

Octal Buffer/Line Driver: 3-state

CJ74HC/HCT244 Logic

1 Introduction

The CJ74HC/HCT244 is an 8-bit buffer/line driver with 3-state outputs. The device can be used as two 4-bit buffers or one 8-bit buffer. The device features two output enables (/1OE and /2OE), each controlling four of the 3-state outputs. A HIGH on /nOE causes the outputs to assume a high-impedance OFF-state. Inputs include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of V_{cc}.

2 Available Packages

PART NUMBER	PACKAGE
CJ74HC244	SOP20
	TSSOP20
CJ74HCT244	SOP20
	TSSOP20

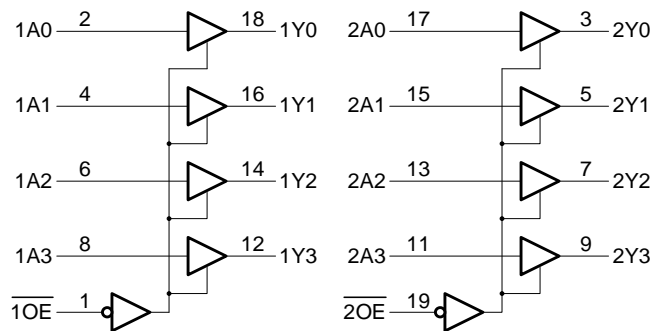
Note: For all available packages, please refer to the part Orderable Information.

3 Features

- Input levels:
 - For CJ74HC244: CMOS level
 - For CJ74HCT244: TTL level
- Octal bus interface
- Non-inverting 3-state outputs
- Specified from -40°C to +125°C

4 Applications

- Servers
- LED Displays
- Network Switches
- Telecom Infrastructure
- Motor Controls
- I/O Expanders



Logic symbol

5 Orderable Information

DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJ74HC244AGN	SOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 2000 Units / Reel	Active
CJ74HCT244AGN	SOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 2000 Units / Reel	Active
CJ74HC244BGN	TSSOP20	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active
CJ74HCT244BGN	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

