

DATA SHEET

TDA4662 Baseband delay line

Product specification
Supersedes data of 1995 Oct 30
File under Integrated Circuits, IC02

1996 Nov 14

Baseband delay line

TDA4662

FEATURES

- Two comb filters, using the switched-capacitor technique, for one line delay time (64 μ s)
- For PAL and NTSC
- Adjustment-free application
- Handles negative or positive colour-difference input signals
- Clamping of AC-coupled input signals [$\pm(R-Y)$ and $\pm(B-Y)$]
- VCO without external components
- 3 MHz internal clock signal derived from a 6 MHz CCO, line-locked by the sandcastle pulse (64 μ s line)
- Sample-and-hold circuits and low-pass filters to suppress the 3 MHz clock signal
- Addition of delayed and non-delayed output signals
- Output buffer amplifiers
- Comb filtering functions for NTSC colour-difference signals to suppress cross-colour.

GENERAL DESCRIPTION

The TDA4662 is an integrated baseband delay line circuit with one line delay. It is suitable for PAL and NTSC decoders with colour-difference signal outputs $\pm(R-Y)$ and $\pm(B-Y)$.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_{P1}	analog supply voltage (pin 9)	4.5	5	6	V
V_{P2}	digital supply voltage (pin 1)	4.5	5	6	V
$I_{P(tot)}$	total supply current	–	5.5	7.0	mA
$V_{i(p-p)}$	$\pm(R-Y)$ input signal PAL/NTSC (peak-to-peak value; pin 16)	–	525	–	mV
	$\pm(B-Y)$ input signal PAL/NTSC (peak-to-peak value; pin 14)	–	665	–	mV
G_v	voltage gain V_O/V_I of colour-difference output signals				
	V_{11}/V_{16} for PAL and NTSC	5.3	5.8	6.3	dB
	V_{12}/V_{14} for PAL and NTSC	5.3	5.8	6.3	dB

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
TDA4662	DIP16	plastic dual in-line package; 16 leads (300 mil)	SOT38-4
TDA4662T	SO16	plastic small outline package; 16 leads; body width 3.9 mm	SOT109-1

