TAA 611A

LINEAR INTEGRATED CIRCUIT

AUDIO AMPLIFIER

- OUTPUT POWER 1.8 W (9 V - 4 Ω)
- LOW DISTORTION
- LOW QUIESCENT CURRENT
- HIGH INPUT IMPEDANCE

The TAA 611 A is a monolithic integrated circuit in a 14-lead quad in-line plastic package or in a TO-100 metal case.

It is particularly designed for use in radio receivers and record-players as audio amplifier. The usable range of supply voltage varies from 6 V to 12 V and the circuit requires a minimum number of external components.

ABSOLUTE MAXIMUM RATINGS

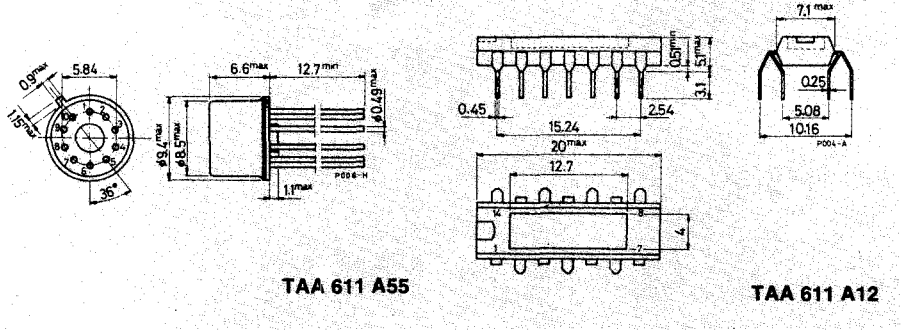
		TAA 611 A12	TAA 611 A55
V_s	Supply voltage	12 V	
V_i*	Input voltage	-0.5 to 12 V	
I_o	Output peak current	1 A	
→P_{tot}	Power dissipation at $T_{amb} \leq 25$ °C	1.35 W	0.57 W
	at $T_{case} \leq 70$ °C	—	1.6 W
	at $T_{case} \leq 100$ °C	3.1 W	—
→T_{stg}, T_j	Storage and junction temperature	-40 to 150 °C	

* For $V_s < 12$ V, $V_{i\,max} = V_s$

ORDERING NUMBERS: TAA 611 A55 (for TO-100 metal case)
TAA 611 A12 (for quad in-line plastic package)

