

# 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 611A 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	
$\rightarrow P_{rot}$	Power dissipation at $T_{amb} \leq 25^\circ\text{C}$	1.35 W	0.57 W
	at $T_{case} \leq 70^\circ\text{C}$	—	1.6 W
	at $T_{case} \leq 100^\circ\text{C}$	3.1 W	—
$\rightarrow T_{stg}, T_j$	Storage and junction temperature	-40 to 150 °C	

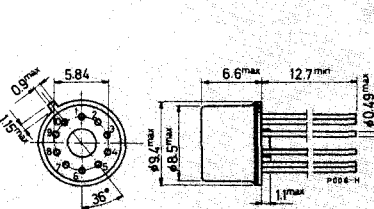
\* For  $V_s < 12\text{ V}$ ,  $V_{i\text{ max}} = V_s$

**ORDERING NUMBERS:** TAA 611 A55 (for TO-100 metal case)

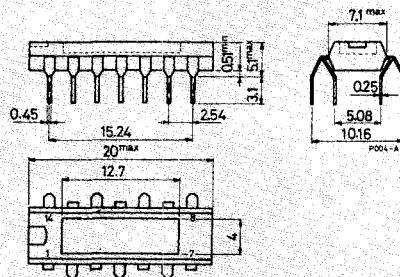
TAA 611 A12 (for quad in-line plastic package)

