

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC7SZ05F, TC7SZ05FU

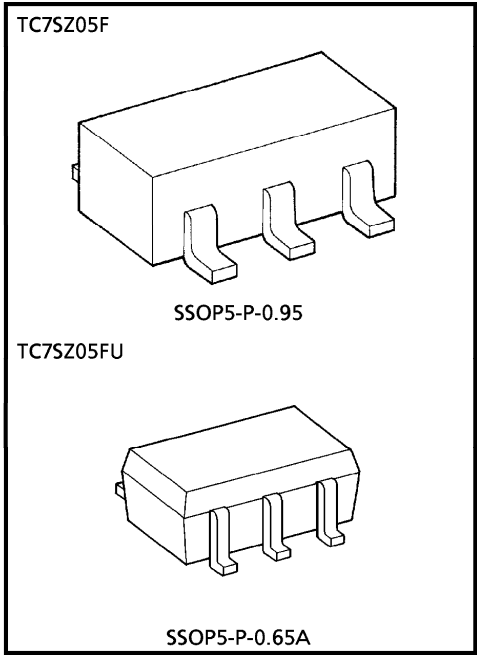
INVERTER (OPEN DRAIN)

FEATURES

- High Output Drive : $\pm 24\text{ mA}$ (Typ.)
 $(V_{CC} = 3\text{ V})$
- Super High Speed Operation : $t_{pD} = 2.4\text{ ns}$ (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 Toleratnt Function

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}	± 20	mA
Output Diode Current	I _{OK}	± 20	mA
DC Output Current	I _{OUT}	± 50	mA
DC V _{CC} / Ground Current	I _{CC}	± 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

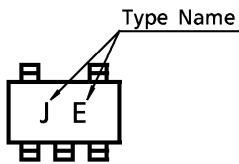
CHARACTERISTIC	SYMBOL	TEST CONDITION		V _{CC} (V)	Ta = 25°C			Ta = - 40~85°C		UNIT	
					MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Input Voltage	V _{IH}			1.8	0.88 × V _{CC}	—	—	0.88 × V _{CC}	—	V	
				2.3~ 5.5	0.75 × V _{CC}	—	—	0.75 × V _{CC}	—		
Low-Level Input Voltage	V _{IL}			1.8	—	—	0.12 × V _{CC}	—	0.12 × V _{CC}	V	
				2.3~ 5.5	—	—	0.25 × V _{CC}	—	0.25 × V _{CC}		
High Level Output Leakage	I _{LKG}	V _{IN} = V _{IL}		1.8~ 5.5	—	—	± 5	—	± 10	μA	
Low-Level Output Voltage	V _{OL}	V _{IN} = V _{IH}	I _{OL} = 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 _{OL} = 8 mA	2.3	—	0.1	0.3	—	0.3	V	
				I _{OL} = 16 mA	3.0	—	0.15	0.4	—		0.4
				I _{OL} = 24 mA	3.0	—	0.22	0.55	—		0.55
				I _{OL} = 32 mA	4.5	—	0.22	0.55	—		0.55
Input Leakage Current	I _{IN}	V _{IN} = 5.5 V or GND		0~ 5.5	—	—	± 1	—	± 10	μA	
Power Off Leakage Current	I _{OFF}	V _{IN} or V _{OUT} = 5.5 V		0.0	—	—	1	—	10	μA	
Quiescent Supply Current	I _{CC}	V _{IN} = V _{CC} or GND		5.5	—	—	2	—	20	μA	

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

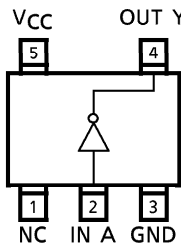
CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta = 25°C				Ta = - 40~85°C		UNIT
			V _{CC} (V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay Time	t _{PZL}	C _L = 50 pF, R _L = 500 Ω	1.8	1.5	4.6	10.5	1.5	11.0	ns
			2.5 ± 0.2	0.8	3.0	7.0	0.8	7.5	
			3.3 ± 0.3	0.8	2.4	5.0	0.8	5.2	
			5.0 ± 0.5	0.5	1.9	4.3	0.5	4.5	
	t _{PLZ}	C _L = 50 pF, R _L = 500 Ω	1.8	1.5	4.1	10.5	1.5	11.0	
			2.5 ± 0.2	0.8	2.5	7.0	0.8	7.5	
			3.3 ± 0.3	0.8	2.1	5.0	0.8	5.2	
			5.0 ± 0.5	0.5	1.2	4.3	0.5	4.5	
Input Capacitance	C _{IN}		0~5.5	—	4	—	—	pF	
Power Dissipation Capacitance	C _{PD}	(Note 1)	3.3	—	3.6	—	—	—	pF
			5.5	—	6.5	—	—	—	

(Note 1) CPD 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)

