

Octal Buffer/Line Driver: 3-state: Inverting

CJ74HC/HCT540 Logic

1 Introduction

The CJ74HC/HCT540 is an 8-bit inverting buffer/line driver with 3-state outputs. The device features two output enables ($\overline{OE1}$ and $\overline{OE2}$). A HIGH on \overline{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_{CC} .

2 Available Packages

PART NUMBER	PACKAGE
CJ74HC540	SOP20
	TSSOP20
CJ74HCT540	SOP20
	TSSOP20

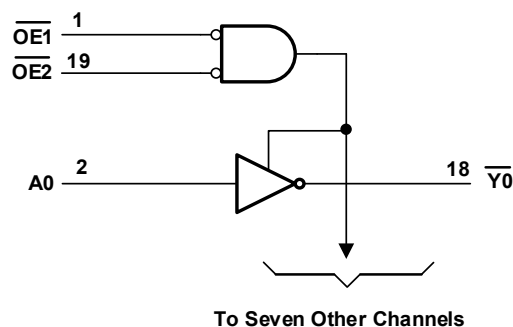
Note: For all available packages, please refer to the part Orderable Information.

3 Features

- Input levels:
 - For CJ74HC540: CMOS level
 - For CJ74HCT540: TTL level
- Inverting outputs
- Specified from -40°C to $+125^{\circ}\text{C}$

4 Applications

- Servers
- PCs and Notebooks
- Network switches
- Wearable health and fitness devices
- Telecom infrastructures
- Electronic points of sale



Functional block diagram

5 Orderable Information

DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJ74HC540AGN	SOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 2000 Units / Reel	Active
CJ74HCT540AGN	SOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 2000 Units / Reel	Active
CJ74HC540BGN	TSSOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active
CJ74HCT540BGN	TSSOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active

Note:

ECO PLAN: For the RoHS and Green certification standards of this product, please refer to the official report provided by JSCJ.

MSL: Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

SORT: Specifically defined as follows:

Active: Recommended for new products;

Customized: Products manufactured to meet the specific needs of customers;

Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;

NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;

Obsolete: The device has been discontinued.

6 Pin Configuration and Marking Information

6.1 Pin Configuration

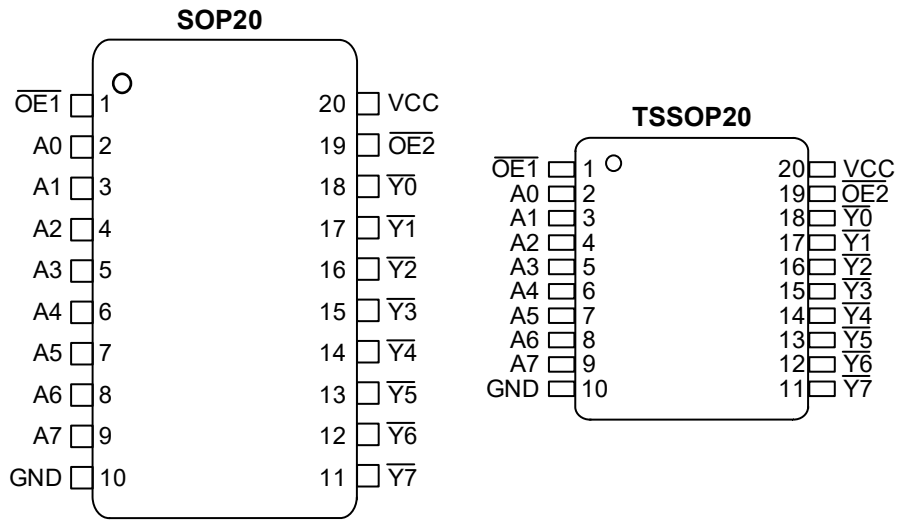


Figure 6-1 Pin configuration

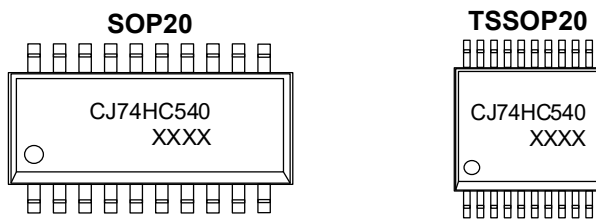
6.2 Pin Function

PIN		I/O ⁽¹⁾	DESCRIPTION
No.	NAME		
1	$\overline{OE1}$	I	Output enable input (active LOW)
2	A0	I	Data input
3	A1	I	Data input
4	A2	I	Data input
5	A3	I	Data input
6	A4	I	Data input
7	A5	I	Data input
8	A6	I	Data input
9	A7	I	Data input
10	GND	G	Ground (0V)
11	$\overline{Y7}$	O	Data output
12	$\overline{Y6}$	O	Data output
13	$\overline{Y5}$	O	Data output
14	$\overline{Y4}$	O	Data output
15	$\overline{Y3}$	O	Data output
16	$\overline{Y2}$	O	Data output
17	$\overline{Y1}$	O	Data output
18	$\overline{Y0}$	O	Data output
19	$\overline{OE2}$	I	Output enable input (active LOW)
20	VCC	P	Supply voltage

(1) I-Input, O-Output, P-Power, G-Ground.

