DATA SHEET

74HC154; 74HCT154

4-to-16 line decoder/demultiplexer

Product specification

Supersedes data of 2004 Oct 05

2004 Oct 12

Philips
Semiconductors

PHILIPS

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

FEATURES

- 16-line demultiplexing capability
- Decodes 4 binary-coded inputs into one 16 mutually exclusive outputs
- Complies with JEDEC standard no. 8-1 B
- ESD protection:
  HBM EIA/JESD22-A114-B exceeds 2000 V
  MM EIA/JESD22-A115-A exceeds 200 V.
- Specified from $-40\ °C$ to $+85\ °C$ and $-40\ °C$ to $+125\ °C$.

DESCRIPTION

The 74HC154; 74HCT154 are high-speed Si-gate CMOS devices and are pin compatible with low power Schottky TTL (LSTTL). They are specified in compliance with JEDEC standard no. 7A.

The 74HC154; 74HCT154 decoders accept four active HIGH binary address inputs and provide 16 mutually exclusive active LOW outputs. The two-input enable gate can be used to strobe the decoder to eliminate the normal decoding "glitches" on the outputs, or can be used for the expansion of the decoder.

The enable gate has two ANDed inputs which must be LOW to enable the outputs.

The 74HC154; 74HCT154 can be used as a 1-to-16 demultiplexer by using one of the enable inputs as the multiplexed data input.

When the other enable input is LOW, the addressed output will follow the state of the applied data.

QUICK REFERENCE DATA

GND = 0 V; T_{amb} = 25 °C; $t_r = t_f$ = 6 ns.

SYMBOL	PARAMETER	CONDITIONS	TYPICAL		UNIT
			74HC154	74HCT154	
t_{PHL}/t_{PLH}	propagation delay An, $\overline{En}$ to $\overline{Yn}$	C_L = 15 pF; R_L = 1 kΩ; V_{CC} = 5 V	11	13	ns
C_I	input capacitance		3.5	3.5	pF
C_{PD}	power dissipation capacitance per gate	notes 1 and 2	60	60	pF

Notes

1. C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

   $P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o)$ where:

   f_i = input frequency in MHz;

   f_o = output frequency in MHz;

   C_L = output load capacitance in pF;

   V_{CC} = supply voltage in Volts;

   N = total load switching outputs;

   $\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.

2. For 74HC154 the condition is V_I = GND to V_{CC}

   For 74HCT154 the condition is V_I = GND to $V_{CC} - 1.5$ V.

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FUNCTION TABLE

See note 1.

INPUT						OUTPUT															
E̅0	E̅1	A0	A1	A2	A3	Y0	Y1	Y2	Y3	Y4	Y6	Y7	Y8	Y2	Y9	Y10	Y11	Y12	Y13	Y14	Y15
H	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
H	L	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	H	X	X	X	X	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
		H	L	L	L	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
		L	H	L	L	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	H
		H	H	L	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H	H
		L	L	H	L	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
		H	L	H	L	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H	H
		L	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H	H
		H	H	H	L	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H	H
		L	L	L	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H	H
		H	L	L	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H	H
		L	H	L	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H	H
		H	H	L	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H	H
		L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H	H
		H	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H	H
		L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	H
		H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L

Note

1. H = HIGH voltage level

    L = LOW voltage level

    X = don't care.

4-to-16 line decoder/demultiplexer

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ORDERING INFORMATION

TYPE NUMBER	TEMPERATURE RANGE	PACKAGE			
		PINS	PACKAGE	MATERIAL	CODE
74HC154N	−40 °C to +125 °C	24	DIP24	plastic	SOT101-1
74HCT154N	−40 °C to +125 °C	24	DIP24	plastic	SOT101-1
74HC154D	−40 °C to +125 °C	24	SO24	plastic	SOT137-1
74HCT154D	−40 °C to +125 °C	24	SO24	plastic	SOT137-1
74HC154DB	−40 °C to +125 °C	24	SSOP24	plastic	SOT340-1
74HCT154DB	−40 °C to +125 °C	24	SSOP24	plastic	SOT340-1
74HC154PW	−40 °C to +125 °C	24	TSSOP24	plastic	SOT355-1
74HCT154PW	−40 °C to +125 °C	24	TSSOP24	plastic	SOT355-1
74HC154BQ	−40 °C to +125 °C	24	DHVQFN24	plastic	SOT815-1
74HCT154BQ	−40 °C to +125 °C	24	DHVQFN24	plastic	SOT815-1

PINNING

PIN	SYMBOL	DESCRIPTION
1	$\overline{Y0}$	data output (active LOW)
2	$\overline{Y1}$	data output (active LOW)
3	$\overline{Y2}$	data output (active LOW)
4	$\overline{Y3}$	data output (active LOW)
5	$\overline{Y4}$	data output (active LOW)
6	$\overline{Y5}$	data output (active LOW)
7	$\overline{Y6}$	data output (active LOW)
8	$\overline{Y7}$	data output (active LOW)
9	$\overline{Y8}$	data output (active LOW)
10	$\overline{Y9}$	data output (active LOW)
11	$\overline{Y10}$	data output (active LOW)
12	GND	ground (0 V)
13	$\overline{Y11}$	data output (active LOW)
14	$\overline{Y12}$	data output (active LOW)
15	$\overline{Y13}$	data output (active LOW)
16	$\overline{Y14}$	data output (active LOW)
17	$\overline{Y15}$	data output (active LOW)
18	$\overline{E0}$	enable input
19	$\overline{E1}$	enable input
20	A3	data input
21	A2	data input
22	A1	data input
23	A0	data input
24	V_{CC}	positive supply voltage

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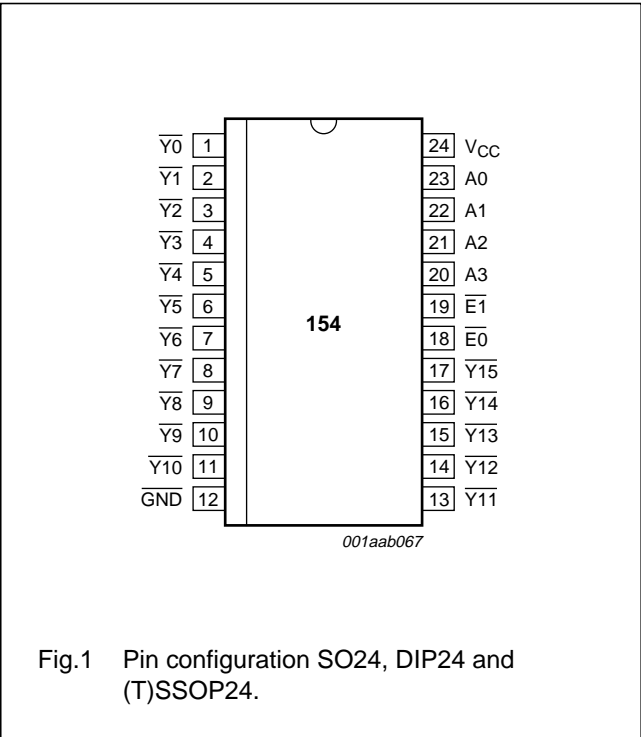
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Fig.1   Pin configuration SO24, DIP24 and (T)SSOP24.

