

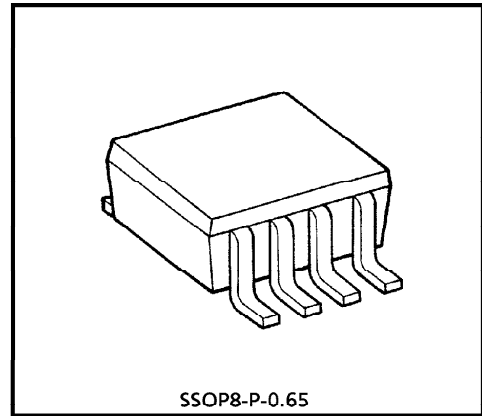
# TC7W126FU

## DUAL BUS BUFFER

The TC7W126FU is a high speed C<sup>2</sup>MOS DUAL BUS BUFFERS fabricated with silicon gate C<sup>2</sup>MOS technology. It achieve the high speed operation similar to equivalent LSTTL while maintaining the C<sup>2</sup>MOS low power dissipation.

The require 3-state control input G to be set low to place the output into the high impedance.

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



Weight : 0.02g (Typ.)

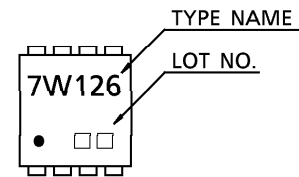
### FEATURES

- High Speed.....  $t_{pd} = 10ns$  (Typ.) at  $V_{CC} = 5V$
- Low Power Dissipation.....  $I_{CC} = 2\mu A$  (Max.) at  $T_a = 25^\circ C$
- High Noise Immunity .....  $V_{NIH} = V_{NIL} = 28\% V_{CC}$  (Min.)
- Output Drive Capability ..... 15 LSTTL Loads
- Symmetrical Output Impedance...  $|I_{OH}| = I_{OL} = 6mA$  (Min.)
- Balanced Propagation Delays .....  $t_{pLH} \approx t_{pHL}$
- Wide Operating Voltage Range...  $V_{CC} (opr) = 2\sim 6V$

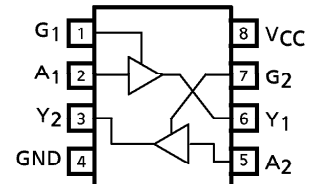
### MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	$V_{CC}$	- 0.5~7	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	$I_{IK}$	$\pm 20$	mA
Output Diode Current	$I_{OK}$	$\pm 20$	mA
DC Output Current	$I_{OUT}$	$\pm 35$	mA
DC $V_{CC}$ / Ground Current	$I_{CC}$	$\pm 37.5$	mA
Power Dissipation	$P_D$	300	mW
Storage Temperature	$T_{stg}$	- 65~150	$^\circ C$
Lead Temperature (10s)	$T_L$	260	$^\circ C$

### MARKING



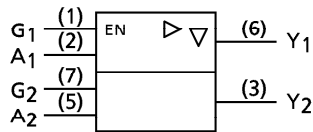
### PIN ASSIGNMENT (TOP VIEW)



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LOGIC DIAGRAM



TRUTH TABLE

INPUTS		OUTPUTS
G	A	Y
L	X	Z
H	L	L
H	H	H

X : Don't Care  
Z : High Impedance

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V <sub>CC</sub>	2~6	V
Input Voltage	V <sub>IN</sub>	0~V <sub>CC</sub>	V
Output Voltage	V <sub>OUT</sub>	0~V <sub>CC</sub>	V
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Input Rise and Fall Time	t <sub>r</sub> , t <sub>f</sub>	0~1000 (V <sub>CC</sub> =2.0V) 0~500 (V <sub>CC</sub> =4.5V) 0~400 (V <sub>CC</sub> =6.0V)	ns

DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CIRCUIT	TEST CONDITION	Ta = 25°C			Ta = -40~85°C		UNIT											
				V <sub>CC</sub>	MIN.	TYP.	MAX.	MIN.		MAX.										
High-Level Input Voltage	V <sub>IH</sub>	—	—	2.0	1.5	—	—	1.5	—	V										
				4.5	3.15	—	—	3.15	—											
				6.0	4.2	—	—	4.2	—											
Low-Level Input Voltage	V <sub>IL</sub>	—	—	2.0	—	—	0.5	—	0.5	V										
				4.5	—	—	1.35	—	1.35											
				6.0	—	—	1.8	—	1.8											
High-Level Output Voltage	V <sub>OH</sub>	—	V <sub>IN</sub> = V <sub>IH</sub>	I <sub>OH</sub> = -20μA	2.0	1.9	2.0	—	1.9	—	V									
					4.5	4.4	4.5	—	4.4	—										
					6.0	5.9	6.0	—	5.9	—										
					4.5	4.18	4.31	—	4.13	—										
Low-Level Output Voltage	V <sub>OL</sub>	—	V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OL</sub> = 20μA	2.0	—	0.0	0.1	—	0.1	V									
					4.5	—	0.0	0.1	—	0.1										
					6.0	—	0.0	0.1	—	0.1										
					4.5	—	0.17	0.26	—	0.33										
3-State Output Off-State Current	I <sub>OZ</sub>	—	V <sub>IN</sub> = V <sub>IH</sub> or V <sub>IL</sub> V <sub>OUT</sub> = V <sub>CC</sub> or GND	6.0	—	—	±0.5	—	±5.0	μA										
											Input Leakage Current	I <sub>IN</sub>	—	V <sub>IN</sub> = V <sub>CC</sub> or GND	6.0	—	—	±0.1	—	±1.0

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AC ELECTRICAL CHARACTERISTICS (Input  $t_r = t_f = 6\text{ns}$ )

PARAMETER	SYMBOL	TEST CIRCUIT	TEST CONDITION			Ta = 25°C			Ta = -40~85°C		UNIT
				CL	VCC	MIN.	TYP.	MAX.	MIN.	MAX.	
Output Transition Time	t <sub>TLH</sub> t <sub>THL</sub>	—	—	50	2.0	—	20	60	—	75	ns
					4.5	—	6	12	—	15	
					6.0	—	5	10	—	13	
Propagation Delay Time	t <sub>PLH</sub> t <sub>pHL</sub>	—	—	50	2.0	—	30	90	—	115	
					4.5	—	11	18	—	23	
					6.0	—	10	15	—	20	
				150	2.0	—	42	130	—	165	
					4.5	—	14	26	—	33	
					6.0	—	12	22	—	28	
Output Enable Time	t <sub>pZL</sub> t <sub>pZH</sub>	—	R <sub>L</sub> = 1kΩ	50	2.0	—	30	90	—	115	
					4.5	—	11	18	—	23	
					6.0	—	10	15	—	20	
				150	2.0	—	42	130	—	165	
					4.5	—	14	26	—	33	
					6.0	—	12	22	—	28	
Output Disable Time	t <sub>pLZ</sub> t <sub>pHZ</sub>	—	R <sub>L</sub> = 1kΩ	50	2.0	—	24	100	—	125	
					4.5	—	12	20	—	25	
					6.0	—	10	17	—	21	
Input Capacitance	C <sub>IN</sub>	—	—	—	—	—	5	10	—	10	pF
Output Capacitance	C <sub>OUT</sub>	—	—	—	—	—	10	—	—	—	
Power Dissipation Capacitance	C <sub>PD</sub>	—	Note (1)	—	—	—	32	—	—	—	

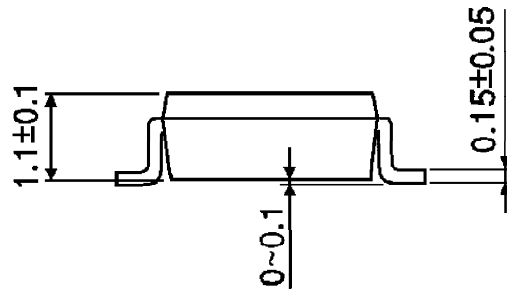
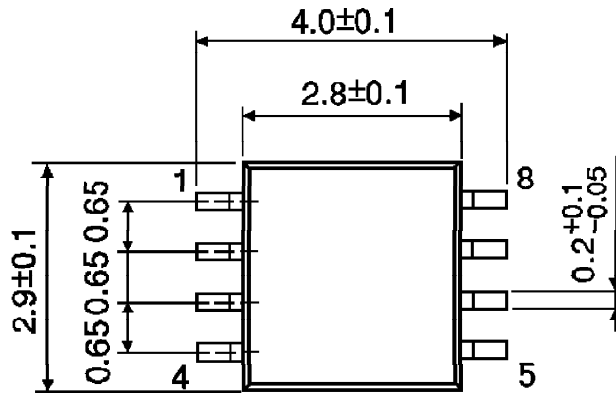
Note (1) : C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation :

$$I_{CC}(\text{opr}) = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC} / 2 \text{ (per Gate)}$$

OUTLINE DRAWING  
SSOP8-P-0.65

Unit : mm



Weight : 0.02g (Typ.)