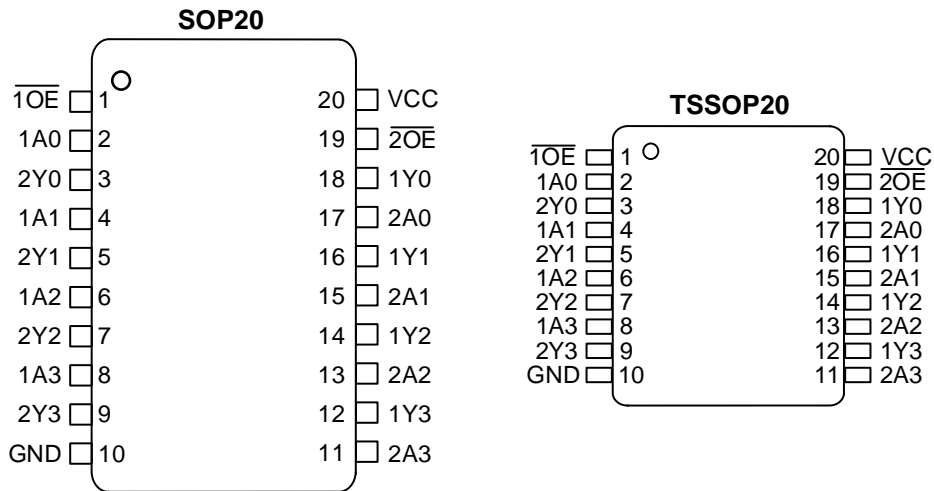


Figure 6-1 Pin configuration

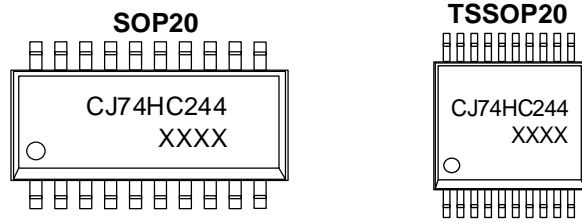
6.2 Pin Function

PIN		I/O ⁽¹⁾	DESCRIPTION
No.	NAME		
1	10E	I	Output enable input (active LOW)
2	1A0	I	Data input
3	2Y0	O	Bus output
4	1A1	I	Data input
5	2Y1	O	Bus output
6	1A2	I	Data input
7	2Y2	O	Bus output
8	1A3	I	Data input
9	2Y3	O	Bus output
10	GND	G	Ground (0V)
11	2A3	I	Data input
12	1Y3	O	Bus output
13	2A2	I	Data input
14	1Y2	O	Bus output
15	2A1	I	Data input
16	1Y1	O	Bus output
17	2A0	I	Data input
18	1Y0	O	Bus output
19	2OE	I	Output enable input (active LOW)
20	VCC	P	Supply voltage

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

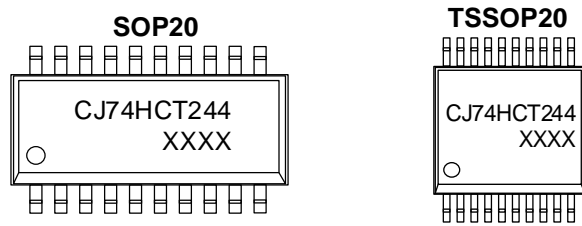
6.3 Marking Information

6.3.1 CJ74HC244



XXXX: Code, indicates weekly record information.

6.3.2 CJ74HCT244



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
CJ74HC244						
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
CJ74HCT244						
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 ESD Ratings

SYMBOL	ESD RATINGS		VALUE	UNIT
V _{ESD-HBM}	Electrostatic discharge	Human body model (HBM) ⁽¹⁾	±4000	V

(1) JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

7.4 Electrical Characteristics
7.4.1 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	
CJ74HC244							
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	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=-20\mu\text{A}; V_{CC}=2.0\text{V}$	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	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=20\mu\text{A}; V_{CC}=2.0\text{V}$	-	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	$V_I=V_{CC} \text{ or } \text{GND}; V_{CC}=6.0\text{V}$	-	-	± 1.0	μA	
I_{OZ}	OFF-state output current	$V_I=V_{IH} \text{ or } V_{IL}; V_{CC}=6.0\text{V}; V_O=V_{CC} \text{ or } \text{GND}$	-	-	± 1.0	μA	
I_{CC}	Supply current	$V_I=V_{CC} \text{ or } \text{GND}; I_O=0\text{A}; V_{CC}=6.0\text{V}$	-	-	8.0	μA	
C_i	Input capacitance	-	-	3.5	-	pF	
CJ74HCT244							
V_{IH}	HIGH-level input voltage	$V_{CC}=4.5\text{V to } 5.5\text{V}$	2.0	-	-	V	
V_{IL}	LOW-level input voltage	$V_{CC}=4.5\text{V to } 5.5\text{V}$	-	-	0.8	V	
V_{OH}	HIGH-level output voltage	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=-20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	4.5	-	V
			$I_O=-6.0\text{mA}; V_{CC}=4.5\text{V}$	3.98	4.32	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH} \text{ or } V_{IL}$	$I_O=20\mu\text{A}; V_{CC}=4.5\text{V}$	-	0	0.1	V
			$I_O=6.0\text{mA}; V_{CC}=4.5\text{V}$	-	0.16	0.26	V
I_I	Input leakage current	$V_I=V_{CC} \text{ or } \text{GND}; V_{CC}=5.5\text{V}$	-	-	± 1.0	μA	
I_{OZ}	OFF-state output current	$V_I=V_{IH} \text{ or } V_{IL}; V_{CC}=5.5\text{V}; V_O=V_{CC} \text{ or } \text{GND}$	-	-	± 1.0	μA	
I_{CC}	Supply current	$V_I=V_{CC} \text{ or } \text{GND}; I_O=0\text{A}; V_{CC}=5.5\text{V}$	-	-	8.0	μA	
ΔI_{CC}	Additional supply current	Per input pin; $V_I=V_{CC}-2.1\text{V};$ Other inputs at $V_{CC} \text{ or } \text{GND};$ $V_{CC}=4.5\text{V to } 5.5\text{V}; I_O=0\text{A}$	-	70	252	μA	
C_i	Input capacitance	-	-	3.5	-	pF	