Transparent top view

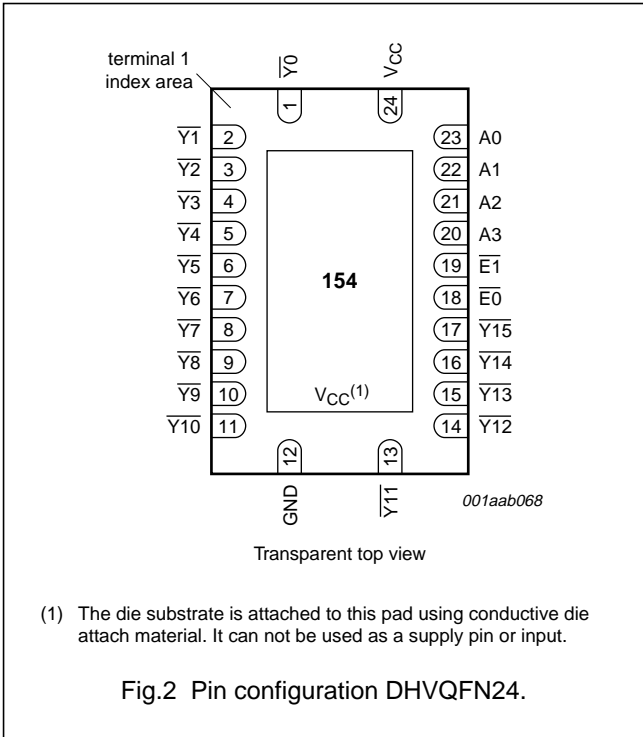(1)   The die substrate is attached to this pad using conductive die attach material. It can not be used as a supply pin or input.
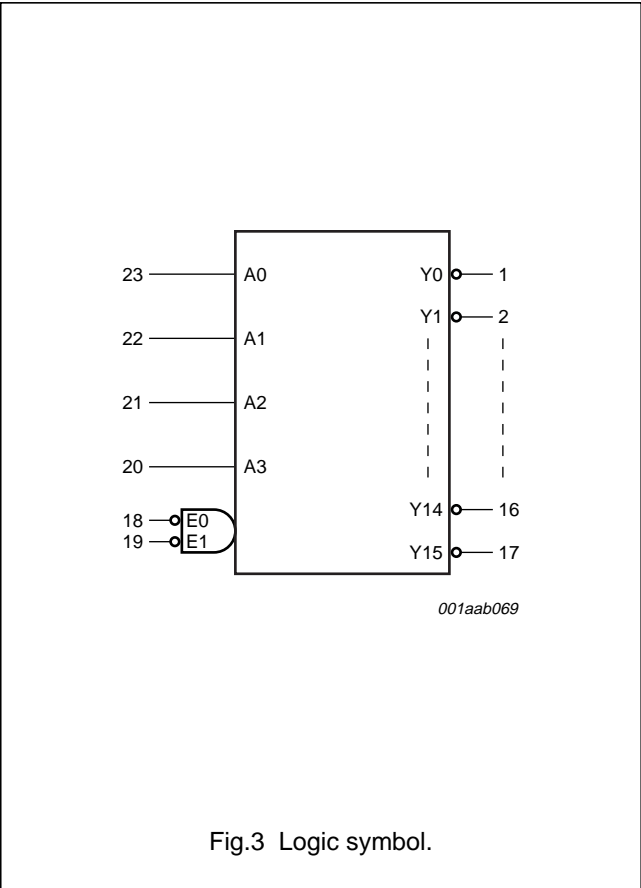
Fig.2 Pin configuration DHVQFN24.

Fig.3 Logic symbol.
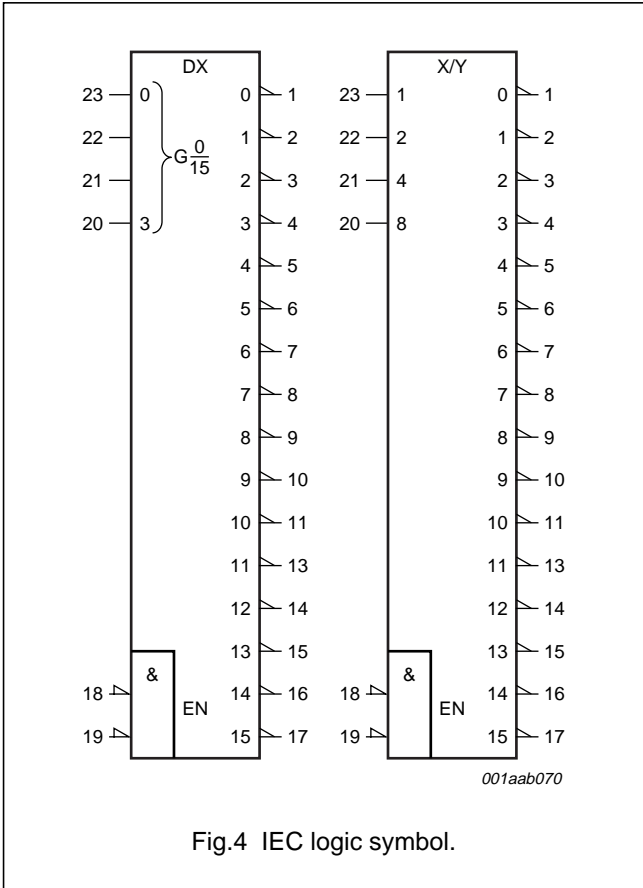
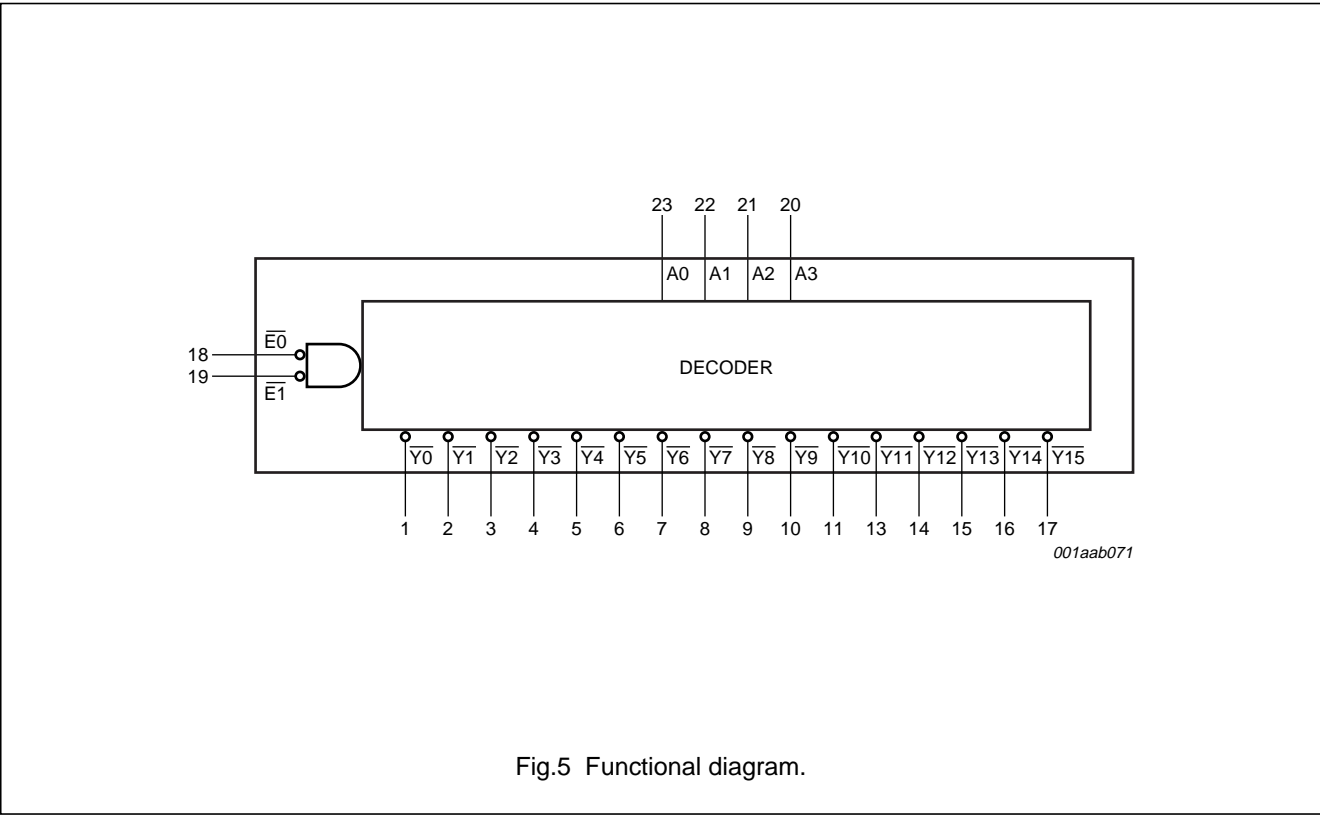Fig.4 IEC logic symbol.

