

TC74AC367P, TC74AC367F, TC74AC367FN, TC74AC367FT

HEX BUS BUFFER (3 - STATE)

The TC74AC367 is an advanced high speed CMOS HEX BUS BUFFERS fabricated with silicon gate and double - layer metal wiring C²MOS technology.

It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.

It contains 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.

All inputs are equipped with protection circuits against static discharge or transient excess voltage.

FEATURES :

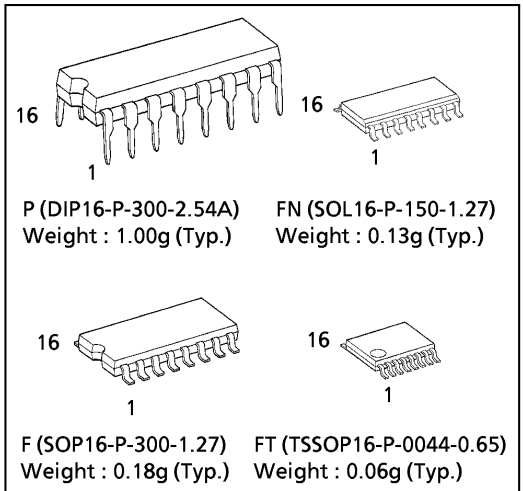
- High Speed..... $t_{pd} = 3.7ns$ (typ.) at $V_{CC} = 5V$
- Low Power Dissipation..... $I_{CC} = 8\mu A$ (Max.) at $T_a = 25^\circ C$
- High Noise Immunity..... $V_{NIH} = V_{NIL} = 28\% V_{CC}$ (Min.)
- Symmetrical Output Impedance... $|I_{OH}| = |I_{OL}| = 24mA$ (Min.)
 Capability of driving 50Ω transmission lines.
- Balanced Propagation Delays..... $t_{pLH} \approx t_{pHL}$
- Wide Operating Voltage Range.... $V_{CC} (opr) = 2V \sim 5.5V$
- Pin and Function Compatible with 74F 367

TRUTH TABLE

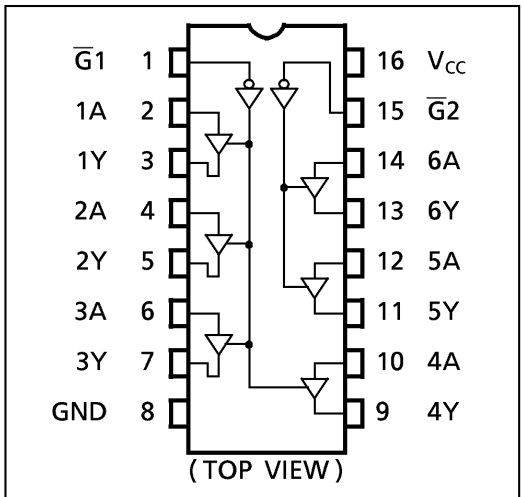
INPUTS		OUTPUTS
\overline{G}	A	Y
L	L	L
L	H	H
H	X	Z

X : Don't Care
 Z : High Impedance

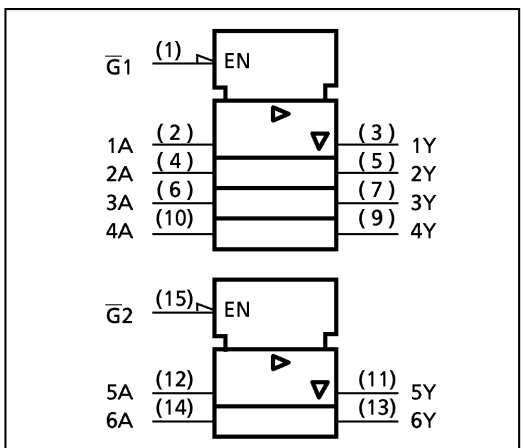
(Note) The JEDEC SOP (FN) is not available in Japan.



