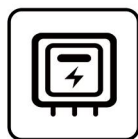
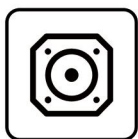


自主封測 品質把控 售後保障

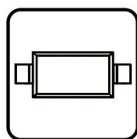
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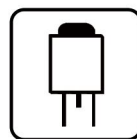
電源管理



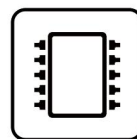
顯示驅動



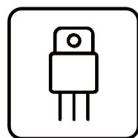
二三極管



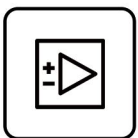
LDO穩壓器



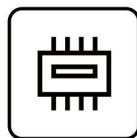
觸摸芯片



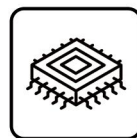
MOS管



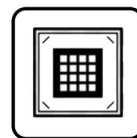
運算放大器



存儲芯片



MCU



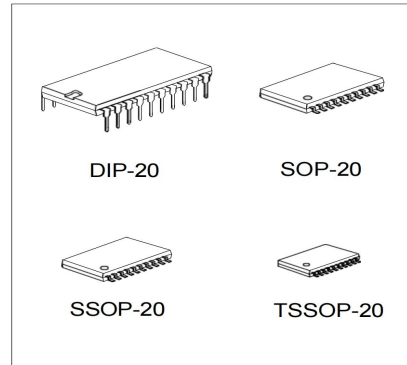
串口通信

74HC244D-TD

產品規格說明書

1. DESCRIPTION

The **74HC244** 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 ($\overline{1OE}$ and $\overline{2OE}$), each controlling four of the 3-state outputs. A HIGH on $\overline{nOE}$ 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 VCC.



2. FEATURES

- Operation voltage range: 2 ~ 6V
- 3-state output
- Output Drive Capability: 15 LSTTL Loads
- Latch-up performance ≤ 250 mA
- ESD protection:
 - HBM: ANSI/ESDA/JEDEC JS-001 2023 exceeds 2000 V
 - CDM: ANSI/ESDA/JEDEC JS-002 2022 exceeds 1000 V
- Package option: DIP-20, SOP-20, SSOP-20 and TSSOP-20

3. ORDERING INFORMATION

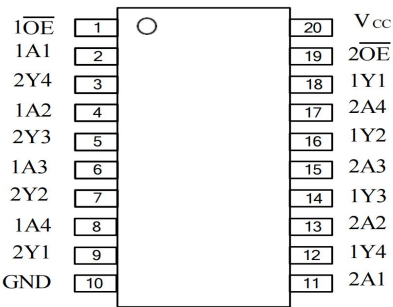
- Tube

Part Number	Marking code	Package	Packing	Pcs/Tube	Pcs/Box
74HC244	74HC245	DIP-20	Tube	18	5,400
74HC244	74HC245	SOP-20	Tube	36	11,520
74HC244	74HC245	SSOP-20	Tube	50	20,000
74HC244	74HC245	TSSOP-20	Tube	70	28,000

● Tape Reel

Part Number	Marking code	Package	Packing	Pcs/Reel	Pcs/ Box
74HC244	74HC245	SOP-20	Tape Reel	2,000	12,000
74HC244	74HC245	SSOP-20	Tape Reel	4,000	64,000
74HC244	74HC245	TSSOP-20	Tape Reel	4,000	64,000

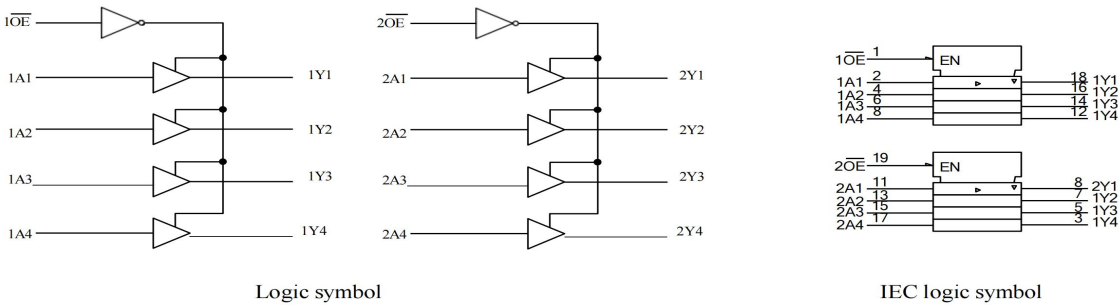
4. PIN CONFIGURATION



5. FUNCTION TABLE

INPUT(n $\overline{OE}$)	INPUT(nAn)	OUTPUT(nYn)
H	$\times$	Z
L	H	H
L	L	L

6. LOGIC DIAGRAM



7. ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{CC}	-0.5 ~ 7	V
Input Clamp Current	I _{IK}	±20	mA
Output Clamp Current	I _{OK}	±20	mA
Output Current	I _{OUT}	±35	mA
VCC or GND Current	I _{CC}	±70	mA
Storage Temperature	T _{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

8. RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V _{CC}		2	-	6	V
Input Voltage	V _{IN}		0	-	V _{CC}	V
Output Voltage	V _{OUT}		0	-	V _{CC}	V
Input Rise or Fall Times	t _R / t _F	V _{CC} =2V	-	-	1000	ns
		V _{CC} =4.5V	-	-	500	ns
		V _{CC} =6V	-	-	400	ns
Operating Temperature	T _A		-40	-	+125	°C

9. STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	V _{IH}	V _{CC} =2V	1.5	-	-	1.5	-	-	V
		V _{CC} =4.5V	3.15	-	-	3.15	-	-	V
		V _{CC} =6V	4.2	-	-	4.2	-	-	V
Low-Level Input Voltage	V _{IL}	V _{CC} =2V	-	-	0.5	-	-	0.5	V
		V _{CC} =4.5V	-	-	1.35	-	-	1.35	V
		V _{CC} =6V	-	-	1.8	-	-	1.8	V
High-Level Output Voltage	V _{OH}	V _{CC} =2V, I _{OH} = -20μA	1.9	1.995	-	1.9	-	-	V
		V _{CC} =4.5V, I _{OH} = -20μA	4.4	4.490	-	4.4	-	-	V
		V _{CC} =6V, I _{OH} = -20μA	5.9	5.980	-	5.9	-	-	V
		V _{CC} =4.5V, I _{OH} = -6mA	3.98	4.37	-	3.7	-	-	V
		V _{CC} =6V, I _{OH} = -7.8mA	5.48	5.85	-	5.2	-	-	V
Low-Level Output Voltage	V _{OL}	V _{CC} =2V, I _{OL} =20μA	-	0.002	0.1	-	-	0.1	V
		V _{CC} =4.5V, I _{OL} =20μA	-	0.002	0.1	-	-	0.1	V
		V _{CC} =6V, I _{OL} =20μA	-	0.003	0.1	-	-	0.1	V
		V _{CC} =4.5V, I _{OL} =6mA	-	0.11	0.26	-	-	0.4	V
		V _{CC} =6V, I _{OL} =7.8mA	-	0.14	0.26	-	-	0.4	V
Input Leakage Current	I _{I(LEAK)}	V _{CC} =6V, V _{IN} =V _{CC} or 0	-	-	±100	-	-	±1000	nA
Output OFF-State Current	I _{OZ}	V _{CC} =6V, V _{OUT} =V _{CC} or 0, V _{IN} =V _{IH} or V _{IL}	-	-	±0.5	-	-	±10	μA
Quiescent Supply Current	I _Q	V _{CC} =6V, V _{IN} =V _{CC} or 0, I _{OUT} =0	-	-	8	-	-	160	μA

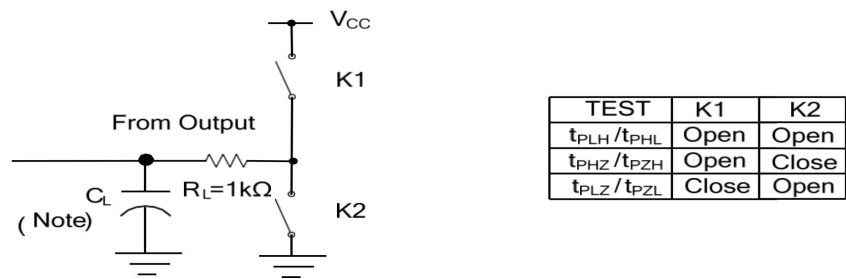
10. DYNAMIC CHARACTERISTICS (Input: $t_R, t_F=6ns$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation delay from input (A) to output(Y)	t_{PLH} / t_{PHL}	$V_{CC}=2V, C_L=50pF$	-	30	115	-	-	145	ns
		$V_{CC}=2V, C_L=150pF$	-	56	165	-	-	245	ns
		$V_{CC}=4.5V, C_L=50pF$	-	17	23	-	-	34	ns
		$V_{CC}=4.5V, C_L=150pF$	-	25	33	-	-	49	ns
		$V_{CC}=6V, C_L=50pF$	-	11	20	-	-	25	ns
		$V_{CC}=6V, C_L=150pF$	-	15	28	-	-	42	ns
3-state output enable time n $\overline{OE}$ to nYn	t_{PZH} / t_{PZL}	$V_{CC}=2V, C_L=50pF$	-	30	150	-	-	190	ns
		$V_{CC}=2V, C_L=150pF$	-	100	200	-	-	300	ns
		$V_{CC}=4.5V, C_L=50pF$	-	15	30	-	-	45	ns
		$V_{CC}=4.5V, C_L=150pF$	-	20	40	-	-	60	ns
		$V_{CC}=6V, C_L=50pF$	-	10	26	-	-	32	ns
		$V_{CC}=6V, C_L=150pF$	-	17	34	-	-	51	ns
3-state output disable time n $\overline{OE}$ to nYn	t_{PHZ} / t_{PLZ}	$V_{CC}=2V, C_L=50pF$	-	26	150	-	-	190	ns
		$V_{CC}=4.5V, C_L=50pF$	-	17	30	-	-	45	ns
		$V_{CC}=6V, C_L=50pF$	-	14	26	-	-	32	ns

