

TC74VHCT367AF, TC74VHCT367AFN, TC74VHCT367AFT

HEX BUS BUFFER
 TC74VHCT367 AF/AFN/AFT NON-INVERTED, 3-STATE OUTPUTS

The TC74VHCT367A is advanced high speed CMOS HEX BUS BUFFERS fabricated with silicon gate C²MOS technology. They achieve the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation. They contain six buffers; four buffers are controlled by an enable input ($\overline{G1}$), and the other two buffers are controlled by another enable input ($\overline{G2}$). The outputs of each buffer group are enabled when $\overline{G1}$ and/or $\overline{G2}$ inputs are held low; if held high, these outputs are in a high impedance state. The TC74VHCT367A is a non-inverting output type. Input protection and output circuit ensure that 0 to 5.5V can be applied to the input and output*1 pins without regard to the supply voltage. These structure prevents device destruction due to mismatched supply and input/output voltages such as battery back up, hot board insertion, etc.

*1: output in off-state

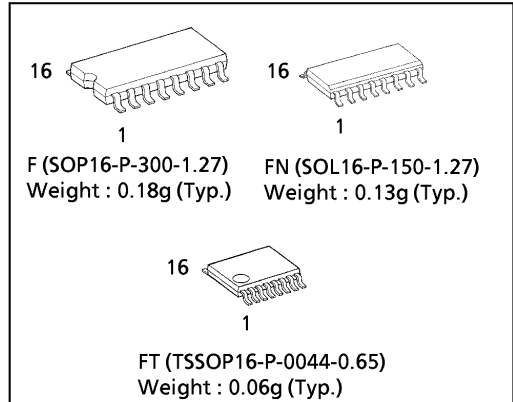
FEATURES :

- High Speed..... $t_{pd} = 5.5ns$ (typ.) at $V_{CC} = 5V$
- Low Power Dissipation..... $I_{CC} = 4\mu A$ (Max.) at $T_a = 25^\circ C$
- Compatible with TTL outputs ... $V_{IL} = 0.8V$ (Max.)
 $V_{IH} = 2.0V$ (Min.)
- Power Down Protection is provided on all inputs and outputs
- Balanced Propagation Delays..... $t_{pLH} \approx t_{pHL}$
- Low Noise $V_{OLP} = 0.8V$ (Max.)
- Pin and Function Compatible with the 74ALS367.

