

SOUND IF AMPLIFIER

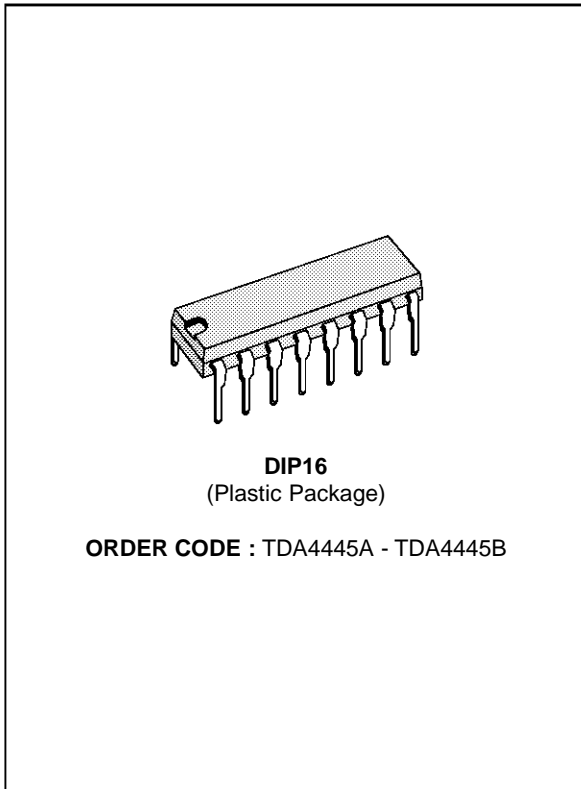
- QUADRATURE INTERCARRIER DEMODULATOR
- VERY HIGH INPUT SENSITIVITY
- GOOD SIGNAL TO NOISE RATIO
- FAST AVERAGING AGC
- IF AMPLIFIER CAN BE SWITCHED OFF FOR VTR MODE
- GOOD AM SUPPRESSION
- OUTPUT SIGNAL STABILIZED AGAINST SUPPLY VOLTAGE VARIATIONS
- VERY FEW EXTERNAL COMPONENTS

DESCRIPTION

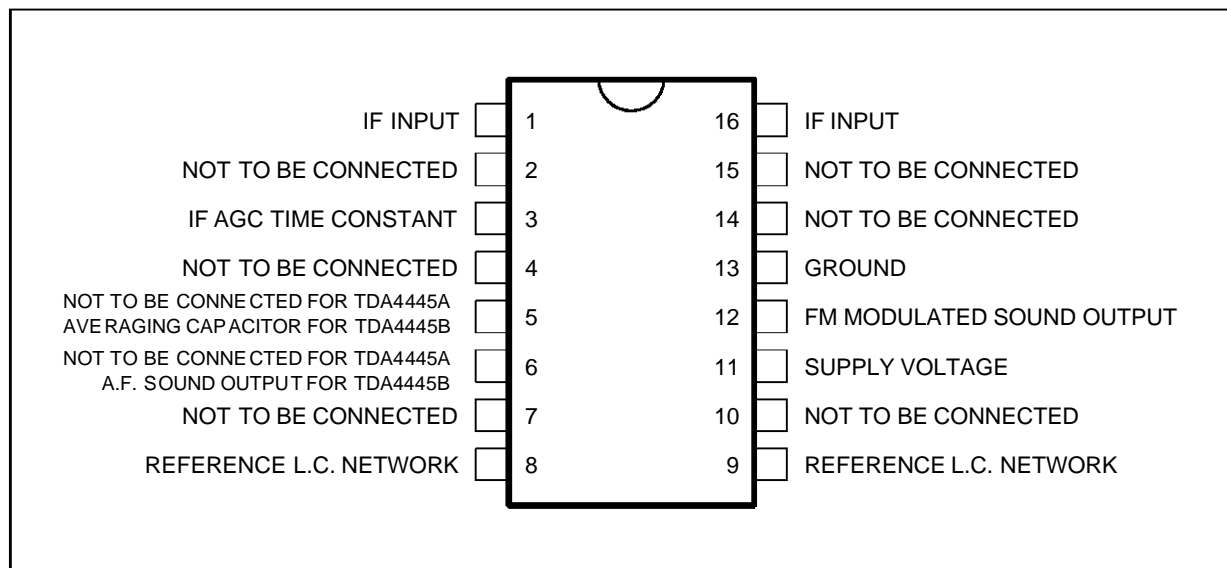
TDA4445A:
Sound IF amplifier, with FM processing for quasi parallel sound system.

