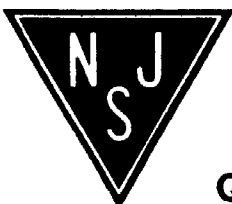
Symbol	Parameter	Value	Units	
V_{CES}	Collector-Emitter Voltage	: BC237	50	V
		: BC238/239	30	V
V_{CEO}	Collector-Emitter Voltage	: BC237	45	V
		: BC238/239	25	V
V_{EBO}	Emitter-Base Voltage	: BC237	6	V
		: BC238/239	5	V
I_C	Collector Current (DC)	100	mA	
P_C	Collector Dissipation	500	mW	
T_J	Junction 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	$I_C=2\text{mA}, I_B=0$					
			: BC237	45			V
	: BC238/239		25			V	
BV_{EBO}	Emitter Base Breakdown Voltage	$I_E=1\mu\text{A}, I_C=0$					
			: BC237	6			V
	: BC238/239		5			V	
I_{CES}	Collector Cut-off Current	$V_{CE}=50\text{V}, V_{BE}=0$ $V_{CE}=30\text{V}, V_{BE}=0$		0.2	15	nA	
			: BC237		0.2	15	nA
	: BC238/239						
h_{FE}	DC Current Gain	$V_{CE}=5\text{V}, I_C=2\text{mA}$	120		800		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$		0.07	0.2	V	
		$I_C=100\text{mA}, I_B=5\text{mA}$		0.2	0.6	V	
$V_{BE(sat)}$	Collector-Base Saturation Voltage	$I_C=10\text{mA}, I_B=0.5\text{mA}$		0.73	0.83	V	
		$I_C=100\text{mA}, I_B=5\text{mA}$		0.87	1.05	V	
$V_{BE(on)}$	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	$V_{CE}=3\text{V}, I_C=0.5\text{mA}, f=100\text{MHz}$		85		MHz	
		$V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	150	250		MHz	
C_{ob}	Output Capacitance	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		3.5	6	pF	
C_{ib}	Input Base Capacitance	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$		8		pF	
NF	Noise Figure	$V_{CE}=5\text{V}, I_C=0.2\text{mA},$ $f=1\text{KHz}, R_G=2\text{K}\Omega$		2	10	dB	
			: BC237/238				
			: BC239			4	dB
			: BC239			4	dB

h_{FE} Classification

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



Quality Semi-Conductors

TO-92