### MECHANICAL DATA

Dimensions in mm



TAA 611 A55

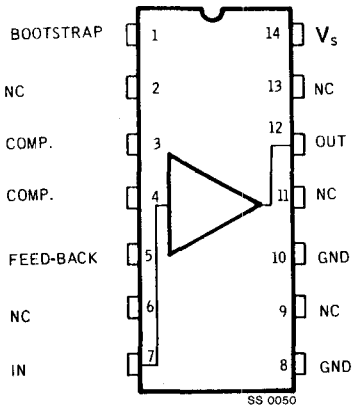


TAA 611 A12

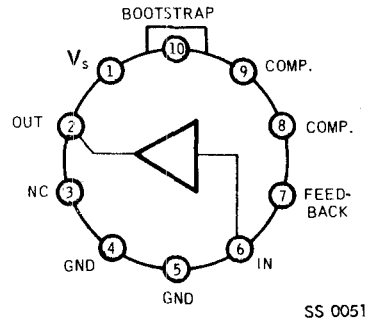
# TAA 611A

## CONNECTION DIAGRAMS

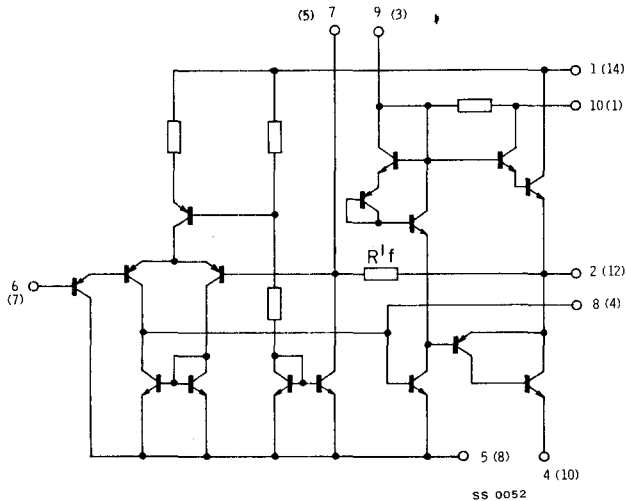
For TAA 611 A12



For TAA 611 A55



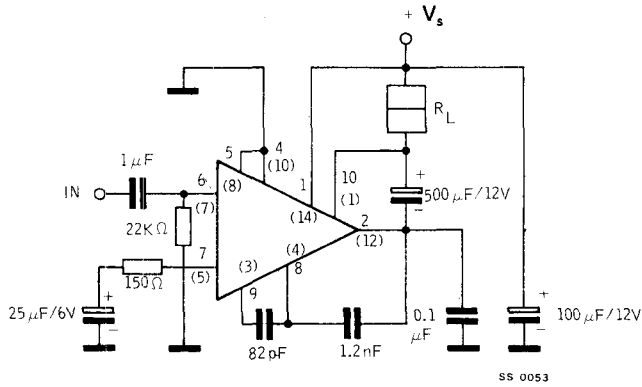
## SCHEMATIC DIAGRAM



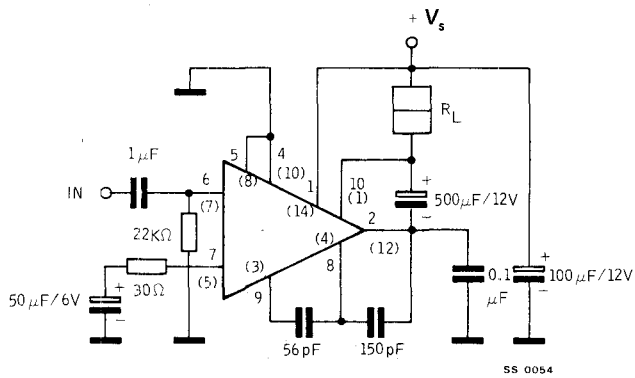
The pin numbers in brackets refer to the TAA 611 A12 and those without brackets refer to the TAA 611 A55.

## TEST CIRCUITS

Circuit No. 1 ( $G_v = 50$ )



Circuit No. 2 ( $G_v = 250$ )



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

## ELECTRICAL CHARACTERISTICS

( $T_{amb} = 25\text{°C}$ ,  $V_s = 9\text{ V}$ , 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	$P_o = 1.15\text{ W}$		170	mA	
→ $I_b$	Input bias current		0.1	0.8	μA	
→ $P_o^*$	Output power	$d = 2\%$ $f = 1\text{ kHz}$ $V_s = 6\text{ V}$ $R_L = 4\ \Omega$ $V_s = 6\text{ V}$ $R_L = 8\ \Omega$ $V_s = 9\text{ V}$ $R_L = 4\ \Omega$ $V_s = 9\text{ V}$ $R_L = 8\ \Omega$  $d = 10\%$ $f = 1\text{ kHz}$ $V_s = 6\text{ V}$ $R_L = 4\ \Omega$ $V_s = 6\text{ V}$ $R_L = 8\ \Omega$ $V_s = 9\text{ V}$ $R_L = 4\ \Omega$ $V_s = 9\text{ V}$ $R_L = 8\ \Omega$		0.50 0.35 1.4 0.9  0.65 0.45 1.8 0.85	1.15     1.15	W W W W  W W W W
$R_f'$	Internal feedback resistance (see schematic diagram)		7.5		kΩ	
→ $Z_i$	Input impedance (open loop)		5		MΩ	

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## ELECTRICAL CHARACTERISTICS (continued)

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

\* External heatsink not required except for TAA 611 A55 at  $V_s = 9 \text{ V}$ ,  $R_L = 4 \Omega$

Fig. 1 - Typical output power vs load resistance

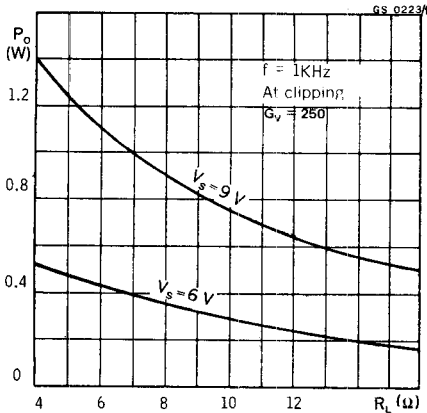
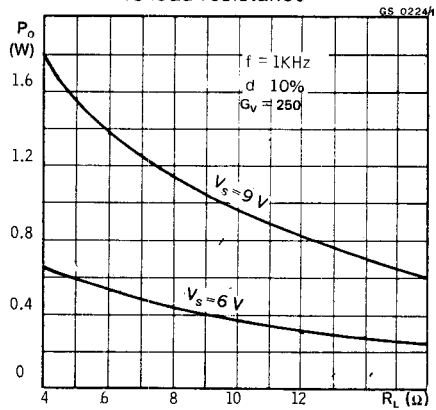


