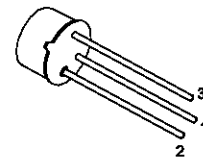


## LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

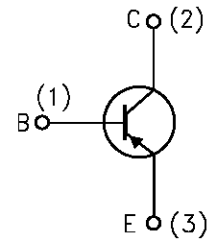
### DESCRIPTION

The BC107 and BC108 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 complement for BC107 is BC177.



TO-18

### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BC107	BC108	
$V_{CBO}$	Collector-Base Voltage ( $I_E = 0$ )	50	30	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	45	20	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	6	5	V
$I_C$	Collector Current	100		mA
$P_{tot}$	Total Dissipation at $T_{amb} \leq 25\text{ }^{\circ}\text{C}$ at $T_{case} \leq 25\text{ }^{\circ}\text{C}$	0.3		W
		0.75		W
$T_{stg}$	Storage Temperature	-55 to 175		$^{\circ}\text{C}$
$T_j$	Max. Operating Junction Temperature	175		$^{\circ}\text{C}$

## BC107/BC108

### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-Case	Max	200	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-Ambient	Max	500	°C/W

### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BC107</b> V <sub>CB</sub> = 40 V V <sub>CB</sub> = 40 V T <sub>case</sub> = 150 °C for <b>BC108</b> V <sub>CB</sub> = 20 V V <sub>CB</sub> = 20 V T <sub>case</sub> = 150 °C			15 15 15 15	nA μA μA μA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>E</sub> = 0)	I <sub>C</sub> = 10 μA for <b>BC107</b> for <b>BC108</b>	50 30			V V
V <sub>(BR)CEO</sub> *	Collector-Emitter Breakdown Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 10 mA for <b>BC107</b> for <b>BC108</b>	45 20			V V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 10 μA for <b>BC107</b> for <b>BC108</b>	6 5			V V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 10 mA I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA I <sub>B</sub> = 5 mA		70 200	250 600	mV mV
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = 10 mA I <sub>B</sub> = 0.5 mA I <sub>C</sub> = 100 mA I <sub>B</sub> = 5 mA		750 950		mV mV
V <sub>BE(on)</sub> *	Base-Emitter On Voltage	I <sub>C</sub> = 2 mA V <sub>CE</sub> = 5 V I <sub>C</sub> = 10 mA V <sub>CE</sub> = 5 V	550	650 700	700 770	mV mV
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 2 mA V <sub>CE</sub> = 5 V for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C I <sub>C</sub> = 10 μA V <sub>CE</sub> = 5 V for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C	110 110 200 110 110 200 420  40 40 100	       120 90 150 120 90 150 270	450 220 450 800 220 450 800	
h <sub>fe</sub> *	Small Signal Current Gain	I <sub>C</sub> = 2 mA V <sub>CE</sub> = 5 V f = 1 KHz for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C I <sub>C</sub> = 10 mA V <sub>CE</sub> = 10 V f = 100 MHz		250 190 300 370 190 300 500 2		

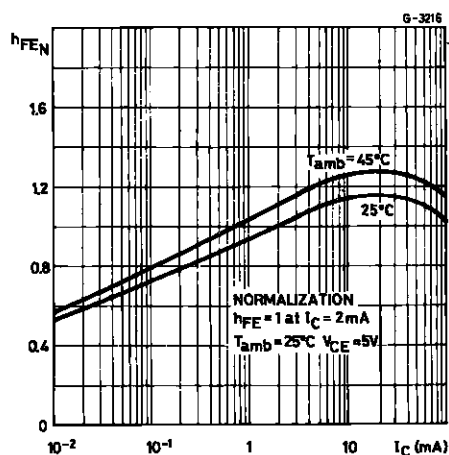
\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

## ELECTRICAL CHARACTERISTICS (continued)

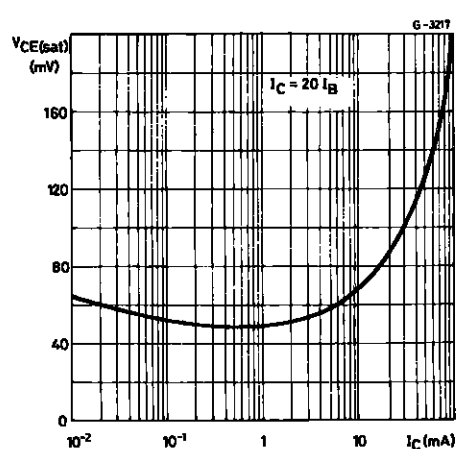
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$C_{CBO}$	Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$		4	6	pF
$C_{EBO}$	Emitter Base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$		12		pF
NF	Noise Figure	$I_C = 0.2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ $R_g = 2\text{ K}\Omega$ $B = 200\text{ Hz}$		2	10	dB
$h_{ie}$	Input Impedance	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C		4 3 4.8 5.5 3 4.8 7		K $\Omega$ K $\Omega$ K $\Omega$ K $\Omega$ K $\Omega$ K $\Omega$ K $\Omega$
$h_{re}$	Reverse Voltage Ratio	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C		2.2 1.7 2.7 3.1 1.7 2.7 3.8		$10^{-4}$ $10^{-4}$ $10^{-4}$ $10^{-4}$ $10^{-4}$ $10^{-4}$ $10^{-4}$
$h_{oe}$	Output Admittance	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for <b>BC107</b> for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C		30 13 26 30 13 26 34		$\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$ $\mu\text{S}$