TDA4445B:
Sound IF amplifier, with FM processing and AM demodulator, for multi-standard sound TV appliances.

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

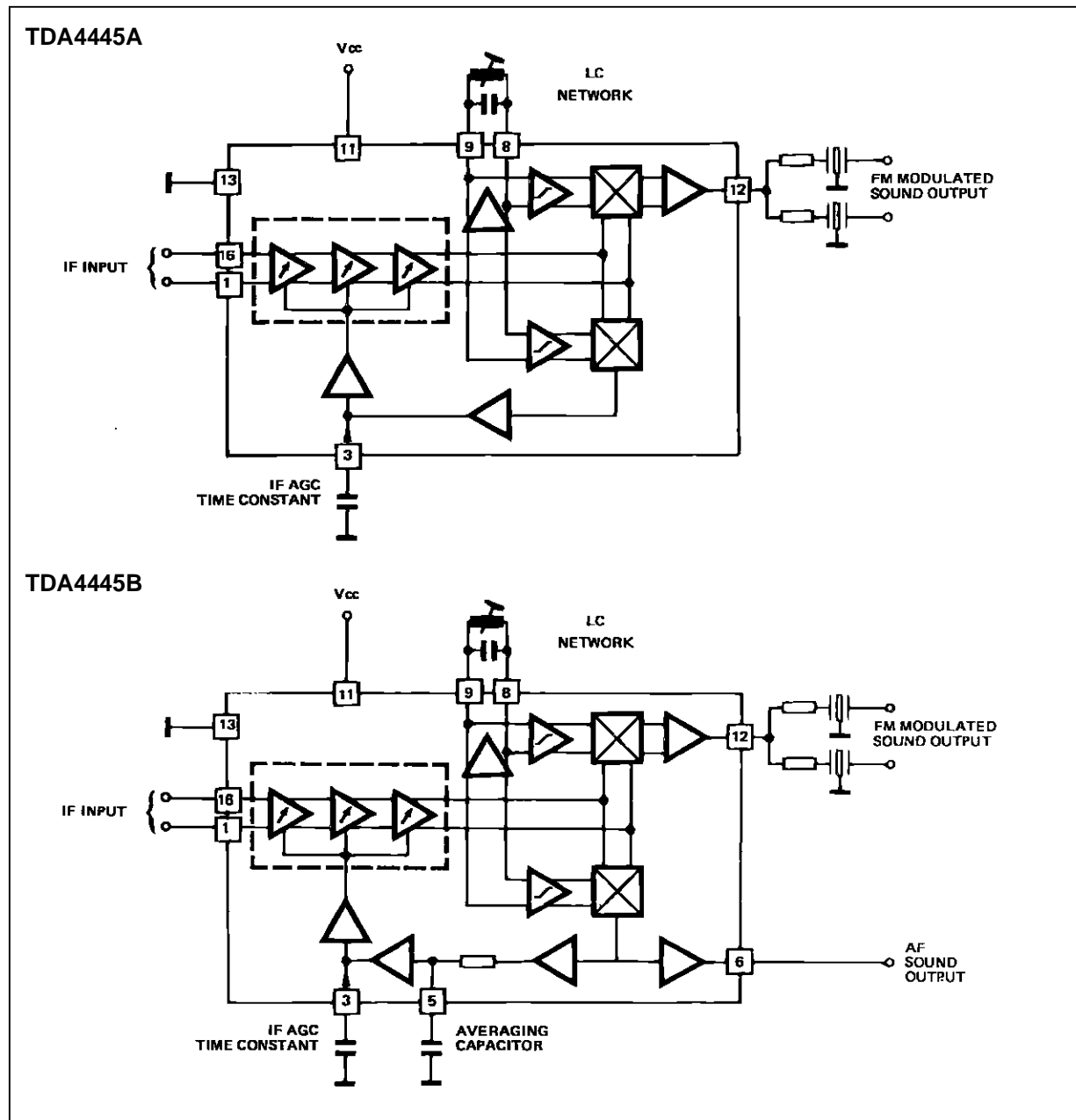


PIN CONNECTIONS



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

essing, 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°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 (V ₃ = 3.5V) | Pin 11 | | 45 | 60 | mA |
| 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 | 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 |
|------------------|--------------|--|----|--|----|

