

A.F. PRE-AMPLIFIER

TAA310

The TAA310 is a monolithic integrated low noise audio pre-amplifier primarily intended for use as a record and play-back amplifier for tape recorders.

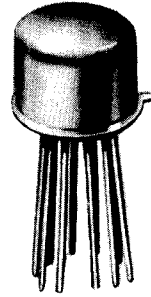
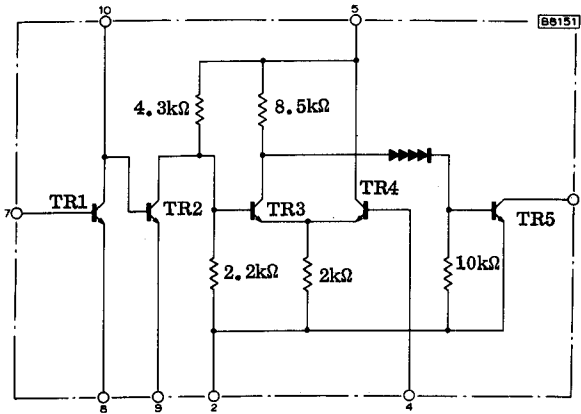
QUICK REFERENCE DATA

Supply voltage (nom.)	+7.0	V
Voltage gain (typ.)	100	dB
Noise figure (max.)	4.0	dB
Input impedance (typ.)	20	k Ω
Operating temperature range	-20 to +75	$^{\circ}$ C

CIRCUIT DIAGRAM

OUTLINE

For details see page 5



RATINGS

Limiting values of operation according to the absolute maximum system.

Electrical

*Voltages

Pin	to	Pin		
5		2	9.5	V
3		2	9.5	V
10		8	6.0	V
8		7	6.0	V
9		10	6.0	V
4		2	6.0	V

Currents

Pin		
3	20	mA
7	3.0	mA
8	-10	mA
9	-10	mA
10	10	mA
4	3.0	mA

Power

P_{tot} up to 60°C (see curve on page 5)	160	mW
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Temperature

Storage

T_{stg} min.	-20	°C
T_{stg} max.	+80	°C

Operating

T_{amb} min.	-20	°C
T_{amb} max.	+75	°C

*The pins 3, 4, 5 and 10 must never have a negative potential applied with respect to pin 2 (substrate).



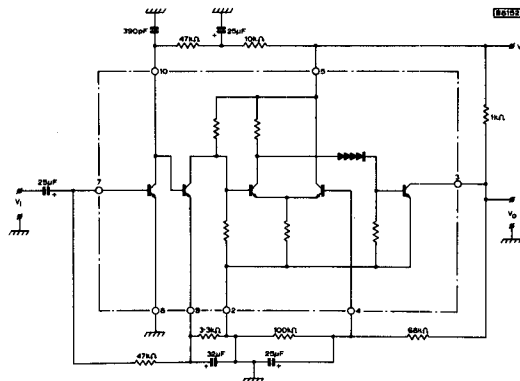
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ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

