

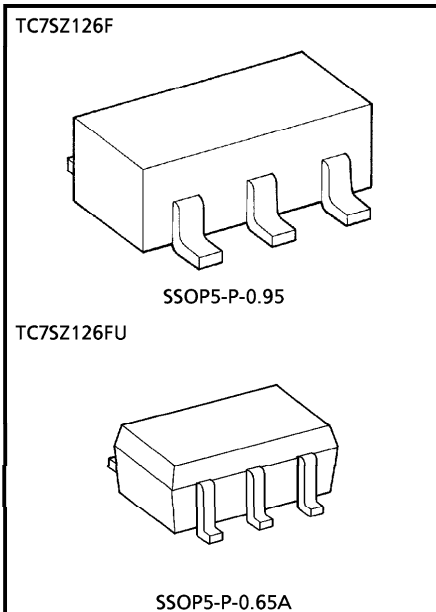
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

**TC7SZ126F, TC7SZ126FU****BUS BUFFER, 3-STATE OUTPUT****FEATURES**

- High Output Drive :  $\pm 24$  mA (Typ.)  
@ $V_{CC} = 3$  V
- Super High Speed Operation :  $t_{PD} 2.6$  ns (Typ.)  
@ $V_{CC} = 5$  V, 50 pF
- Operation Voltage Range :  $V_{CC(opr)} = 1.8\sim 5.5$  V
- Supply Voltage Data Retention :  $V_{CC} = 1.5\sim 5.5$  V
- 5 V Tolerant Function
- Matches the Performance of TC74LCX Series when Operated at 3.3 V  $V_{CC}$

**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	$V_{CC}$	-0.5~6	V
DC Input Voltage	$V_{IN}$	-0.5~6	V
DC Output Voltage	$V_{OUT}$	-0.5~6	V
Input Diode Current	$I_{IK}$	$\pm 20$	mA
Output Diode Current	$I_{OK}$	$\pm 20$	mA
DC Output Current	$I_{OUT}$	$\pm 50$	mA
DC $V_{CC}$ /Ground Current	$I_{CC}$	$\pm 50$	mA
Power Dissipation	$P_D$	200	mW
Storage Temperature	$T_{stg}$	-65~150	°C
Lead Temperature (10 s)	$T_L$	260	°C



Weight  
 SSOP5-P-0.95 : 0.016 g (Typ.)  
 SSOP5-P-0.65A : 0.006 g (Typ.)

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DC ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CONDITION		V <sub>CC</sub> (V)	Ta = 25°C			Ta = -40~85°C		UNIT
					MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level Input Voltage	V <sub>IH</sub>			1.8	0.88	—	—	0.88	—	V
				2.3 – 5.5	0.75	—	—	0.75	—	
Low-Level Input Voltage	V <sub>IL</sub>			1.8	—	—	0.12	—	0.12	V
				2.3 – 5.5	—	—	0.25	—	0.25	
High-Level Output Voltage	V <sub>OH</sub>	V <sub>IN</sub> = V <sub>IH</sub>	I <sub>OH</sub> = -100 μA	1.8	1.7	1.8	—	1.7	—	V
				2.3	2.2	2.3	—	2.2	—	
				3.0	2.9	3.0	—	2.9	—	
				4.5	4.4	4.5	—	4.4	—	
			I <sub>OH</sub> = -8 mA	2.3	1.9	2.15	—	1.9	—	
			I <sub>OH</sub> = -16 mA	3.0	2.4	2.8	—	2.4	—	
			I <sub>OH</sub> = -24 mA	3.0	2.3	2.68	—	2.3	—	
I <sub>OH</sub> = -32 mA	4.5	3.8	4.2	—	3.8	—				
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>IN</sub> = V <sub>IL</sub>	I <sub>OL</sub> = 100 μA	1.8	—	0	0.1	—	0.1	V
				2.3	—	0	0.1	—	0.1	
				3.0	—	0	0.1	—	0.1	
				4.5	—	0	0.1	—	0.1	
			I <sub>OL</sub> = 8 mA	2.3	—	0.1	0.3	—	0.3	
			I <sub>OL</sub> = 16 mA	3.0	—	0.15	0.4	—	0.4	
			I <sub>OL</sub> = 24 mA	3.0	—	0.22	0.55	—	0.55	
I <sub>OL</sub> = 32 mA	4.5	—	0.22	0.55	—	0.55				
Input Leakage Current	I <sub>IN</sub>	V <sub>IN</sub> = 5.5 V or GND	0 – 5.5	—	—	±1	—	±10	μA	
Power Off Leakage Current	I <sub>OFF</sub>	V <sub>IN</sub> or V <sub>OUT</sub> = 5.5 V	0.0	—	—	1	—	10	μA	
Quiescent Supply Current	I <sub>CC</sub>	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5	—	—	2	—	20	μA	

