LINEAR INTEGRATED CIRCUIT

FM IF AMPLIFIER-LIMITER AND DETECTOR

- HIGH GAIN
- FREQUENCY RANGE 5 kHz to 60 MHz
- THRESHOLD LIMITING VOLTAGE 100 μV (5.5 MHz)
- COINCIDENCE GATE DETECTOR
- AUDIO OUTPUT VOLTAGE 1.4 Vrms (d = 1%)

The TAA 661 is a monolithic integrated circuit in a 14-lead quad in-line plastic package or in a Jedec TO-100 metal case. Particularly designed for use in TV sound IF or FM IF amplifiers, it includes: a limiter amplifier, a coincidence detector and a voltage regulator. By using the TAA 661 the ratio detector transformer is eliminated and the audio signal is capable of driving an output amplifier directly. Detector alignment is obtained by adjusting a single coil which provides the quadrature signal to the coincidence gate detector.

ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage		15 V
P_{tot}	Power dissipation at $T_{amb} \leqslant 70\,^\circ$C for **TAA 661 A55**		350 mW
	for **TAA 661 BX2**		500 mW
T_{stg}	Storage temperature		-25 to 125 $^\circ$C
T_{op}	Operating temperature		0 to 70 $^\circ$C

ORDERING NUMBERS: TAA 661 A55 (for TO-100 metal case)
TAA 661 BX2 (for 14-lead quad in-line plastic package)

## MECHANICAL DATA   Dimensions in mm

TAA 661 A55
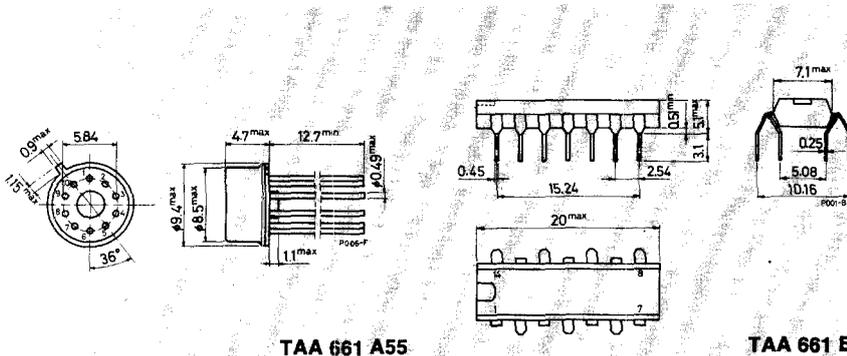
TAA 661 BX2

TAA 661

SCHEMATIC DIAGRAM

5 - 7 - Decoupling
(1) - (3) - Decoupling
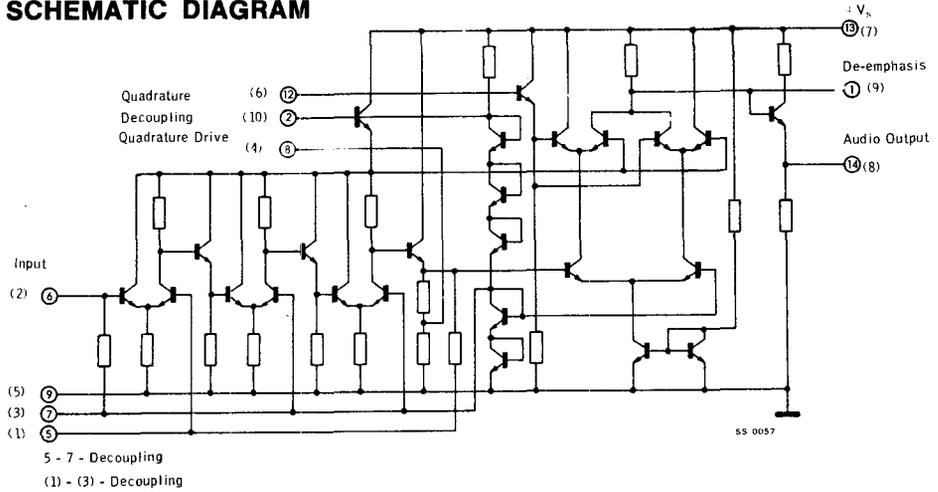
NOTE: the number in brackets refers to the TO-100 package