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BLOCK DIAGRAM

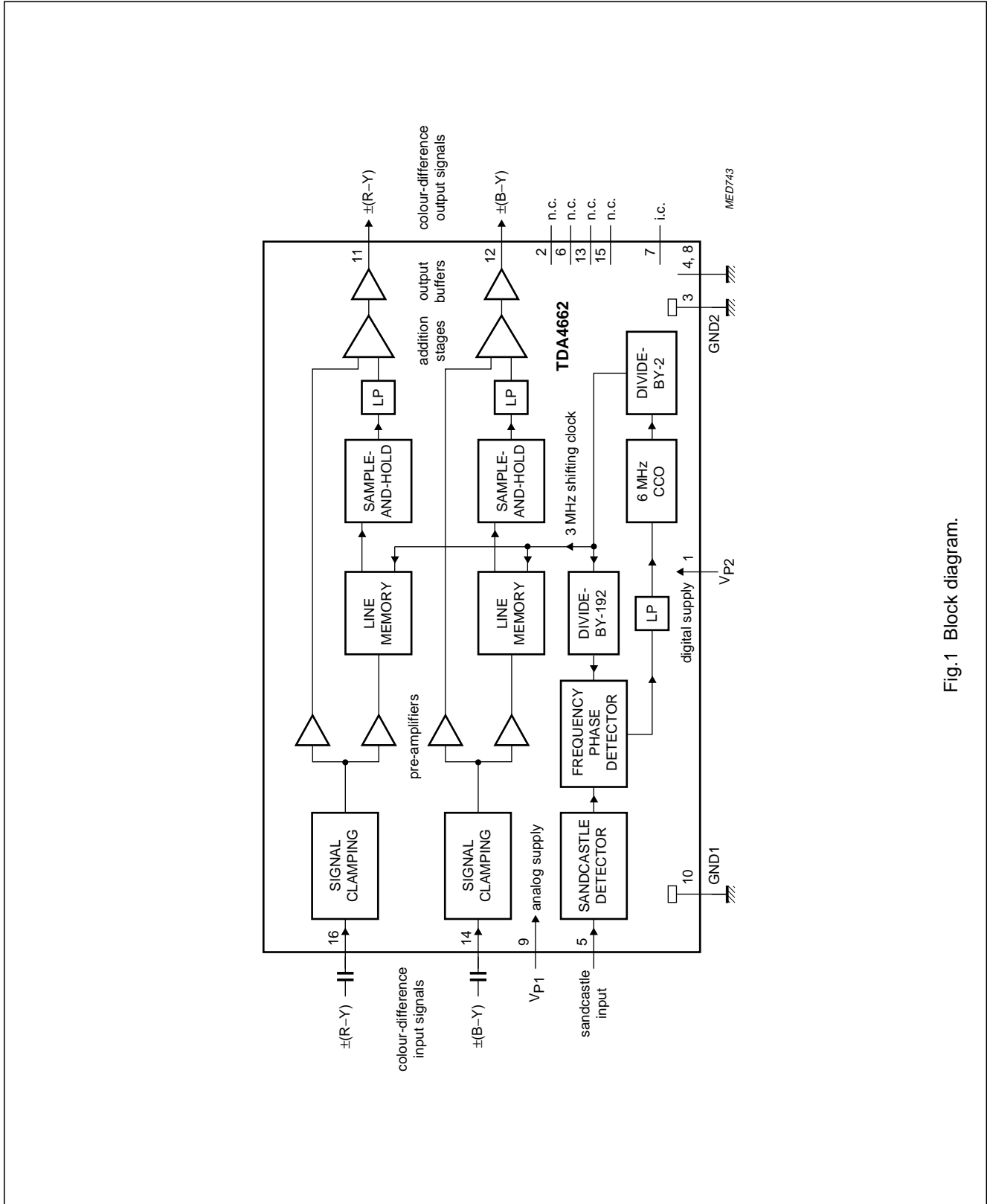


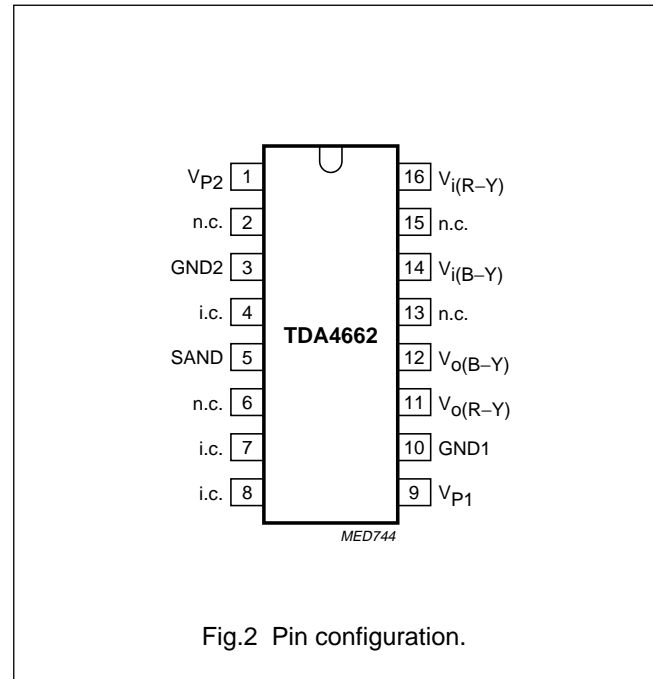
Fig.1 Block diagram.

