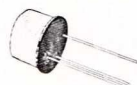


LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

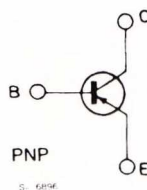
DESCRIPTION

The BC477, BC478 and BC479 are silicon planar epitaxial PNP transistors in TO-18 metal case. The BC477 is a high voltage type designed for use in audio amplifiers or driver stages, and in the signal processing circuits of TV sets. The BC478 and BC479 are respectively low noise and very low noise types, designed for general preamplifier or amplifier applications.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BC477	BC478	BC479	
V_{CES}	Collector-emitter Voltage ($V_{BE} = 0$)	- 90	- 40	- 40	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	- 80	- 40	- 40	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	- 6			V
I_C	Collector Current	- 150			mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25^\circ\text{C}$ at $T_{case} \leq 25^\circ\text{C}$	0.36			W
		1.2			W
T_{stg}	Storage Temperature	- 55 to 200			$^\circ\text{C}$
T_j	Junction Temperature	200			$^\circ\text{C}$

THERMAL DATA

$R_{th j-case}$	Thermal Resistance Junction-case	Max	146	$^{\circ}C/W$
$R_{th j-amb}$	Thermal Resistance Junction-ambient	Max	485	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	for BC477 $V_{CE} = -70 V$ $V_{CE} = -70 V$ $T_{amb} = 125^{\circ}C$ for BC479-BC478 $V_{CE} = -30 V$ $V_{CE} = -30 V$ $T_{amb} = 125^{\circ}C$			- 10 - 10 - 10 - 10	nA μA nA μA
I_{EBO}	Emitter-cutoff Current ($I_C = 0$)	$V_{EB} = -4 V$			- 10	nA
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage ($V_{BE} = 0$)	$I_C = -10 \mu A$ for BC477 for BC478 for BC479	- 90 - 40 - 40			V V V
$V_{(BR)CEO}$	Collector-emitter Breakdown Voltage ($I_B = 0$)	$I_C = -5 mA$ for BC477 for BC478 for BC479	- 80 - 40 - 40			V V V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage ($I_C = 0$)	$I_E = -10 \mu A$	- 6			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = -10 mA$ $I_B = -0.5 mA$ $I_C = -100 mA$ $I_B = -5 mA$		- 0.1 - 0.3	- 0.25	V V
V_{BE}^*	Base-emitter Voltage	$I_C = 2 mA$ $V_{CE} = -5 V$	- 0.55	- 0.65	- 0.75	V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = -10 mA$ $I_B = -0.5 mA$ $I_C = -100 mA$ $I_B = -5 mA$		- 0.75 - 0.9	- 0.9	V V
h_{FE}^*	DC Current Gain	$I_C = -10 \mu A$ $V_{CE} = -5 V$ for BC477 for BC478 for BC479 $I_C = -2 mA$ $V_{CE} = -5 V$ for BC477 for BC478 for BC 479 $I_C = -10 mA$ $V_{CE} = -5 V$ for BC477 for BC478 for BC479	30 50 100 110 110 200	115 195 290	250 450	
h_{fe}	Small Signal Current Gain	$I_C = -2 mA$ $V_{CE} = -5 V$ $f = 1 kHz$ for BC477 for BC478 for BC479 $I_C = -10 mA$ $V_{CE} = -5 V$ $f = 20 MHz$	125 125 220	7.5	260 500	

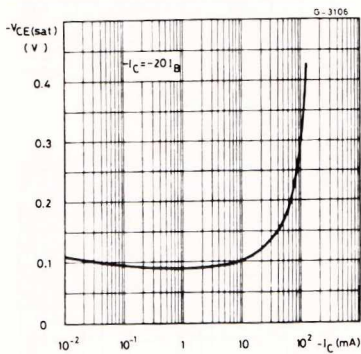
* Pulsed : pulse duration = 300 μs , duty cycle = 1 %.

ELECTRICAL CHARACTERISTICS (continued)

