

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



# Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China







# 74HC540; 74HCT540

Octal buffer/line driver; 3-state; inverting Rev. 3 — 21 January 2013

**Product data sheet** 

### 1. **General description**

The 74HC540; 74HCT540 is an 8-bit inverting buffer/line driver with 3-state outputs. The device features two output enables (OE1 and OE2). A HIGH on OEn causes the outputs to assume a high-impedance OFF-state. Inputs include clamp diodes. This enables the use of current limiting resistors to interface inputs to voltages in excess of V<sub>CC</sub>.

### 2. Features and benefits

- Inverting outputs
- Complies with JEDEC standard no. 7A
- Input levels:
  - ◆ For 74HC540: CMOS level
  - ◆ For 74HCT540: TTL level
- ESD protection:
  - ◆ HBM JESD22-A114F exceeds 2000 V
  - MM JESD22-A115-A exceeds 200 V
- Multiple package options
- Specified from -40 °C to +85 °C and from -40 °C to +125 °C

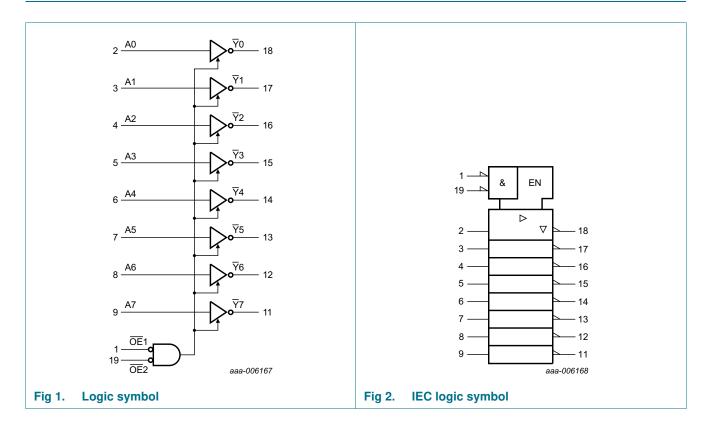
### **Ordering information** 3.

