

## LIMITER/AMPLIFIER

The TBA750C is a limiter/amplifier with f.m. detector, d.c. volume control and a.f. preamplifier. It is intended for 4,5 MHz, 5,5 MHz or 10,7 MHz. The limiter/amplifier is a four-stage differential amplifier that gives very good noise and interference suppression. The detector is of the balanced type. The d.c. volume control stage has excellent control characteristics with a control range of more than 80 dB. The a.f. preamplifier can drive a triode-pentode output stage or a class-A push-pull transistor output stage.

## QUICK REFERENCE DATA

Supply voltage	$V_{2-5}$	typ	12 V
Total current drain	$I_{tot}$	typ	34 mA
Frequency	$f_o$		5,5 MHz
Input voltage at start of limiting	$V_{i\ lim}$	typ	130 $\mu$ V
A.M. rejection at $V_i = 1\ mV$	$\alpha$	typ	45 dB
A.F. output voltage at $\Delta f = \pm 15\ kHz$ at pin 16	$V_{o(rms)}$	typ	2,7 V
D.C. volume control range		>	80 dB

## PACKAGES OUTLINES

TBA750C: 16-lead DIL; plastic (SOT-38).

TBA750CQ: 16-lead QIL; plastic (SOT-58).

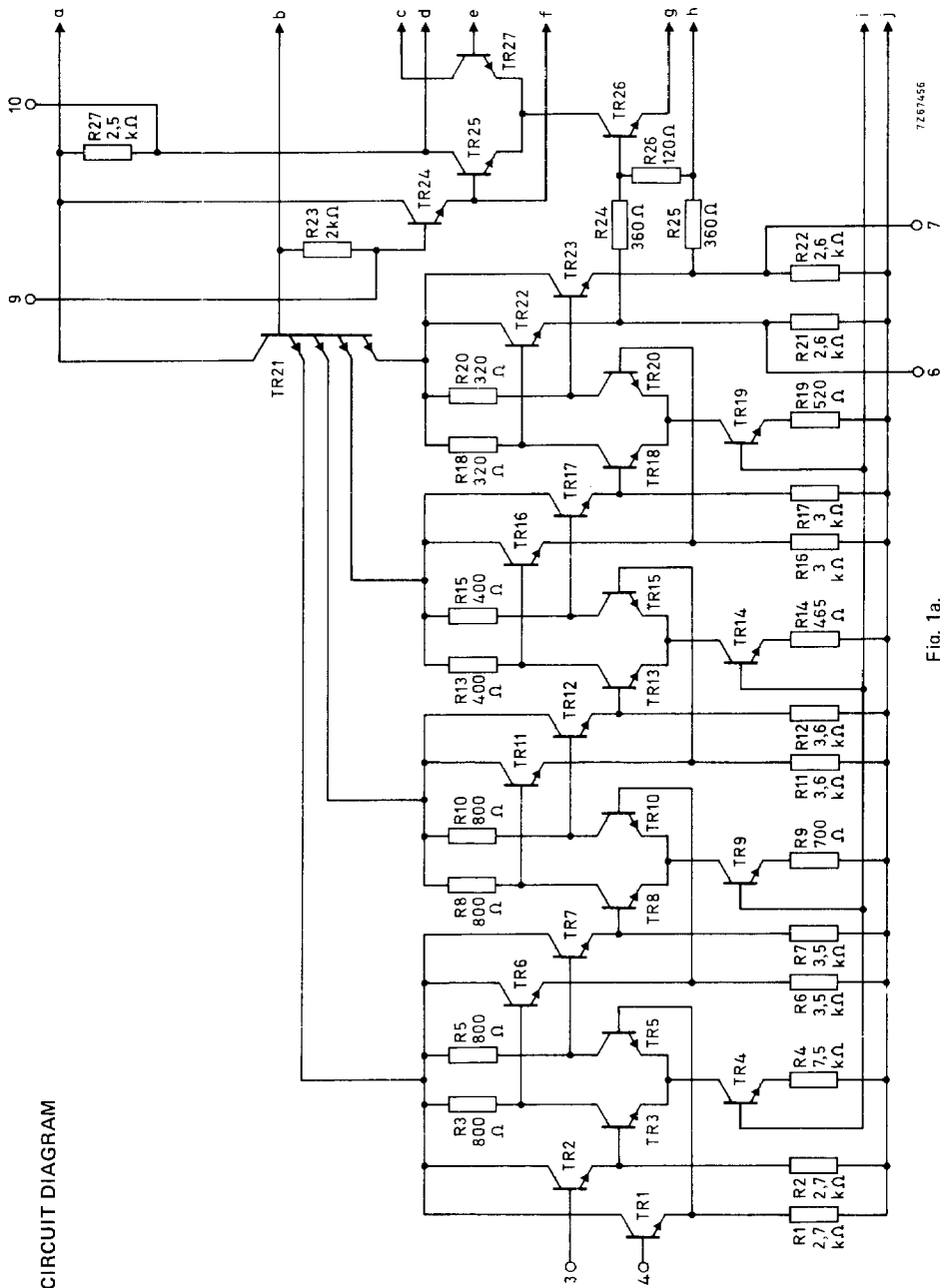


Fig. 1a.