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Fig.5 Functional diagram.

Fig.6 Logic diagram.
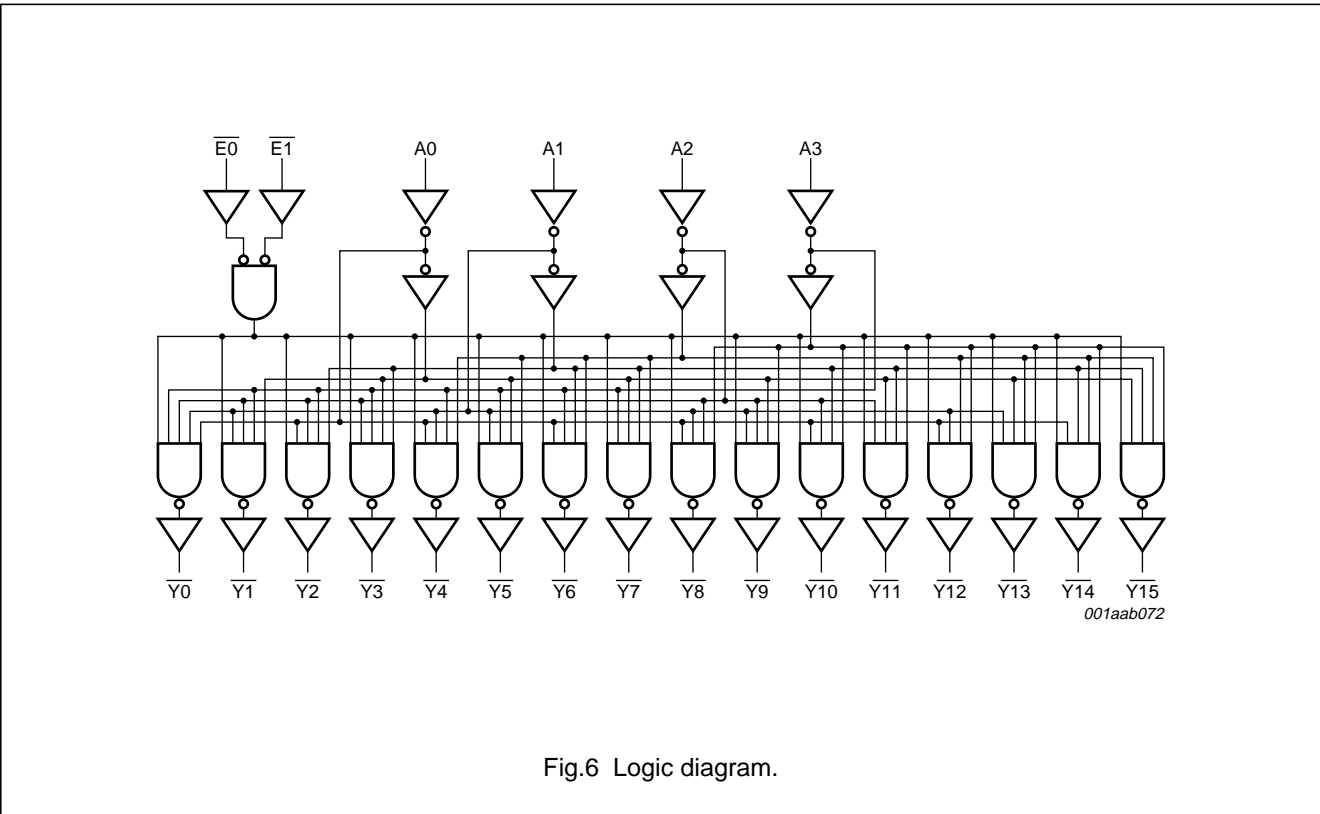
4-to-16 line decoder/demultiplexer

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RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	CONDITIONS	74HC154			74HCT154			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
V_{CC}	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
V_I	input voltage		0	–	V_{CC}	0	–	V_{CC}	V
V_O	output voltage		0	–	V_{CC}	0	–	V_{CC}	V
T_{amb}	ambient temperature		–40	+25	+125	–40	+25	+125	°C
t_r, t_f	input rise and fall times	V_{CC} = 2.0 V	–	–	1000	–	–	–	ns
		V_{CC} = 4.5 V	–	6.0	500	–	6.0	500	ns
		V_{CC} = 6.0 V	–	–	400	–	–	–	ns

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134); voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CC}	supply voltage		–0.5	+7.0	V
I_{IK}	input diode current	V_I < –0.5 V or V_I > V_{CC} + 0.5 V; note 1	–	±20	mA
I_{OK}	output diode current	V_O < –0.5 V or V_O > V_{CC} + 0.5 V; note 1	–	±20	mA
I_O	output source or sink current	–0.5 V < V_O < V_{CC} + 0.5 V; note 1	–	±25	mA
I_{CC}, I_{GND}	V_{CC} or GND current	note 1	–	±50	mA
T_{stg}	storage temperature		–65	+150	°C
P_{tot}	power dissipation	T_{amb} = –40 °C to +125 °C; note 2	–	300	mW

Notes

1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. For DIP24 packages: above 70 °C the value of P_{tot} derates linearly with 12 mW/K.

   For SO24 packages: above 70 °C the value of P_{tot} derates linearly with 8 mW/K.

   For SSOP24 and TSSOP24 packages: above 60 °C the value of P_{tot} derates linearly with 5.5 mW/K.

   For DHVQFN24 packages: above 60 °C the value of P_{tot} derates linearly with 4.5 mW/K.