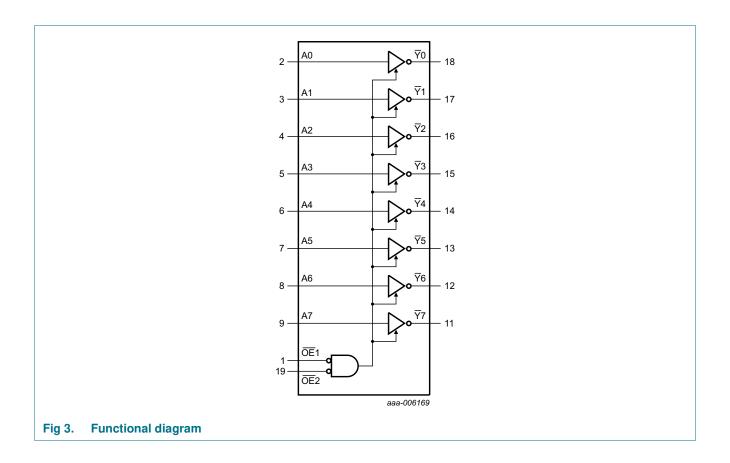
Table 1. **Ordering information** 

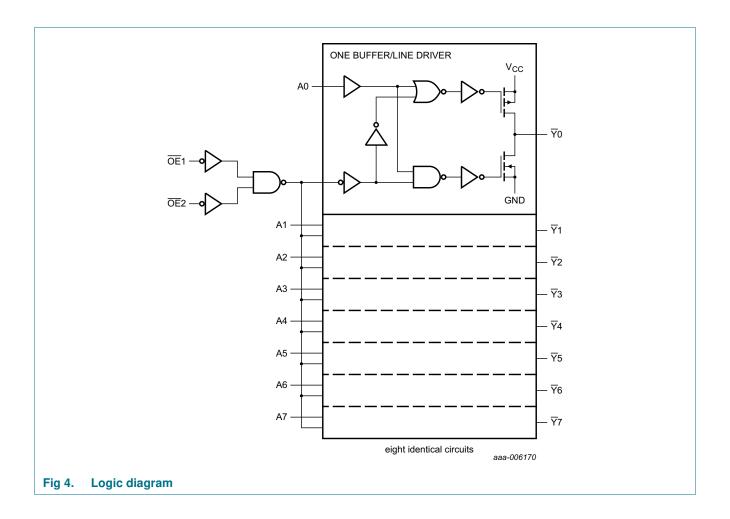
Type number	Package											
	Temperature range	Name	Description	Version								
74HC540N	–40 °C to +125 °C	DIP20	plastic dual in-line package; 20 leads (300 mil)	SOT146-1								
74HCT540N												
74HC540D	–40 °C to +125 °C	SO20	plastic small outline package; 20 leads;	SOT163-1								
74HCT540D			body width 7.5 mm									
74HC540DB	–40 °C to +125 °C	SSOP20	plastic shrink small outline package; 20 leads;	SOT339-1								
74HCT540DB			body width 5.3 mm									



# 4. Functional diagram

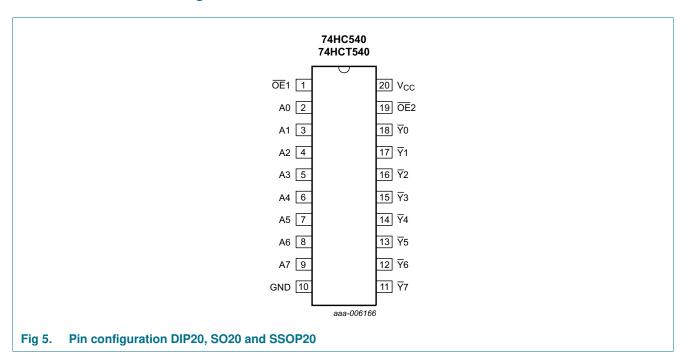






## 5. Pinning information

## 5.1 Pinning



## 5.2 Pin description

Table 2. Pin description

	· ··· docomplian	
Symbol	Pin	Description
OE1	1	output enable input (active LOW)
A0 to A7	2, 3, 4, 5, 6, 7, 8, 9	data input
GND	10	ground (0 V)
$\overline{Y}$ 0 to $\overline{Y}$ 7	18, 17, 16, 15, 14, 13, 12, 11	data output
OE2	19	output enable input (active LOW)
V <sub>CC</sub>	20	supply voltage

## 6. Functional description

Table 3. Functional table[1]

Control		Input	Output
OE1	OE2	An	Yn
L	L	L	Н
L	L	Н	L
X	Н	Χ	Z
Н	Х	Χ	Z

[1] H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state.

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

## 7. Limiting values

Table 4. 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	V
I <sub>IK</sub>	input clamping current	$V_I < -0.5 \text{ V or } V_I > V_{CC} + 0.5 \text{ V}$	<u>[1]</u> -	±20	mA
I <sub>OK</sub>	output clamping current	$V_O < -0.5 \; V$ or $V_O > V_{CC} + 0.5 \; V$	<u>[1]</u> -	±20	mA
Io	output current	$-0.5 \text{ V} < \text{V}_{\text{O}} < \text{V}_{\text{CC}} + 0.5 \text{ V}$	-	±35	mA
I <sub>CC</sub>	supply current		-	70	mA
I <sub>GND</sub>	ground current		-70	-	mA
T <sub>stg</sub>	storage temperature		-65	+150	°C
P <sub>tot</sub>	total power dissipation		[2]		
	DIP20		-	750	mW
	SO20, SSOP20		-	500	mW

<sup>[1]</sup> The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

## 8. Recommended operating conditions

Table 5. Recommended operating conditions

Voltages are referenced to GND (ground = 0 V)

Symbol	Parameter	Conditions	74HC	540		74HC	Unit		
			Min	Тур	Max	Min	Тур	Max	
$V_{CC}$	supply voltage		2.0	5.0	6.0	4.5	5.0	5.5	V
VI	input voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
V <sub>O</sub>	output voltage		0	-	$V_{CC}$	0	-	$V_{CC}$	V
T <sub>amb</sub>	ambient temperature		-40	+25	+125	-40	+25	+125	°C
$\Delta t/\Delta V$	input transition rise and fall rate	$V_{CC} = 2.0 \text{ V}$	-	-	625	-	-	-	ns/V
		$V_{CC} = 4.5 \text{ V}$	-	1.67	139	-	1.67	139	ns/V
		$V_{CC} = 6.0 \text{ V}$	-	-	83	-	-	-	ns/V