7.4.2 DC Characteristics 2

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC244							
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	
CJ74HCT244							
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}	I _O =-20uA; V _{CC} =4.5V	4.4	-	-	V
			I _O =-6.0mA; V _{CC} =4.5V	3.84	-	-	V
V _{OL}	LOW-level output voltage	V _I = V _{IH} or V _{IL}	I _O =20uA; V _{CC} =4.5V	-	-	0.1	V
			I _O =6.0mA; V _{CC} =4.5V	-	-	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	uA	
I _{CC}	Supply current	V _I =V _{CC} or GND; I _O =0A; V _{CC} =5.5V	-	-	80	uA	
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	-	-	315	uA	

7.4.3 DC Characteristics 3
 $T_{amb} = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC244							
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	-	-	V
			$I_O=-20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	-	-	V
			$I_O=-20\mu\text{A}; V_{CC}=6.0\text{V}$	5.9	-	-	V
			$I_O=-6.0\text{mA}; V_{CC}=4.5\text{V}$	3.7	-	-	V
			$I_O=-7.8\text{mA}; V_{CC}=6.0\text{V}$	5.2	-	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}	$I_O=20\mu\text{A}; V_{CC}=2.0\text{V}$	-	-	0.1	V
			$I_O=20\mu\text{A}; V_{CC}=4.5\text{V}$	-	-	0.1	V
			$I_O=20\mu\text{A}; V_{CC}=6.0\text{V}$	-	-	0.1	V
			$I_O=6.0\text{mA}; V_{CC}=4.5\text{V}$	-	-	0.4	V
			$I_O=7.8\text{mA}; V_{CC}=6.0\text{V}$	-	-	0.4	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	-	-	± 10	μA	
I_{CC}	Supply current	$V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=6.0\text{V}$	-	-	160	μA	
CJ74HCT244							
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}	$I_O=-20\mu\text{A}; V_{CC}=4.5\text{V}$	4.4	-	-	V
			$I_O=-6.0\text{mA}; V_{CC}=4.5\text{V}$	3.7	-	-	V
V_{OL}	LOW-level output voltage	$V_I = V_{IH}$ or V_{IL}	$I_O=20\mu\text{A}; V_{CC}=4.5\text{V}$	-	-	0.1	V
			$I_O=6.0\text{mA}; V_{CC}=4.5\text{V}$	-	-	0.4	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	-	-	± 10	μA	
I_{CC}	Supply current	$V_I=V_{CC}$ or GND; $I_O=0\text{A}; V_{CC}=5.5\text{V}$	-	-	160	μA	
ΔI_{CC}	Additional supply current	Per input pin; $V_I=V_{CC}-2.1\text{V};$ Other inputs at V_{CC} or GND; $V_{CC}=4.5\text{V}$ to $5.5\text{V}; I_O=0\text{A}$	-	-	343	μA	

7.4.4 AC Characteristics 1

T_{amb}=25°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =2.0V	-	30	110	ns
			V _{CC} =4.5V	-	11	22	ns
			V _{CC} =5.0V; C _L =15pF	-	9	-	ns
			V _{CC} =6.0V	-	9	19	ns
t _{en}	nOE to nYn enable time	See Figure 8-6 ⁽²⁾	V _{CC} =2.0V	-	36	150	ns
			V _{CC} =4.5V	-	13	30	ns
			V _{CC} =6.0V	-	10	26	ns
t _{dis}	nOE to nYn disable time	See Figure 8-6 ⁽³⁾	V _{CC} =2.0V	-	39	150	ns
			V _{CC} =4.5V	-	14	30	ns
			V _{CC} =6.0V	-	11	26	ns
t _t	Transition time	See Figure 8-5 ⁽⁴⁾	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} ⁽⁵⁾	-	35	-	pF	
CJ74HCT244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =4.5V	-	13	22	ns
			V _{CC} =5.0V; C _L =15pF	-	11	-	ns
t _{en}	nOE to nYn enable time	V _{CC} =4.5V; See Figure 8-6 ⁽²⁾	-	15	30	ns	
t _{dis}	nOE to nYn disable time	V _{CC} =4.5V; See Figure 8-6 ⁽³⁾	-	15	25	ns	
t _t	Transition time	V _{CC} =4.5V; See Figure 8-5 ⁽⁴⁾	-	5	12	ns	
C _{PD}	Power dissipation capacitance	Per buffer; V _I =GND to V _{CC} -1.5V ⁽⁵⁾	-	35	-	pF	

- (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.

