

SOUND IF AMPLIFIER

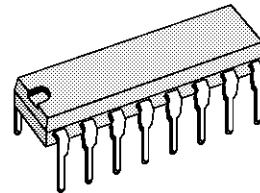
- QUADRATURE INTERCARRIER DEMODULATOR
- VERY HIGH INPUT SENSITIVITY
- GOOD SIGNAL TO NOISE RATIO
- FAST AVERAGING AGC
- IF AMPLIFIER CAN BE SWITCHED OFF FOR VTR MODE
- GOOD AM SUPPRESSION
- OUTPUT SIGNAL STABILIZED AGAINST SUPPLY VOLTAGE VARIATIONS
- VERY FEW EXTERNAL COMPONENTS

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.

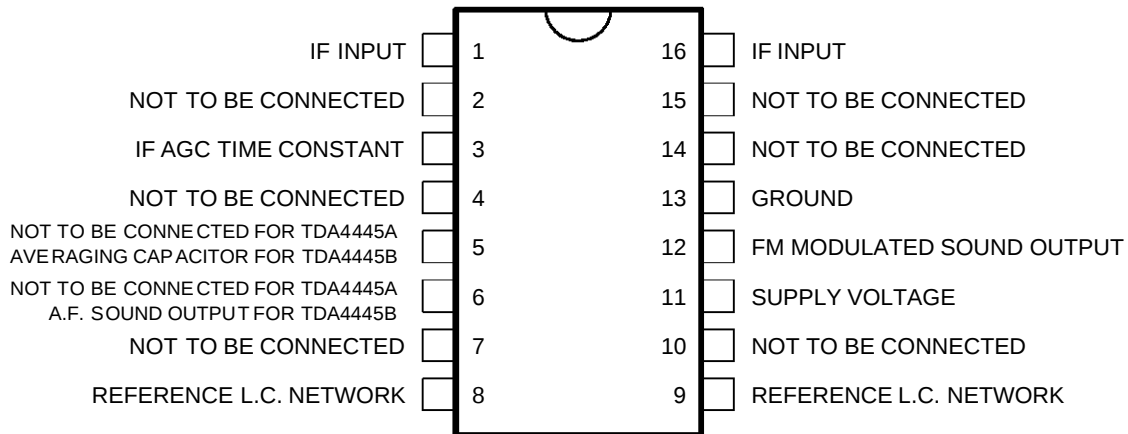
TDA4445B additionnal :
Bistandard applications (B/G and L)
No adjustment of the AM demodulator
Low AM distortion



DIP16
(Plastic Package)