PIN ASSIGNMENT



IEC LOGIC SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V _{CC}	-0.5~7.0	V
DC Input Voltage	V _{IN}	-0.5~V _{CC} + 0.5	V
DC Output Voltage	V _{OUT}	-0.5~V _{CC} + 0.5	V
Input Diode Current	I _{IK}	± 20	mA
Output Diode Current	I _{OK}	± 50	mA
DC Output Current	I _{OUT}	± 50	mA
DC V _{CC} /Ground Current	I _{CC}	± 150	mA
Power Dissipation	P _D	500 (DIP)* / 180 (SOP/TSSOP)	mW
Storage Temperature	T _{stg}	-65~150	°C

*500mW in the range of Ta = -40°C~65°C. From Ta = 65°C to 85°C a derating factor of -10mW/°C should be applied up to 300mW.

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V _{CC}	2.0~5.5	V
Input Voltage	V _{IN}	0~V _{CC}	V
Output Voltage	V _{OUT}	0~V _{CC}	V
Operating Temperature	T _{opr}	-40~85	°C
Input Rise and Fall Time	dt / dV	0~ 100 (V _{CC} = 3.3 ± 0.3V) 0~ 20 (V _{CC} = 5 ± 0.5V)	ns / V

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	V _{CC} (V)	Ta = 25°C			Ta = -40~85°C		UNIT	
				MIN.	TYP.	MAX.	MIN.	MAX.		
High - Level Input Voltage	V _{IH}		2.0	1.50	—	—	1.50	—	V	
			3.0	2.10	—	—	2.10	—		
			5.5	3.85	—	—	3.85	—		
Low - Level Input Voltage	V _{IL}		2.0	—	—	0.50	—	0.50	V	
			3.0	—	—	0.90	—	0.90		
			5.5	—	—	1.65	—	1.65		
High - Level Output Voltage	V _{OH}	V _{IN} = V _{IH} or V _{IL}	I _{OH} = -50µA	2.0	1.9	2.0	—	1.9	V	
				3.0	2.9	3.0	—	2.9		—
			4.5	4.4	4.5	—	4.4	—		
			I _{OH} = -4mA I _{OH} = -24mA* I _{OH} = -75mA*	3.0	2.58	—	—	2.48		—
4.5	3.94	—		—	3.80	—				
Low - Level Output Voltage	V _{OL}	V _{IN} = V _{IH} or V _{IL}	I _{OL} = 50µA	2.0	—	0.0	0.1	—	0.1	V
				3.0	—	0.0	0.1	—	0.1	
			4.5	—	0.0	0.1	—	0.1		
			I _{OL} = 12mA I _{OL} = 24mA* I _{OL} = 75mA*	3.0	—	—	0.36	—	0.44	
4.5	—	—		0.36	—	0.44				
5.5	—	—	—	—	1.65	—				
3 - State Output Off - State Current	I _{OZ}	V _{IN} = V _{IH} or V _{IL} V _{OUT} = V _{CC} or GND	5.5	—	—	± 0.5	—	± 5.0	µA	
Input Leakage Current	I _{IN}	V _{IN} = V _{CC} or GND	5.5	—	—	± 0.1	—	± 1.0		
Quiescent Supply Current	I _{CC}	V _{IN} = V _{CC} or GND	5.5	—	—	8.0	—	80.0		

* : This spec indicates the capability of driving 50Ω transmission lines.
One output should be tested at a time for a 10ms maximum duration.