Fig. 2 - Typical output power vs load resistance



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Fig. 3 - Typical distortion vs output power

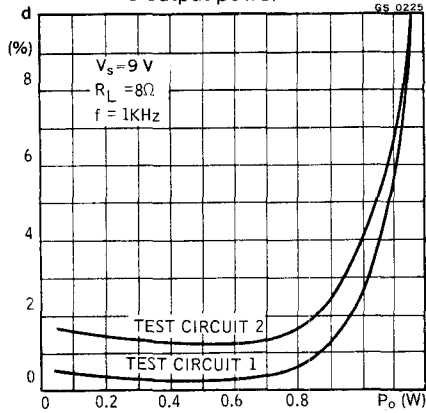


Fig. 4 - Typical distortion vs output power

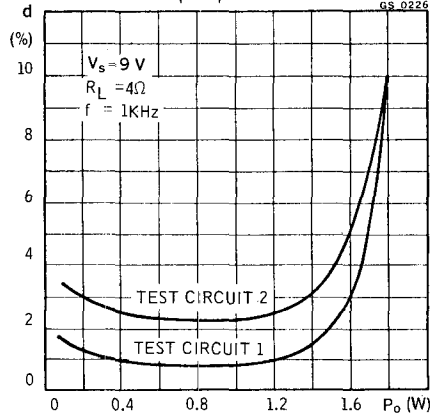


Fig. 5 - Typical relative frequency response

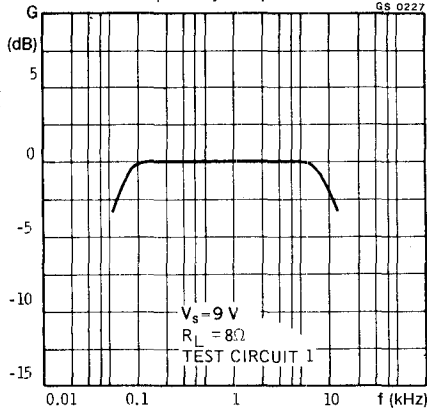


Fig. 6 - Typical relative frequency response

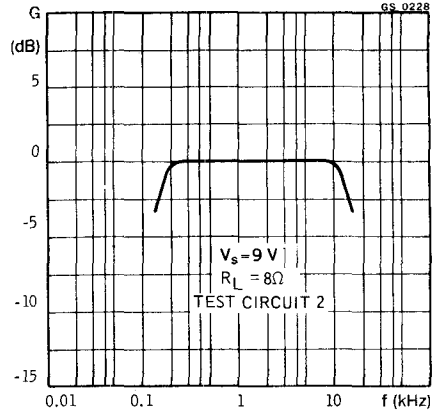
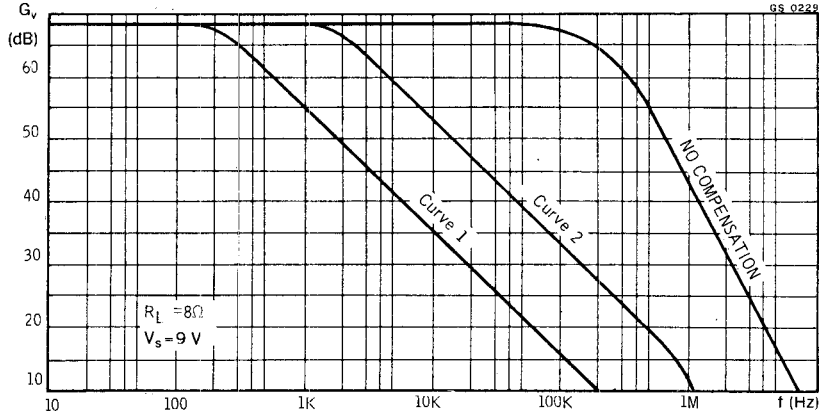