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1\%$ 

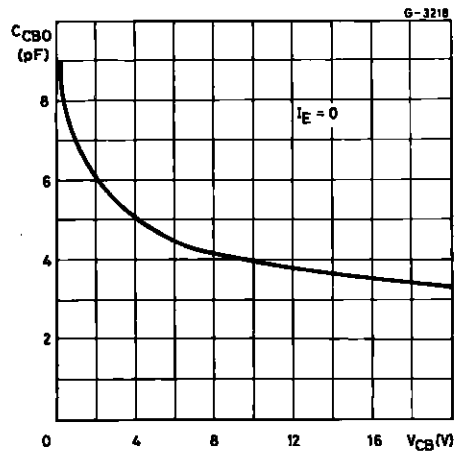
DC Normalized Current Gain.



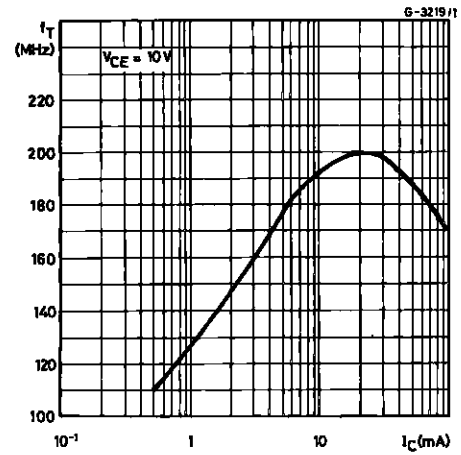
Collector--emitter Saturation Voltage.



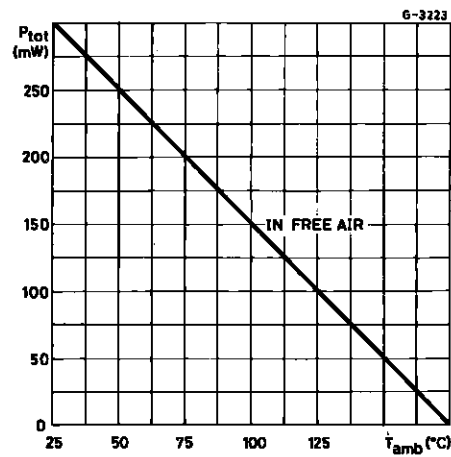
Collector-base Capacitance.



Transition Frequency.

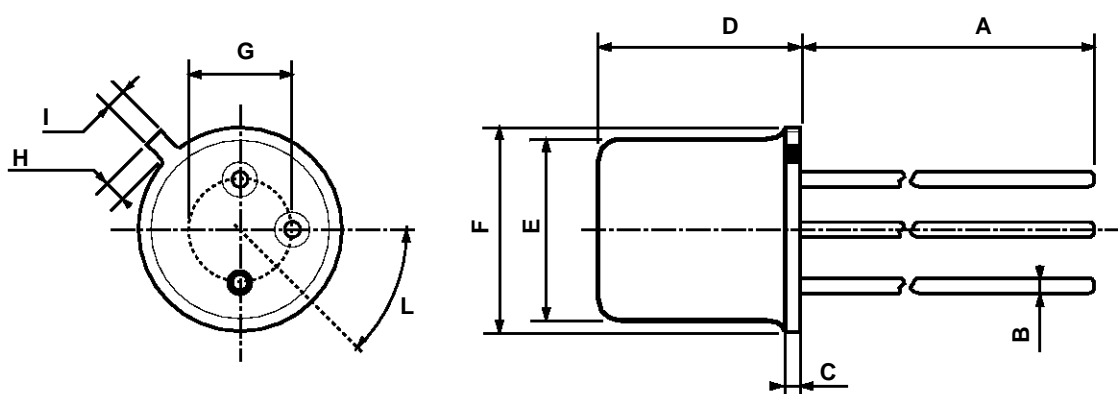


Power Rating Chart.



## 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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