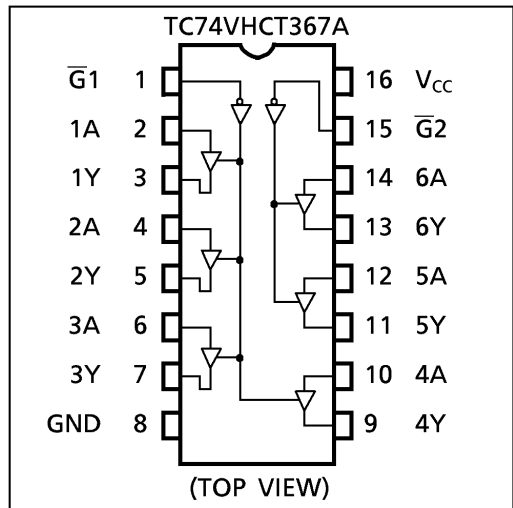
TRUTH TABLE

INPUTS		OUTPUTS
\overline{G}	A	Y
L	L	L
L	H	H
H	X	Z

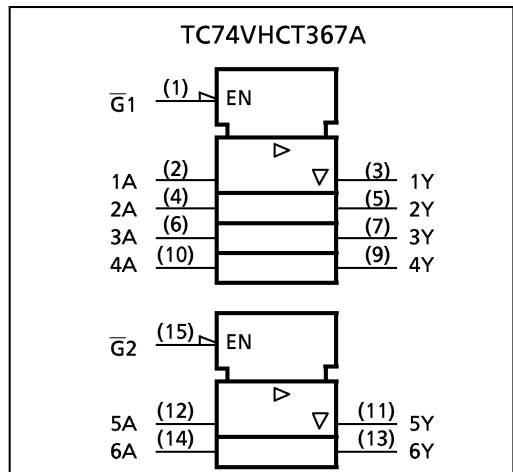
X : Don't Care
 Z : High Impedance



PIN ASSIGNMENT



IEC LOGIC SYMBOL



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	-0.5~7.0	V
DC Input Voltage	V_{IN}	-0.5~7.0	V
DC Output Voltage	V_{OUT}	-0.5~7.0 (Note 1)	V
		-0.5~ $V_{CC} + 0.5$ (Note 2)	
Input Diode Current	I_{IK}	-20	mA
Output Diode Current	I_{OK}	± 20 (Note 3)	mA
DC Output Current	I_{OUT}	± 25	mA
DC Vcc/Ground Current	I_{CC}	± 75	mA
Power Dissipation	P_D	180	mW
Storage Temperature	T_{stg}	-65~150	°C

(Note 1) $V_{CC} = 0V$

(Note 2) High or Low State. I_{OUT} absolute maximum rating must be observed.

(Note 3) $V_{OUT} < GND$, $V_{OUT} > V_{CC}$

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	4.5~5.5	V
Input Voltage	V_{IN}	0~5.5	V
Output Voltage	V_{OUT}	0~5.5 (Note 4)	V
		0~ V_{CC} (Note 5)	
Operating Temperature	T_{opr}	-40~85	°C
Input Rise and Fall Time	dt/dV	0~20	ns/V

(Note 4) $V_{CC} = 0V$

(Note 5) High or Low State

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DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITON		V _{CC} (V)	Ta = 25°C			Ta = -40~85°C		UNIT
					MIN.	TYP.	MAX.	MIN.	MAX.	
High - Level Input Voltage	V _{IH}			4.5~5.5	2.0	—	—	2.0	—	V
Low - Level Input Voltage	V _{IL}			4.5~5.5	—	—	0.8	—	0.8	V
High - Level Output Voltage	V _{OH}	V _{IN} = V _{IH} or V _{IL}	I _{OH} = -50μA	4.5	4.40	4.50	—	4.40	—	V
			I _{OH} = -8mA	4.5	3.94	—	—	3.80	—	V
Low - Level Output Voltage	V _{OL}	V _{IN} = V _{IH} or V _{IL}	I _{OL} = 50μA	4.5	—	0.0	0.10	—	0.10	V
			I _{OL} = 8mA	4.5	—	—	0.36	—	0.44	V
3 - State Output Off - State Current	I _{OZ}	V _{IN} = V _{IH} or V _{IL} V _{OUT} = V _{CC} or GND		5.5	—	—	± 0.25	—	± 2.50	μA
Input Leakage Current	I _{IN}	V _{IN} = 5.5V or GND		0~5.5	—	—	± 0.1	—	± 1.0	
Quiescent Supply Current	I _{CC}	V _{IN} = V _{CC} or GND		5.5	—	—	4.0	—	40.0	mA
	I _{CCT}	PER INPUT : V _{IN} = 3.4V OTHER INPUT : V _{CC} or GND		5.5	—	—	1.35	—	1.50	
Output Leakage Current	I _{OPD}	V _{OUT} = 5.5V		0	—	—	+ 0.5	—	+ 5.0	μA

AC ELECTRICAL CHARACTERISTICS (Input $t_r = t_f = 3\text{ns}$)

PARAMETER	SYMBOL	TEST CONDITION		Ta = 25°C			Ta = -40~85°C		UNIT	
		V _{CC} (V)	C _L (pF)	MIN.	TYP.	MAX.	MIN.	MAX.		
Propagation Delay Time	t _{pLH}	5.0 ± 0.5	15	—	4.7	7.4	1.0	8.5	ns	
	t _{pHL}		50	—	5.2	8.4	1.0	9.5		
3-State Output Enable Time	t _{pZL}	R _L = 1kΩ	15	—	4.9	10.4	1.0	12.0		
	t _{pZH}		50	—	5.4	11.4	1.0	13.0		
3-State Output Disable Time	t _{pLZ}	R _L = 1kΩ	5.0 ± 0.5	50	—	6.3	11.4	1.0		13.0
	t _{pHZ}		(Note 6)	5.0 ± 0.5	50	—	—	1.0		—
Output to Output Skew	t _{osLH} t _{osHL}	(Note 6)	5.0 ± 0.5	50	—	—	1.0	—	1.0	
Input Capacitance	C _{IN}			—	4	10	—	10	pF	
Output Capacitance	C _{OUT}			—	9	—	—	—		
Power Dissipation Capacitance (Note 7)	C _{PD}	TC74VHCT367A		—	16	—	—	—		