4-to-16 line decoder/demultiplexer

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DC CHARACTERISTICS

Type 74HC154

At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V_{CC} (V)				
T_{amb} = 25 °C							
V_{IH}	HIGH-level input voltage		2.0	1.5	1.2	–	V
			4.5	3.15	2.4	–	V
			6.0	4.2	3.2	–	V
V_{IL}	LOW-level input voltage		2.0	–	0.8	0.5	V
			4.5	–	2.1	1.35	V
			6.0	–	2.8	1.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		I_O = −20 µA	2.0	1.9	2.0	–	V
		I_O = −20 µA	4.5	4.4	4.5	–	V
		I_O = −20 µA	6.0	5.9	6.0	–	V
		I_O = −4.0 mA	4.5	3.98	4.32	–	V
		I_O = −5.2 mA	6.0	5.48	5.81	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		I_O = 20 µA	2.0	–	0	0.1	V
		I_O = 20 µA	4.5	–	0	0.1	V
		I_O = 20 µA	6.0	–	0	0.1	V
		I_O = 4.0 mA	4.5	–	0.15	0.26	V
		I_O = 5.2 mA	6.0	–	0.16	0.26	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	6.0	–	–	±0.1	µA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; I_O = 0 A	6.0	–	–	8.0	µA

4-to-16 line decoder/demultiplexer

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SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V_{CC} (V)				
T_{amb} = −40 °C to +85 °C							
V_{IH}	HIGH-level input voltage		2.0	1.5	–	–	V
			4.5	3.15	–	–	V
			6.0	4.2	–	–	V
V_{IL}	LOW-level input voltage		2.0	–	–	0.5	V
			4.5	–	–	1.35	V
			6.0	–	–	1.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = -20$ μA	2.0	1.9	–	–	V
		$I_O = -20$ μA	4.5	4.4	–	–	V
		$I_O = -20$ μA	6.0	5.9	–	–	V
		$I_O = -4.0$ mA	4.5	3.84	–	–	V
		$I_O = -5.2$ mA	6.0	5.34	–	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = 20$ μA	2.0	–	–	0.1	V
		$I_O = 20$ μA	4.5	–	–	0.1	V
		$I_O = 20$ μA	6.0	–	–	0.1	V
		$I_O = 4.0$ mA	4.5	–	–	0.33	V
		$I_O = 5.2$ mA	6.0	–	–	0.33	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	6.0	–	–	±1.0	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A	6.0	–	–	80	μA

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V_{CC} (V)				
T_{amb} = −40 °C to +125 °C							
V_{IH}	HIGH-level input voltage		2.0	1.5	–	–	V
			4.5	3.15	–	–	V
			6.0	4.2	–	–	V
V_{IL}	LOW-level input voltage		2.0	–	–	0.5	V
			4.5	–	–	1.35	V
			6.0	–	–	1.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = -20\ \mu A$	2.0	1.9	–	–	V
		$I_O = -20\ \mu A$	4.5	4.4	–	–	V
		$I_O = -20\ \mu A$	6.0	5.9	–	–	V
		$I_O = -4.0$ mA	4.5	3.7	–	–	V
		$I_O = -5.2$ mA	6.0	5.2	–	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = 20\ \mu A$	2.0	–	–	0.1	V
		$I_O = 20\ \mu A$	4.5	–	–	0.1	V
		$I_O = 20\ \mu A$	6.0	–	–	0.1	V
		$I_O = 4.0$ mA	4.5	–	–	0.4	V
		$I_O = 5.2$ mA	6.0	–	–	0.4	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	6.0	–	–	±0.1	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A	6.0	–	–	160	μA

4-to-16 line decoder/demultiplexer

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Type 74HCT154

At recommended operating conditions; voltages are referenced to GND (ground = 0 V).

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V_{CC} (V)				
T_{amb} = 25 °C							
V_{IH}	HIGH-level input voltage		4.5 to 5.5	2.0	1.6	–	V
V_{IL}	LOW-level input voltage		4.5 to 5.5	–	1.2	0.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = -20$ μA	4.5	4.4	4.5	–	V
		$I_O = -4$ mA	4.5	3.98	4.32	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = 20$ μA	4.5	–	0	0.1	V
		$I_O = 4$ mA	4.5	–	0.15	0.25	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	5.5	–	–	±0.1	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A	5.5	–	–	8.0	μA
ΔI_{CC}	additional quiescent supply current per input	$V_I = V_{CC} - 2.1$ V; $I_O = 0$ A	4.5 to 5.5	–	–	360	μA
T_{amb} = −40 °C to +85 °C							
V_{IH}	HIGH-level input voltage		4.5 to 5.5	2.0	–	–	V
V_{IL}	LOW-level input voltage		4.5 to 5.5	–	–	0.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = -20$ μA	4.5	4.4	–	–	V
		$I_O = -4$ mA	4.5	3.84	–	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = 20$ μA	4.5	–	–	0.1	V
		$I_O = 4$ mA	4.5	–	–	0.33	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	5.5	–	–	±1.0	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A	5.5	–	–	80	μA
ΔI_{CC}	additional quiescent supply current per input	$V_I = V_{CC} - 2.1$ V; $I_O = 0$ A	4.5 to 5.5	–	–	450	μA

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SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
		OTHER	V_{CC} (V)				
T_{amb} = −40 °C to +125 °C							
V_{IH}	HIGH-level input voltage		4.5 to 5.5	2.0	–	–	V
V_{IL}	LOW-level input voltage		4.5 to 5.5	–	–	0.8	V
V_{OH}	HIGH-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = -20\ \mu A$	4.5	4.4	–	–	V
		$I_O = -4\ mA$	4.5	3.7	–	–	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}					
		$I_O = 20\ \mu A$	4.5	–	–	0.1	V
		$I_O = 4\ mA$	4.5	–	–	0.4	V
I_{LI}	input leakage current	$V_I = V_{CC}$ or GND	5.5	–	–	±1.0	μA
I_{CC}	quiescent supply current	$V_I = V_{CC}$ or GND; $I_O = 0\ A$	5.5	–	–	160	μA
ΔI_{CC}	additional quiescent supply current per input	$V_I = V_{CC} - 2.1$ V; $I_O = 0\ A$	4.5 to 5.5	–	–	490	μA

4-to-16 line decoder/demultiplexer

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AC CHARACTERISTICS

Type 74HC154

GND = 0 V; t_r = t_f = 6 ns; C_L = 50 pF.

