

TC7SZ08F, TC7SZ08FU

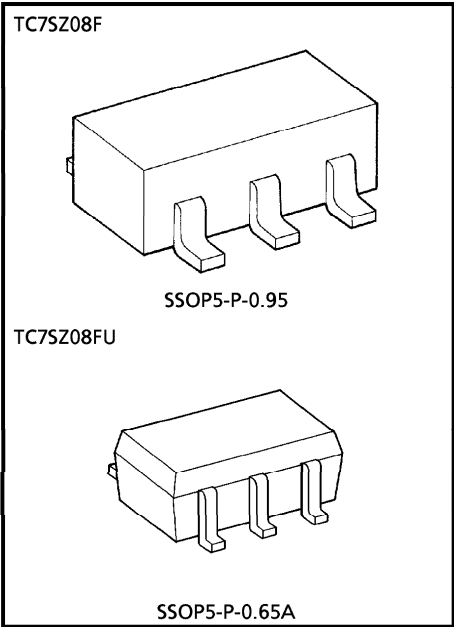
2 INPUT AND GATE

FEATURES

- High Output Drive :  $\pm 24\text{ mA}$  (Typ.)  
( $V_{CC} = 3\text{ V}$ )
- Super High Speed Operation :  $t_{PD} = 2.7\text{ ns}$  (Typ.)  
( $V_{CC} = 5\text{ V}$ ,  $50\text{ pF}$ )
- Operation Voltage Range :  $V_{CC}(\text{opr}) = 1.8\sim 5.5\text{ V}$
- Supply Voltage Data Retention :  $V_{CC} = 1.5\sim 5.5\text{ V}$
- 5 V Tolerant Function
- Matches the Performance of TC74LCX Series when Operated at  $3.3\text{ V } V_{CC}$

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	$V_{CC}$	$-0.5\sim 6$	V
DC Input Voltage	$V_{IN}$	$-0.5\sim 6$	V
DC Output Voltage	$V_{OUT}$	$-0.5\sim 6$	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	$T_{stg}$	$-65\sim 150$	°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.)

## DC ELECTRICAL CHARACTERISTICS

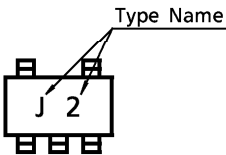
CHARACTERISTIC	SYMBOL	TEST CONDITION		V <sub>CC</sub> (V)	Ta = 25°C			Ta = - 40~85°C		UNIT	
					MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Input Voltage	V <sub>IH</sub>			1.8	0.88 × V <sub>CC</sub>	—	—	0.88 × V <sub>CC</sub>	—	V	
				2.3~ 5.5	0.75 × V <sub>CC</sub>	—	—	0.75 × V <sub>CC</sub>	—		
Low-Level Input Voltage	V <sub>IL</sub>			1.8	—	—	0.12 × V <sub>CC</sub>	—	0.12 × V <sub>CC</sub>	V	
				2.3~ 5.5	—	—	0.25 × V <sub>CC</sub>	—	0.25 × V <sub>CC</sub>		
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>IH</sub> or 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  $t_r = t_f = 3\text{ ns}$ )

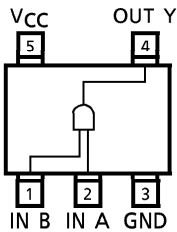
CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta = 25°C				Ta = -40~85°C		UNIT
			VCC (V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay Time	tPLH tPHL	CL = 15 pF, RL = 1 MΩ	1.8	2.0	5.2	10.0	2.0	10.5	ns
			2.5 ± 0.2	0.8	3.4	7.0	0.8	7.5	
			3.3 ± 0.3	0.5	2.6	4.7	0.5	5.0	
			5.0 ± 0.5	0.5	2.2	4.1	0.5	4.4	
		CL = 50 pF, RL = 500 Ω	3.3 ± 0.3	1.5	3.3	5.2	1.5	5.5	
			5.0 ± 0.5	0.8	2.7	4.5	0.8	4.8	
Input Capacitance	CIN		0~5.5	—	4	—	—	—	pF
Power Dissipation Capacitance	CPD	(Note 1)	3.3	—	20	—	—	—	pF
			5.5	—	25	—	—	—	

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

MARKING



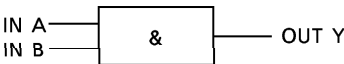
PIN ASSIGNMENT (TOP VIEW)