AC ELECTRICAL CHARACTERISTICS ($C_L = 50\text{pF}$, $R_L = 500\Omega$, Input $t_r = t_f = 3\text{ns}$)

PARAMETER	SYMBOL	TEST CONDITION	Ta = 25°C			Ta = -40~85°C		UNIT	
			V _{CC} (V)	MIN.	TYP.	MAX.	MIN.		MAX.
Propagation Delay Time	t _{pLH} t _{pHL}		3.3 ± 0.3	—	6.5	11.0	1.0	12.5	ns
			5.0 ± 0.5	—	4.5	7.0	1.0	8.0	
Output Enable Time	t _{pZL} t _{pZH}		3.3 ± 0.3	—	7.9	13.2	1.0	15.0	
			5.0 ± 0.5	—	5.5	8.7	1.0	10.0	
Output Disable Time	t _{pLZ} t _{pHZ}		3.3 ± 0.3	—	6.3	10.5	1.0	12.0	
			5.0 ± 0.5	—	5.2	7.9	1.0	9.0	
Input Capacitance	C _{IN}		—	5	10	—	10	pF	
Output Capacitance	C _{OUT}		—	10	—	—	—		
Power Dissipation Capacitance	C _{PD} (1)		—	28	—	—	—		

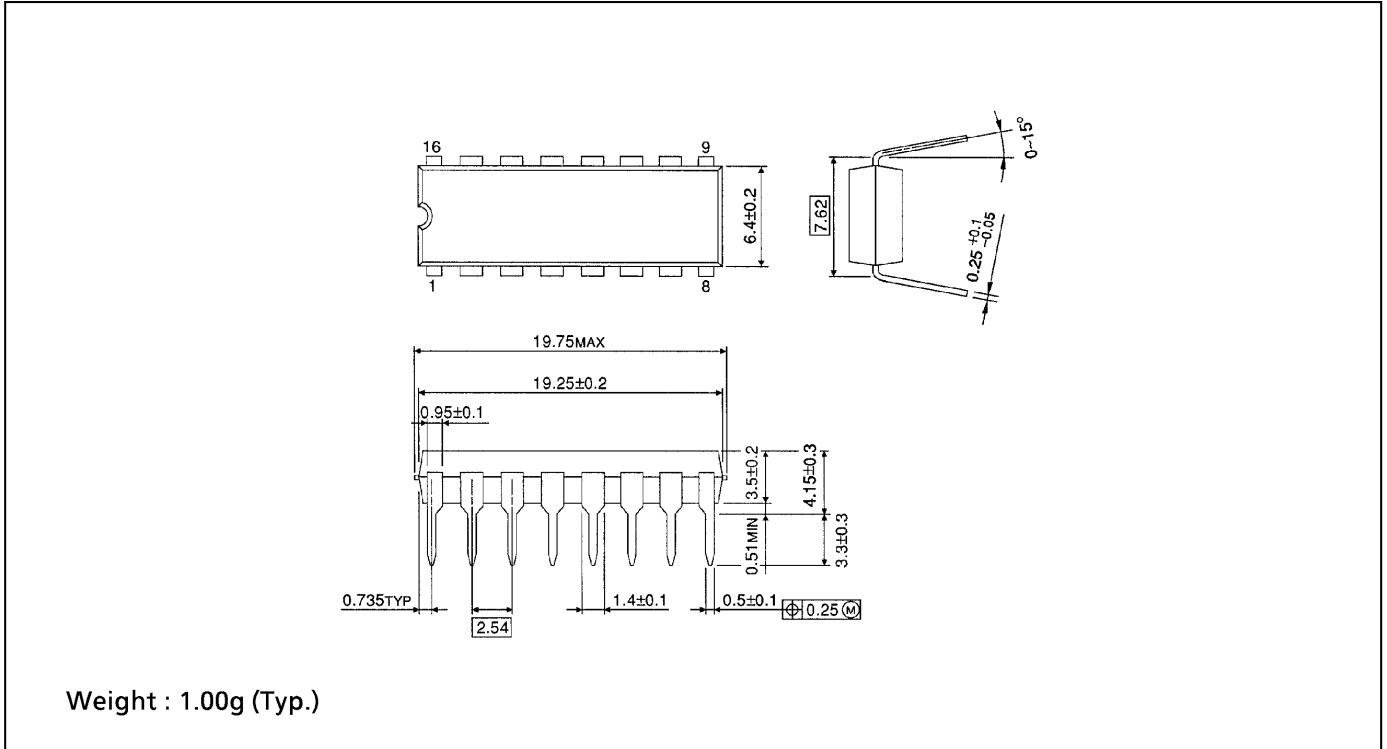
Note (1) C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation :

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

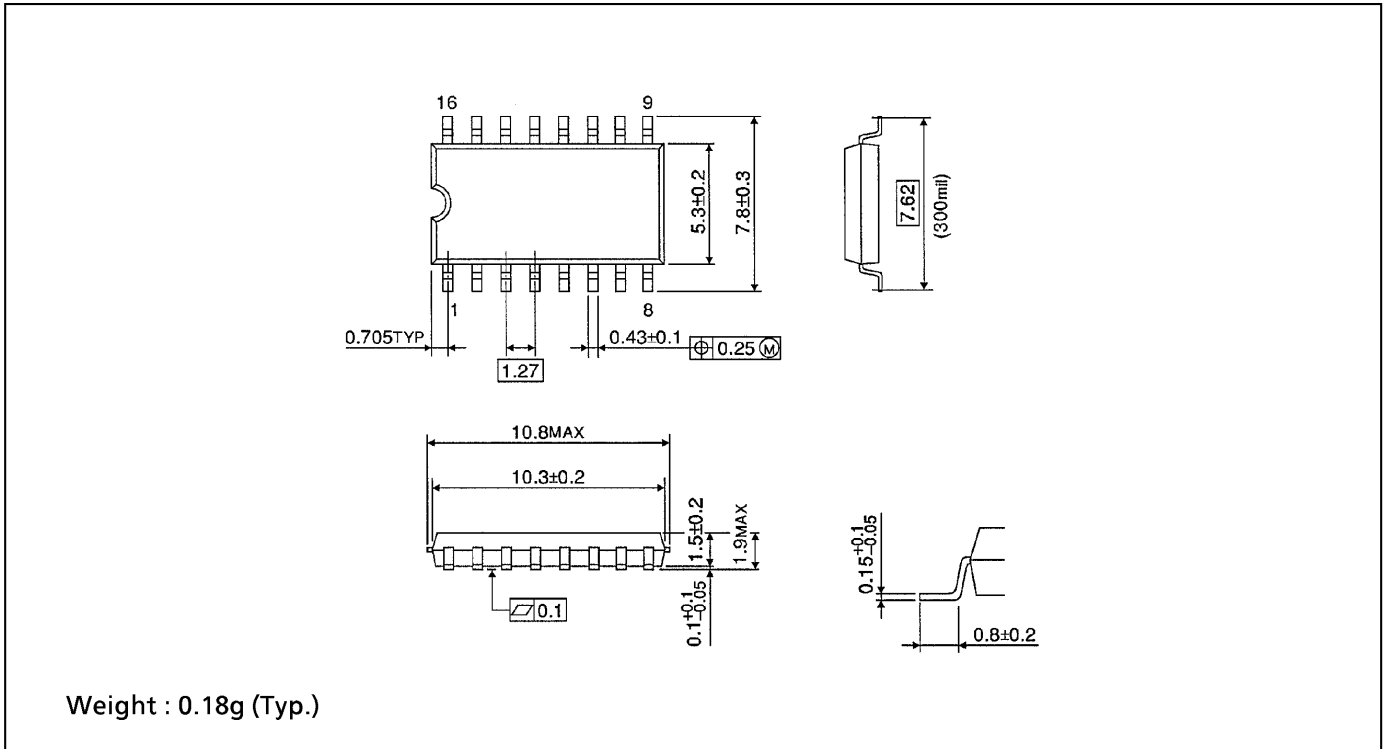
DIP 16PIN PACKAGE DIMENSIONS (DIP16-P-300-2.54A)

