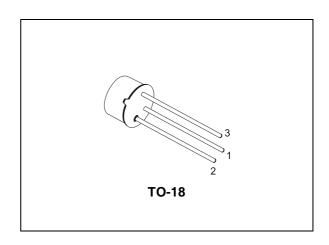
Low noise general purpose audio amplifiers

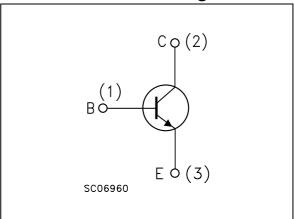
Description

The BC107 and BC107B are silicon planar epitaxial NPN transistors in TO-18 metal case.

They are suitable for use in driver stages, low noise input stages and signal processing circuits of television receivers. The PNP complementary types are BC177 and BC177B respectively.



Internal schematic diagram



Order codes

Part Number	Marking	Marking Package	
BC107	BC107	TO-18	Bag
BC107A	BC107B	TO-18	Bag

Electrical ratings BC107 - BC107B

1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V _{CBO}	Collector-emitter voltage (I _E = 0)	50	V
V _{CEO}	Collector-emitter voltage (I _B = 0)	45	V
V _{EBO}	Emitter-base voltage ($I_C = 0$)	6	V
I _C	Collector current	100	mA
P _{tot}	Total dissipation at $T_{amb} \le 25^{\circ}C$ at $T_{case} \le 25^{\circ}C$	0.3 0.75	W W
T _{stg}	Storage temperature	-55 to 175	°C
TJ	Max. operating junction temperature	175	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R _{thj-case}	Thermal resistance junction-case max	200	°C/W
R _{thj-amb}	Thermal resistance junction-ambient max	500	°C/W

BC107 - BC107B Electrical characteristics

2 Electrical characteristics

 $(T_{CASE} = 25^{\circ}C; unless otherwise specified)$

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I _{CBO}	Collector cut-off current (I _E = 0)	$V_{CB} = 40V$ $V_{CB} = 40V$ $T_{C} = 150^{\circ}C$			15 15	nA μA
V _{(BR)CBO}	Collector-base breakdown voltage (I _E = 0)	I _C = 10μA	50			V
V _{(BR)CEO} ⁽¹⁾	Collector-emitter breakdown voltage (I _B = 0)	I _C = 10mA	45			V
V _{(BR)EBO}	Emitter-base breakdown voltage $(I_C = 0)$	I _E = 10μA	6			V
V _{CE(sat)} (1)	Collector-emitter saturation voltage	$I_C = 10$ mA $I_B = 0.5$ mA $I_C = 100$ mA $I_B = 5$ mA		70 200	250 600	mV mV
V _{BE(sat)} (1)	Base-emitter saturation voltage	$I_C = 10$ mA $I_B = 0.5$ mA $I_C = 100$ mA $I_B = 5$ mA		750 950		mV mV
V _{BE(on)} (1)	Base-emitter on voltage	$I_C = 2mA$ $V_{CE} = 5V$ $I_C = 10mA$ $V_{CE} = 5V$	550	650 700	700 770	mV mV
h _{FE}	DC current gain	$I_{C} = 2mA$ $V_{CE} = 5V$ for BC107 for BC107B $I_{C} = 10\mu A$ $V_{CE} = 5V$ for BC107 for BC107B	110 200 40	120 150	450 450	
h _{fe}	Small signal current gain	I _C = 2mA		250 300 2		
C _{CBO}	Collector-base capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHz$		4	6	pF
C _{EBO}	Emitter-base capacitance	$I_C = 0$ $V_{EB} = 0.5V$ $f = 1MHz$		12		pF
NF	Noise figure	$I_C = 0.2$ mA $V_{CE} = 5V$ $f = 1$ kHz $R_G = 2$ k Ω $B = 200$ Hz	:	2	10	dB
h _{ie}	Input impedance	I _C = 2mA		4 4.8		kΩ kΩ

5//

Electrical characteristics BC107 - BC107B

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
h _{re}	Reverse voltage ratio	I _C = 2mA		2.2 2.7		10 ⁻⁴ 10 ⁻⁴
h _{oe}	Output admittance	I _C = 2mA		30 26		μ S μ S

⁽¹⁾ Pulsed: Pulse duration = 300 $\mu s,$ duty cycle \leq 1 %

2.1 Electrical characteristics (curves)

Figure 1. DC normalized current gain Figure 2. Collector-emitter saturation

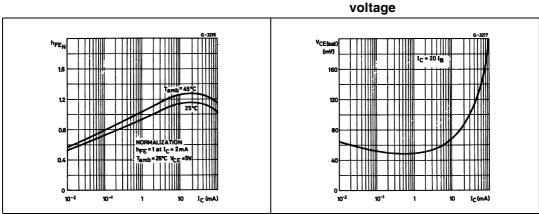
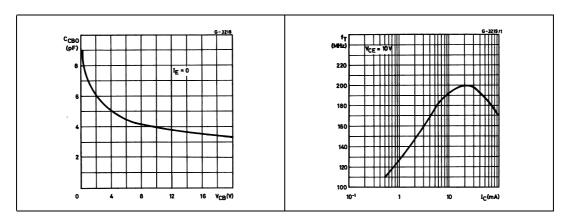
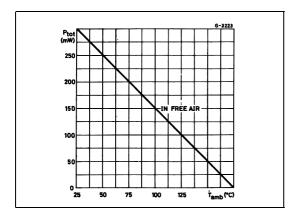


Figure 3. Collector-base capacitance Figure 4. Transition frequency



BC107 - BC107B Electrical characteristics

Figure 5. Power rating chart



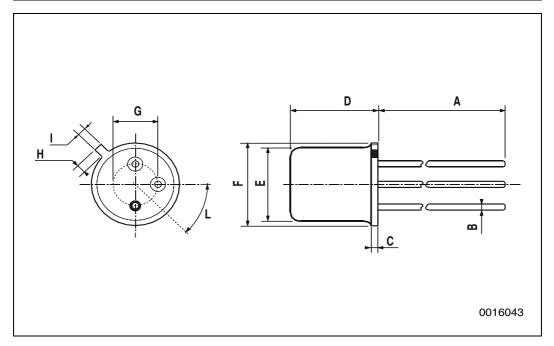
Package mechanical data BC107 - BC107B

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-18 MECHANICAL DATA

DIM.	mm			inch		
<u> </u>	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
Α		12.7			0.500	
В			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
Н			1.2			0.047
ı			1.16			0.045
L	45°			45°		



Revision history BC107 - BC107B

4 Revision history

Table 4. Revision history

Date	Revision	Changes	
01-Dec-2002	1	First release	
06-Nov-2006	2	The document has been reformatted	

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