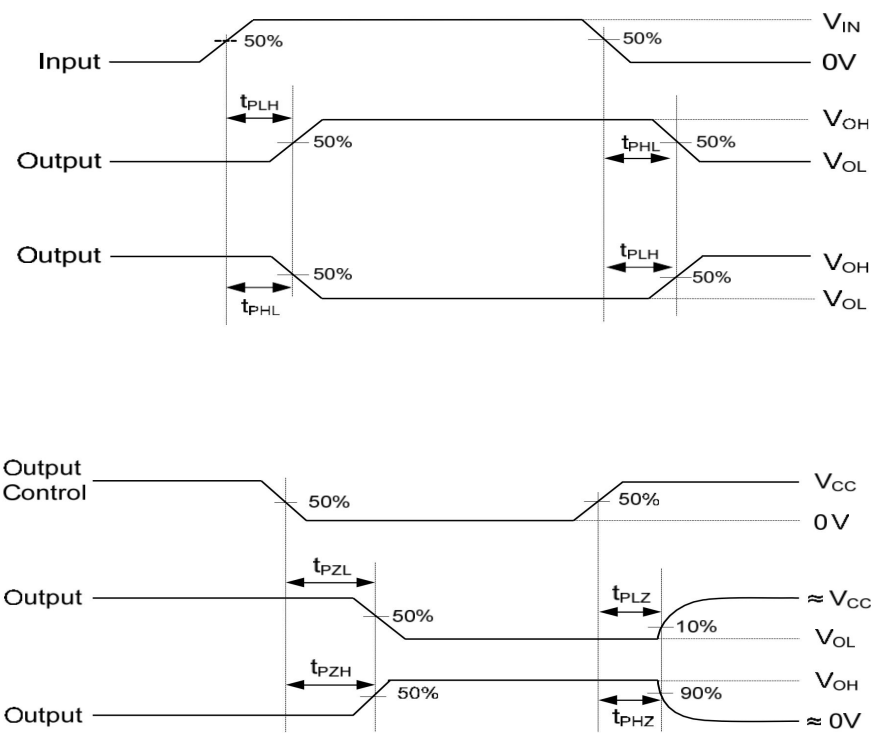
11. OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}	$V_{CC}=2V\sim 6V$	-	3	10	pF
Power Dissipation Capacitance	C_{PD}	No load	-	35	-	pF

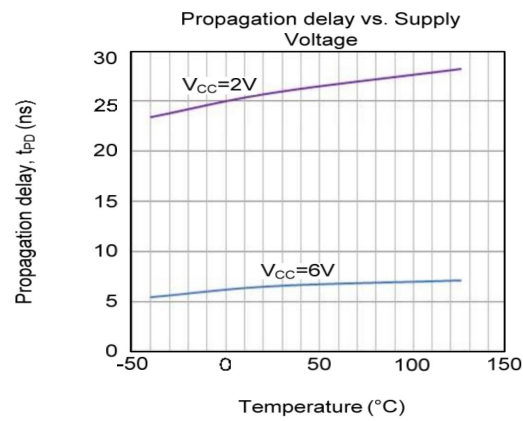
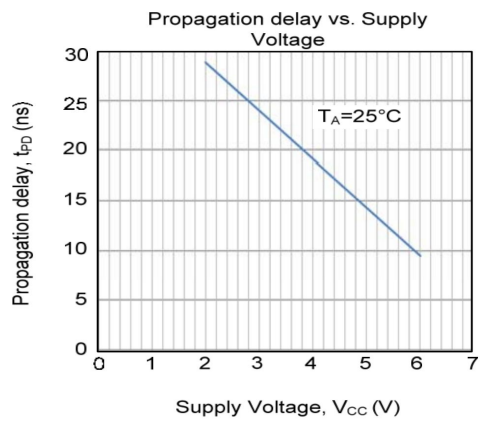
12. TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.