Fig. 7 - Typical voltage gain (open loop) vs frequency



Curve 1: TAA611 A 55, $C_{9-8} = 82\text{pF}$	$C_{8-2} = 1.2\text{nF}$	$C_{10-1} = 0.1\mu\text{F}$
TAA611 A 12, $C_{3-4} = 82\text{pF}$	$C_{4-12} = 1.2\text{nF}$	$C_{1-14} = 0.1\mu\text{F}$
Curve 2: TAA611 A 55, $C_{9-8} = 56\text{pF}$	$C_{8-2} = 150\text{pF}$	$C_{10-1} = 0.1\mu\text{F}$
TAA611 A 12, $C_{3-4} = 56\text{pF}$	$C_{4-12} = 150\text{pF}$	$C_{1-14} = 0.1\mu\text{F}$

Fig. 8 - Typical output power vs input voltage

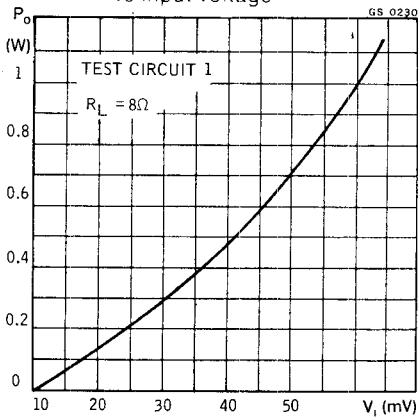
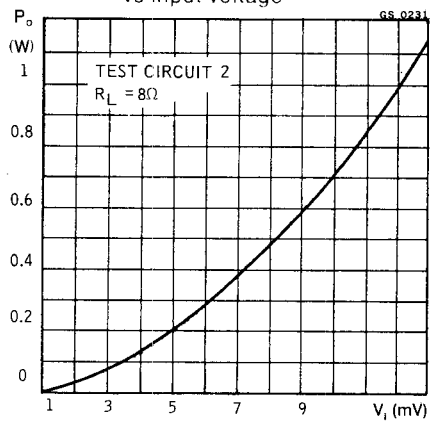