CONNECTION DIAGRAMS

For TAA 661 BX2

|	
DE-EMPHASIS 1	14 OUTPUT
DECOUPLING 2	13 + V$_S$
N.C. 3	12 PHASE-SHIFT
N.C. 4	11 N.C.
DECOUPLING 5	10 N.C.
INPUT 6	9 GROUND
DECOUPLING 7	8 PHASE-SHIFT

S-0357

For TAA 661 A55

S-0356
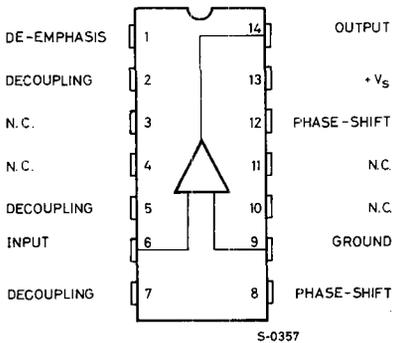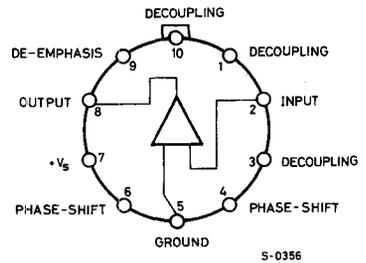
TEST CIRCUIT
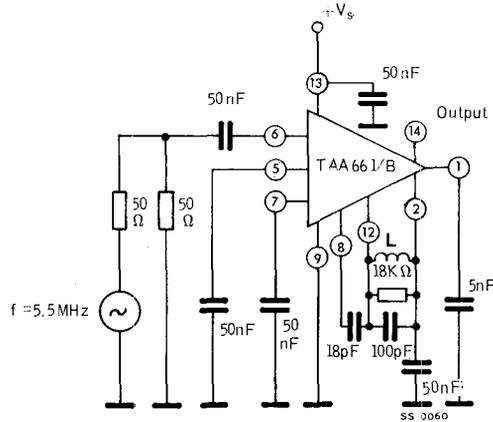
L = 35 turns of 0.16 mm nylon covered copper wire

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

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_d	Quiescent drain current	$V_s = 6\ V$	9		14	mA
		$V_s = 9\ V$	11		17	mA
		$V_s = 12\ V$	13		20	mA
$V_{i(threshold)}$	Input limiting voltage	$f\ \ = 5.5\ MHz$			100	μV
		$f\ \ = 10.7\ MHz$			230	μV
V_o	Recovered output voltage	$V_i = 10\ mV \quad f = 5.5\ MHz$ $f_m = 1\ kHz\ \Delta f = \pm 50\ kHz$				
		$V_s = 6\ V$		0.5		V_{rms}
		$V_s = 9\ V$		0.75		V_{rms}
		$V_s = 12\ V$		1.4		V_{rms}
d	Distortion	$V_s = 12\ V \quad V_i = 10\ mV$ $f\ \ = 5.5\ MHz \quad f_m = 1\ kHz$ $\Delta f = \pm 25\ kHz$		1		%

TAA 661

Parameter		Test conditions	Min.	Typ.	Max.	Unit
AMR	Amplitude modulation rejection	$V_s = 12\text{ V}$ $V_i = 10\text{ mV}$ $f = 5.5\text{ MHz}$ $f_m = 1\text{ kHz}$ $\Delta f = \pm 50\text{ kHz}$ $m = 0.3$	45			dB
R_i	Input resistance	$f = 5.5\text{ MHz}$ $f = 10.7\text{ MHz}$		2.5 2		$k\Omega$ $k\Omega$
C_i	Input capacitance	$V_s = 9\text{ V}$ $f = 5.5\text{ MHz}$		2.5		pF
Z_o	Output impedance	$V_s = 6\text{ V}$ $V_s = 9\text{ V}$ $V_s = 12\text{ V}$		200 150 100		Ω Ω Ω
R_L	Min. load impedance without clipping	$V_s = 6\text{ V}$ $V_s = 9\text{ V}$ $V_s = 12\text{ V}$		10 4 2		$k\Omega$ $k\Omega$ $k\Omega$
R_{5-6}	Resistance between pins 5 and 6 of the TAA 661 A55	$f = 5.5\text{ MHz}$ 　　　　$V_s = 6\text{ V}$ 　　　　$V_s = 9\text{ V}$ 　　　　$V_s = 12\text{ V}$		50 50 50		$k\Omega$ $k\Omega$ $k\Omega$
C_{5-6}	Capacitance between pins 5 and 6 of the TAA 661 A55	$f = 5.5\text{ MHz}$		3		pF