(Note 6) Parameter guaranteed by design. $t_{osLH} = |t_{pLHm} - t_{pLHn}|$, $t_{osHL} = |t_{pHLm} - t_{pHLn}|$

(Note 7) C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation :

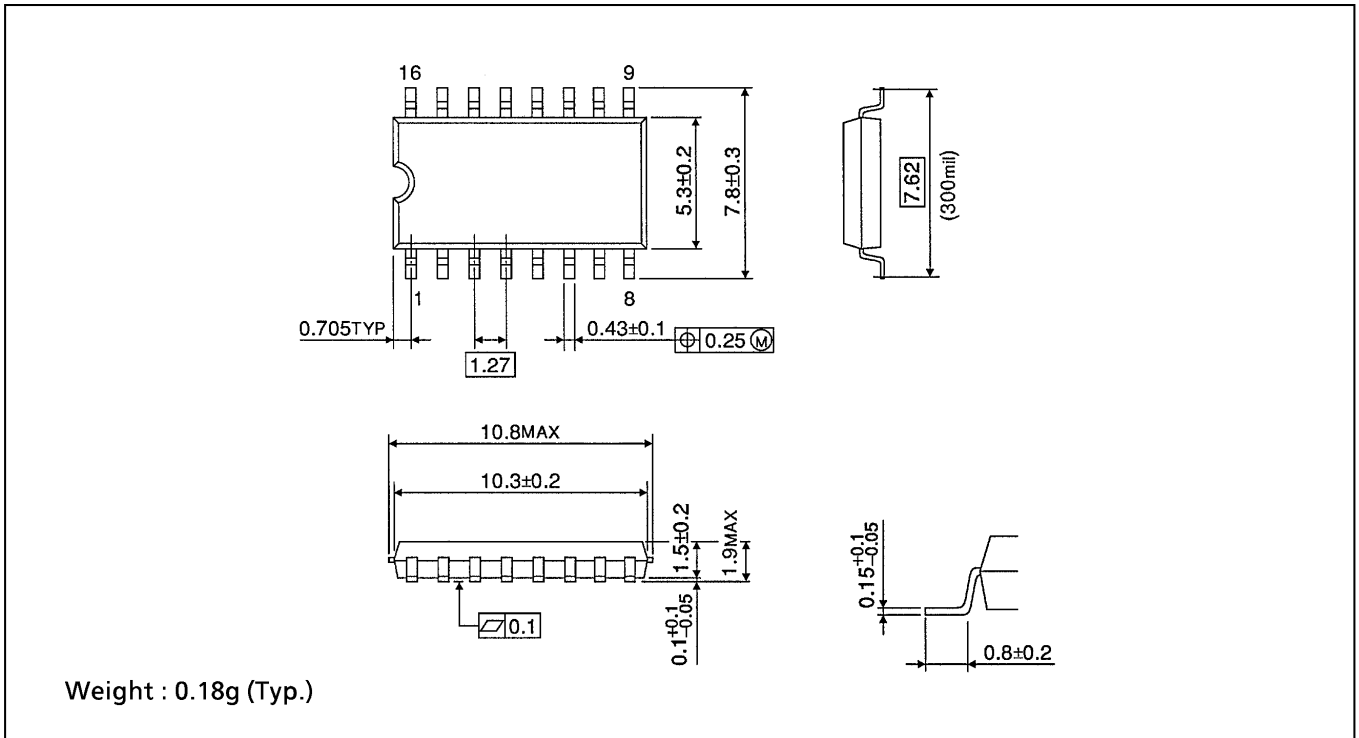
$$I_{CC(opr.)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC} / 6 \text{ (per bit)}$$

NOISE CHARACTERISTICS (Input $t_r = t_f = 3\text{ns}$)

