



# BC 200

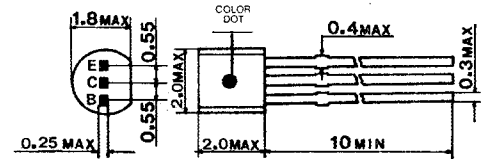
## MINIATURE PNP AF LOW NOISE SILICON PLANAR EPITAXIAL TRANSISTOR

### GENERAL DESCRIPTION

The BC 200 is a PNP silicon planar epitaxial transistor in miniature plastic package designed for hearing aids, watches, paging systems and other equipment where small size is of paramount importance. The BC 200 is complementary to NPN BC 146.

### MECHANICAL OUTLINE MT-42

COLOR DOT  
R - RED  
Y - YELLOW  
G - GREEN



ALL DIMENSIONS IN mm

### ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Collector Current  
Total Power Dissipation at  $T_A \leq 45^\circ\text{C}$   
Junction Temperature  
Storage Temperature Range

$-V_{CBO}$	20V
$-V_{CEO}$	20V
$-V_{EBO}$	5V
$-I_C$	50mA
$P_{tot}$	50mW
$T_j$	125°C
$T_{stg}$	-65°C to +125°C

### THERMAL RESISTANCE

Junction to Ambient

$\theta_{ja}$  1.6°C/mW

### ELECTRICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

PARAMETER	SYMBOL	BC 200R			BC 200Y			BC 200G			UNIT	TEST CONDITIONS
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
Collector Cutoff Current	$-I_{CBO}$			100			100			100	nA	$-V_{CB}=20V$ $I_E=0$
Collector Cutoff Current	$-I_{CBO}$			1			1			1	$\mu\text{A}$	$-V_{CB}=20V$ $I_E=0$ $T_j=125^\circ\text{C}$
Collector-Emitter Knee Voltage	$-V_{CEK}$		200			200			200		mV	$-I_C=2\text{mA}$ $-I_B=\text{value}$ for which $-I_C=2.2\text{mA}$ and $-V_{CE}=1V$
Base-Emitter Voltage	$-V_{BE}$		580			580			580		mV	$-V_{CE}=0.5V$ $-I_C=0.2\text{mA}$
Base-Emitter Voltage	$-V_{BE}$		650			650			650		mV	$-V_{CE}=1V$ $-I_C=2\text{mA}$
D.C. Current Gain	$H_{FE}$	50	75	105	85	140	200	165	250	400		$-V_{CE}=0.5V$ $-I_C=0.2\text{mA}$
D.C. Current Gain	$H_{FE}$	60			100			175				$-V_{CE}=1V$ $-I_C=2\text{mA}$
Noise Figure	NF		1.5			1.5	4		1.5		dB	$-V_{CE}=5V$ $-I_C=0.2\text{mA}$ $R_g=2K\Omega$ $f=30\text{Hz to } 15\text{KHz}$
Transition Frequency	$f_T$		80			110			150		MHz	$-V_{CE}=5V$ $-I_C=2\text{mA}$
Collector Capacitance	$C_{cb}$		4.5			4.5			4.5		pF	$-V_{CB}=5V$ $I_E=0$ $f=1\text{MHz}$

### TYPICAL h-PARAMETERS AT $-V_{CE} = 0.5V$ , $-I_C = 0.2\text{mA}$ , $f = 1\text{KHz}$

PARAMETER	SYMBOL	BC 200R	BC 200Y	BC 200G	UNIT
Input Impedance	$h_{ie}$	12	15	20	$K\Omega$
Reverse Voltage Transfer Ratio	$h_{re}$	13	25	40	$\times 10^{-4}$
Small Signal Current Gain	$h_{fe}$	80	160	270	
Output Admittance	$h_{oe}$	13	18	33	$\mu\text{S}$

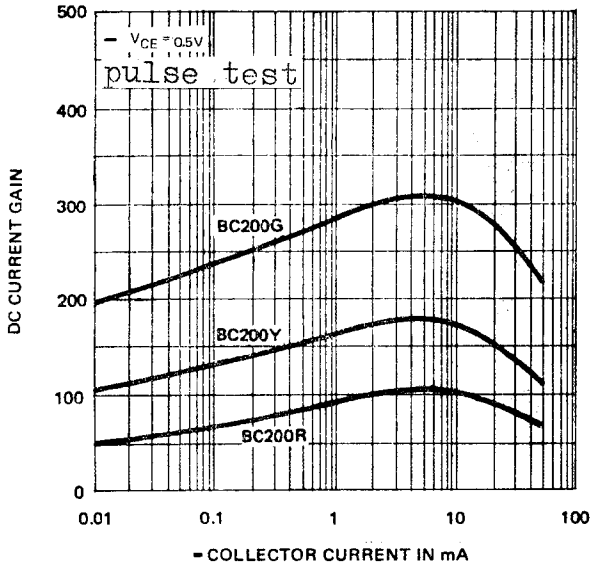
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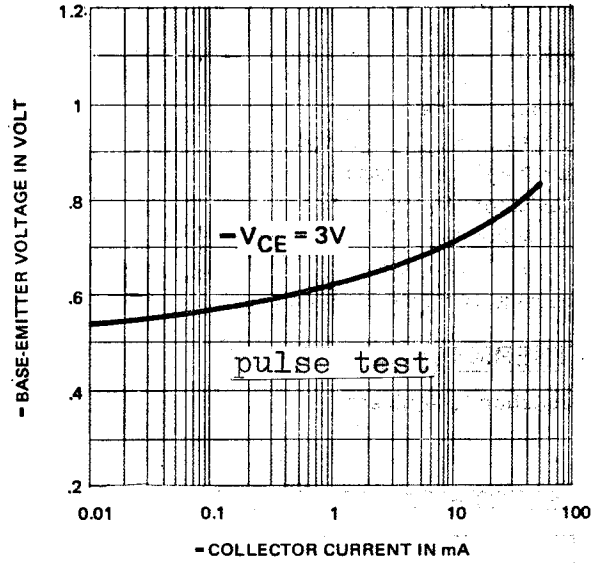
TYPICAL ELECTRICAL CHARACTERISTICS AT  $T_A = 25^\circ\text{C}$

BC 200

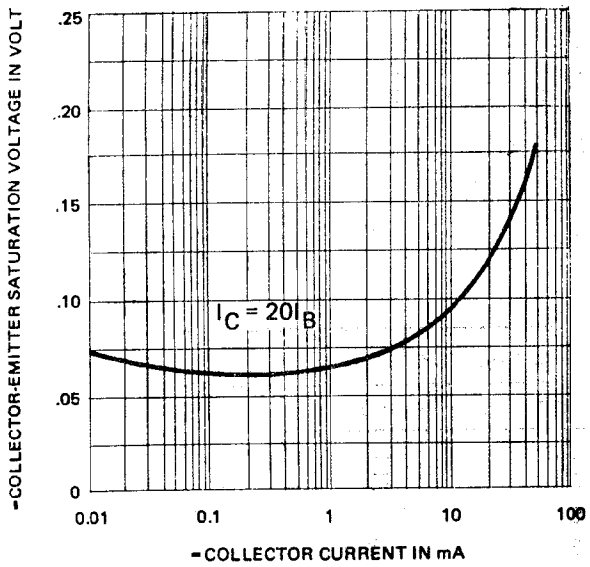
DC CURRENT GAIN VERSUS COLLECTOR CURRENT



BASE-EMITTER VOLTAGE VERSUS COLLECTOR CURRENT



COLLECTOR-EMITTER SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



WIDE BAND NOISE FIGURE

