

## LINEAR INTEGRATED CIRCUIT

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### TV SIGNAL PROCESSING CIRCUIT

The TBA 311 is a monolithic integrated circuit in a 16-lead dual in-line or quad in-line plastic package. It is intended for use as signal processing circuit for black and white and colour television sets.

The circuit is designed for receivers equipped with tubes or transistors in the deflection and video output stages, and with PNP or NPN transistors in the tuner and NPN in the IF amplifier.

Only signals with the negative modulation can be handled by the circuit. The circuit is protected against short circuit between video output and GND. The TBA 311 includes:

- VIDEO PREAMPLIFIER with EMITTER FOLLOWER OUTPUT
- GATED AGC for VIDEO IF AMPLIFIER and TUNER
- NOISE INVERTER CIRCUIT for GATING AGC and SYNC. PULSE SEPARATOR
- HORIZONTAL SYNC. PULSE SEPARATOR
- VERTICAL SYNC. PULSE SEPARATOR
- BLANKING FACILITY for the VIDEO AMPLIFIER

### ABSOLUTE MAXIMUM RATINGS

$V_s$	Supply voltage	16 V
$P_{tot}$	Power dissipation at $T_{amb} \leq 70^\circ\text{C}$	500 mW
$T_{stg}$	Storage temperature	-55 to 125 °C
$T_{op}$	Operating temperature	-25 to 70 °C

### ORDERING NUMBERS:

TBA 311 A22 (for 16-lead quad in-line plastic package)

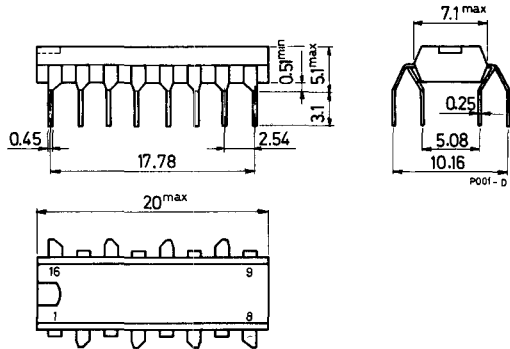
TBA 311 A17 (for 16-lead dual in-line plastic package)

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# TBA 311

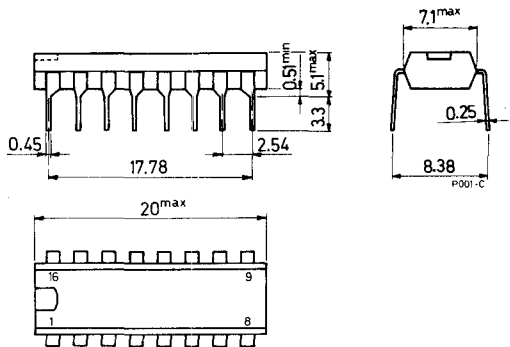
## MECHANICAL DATA (Dimensions in mm)

Quad in-line plastic package  
for TBA 311 A22



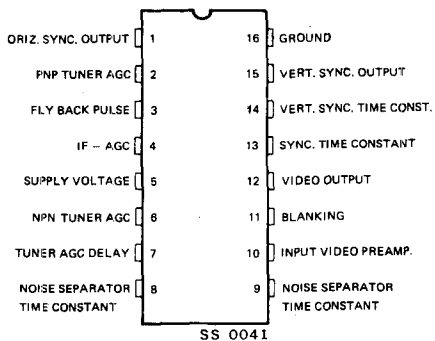
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Dual in-line plastic package  
for TBA 311 A17



