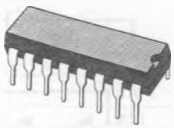
SGS-THOMSON
MICROELECTRONICS

TDA4445A
TDA4445B

SOUND IF AMPLIFIER

- QUADRATURE INTERCARRIER DEMODULATOR
- VERY HIGH INPUT SENSITIVITY
- GOOD SIGNAL TO NOISE RATIO
- FAST AVERAGING AGC
- IF AMPLIFIER CAN BE SWITCHED OFF FOR VTR MODE
- GOOD AM SUPPRESSION
- OUTPUT SIGNAL STABILIZED AGAINST SUPPLY VOLTAGE VARIATIONS
- VERY FEW EXTERNAL COMPONENTS



TDA4445A
TDA4445B
DIL16
(Plastic Package)

DESCRIPTION

TDA4445A :

Sound IF amplifier, with FM processing for quasi parallel sound system.

TDA4445B :

Sound IF amplifier, with FM processing and AM demodulator, for multi-standard sound TV appliances.

TDA4445B additionnal :

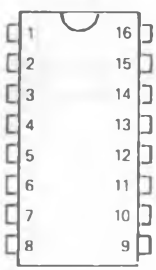
Bistandard applications (B/G and L)

No adjustment of the AM demodulator

Low AM distortion

PIN CONNECTIONS

TDA4445A	TDA4445B
1 - IF Input	1 - IF Input
2 - Not to be connected	2 - Not to be connected
3 - IF AGC Time Constant	3 - IF AGC Time Constant
4 - Not to be connected	4 - Not to be connected
5 - Not to be connected	5 - Averaging capacitor
6 - Not to be connected	6 - A.F. Sound Output
7 - Not to be connected	7 - Not to be connected
8 - Reference LC Network	8 - Reference LC Network
9 - Reference LC Network	9 - Reference LC Network
10 - Not to be connected	10 - Not to be connected
11 - Supply Voltage	11 - Supply Voltage
12 - FM modulated sound output	12 - FM modulated sound output
13 - Ground	13 - Ground
14 - Not to be connected	14 - Not to be connected
15 - Not to be connected	15 - Not to be connected
16 - IF Input	16 - IF Input



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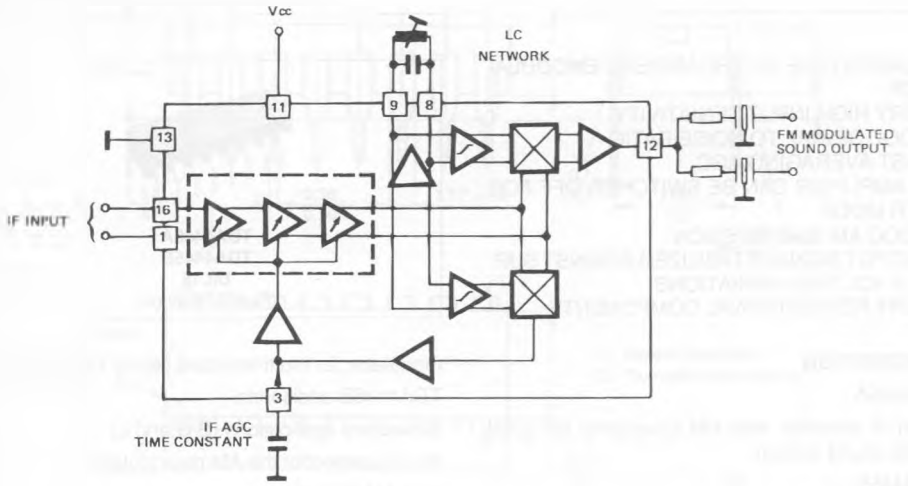
BLOCK DIAGRAMS

TDA4445A



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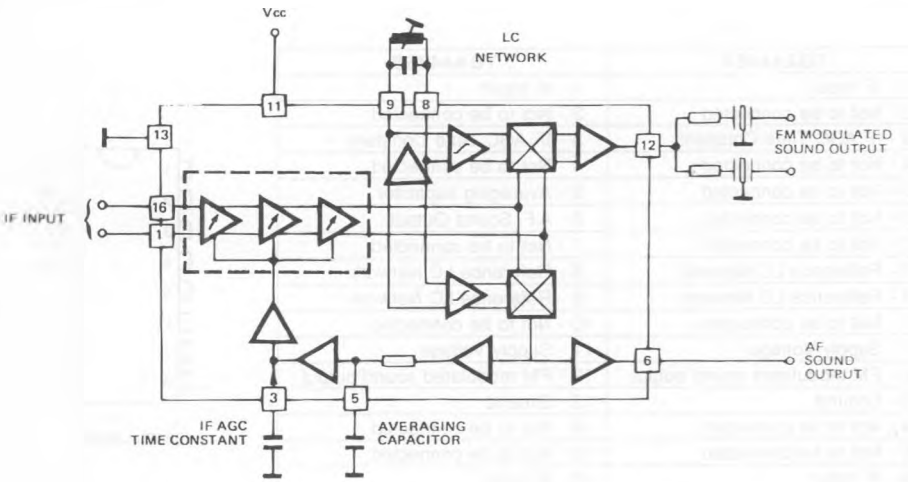
TDA4445B