PARAMETER	SYMBOL	TEST CONDITION		Ta = 25°C		UNIT
		V _{CC} (V)	C _L (pF)	TYP.	MAX.	
Quiet Output Maximum Dynamic V _{OL}	V _{OLP}	C _L = 50pF	5.0	0.6	0.8	V
Quiet Output Minimum Dynamic V _{OL}	V _{OLV}	C _L = 50pF	5.0	-0.6	-0.8	V
Minimum High Level Dynamic Input Voltage	V _{IHD}	C _L = 50pF	5.0	—	2.0	V
Maximum Low Level Dynamic Input Voltage	V _{ILD}	C _L = 50pF	5.0	—	0.8	V

SOP 16PIN (200mil BODY) OUTLINE DRAWING (SOP16-P-300-1.27)

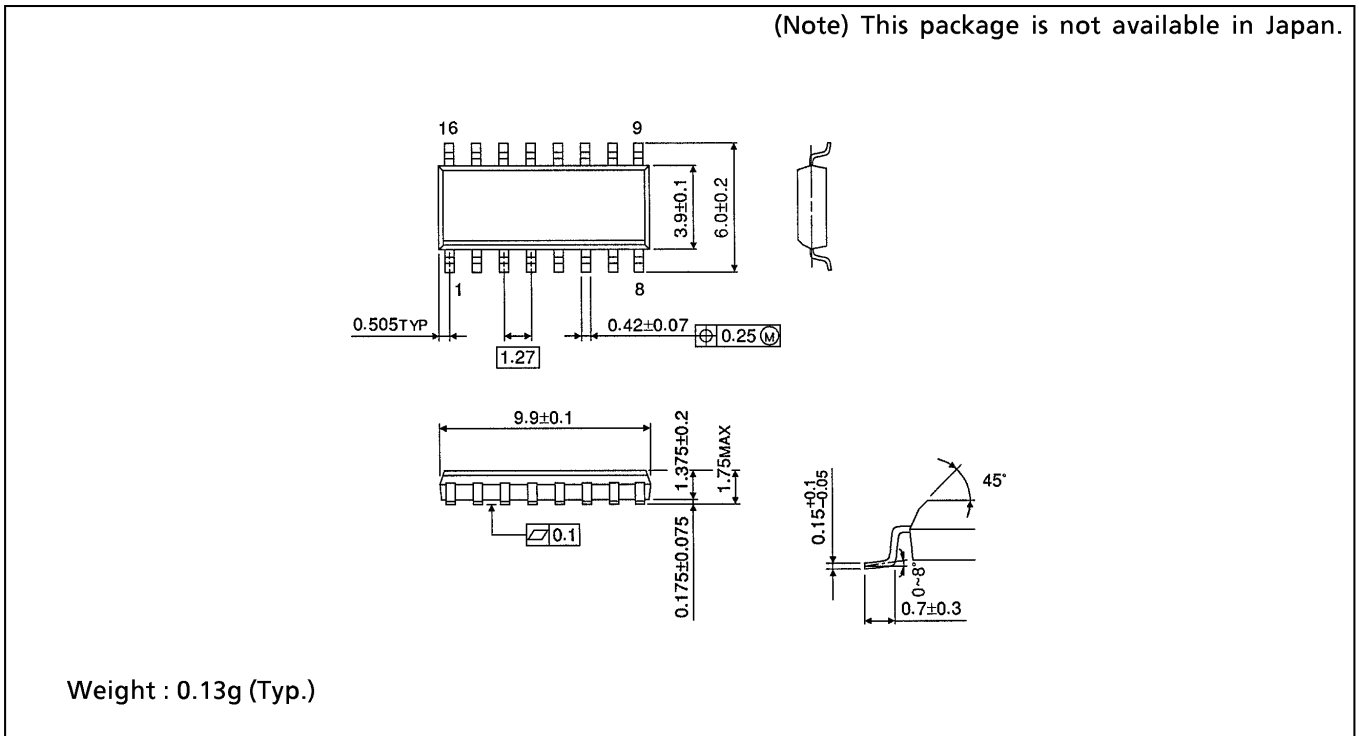
Unit in mm



SOP 16PIN (150mil BODY) OUTLINE DRAWING (SOP16-P-150-1.27)

Unit in mm

(Note) This package is not available in Japan.



TSSOP 16PIN OUTLINE DRAWING (TSSOP16-P-0044-0.65)

Unit in mm