MECHANICAL DATA

Dimensions in mm



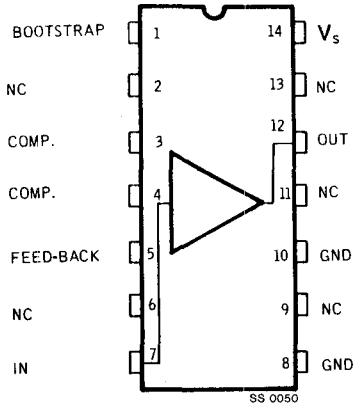
TAA 611 A55

TAA 611 A12

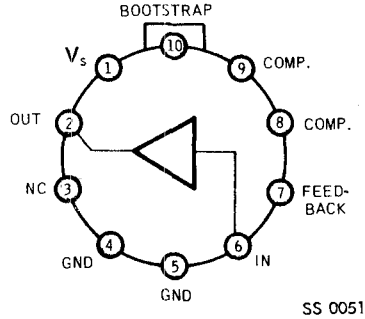
TAA 611A

CONNECTION DIAGRAMS

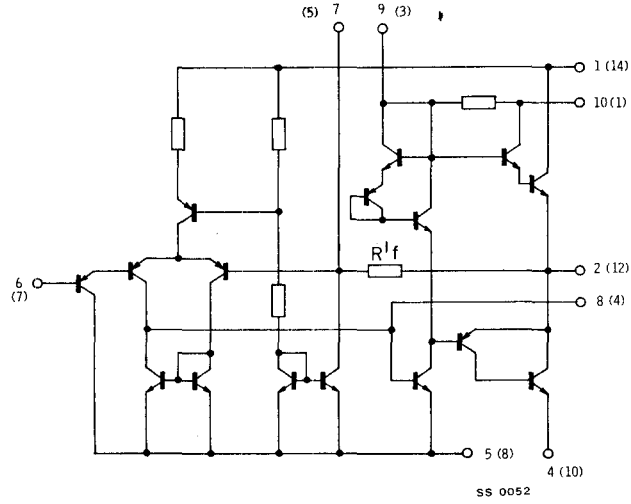
For **TAA 611 A12**



For **TAA 611 A55**



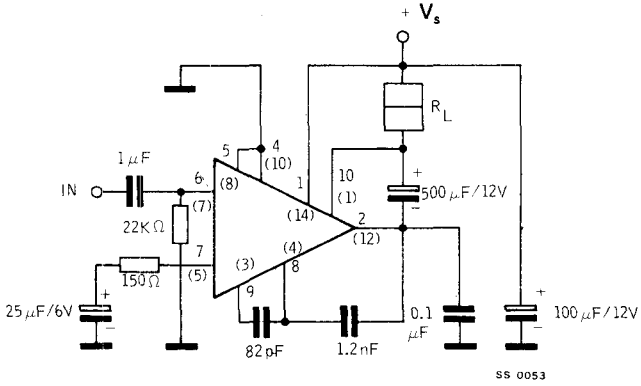
SCHEMATIC DIAGRAM



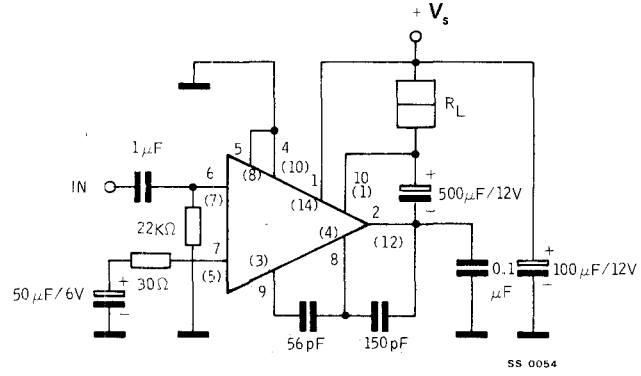
The pin numbers in brackets refer to the TAA 611 A12 and those without brackets refer to the TAA 611 A55.

TEST CIRCUITS

Circuit No. 1 (G_v = 50)



Circuit No. 2 (G_v = 250)



TAA 611A

THERMAL DATA (maximum values)		TAA 611 A12	TAA 611 A55
→ $R_{th\ j\text{-}case}$	Thermal resistance junction-case	16 °C/W	50 °C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	93 °C/W	220 °C/W

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25 °C, V_s = 9 V, refer to the test circuit no. 2 unless otherwise specified)

	Parameter		Test conditions	Min.	Typ.	Max.	Unit
	V_o	Quiescent output voltage			4.8		V
	I_d	Total quiescent drain current			3		mA
	I_d	Quiescent drain current of output transistors			1		mA
	I_d	Drain current	P_o = 1.15 W R_L = 8 Ω		170		mA
→	I_b	Input bias current			0.1	0.8	μA
→	P_o*	Output power	d = 2% f = 1 kHz				
			V_s = 6 V R_L = 4 Ω		0.50		W
			V_s = 6 V R_L = 8 Ω		0.35		W
			V_s = 9 V R_L = 4 Ω		1.4		W
			V_s = 9 V R_L = 8 Ω		0.9		W
			d = 10% f = 1 kHz				
			V_s = 6 V R_L = 4 Ω		0.65		W
			V_s = 6 V R_L = 8 Ω		0.45		W
			V_s = 9 V R_L = 4 Ω		1.8		W
			V_s = 9 V R_L = 8 Ω	0.85	1.15		W
	R_f'	Internal feedback resistance (see schematic diagram)			7.5		kΩ
→	Z_i	Input impedance (open loop)			5		MΩ

ELECTRICAL CHARACTERISTICS (continued)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
d	Distortion	Test circuit 1				
		P_o = 50 mW V_s = 9 V R_L = 8 Ω f = 1 kHz		0.4		%
		P_o = 0.5 W V_s = 9 V R_L = 8 Ω f = 1 kHz		0.3		%
		Test circuit 2				
		P_o = 50 mW V_s = 9 V R_L = 8 Ω f = 1 kHz		1.7		%
		P_o = 0.5 W V_s = 9 V R_L = 8 Ω f = 1 kHz		1.2		%
G_v	Voltage gain (open loop)	R_L = 8 Ω		68		dB