<sup>[2]</sup> For DIP20 packages: above 70 °C the value of  $P_{tot}$  derates linearly with 12 mW/K. For SO20 packages: above 70 °C the value of  $P_{tot}$  derates linearly with 8 mW/K. For SSOP20 packages: above 60 °C the value of  $P_{tot}$  derates linearly with 5.5 mW/K.

## 9. Static characteristics

Table 6. Static characteristics

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

Symbol	Parameter	Conditions	Tar	<sub>nb</sub> = 25	°C		: –40 °C 85 °C	T <sub>amb</sub> =	Unit	
			Min	Тур	Max	Min	Max	Min	Max	
74HC54	0						I			
V <sub>IH</sub>	HIGH-level	$V_{CC} = 2.0 \text{ V}$	1.5	1.2	-	1.5	-	1.5	-	V
	input voltage	V <sub>CC</sub> = 4.5 V	3.15	2.4	-	3.15	-	3.15	-	V
		$V_{CC} = 6.0 \text{ V}$	4.2	3.2	-	4.2	-	4.2	-	V
$V_{IL}$	LOW-level	$V_{CC} = 2.0 \text{ V}$	-	8.0	0.5	-	0.5	-	0.5	V
	input voltage	$V_{CC} = 4.5 \text{ V}$	-	2.1	1.35	-	1.35	-	1.35	V
		$V_{CC} = 6.0 \text{ V}$	-	2.8	1.8	-	1.8	-	1.8	V
$V_{OH}$	HIGH-level	$V_I = V_{IH}$ or $V_{IL}$								
	output voltage	$I_{O} = -20 \mu A; V_{CC} = 2.0 V$	1.9	2.0	-	1.9	-	1.9	-	V
		$I_O = -20 \mu A$ ; $V_{CC} = 4.5 V$	4.4	4.5	-	4.4	-	4.4	-	V
		$I_{O} = -20 \mu A; V_{CC} = 6.0 V$	5.9	6.0	-	5.9	-	5.9	-	V
		$I_{O} = -6.0 \text{ mA}; V_{CC} = 4.5 \text{ V}$	3.98	4.32	-	3.84	-	3.7	-	V
		$I_{O} = -7.8 \text{ mA}; V_{CC} = 6.0 \text{ V}$	5.48	5.81	-	5.34	-	5.2	-	V
$V_{OL}$	LOW-level	$V_I = V_{IH}$ or $V_{IL}$								
	output voltage	$I_O = 20 \mu A; V_{CC} = 2.0 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 20 \mu A; V_{CC} = 4.5 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 20 \mu A; V_{CC} = 6.0 V$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 6.0 \text{ mA}; V_{CC} = 4.5 \text{ V}$	-	0.15	0.26	-	0.33	-	0.4	V
		$I_O = 7.8 \text{ mA}; V_{CC} = 6.0 \text{ V}$	-	0.16	0.26	-	0.33	-	0.4	V
l <sub>l</sub>	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 6.0 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μΑ
l <sub>OZ</sub>	OFF-state output current	per input pin; $V_I = V_{IH}$ or $V_{IL}$ ; $V_O = V_{CC}$ or GND; other inputs at $V_{CC}$ or GND; $V_{CC} = 6.0 \text{ V}$ ; $I_O = 0 \text{ A}$	-	±0.5	-	±5.0	-	±10	-	μΑ
I <sub>CC</sub>	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 6.0 \text{ V}$	-	-	8.0	-	80	-	160	μΑ
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF
<b>74HCT5</b>	40									
V <sub>IH</sub>	HIGH-level input voltage	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	2.0	1.6	-	2.0	-	2.0	-	V
$V_{IL}$	LOW-level input voltage	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$	-	1.2	8.0	-	0.8	-	0.8	V
$V_{OH}$	HIGH-level	$V_I = V_{IH}$ or $V_{IL}$ ; $V_{CC} = 4.5 \text{ V}$								
	output voltage	$I_O = -20 \mu A$	4.4	4.5	-	4.4	-	4.4	-	V
		$I_{O} = -6.0 \text{ mA}$	3.98	4.32	-	3.84	-	3.7	-	V

Static characteristics ...continued Table 6.