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PINNING

SYMBOL	PIN	DESCRIPTION
V _{P2}	1	supply voltage for digital part (+5 V)
n.c.	2	not connected
GND2	3	ground for digital part (0 V)
i.c.	4	internally connected
SAND	5	sandcastle pulse input
n.c.	6	not connected
i.c.	7	internally connected
i.c.	8	internally connected
V _{P1}	9	supply voltage for analog part (+5 V)
GND1	10	ground for analog part (0 V)
V _{O(R-Y)}	11	±(R-Y) output signal
V _{O(B-Y)}	12	±(B-Y) output signal
n.c.	13	not connected
V _{I(B-Y)}	14	±(B-Y) input signal
n.c.	15	not connected
V _{I(R-Y)}	16	±(R-Y) input signal



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134). Ground pins 3 and 10 connected together.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{P1}	supply voltage (pin 9)		-0.5	+7	V
V _{P2}	supply voltage (pin 1)		-0.5	+7	V
V ₅	input voltage on pin 5		-0.5	V _P + 1.0	V
V _n	voltage on pins 11, 12, 14 and 16		-0.5	V _P	V
T _{stg}	storage temperature		-25	+150	°C
T _{amb}	operating ambient temperature		0	70	°C
V _{ESD}	electrostatic handling for all pins	note 1	-	±500	V

Note

- Equivalent to discharging a 200 pF capacitor through a 0 Ω series resistor.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient in free air		
	SOT38-4	75	K/W
	SOT109-1	220	K/W

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CHARACTERISTICS

$V_P = 5\text{ V}$; input signals as specified in characteristics with 75% colour bars; super-sandcastle frequency of 15.625 kHz; $T_{amb} = 25\text{ }^\circ\text{C}$; measurements taken in Fig.3; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{P1}	analog supply voltage (pin 9)		4.5	5	6	V
V_{P2}	digital supply voltage (pin 1)		4.5	5	6	V
I_{P1}	analog supply current (pin 9)		–	4.8	6.0	mA
I_{P2}	digital supply current (pin 1)		–	0.7	1.0	mA
Colour-difference input signals						
$V_{i(p-p)}$	input signal (peak-to-peak value) $\pm(R-Y)$ PAL and NTSC (pin 16) $\pm(B-Y)$ PAL and NTSC (pin 14)		– –	525 665	– –	mV mV
$V_{i(max; p-p)}$	maximum symmetrical input signal (peak-to-peak value) $\pm(R-Y)$ for PAL and NTSC $\pm(B-Y)$ for PAL and NTSC	before clipping before clipping	660 840	– –	– –	mV mV
$R_{14,16}$	input resistance during clamping		–	–	40	k Ω
$C_{14,16}$	input capacitance		–	–	10	pF
$V_{14,16}$	input clamping voltage	proportional to V_P	1.3	1.5	1.7	V
Colour-difference output signals						
$V_{o(p-p)}$	output signal (peak-to-peak value) $\pm(R-Y)$ on pin 11 $\pm(B-Y)$ on pin 12		– –	1.05 1.33	– –	V V
V_{11}/V_{12}	ratio of output amplitudes at equal input signals	$V_{i14,16} = 665\text{ mV (p-p)}$	–0.4	0	+0.4	dB
$V_{11,12}$	DC output voltage	proportional to V_P	2.5	2.9	3.3	V
$R_{11,12}$	output resistance		–	330	400	Ω
G_v	gain for PAL and NTSC	ratio V_o/V_i	5.3	5.8	6.3	dB
$V_{N(rms)}$	noise voltage (RMS value; pins 11 and 12)	$V_{i14,16} = 0\text{ V}$; note 1	–	–	1.2	mV
$V_{11,12(p-p)}$	unwanted signals (line-locked) (peak-to-peak value) meander spikes	$V_{i14,16} = 0\text{ V}$; active video; $R_S = 300\ \Omega$	– –	– –	5 10	mV mV
S/N(W)	weighted signal-to-noise ratio (pins 11 and 12)	$V_o = 1\text{ V (p-p)}$; note 1	–	54	–	dB
t_d	time difference between undelayed and delayed output signals (pins 11 and 12)		63.94	64	64.06	μs
	delay of undelayed signals		40	60	80	ns