* External heatsink not required except for TAA 611 A55 at V_s = 9 V, R_L = 4 Ω

Fig. 1 - Typical output power vs load resistance

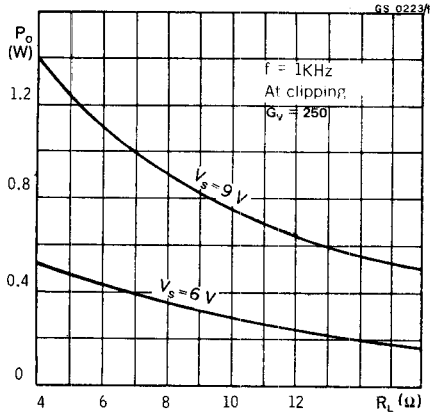


Fig. 2 - Typical output power vs load resistance

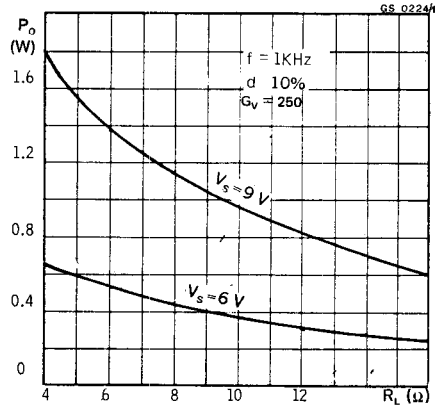


Fig. 3 - Typical distortion vs output power

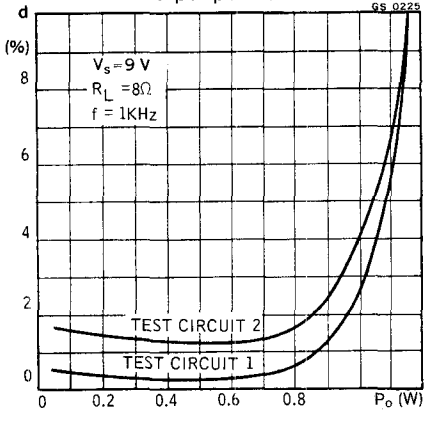


Fig. 4 - Typical distortion vs output power

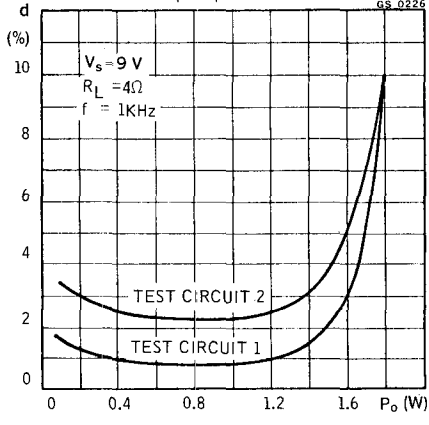


Fig. 5 - Typical relative frequency response

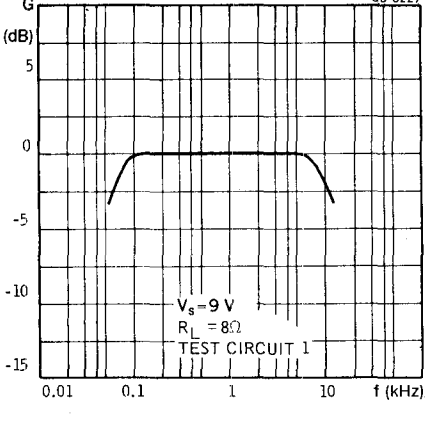


Fig. 6 - Typical relative frequency response

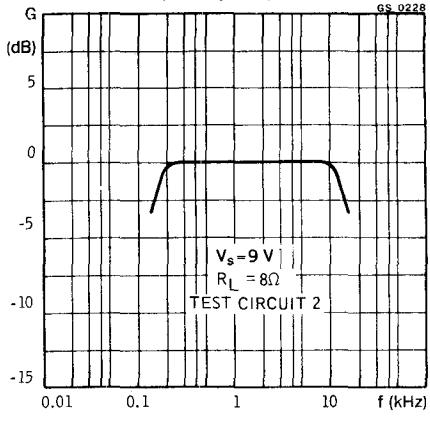
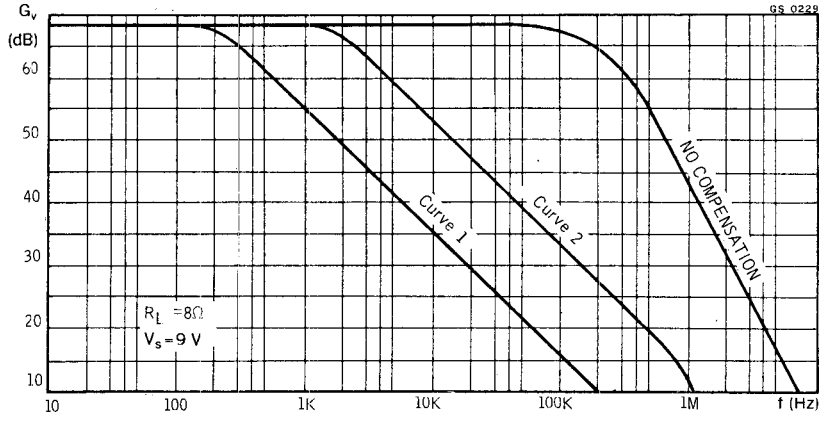


Fig. 7 - Typical voltage gain (open loop) vs frequency



Curve 1: TAA611A 55, C_{9-8} = 82pF C_{8-2} = 1.2 nF C_{10-1} = 0.1 μF
TAA611A 12, C_{3-4} = 82pF C_{4-12} = 1.2nF C_{1-14} = 0.1 μF
Curve 2: TAA611A 55, C_{9-8} = 56pF C_{8-2} = 150pF C_{10-1} = 0.1 μF
TAA611A 12, C_{3-4} = 56pF C_{4-12} = 150pF C_{1-14} = 0.1 μF