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

Symbol	Parameter	Conditions	T <sub>ar</sub>	<sub>nb</sub> = 25	°C		-40 °C 85 °C		: –40 °C I25 °C	Unit
			Min	Тур	Max	Min	Max	Min	Max	
$V_{OL}$	LOW-level	$V_I = V_{IH}$ or $V_{IL}$ ; $V_{CC} = 4.5 V$								
	output voltage	$I_{O} = 20 \mu A;$	-	0	0.1	-	0.1	-	0.1	V
		$I_O = 6.0 \text{ mA};$	-	0.16	0.26	-	0.33	-	0.4	V
l <sub>l</sub>	input leakage current	$V_I = V_{CC}$ or GND; $V_{CC} = 5.5 \text{ V}$	-	-	±0.1	-	±1.0	-	±1.0	μА
I <sub>OZ</sub>	OFF-state output current	per input pin; $V_I = V_{IH}$ or $V_{IL}$ ; $V_O = V_{CC}$ or GND; other inputs at $V_{CC}$ or GND; $V_{CC} = 5.5 \text{ V}$ ; $I_O = 0 \text{ A}$	-	-	±0.5	-	±5.0	-	±10	μΑ
I <sub>CC</sub>	supply current	$V_I = V_{CC}$ or GND; $I_O = 0$ A; $V_{CC} = 5.5 \text{ V}$	-	-	8.0	-	80	-	160	μА
Δl <sub>CC</sub>	additional supply current	per input pin; $I_O = 0$ A; $V_I = V_{CC} - 2.1$ V; other inputs at $V_{CC}$ or GND; $V_{CC} = 4.5$ V to 5.5 V								
		An input	-	140	504	-	630	-	686	μΑ
		OE1 input	-	150	540	-	675	-	735	μΑ
		OE2 input	-	100	360	-	450	-	490	μΑ
C <sub>I</sub>	input capacitance		-	3.5	-	-	-	-	-	pF

# 10. Dynamic characteristics

Table 7. **Dynamic characteristics** 

 $GND = 0 \ V; \ C_L = 50 \ pF;$  for test circuit see <u>Figure 8</u>.

Symbol	Parameter	Conditions		Tan	<sub>nb</sub> = 25	°C	$T_{amb} = -40^{\circ}$	Unit	
				Min	Тур	Max	Max (85 °C)	Max (125 °C)	
74HC540		'			•				
t <sub>pd</sub>	propagation delay	An to Yn; see Figure 6	[1]						
		V <sub>CC</sub> = 2.0 V		-	30	100	125	150	ns
		V <sub>CC</sub> = 4.5 V		-	11	20	25	30	ns
		$V_{CC} = 5.0 \text{ V}; C_L = 15 \text{ pF}$		-	9	-	-	-	ns
		V <sub>CC</sub> = 6.0 V		-	9	17	21	26	ns
t <sub>en</sub>	enable time	OEn to Yn; see Figure 7	[1]						
		V <sub>CC</sub> = 2.0 V		-	52	160	200	240	ns
		V <sub>CC</sub> = 4.5 V		-	19	32	40	48	ns
		V <sub>CC</sub> = 6.0 V		-	15	27	34	41	ns
t <sub>dis</sub>	disable time	OEn to Yn; see Figure 7	[1]						
		$V_{CC} = 2.0 \text{ V}$		-	61	160	200	240	ns
		V <sub>CC</sub> = 4.5 V		-	22	32	40	48	ns
		V <sub>CC</sub> = 6.0 V		-	18	27	34	41	ns

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

Table 7. Dynamic characteristics

 $GND = 0 \ V; \ C_L = 50 \ pF;$  for test circuit see <u>Figure 8</u>.