Fig. 9 - Typical output power vs input voltage



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

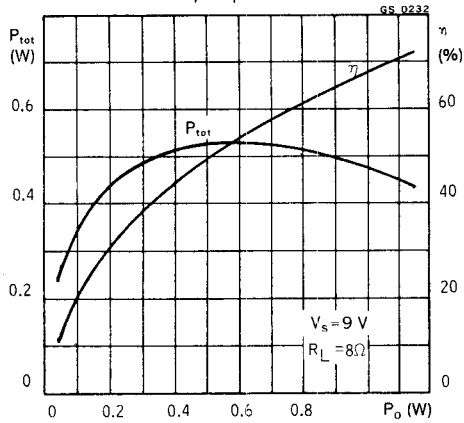


Fig. 11 - Typical power dissipation and efficiency vs output power

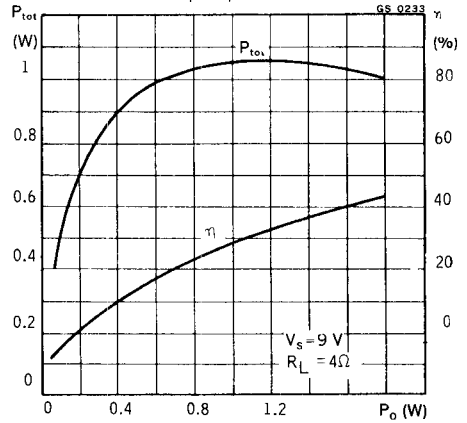


Fig. 12 - Typical power dissipation and efficiency vs output power

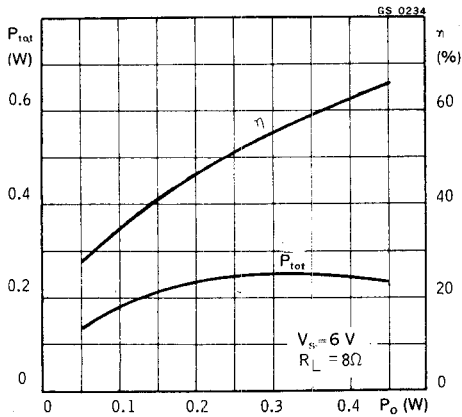


Fig. 13 - Typical power dissipation and efficiency vs output power

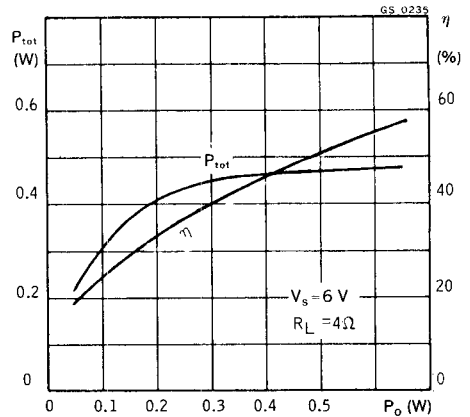




Fig. 14 - Typical drain current vs output power

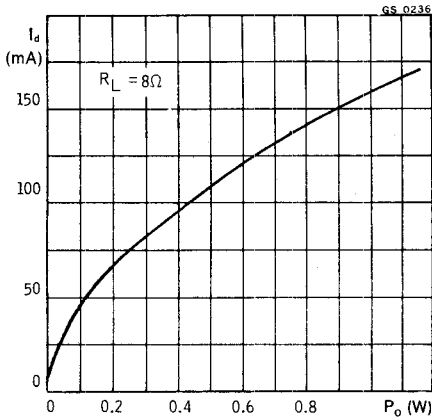


Fig. 15 - Maximum power dissipation vs load resistance

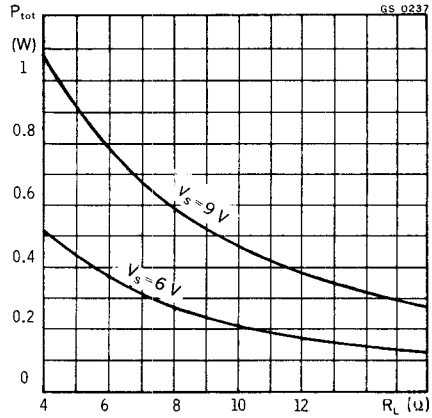


Fig. 16 - Power rating chart (TAA 611 A55)

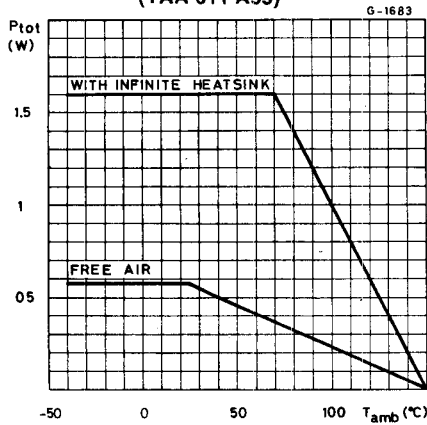
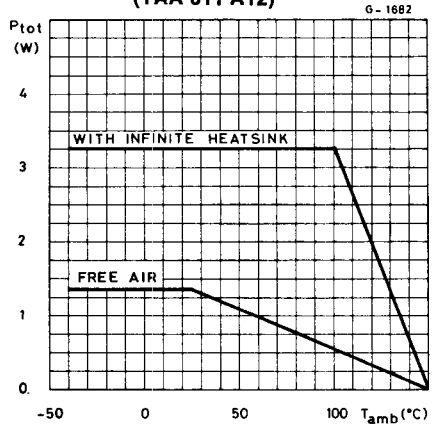


Fig. 17 - Power rating chart (TAA 611 A12)



