

# DATA SHEET

## **TDA2546A**

Quasi-split-sound circuit  
with 5,5 MHz demodulation

Product specification  
File under Integrated Circuits, IC02

February 1985

## Quasi-split-sound circuit with 5,5 MHz demodulation

## 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

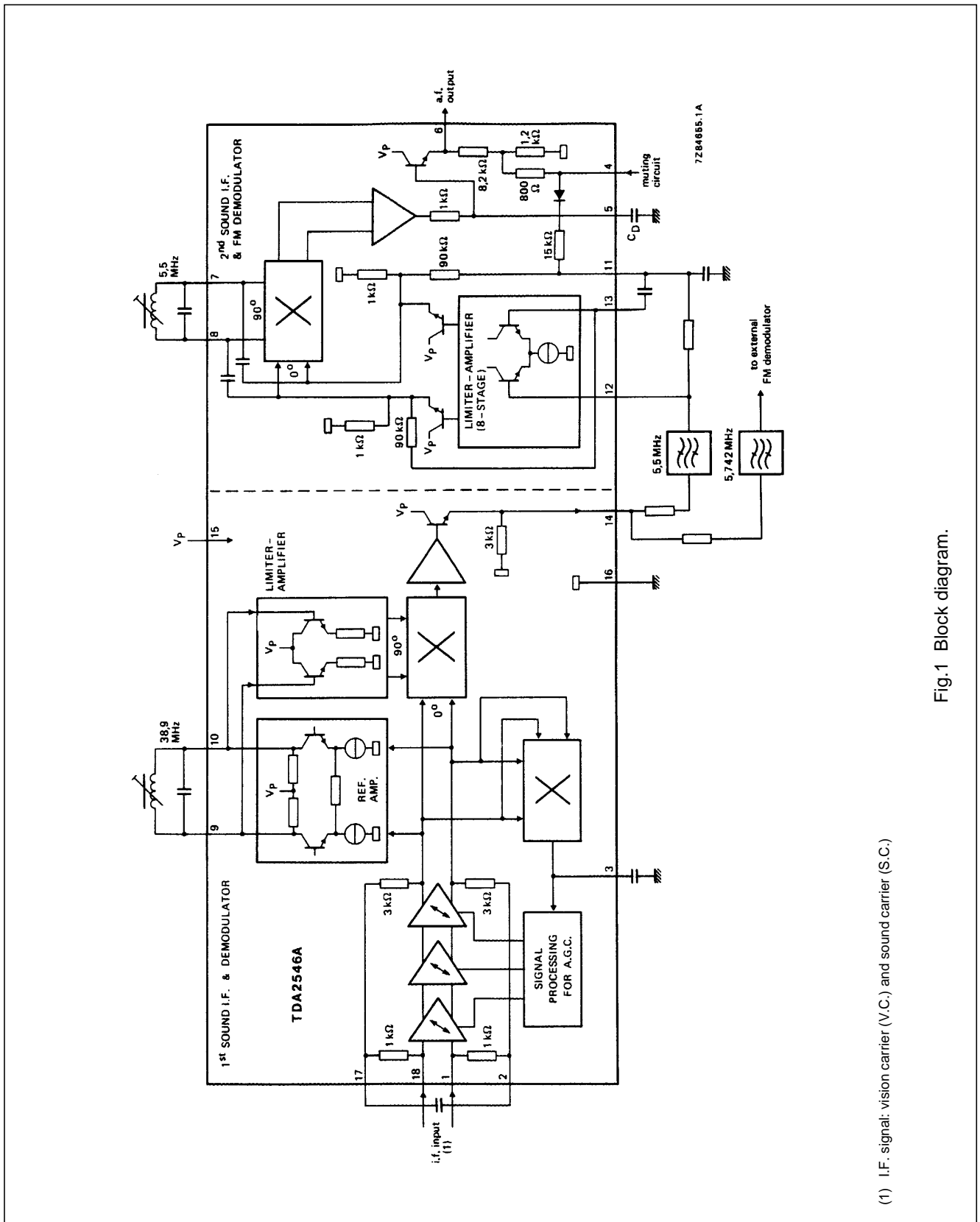
Supply voltage (pin 15)	$V_P = V_{15-16}$	typ.	12	V
Supply current (pin 15)	$I_P = I_{15}$	typ.	57	mA
Minimum i.f. vision carrier input voltage (r.m.s. value)	$V_{VC1-18 (rms)}$	typ.	150	$\mu$ V
Output voltage; 5,5 MHz (r.m.s. value)	$V_{14-16(rms)}$	typ.	100	mV
Output voltage; 5,742 MHz (r.m.s. value)	$V_{14-16(rms)}$	typ.	45	mV
I.F. control range	$\Delta G_V$	typ.	64	dB
Signal-to-weighted-noise ratio (rel. to 1 kHz; 30 kHz deviation) at 5,5 MHz	S + W/W	typ.	58	dB
for 2T/20T pulses with white bars				
at 5,742 MHz	S + W/W	typ.	56	dB
A.F. output voltage (r.m.s. value)	$V_{06-16(rms)}$	typ.	0,6	V