AC ELECTRICAL CHARACTERISTICS (Input  $t_r = t_f = 3$  ns)

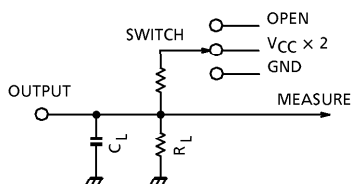
CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta = 25°C				Ta = -40~85°C		UNIT
			VCC (V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay Time	t <sub>PLH</sub> t <sub>PHL</sub>	C <sub>L</sub> = 15 pF, R <sub>L</sub> = 1 MΩ (Figure 1)	1.8	2.0	5.3	11.0	2.0	11.5	ns
			2.5 ± 0.2	0.8	3.4	7.5	0.8	8.0	
			3.3 ± 0.3	0.5	2.5	5.2	0.5	5.5	
			5.0 ± 0.5	0.5	2.1	4.5	0.5	4.8	
		C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω (Figure 1)	3.3 ± 0.3	1.5	3.2	5.7	1.5	6.0	
			5.0 ± 0.5	0.8	2.6	5.0	0.8	5.3	
Output Enable Time	t <sub>pZL</sub> t <sub>pZH</sub>	C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω (Figure 1)	1.8	2.0	6.1	11.5	2.0	12.0	ns
			2.5 ± 0.2	1.5	3.8	8.0	1.5	8.5	
			3.3 ± 0.3	1.5	3.2	5.7	1.5	6.0	
			5.0 ± 0.5	0.8	2.3	5.0	0.8	5.3	
Output Disable Time	t <sub>pLZ</sub> t <sub>pHZ</sub>	C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω (Figure 1)	1.8	2.0	5.6	11.0	2.0	12.0	ns
			2.5 ± 0.2	1.0	4.0	8.0	1.0	8.5	
			3.3 ± 0.3	1.0	3.5	5.7	1.0	6.0	
			5.0 ± 0.5	0.5	2.5	4.7	0.5	5.0	
Input Capacitance	C <sub>IN</sub>		0 - 5.5	—	4	—	—	pF	
Power Dissipation Capacitance	C <sub>PD</sub>	(Note 1)	3.3	—	17	—	—	—	pF
			5.5	—	24	—	—	—	

(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.

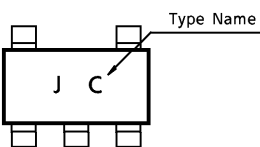
$$I_{CC(opr)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}$$

Figure 1 AC Characteristics Measurement Circuit

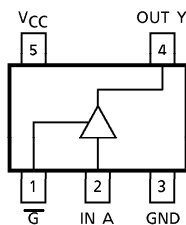


CHARACTERISTICS	SWITCH
t <sub>PLH</sub> , t <sub>PHL</sub>	OPEN
t <sub>pLZ</sub> , t <sub>pZL</sub>	V <sub>CC</sub> × 2
t <sub>pHZ</sub> , t <sub>pZH</sub>	GND

MARKING



PIN ASSIGNMENT (TOP VIEW)