QUASI PARALLEL SOUND OPERATION

(f_{PC} = 38.9MHz, f_{SC1} = 33.4MHz, f_{SC2} = 33.16MHz, PC/SC₁ = 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} |
| V _O | Sound-IF-output Voltage (V ₁₋₁₆ = 20mV _{eff} SC unmodulated) | Pin 12 | | | | |
| | 5.5MHz Output Voltage | | 200 | | 400 | mV _{eff} |
| | 5.74MHz Output Voltage | | 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 → Out 1 350mV _{RMS} f _{mod} = 1kHz, measured at audio-output Out 2 350mV _{RMS} | Pin 12 | | | | |
| $\frac{S+N}{N}$ | Black Screen (1. Channel/2. Channel) | | | 55/50 | | dB |
| | Grid Screen (1. Channel/2. Channel) | | | 45/40 | | dB |

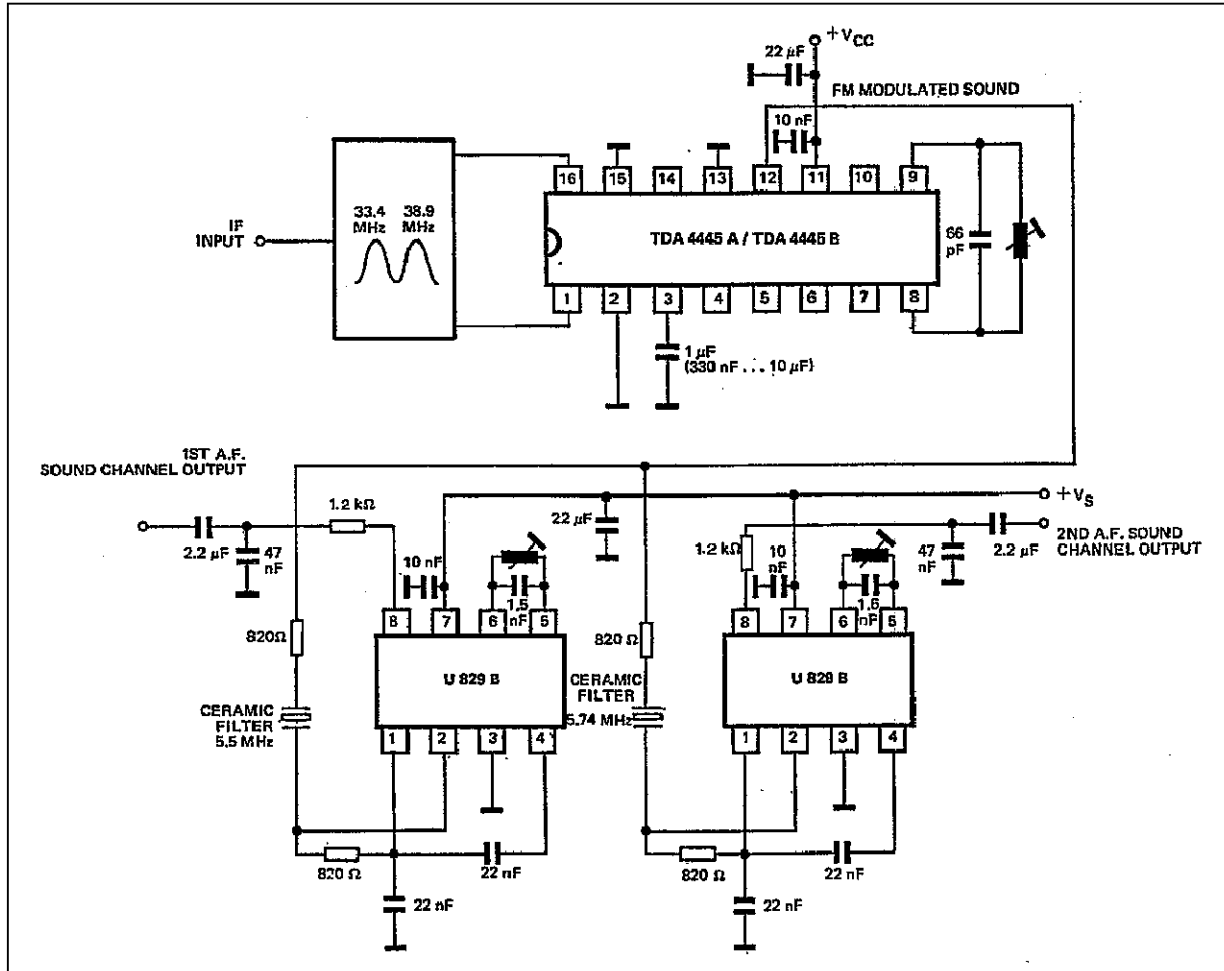
AM DEMODULATION (TDA4445B only) (f_{SC} = 39.2MHz, m = 80%, f_{mod} = 1kHz)