### PACKAGE OUTLINES

18-lead DIL; plastic (SOT 102); SOT102-1; 1996 November 19.

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

Fig.1 Block diagram.

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**TDA2546A****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. 7	mA
Storage temperature range	$T_{stg}$	-25 to +150	°C
Operating ambient temperature range	$T_{amb}$	0 to +70	°C

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### CHARACTERISTICS

$V_P = V_{15-16} = 12$  V;  $T_{amb} = 25$  °C; measured at  $f_{VC} = 38,9$  MHz,  $f_{SC1} = 33,4$  MHz,  $f_{SC2} = 33,158$  MHz:

Vision carrier (V.C.) modulated with different video signals (see below); modulation depth 100% (proportional to 10% residual carrier).

Vision carrier amplitude (r.m.s. value) is  $V_{VC} = 10$  mV.

Vision-to-sound carrier ratios are VC/SC1 = 13 dB and VC/SC2 = 20 dB.

Sound carriers (SC1, SC2) modulated with  $f = 1$  kHz and deviation  $\Delta f = \pm 30$  kHz.

For measuring circuit see Fig.2; unless otherwise specified.

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>Supply (pin 15)</b>					
Supply voltage	$V_P = V_{15-16}$	10,8	12	13,2	V
Supply current	$I_P = I_{15}$	40	57	75	mA
<b>I.F. amplifier</b>					
Input voltage for start of gain control (intercarrier signals -3 dB)	$V_{VC1-18(rms)}$	—	150	200	$\mu$ V
Input voltage for end of gain control (intercarrier signals + 1 dB)	$V_{VC1-18 (rms)}$	100	250	—	mV
I.F. gain control range	$\Delta G_V$	60	64	—	dB
Control voltage range (see Fig.3)	$V_{3-16}$	4	—	$V_p$	V
Input resistance	$R_{1-18}$	—	2,5	—	k $\Omega$
Input capacitance	$C_{1-18}$	—	1,5	—	pF
<b>Intercarrier generation</b>					
Output voltage; 5,5 MHz (r.m.s. value)	$V_{14-16(rms)}$	60	100	140	mV
Output voltage; 5,742 MHz (r.m.s. value)	$V_{14-16(rms)}$	27	45	63	mV
D.C. output voltage	$V_{14-16}$	—	5,9	—	V
Allowable d.c. load resistance at the output	$R_{14-16}$	7	—	—	V
Allowable output current	$-I_{14}$	—	—	1	mA
<b>Frequency demodulator (measured at <math>f = 5,5</math> MHz)</b>					
Input voltage vor start of limiting (r.m.s. value)	$V_{12-16(rms)}$	—	—	100	$\mu$ V
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
A.F. output voltage (r.m.s. value)	$V_{6-16(rms)}$	450	600	810	mV
D.C. output voltage	$V_{6-16}$	—	4	—	V
Allowable d.c. load resistance at the output	$R_{6-16}$	27	—	—	k $\Omega$
Allowable a.c. load impedance at the output	$Z_{6-16}$	10	—	—	k $\Omega$
Total harmonic distortion	THD	—	—	1	%
Internal de-emphasis resistance	$R_{i5-16}$	—	1	—	k $\Omega$
<b>Switching voltage (pin 4)</b>					
for mute	$V_{4-16}$	9	—	—	V
for a.f. on	$V_{4-16}$	—	—	2,5	V