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GENERAL DESCRIPTION

This circuit includes the following functions :

- Three symmetrical and gain controlled wide band amplifier stages, which are extremely stable by quasi DC coupling without feedback.
- Averaging AGC with discharge control circuit
- AGC voltage generator

Quasi parallel sound operation :

- High phase accuracy of the carrier signal processing, independent from AM
- Linear quadrature demodulator
- Sound-IF-amplifier stage with impedance converter

AM-Demodulation (only TDA4445B) :

- Carrier controlled demodulator
- Audio frequency stage with impedance converter
- Averaging low pass AGC

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage Range	Pin 11	15	V
I_{CC}	Supply Current	Pin 11	70	mA
V_{ext}	External Voltages	Pin 3	12	V
V_{ext}	TDA4445A/TDA4445B	Pin 12	8	V
V_{ext}	External Voltages	Pin 5	8	V
V_{ext}	only TDA4445B	Pin 6	8	V
P_{tot}	Power Dissipation		1	W
T_j	Junction Temperature		125	°C
T_{amb}	Ambient Temperature Range		0 to + 70	°C
T_{stg}	Storage Temperature Range		– 25 to + 125	°C

THERMAL DATA

$R_{th(j-a)}$	Junction-ambient Thermal Resistance	70	°C/W

ELECTRICAL OPERATING CHARACTERISTICS

T_{amb} = + 25°C, V_{CC} = 12V (unless otherwise specified)

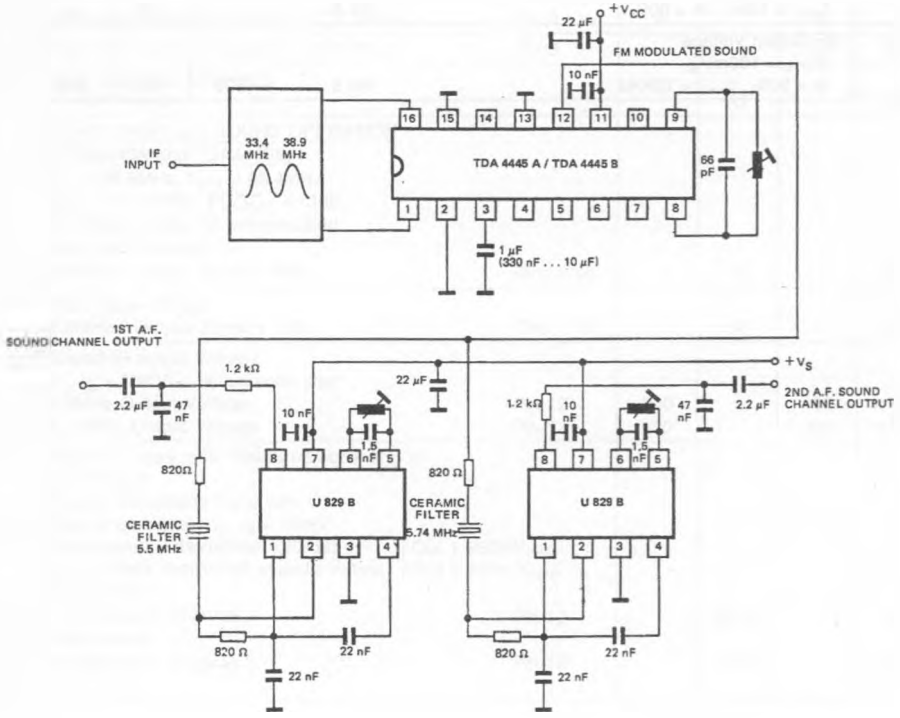
Symbol	Parameter		Min.	Typ.	Max.	Unit
	DC CHARACTERISTICS					
V_{CC}	Supply Voltage	Pin 13	10	12	15	V
I_{CC}	Supply Current	Pin 11		45	60	mA
	V_3 = 3.5V					
V_O	DC Output Voltage					
	V_3 = 3.5V	Pin 12	4.25	5	5.75	V
I	Output DC Current					
	V_3 = 3.5V V_{11} = 12V	Pin 12	1		2	mA
R	Input Impedance	Pins 1-16		2		KΩ
C		Pins 1-16		2		pF
V	Switch off Control Voltage for VTR Mode	Pin 3	9		10	V
I	Switch off Control Current for VTR Mode	Pin 3			150	µA
Δ_{GIF}	AGC CHARACTERISTICS					
	IF AGC Range			62		dB
	QUASI PARALLEL SOUND OPERATION					
	(TDA4445A and TDA4445B)					
	f_{PC} = 38.9MHz, f_{SC1} = 33.4MHz,					
	f_{SC2} = 33.16MHz, PC/SC_1 = 13dB,					
	PC/SC2 = 20dB, PC unmodulated					
V_I	Min. Input Voltage					
	5.5MHz - Output Signal - 3dB	Pins 1-16		70		μV_{eff}
V_I	Max. Input Voltage					
	5.5MHz - Output Signal + 1dB	Pins 1-16		90		mV_{eff}
	Sound-IF-output Voltage					
	V_{1-16} = 20mV_{eff} SC unmodulated					
V_O	5.5MHz Output Voltage	Pin 12	200		400	mV_{eff}
V_O	5.74MHz Output Voltage	Pin 12	100		300	mV_{eff}
	Signal to noise ratio measured according to CCIR 468-2					
	Picture Modulation Ratio 90%					
	Reference signal : V_{1-16} = 10mV,					
	FM-frequency deviation 30kHz → f_{mod} = 1kHz, measured at audio-output	Out 1 350mV_{RMS} / Out 2 350mV_{RMS}				
	Black Screen					
$\frac{S+N}{N}$	1. Channel/2. Channel	Pin 12		55/50		dB
	Grid Screen					
$\frac{S+N}{N}$	1. Channel/2. Channel	Pin 12		45/40		dB