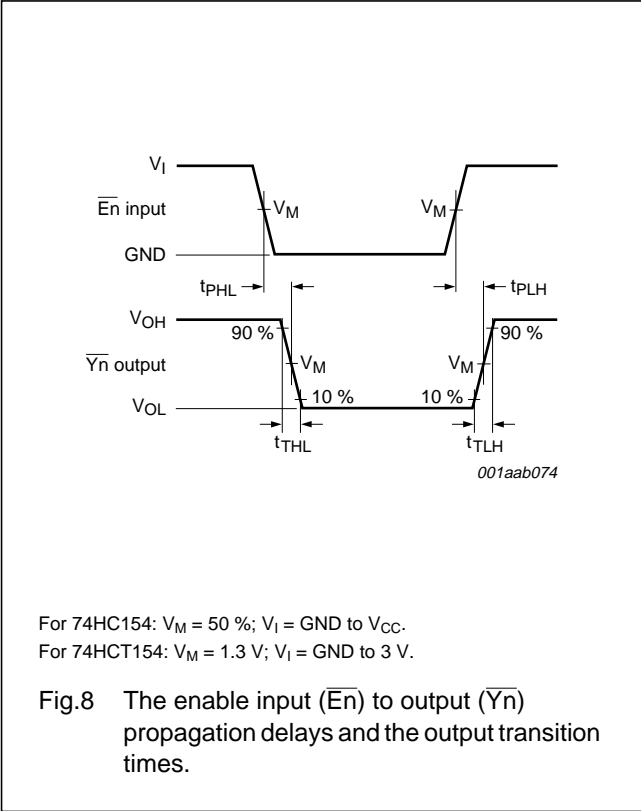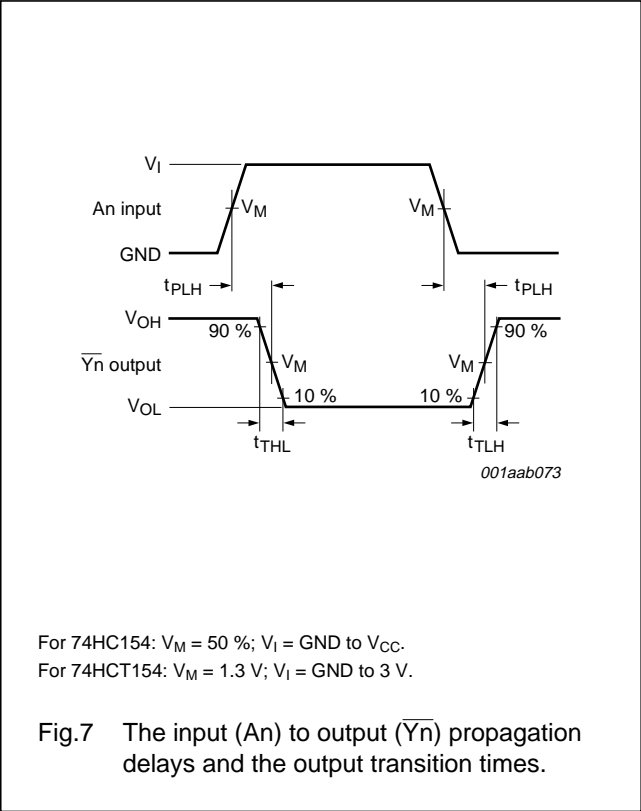| SYMBOL	PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
		WAVEFORMS	V_{CC} (V)				
T_{amb} = 25 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	2.0	–	36	150	ns
			4.5	–	13	30	ns
			6.0	–	10	26	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	2.0	–	39	150	ns
			4.5	–	14	30	ns
			6.0	–	11	26	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	2.0	–	19	75	ns
			4.5	–	7	15	ns
			6.0	–	6	13	ns
T_{amb} = −40 °C to +85 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	2.0	–	–	190	ns
			4.5	–	–	38	ns
			6.0	–	–	33	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	2.0	–	–	190	ns
			4.5	–	–	38	ns
			6.0	–	–	33	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	2.0	–	–	95	ns
			4.5	–	–	19	ns
			6.0	–	–	16	ns
T_{amb} = −40 °C to +125 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	2.0	–	–	225	ns
			4.5	–	–	45	ns
			6.0	–	–	38	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	2.0	–	–	225	ns
			4.5	–	–	45	ns
			6.0	–	–	38	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	2.0	–	–	110	ns
			4.5	–	–	22	ns
			6.0	–	–	19	ns

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

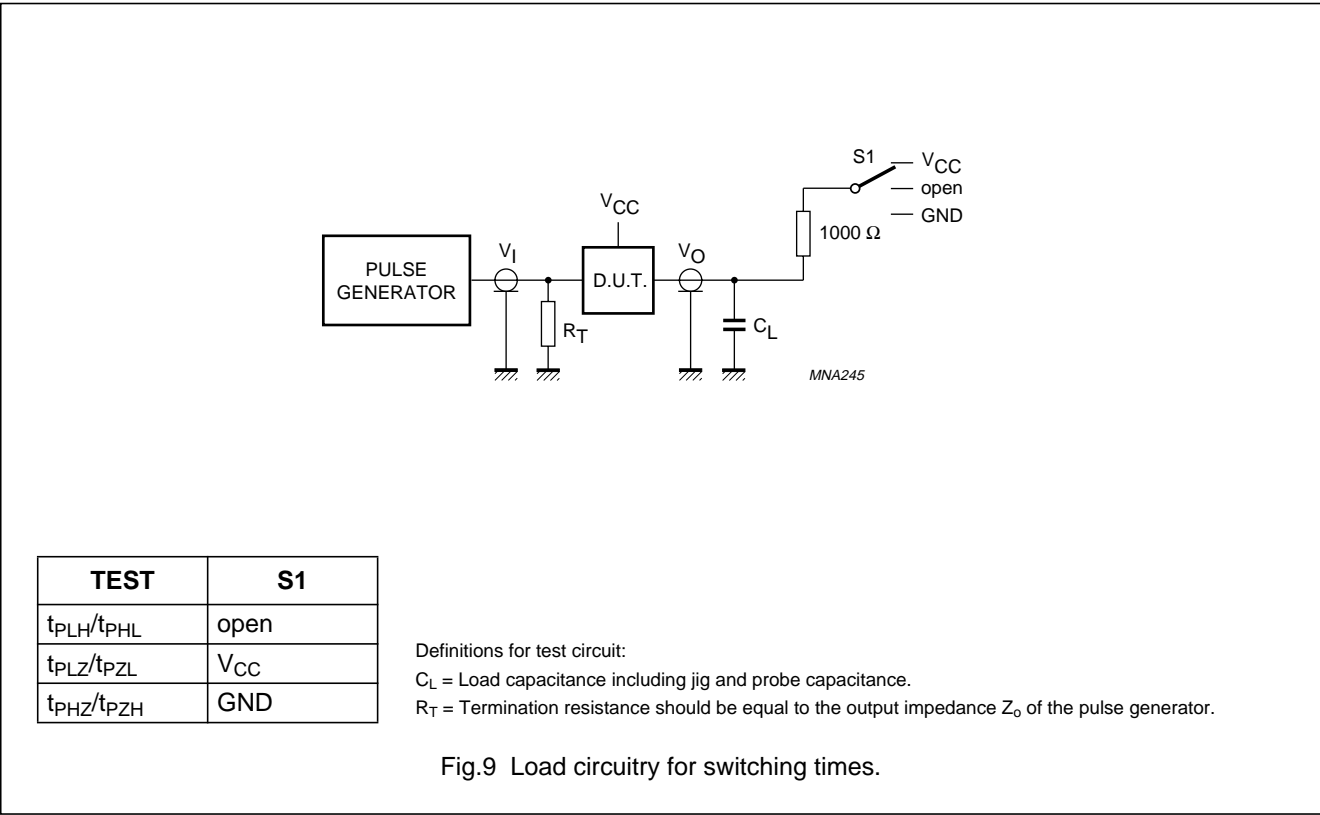**Type 74HCT154**

GND = 0 V; $t_r = t_f = 6$ ns; $C_L = 50$ pF.

SYMBOL	PARAMETER	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
		WAVEFORMS	V_{CC} (V)				
T_{amb} = 25 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	4.5	–	16	35	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	4.5	–	15	32	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	4.5	–	7	15	ns
T_{amb} = −40 °C to +85 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	4.5	–	–	44	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	4.5	–	–	40	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	4.5	–	–	19	ns
T_{amb} = −40 °C to +125 °C							
t_{PHL}/t_{PLH}	propagation delay An to $\overline{Yn}$	see Figs 7 and 9	4.5	–	–	53	ns
	propagation delay $\overline{En}$ to $\overline{Yn}$	see Figs 8 and 9	4.5	–	–	48	ns
t_{THL}/t_{TLH}	output transition time	see Figs 7, 8 and 9	4.5	–	–	22	ns

AC WAVEFORMS

For 74HC154: $V_M = 50$ %; $V_I = $ GND to V_{CC}.
For 74HCT154: $V_M = 1.3$ V; $V_I = $ GND to 3 V.