## Quasi-split-sound circuit with 5,5 MHz demodulation

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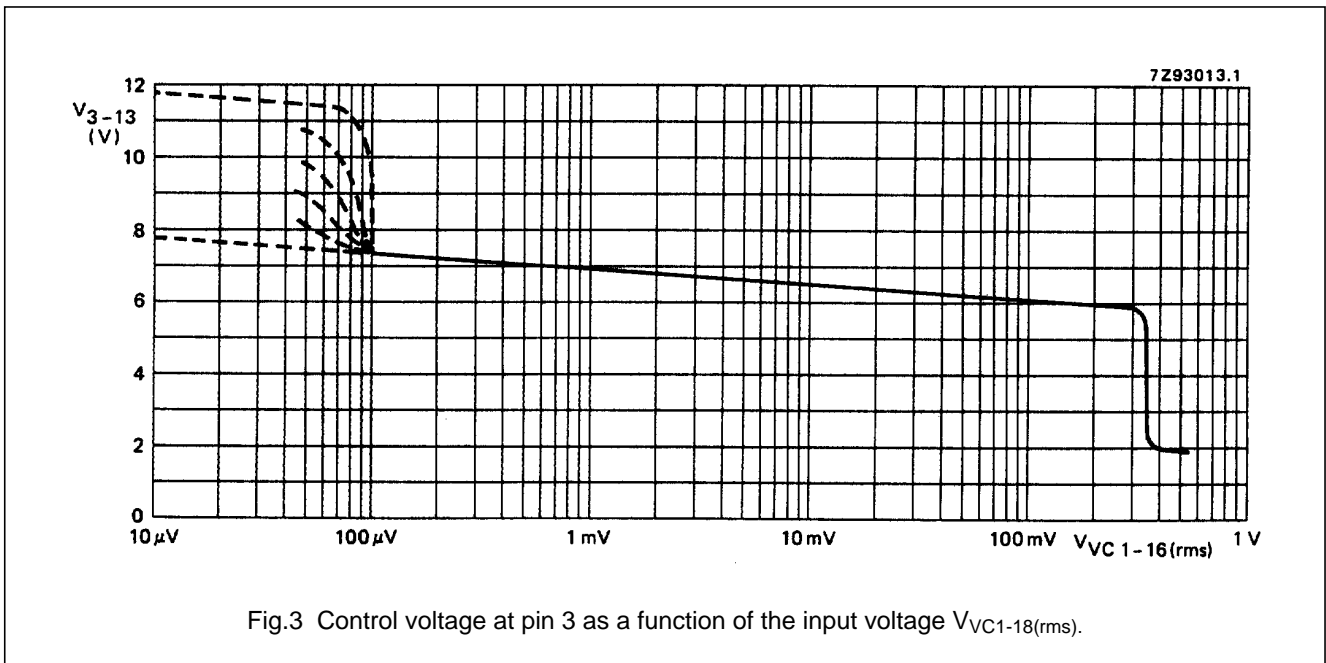
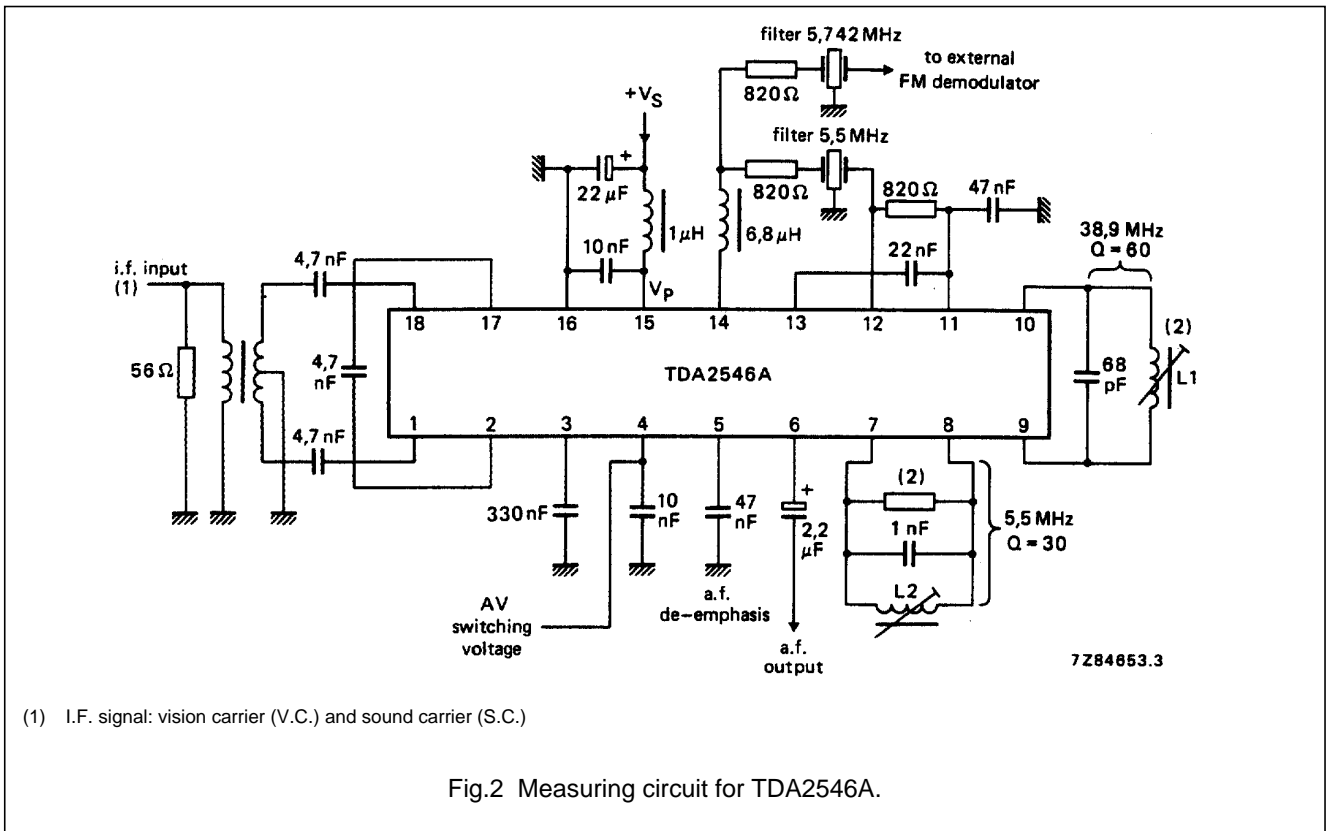
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
<b>Intercarrier signal-to-noise</b> (measured behind the FM demodulators)					
Signal-to-weighted-noise ratio according to CCIR 468-2, quasi-peak 2T/20T pulses with white bars (see also Fig.4)					
at 5,5 MHz	S+W/W	53	58	–	dB
at 5,742 MHz	S+W/W	51	56	–	dB
6 kHz sine wave					
at 5,5 MHz	S+W/W	50	53	–	dB
at 5,742 MHz	S+W/W	50	53	–	dB
with black level (vision carrier modulated with sync pulses only)					
at 5,5 MHz	S+W/W	60	65	–	dB
at 5,742 MHz	S+W/W	58	63	–	dB

### Notes to the characteristics

- Incidental phase on the vision carrier, caused by TV-transmitter, has to be less than 0,5 degrees for black to white transient.  
(Equivalent to S+W/W = 56 dB for 6 kHz sine wave).