ELECTRICAL OPERATING CHARACTERISTICS (cont'd)
T_{amb} = + 25°C, V_{CC} = 12V (unless otherwise specified)

Symbol	Parameter		Min.	Typ.	Max.	Unit
V_I	AM DEMODULATION (TDA4445B only) f_{SC} = 39.2MHz, m = 80%, f_{mod} = 1kHz Min. Input Voltage Audio Output Signal - 3dB	Pins 1-16		70		μV_{eff}
V_O	Output DC Voltage V_{1-16} = 10mV$_{eff}$ unmodulated	Pin 6	3.3		4.5	V
I	Output DC Current V_6 = 7.5V, V_3 = 3.5V	Pin 6	0.3		1.2	mA
d	Distortion V_{1-16} = 10mV f_{mod} = 1kHz , m = 80%	Pin 6		2.5	4	%
V_O	AF Output Voltage V_{1-16} = 100mV$_{eff}$ m = 50% , f_{mod} = 10KHz	Pin 6	500	700	900	mV$_{eff}$

TYPICAL APPLICATION

Figure 1 : Quasi Parallel Sound Operation.



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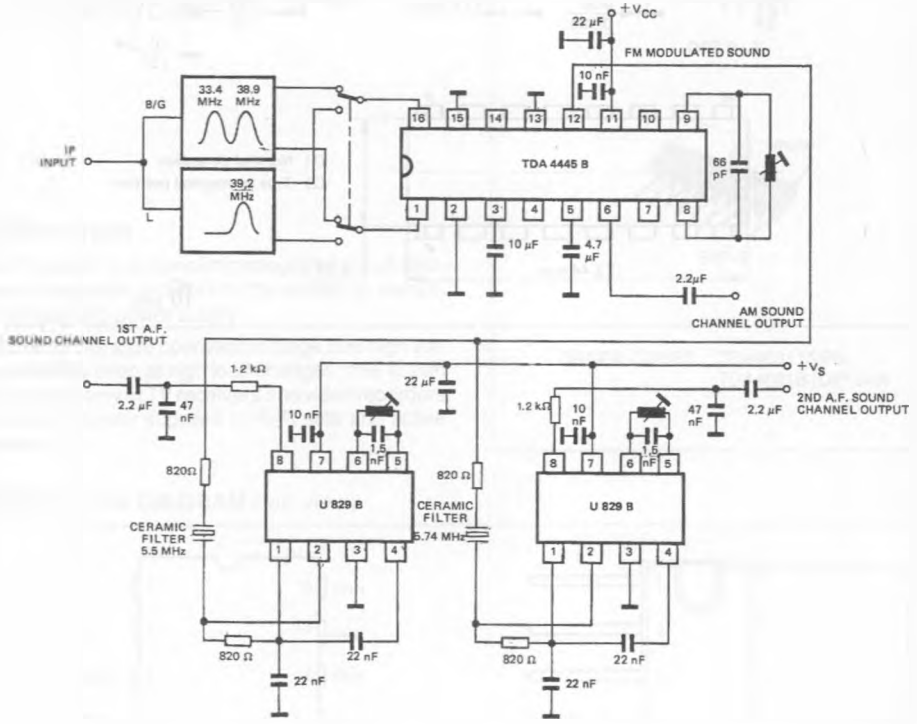
TYPICAL APPLICATION

Figure 2 : Bistandard Operation (FM stereo sound + AM sound).



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PACKAGE MECHANICAL DATA

16 PINS–PLASTIC DIP