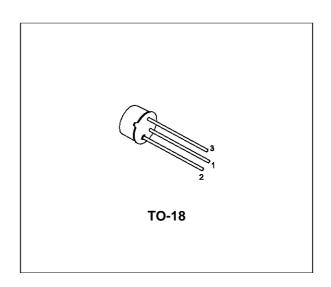
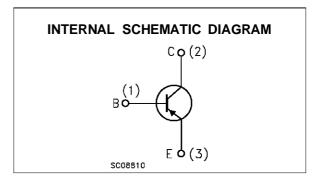


# LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

#### **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 reveivers. The PNP complemet for BC107 is BC177.





### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Va	Unit	
		BC107	BC108	
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)	50	30	V
$V_{CEO}$	Collector-Emitter Voltage (I <sub>B</sub> = 0)	45	20	V
$V_{EBO}$	Emitter-Base Voltage (I <sub>C</sub> = 0)	6	5	V
Ic	Collector Current	1	mA	
P <sub>tot</sub>	Total Dissipation at T <sub>amb</sub> ≤ 25 °C	(	W	
	at T <sub>case</sub> ≤ 25 °C	0.75		W
T <sub>stg</sub>	Storage Temperature	-55 to 175		°C
Tj	Max. Operating Junction Temperature	1	°C	

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### THERMAL DATA

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

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

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
Ісво	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BC107</b> $V_{CB} = 40 \text{ V}$ $V_{CB} = 40 \text{ V}$ $V_{CB} = 40 \text{ V}$ $V_{CB} = 20 \text{ V}$			15 15 15 15	nA μA μA μA
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (IE = 0)	$I_C$ = 10 $\mu$ A for BC107 for BC108	50 30			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	$I_{C} = 10 \text{ mA}$ $I_{B} = 0.5 \text{ mA}$ $I_{C} = 100 \text{ mA}$ $I_{B} = 5 \text{ mA}$		70 200	250 600	mV mV
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	$I_{C} = 10 \text{ mA}$ $I_{B} = 0.5 \text{ mA}$ $I_{C} = 100 \text{ mA}$ $I_{B} = 5 \text{ mA}$		750 950		mV mV
V <sub>BE(on)</sub> *	Base-Emitter On Voltage		550	650 700	700 770	mV mV
hfe*	DC Current Gain	$I_C$ = 2 mA $V_{CE}$ = 5 V for BC107 Gr. A for BC107 Gr. B for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C $I_C$ = 10 μA $V_{CE}$ = 5 V for BC107 Gr. A for BC107 Gr. A for BC107 Gr. A for BC108 Gr. B for BC108 Gr. C	110 110 200 110 110 200 420 40	120 90 150 120 90 150 270	450 220 450 800 220 450 800	
h <sub>fe</sub> *	Small Signal Current Gain	$\begin{tabular}{lc} I_C = 2 & mA & V_{CE} = 5 & V & f = 1 \mbox{KHz} \\ for $BC107$ & Gr. A \\ for $BC107$ & Gr. B \\ for $BC108$ & Gr. A \\ for $BC108$ & Gr. B \\ for $BC108$ & Gr. C \\ I_C = 10 & mA & V_{CE} = 10 & V & f = 100 & \mbox{MHz} \\ \end{tabular}$		250 190 300 370 190 300 500		

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

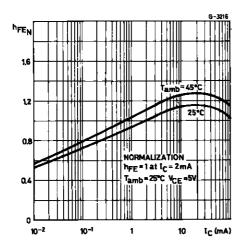


### **ELECTRICAL CHARACTERISTICS** (continued)

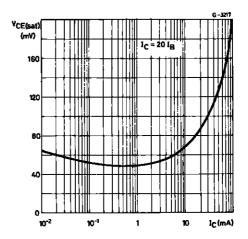
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
Ссво	Collector Base Capacitance	I <sub>E</sub> = 0 V <sub>CB</sub> = 10 V f = 1MHz		4	6	pF
C <sub>EBO</sub>	Emitter Base Capacitance	$I_C = 0$ $V_{EB} = 0.5 \text{ V}$ $f = 1\text{MHz}$		12		pF
NF	Noise Figure			2	10	dB
h <sub>ie</sub>	Input Impedance	$I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 1 \text{KHz}$ for <b>BC107</b> Gr. A for <b>BC107</b> Gr. B for <b>BC108</b> Gr. A for <b>BC108</b> Gr. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C		4 3 4.8 5.5 3 4.8 7		ΚΩ ΚΩ ΚΩ ΚΩ ΚΩ ΚΩ
h <sub>re</sub>	Reverse Voltage Ratio	I <sub>C</sub> = 2 mA		2.2 1.7 2.7 3.1 1.7 2.7 3.8		10 <sup>-4</sup> 10 <sup>-4</sup> 10 <sup>-4</sup> 10 <sup>-4</sup> 10 <sup>-4</sup> 10 <sup>-4</sup>
h <sub>oe</sub>	Output Admittance	I <sub>C</sub> = 2 mA   V <sub>CE</sub> = 5 V   f = 1KHz 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. A for <b>BC108</b> Gr. B for <b>BC108</b> Gr. C		30 13 26 30 13 26 34		д В В В В В В В В В В В В В В В В В В В

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

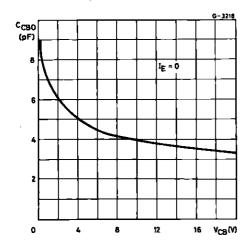
### DC Normalized Current Gain.



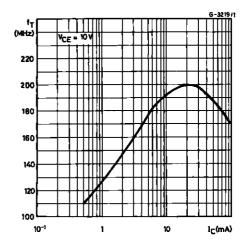
### Collector--emitter Saturation Voltage.



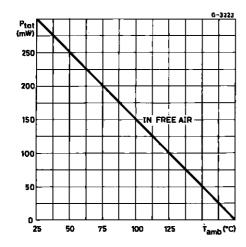
Collector-base Capacitance.



Transition Frequency.

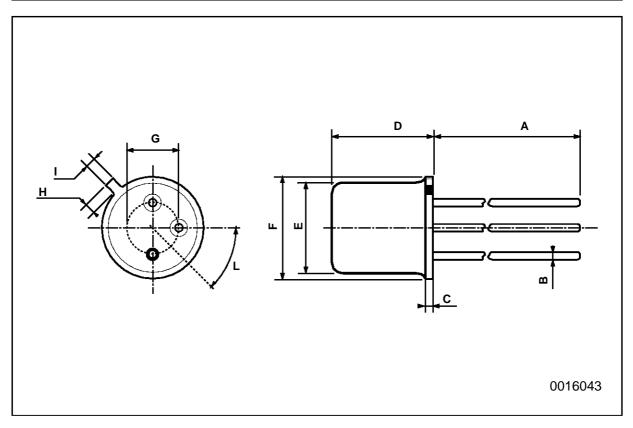


Power Rating Chart.



## **TO-18 MECHANICAL DATA**

DIM.		mm		inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А		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
I			1.16			0.045
L	45°			45°		



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