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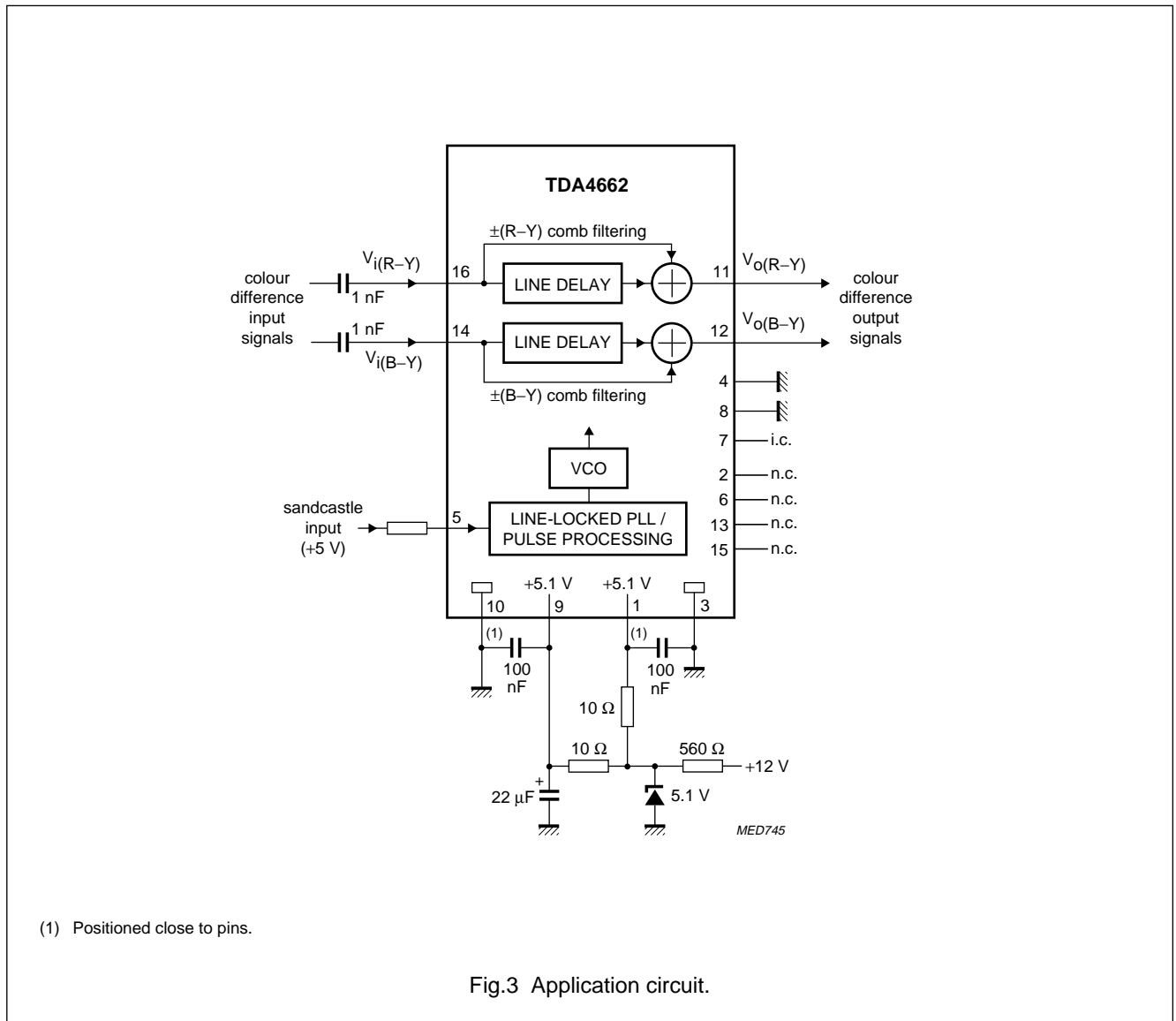
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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Sandcastle pulse input (pin 5)						
f_{BK}	burst-key frequency/sandcastle frequency		14.2	15.625	17.0	kHz
V_5	top pulse voltage	note 2	4.0	–	$V_P + 1.0$	V
V_{slice}	internal slicing level		$V_5 - 1.0$	–	$V_5 - 0.5$	V
I_5	input current		–	–	10	μA
C_5	input capacitance		–	–	10	pF

Notes

- Noise voltage at $f = 10 \text{ kHz to } 1 \text{ MHz}$; $R_S < 300 \Omega$.
- The leading edge of the burst-key pulse or H-blanking pulse is used for timing.