7.4.5 AC 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	
CJ74HC244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =2.0V	-	-	145	ns
			V _{CC} =4.5V	-	-	28	ns
			V _{CC} =6.0V	-	-	24	ns
t _{en}	$\overline{\text{nOE}}$ to nYn enable time	See Figure 8-6 ⁽²⁾	V _{CC} =2.0V	-	-	190	ns
			V _{CC} =4.5V	-	-	38	ns
			V _{CC} =6.0V	-	-	33	ns
t _{dis}	$\overline{\text{nOE}}$ to nYn disable time	See Figure 8-6 ⁽³⁾	V _{CC} =2.0V	-	-	190	ns
			V _{CC} =4.5V	-	-	38	ns
			V _{CC} =6.0V	-	-	33	ns
t _t	Transition time	See Figure 8-5 ⁽⁴⁾	V _{CC} =2.0V	-	-	75	ns
			V _{CC} =4.5V	-	-	15	ns
			V _{CC} =6.0V	-	-	13	ns
CJ74HCT244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =4.5V	-	-	28	ns
t _{en}	$\overline{\text{nOE}}$ to nYn enable time	V _{CC} =4.5V; See Figure 8-6 ⁽²⁾		-	-	38	ns
t _{dis}	$\overline{\text{nOE}}$ to nYn disable time	V _{CC} =4.5V; See Figure 8-6 ⁽³⁾		-	-	31	ns
t _t	Transition time	V _{CC} =4.5V; See Figure 8-5 ⁽⁴⁾		-	-	15	ns

- (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}.

7.4.6 AC Characteristics 3

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
CJ74HC244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =2.0V	-	-	165	ns
			V _{CC} =4.5V	-	-	33	ns
			V _{CC} =6.0V	-	-	28	ns
t _{en}	$\overline{\text{nOE}}$ to nYn enable time	See Figure 8-6 ⁽²⁾	V _{CC} =2.0V	-	-	225	ns
			V _{CC} =4.5V	-	-	45	ns
			V _{CC} =6.0V	-	-	38	ns
t _{dis}	$\overline{\text{nOE}}$ to nYn disable time	See Figure 8-6 ⁽³⁾	V _{CC} =2.0V	-	-	225	ns
			V _{CC} =4.5V	-	-	45	ns
			V _{CC} =6.0V	-	-	38	ns
t _t	Transition time	See Figure 8-5 ⁽⁴⁾	V _{CC} =2.0V	-	-	90	ns
			V _{CC} =4.5V	-	-	18	ns
			V _{CC} =6.0V	-	-	15	ns
CJ74HCT244							
t _{pd}	nAn to nYn propagation delay	See Figure 8-5 ⁽¹⁾	V _{CC} =4.5V	-	-	33	ns
t _{en}	$\overline{\text{nOE}}$ to nYn enable time	V _{CC} =4.5V; See Figure 8-6 ⁽²⁾		-	-	45	ns
t _{dis}	$\overline{\text{nOE}}$ to nYn disable time	V _{CC} =4.5V; See Figure 8-6 ⁽³⁾		-	-	38	ns
t _t	Transition time	V _{CC} =4.5V; See Figure 8-5 ⁽⁴⁾		-	-	18	ns

(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/HCT244 is an 8-bit buffer/line driver with 3-state outputs. The device can be used as two 4-bit buffers or one 8-bit buffer. The device features two output enables ($\overline{1}OE$ and $\overline{2}OE$), each controlling four of the 3-state outputs. A HIGH on $\overline{1}OE$ causes the outputs to assume a high-impedance OFF-state. Inputs include clamp diodes that enable the use of current limiting resistors to interface inputs to voltages in excess of V_{CC} .