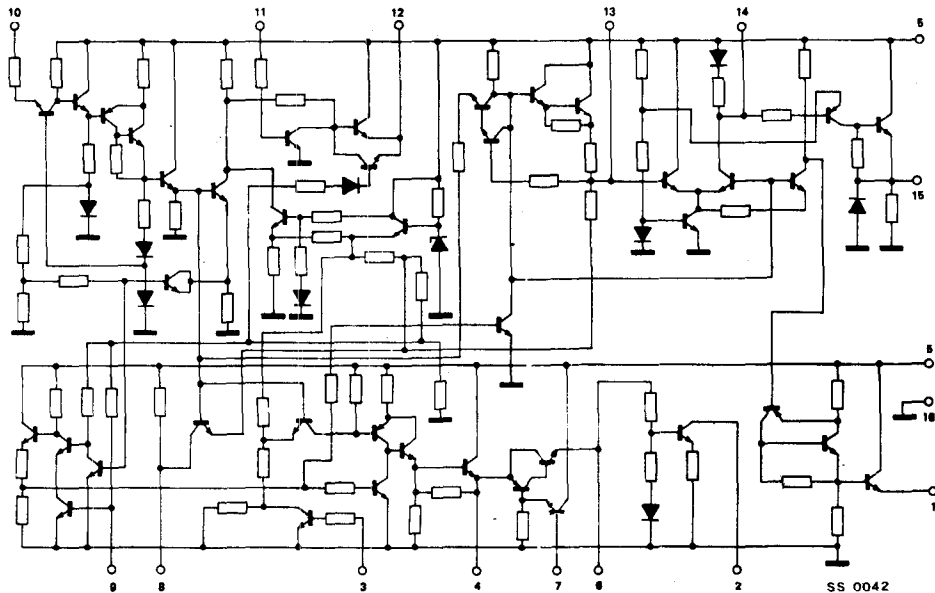
# TBA 311

## CONNECTION DIAGRAM



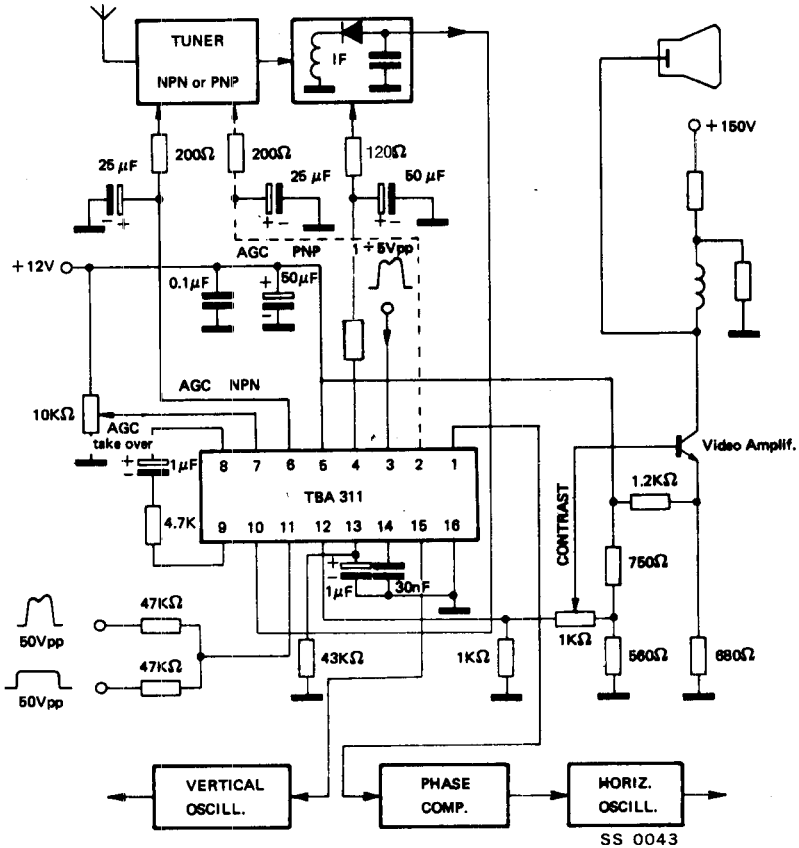
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## SCHEMATIC DIAGRAM



# TBA 311

## TEST CIRCUIT



# TBA 311

## ELECTRICAL CHARACTERISTICS

( $T_{amb} = 25\text{ }^{\circ}\text{C}$ ,  $V_s = 12\text{ V}$  unless otherwise specified, see also test circuit)

Parameter	Min.	Typ.	Max.	Unit
$I_d$ Quiescent drain current		14		mA

## VIDEO AMPLIFIER

$R_i$ Input resistance (pin 10)		2.7		k $\Omega$
$C_i$ Input capacitance (pin 10)		0.8		pF
B Bandwidth (-3 dB)		5		MHz
$G_v$ Voltage gain		9.5		dB
$V_i$ Peak to peak video input voltage (pin 10)	(1)	2		V
$V_o$ Peak to peak video output voltage (pin 12)	(2)	6		V
V Black level at the output (pin 12)	(3)	5		V
$I_o$ Available video peak output current	(4)	20		mA
$\frac{\Delta V_o}{\Delta T_{amb}}$ Video output voltage temperature drift	(5)	1		mV/ $^{\circ}\text{C}$
$\frac{\Delta V}{\Delta T_{amb}}$ Black level temperature drift		0.2		mV/ $^{\circ}\text{C}$
$\frac{\Delta V}{\Delta V_s}$ Black level drift at the output with supply voltage variation		0.5		V/V

## VIDEO BLANKING

$V_i$ Peak to peak input voltage (pin 11)		1	5	V
$R_i$ Input resistance (pin 11)		1		k $\Omega$

## AGC CIRCUIT

V Control voltage IF amplifier (pin 4)		0 to 7.5		V
V Control voltage tuner NPN (pin 6)		0 to 6.5		V
PNP (pin 2)		12 to 6		V

# TBA 311

## ELECTRICAL CHARACTERISTICS (continued)

Parameter	Min.	Typ.	Max.	Unit
$\frac{\Delta V_i}{\Delta V}$		10		%
V			5	V
$R_i$		2		k $\Omega$

## SYNC. CIRCUITS

$V_o$	Output voltage of horizontal sync. pulse (pin 1)	8.4	10	V
$Z_o$	Horizontal output impedance (pin 1)		100	$\Omega$
$V_o$	Output voltage of vertical sync. pulse (pin 15)	8.4	9.5	V
$Z_o$	Vertical output impedance (pin 15)		2	k $\Omega$

## NOTES:

- 1) Negative going video signal (no pre-bias needed for the detector).
- 2) Video signal with negative going sync. pulse.
- 3) Only valid if the video signal is in accordance with the CCIR standard.
- 4) The total load on pin 12 must be such that under nominal conditions  $I_o \leq 20$  mA.
- 5) Because the integrated circuit reaches 95% of its final working temperature in 100 seconds, the temperature variations to be considered are those caused by the slower rise in cabinet temperature and by changes in room temperature.
- 6) The TBA 311 may be operated unkeyed but then point 3 must be connected to the positive supply line via a resistor of suitable value (e.g. 10 k $\Omega$ ). However, the following consequences should be borne in mind:
  - The decoupling capacitors at the IF and tuner control points must be larger to prevent ripple voltages due to the vertical sync pulses. In consequence the AGC will not follow fast signal fluctuations (aircraft flutter).