TAA 661

TAA 661 AS TV SOUND IF AMPLIFIER (outputs referred to the TAA 661 BX2)

Phase - shift network

SS 0063

PHASE SHIFT NETWORK

L_o = Constant without R_p

SS 0064
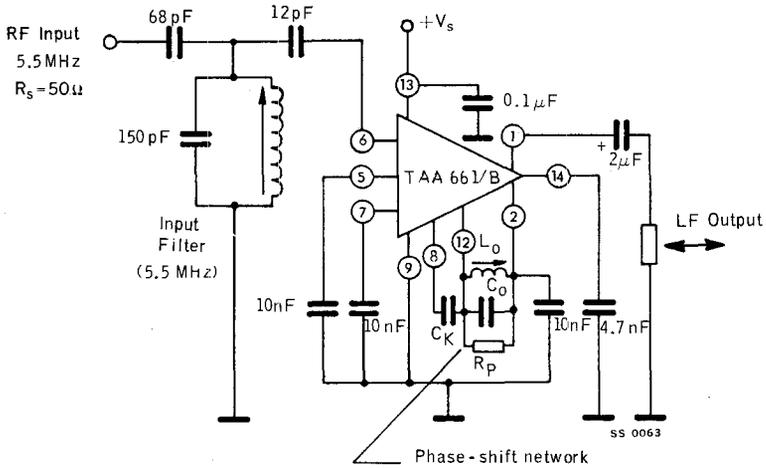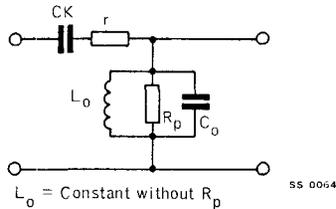
	a	b	c	d	e	f
Co/pF	120	100	56	33	15	—

TAA 661

Fig. 1 – Typical distortion

d
(%)

$V_s = 12$ V
$f = 5.5$ MHz
$\Delta f \pm 50$ kHz
$V_i = 10$ mV

4

3

2

1

0

a
b
c
d
e
f

10^0 2   4   6 8 10^1 2   **4** C_K (pF)

Fig. 2 – Typical amplitude
modulation rejection

GS 0244

60

AMR
(dB)

$V_s = 12$ V
$f = 5.5$ MHz
$V_i = 10$ mV

50

45

40

35

30

a,b

c
d
e

f

10^0 2   4 6 8 10^1 2 C_K (pF)
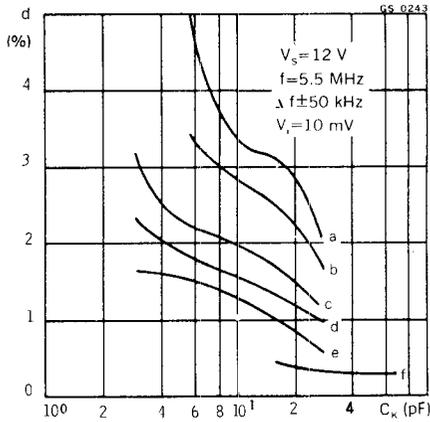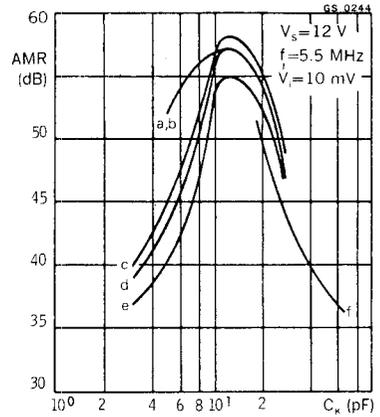
Fig. 3 – Typical amplitude modulation rejection vs input voltage

GS 0245

AMR
(dB)