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CIRCUIT DIAGRAM

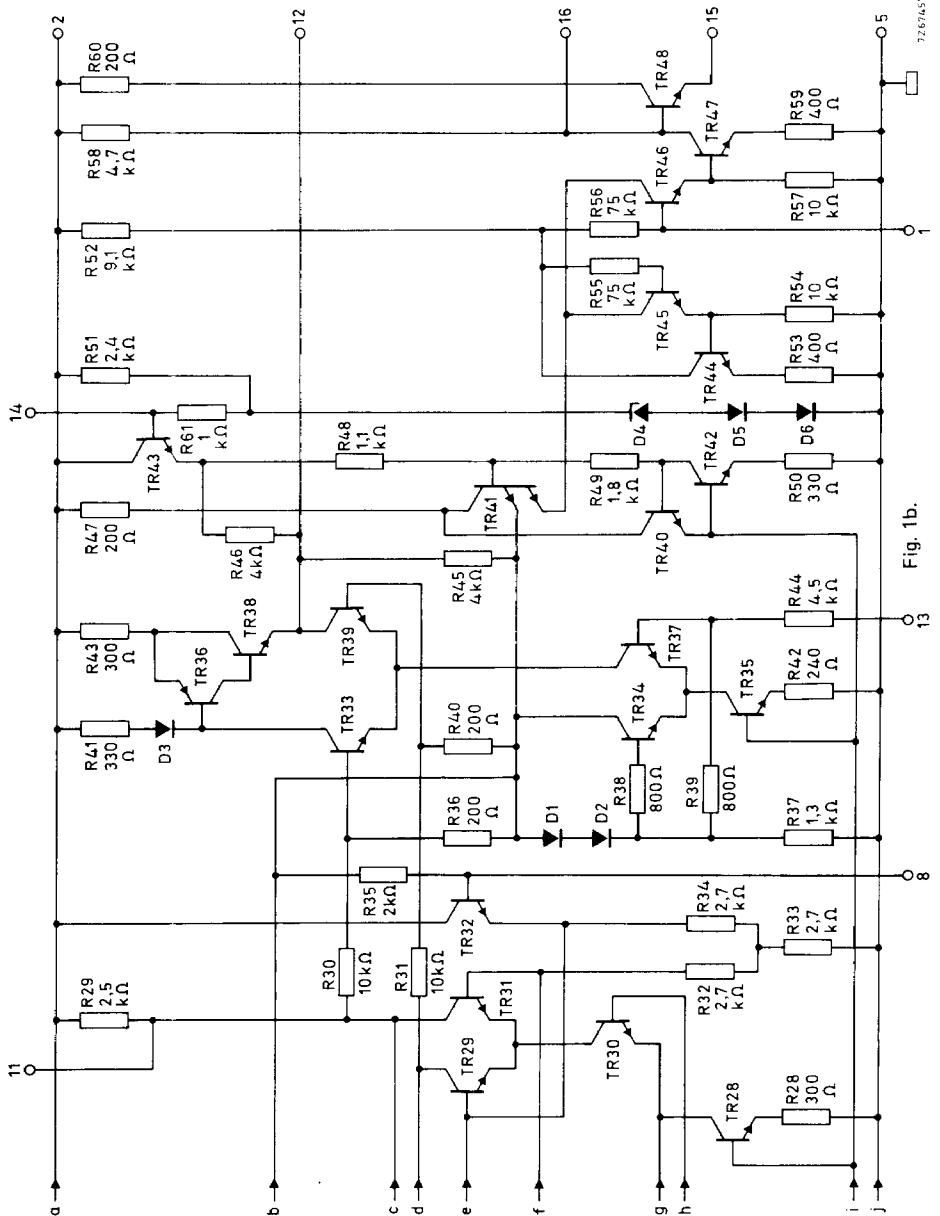


Fig. 1b.

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**RATINGS**

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Supply voltage	$V_{2-5}$	max	16 V *
Storage temperature	$T_{stg}$		-55 to + 125 °C
Operating ambient temperature	$T_{amb}$		-25 to + 55 °C
Power dissipation			

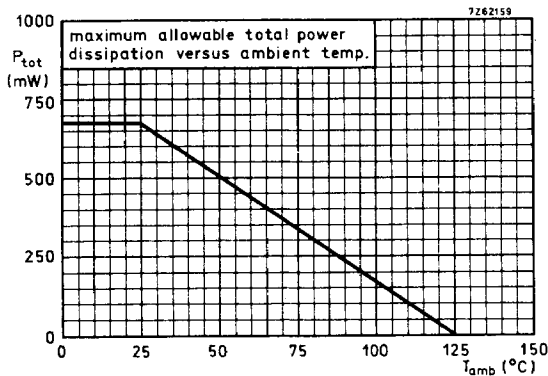


Fig. 2.