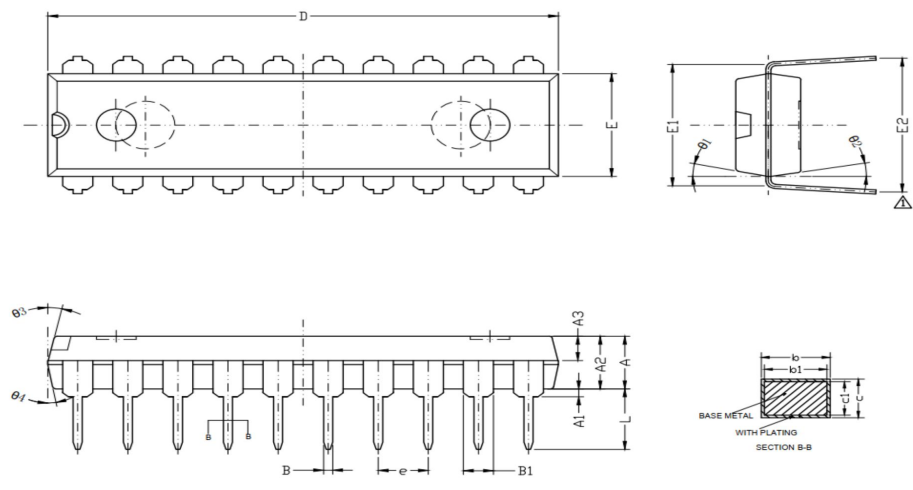


13. TYPICAL CHARACTERISTICS



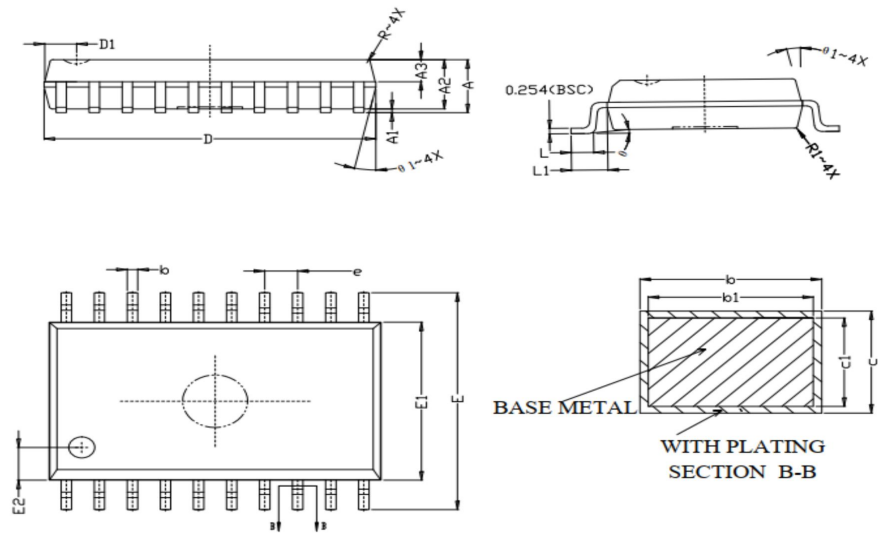
14. PACKAGE INFORMATION

DIP 20 package information



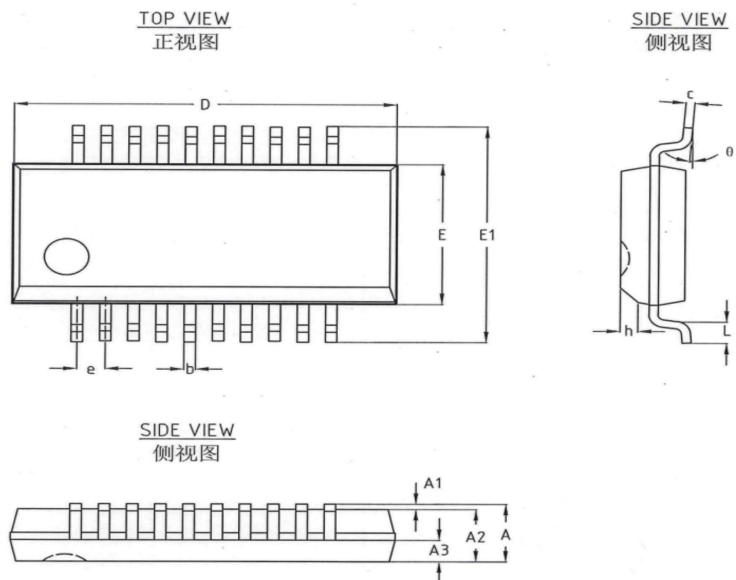
SYMBOL	MILLIMETER		
	MIN	MIN	MAX
A	3.60	3.80	4.00
A1	0.51	--	--
A2	3.20	3.30	3.40
A3	1.47	1.52	1.57
B	0.44	--	0.53
B1	1.52(BSC)		
b	0.44	--	0.53
b1	0.43	0.46	0.48
c	0.25	--	0.31
c1	0.24	0.25	0.26
D	25.7	25.9	26.1
E	6.35	6.55	6.75
E1	7.62(BSC)		
E2	8.00	8.40	8.80
e	2.54(BSC)		
L	3.00	--	3.60
θ1	8°	~	14°
θ2	6°	~	12°
θ3	8°	~	14°
θ4	6°	~	12°

SOP 20 package information



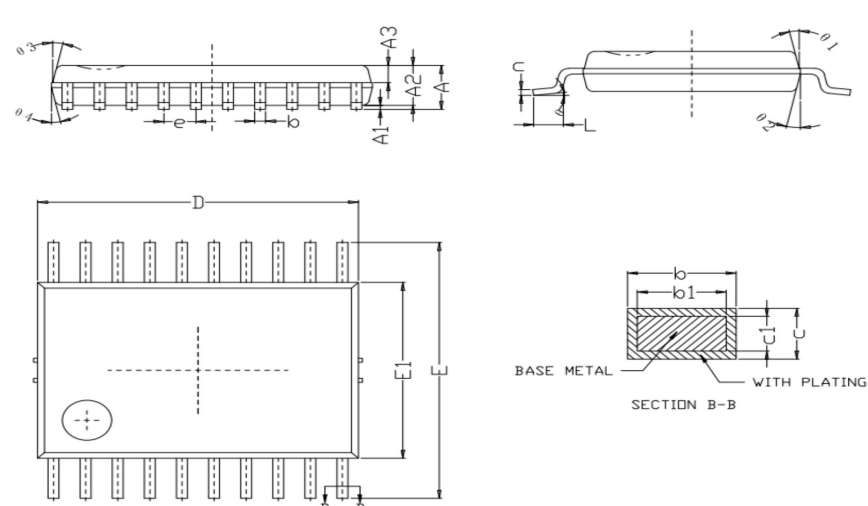
SYMBOL	MILLIMETER		
	MIN	MIN	MAX
A	--	--	2.615
A1	0.10	--	0.30
A2	2.29	2.34	2.39
A3	0.99	1.043	1.07
b	0.39	--	0.47
b1	0.38	0.41	0.44
c	0.25	--	0.29
c1	0.24	0.25	0.26
