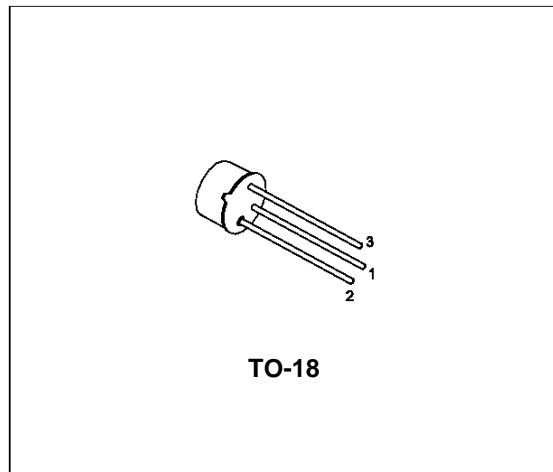


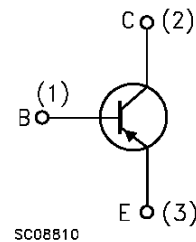
## LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

### 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.



### 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

$R_{thj-case}$	Thermal Resistance Junction-Case	Max	200	$^{\circ}C/W$
$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	500	$^{\circ}C/W$

### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	for <b>BC107</b> $V_{CB} = 40 V$ $V_{CB} = 40 V$ $T_{case} = 150^{\circ}C$ for <b>BC108</b> $V_{CB} = 20 V$ $V_{CB} = 20 V$ $T_{case} = 150^{\circ}C$			15 15 15 15	nA $\mu A$ $\mu A$ $\mu A$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = 10 \mu A$ for <b>BC107</b> for <b>BC108</b>	50 30			V V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = 10 mA$ for <b>BC107</b> for <b>BC108</b>	45 20			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_E = 10 \mu A$ for <b>BC107</b> for <b>BC108</b>	6 5			V V
$V_{CE(sat)}^*$	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
$V_{BE(sat)}^*$	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
$V_{BE(on)}^*$	Base-Emitter On Voltage	$I_C = 2 mA$ $V_{CE} = 5 V$ $I_C = 10 mA$ $V_{CE} = 5 V$	550	650 700	700 770	mV mV
$h_{FE}^*$	DC Current Gain	$I_C = 2 mA$ $V_{CE} = 5 V$ 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 $I_C = 10 \mu A$ $V_{CE} = 5 V$ 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		450 220 450 800 220 450 800  120 90 150 120 90 150 270	
$h_{fe}^*$	Small Signal Current Gain	$I_C = 2 mA$ $V_{CE} = 5 V$ $f = 1 KHz$ 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 $I_C = 10 mA$ $V_{CE} = 10 V$ $f = 100 MHz$			250 190 300 370 190 300 500 2	

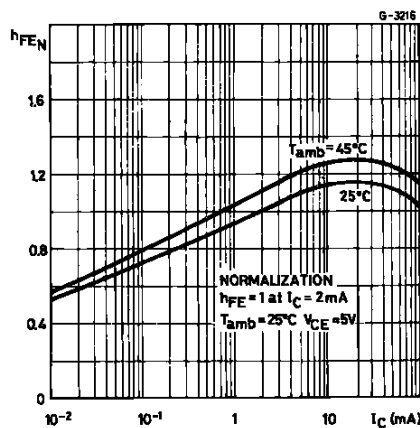
\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle  $\leq 1\%$

**ELECTRICAL CHARACTERISTICS** (continued)

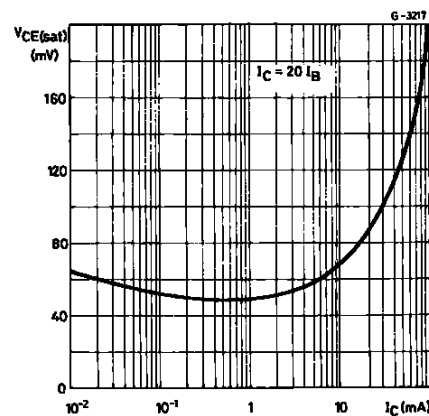
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C <sub>CB0</sub>	Collector Base Capacitance	I <sub>E</sub> = 0 V <sub>CB</sub> = 10 V f = 1MHz		4	6	pF
C <sub>EBO</sub>	Emitter Base Capacitance	I <sub>C</sub> = 0 V <sub>EB</sub> = 0.5 V f = 1MHz		12		pF
NF	Noise Figure	I <sub>C</sub> = 0.2 mA V <sub>CE</sub> = 5 V f = 1KHz R <sub>g</sub> = 2KΩ B = 200Hz		2	10	dB
h <sub>ie</sub>	Input Impedance	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. B for <b>BC108</b> Gr. C		4 3 4.8 5.5 3 4.8 7		KΩ KΩ KΩ KΩ KΩ KΩ KΩ
h <sub>re</sub>	Reverse Voltage Ratio	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. B for <b>BC108</b> Gr. C		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> 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. B for <b>BC108</b> Gr. C		30 13 26 30 13 26 34		μS μS μS μS μS μS μS

