QUASI-SPLIT SOUND I.F. WITH SOUND DEMODULATOR — TDA2546A

GENERAL DESCRIPTION

The TDA2546A is a monolithic integrated circuit for quasi-split-sound processing, including 5.5 MHz demodulation, in television receivers.

Features

1st i.f. (V.C.: vision carrier plus S.C.: sound carrier)

- 3-stage gain controlled i.f. amplifier
- A.G.C. circuit
- Reference amplifier and limiter amplifier for vision carrier (V.C.) processing
- Linear multiplier for quadrature demodulation

2nd i.f. (5.5 MHz signal)

- 8-stage limiter amplifier
- Quadrature demodulator
- A.F. amplifier with de-emphasis
- AV switch

QUICK REFERENCE DATA

Supply voltage (pin 15)	$V_P = V_{15\text{-}16}$	typ.	12 V
Supply current (pin 15)	$I_P = I_{15}$	typ.	54 mA
Minimum i.f. vision carrier input voltage (r.m.s. value)	$V_{VC1\text{-}18(rms)}$	typ.	50 μV
Output voltage; 5.5 MHz (r.m.s. value)	$V_{14\text{-}16(rms)}$	typ.	100 mV
Output voltage; 5.742 MHz (r.m.s. value)	$V_{14\text{-}16(rms)}$	typ.	45 mV
I.F. control range	ΔG_v	min.	66 dB
Signal-to-weighted-noise ratio			
at 5.5 MHz	S + W/W	min.	53 dB
at 5.742 MHz	S + W/W	min.	51 dB
A.F. output voltage (r.m.s. value)	$V_{o6\text{-}16(rms)}$	typ.	0.6 V

PACKAGE OUTLINES

18-lead DIL; plastic (SOT-102CS).

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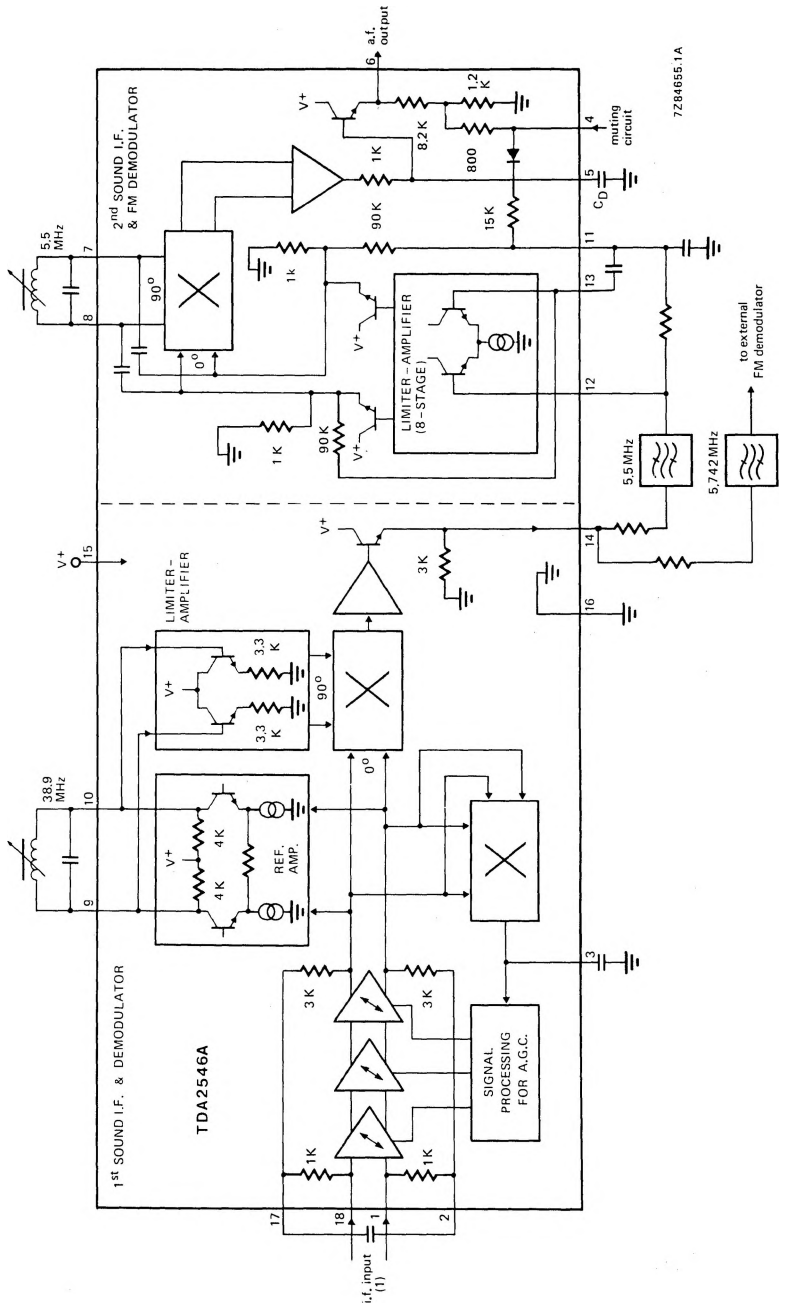


(1) I.F. signal: vision carrier (V.C.) and sound carrier (S.C.)

Fig. 1 Block diagram.