Fig.7   The input (An) to output ($\overline{Yn}$) propagation delays and the output transition times.

For 74HC154: $V_M = 50$ %; $V_I = $ GND to V_{CC}.
For 74HCT154: $V_M = 1.3$ V; $V_I = $ GND to 3 V.

Fig.8   The enable input ($\overline{En}$) to output ($\overline{Yn}$) propagation delays and the output transition times.

TEST	S1
t_{PLH}/t_{PHL}	open
t_{PLZ}/t_{PZL}	V_{CC}
t_{PHZ}/t_{PZH}	GND

Definitions for test circuit:

C_L = Load capacitance including jig and probe capacitance.

R_T = Termination resistance should be equal to the output impedance Z_o of the pulse generator.

Fig.9 Load circuitry for switching times.

APPLICATION DATA

Fig.10   1-of-16 decoder; LOW level output selected.

Fig.11   1-of-16 demultiplexer; logic level on selected outputs follow the logic level on the data input.

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

PACKAGE OUTLINES
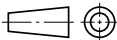
DIP24: plastic dual in-line package; 24 leads (600 mil)   **SOT101-1**
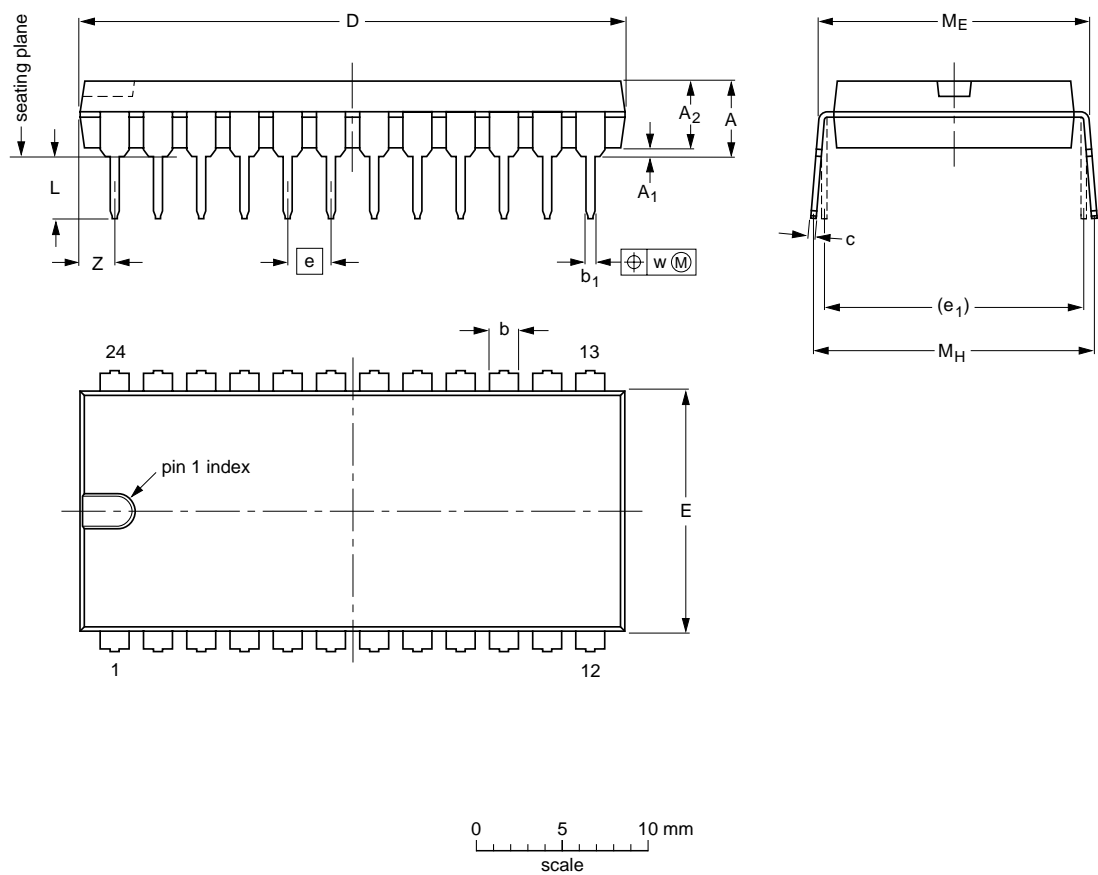
DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A₁ min.	A₂ max.	b	b₁	c	D (1)	E (1)	e	e₁	L	M_E	M_H	w	Z (1) max.
mm	5.1	0.51	4	1.7 1.3	0.53 0.38	0.32 0.23	32.0 31.4	14.1 13.7	2.54	15.24	3.9 3.4	15.80 15.24	17.15 15.90	0.25	2.2
inches	0.2	0.02	0.16	0.066 0.051	0.021 0.015	0.013 0.009	1.26 1.24	0.56 0.54	0.1	0.6	0.15 0.13	0.62 0.60	0.68 0.63	0.01	0.087

Note

1. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.
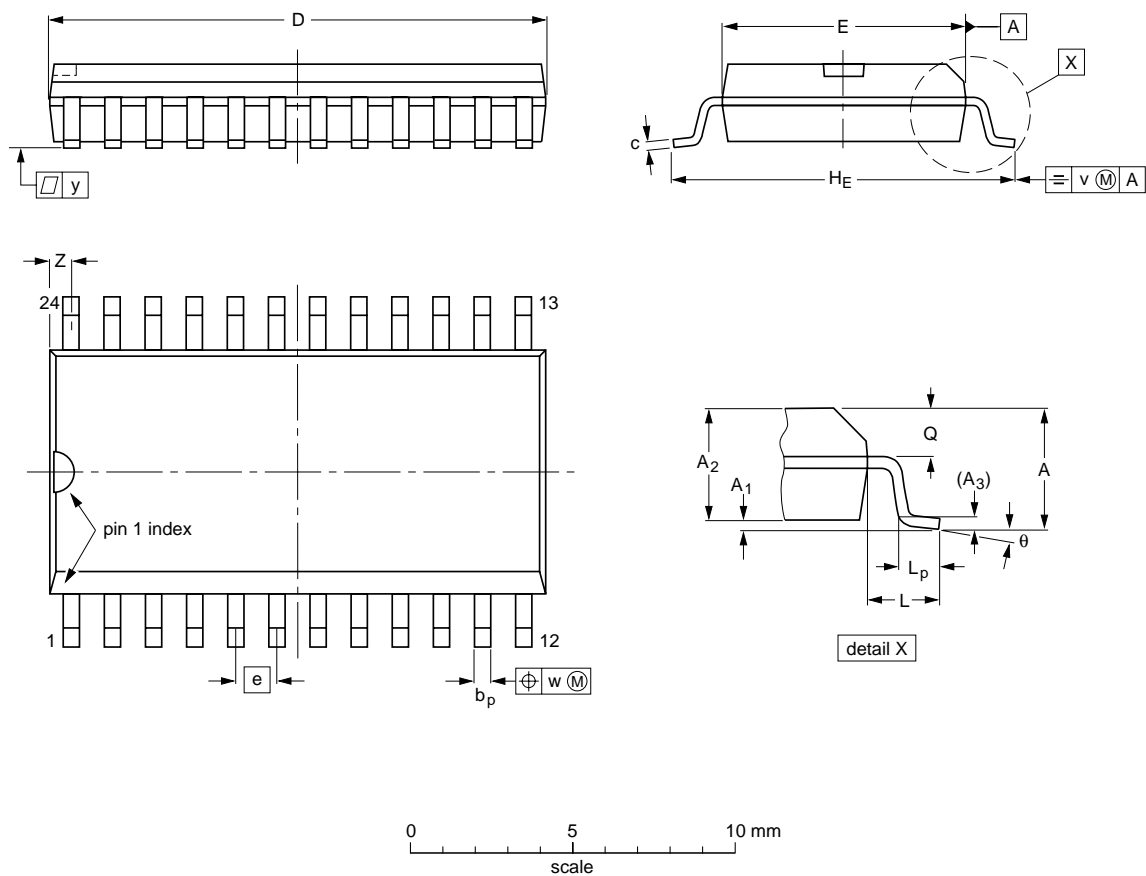
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT101-1	051G02	MO-015	SC-509-24			99-12-27 03-02-13