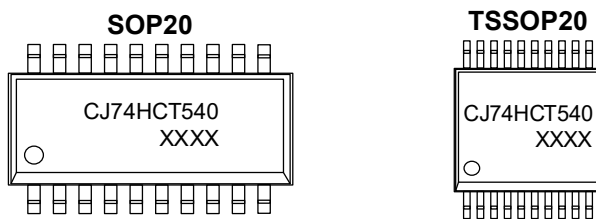
6.3 Marking Information

6.3.1 CJ74HC540



XXXX: Code, indicates weekly record information.

6.3.2 CJ74HCT540



XXXX: Code, indicates weekly record information.

7 Specifications

7.1 Absolute Maximum Ratings

Voltages are referenced to GND(ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	MAX.	UNIT
V _{CC}	Supply voltage	-		-0.5	+7.0	V
I _{IK}	Input clamping current	V _I < -0.5V or V _I > V _{CC} +0.5V		-	±20	mA
I _{OK}	Output clamping current	V _O < -0.5V or V _O > V _{CC} +0.5V		-	±20	mA
I _O	Output current	-0.5V < V _O < V _{CC} +0.5V		-	±35	mA
I _{CC}	Supply current	-		-	70	mA
I _{GND}	Ground current	-		-70	-	mA
T _{stg}	Storage temperature	-		-65	+150	°C
P _{tot}	Total power dissipation	-		-	500	mW
T _L	Soldering temperature	10s	SOP/TSSOP	-	260	°C

Note: Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to GND. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

7.2 Recommended Operating Conditions

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CJ74HC540						
V _{CC}	Supply voltage	-	2.0	5.0	6.0	V
V _I	Input voltage	-	0	-	V _{CC}	V
V _O	Output voltage	-	0	-	V _{CC}	V
Δt/ΔV	Input transition rise and fall rate	V _{CC} =2.0V	-	-	625	ns/V
		V _{CC} =4.5V	-	1.67	139	ns/V
		V _{CC} =6.0V	-	-	83	ns/V
T _{amb}	Ambient temperature	-	-40	-	+125	°C
CJ74HCT540						
V _{CC}	Supply voltage	-	4.5	5.0	5.5	V
V _I	Input voltage	-	0	-	V _{CC}	V
V _O	Output voltage	-	0	-	V _{CC}	V
Δt/ΔV	Input transition rise and fall rate	V _{CC} =4.5V	-	1.67	139	ns/V
T _{amb}	Ambient temperature	-	-40	-	+125	°C

7.3 Electrical Characteristics
7.3.1 DC Characteristics 1
 $T_{amb}=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC540							
V_{IH}	HIGH-level input voltage	$V_{CC}=2.0\text{V}$		1.5	-	-	V
		$V_{CC}=4.5\text{V}$		3.15	-	-	V
		$V_{CC}=6.0\text{V}$		4.2	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC}=2.0\text{V}$		-	-	0.5	V
		$V_{CC}=4.5\text{V}$		-	-	1.35	V
		$V_{CC}=6.0\text{V}$		-	-	1.8	V
V_{OH}	HIGH-level output voltage	$V_i=V_{IH}$ or V_{IL}	$I_o=-20\mu\text{A}; V_{CC}=2.0\text{V}$	1.9	2.0	-	V
			$I_o=-20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	4.5	-	V
			$I_o=-20\mu\text{A}; V_{CC}=6.0\text{V}$	5.9	6.0	-	V
			$I_o=-6.0\text{mA}; V_{CC}=4.5\text{V}$	3.98	4.32	-	V
			$I_o=-7.8\text{mA}; V_{CC}=6.0\text{V}$	5.48	5.81	-	V
V_{OL}	LOW-level output voltage	$V_i=V_{IH}$ or V_{IL}	$I_o=20\mu\text{A}; V_{CC}=2.0\text{V}$	-	0	0.1	V
			$I_o=20\mu\text{A}; V_{CC}=4.5\text{V}$	-	0	0.1	V
			$I_o=20\mu\text{A}; V_{CC}=6.0\text{V}$	-	0	0.1	V
			$I_o=6.0\text{mA}; V_{CC}=4.5\text{V}$	-	0.15	0.26	V
			$I_o=7.8\text{mA}; V_{CC}=6.0\text{V}$	-	0.16	0.26	V
I_i	Input leakage current	$V_i=V_{CC}$ or GND; $V_{CC}=6.0\text{V}$		-	-	± 1.0	μA
I_{oz}	OFF-state output current	$V_i=V_{IH}$ or $V_{IL}; V_{CC}=6.0\text{V}; V_o=V_{CC}$ or GND		-	-	± 1.0	μA
I_{CC}	Supply current	$V_i=V_{CC}$ or GND; $I_o=0\text{A}; V_{CC}=6.0\text{V}$		-	-	8.0	μA
C_i	Input capacitance			-	3.5	-	pF
CJ74HCT540							
V_{IH}	HIGH-level input voltage	$V_{CC}=4.5\text{V}$ to 5.5V		2.0	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC}=4.5\text{V}$ to 5.5V		-	-	0.8	V
V_{OH}	HIGH-level output voltage	$V_i=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$	$I_o=-20\mu\text{A}$	4.4	4.5	-	V
			$I_o=-6.0\text{mA}$	3.98	4.32	-	V
V_{OL}	LOW-level output voltage	$V_i=V_{IH}$ or $V_{IL}; V_{CC}=4.5\text{V}$	$I_o=20\mu\text{A}$	-	0	0.1	V
			$I_o=6.0\text{mA}$	-	0.16	0.26	V
I_i	Input leakage current	$V_i=V_{CC}$ or GND; $V_{CC}=5.5\text{V}$		-	-	± 1.0	μA
I_{oz}	OFF-state output current	$V_i=V_{IH}$ or $V_{IL}; V_{CC}=5.5\text{V}; V_o=V_{CC}$ or GND		-	-	± 1.0	μA
I_{CC}	Supply current	$V_i=V_{CC}$ or GND; $I_o=0\text{A}; V_{CC}=5.5\text{V}$		-	-	8.0	μA
ΔI_{CC}	Additional supply current	Per input pin; $V_i=V_{CC}$ -	An input	-	-	504	μA

		2.1V; Other inputs at V _{CC} or GND; V _{CC} =4.5V to 5.5V; I _o =0A	$\overline{\text{OE1}}$ input	-	-	540	uA
			$\overline{\text{OE2}}$ input	-	-	360	uA
C _i	Input capacitance		-	-	3.5	-	pF

7.3.2 DC Characteristics 2

 T_{amb} = -40°C to +85°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC540							
V _{IH}	HIGH-level input voltage	V _{CC} =2.0V	1.5	-	-	V	
		V _{CC} =4.5V	3.15	-	-	V	
		V _{CC} =6.0V	4.2	-	-	V	
V _{IL}	LOW-level input voltage	V _{CC} =2.0V	-	-	0.5	V	
		V _{CC} =4.5V	-	-	1.35	V	
		V _{CC} =6.0V	-	-	1.8	V	
V _{OH}	HIGH-level output voltage	V _i =V _{IH} or V _{IL}	I _o =-20uA; V _{CC} =2.0V	1.9	-	-	V
			I _o =-20uA; V _{CC} =4.5V	4.4	-	-	V
			I _o =-20uA; V _{CC} =6.0V	5.9	-	-	V
			I _o =-6.0mA; V _{CC} =4.5V	3.84	-	-	V
			I _o =-7.8mA; V _{CC} =6.0V	5.34	-	-	V
V _{OL}	LOW-level output voltage	V _i =V _{IH} or V _{IL}	I _o =20uA; V _{CC} =2.0V	-	-	0.1	V
			I _o =20uA; V _{CC} =4.5V	-	-	0.1	V
			I _o =20uA; V _{CC} =6.0V	-	-	0.1	V
			I _o =6.0mA; V _{CC} =4.5V	-	-	0.33	V
			I _o =7.8mA; V _{CC} =6.0V	-	-	0.33	V
I _i	Input leakage current	V _i =V _{CC} or GND; V _{CC} =6.0V	-	-	±1.0	uA	
I _{oz}	OFF-state output current	V _i =V _{IH} or V _{IL} ; V _{CC} =6.0V; V _o =V _{CC} or GND	-	-	±5.0	uA	
I _{CC}	Supply current	V _i =V _{CC} or GND; I _o =0A; V _{CC} =6.0V	-	-	80	uA	
CJ74HCT540							
V _{IH}	HIGH-level input voltage	V _{CC} =4.5V to 5.5V	2.0	-	-	V	
V _{IL}	LOW-level input voltage	V _{CC} =4.5V to 5.5V	-	-	0.8	V	
V _{OH}	HIGH-level output voltage	V _i =V _{IH} or V _{IL} ; V _{CC} =4.5V	I _o =-20uA	4.4	-	-	V
			I _o =-6.0mA	3.84	-	-	V
V _{OL}	LOW-level output voltage	V _i =V _{IH} or V _{IL} ; V _{CC} =4.5V	I _o =20uA	-	-	0.1	V
			I _o =6.0mA	-	-	0.33	V
I _i	Input leakage current	V _i =V _{CC} or GND; V _{CC} =5.5V	-	-	±1.0	uA	

I_{OZ}	OFF-state output current	$V_I=V_{IH}$ or V_{IL} ; $V_{CC}=5.5V$; $V_O=V_{CC}$ or GND		-	-	± 5.0	μA
I_{CC}	Supply current	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=5.5V$		-	-	80	μA
ΔI_{CC}	Additional supply current	Per input pin; $V_I=V_{CC}-2.1V$; Other inputs at V_{CC} or GND; $V_{CC}=4.5V$ to $5.5V$; $I_O=0A$	An input	-	-	630	μA
			$\overline{OE1}$ input	-	-	675	μA
			$\overline{OE2}$ input	-	-	450	μA

7.3.3 DC Characteristics 3

$T_{amb}=-40^{\circ}C$ to $+125^{\circ}C$, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
CJ74HC540							
V_{IH}	HIGH-level input voltage	$V_{CC}=2.0V$		1.5	-	-	V
		$V_{CC}=4.5V$		3.15	-	-	V
		$V_{CC}=6.0V$		4.2	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC}=2.0V$		-	-	0.5	V
		$V_{CC}=4.5V$		-	-	1.35	V
		$V_{CC}=6.0V$		-	-	1.8	V
V_{OH}	HIGH-level output voltage	$V_I=V_{IH}$ or V_{IL}	$I_O=-20\mu A$; $V_{CC}=2.0V$	1.9	-	-	V
			$I_O=-20\mu A$; $V_{CC}=4.5V$	4.4	-	-	V
			$I_O=-20\mu A$; $V_{CC}=6.0V$	5.9	-	-	V
			$I_O=-6.0mA$; $V_{CC}=4.5V$	3.7	-	-	V
			$I_O=-7.8mA$; $V_{CC}=6.0V$	5.2	-	-	V
V_{OL}	LOW-level output voltage	$V_I=V_{IH}$ or V_{IL}	$I_O=20\mu A$; $V_{CC}=2.0V$	-	-	0.1	V
			$I_O=20\mu A$; $V_{CC}=4.5V$	-	-	0.1	V
			$I_O=20\mu A$; $V_{CC}=6.0V$	-	-	0.1	V
			$I_O=6.0mA$; $V_{CC}=4.5V$	-	-	0.4	V
			$I_O=7.8mA$; $V_{CC}=6.0V$	-	-	0.4	V
I_I	Input leakage current	$V_I=V_{CC}$ or GND; $V_{CC}=6.0V$		-	-	± 1.0	μA
I_{OZ}	OFF-state output current	$V_I=V_{IH}$ or V_{IL} ; $V_{CC}=6.0V$; $V_O=V_{CC}$ or GND		-	-	± 10	μA
I_{CC}	Supply current	$V_I=V_{CC}$ or GND; $I_O=0A$; $V_{CC}=6.0V$		-	-	160	μA
CJ74HCT540							
V_{IH}	HIGH-level input voltage	$V_{CC}=4.5V$ to $5.5V$		2.0	-	-	V
V_{IL}	LOW-level input voltage	$V_{CC}=4.5V$ to $5.5V$		-	-	0.8	V
V_{OH}	HIGH-level output voltage	$V_I=V_{IH}$ or V_{IL} ; $V_{CC}=4.5V$	$I_O=-20\mu A$	4.4	-	-	V
			$I_O=-6.0mA$	3.7	-	-	V
V_{OL}	LOW-level output voltage	$V_I=V_{IH}$ or V_{IL} ; $V_{CC}=4.5V$	$I_O=20\mu A$	-	-	0.1	V
			$I_O=6.0mA$	-	-	0.4	V

I_i	Input leakage current	$V_i=V_{CC}$ or GND; $V_{CC}=5.5V$		-	-	± 1.0	μA
I_{oz}	OFF-state output current	$V_i=V_{IH}$ or V_{IL} ; $V_{CC}=5.5V$; $V_o=V_{CC}$ or GND		-	-	± 10	μA
I_{CC}	Supply current	$V_i=V_{CC}$ or GND; $I_o=0A$; $V_{CC}=5.5V$		-	-	160	μA
ΔI_{CC}	Additional supply current	Per input pin; $V_i=V_{CC}-2.1V$; Other inputs at V_{CC} or GND; $V_{CC}=4.5V$ to $5.5V$; $I_o=0A$	An input	-	-	686	μA
			$\overline{OE1}$ input	-	-	735	μA
			$\overline{OE2}$ input	-	-	490	μA

7.3.4 AC Characteristics 1

Tamb=25°C, GND=0V, CL=50pF, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC540							
t _{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	V _{CC} =2.0V	-	30	100	ns
			V _{CC} =4.5V	-	11	20	ns
			V _{CC} =5.0V; C _L =15pF	-	9	-	ns
			V _{CC} =6.0V	-	9	17	ns
t _{en}	\overline{OEn} to \bar{Y}_n enable time	See Figure 8-7	V _{CC} =2.0V	-	52	160	ns
			V _{CC} =4.5V	-	19	32	ns
			V _{CC} =6.0V	-	15	27	ns
t _{dis}	\overline{OEn} to \bar{Y}_n disable time	See Figure 8-7	V _{CC} =2.0V	-	61	160	ns
			V _{CC} =4.5V	-	22	32	ns
			V _{CC} =6.0V	-	18	27	ns
t _t	Transition time	See Figure 8-6	V _{CC} =2.0V	-	14	60	ns
			V _{CC} =4.5V	-	5	12	ns
			V _{CC} =6.0V	-	4	10	ns
C _{PD}	Power dissipation capacitance	Per buffer; V _I =GND to V _{CC}	-	39	-	pF	
CJ74HCT540							
t _{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	V _{CC} =4.5V	-	13	24	ns
			V _{CC} =5.0V; C _L =15pF	-	11	-	ns
t _{en}	\overline{OEn} to \bar{Y}_n enable time	V _{CC} =4.5V; See Figure 8-7	-	22	35	ns	
t _{dis}	\overline{OEn} to \bar{Y}_n disable time	V _{CC} =4.5V; See Figure 8-7	-	23	35	ns	
t _t	Transition time	V _{CC} =4.5V; See Figure 8-6	-	5	12	ns	
C _{PD}	Power dissipation capacitance	Per buffer; V _I =GND to V _{CC} -1.5V	-	44	-	pF	

Note:

- (1) t_{pd} is the same as t_{PLH} and t_{PHL}.
- (2) t_{en} is the same as t_{PZL} and t_{PZH}.
- (3) t_{dis} is the same as t_{PLZ} and t_{PHZ}.
- (4) t_t is the same as t_{THL} and t_{TLH}.
- (5) C_{PD} is used to determine the dynamic power dissipation (P_D in uW).

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

 f_i=input frequency in MHz;

 f_o=output frequency in MHz;

 C_L=output load capacitance in pF;

 V_{CC}=supply voltage in V;

N=number of inputs switching;

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

7.3.5 AC Characteristics 2
 $T_{amb} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, $GND = 0V$, $C_L = 50pF$, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC540							
t_{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	$V_{CC} = 2.0V$	-	-	125	ns
			$V_{CC} = 4.5V$	-	-	25	ns
			$V_{CC} = 6.0V$	-	-	21	ns
t_{en}	\overline{OEn} to \bar{Y}_n enable time	See Figure 8-7	$V_{CC} = 2.0V$	-	-	200	ns
			$V_{CC} = 4.5V$	-	-	40	ns
			$V_{CC} = 6.0V$	-	-	34	ns
t_{dis}	\overline{OEn} to \bar{Y}_n disable time	See Figure 8-7	$V_{CC} = 2.0V$	-	-	200	ns
			$V_{CC} = 4.5V$	-	-	40	ns
			$V_{CC} = 6.0V$	-	-	34	ns
t_t	Transition time	See Figure 8-6	$V_{CC} = 2.0V$	-	-	75	ns
			$V_{CC} = 4.5V$	-	-	15	ns
			$V_{CC} = 6.0V$	-	-	13	ns
CJ74HCT540							
t_{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	$V_{CC} = 4.5V$	-	-	30	ns
t_{en}	\overline{OEn} to \bar{Y}_n enable time	$V_{CC} = 4.5V$; See Figure 8-7		-	-	44	ns
t_{dis}	\overline{OEn} to \bar{Y}_n disable time	$V_{CC} = 4.5V$; See Figure 8-7		-	-	44	ns
t_t	Transition time	$V_{CC} = 4.5V$; See Figure 8-6		-	-	15	ns

Note:

- (1) t_{pd} is the same as t_{PLH} and t_{PHL} .
- (2) t_{en} is the same as t_{PZL} and t_{PZH} .
- (3) t_{dis} is the same as t_{PLZ} and t_{PHZ} .
- (4) t_t is the same as t_{THL} and t_{TLH} .

7.3.6 AC Characteristics 3
 $T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, $GND=0\text{V}$, $C_L=50\text{pF}$, unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC540							
t_{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	$V_{CC}=2.0\text{V}$	-	-	150	ns
			$V_{CC}=4.5\text{V}$	-	-	30	ns
			$V_{CC}=6.0\text{V}$	-	-	26	ns
t_{en}	\overline{OEn} to \bar{Y}_n enable time	See Figure 8-7	$V_{CC}=2.0\text{V}$	-	-	240	ns
			$V_{CC}=4.5\text{V}$	-	-	48	ns
			$V_{CC}=6.0\text{V}$	-	-	41	ns
t_{dis}	\overline{OEn} to \bar{Y}_n disable time	See Figure 8-7	$V_{CC}=2.0\text{V}$	-	-	240	ns
			$V_{CC}=4.5\text{V}$	-	-	48	ns
			$V_{CC}=6.0\text{V}$	-	-	41	ns
t_t	Transition time	See Figure 8-6	$V_{CC}=2.0\text{V}$	-	-	90	ns
			$V_{CC}=4.5\text{V}$	-	-	18	ns
			$V_{CC}=6.0\text{V}$	-	-	15	ns
CJ74HCT540							
t_{pd}	An to \bar{Y}_n propagation delay	See Figure 8-6	$V_{CC}=4.5\text{V}$	-	-	36	ns
t_{en}	\overline{OEn} to \bar{Y}_n enable time	See Figure 8-7	$V_{CC}=4.5\text{V}$	-	-	53	ns
t_{dis}	\overline{OEn} to \bar{Y}_n disable time	See Figure 8-7	$V_{CC}=4.5\text{V}$	-	-	53	ns
t_t	Transition time	See Figure 8-6	$V_{CC}=4.5\text{V}$	-	-	18	ns

Note:

- (1) t_{pd} is the same as t_{PLH} and t_{PHL} .
- (2) t_{en} is the same as t_{PZL} and t_{PZH} .
- (3) t_{dis} is the same as t_{PLZ} and t_{PHZ} .
- (4) t_t is the same as t_{THL} and t_{TLH} .

8 Detailed Description

8.1 Overview

The CJ74HC/HCT540 is an 8-bit inverting buffer/line driver with 3-state outputs. The device features two output enables ($\overline{OE1}$ and $\overline{OE2}$). A HIGH on \overline{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_{CC} .

8.2 Functional Block Diagram

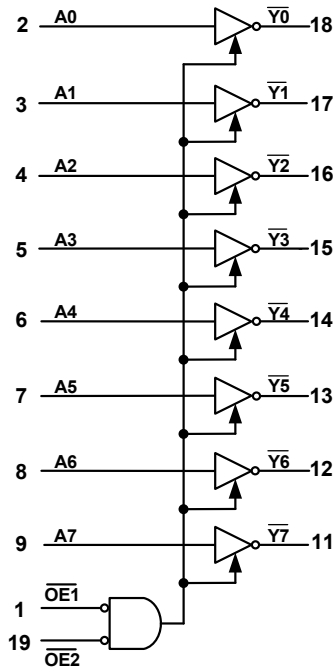


Figure 8-1 Logic symbol

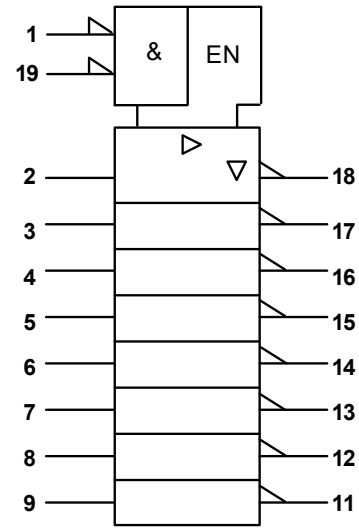


Figure 8-2 IEC logic symbol

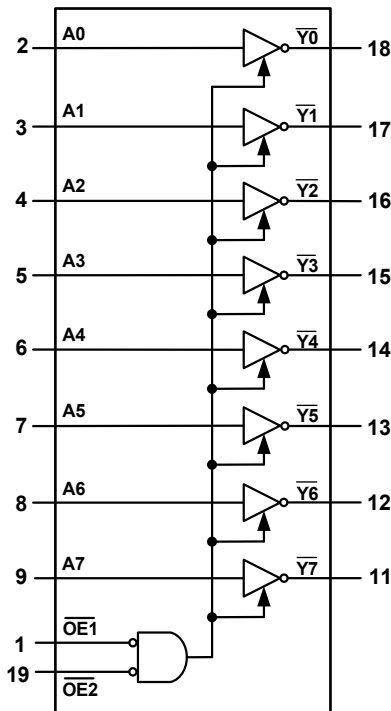


Figure 8-3 Functional diagram

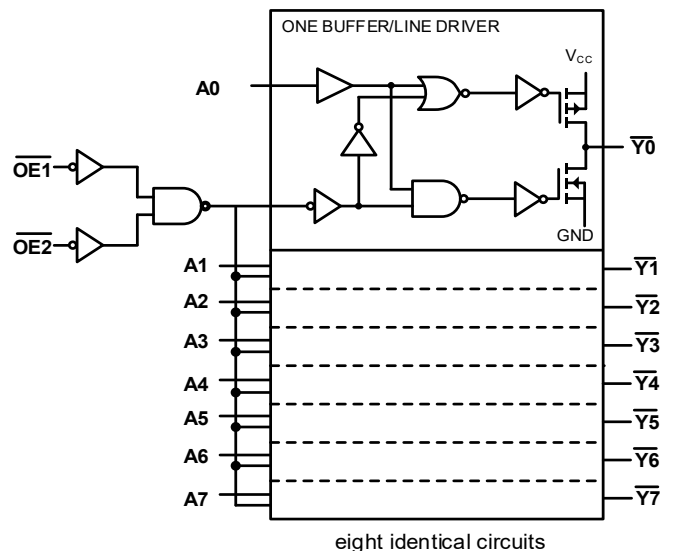


Figure 8-4 Logic diagram

8.3 Function Table⁽¹⁾

INPUT			OUTPUT
$\overline{OE1}$	$\overline{OE2}$	An	\overline{Yn}
L	L	L	H
L	L	H	L
X	H	X	Z
H	X	X	Z