RATINGS

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

Supply voltage (pin 15)	$V_P = V_{15-16}$	max.		13.2	V
Input current (pin 4)	I_4	max.		5	mA
Storage temperature range	T_{stg}	−25	to	+150	°C
Operating ambient temperature range	T_{amb}	0	to	+70	°C

CHARACTERISTICS

$V_P = V_{15-16} = 12$ V; $T_{amb} = 25\ ^oC$; measured at $f_{VC} = 38.9$ MHz, $f_{SC1} = 33.4$ MHz, $f_{SC2} = 33.158$ MHz:

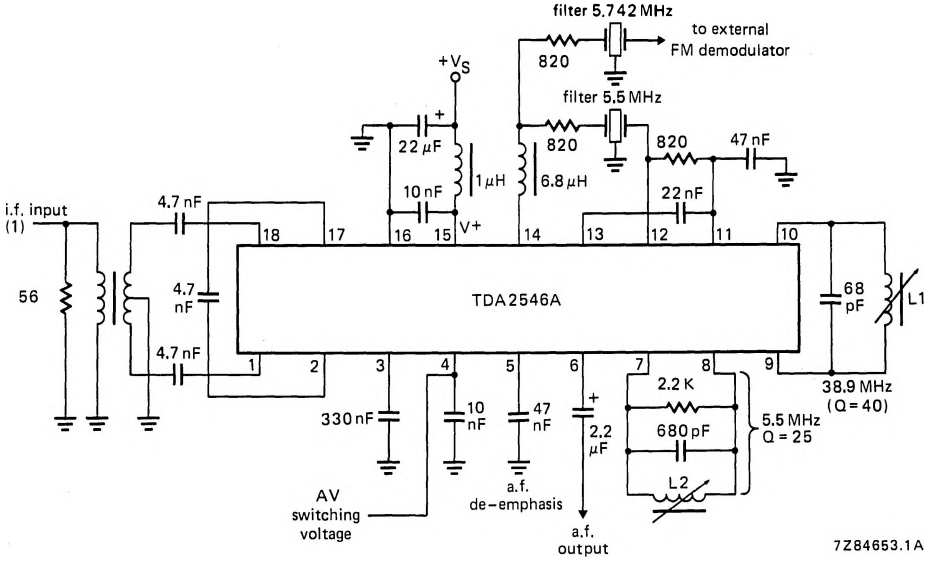
Vision carrier (V.C.) modulated with 2 T/20 T pulses, line-for-line alternating with white bars; modulation depth 100% (proportional to 10% residual carrier).

Sound carriers (S.C.1, S.C.2) modulated with f = 1 kHz and $\Delta f = \pm 30$ kHz.

Vision-to-sound carrier ratios are V.C./S.C.1 = 13 dB and V.C./S.C.2 = 20 dB.
Vision carrier amplitude (r.m.s. value) is $V_{VC} = 10$ mV.
For measuring circuit see Fig. 2; unless otherwise specified.

parameter	symbol	min.	typ.	max.	unit
Supply (pin 15)					
Supply voltage	$V_P = V_{15-16}$	10.8	12	13.2	V
Supply current	$I_P = I_{15}$	–	54	–	mA
I.F. amplifier					
Minimum input voltage (r.m.s. value) (intercarrier signals –3 dB)	$V_{VC1-18(rms)}$	–	50	–	μV
Maximum input voltage (r.m.s. value) (intercarrier signals + 1 dB)	$V_{VC1-18(rms)}$	–	100	–	mV
I.F. control range	ΔG_V	66	–	–	dB
Control voltage range	V_{3-16}	4	–	9	V
Input resistance	R_{1-18}	–	2	–	kΩ
Input capacitance	C_{1-18}	–	2	–	pF
Intercarrier generation					
Output voltage; 5.5 MHz (r.m.s. value)	$V_{14-16(rms)}$	–	100	–	mV
Output voltage; 5.742 MHz (r.m.s. value)	$V_{14-16(rms)}$	–	45	–	mV
D.C. output voltage	V_{14-16}	–	5.9	–	V
Allowable load resistance at the output	R_{14-16}	7	–	–	kΩ
Allowable output current	$-I_{14}$	–	–	1	mA
Frequency demodulator (measured at f = 5.5 MHz)					
Input voltage for start of limiting (r.m.s. value)	$V_{12-16(rms)}$	–	–	100	μV
Maximum input voltage (r.m.s. value)	$V_{12-16(rms)}$	–	200	–	mV
D.C. output voltage	$V_{11,12,13-16}$	–	2.2	–	V

parameter	symbol	min.	typ.	max.	unit
A.F. output voltage (r.m.s. value)	$V_{6\text{-}16(rms)}$	–	600	–	mV
D.C. output voltage	$V_{6\text{-}16}$	–	4	–	V
Allowable load resistance at the output	$R_{6\text{-}16}$	27	–	–	kΩ
Total harmonic distortion	THD	–	–	1	%
Internal de-emphasis resistance	$R_{i5\text{-}16}$	–	1	–	kΩ
Switching voltage (pin 4)					
for mute	$V_{4\text{-}16}$	9	–	–	V
for a.f. on	$V_{4\text{-}16}$	–	–	2.5	V
Intercarrier signal-to-noise (measured behind the FM demodulators)					
Signal-to-weighted-noise ratio according to CCIR 468-2, quasi-peak					
at 5.5 MHz	S + W/W	53	–	–	dB
at 5.742 MHz	S + W/W	51	–	–	dB
with black level (vision carrier modulated with sync pulses only)					
at 5.5 MHz	S + W/W	60	–	–	dB
at 5.742 MHz	S + W/W	58	–	–	dB



(1) I.F. signal: vision carrier (V.C.) and sound carrier (S.C.).

Fig. 2 Measuring circuit for TDA2546A.