Symbol	Parameter	Conditions		Tar	<sub>nb</sub> = 25	°C	$T_{amb} = -40^{\circ}$	°C to +125 °C	Unit
				Min	Тур	Max	Max (85 °C)	Max (125 °C)	
t <sub>t</sub>	transition time	see Figure 6	[2]			'	'		
		$V_{CC} = 2.0 \text{ V}$		-	14	60	75	90	ns
		$V_{CC} = 4.5 \text{ V}$		-	5	12	15	18	ns
		$V_{CC} = 6.0 \text{ V}$		-	4	10	13	15	ns
$C_{PD}$	power dissipation capacitance	per package; $V_I = GND$ to $V_{CC}$	[3]	-	39	-	-	-	pF
74HCT54	40								
t <sub>pd</sub>	propagation delay	An to Yn; see Figure 6	<u>[1]</u>						
		$V_{CC} = 4.5 \text{ V}$		-	13	24	30	36	ns
		$V_{CC} = 5.0 \text{ V}; C_L = 15 \text{ pF}$		-	11	-	-	-	ns
t <sub>en</sub>	enable time	OEn to Yn; see Figure 7	<u>[1]</u>						
		$V_{CC} = 4.5 \text{ V}$		-	22	35	44	53	ns
t <sub>dis</sub>	disable time	OEn to Yn; see Figure 7	<u>[1]</u>						
		$V_{CC} = 4.5 \text{ V}$		-	23	35	44	53	ns
t <sub>t</sub>	transition time	V <sub>CC</sub> = 4.5 V; see <u>Figure 6</u>	[2]	-	5	12	15	18	ns
$C_{PD}$	power dissipation capacitance	per package; V <sub>I</sub> = GND to V <sub>CC</sub> - 1.5 V	<u>[3]</u>	-	44	-	-	-	pF

<sup>[1]</sup>  $t_{pd}$  is the same as  $t_{PLH}$  and  $t_{PHL}$ .

 $t_{\text{en}}$  is the same as  $t_{\text{PZL}}$  and  $t_{\text{PZH}}.$ 

 $t_{dis}$  is the same as  $t_{PLZ}$  and  $t_{PHZ}$ .

[3]  $C_{PD}$  is used to determine the dynamic power dissipation ( $P_D$  in  $\mu W$ ):

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

 $f_i$  = input frequency in MHz;

 $f_o$  = output frequency in MHz;

C<sub>L</sub> = output load capacitance in pF;

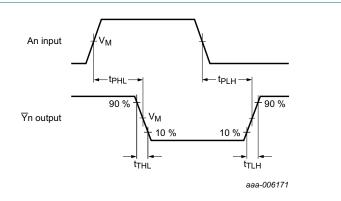
V<sub>CC</sub> = supply voltage in V;

N = number of inputs switching;

 $\sum (C_L \times V_{CC}^2 \times f_0) = \text{sum of outputs.}$ 

<sup>[2]</sup>  $t_t$  is the same as  $t_{THL}$  and  $t_{TLH}$ .

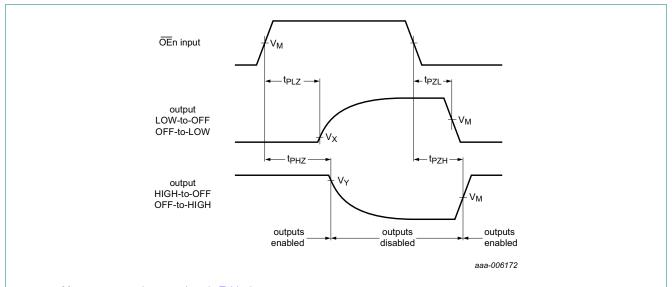
## 11. Waveforms



Measurement points are given in Table 8.

 $V_{OL}$  and  $V_{OH}$  are typical voltage output levels that occur with the output load.

Fig 6. Input to output propagation delays



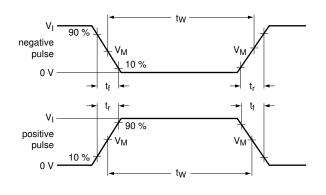
Measurement points are given in Table 8.