APPLICATION INFORMATION



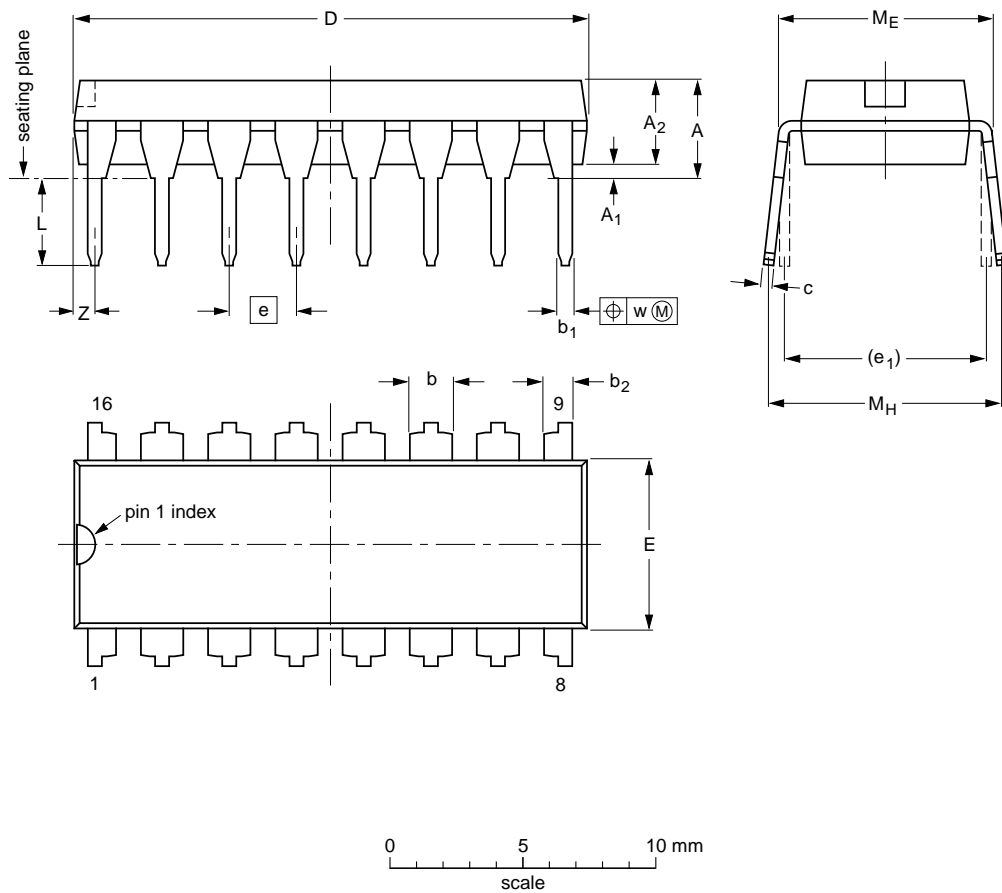
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PACKAGE OUTLINES

DIP16: plastic dual in-line package; 16 leads (300 mil)

SOT38-4



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

UNIT	A max.	A ₁ min.	A ₂ max.	b	b ₁	b ₂	c	D ⁽¹⁾	E ⁽¹⁾	e	e ₁	L	M _E	M _H	w	Z ⁽¹⁾ max.
mm	4.2	0.51	3.2	1.73 1.30	0.53 0.38	1.25 0.85	0.36 0.23	19.50 18.55	6.48 6.20	2.54	7.62	3.60 3.05	8.25 7.80	10.0 8.3	0.254	0.76
inches	0.17	0.020	0.13	0.068 0.051	0.021 0.015	0.049 0.033	0.014 0.009	0.77 0.73	0.26 0.24	0.10	0.30	0.14 0.12	0.32 0.31	0.39 0.33	0.01	0.030