50
45
40

30

20

10

0

Typical value

4
3
2
1

Curve	C_K/pF	C_O/pF	R_p/kΩ
1	12	33	–
2	12	100	–
3	18	100	27
4	18	68	–

10^{-1} 2   4   6 8 10^0 2   4   6 8 10^1 2   4   6 8 10^2 2 V_i (mV)
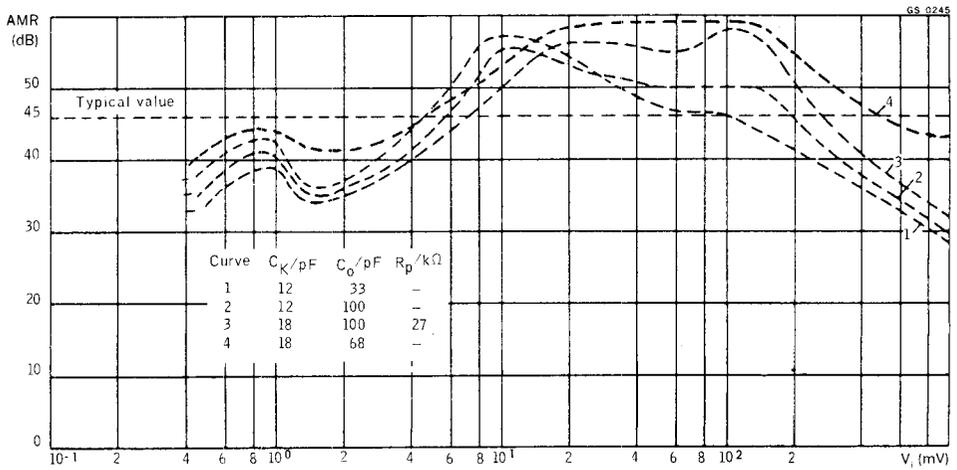
Fig. 4 - Typical recovered
output voltage
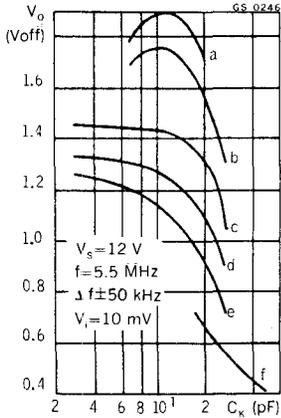
Fig. 5 - Phase response of the
TAA 661 wide band amplifier
measured at 25 °C
ambient temperature
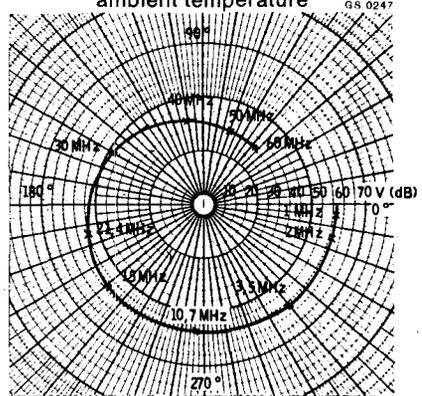
TYPICAL APPLICATION
TAA 661 in TV receiver.
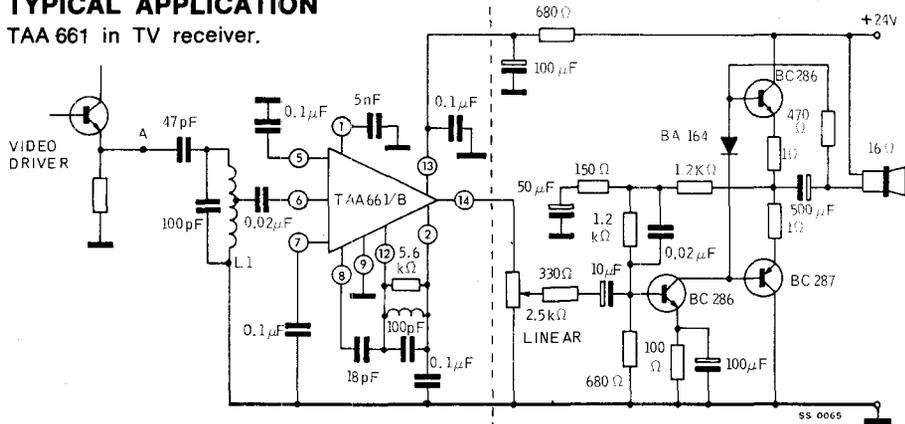
Notes:
— Pin numbers shown are for the TAA 661 BX2.
— L_1 = 24 turns of 0.16 mm nylon covered copper wired with tapping at turn 12 from ground.
— L_2 = 35 turns of 0.16 mm nylon covered copper wired.
— Neosid former K4/21.5/0.5 - Neosid core GW4 x 0.5 x 10FE10(Q_o=80).