**CHARACTERISTICS**

Measured in test circuit Fig. 3.

Supply voltage range  
see also Fig. 4

$V_{2-5}$  10 to 25 V

Total current drain; pin 15 not connected

$I_2$  25 to 45 mA

Input limiting voltage at  $V_O = -3$  dB (r.m.s. value)

$V_i \text{ lim(rms)}$  typ 130  $\mu$ V

I.F. output voltage at pins 6 and 7  
(peak-to-peak value)

$V_{6-5(p-p)}$  } typ 380 mV  
 $V_{7-5(p-p)}$  }

A.M. rejection

$V_i = 1$  mV  
 $V_i = 10$  mV  
 $V_i = 100$  mV

$\alpha$  typ 45 dB  
 $\alpha$  typ 50 dB  
 $\alpha$  typ 55 dB

D.C. volume control range; see also Fig. 5

> 80 dB

A.F. preamplifier voltage gain  
pin 1 to pin 16

$G_V$  typ 10

Input resistance at pin 1

$R_i$   $\geq$  35 k $\Omega$

\* Allowable only if the dissipation in the IC is limited by means of a series resistor in the supply (see also Fig. 4).

CHARACTERISTICS (continued)

A.F. output voltages (r.m.s. values)

$\Delta f = \pm 15 \text{ kHz}; f_m = 1 \text{ kHz}$

$V_{10-5(rms)}$	}	typ	65 mV
$V_{11-5(rms)}$			
$V_{12-5(rms)}$	typ	250 mV	
$V_{16-5(rms)}$	typ	2,7 V	
$d_{tot}$	typ	3 %	
$d_{tot}$	typ	2,6 %	

Total harmonic distortion

at pin 12;  $\Delta f = 15 \text{ kHz}$

at pin 1 with respect to pin 16;  $V_O(rms) = 3 \text{ V}$

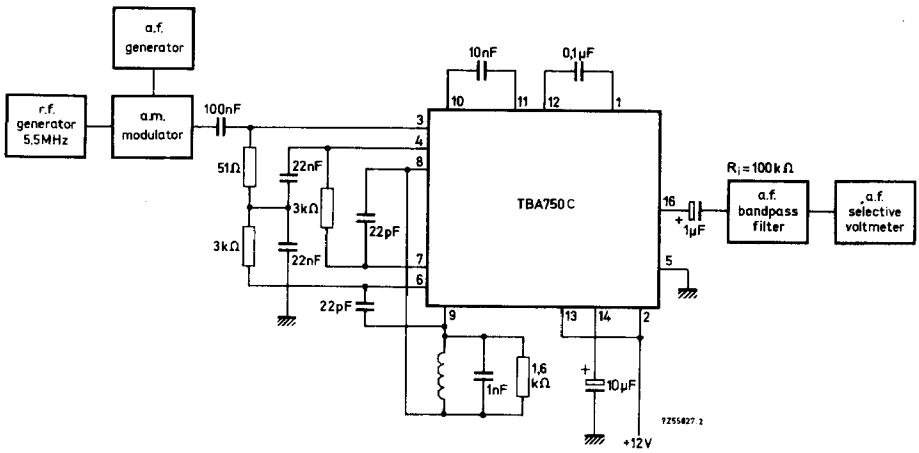


Fig.3 Test circuit; for f.m.:  $f_O = 5,5 \text{ MHz}; \Delta f = \pm 15 \text{ kHz}; f_m = 70 \text{ Hz}$ .  
For a.m.:  $m = 0,3; f_m = 1 \text{ kHz}$ .