8.2 Functional Block Diagram

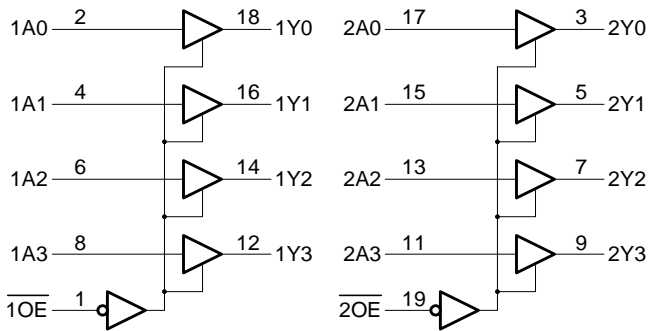


Figure 8-1 Logic symbol

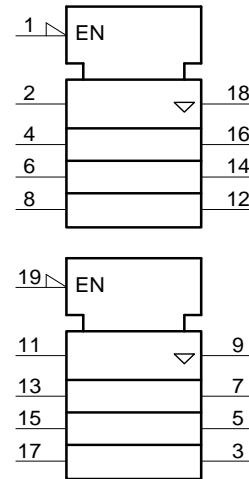


Figure 8-2 IEC logic symbol

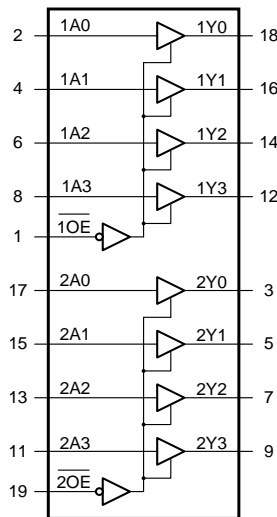


Figure 8-3 Functional diagram

8.3 Function Table

INPUT		OUTPUT
$\overline{n}OE$	nAn	nYn
L	L	L
L	H	H
H	X	Z

Note: 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

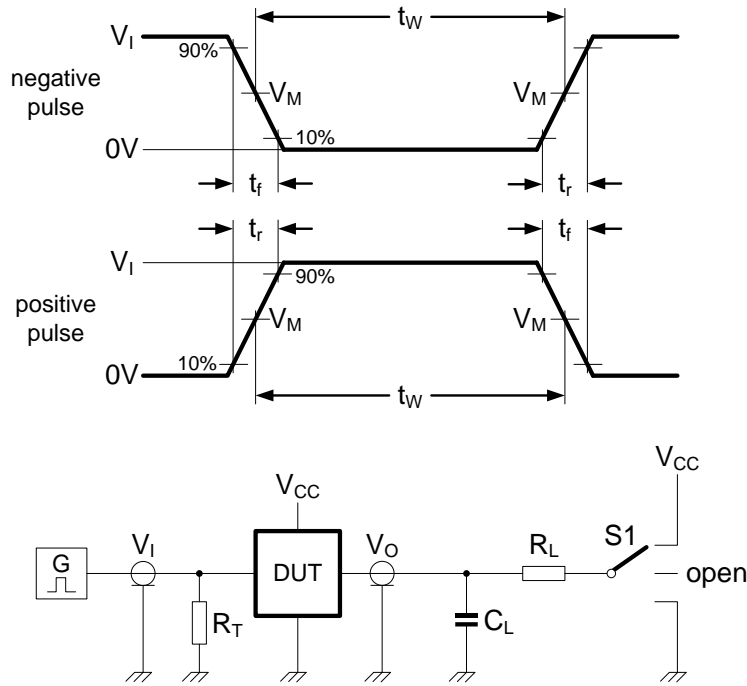


Figure 8-4 Test circuit for measuring switching times