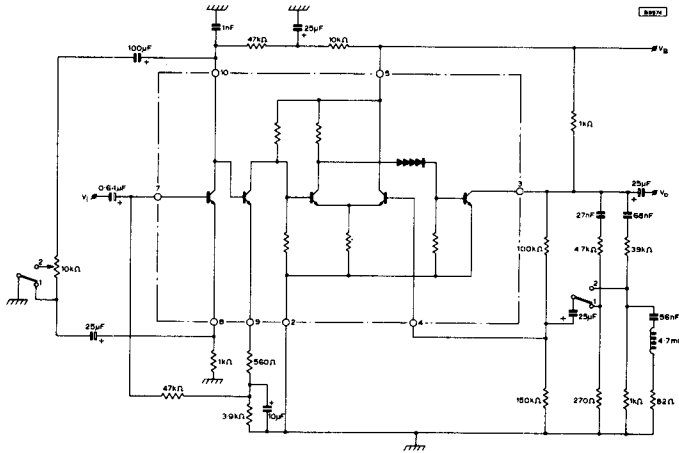
		Min.	Typ.	Max.	
h_{FE}	D.C. current gain of first transistor $I_{10} = 100\mu\text{A}$, $V_{10-7} = 0$	40	-	-	
Z_i	Input impedance ($f = 1.0\text{kHz}$) $I_{10} = 100\mu\text{A}$, $V_{10-7} = 0$	-	20	-	k Ω
$V_{3-2(\text{sat})}$	Saturation voltage of output transistor $I_3 = 7.0\text{mA}$	-	0.8	1.2	V
G_v	Voltage gain	93	100	-	dB
N	Noise figure $R_s = 2.0\text{k}\Omega$, B (bandwidth) = 30 to 15 000Hz	-	2.5	4.0	dB
$V_{o(\text{rms})}$	Output voltage $d_{tot} = 10\%$	-	2.0	-	V
f_c	Cut-off frequency at -3.0dB	15	-	-	kHz
V_{3-2}	D.C. collector voltage of output transistor $I_9 = 200\mu\text{A}$	3.4	3.8	4.2	V

Test circuit for measuring G_v , N, $V_{o(\text{rms})}$, f_c and V_{3-2} at $V_B = 7\text{V}$



APPLICATION INFORMATION

Practical tape recorder pre-amplifier with a TAA310



Switch in playback position

Data for use as a recording amplifier (measured at $f = 1.0\text{kHz}$)

		Min.	Typ.	Max.	
G_V	Voltage gain	62	64	66	dB
	Frequency responses see page 6				
d_{tot}	Distortion at $V_{O(rms)} = 0.5V$	-	-	0.5	%
	Volume control range	-	75	-	dB
	Signal handling	20	-	-	mV
ΔG_V	Gain variation				
	V_B decreased from 7 to 5V	-	3.0	-	dB

Data for use as a playback amplifier (measured at $f = 1.0\text{kHz}$)

G_V	Voltage gain	62	64	66	dB
	Frequency responses see page 6				
d_{tot}	Distortion at $V_{O(rms)} = 0.5V$	-	-	0.5	%
ΔG_V	Gain variation				
	V_B decreased from 7 to 5V	-	3.0	-	dB

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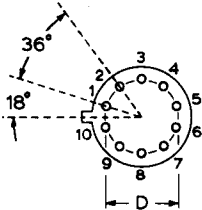
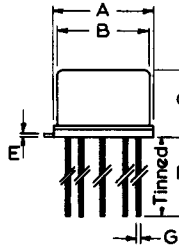


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OUTLINE AND DIMENSIONS

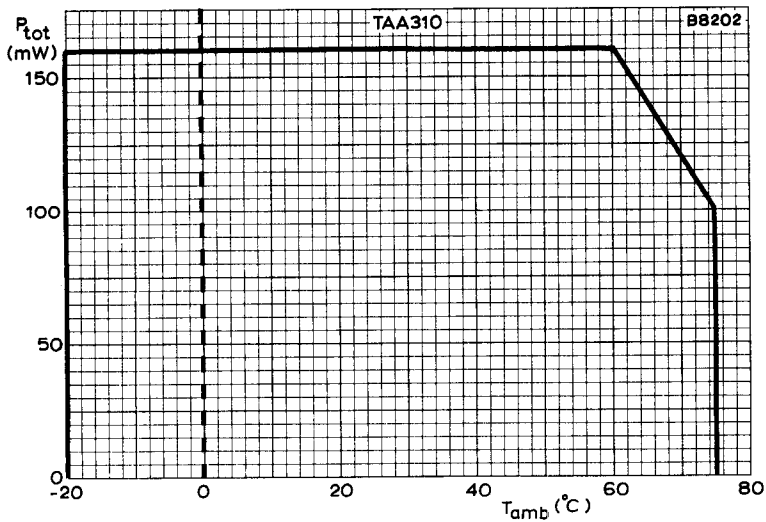
Conforms to B.S. 3934 SO-44B/SB10-1
J.E.D.E.C. TO-74