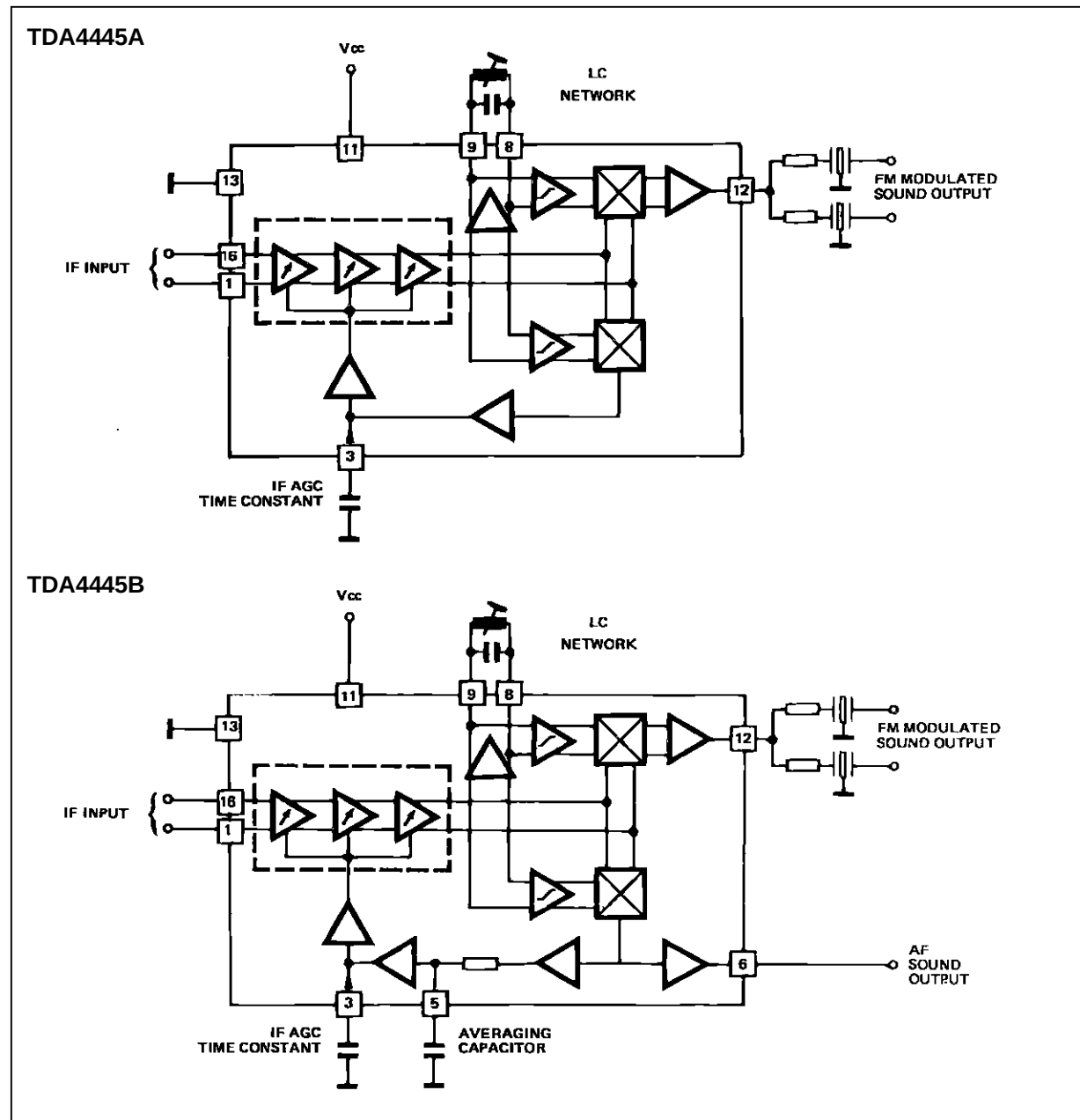
ORDER CODE : TDA4445A - TDA4445B

PIN CONNECTIONS



4445-01EPS

BLOCK DIAGRAMS



4445-02.EPS / 4445-03.EPS

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 Pin 12	12 8	V V
V_{ext}	External Voltages TDA4445A - TDA4445B TDA4445B Pin 5 Pin 6	8 8	V V
P_{tot}	Power Dissipation	1	W
T_j	Junction Temperature	125	°C
T_{amb}	Ambient Temperature Range	0, + 70	°C
T_{stg}	Storage Temperature Range	- 25, + 125	°C

4445-01.TBL

THERMAL DATA

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

4445-02.TBL

ELECTRICAL OPERATING CHARACTERISTICS

 $T_{amb} = + 25^{\circ}\text{C}$, $V_{CC} = 12\text{V}$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
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DC CHARACTERISTICS

V_{CC}	Supply Voltage Pin 13	10	12	15	V
I_{CC}	Supply Current ($V_3 = 3.5\text{V}$) Pin 11		45	60	mA
V_O	DC Output Voltage ($V_3 = 3.5\text{V}$) Pin 12	4.25	5	5.75	V
I	Output DC Current ($V_3 = 3.5\text{V}$, $V_{11} = 12\text{V}$) Pin 12	1		2	mA
R	Input Impedance Pins 1-16		2		k Ω
C	Input Impedance 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

AGC CHARACTERISTICS

Δ_{GIF}	IF AGC Range		62		dB
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QUASI PARALLEL SOUND OPERATION