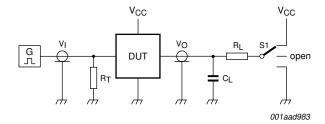
 $\ensuremath{V_{OL}}$  and  $\ensuremath{V_{OH}}$  are typical voltage output levels that occur with the output load.

Fig 7. 3-state enable and disable times

Table 8. Measurement points

Туре	Input	Output		
	V <sub>M</sub>	V <sub>M</sub>	V <sub>X</sub>	V <sub>Y</sub>
74HC540	0.5V <sub>CC</sub>	0.5V <sub>CC</sub>	0.1V <sub>CC</sub>	0.9V <sub>CC</sub>
74HCT540	1.3 V	1.3 V	0.1V <sub>CC</sub>	0.9V <sub>CC</sub>





Test data is given in Table 9.

Definitions test circuit:

 $R_T$  = Termination resistance should be equal to output impedance  $Z_0$  of the pulse generator

C<sub>L</sub> = Load capacitance including jig and probe capacitance

R<sub>L</sub> = Load resistance

S1 = Test selection switch

Fig 8. Test circuit for measuring switching times

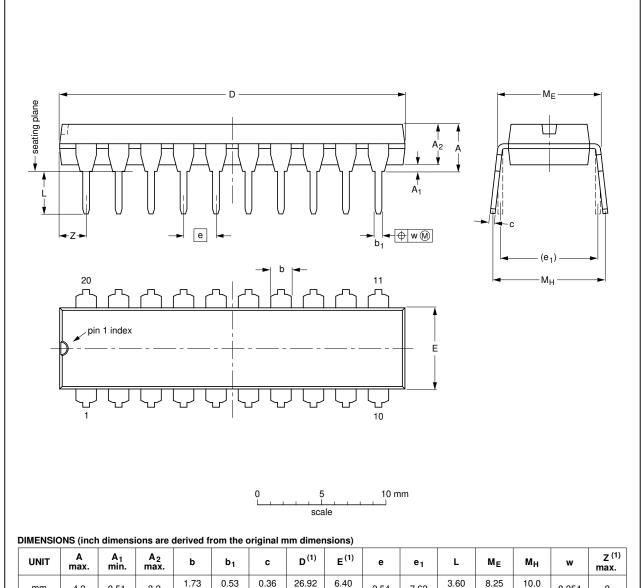
Table 9. Test data

Туре	Input		Load		S1 position			
	VI	t <sub>r</sub> , t <sub>f</sub>	C <sub>L</sub>	R <sub>L</sub>	t <sub>PHL</sub> , t <sub>PLH</sub>	t <sub>PZH</sub> , t <sub>PHZ</sub>	t <sub>PZL</sub> , t <sub>PLZ</sub>	
74HC540	$V_{CC}$	6 ns	15 pF, 50 pF	1 k $\Omega$	open	GND	V <sub>CC</sub>	
74HCT540	3 V	6 ns	15 pF, 50 pF	1 kΩ	open	GND	V <sub>CC</sub>	

## 12. Package outline

## DIP20: plastic dual in-line package; 20 leads (300 mil)

SOT146-1



UNIT	A max.	A <sub>1</sub> min.	A <sub>2</sub> max.	b	b <sub>1</sub>	С	D <sup>(1)</sup>	E <sup>(1)</sup>	е	e <sub>1</sub>	L	ME	Мн	w	Z <sup>(1)</sup> max.
mm	4.2	0.51	3.2	1.73 1.30	0.53 0.38	0.36 0.23	26.92 26.54	6.40 6.22	2.54	7.62	3.60 3.05	8.25 7.80	10.0 8.3	0.254	2
inches	0.17	0.02	0.13	0.068 0.051	0.021 0.015	0.014 0.009	1.060 1.045	0.25 0.24	0.1	0.3	0.14 0.12	0.32 0.31	0.39 0.33	0.01	0.078

### Note

1. Plastic or metal protrusions of 0.25 mm (0.01 inch) maximum per side are not included.

OUTLINE VERSION		REFER	ENCES	EUROPEAN	ICCUE DATE
	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE
SOT146-1		MS-001	SC-603		<del>99-12-27</del> 03-02-13