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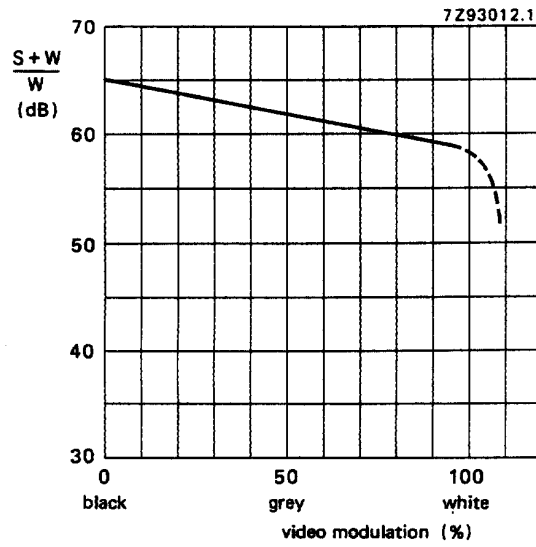


Fig.4 Signal-to-weighted-noise ratio depending on video modulation.



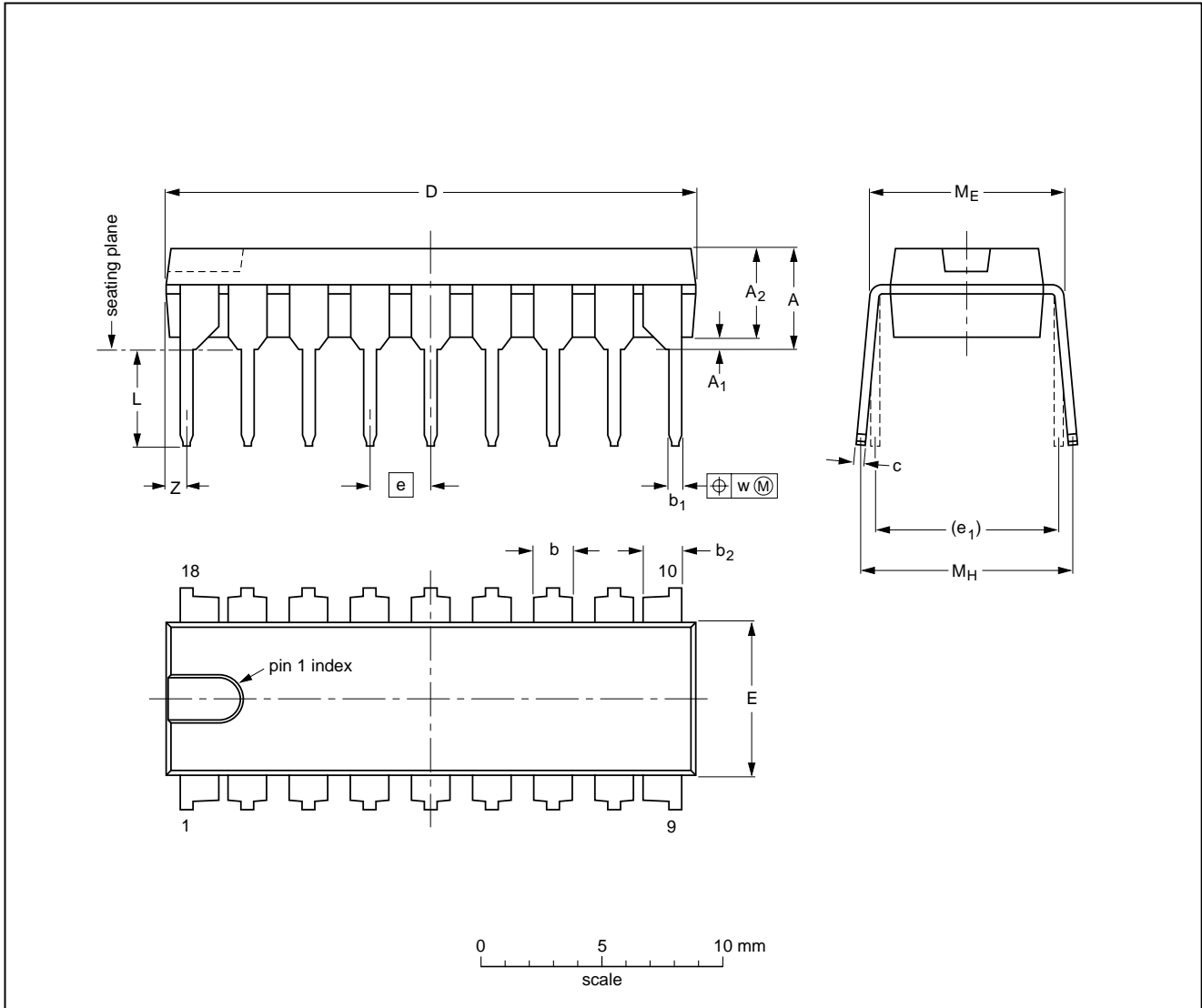
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PACKAGE OUTLINE