D	12.65	12.75	12.85
D1	1.225(BSC)		
E	10.10	10.30	10.50
E1	7.40	7.50	7.60
E2	1.55(BSC)		
e	1.27(BSC)		
L	0.854	0.864	0.874
L1	1.403(REF)		
θ	0°	~	8°
θ1	6°	~	15°
R/R1	R1.27(BSC)		

SSOP 20 package information



SYMBOL	MILLIMETER		
	MIN	MIN	MAX
A	--	--	1.75
A1	0.10	--	0.25
A2	1.35	1.45	1.55
A3	0.60	0.65	0.70
b	0.23	--	0.31
c	0.19	--	0.25
D	8.50	8.60	8.70
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
e	0.635(BSC)		
h	0.30	--	0.50
L	0.40	~	0.80
θ	0°	~	8°

TSSOP 20 package information



SYMBOL	MILLIMETER		
	MIN	MIN	MAX
A	--	--	1.20
A1	0.05	0.10	0.15
A2	0.80	0.93	1.05
A3	0.38	0.43	0.48
b	0.17	--	0.27
b1	0.16	0.22	0.26
c	0.13	--	0.15
c1	0.12	0.13	0.14
D	6.40	6.50	6.60
E	6.25	6.40	6.55
E1	4.30	4.40	4.50
e	0.65(BSC)		
L	0.45	0.60	0.75
θ	0°	~	8°
θ1	10°	~	14°
θ2	10°	~	14°
θ3	10°	~	14°
θ4	10°	~	14°