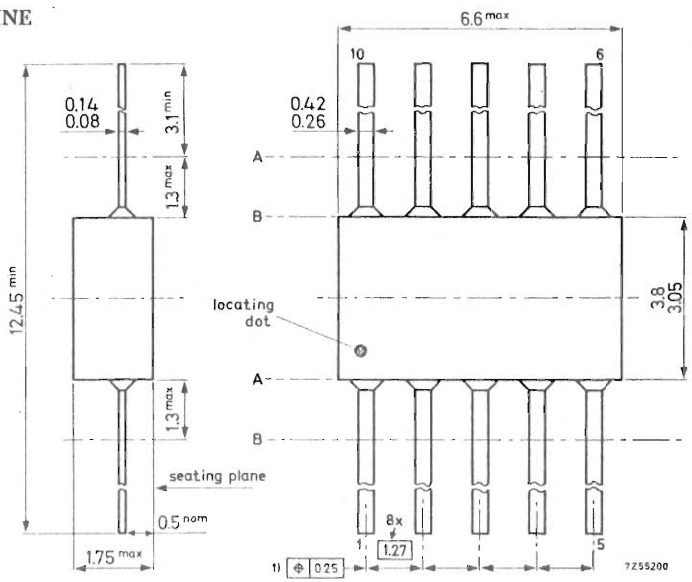
HEARING-AID AMPLIFIER

Integrated monolithic a.f. amplifier for use in hearing aids. The collector current of the class A output transmitter can be determined externally, making the circuit suitable for a wide range of output powers at a low current consumption. Provision is made for the use of peak-clipping and frequency compensation circuits, and special measures have been taken to minimize the influence of temperature and supply voltage variations.

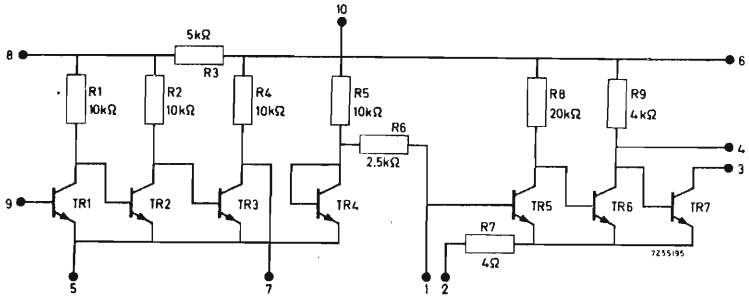
QUICK REFERENCE DATA				
Supply voltage	V_B	nom.	1.3	V
Transducer gain	G_{tr}	typ.	90	dB
Output power at d_{tot} = 10%	P_o	typ.	1.5	mW
Saturation voltage of TR7 at I_C = 5 mA; V_{6-2} = 1.3 V	V_{3-2sat}	<	300	mV
Current consumption of all stages except output stage	I	typ.	0.35	mA
Noise figure	F	typ.	3	dB

PACKAGE OUTLINE

XE10 (TO-89)



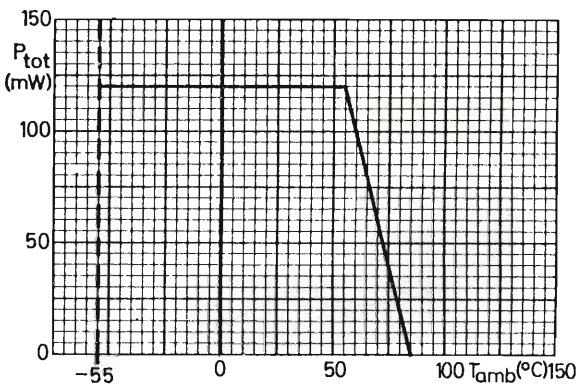
CIRCUIT DIAGRAM



RATINGS Limiting values in accordance with the Absolute Maximum System (IEC134)

Voltages	V_{6-2}	max.	5	V
	V_{3-2}	max.	5	V
	V_{8-2}	max.	5	V
	V_{5-9}	max.	5	V
Currents	I_2	max.	20	mA
	I_3	max.	20	mA

Maximum allowable total power dissipation versus ambient temperature



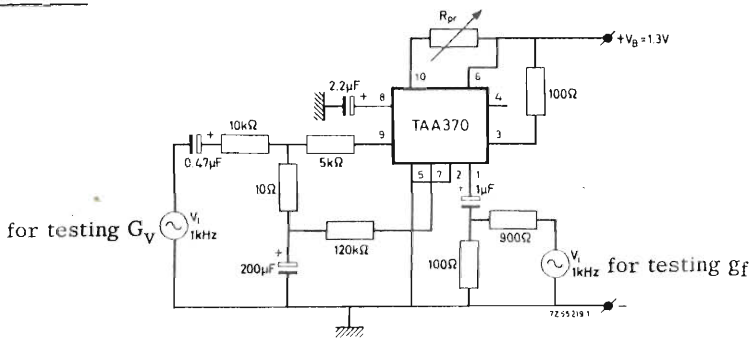
Temperatures

Storage temperature	T_{stg}	−55 to +85	°C
Operating ambient temperature	T_{amb}	−55 to +85	°C

CHARACTERISTICS (see also test circuit) T_{amb} = 25 °C

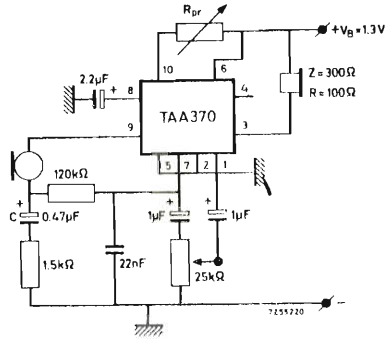
Supply voltage	V_B	nom.	1.3	V
Voltage gain of first 3 transistors (TR1 to TR3)	G_v	>	60	dB
Transconductance of last 3 transistors (TR5 to TR7)	g_f	200 to 280		$m\Omega^{-1}$
Saturation voltage of last transistor (TR7) at I_C = 5 mA; V_{6-2} = 1.3 V	$V_{3-2\,sat}$	<	300	mV
Current consumption of all stages except output stage	I	typ. <	0.35 0.5	mA mA
Noise figure R_S = 5 kΩ; B = 400 to 3200 Hz	F	typ. <	3 6	dB dB

Test circuit



APPLICATION INFORMATION

The TAA370 in a 1.5 mW amplifier



I_3 = 2.5 mA

I_{tot} = 2.85 mA

R_{pr} = 4 kΩ