Fig. 8 - Typical output power vs input voltage

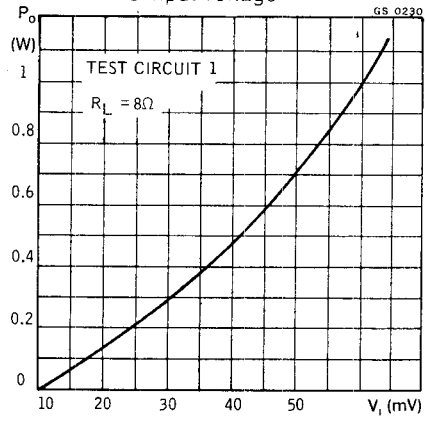


Fig. 9 - Typical output power vs input voltage

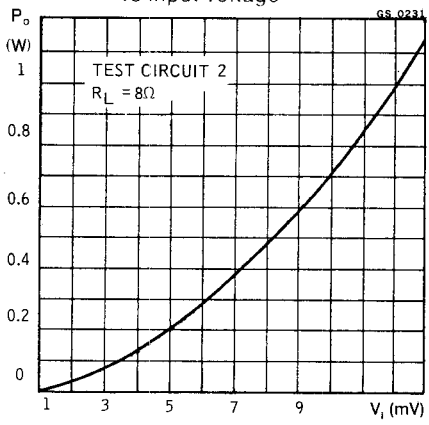


Fig. 10 - Typical power dissipation and efficiency vs output power

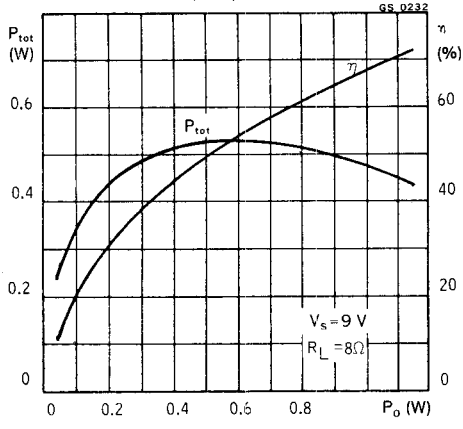


Fig. 11 - Typical power dissipation and efficiency vs output power

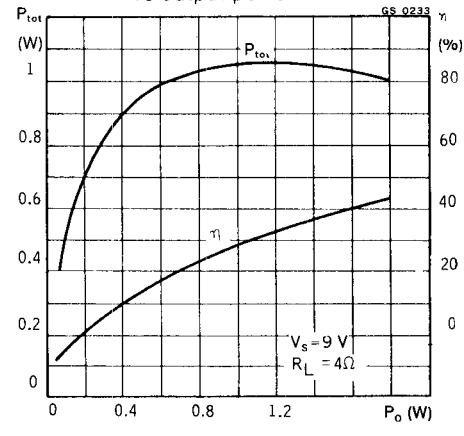


Fig. 12 - Typical power dissipation and efficiency vs output power

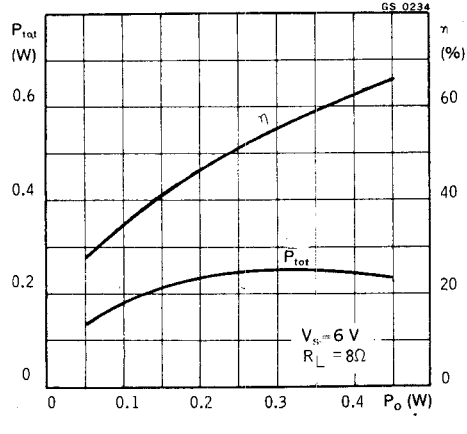