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

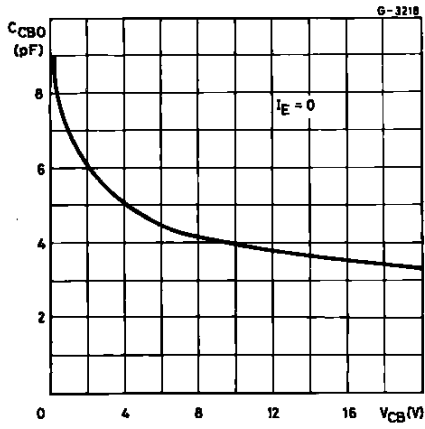
DC Normalized Current Gain.



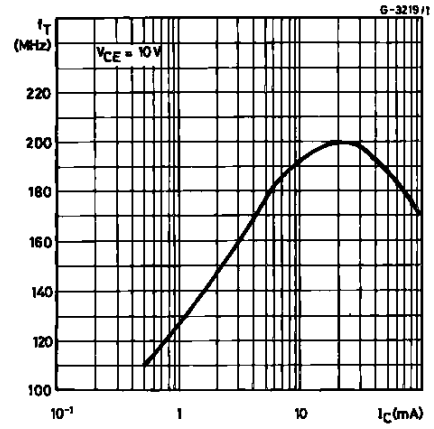
Collector--emitter Saturation Voltage.



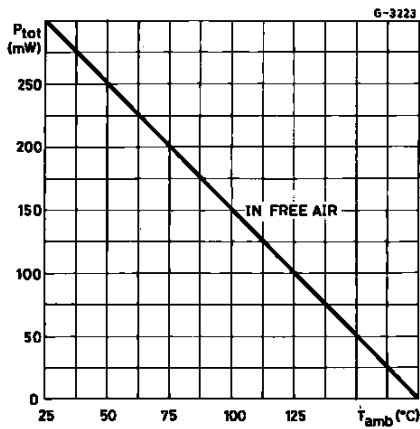
Collector-base Capacitance.



Transition Frequency.

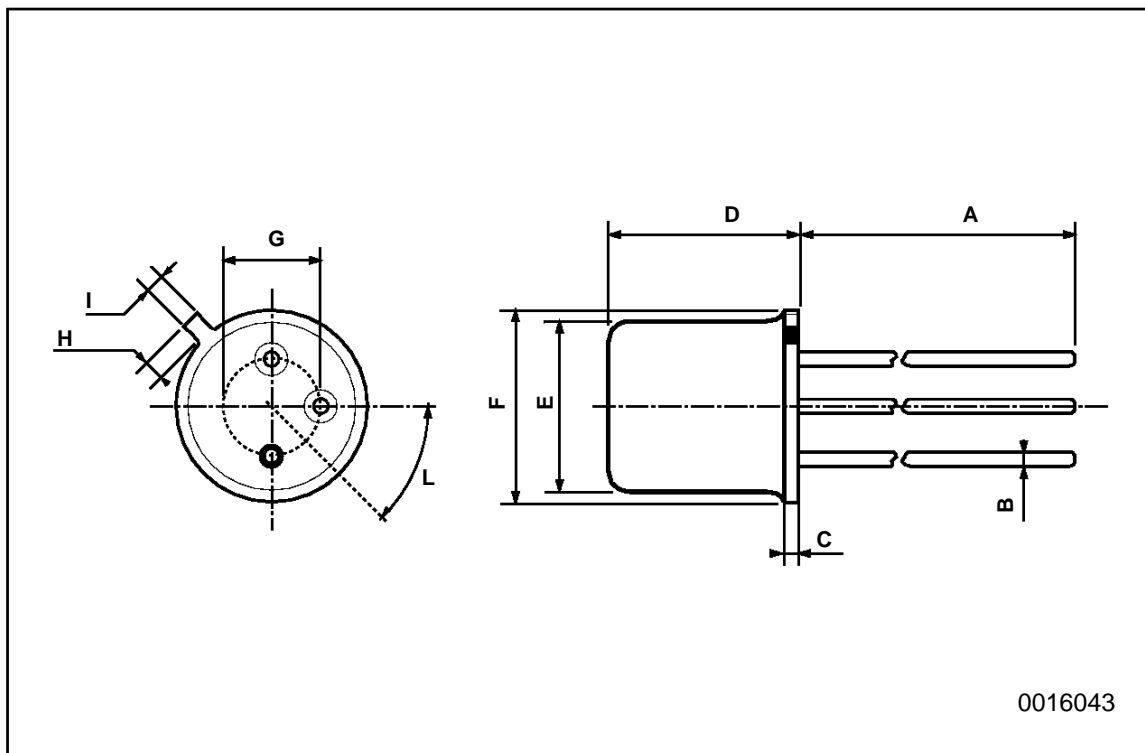


Power Rating Chart.



## TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
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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