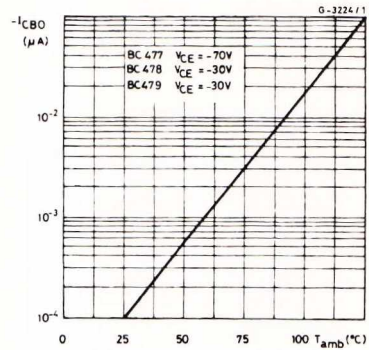
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = -5 \text{ V}$		4	6	pF
C_{EBO}	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = -0.5 \text{ V}$		11	15	pF
NF	Noise Figure	$I_C = -20 \mu\text{A}$ $V_{CE} = -5 \text{ V}$ $R_g = 10 \text{ k}\Omega$ $f = 10 \text{ Hz to } 10 \text{ kHz}$ $B = 15.7 \text{ kHz}$ for BC479		0.8	3.5	dB
NF	Noise Figure	$I_C = -200 \mu\text{A}$ $V_{CE} = -5 \text{ V}$ $R_g = 2 \text{ k}\Omega$ $f = 10 \text{ Hz to } 10 \text{ kHz}$ $B = 15.7 \text{ kHz}$ for BC478 for BC479		1.5 1	4	dB dB
		$I_C = -20 \mu\text{A}$ $V_{CE} = -5 \text{ V}$ $R_g = 10 \text{ k}\Omega$ $f = 1 \text{ kHz}$ for BC479		0.5	2.5	dB
		$I_C = -200 \mu\text{A}$ $V_{CE} = -5 \text{ V}$ $R_g = 2 \text{ k}\Omega$ $B = 200 \text{ Hz}$ for BC477 for BC478 for BC479		2 1.2 0.8	10 6 4	dB dB dB

* Pulsed : pulse duration = 300 μs , duty cycle = 1 %.

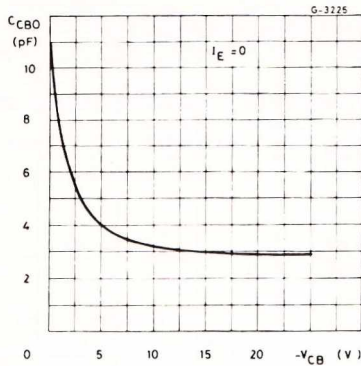
Collector-emitter Saturation Voltage.



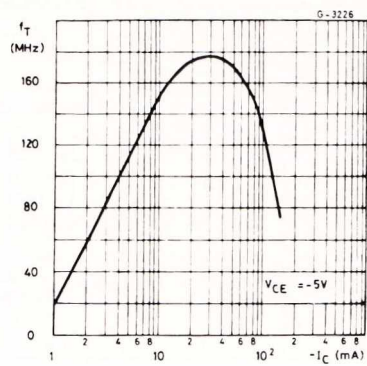
Collector Cutoff Current.



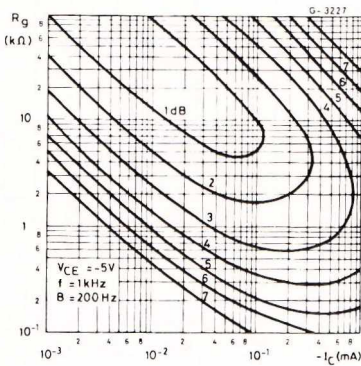
Collector-base Capacitance.



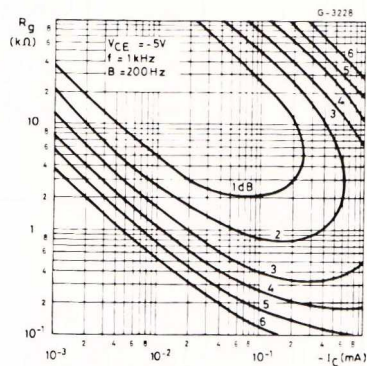
Transition Frequency.



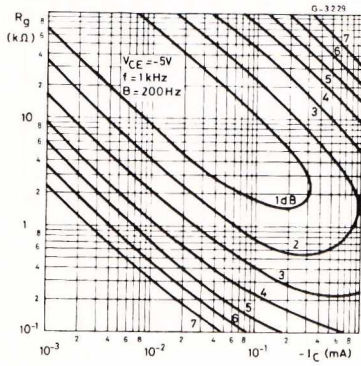
Noise Figure (for BC477 only).



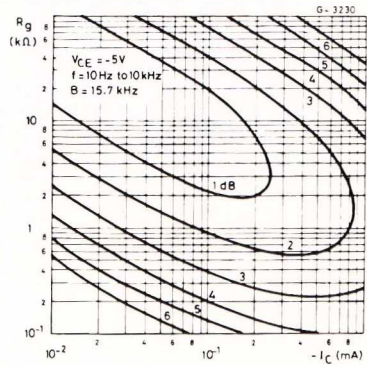
Noise Figure (for BC478 only).



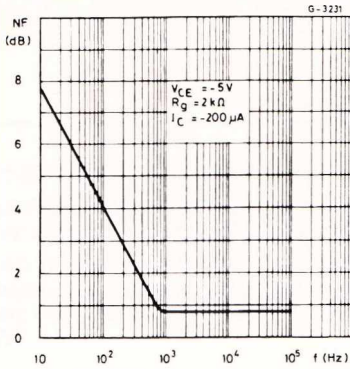
Noise Figure (for BC479 only).



Noise Figure (for BC479 only).



Noise Figure vs. Frequency (for BC479 only).



Power Rating Chart.