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Fig. 18 - Typical quiescent drain current vs supply voltage

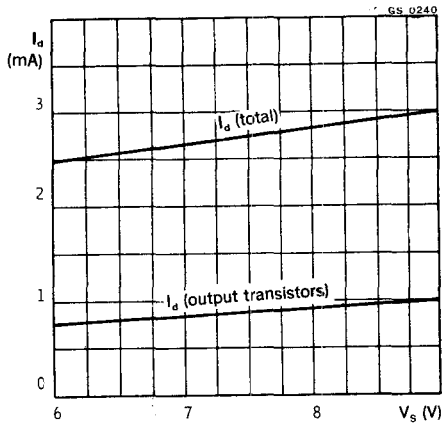


Fig. 19 - Typical quiescent drain current vs ambient temperature

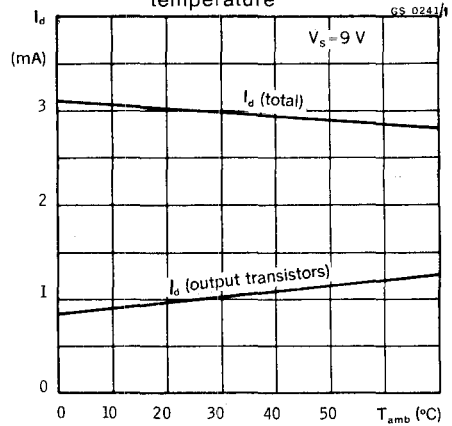
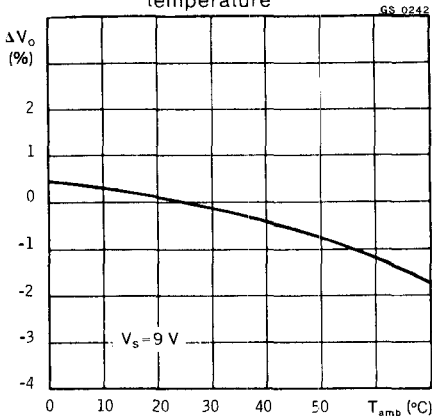


Fig. 20 - Typical quiescent output voltage vs ambient temperature



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## TYPICAL APPLICATIONS

Fig. 21 - Audio amplifier for record-player

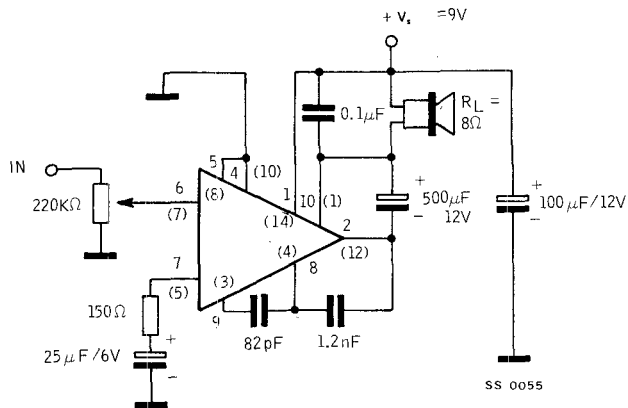
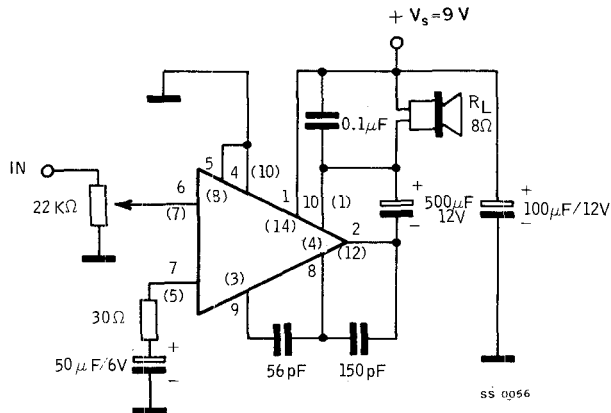


Fig. 22 - Audio amplifier for radio



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