

BC 171 • BC 172 • BC 173

NPN HIGH GAIN LOW NOISE

SILICON PLANAR EPITAXIAL TRANSISTOR

BC 171
BC 172
BC 173

FEATURES

- High Breakdown Voltage $V_{CE0} \dots 50V$ (BC171)
- Available in Different Current Gain Groupings
- Low Noise N.F. 4dB_{max} @ 0.2mA (BC173)

THERMAL CHARACTERISTICS

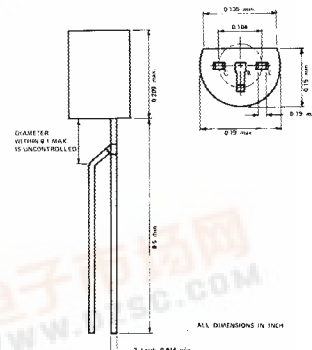
Thermal Resistance from Junction to Ambient $\theta(j-amb)$
 Maximum Collector Junction Temperature
 Storage Temperature Range
 Soldering Temperature (10 sec. time limit)

APPLICATIONS

- Audio Amplifier Driver Stage
- Television Receiver Circuits
- Low Power General Purpose
- Low Noise Pre-Amplifier (BC173)

MECHANICAL OUTLINE

u - 135
 (Lead Code A)
 (TO-92 Variant)



ABSOLUTE MAXIMUM RATINGS

Continuous Power Dissipation @ 25°C Ambient
 Continuous Collector Current
 Collector - Base Voltage
 Collector - Emitter Voltage
 Base - Emitter Voltage

BC 171	BC 172	BC 173
300 mW	300 mW	300 mW
100 mA	100 mA	100 mA
50 V	25 V	25 V
45 V	25 V	25 V
6 V	5 V	5 V

ELECTRICAL CHARACTERISTICS @ 25°C free air temperature:

PARAMETER	SYMBOL	BC 171		BC 172		BC 173		UNIT	TEST CONDITIONS
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.		
Collector-Base Cutoff Current	I_{CBO}		15					nA	$V_{CB} = 45V$
Collector-Base Cutoff Current	I_{CBO}				15		15	nA	$V_{CB} = 20V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.25		0.25		0.25	V	$I_C = 10mA$ $I_B = 0.5mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.6		0.6		0.6	V	$I_C = 100mA$ $I_B = 5mA$
Base-Emitter On Voltage	$V_{BE(sat)}$	0.55	0.7	0.55	0.7	0.55	0.7	V	$V_{CE} = 5V$ $I_C = 2mA$
Forward Current Transfer Ratio	h_{FE}	110	450	110	800	110	800		$V_{CE} = 5V$ $I_C = 2mA$
Small Signal Current Gain	h_{fe}	1.5		1.5		1.5			$f = 100MHz$ $I_C = 10mA$ $V_{CE} = 5V$
Collector Output Capacitance	C_{ob}		6		6		6	pF	$V_{CE} = 10V$ $f = 1MHz$ $I_E = 0$
Noise Figure (Narrow Band)	N.F.		10		10		4	dB	$V_{CE} = 5V$ $I_C = 0.2mA$ $R_g = 2K\Omega$ $f = 1KHz$ $BW = 200Hz$
Noise Figure (Wide Band)	N.F.						4	dB	$V_{CE} = 5V$ $I_C = 0.2mA$ $R_g = 2K\Omega$ $f = 30Hz$ to $15KHz$

* D. C. CURRENT GAIN GROUPINGS

TYPE	BC171A		BC172B BC173B		BC172C BC173C		BC171A BC172A BC173A		BC171B BC172B BC173B		BC172C BC173C	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
$V_{CE} = 5V$ $I_C = 0.01mA$	40		40		100							
$V_{CE} = 5V$ $I_C = 2mA$							110	220	200	450	420	800

TYPICAL TWO PORT CHARACTERISTICS (h parameters)

TYPE	BC171A BC172A BC173A		BC171B BC172B BC173B		BC172C BC173C		UNIT	TEST CONDITIONS
PARAMETERS								
h_{fe}	180		300		600			$V_{CE} = 5V$ $I_C = 2mA$ $f = 1KHz$
h_{ie}	2.5		4		8		Kohm	
h_{re}	3×10^{-4}		6×10^{-4}		8×10^{-4}			
h_{oe}	20		26		50		μS	

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TYPICAL ELECTRICAL CHARACTERISTICS

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