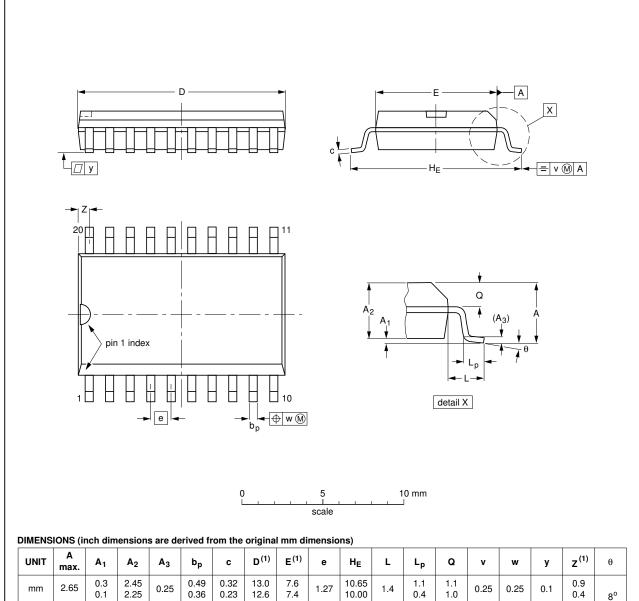
Fig 9. Package outline SOT146-1 (DIP20)

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

## SO20: plastic small outline package; 20 leads; body width 7.5 mm

SOT163-1



UNIT	A max.	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	bp	C	D <sup>(1)</sup>	E <sup>(1)</sup>	е	HE	L	Lp	Q	v	w	у	z <sup>(1)</sup>	θ
mm	2.65	0.3 0.1	2.45 2.25	0.25	0.49 0.36	0.32 0.23	13.0 12.6	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°
inches	0.1	0.012 0.004	0.096 0.089	0.01	0.019 0.014	0.013 0.009	0.51 0.49	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	0°

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

OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE	
SOT163-1	075E04	MS-013			<del>99-12-27</del> 03-02-19	

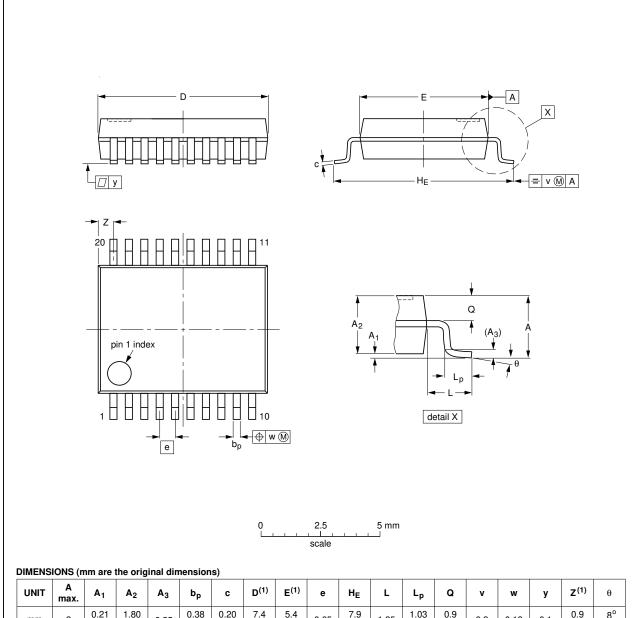
Fig 10. Package outline SOT163-1 (SO20)

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

## SSOP20: plastic shrink small outline package; 20 leads; body width 5.3 mm

SOT339-1



UN	IT   '	A nax.	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	bp	С	D <sup>(1)</sup>	E <sup>(1)</sup>	е	HE	L	Lp	Q	v	w	у	Z <sup>(1)</sup>	θ
mr	n :	2	0.21 0.05	1.80 1.65	0.25	0.38 0.25	0.20 0.09	7.4 7.0	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	0.9 0.5	8° 0°

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

OUTLINE		REFER	ENCES	EUROPEAN	ISSUE DATE	
VERSION	IEC	JEDEC	JEITA	PROJECTION	ISSUE DATE	
SOT339-1		MO-150			<del>99-12-27</del> 03-02-19	