Fig. 13 - Typical power dissipation and efficiency vs output power

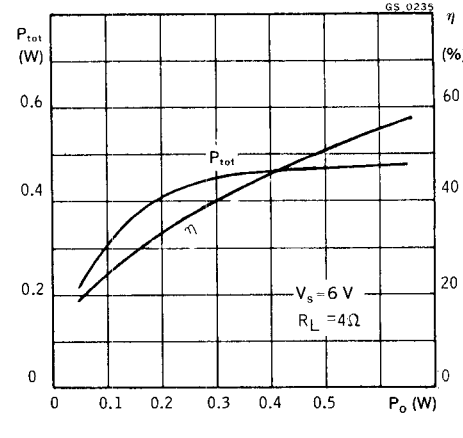


Fig. 14 - Typical drain current vs output power

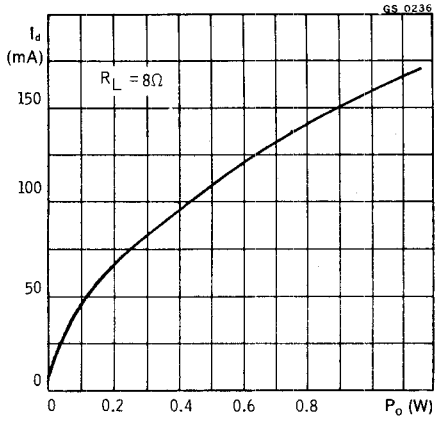


Fig. 15 - Maximum power dissipation vs load resistance

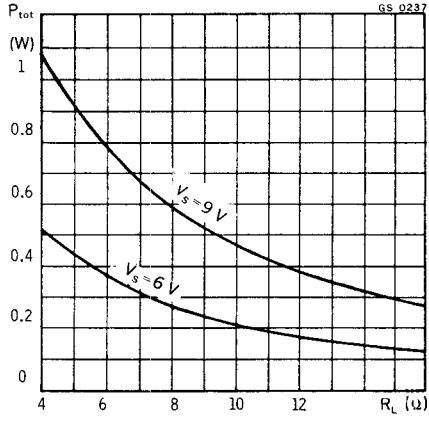


Fig. 16 - Power rating chart **(TAA 611 A55)**

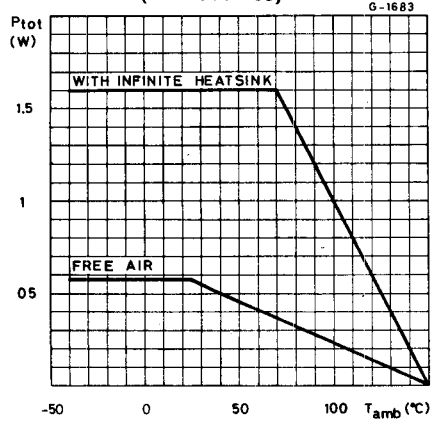


Fig. 17 - Power rating chart **(TAA 611 A12)**

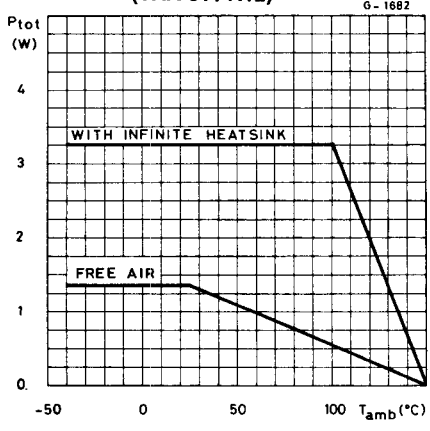


Fig. 18 - Typical quiescent drain current vs supply voltage