DIP18: plastic dual in-line package; 18 leads (300 mil)

SOT102-1



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A <sub>1</sub> min.	A <sub>2</sub> max.	b	b <sub>1</sub>	b <sub>2</sub>	c	D <sup>(1)</sup>	E <sup>(1)</sup>	e	e <sub>1</sub>	L	M <sub>E</sub>	M <sub>H</sub>	w	Z <sup>(1)</sup> max.
mm	4.7	0.51	3.7	1.40 1.14	0.53 0.38	1.40 1.14	0.32 0.23	21.8 21.4	6.48 6.20	2.54	7.62	3.9 3.4	8.25 7.80	9.5 8.3	0.254	0.85
inches	0.19	0.020	0.15	0.055 0.044	0.021 0.015	0.055 0.044	0.013 0.009	0.86 0.84	0.26 0.24	0.10	0.30	0.15 0.13	0.32 0.31	0.37 0.33	0.01	0.033

Note

1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT102-1						93-10-14 95-01-23

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### SOLDERING

#### Introduction

There is no soldering method that is ideal for all IC packages. Wave soldering is often preferred when through-hole and surface mounted components are mixed on one printed-circuit board. However, wave soldering is not always suitable for surface mounted ICs, or for printed-circuits with high population densities. In these situations reflow soldering is often used.

This text gives a very brief insight to a complex technology. A more in-depth account of soldering ICs can be found in our "IC Package Databook" (order code 9398 652 90011).

#### Soldering by dipping or by wave

The maximum permissible temperature of the solder is 260 °C; solder at this temperature must not be in contact with the joint for more than 5 seconds. The total contact time of successive solder waves must not exceed 5 seconds.

The device may be mounted up to the seating plane, but the temperature of the plastic body must not exceed the specified maximum storage temperature ( $T_{stg\ max}$ ). If the printed-circuit board has been pre-heated, forced cooling may be necessary immediately after soldering to keep the temperature within the permissible limit.

#### Repairing soldered joints

Apply a low voltage soldering iron (less than 24 V) to the lead(s) of the package, below the seating plane or not more than 2 mm above it. If the temperature of the soldering iron bit is less than 300 °C it may remain in contact for up to 10 seconds. If the bit temperature is between 300 and 400 °C, contact may be up to 5 seconds.

### DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

### LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

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