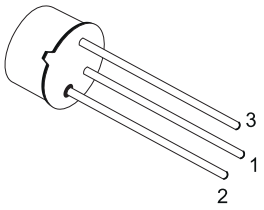
BC107
BC107B

Low noise general purpose audio amplifiers

Description

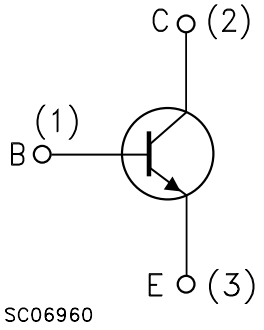
The BC107 and BC107B are silicon planar epitaxial NPN transistors in TO-18 metal case.

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.



TO-18

Internal schematic diagram



Order codes

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

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 $T_{amb} \leq 25°C$ at $T_{case} \leq 25°C$	0.3 0.75	W W
T_{stg}	Storage temperature	-55 to 175	°C
T_J	Max. operating junction temperature	175	°C

Table 2. Thermal data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	200	°C/W
$R_{thj\text{-}amb}$	Thermal resistance junction-ambient	max	500	°C/W

2 Electrical characteristics

(T_{CASE} = 25°C; unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 40V V_{CB} = 40V T_C = 150°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 = 10mA I_B = 0.5mA I_C = 100mA I_B = 5mA		70 200	250 600	mV mV
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 10mA I_B = 0.5mA I_C = 100mA I_B = 5mA		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 = 10µA V_{CE} = 5V **for BC107** **for BC107B**	 110 200 40	 120 150	 450 450	
h_{fe}	Small signal current gain	I_C = 2mA V_{CE} = 5V f = 1kHz **for BC107** **for BC107B** I_C = 10mA V_{CE} = 5V f = 100MHz		 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 = 0.2mA V_{CE} = 5V f = 1kHz R_G =2kΩ B=200Hz		2	10	dB
h_{ie}	Input impedance	I_C = 2mA V_{CE} = 5V f = 1kHz **for BC107** **for BC107B**		 4 4.8		 kΩ kΩ

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{re}	Reverse voltage ratio	I_C = 2mA V_{CE} = 5V f = 1kHz **for BC107** **for BC107B**		 2.2 2.7		 10^{-4} 10^{-4}
h_{oe}	Output admittance	I_C = 2mA V_{CE} = 5V f = 1kHz **for BC107** **for BC107B**		 30 26		 µS µS

(1) Pulsed: Pulse duration = 300 µs, duty cycle ≤ 1 %

2.1 Electrical characteristics (curves)

Figure 1. DC normalized current gain

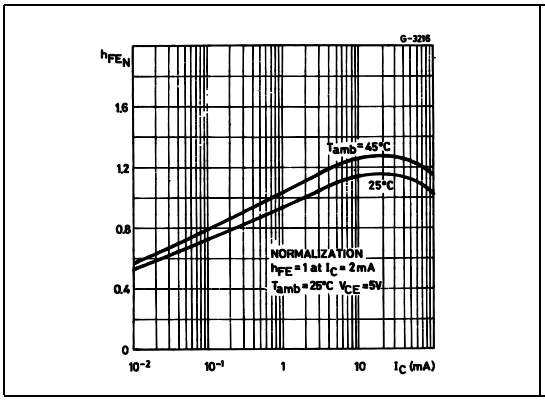


Figure 2. Collector-emitter saturation voltage

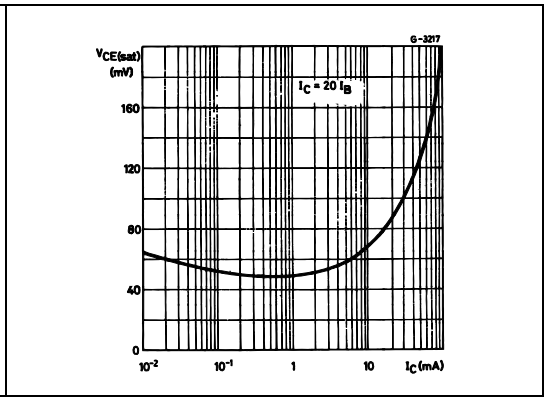


Figure 3. Collector-base capacitance

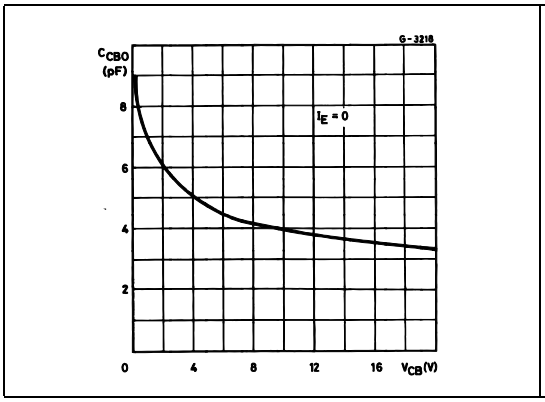


Figure 4. Transition frequency

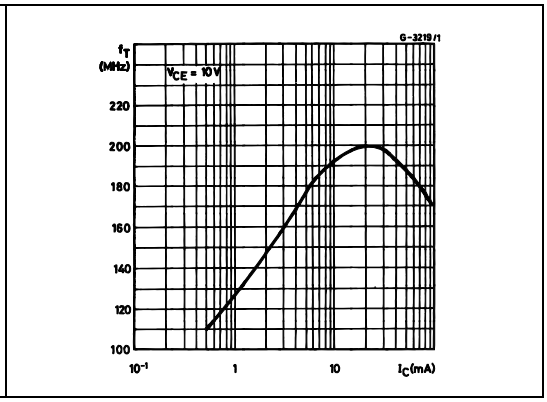
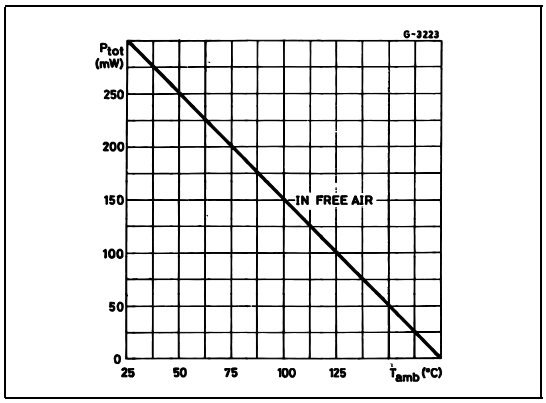


Figure 5. Power rating chart

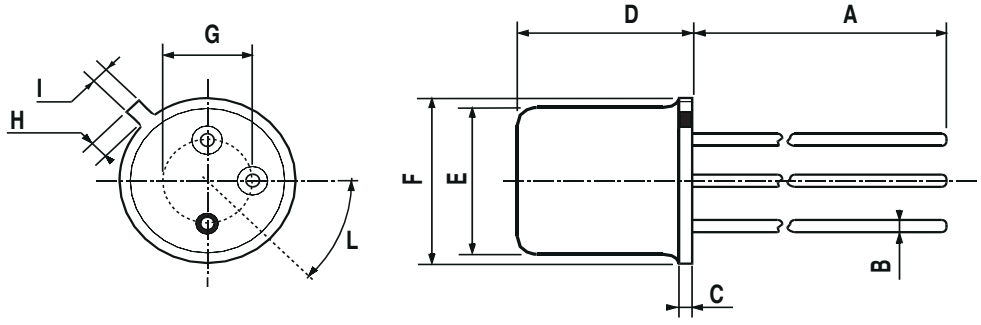


3 Package mechanical data

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		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



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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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