Note

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

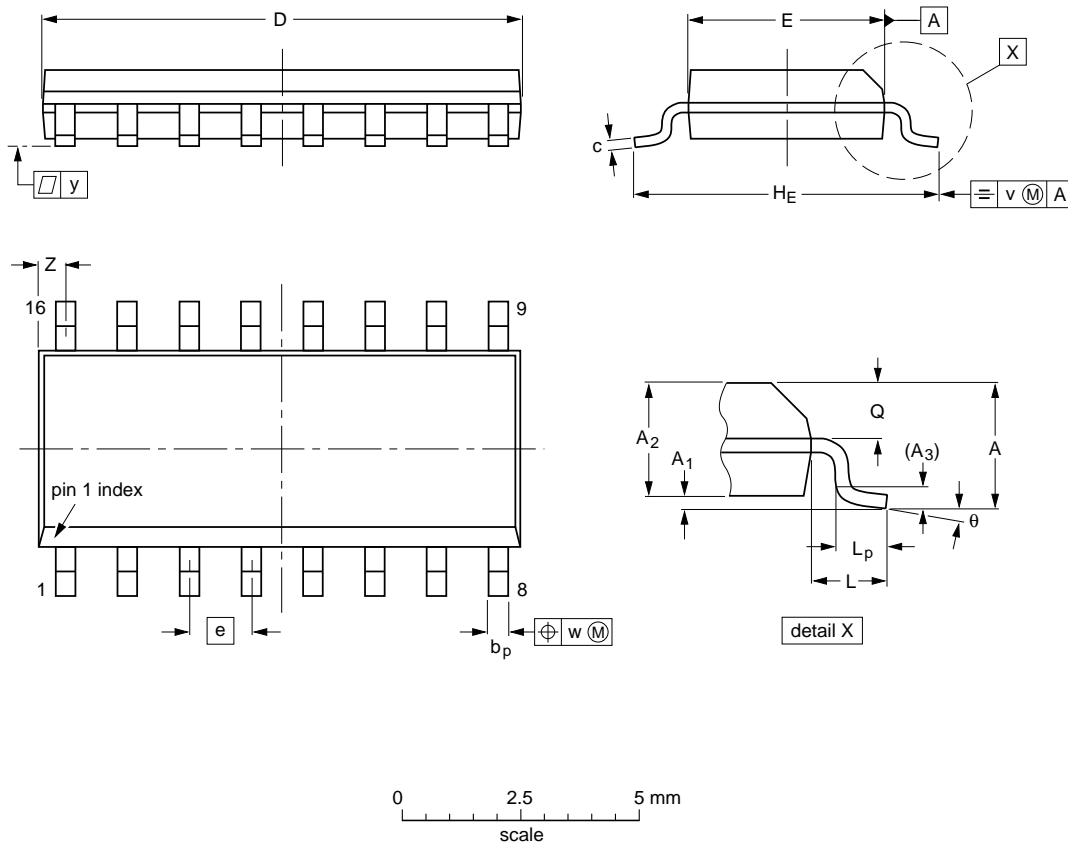
OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT38-4					92-11-17 95-01-14

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SO16: plastic small outline package; 16 leads; body width 3.9 mm

SOT109-1



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

UNIT	A max.	A ₁	A ₂	A ₃	b _p	c	D ⁽¹⁾	E ⁽¹⁾	e	H _E	L	L _p	Q	v	w	y	Z ⁽¹⁾	θ
mm	1.75	0.25 0.10	1.45 1.25	0.25	0.49 0.36	0.25 0.19	10.0 9.8	4.0 3.8	1.27	6.2 5.8	1.05	1.0 0.4	0.7 0.6	0.25	0.25	0.1	0.7 0.3	8° 0°
inches	0.069	0.0098 0.0039	0.057 0.049	0.01	0.019 0.014	0.0098 0.0075	0.39 0.38	0.16 0.15	0.050	0.24 0.23	0.041	0.039 0.016	0.028 0.020	0.01	0.01	0.004	0.028 0.012	

Note

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT109-1	076E07S	MS-012AC			91-08-13 95-01-23