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

SO24: plastic small outline package; 24 leads; body width 7.5 mm

SOT137-1

pin 1 index

detail X

```
0          5          10 mm
scale
```

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	2.65	0.3 0.1	2.45 2.25	0.25	0.49 0.36	0.32 0.23	15.6 15.2	7.6 7.4	1.27	10.65 10.00	1.4	1.1 0.4	1.1 1.0	0.25	0.25	0.1	0.9 0.4	8° 0°
inches	0.1	0.012 0.004	0.096 0.089	0.01	0.019 0.014	0.013 0.009	0.61 0.60	0.30 0.29	0.05	0.419 0.394	0.055	0.043 0.016	0.043 0.039	0.01	0.01	0.004	0.035 0.016	

Note

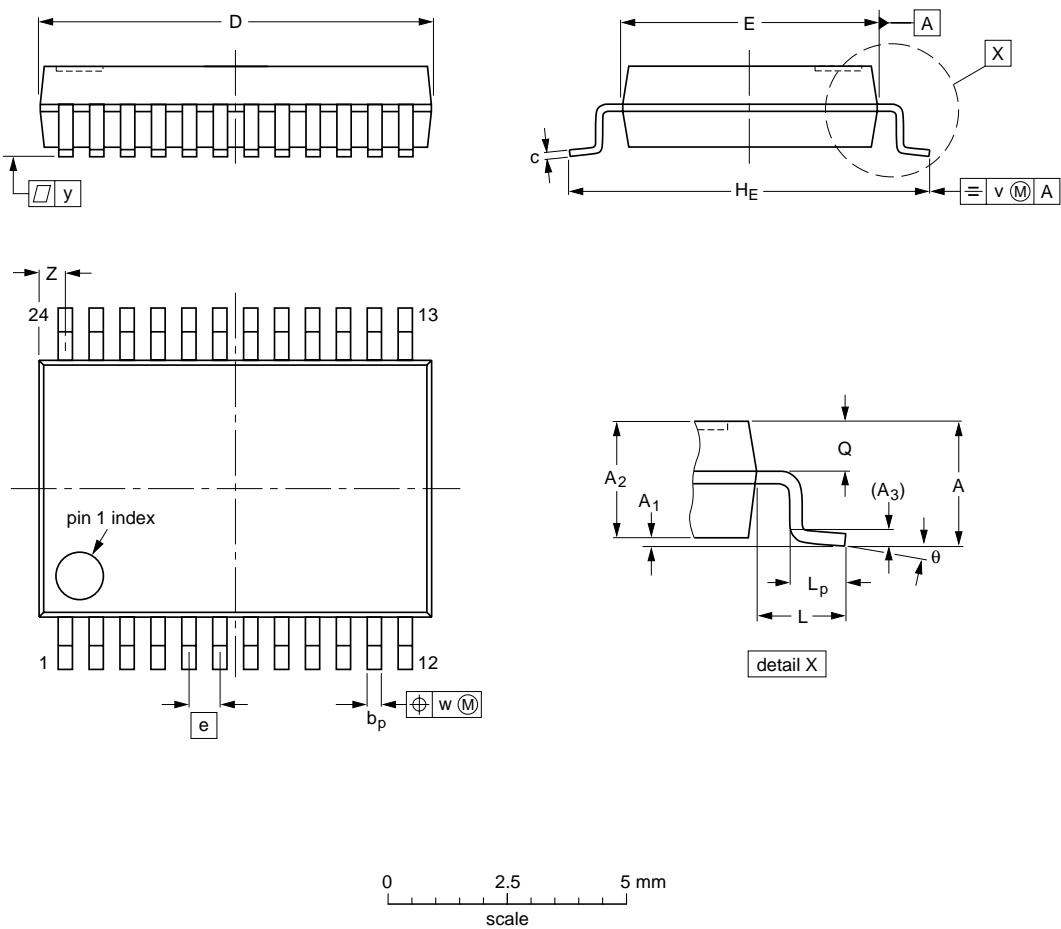1. Plastic or metal protrusions of 0.15 mm (0.006 inch) maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT137-1	075E05	MS-013				99-12-27 03-02-19

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

SSOP24: plastic shrink small outline package; 24 leads; body width 5.3 mm

SOT340-1

pin 1 index

detail X

0   2.5   5 mm
scale

DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A₁	A₂	A₃	bₚ	c	D⁽¹⁾	E⁽¹⁾	e	Hₑ	L	Lₚ	Q	v	w	y	Z⁽¹⁾	θ
mm	2	0.21 0.05	1.80 1.65	0.25	0.38 0.25	0.20 0.09	8.4 8.0	5.4 5.2	0.65	7.9 7.6	1.25	1.03 0.63	0.9 0.7	0.2	0.13	0.1	0.8 0.4	8° 0°

Note

1. Plastic or metal protrusions of 0.2 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT340-1		MO-150				99-12-27 03-02-19

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

TSSOP24: plastic thin shrink small outline package; 24 leads; body width 4.4 mm   **SOT355-1**