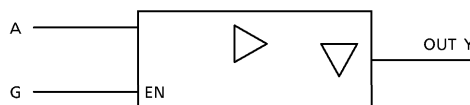


TRUTH TABLE

INPUT		OUTPUT
A	G	Y
x	L	Z
L	H	L
H	H	H

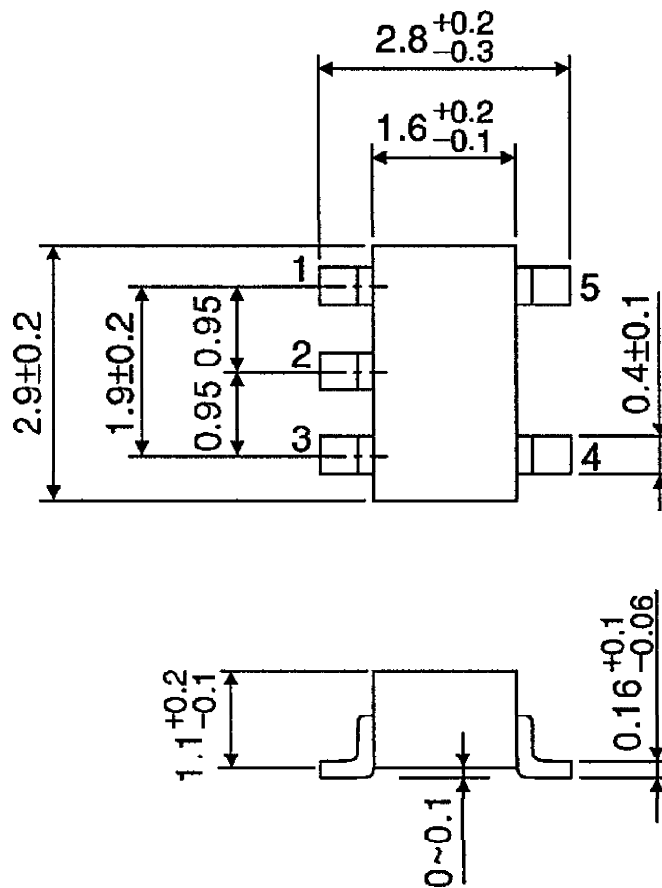
x : Don't Care  
Z : High Impedance

LOGIC DIAGRAM



OUTLINE DRAWING  
SSOP5-P-0.95

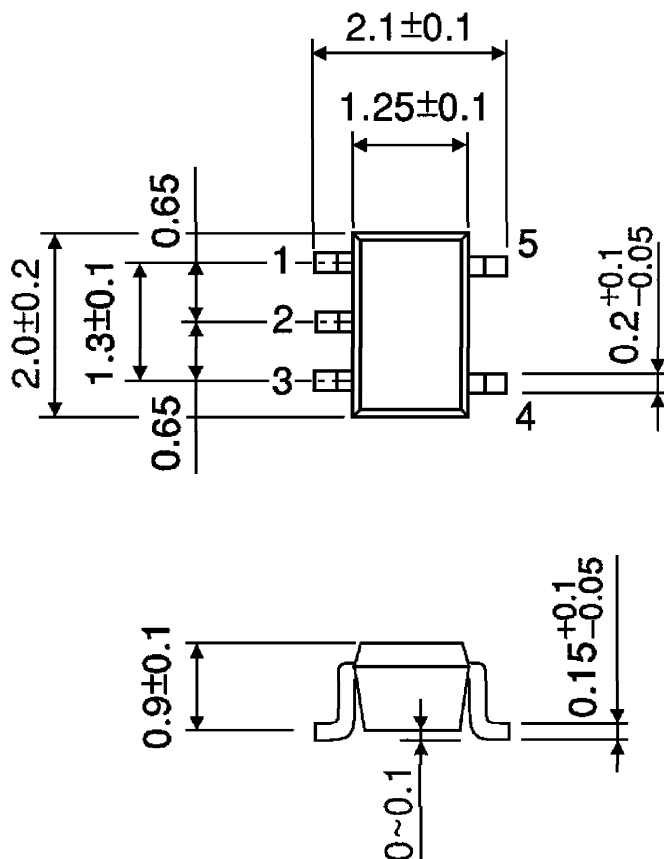
Unit : mm



Weight : 0.016 g (Typ.)

OUTLINE DRAWING  
SSOP5-P-0.65A

Unit : mm



Weight : 0.006 g (Typ.)