Unit in mm



SOP 16PIN (200mil BODY) PACKAGE DIMENSIONS (SOP16-P-300-1.27)

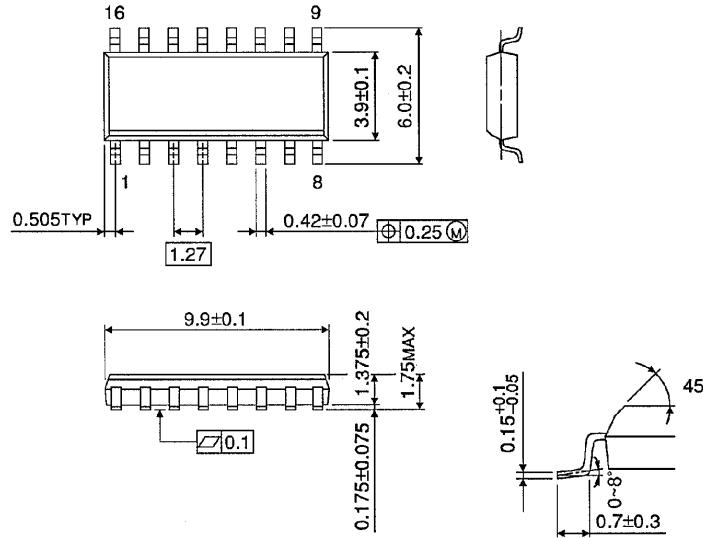
Unit in mm



SOP 16PIN (150mil BODY) PACKAGE DIMENSIONS (SOL16-P-150 -1.27)

Unit in mm

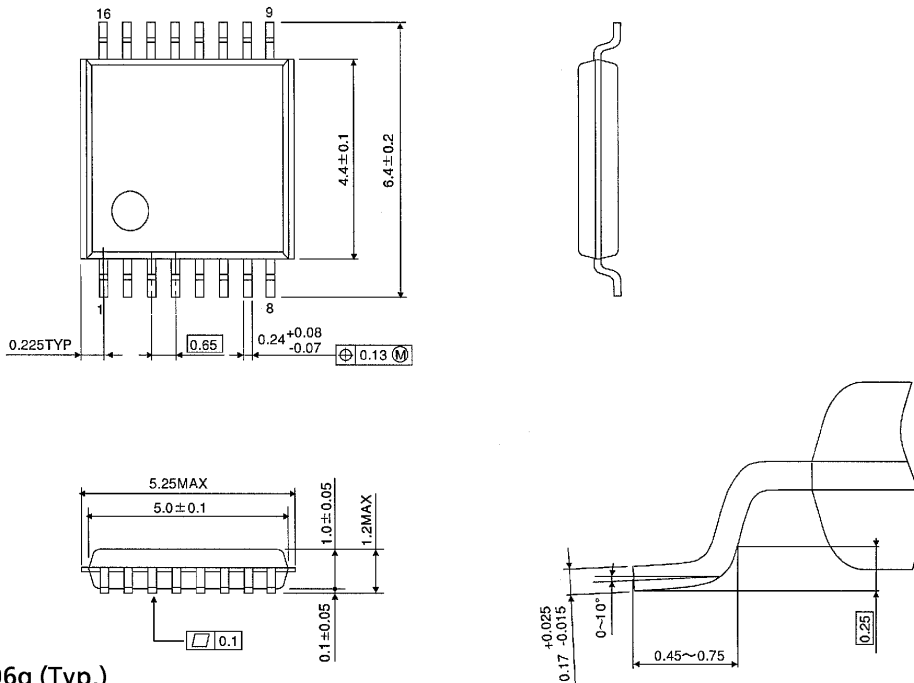
(Note) This package is not available in Japan.



Weight : 0.13g (Typ.)

TSSOP 16PIN PACKAGE DIMENSIONS (TSSOP16-P-0044-0.65)

Unit in mm



Weight : 0.06g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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