

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.

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

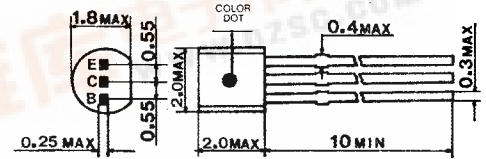
$-V_{CBO}$	20V
$-V_{CEO}$	20V
$-V_{EBO}$	5V
$-I_C$	50mA
P_{tot}	50mW
T_j	125°C
T_{stg}	-65°C to +125°C

THERMAL RESISTANCE

Junction to Ambient

θ_{ja}	1.6°C/mW
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MECHANICAL OUTLINE MT-42



COLOR DOT
 R - RED
 Y - YELLOW
 G - GREEN

ALL DIMENSIONS IN mm

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	μA	$-V_{CB}=20V$ $I_E=0$ $T_j=125^\circ\text{C}$
Collector-Emitter Knee Voltage	$-V_{CEK}$		200			200			200		mV	$-I_C=2mA$ $-I_B=\text{value for which } -I_C=2.2mA \text{ and } -V_{CE}=1V$
Base-Emitter Voltage	$-V_{BE}$		580			580			580		mV	$-V_{CE}=0.5V$ $-I_C=0.2mA$
Base-Emitter Voltage	$-V_{BE}$		650			650			650		mV	$-V_{CE}=1V$ $-I_C=2mA$
D.C. Current Gain	H_{FE}	50	75	105	85	140	200	165	250	400		$-V_{CE}=0.5V$ $-I_C=0.2mA$
D.C. Current Gain	H_{FE}	60			100			175				$-V_{CE}=1V$ $-I_C=2mA$
Noise Figure	NF		1.5			1.5	4		1.5		dB	$-V_{CE}=5V$ $-I_C=0.2mA$ $R_g=2K\Omega$ $f=30\text{Hz to } 15\text{KHz}$
Transition Frequency	f_T		80			110			150		MHz	$-V_{CE}=5V$ $-I_C=2mA$
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 $-V_{CE} = 0.5V$, $-I_C = 0.2mA$, $f = 1\text{KHz}$

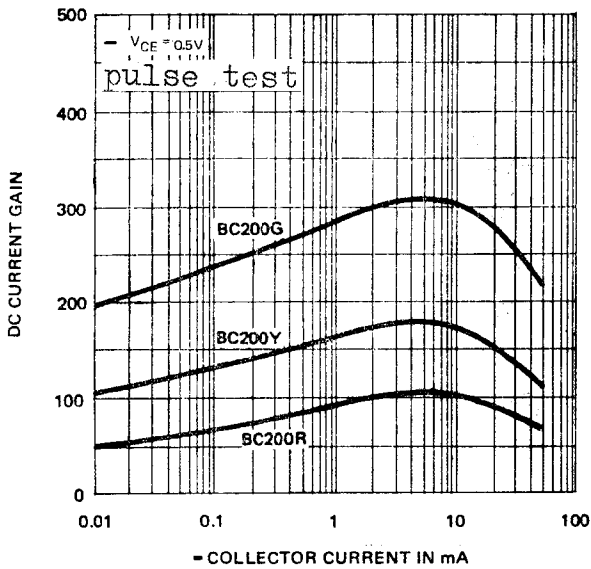
PARAMETER	SYMBOL	BC 200R	BC 200Y	BC 200G	UNIT
Input Impedance	h_{ie}	12	15	20	$K\Omega$
Reverse Voltage Transfer Ratio	h_{re}	13	25	40	$\times 10^{-4}$
Small Signal Current Gain	h_{fe}	80	160	270	
Output Admittance	h_{oe}	13	18	33	μS



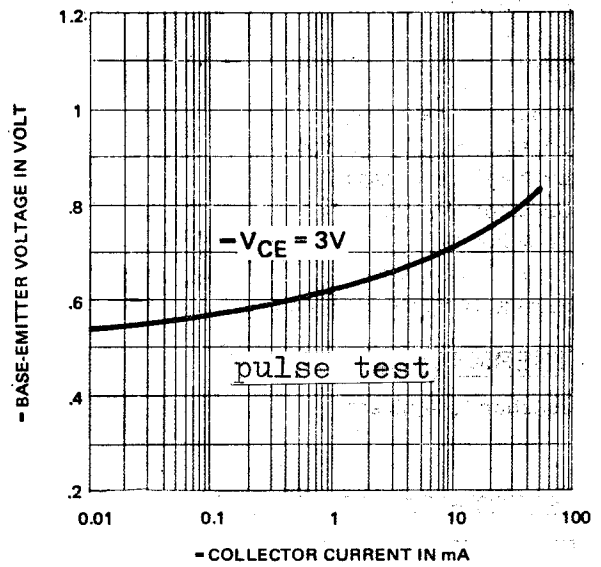
TYPICAL ELECTRICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

BC 200

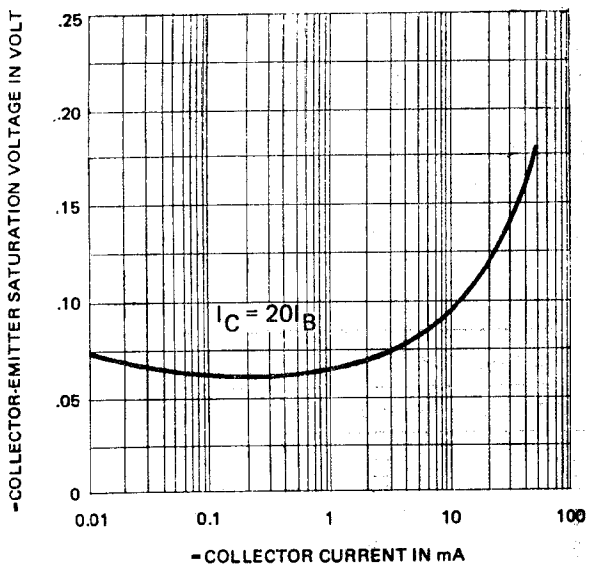
DC CURRENT GAIN VERSUS COLLECTOR CURRENT



BASE-EMITTER VOLTAGE VERSUS COLLECTOR CURRENT



COLLECTOR-EMITTER SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



WIDE BAND NOISE FIGURE