 $(f_{PC} = 38.9\text{MHz}$, $f_{SC1} = 33.4\text{MHz}$, $f_{SC2} = 33.16\text{MHz}$, $PC/SC_1 = 13\text{dB}$, $PC/SC_2 = 20\text{dB}$, 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}
V_O	Sound-IF-output Voltage ($V_{1-16} = 20\text{mV}_{eff}$ SC unmodulated) 5.5MHz Output Voltage 5.74MHz Output Voltage Pin 12	200 100		400 300	mV_{eff} mV_{eff}
$\frac{S+N}{N}$	Signal to noise ratio measured according to CCIR 468-2 Picture Modulation Ratio 90%, Reference signal ($V_{1-16} = 10\text{mV}$), FM-frequency deviation 30kHz $\rightarrow$ Out 1 350mVRMS $f_{mod} = 1\text{kHz}$, measured at audio-output Out 2 350mVRMS Pin 12				
	Black Screen (1. Channel/2. Channel) Grid Screen (1. Channel/2. Channel)		55/50 45/40		dB dB

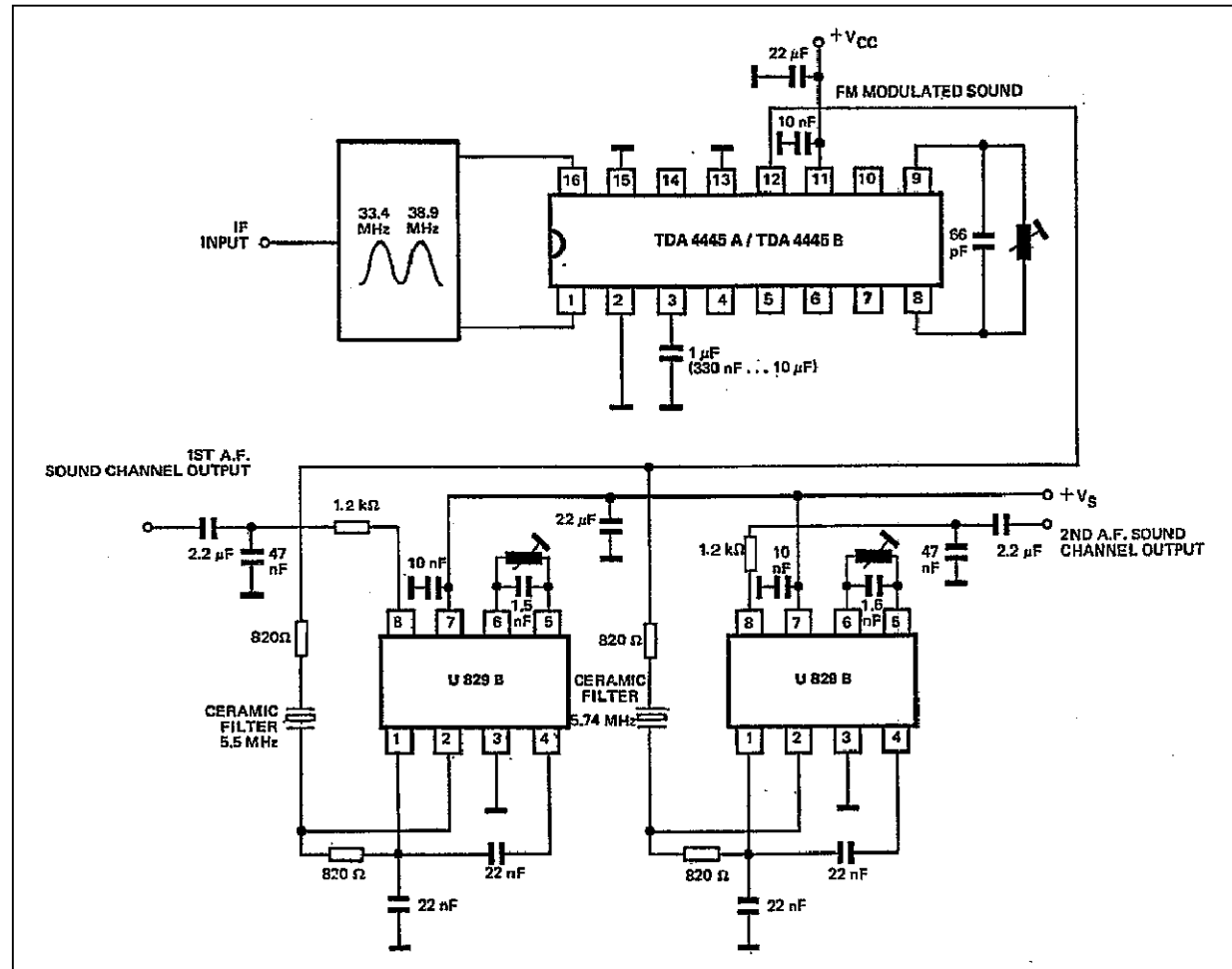
AM DEMODULATION (TDA4445B only) ($f_{SC} = 39.2\text{MHz}$, $m = 80\%$, $f_{mod} = 1\text{kHz}$)