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

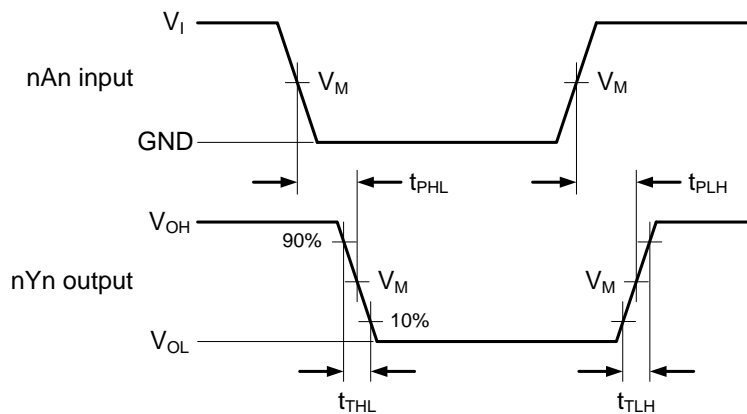


Figure 8-5 Input (nAn) to output (nYn) propagation delays and output transition times

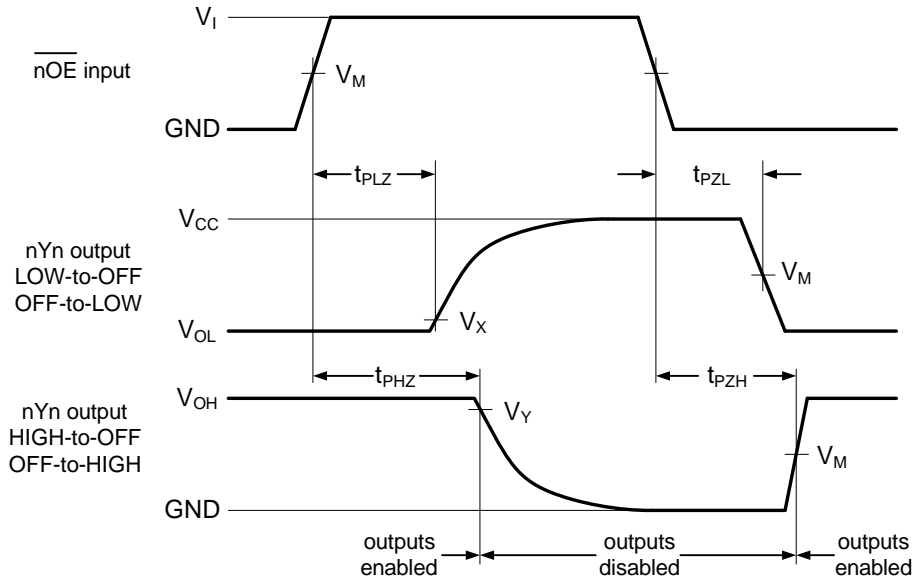


Figure 8-6 3-state enable and disable times

8.4.3 Measurement Points

TYPE	INPUT		OUTPUT	
	V_M	V_M	V_X	V_Y
CJ74HC244	$0.5 \times V_{CC}$	$0.5 \times V_{CC}$	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$
CJ74HCT244	1.3V	1.3V	$0.1 \times V_{CC}$	$0.9 \times V_{CC}$