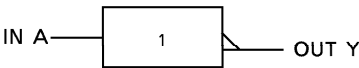


TRUTH TABLE

A	Y
L	* H
H	L

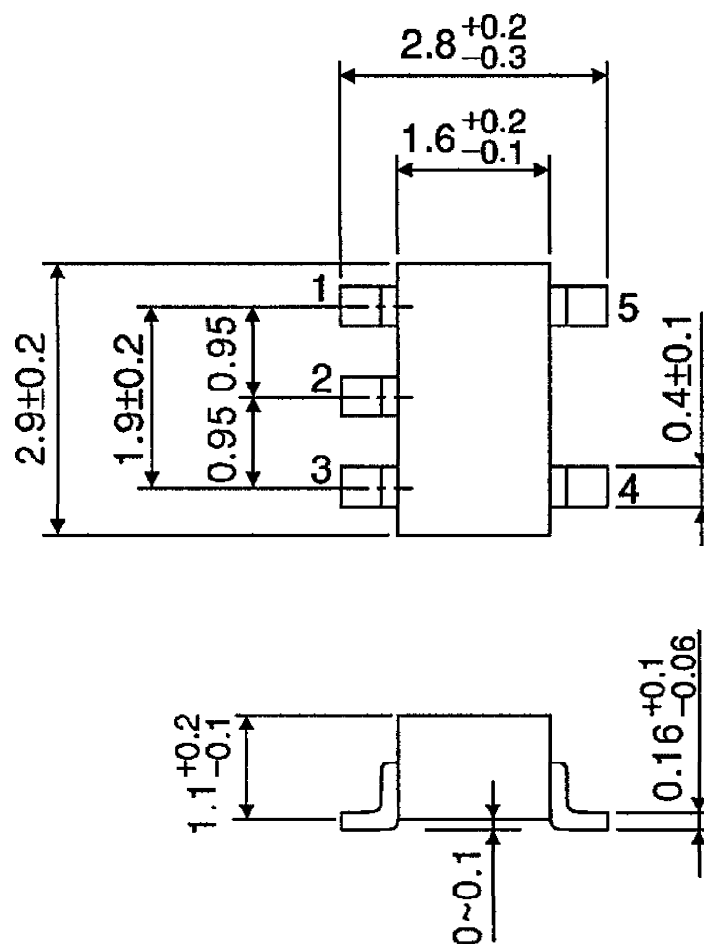
* : High Impedance

LOGIC DIAGRAM



OUTLINE DRAWING
SSOP5-P-0.95

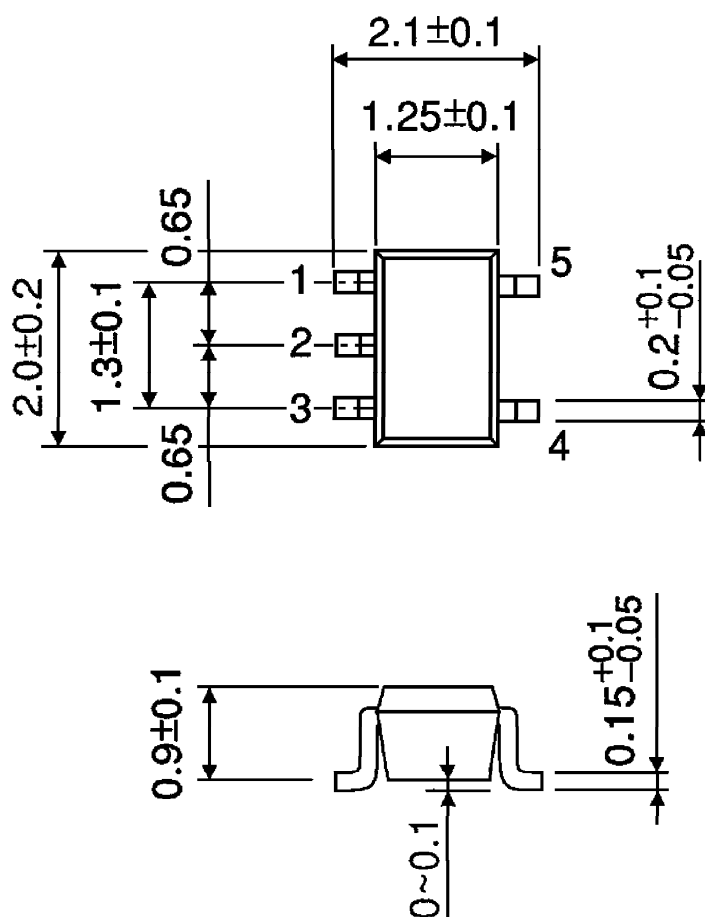
Unit : mm



Weight : 0.016 g (Typ.)

OUTLINE DRAWING
SSOP5-P-0.65A

Unit : mm



Weight : 0.006 g (Typ.)

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