V_i	Min. Input Voltage (Audio Output Signal - 3dB) Pins 1-16		70		μV_{eff}
V_O	Output DC Voltage ($V_{1-16} = 10\text{mV}_{eff}$ unmodulated) Pin 6	3.3		4.5	V
I	Output DC Current ($V_6 = 7.5\text{V}$, $V_3 = 3.5\text{V}$) Pin 6	0.3		1.2	mA
d	Distortion ($V_{1-16} = 10\text{mV}$, $f_{mod} = 1\text{kHz}$, $m = 80\%$) Pin 6		2.5	4	%
V_O	AF Output Voltage ($V_{1-16} = 100\text{mV}_{eff}$, $m = 50\%$, $f_{mod} = 10\text{kHz}$) Pin 6	500	700	900	mV_{eff}

4445-03.TBL

TYPICAL APPLICATION

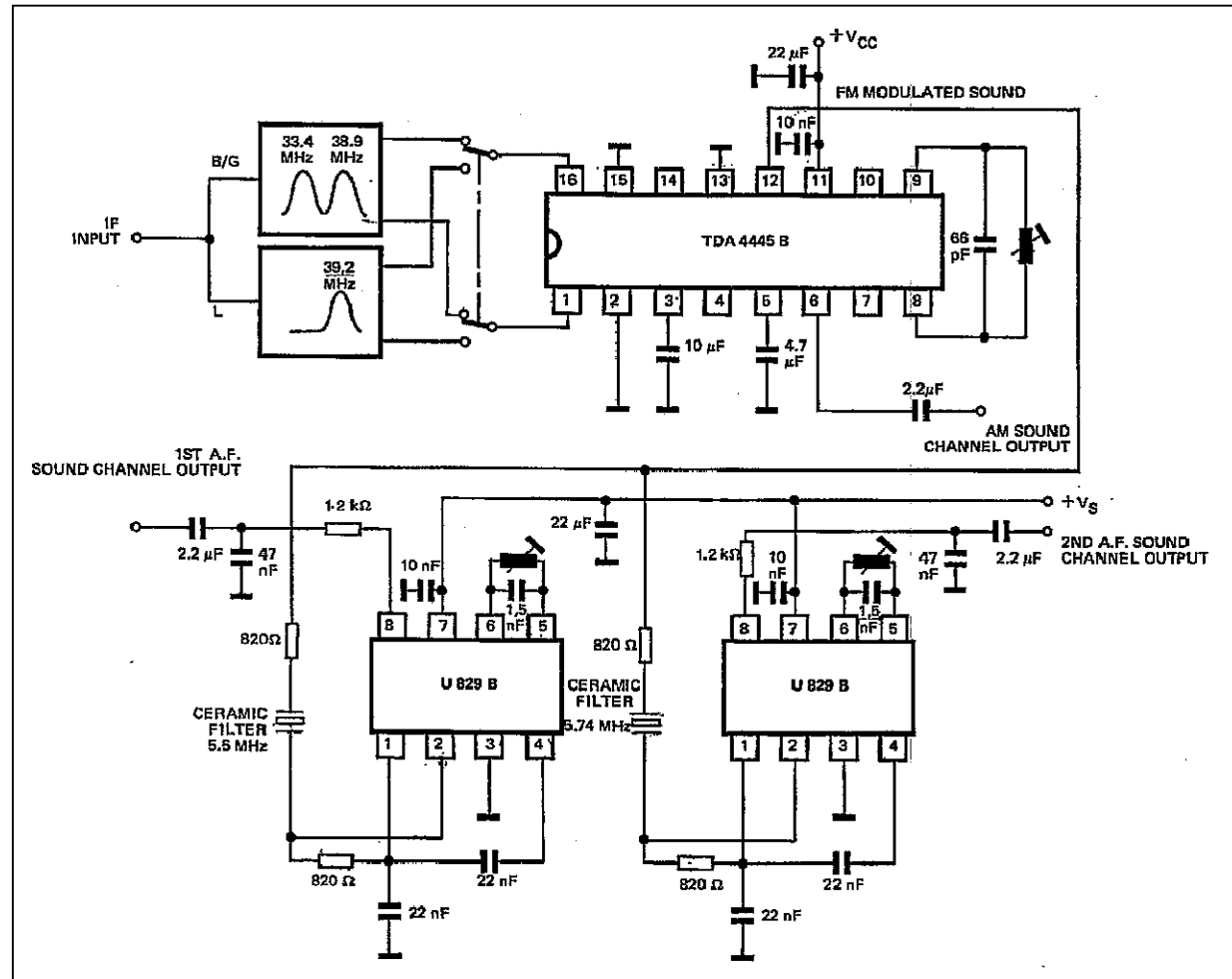
Figure 1 : Quasi Parallel Sound Operation



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TYPICAL APPLICATION

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

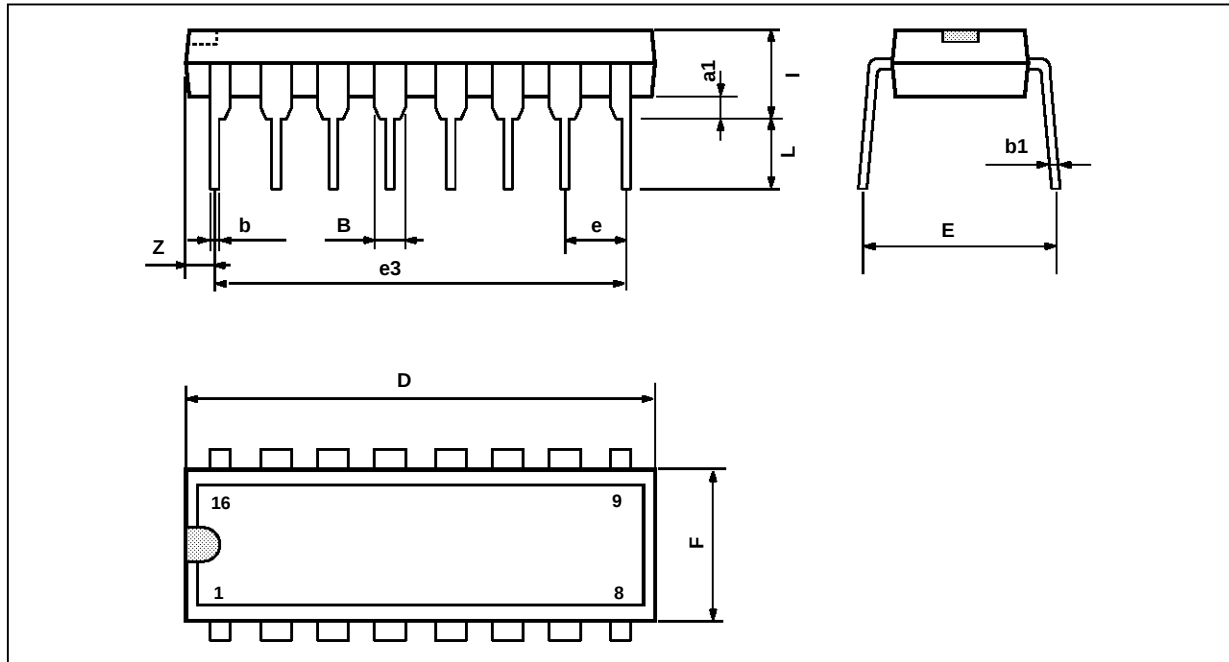


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TDA4445A - TDA4445B

PACKAGE MECHANICAL DATA

16 PINS - PLASTIC DIP



PM-DIP16.EPS

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
i			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

DIP16.TBL

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