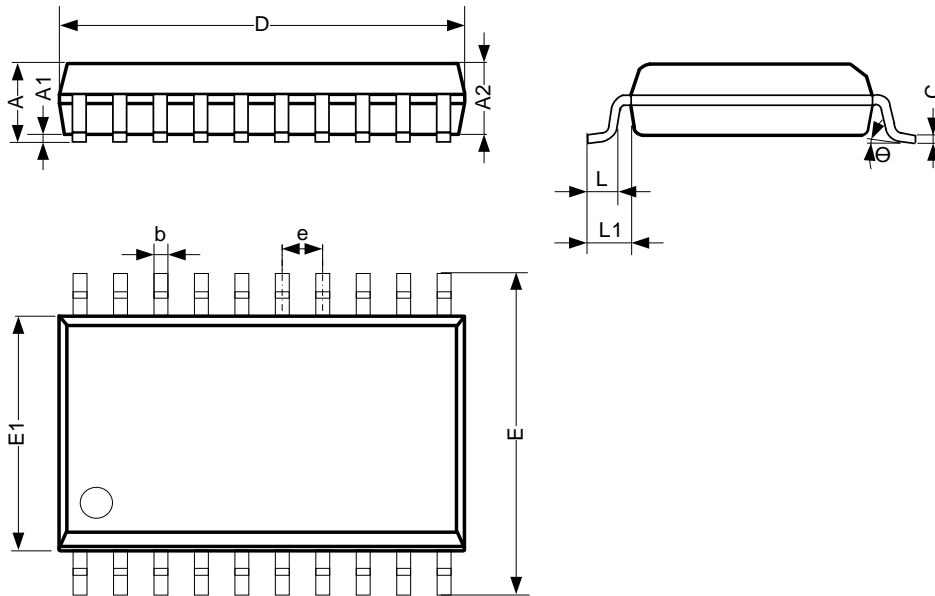
8.4.4 Test Data

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}
CJ74HC244	V_{CC}	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}
CJ74HCT244	3V	6ns	15pF, 50pF	1kΩ	Open	GND	V_{CC}

9 Mechanical Information

9.1 SOP20 Mechanical Information

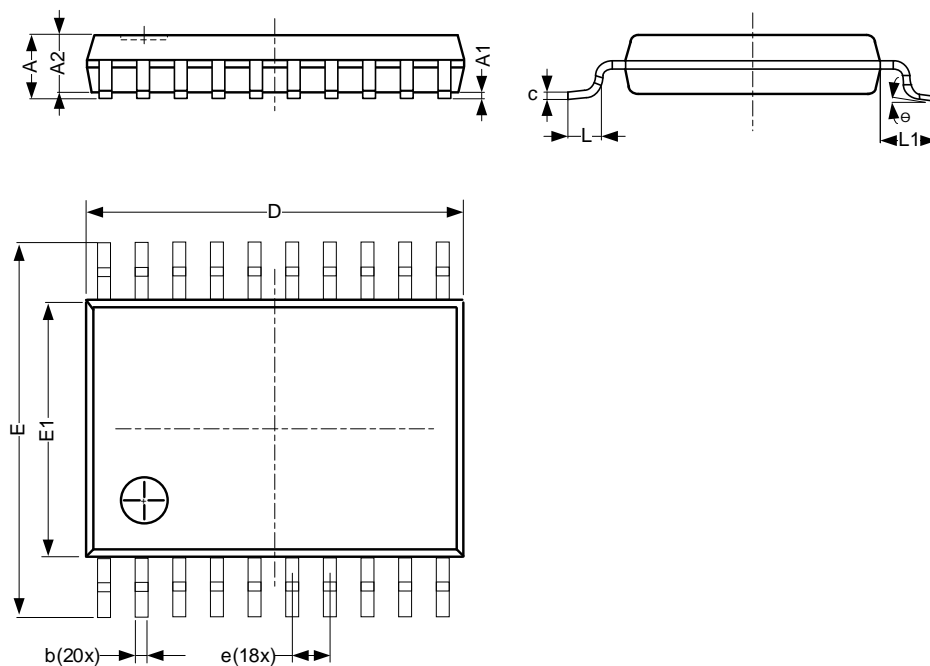
9.1.1 SOP20 Outline Dimensions



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

IMPORTANT NOTICE, PLEASE READ CAREFULLY

The information in this data sheet is intended to describe the operation and characteristics of our products. JSCJ has the right to make any modification, enhancement, improvement, correction or other changes to any content in this data sheet, including but not limited to specification parameters, circuit design and application information, without prior notice.

Any person who purchases or uses JSCJ products for design shall: 1. Select products suitable for circuit application and design; 2. Design, verify and test the rationality of circuit design; 3. Procedures to ensure that the design complies with relevant laws and regulations and the requirements of such laws and regulations. JSCJ makes no warranty or representation as to the accuracy or completeness of the information contained in this data sheet and assumes no responsibility for the application or use of any of the products described in this data sheet.

Without the written consent of JSCJ, this product shall not be used in occasions requiring high quality or high reliability, including but not limited to the following occasions: medical equipment, military facilities and aerospace. JSCJ shall not be responsible for casualties or property losses caused by abnormal use or application of this product.

Official Website: www.jscj-elec.com

Copyright © JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD