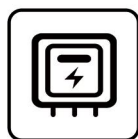
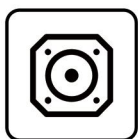


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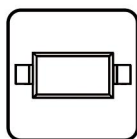
WEB | WWW.TDSEMIC.COM



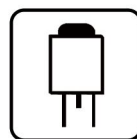
電源管理



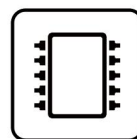
顯示驅動



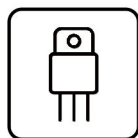
二三極管



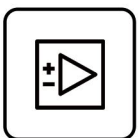
LDO穩壓器



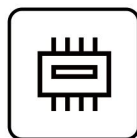
觸摸芯片



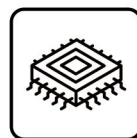
MOS管



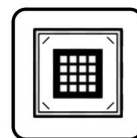
運算放大器



存儲芯片



MCU



串口通信

74HC08D-TD

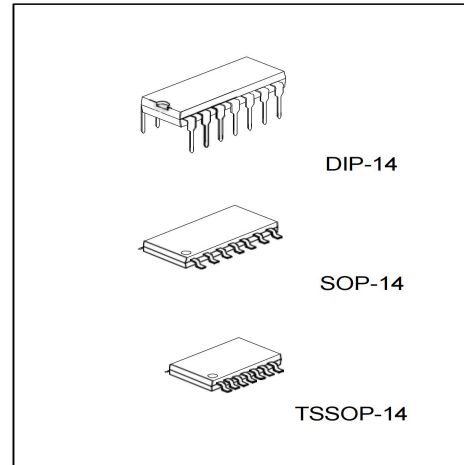
產品規格說明書

1. DESCRIPTION

The 74HC08 contains four independent 2-input AND gates, perform the Boolean function $Y = \overline{A} \cdot \overline{B}$ or $Y = A + B$ in positive logic.

2. FEATURES

- Operation Voltage Range: 2~6V
- Low Quiescent Current: $I_{CC} = 2\mu A$ (Max)
- High Speed: $t_{PD} = 8ns$ (Typ)
- Low Input Current: 100nA (Max)
- ESD protection:
 - HBM: ANSI/ESDA/JEDEC JS-001 2023 exceeds 1000 V
 - CDM: ANSI/ESDA/JEDEC JS-002 2022 exceeds 2000 V
- Latch-up performance ≤ 250 mA
- Package Option: DIP-14, SOP-14 and TSSOP-14



3. ORDERING INFORMATION

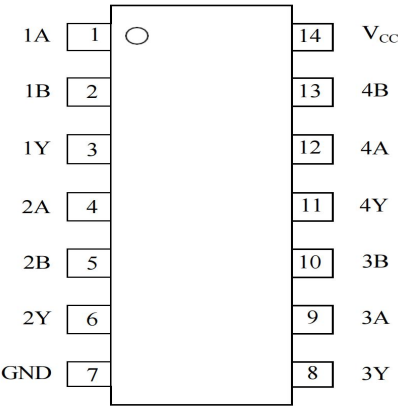
● Tube

Part Number	Marking code	Package	Packing	Pcs/Tube	Pcs/Box
74HC08	74HC08	DIP-14	Tube	25	1250

● Tape Reel

Part Number	Marking code	Package	Packing	Pcs/Reel	Pcs/ Box
74HC08	74HC08	SOP-14	Tape Reel	2.5K	50K
74HC08	74HC08	TSSOP-14	Tape Reel	5K	80k

4. PIN CONFIGURATION



5. FUNCTION TABLE (Each Gate)

INPUT(A)	INPUT(B)	OUTPUT(Y)
H	H	H
H	L	L
L	H	L
L	L	L

6. LOGIC DIAGRAM (Positive Logic)



7. ABSOLUTE MAXIMUM RATING(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}	±25	mA
VCC or GND Current	I _{CC}	±50	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	TEST 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 Transition Rise or Fall Rate	t _R , t _F	V _{CC} =2V	-	-	1000	ns
		V _{CC} =4.5V	-	-	500	
		V _{CC} =6V	-	-	400	
Operating Temperature	T _A	-	-40	-	+125	°C

9. THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	DIP-14	100	°C/W
	SOP-14	125	°C/W
	TSSOP-14	150	°C/W

10. STATIC CHARACTERISTICS (T_A=25°C ,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V _{IH}	V _{CC} =2V	1.5	-	-	V
		V _{CC} =4.5V	3.15	-	-	
		V _{CC} =6V	4.2	-	-	
Low-Level Input Voltage	V _{IL}	V _{CC} =2V	-	-	0.5	V
		V _{CC} =4.5V	-	-	1.35	
		V _{CC} =6V	-	-	1.8	
High-Level Output Voltage	V _{OH}	V _{CC} =2V, I _{OH} =20μA	1.9	1.998	-	V
		V _{CC} =4.5V, I _{OH} =20μA	4.4	4.499	-	
		V _{CC} =6V, I _{OH} =20μA	5.9	5.999	-	
		V _{CC} =4.5V, I _{OH} =4mA	3.98	4.32	-	
		V _{CC} =6V, I _{OH} =5.2mA	5.48	5.81	-	
Low-Level Output Voltage	V _{OL}	V _{CC} =2V, I _{OL} =20μA	-	0.002	0.1	V
		V _{CC} =4.5V, I _{OL} =20μA	-	0.001	0.1	
		V _{CC} =6V, I _{OL} =20μA	-	0.001	0.1	
		V _{CC} =4.5V, I _{OL} =4mA	-	0.15	0.26	
		V _{CC} =6V, I _{OL} =5.2mA	-	0.16	0.26	
Input Leakage Current	I _{I(LEAK)}	V _{CC} = 6V, V _{IN} =V _{CC} or GND	-	±0.1	±100	nA
Quiescent Supply Current	I _Q	V _{CC} = 6V, V _{IN} =V _{CC} or GND, I _{OUT} =0	-	-	8	μA
Input Capacitance	C _{IN}	V _{CC} =2V~6V	-	3	10	pF

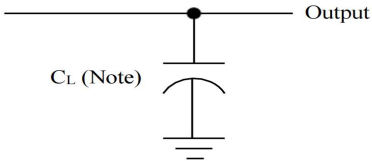
11. DYNAMIC CHARACTERISTICS (T_A=25°C, Input: t_R=t_F=6ns, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from Input(A or B) to Output(Y)	t _{PLH} , t _{PHL}	V _{CC} =2V, C _L =50pF	-	25	90	ns
		V _{CC} =4.5V, C _L =50pF	-	9	18	
		V _{CC} =6V, C _L =50pF	-	7	15	
Output Transition Time	t _T	V _{CC} =2V	-	19	75	ns
		V _{CC} =4.5V	-	7	15	
		V _{CC} =6V	-	6	13	

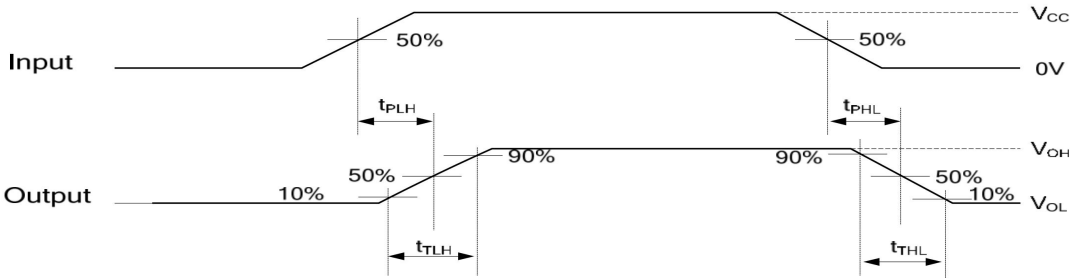
12. OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	RATINGS	UNIT
Power Dissipation Capacitance	C _{PD}	No Load	20	pF

13. TEST CIRCUIT AND WAVEFORMS

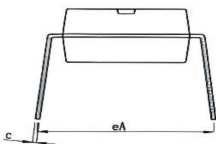
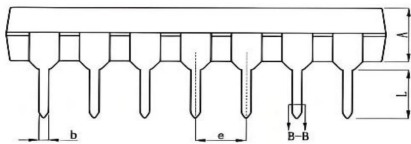


Note: CL includes probe and jig capacitance.

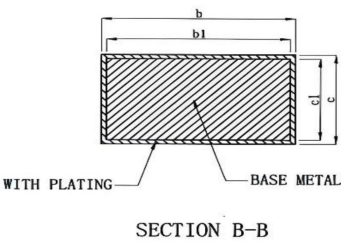
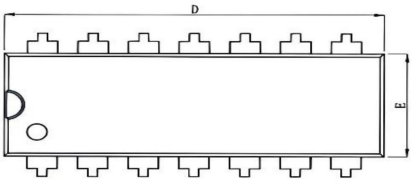


14. PACKAGE INFORMATION

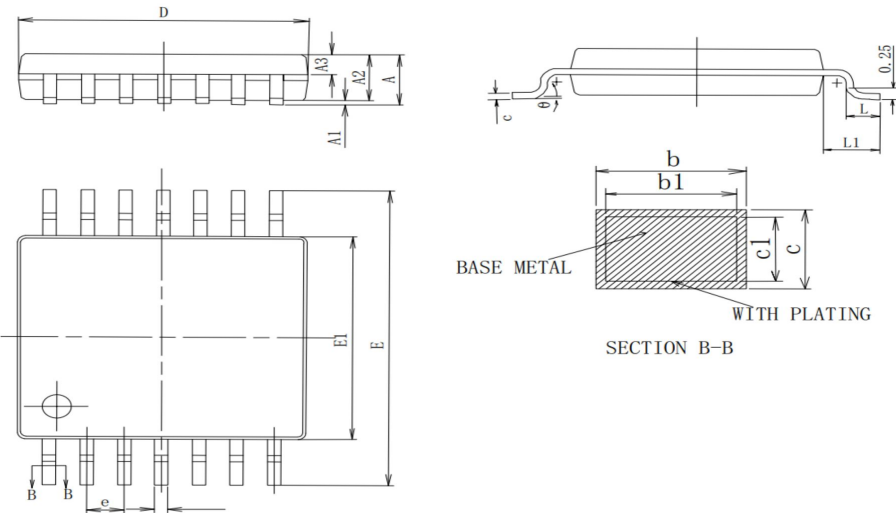
DIP 14 package information



Symbol	Millimeter		
	Min	Nom	Max
A	3.20	3.30	3.40
b	0.44	—	0.53
b1	0.43	0.46	0.49
c	0.25	—	0.30
c1	0.24	0.25	0.26
D	18.95	19.05	19.15
E	6.25	6.35	6.45
e	2.54BSC		
eA	7.62	—	9.50
L	3.00	—	—

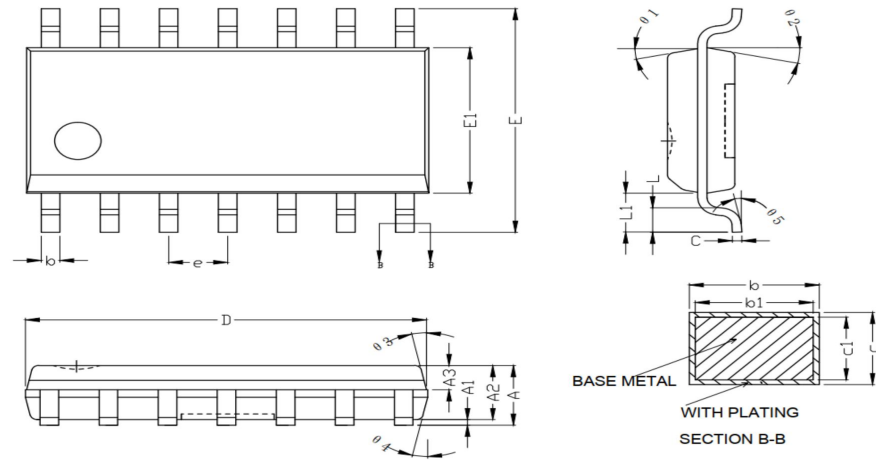


TSSOP 14 package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	—	0.28
b1	0.19	0.22	0.25
c	0.13	—	0.17
c1	0.12	0.13	0.14
D	4.90	5.00	5.10
E	6.20	6.40	6.60
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00BSC		
θ	0	—	8°

SOP 14 package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	--	--	1.70
A1	0.10	0.15	0.21
A2	1.40	1.45	1.50
A3	0.60	0.65	0.70
b	0.33	--	0.47
b1	0.32	0.41	0.44
c	0.20	--	0.24
c1	0.19	0.20	0.21
D	8.45	8.60	8.75
E	5.80	6.00	6.20
E1	3.85	3.90	4.00
e	1.27(BSC)		
L	0.50	0.60	0.70
L1	1.10(BSC)		
θ 1	8°	~	15°
θ 2	8°	~	15°
θ 3	8°	~	15°
θ 4	8°	~	15°
θ 5	0°	~	6°