| | | | | | | |
|----------------|--|-----------|-----|-----|-----|-------------------|
| V _I | 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} |

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TYPICAL APPLICATION

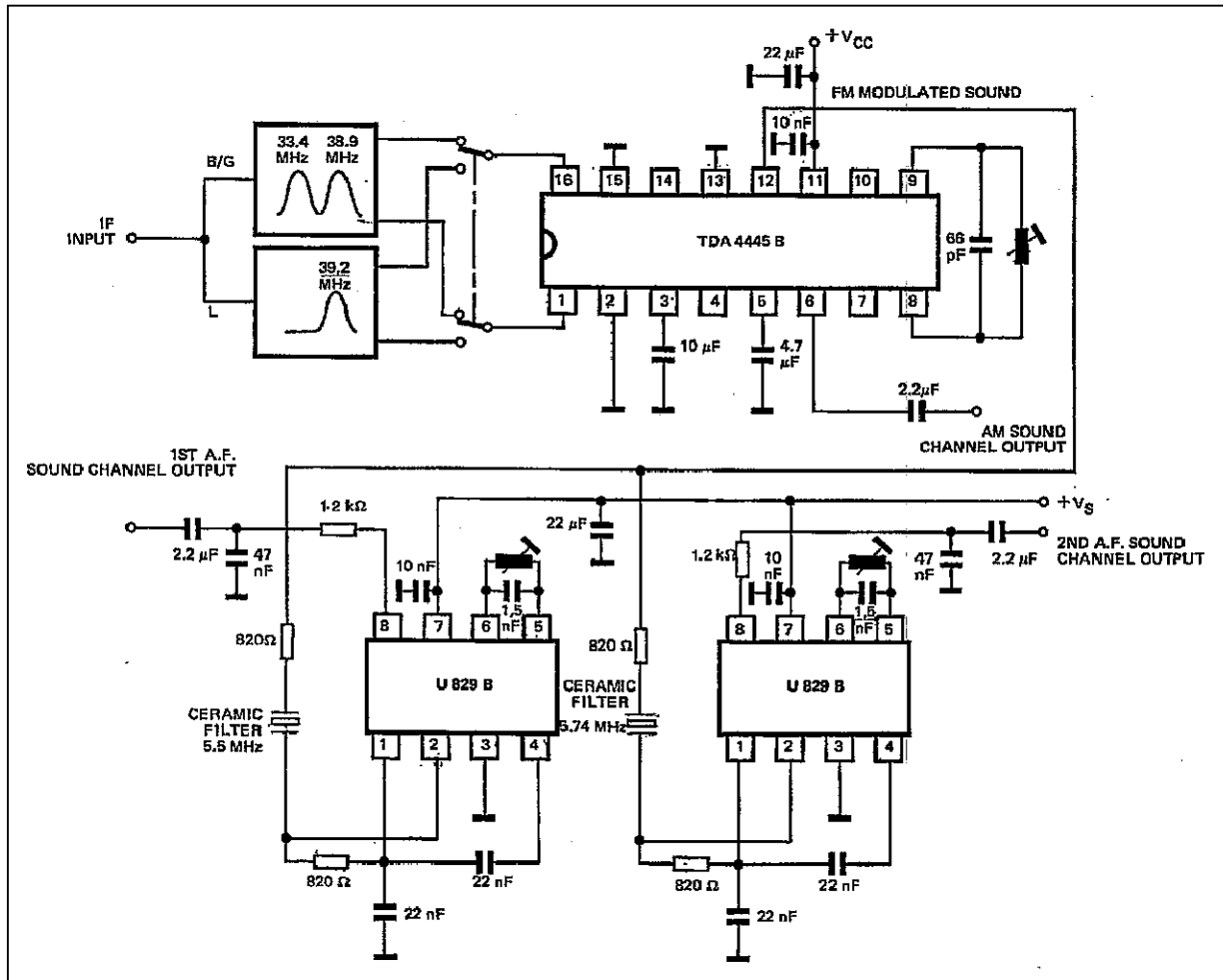
Figure 1 : Quasi Parallel Sound Operation



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TYPICAL APPLICATION

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

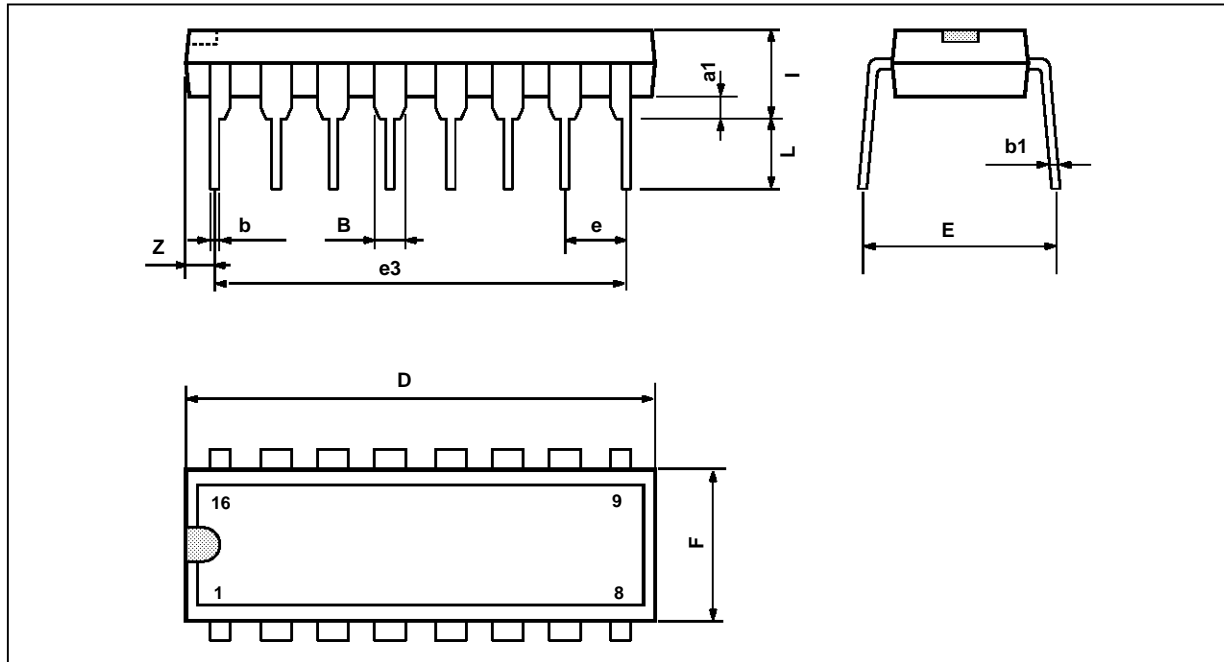


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TDA4445A - TDA4445B

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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