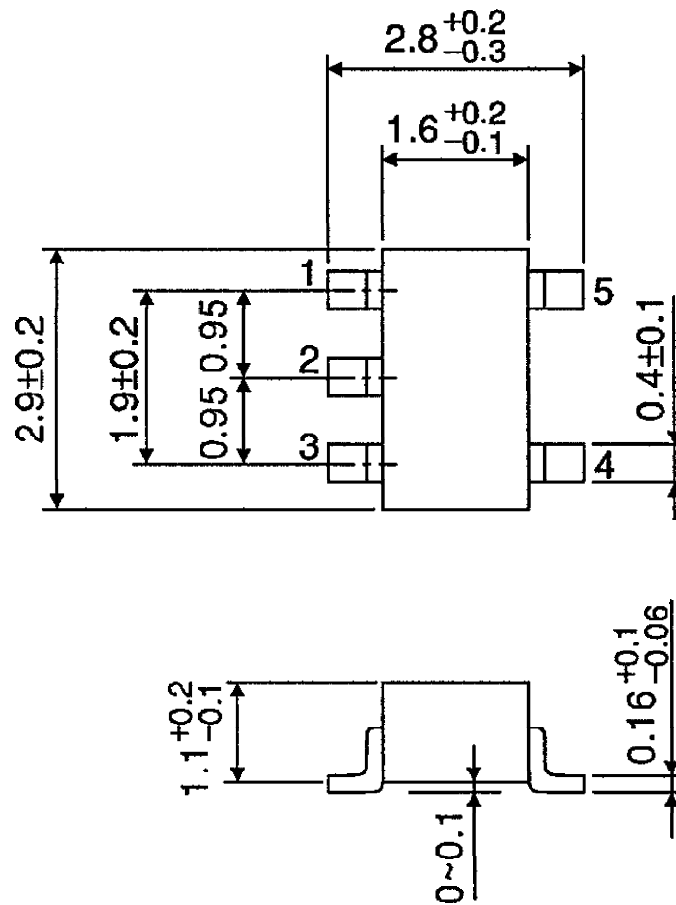
TRUTH TABLE

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

LOGIC DIAGRAM



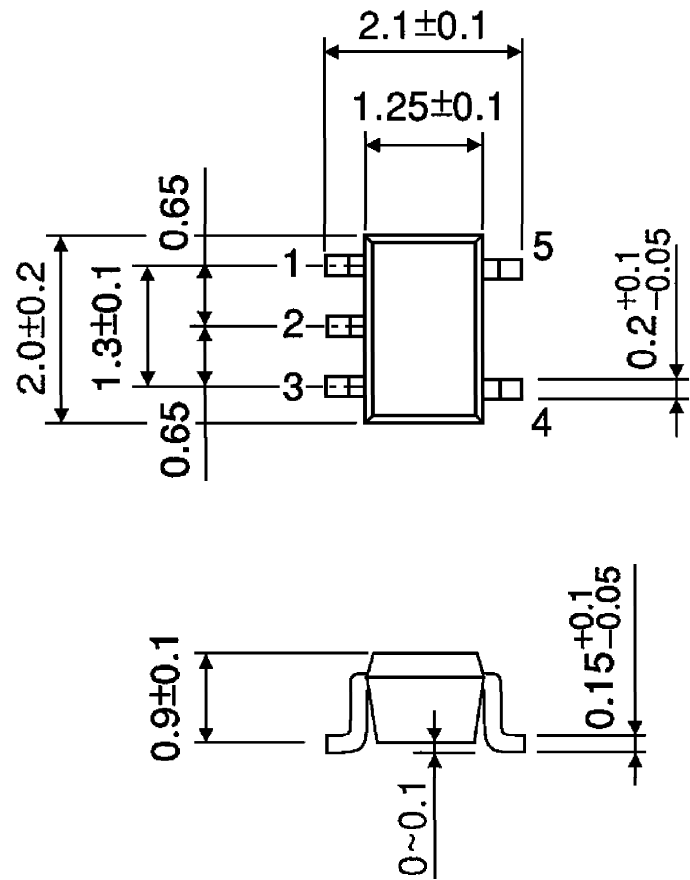
## Unit : mm



Weight : 0.016 g (Typ.)

PACKAGE DIMENSIONS  
SSOP5-P-0.65A

Unit : mm



Weight : 0.006 g (Typ.)

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000707EBA

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