Fig 11. Package outline SOT339-1 (SSOP20)

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

## 13. Abbreviations

### Table 10. Abbreviations

Acronym	Description
CMOS	Complementary Metal-Oxide Semiconductor
DUT	Device Under Test
ESD	ElectroStatic Discharge
НВМ	Human Body Model
LSTTL	Low-power Schottky Transistor-Transistor Logic
MM	Machine Model

# 14. Revision history

## Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes			
74HC_HCT540 v.3	20130121	Product data sheet	-	74HC_HCT540_CNV v.2			
Modifications:	<ul> <li>The format of this data sheet has been redesigned to comply with the new ident guidelines of NXP Semiconductors.</li> </ul>						
	<ul> <li>Legal texts h</li> </ul>	nave been adapted to the r	new company name whe	re appropriate.			
74HC_HCT540_CNV v.2	19970905	Product specification	-	-			

## 15. Legal information

### 15.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions"
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <a href="http://www.nxp.com">http://www.nxp.com</a>.

### 15.2 Definitions

Draft — The document is a draft version only. The content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included herein and shall have no liability for the consequences of use of such information.

Short data sheet — A short data sheet is an extract from a full data sheet with the same product type number(s) and title. A short data sheet is intended for quick reference only and should not be relied upon to contain detailed and full information. For detailed and full information see the relevant full data sheet, which is available on request via the local NXP Semiconductors sales office. In case of any inconsistency or conflict with the short data sheet, the full data sheet shall prevail.

**Product specification** — The information and data provided in a Product data sheet shall define the specification of the product as agreed between NXP Semiconductors and its customer, unless NXP Semiconductors and customer have explicitly agreed otherwise in writing. In no event however, shall an agreement be valid in which the NXP Semiconductors product is deemed to offer functions and qualities beyond those described in the Product data sheet.

### 15.3 Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors.

In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the *Terms and conditions of commercial sale* of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors and its suppliers accept no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

**Applications** — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Limiting values — Stress above one or more limiting values (as defined in the Absolute Maximum Ratings System of IEC 60134) will cause permanent damage to the device. Limiting values are stress ratings only and (proper) operation of the device at these or any other conditions above those given in the Recommended operating conditions section (if present) or the Characteristics sections of this document is not warranted. Constant or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the device.

Terms and conditions of commercial sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <a href="http://www.nxp.com/profile/terms">http://www.nxp.com/profile/terms</a>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. NXP Semiconductors hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of NXP Semiconductors products by customer.

**No offer to sell or license** — Nothing in this document may be interpreted or construed as an offer to sell products that is open for acceptance or the grant, conveyance or implication of any license under any copyrights, patents or other industrial or intellectual property rights.

74HC\_HCT540

All information provided in this document is subject to legal disclaimers.

# 74HC540; 74HCT540

### Octal buffer/line driver; 3-state; inverting

**Export control** — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Non-automotive qualified products — Unless this data sheet expressly states that this specific NXP Semiconductors product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. NXP Semiconductors accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without NXP Semiconductors' warranty of the

product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond NXP Semiconductors' specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies NXP Semiconductors for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond NXP Semiconductors' standard warranty and NXP Semiconductors' product specifications.

### 15.4 Trademarks

Notice: All referenced brands, product names, service names and trademarks are the property of their respective owners.

### 16. Contact information

For more information, please visit: http://www.nxp.com

For sales office addresses, please send an email to: <a href="mailto:salesaddresses@nxp.com">salesaddresses@nxp.com</a>

## **NXP Semiconductors**

Octal buffer/line driver; 3-state; inverting

## 17. Contents

1	General description
2	Features and benefits
3	Ordering information
4	Functional diagram
5	Pinning information
5.1	Pinning
5.2	Pin description
6	Functional description
7	Limiting values
8	Recommended operating conditions
9	Static characteristics
10	Dynamic characteristics
11	Waveforms
12	Package outline
13	Abbreviations15
14	Revision history
15	Legal information
15.1	Data sheet status
15.2	Definitions16
15.3	Disclaimers
15.4	Trademarks17
16	Contact information 17
17	Contents 15

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.