detail X

```
0        2.5        5 mm
|__|__|__|__|__|__|__|__|__|__|
          scale
```
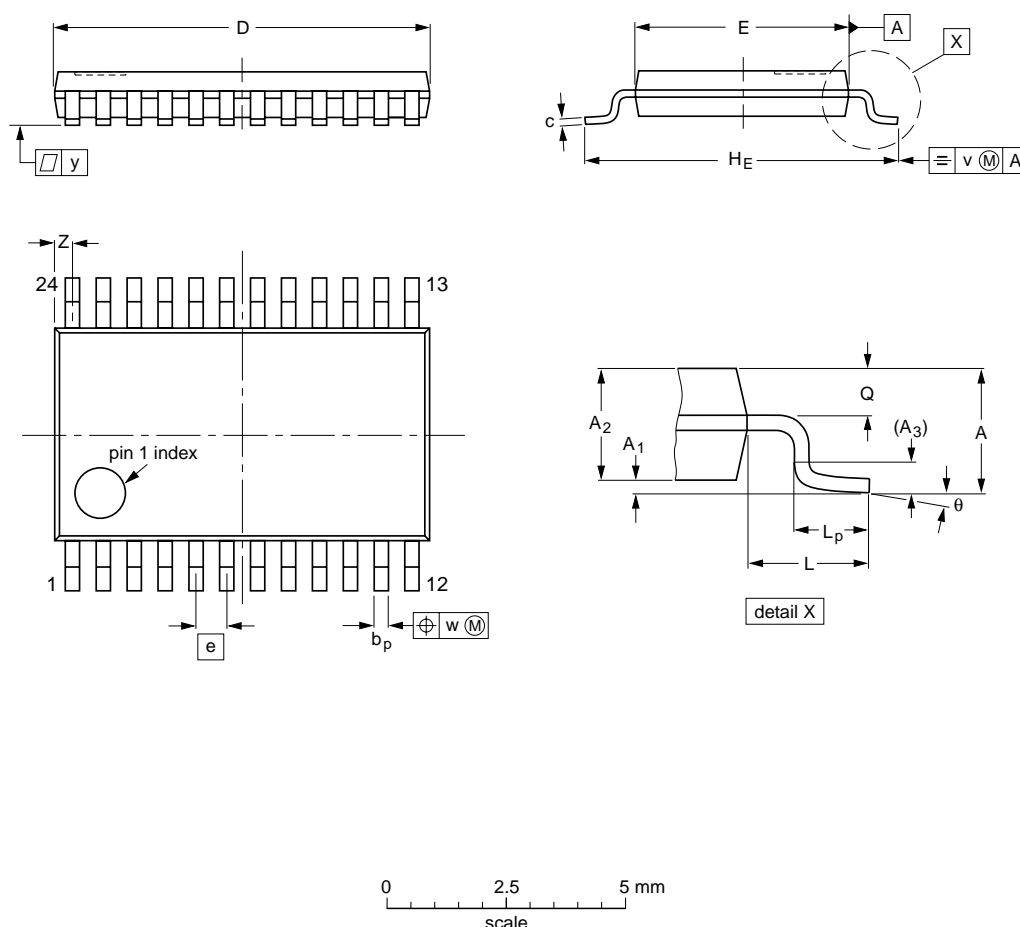
DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A₁	A₂	A₃	b_p	c	D(1)	E(2)	e	H_E	L	L_p	Q	v	w	y	Z (1)	θ
mm	1.1	0.15 0.05	0.95 0.80	0.25	0.30 0.19	0.2 0.1	7.9 7.7	4.5 4.3	0.65	6.6 6.2	1	0.75 0.50	0.4 0.3	0.2	0.13	0.1	0.5 0.2	8° 0°

Notes

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
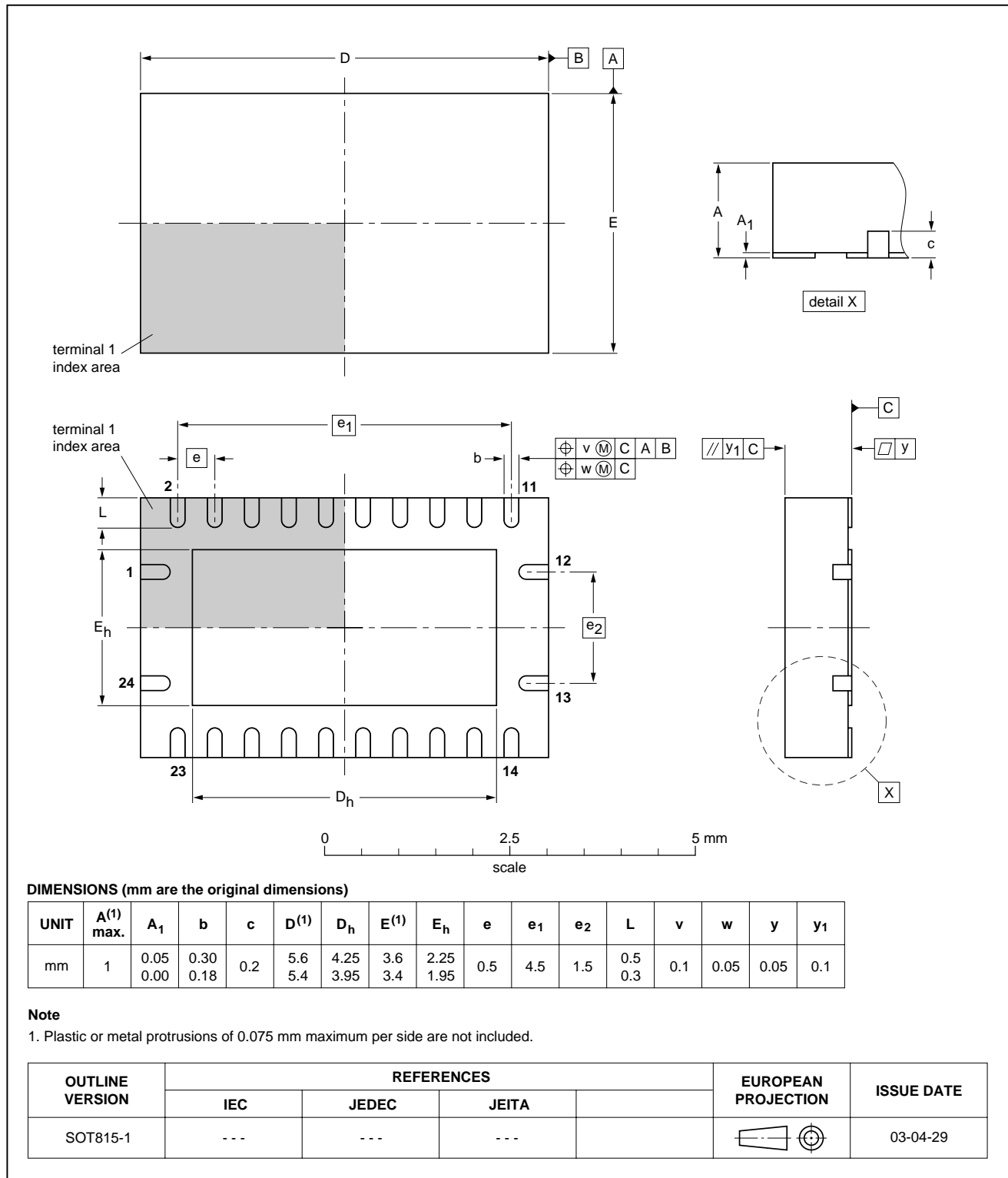2. Plastic interlead protrusions of 0.25 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT355-1		MO-153				~~99-12-27~~ 03-02-19

**DHVQFN24: plastic dual in-line compatible thermal enhanced very thin quad flat package;
no leads; 24 terminals; body 3.5 x 5.5 x 0.85 mm**

SOT815-1

terminal 1 index area

detail X

DIMENSIONS (mm are the original dimensions)

UNIT	A[1] max.	A₁	b	c	D[1]	Dₕ	E[1]	Eₕ	e	e₁	e₂	L	v	w	y	y₁
mm	1	0.05 0.00	0.30 0.18	0.2	5.6 5.4	4.25 3.95	3.6 3.4	2.25 1.95	0.5	4.5	1.5	0.5 0.3	0.1	0.05	0.05	0.1

Note

1. Plastic or metal protrusions of 0.075 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT815-1	- - -	- - -	- - -			03-04-29

4-to-16 line decoder/demultiplexer

74HC154; 74HCT154

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS[1]	PRODUCT STATUS[2][3]	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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