



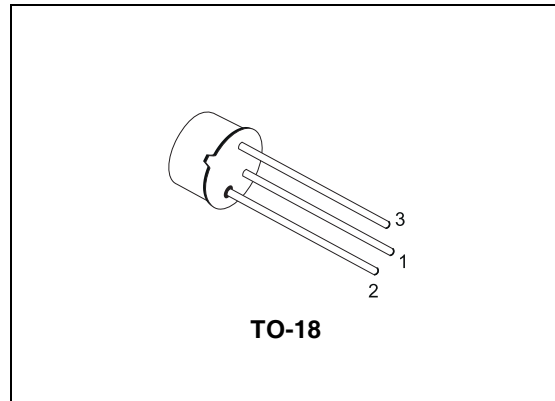
BC107 BC107B

Low noise general purpose audio amplifiers

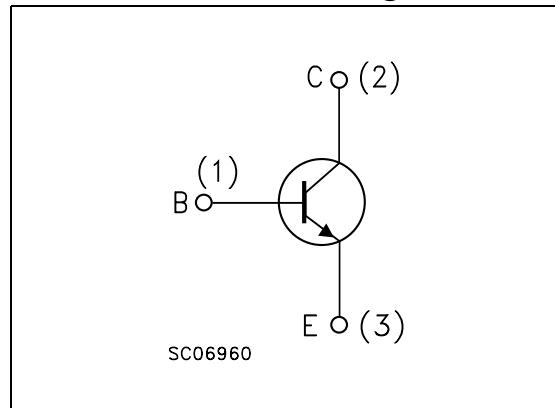
Description

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.



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

Table 2. Thermal data

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

2 Electrical characteristics

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

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 40V$ $V_{CB} = 40V$ $T_C = 150^{\circ}C$			15 15	nA μA
$V_{(BR)CBO}$	Collector-base breakdown voltage ($I_E = 0$)	$I_C = 10\mu A$	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 ($I_C = 0$)	$I_E = 10\mu A$	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 $I_C = 10\mu A$ $V_{CE} = 5V$ for BC107 for BC107B	110 200 40	 120 150	450 450	
h_{fe}	Small signal current gain	$I_C = 2mA$ $V_{CE} = 5V$ $f = 1kHz$ 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	$I_C = 0.2mA$ $V_{CE} = 5V$ $f = 1kHz$ $R_G = 2k\Omega$ $B = 200Hz$		2	10	dB
h_{ie}	Input impedance	$I_C = 2mA$ $V_{CE} = 5V$ $f = 1kHz$ for BC107 for BC107B		4 4.8		$k\Omega$ $k\Omega$

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

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

2.1 Electrical characteristics (curves)

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

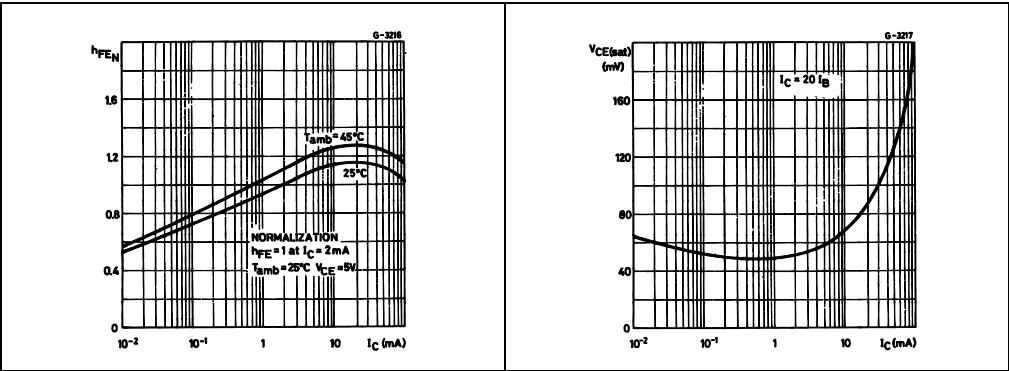


Figure 3. Collector-base capacitance Figure 4. Transition frequency

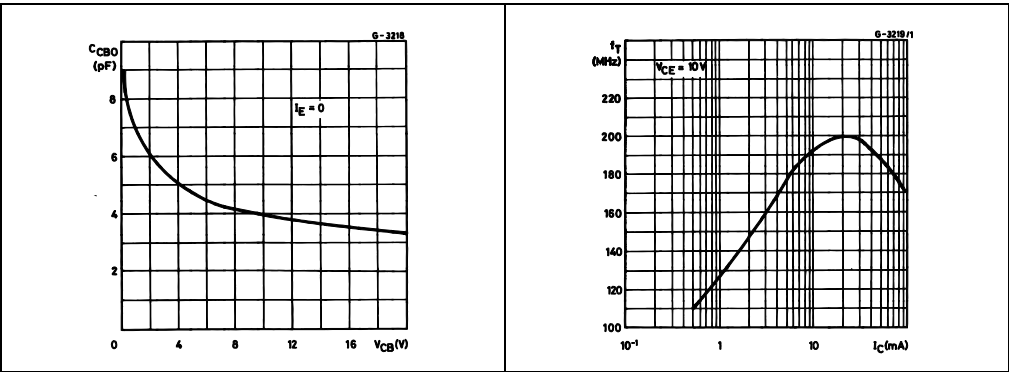
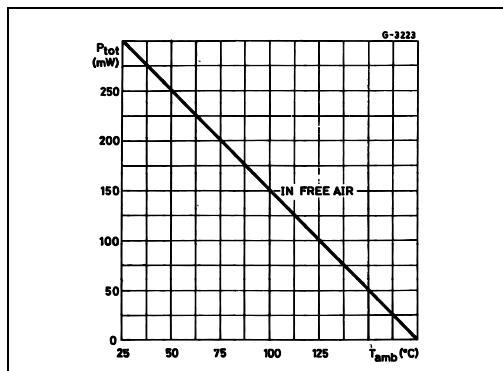


Figure 5. Power rating chart



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°		

The image contains two mechanical drawings of a TO-18 package. The left drawing is a top view showing a circular body with a central pin. Dimensions G, H, I, and L are indicated. G is the diameter of the body, H and I are the diameters of the mounting holes, and L is the lead angle. The right drawing is a side view showing the package's profile. Dimensions A, B, C, D, E, and F are indicated. A is the total length, B is the lead height, C is the lead thickness, D is the body diameter, E is the body height, and F is the total height including the lead.

0016043

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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