SILICON PLANAR NPN

BC 113
BC 114

HIGH GAIN, LOW NOISE AUDIO AMPLIFIERS

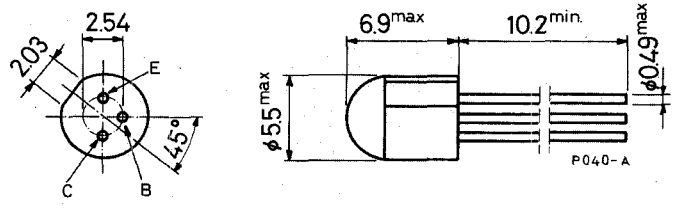
The BC 113 and BC 114 are silicon planar NPN transistors in TO-18 epoxy package. They are specifically designed for use in low-noise audio preamplifiers.

ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	30 V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	30 V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	6 V
I_C	Collector current	50 mA
P_{tot}	Total power dissipation at $T_{amb} \leq 25$ °C	200 mW
	at $T_{case} \leq 25$ °C	500 mW
T_{stg}	Storage temperature	-55 to 125 °C
T_j	Junction temperature	125 °C

MECHANICAL DATA

Dimensions in mm



TO-18 epoxy

BC 113
BC 114

THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max	200	°C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	500	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cutoff current (V_{BE} = 0)	V_{CE} = 20 V			50	nA
		V_{CE} = 20 V T_{amb} = 65°C			5	μA
$V_{(BR)CEO}$*	Collector-emitter breakdown voltage (I_B = 0)	I_C = 10 mA	30			V
$V_{(BR)\ CBO}$	Collector-base breakdown voltage (I_E = 0)	I_C = 10 μA	30			V
$V_{(BR)\ EBO}$	Emitter-base breakdown voltage (I_C = 0)	I_E = 10 μA	6			V
V_{BE}	Base-emitter voltage	I_C = 1 mA V_{CE} = 5 V		0.64	0.7	V
h_{FE}	DC current gain	I_C = 10 μA V_{CE} = 5 V		170		—
		I_C = 100 μA V_{CE} = 5 V	120	250		—
		I_C = 1 mA V_{CE} = 5 V	200		1000	—
		I_C = 10 mA V_{CE} = 5 V				
		for **BC 113**		400		—
		for **BC 114**	200	400		—
f_T	Transition frequency	I_C = 1 mA V_{CE} = 5 V				
		for **BC 113**	60	100		MHz
		for **BC 114**	70	100		MHz
C_{CBO}	Collector-base capacitance	I_E = 0 V_{CB} = 5 V		2.7	4	pF
NF	Noise figure	I_C = 10μA V_{CE} = 5 V				
		R_g = 10 kΩ f = 1 kHz				
		B = 200 Hz				
		for **BC 113**		2.5		dB
		for **BC 114**		1.5	3	dB

* Pulsed: pulse duration = 300 μs, duty factor = 1%