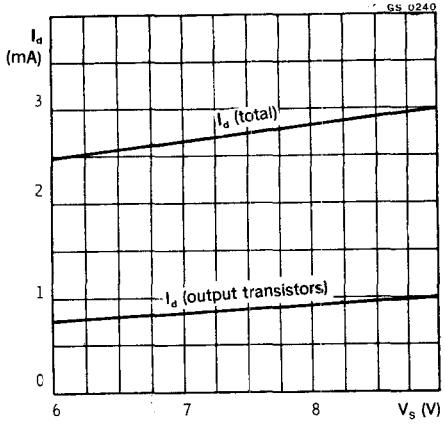


Fig. 19 - Typical quiescent drain current vs ambient temperature

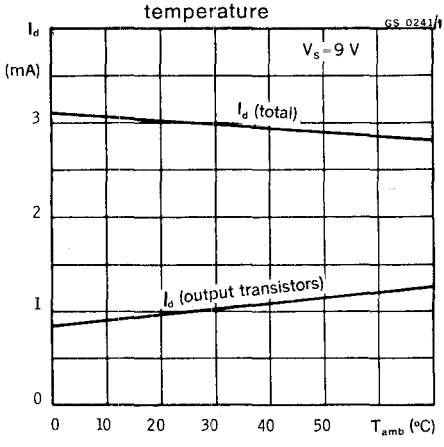
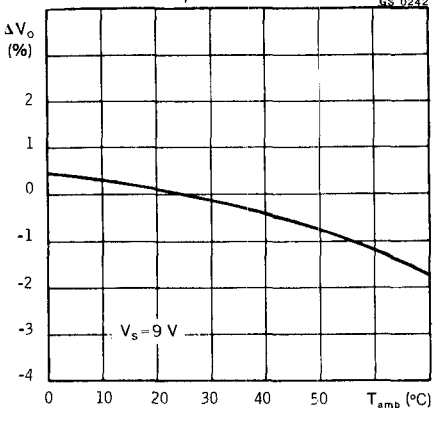


Fig. 20 - Typical quiescent output voltage vs ambient temperature



TYPICAL APPLICATIONS

Fig. 21 - Audio amplifier for record-player

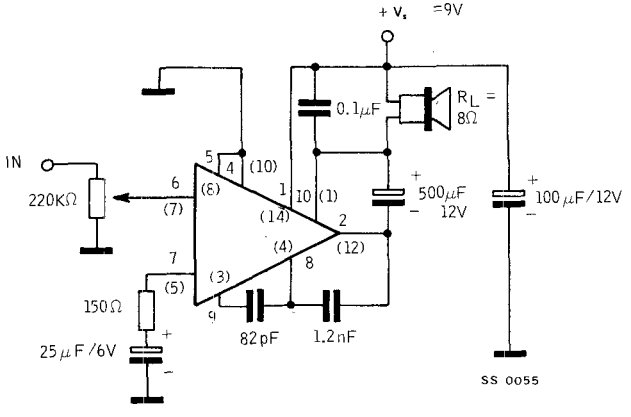
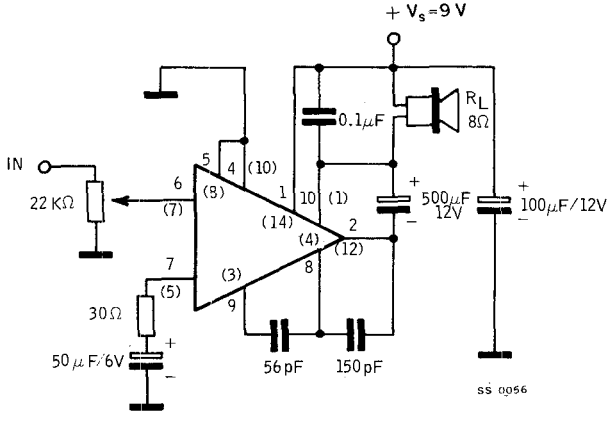


Fig. 22 - Audio amplifier for radio



The pin numbers in brackets refer to the TAA 611 A12 and those without brackets refer to the TAA 611 A55.