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

8.4 Testing Circuit

8.4.1 AC Testing Circuit

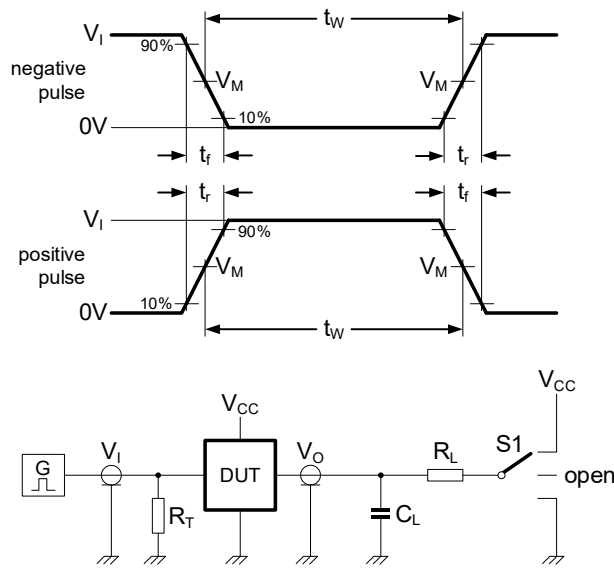


Figure 8-5 Test circuit for measuring switching times

Definitions for test circuit:

R_L =Load resistance.

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.

S1=Test selection switch.

8.4.2 AC Testing Waveforms

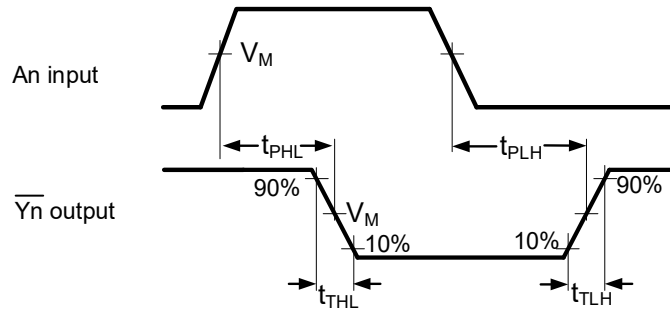


Figure 8-6 Input to output propagation delays

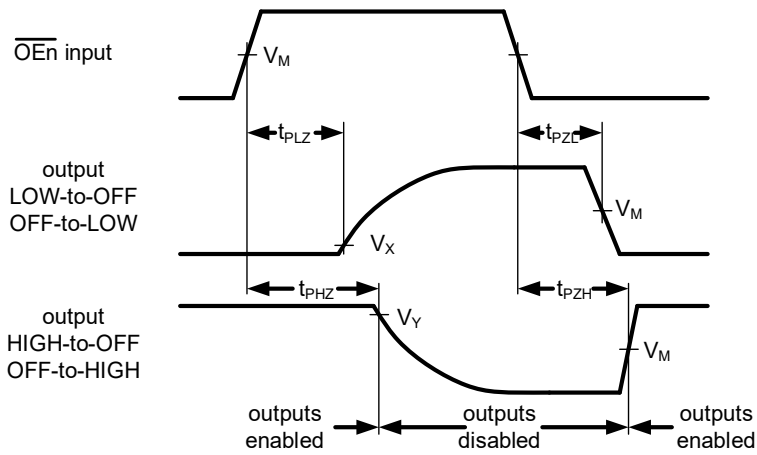


Figure 8-7 3-state enable and disable times

8.4.3 Measurement Points

TYPE	INPUT		OUTPUT	
	V_M	V_M	V_X	V_Y
CJ74HC540	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$
CJ74HCT540	1.3V	1.3V	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$