Millimetres

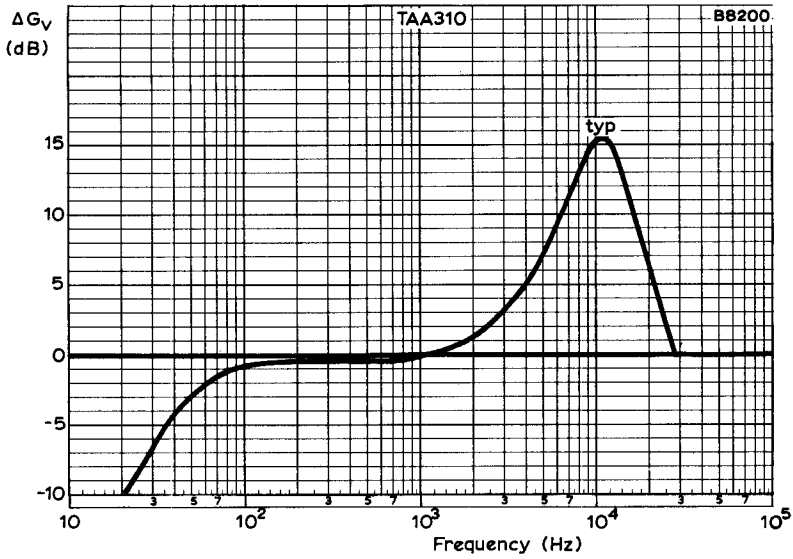
	Min.	Nom.	Max.
A	8.64	8.90	9.40
B	7.75	8.15	8.50
C	-	-	5.33
D	-	5.08	-
E	-	0.40	-
F	12.7	-	-
G	-	0.43	-

Envelope connected to pin 2
10 pins on 360° spaced equally

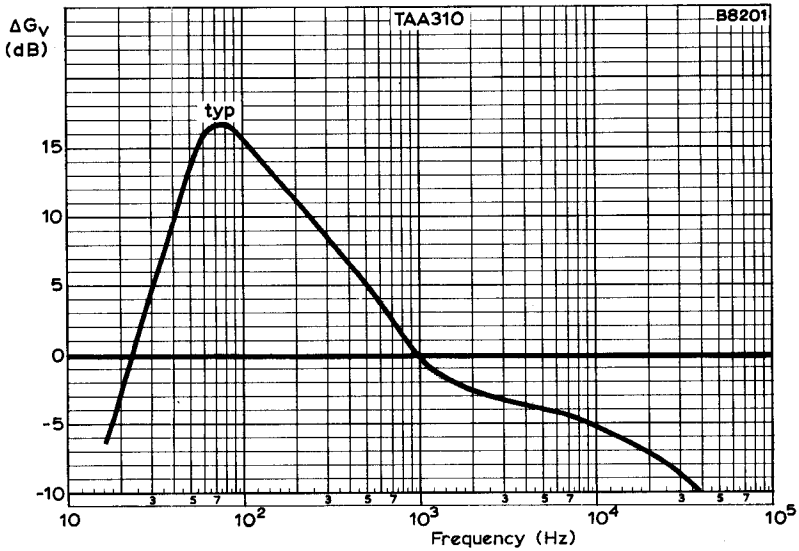


TOTAL POWER DISSIPATION PLOTTED AGAINST
AMBIENT TEMPERATURE





FREQUENCY RESPONSE CURVE OF TAPE-RECORDER PRE-AMPLIFIER DURING RECORDING, GAIN AT 1.0kHz is 64dB



FREQUENCY RESPONSE CURVE OF TAPE-RECORDER PRE-AMPLIFIER DURING PLAY-BACK, GAIN AT 1.0kHz is 64dB