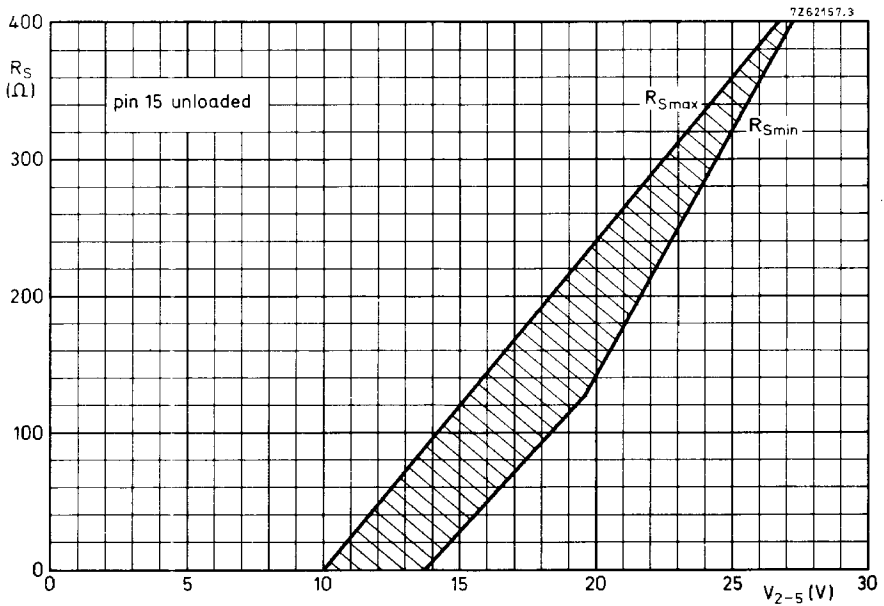


Fig. 4 Maximum and minimum values for the power supply series resistance ( $R_S$ ).

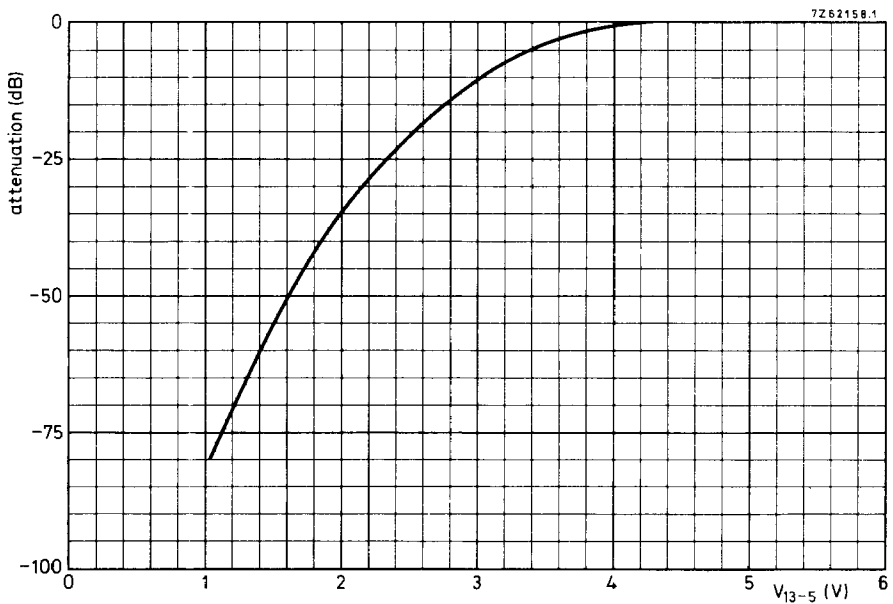


Fig. 5 Remote control characteristic.

APPLICATION INFORMATION at  $f = 5,5 \text{ MHz}$

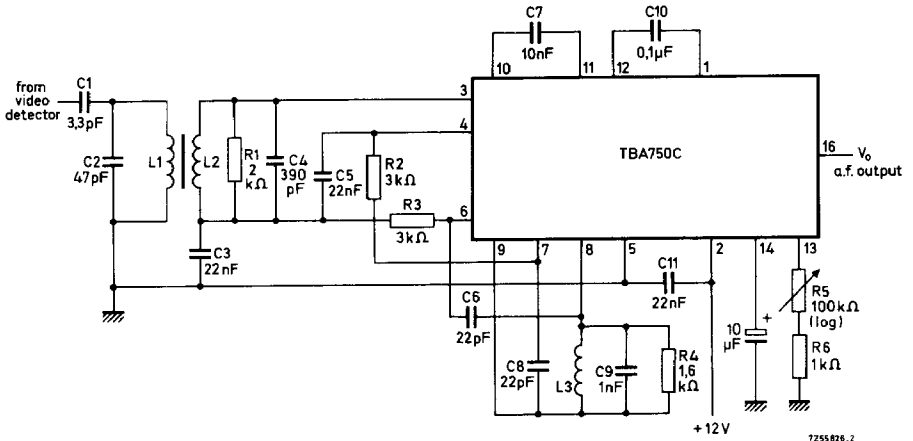


Fig. 6.

- L1 = 18 µH;  $Q_{L1} = 36$
- L2 = 2,2 µH;  $Q_{L2} = 21$
- L3 = 0,84 µH;  $Q_{L3} = 22$

Note

$Q_{L1}$ ,  $Q_{L2}$  and  $Q_{L3}$  are the loaded Q-factors.

The transfer ratio of the input bandpass filter:  $\frac{V_2}{V_1} = 0,54$ .

The peak-to-peak bandwidth of the detector S-curve is 300 kHz.