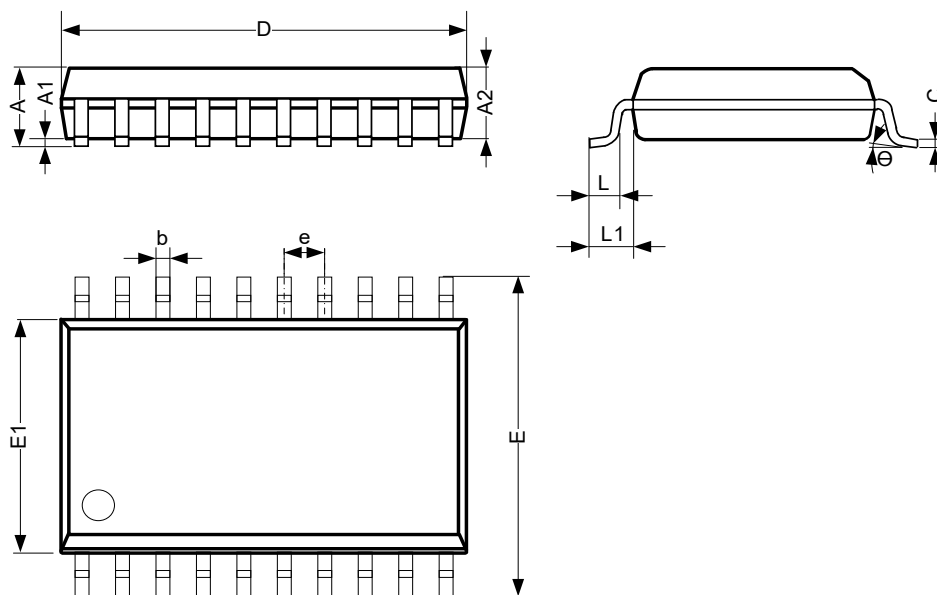
8.4.4 Test Data

TYPE	INPUT		LOAD		S1 POSITION		
	V_I	t_r, t_f	C_L	R_L	t_{PHL}, t_{PLH}	t_{PZH}, t_{PHZ}	t_{PZL}, t_{PLZ}
CJ74HC540	V_{CC}	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}
CJ74HCT540	3V	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}

9 Mechanical Information

9.1 SOP20 Mechanical Information

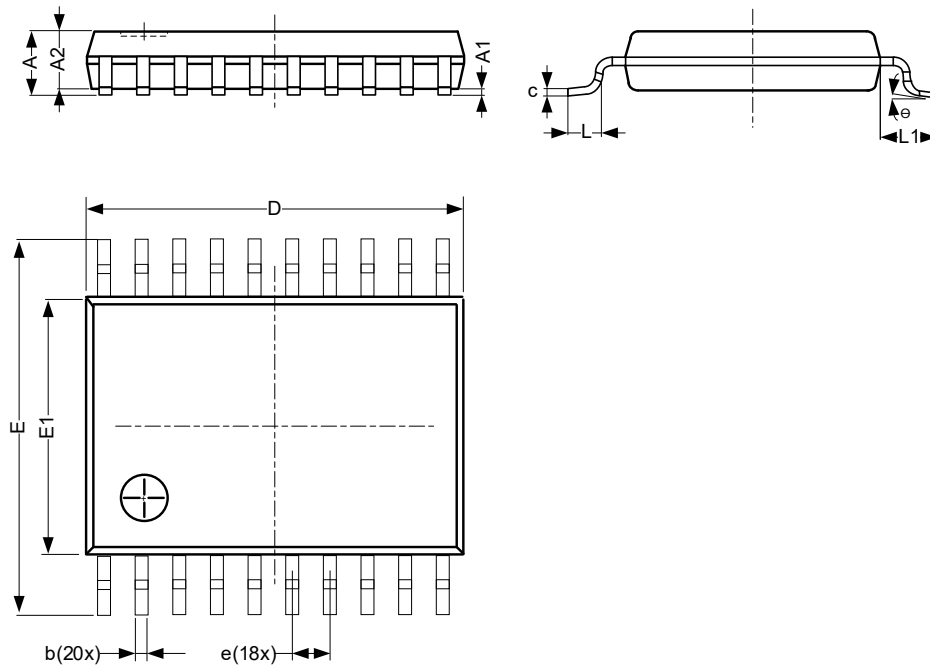
9.1.1 SOP20 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	2.47	-	2.65
A1	0.05	-	0.30
A2	2.20	-	2.44
b	0.35	-	0.50
c	0.15	-	0.30
D	12.54	-	12.94
E	10.00	-	10.60
E1	7.30	-	7.70
e	1.27 BSC		
L	0.40	-	1.05
L1	1.30	-	1.50
θ	0°	-	8°
Unit: mm			

9.2 TSSOP20 Mechanical Information

9.2.1 TSSOP20 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	-	-	1.20
A1	0.05	-	0.15
A2	0.80	-	1.05
b	0.19	-	0.30
c	0.09	-	0.20
D	6.40	-	6.60
E	6.20	-	6.60
E1	4.30	-	4.50
e	0.65 BSC		
L	0.45	-	0.75
L1	-	1.00	-
θ	0°	-	8°
Unit: mm			

10 Notes and Revision History

10.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, click the official website of JSCJ -- <https://www.jscj-elec.com> for more details.

10.2 Notes

Electrostatic Discharge Caution



This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

DISCLAIMER

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