

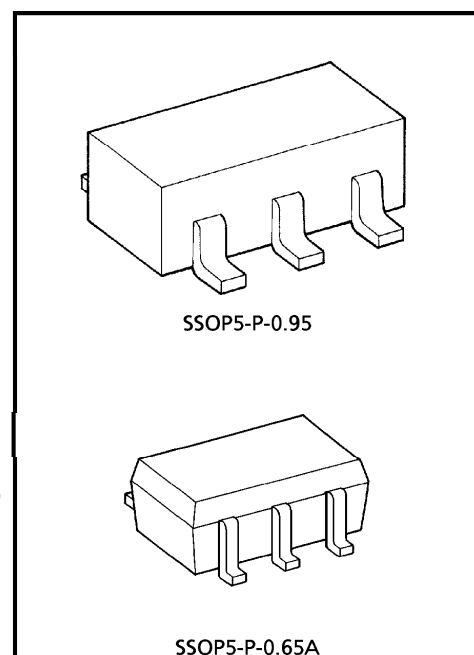
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC7SZ04F, TC7SZ04FU**INVERTER****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.) @ $V_{CC} = 5\text{V}$, 50pF
- Operation Voltage Range : $V_{CC}(\text{opr}) = 1.8\sim 5.5\text{V}$
- 5V Tolerant Function
- Matches the Performance of TC74LCX Series when Operated at 3.3V V_{CC}

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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}	± 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}	$-65\sim 150$	$^\circ\text{C}$
Lead Temperature (10s)	T_L	260	$^\circ\text{C}$



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

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DC ELECTRICAL CHARACTERISTICS

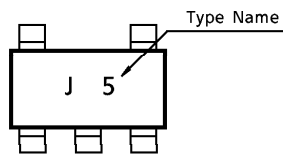
CHARACTERISTIC	SYM- BOL	TEST CONDITION		V _{CC} (V)	Ta = 25°C			Ta = −40~ 85°C		UNIT	
					MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Input Voltage	V _{IH}			1.8	0.88 × V _{CC}	—	—	0.88 × V _{CC}	—	V	
				2.3 – 5.5	0.75 × V _{CC}	—	—	0.75 × V _{CC}	—		
Low-Level Input Voltage	V _{IL}			1.8	—	—	0.12 × V _{CC}	—	0.12 × V _{CC}	V	
				2.3 – 5.5	—	—	0.25 × V _{CC}	—	0.25 × V _{CC}		
High-Level Output Voltage	V _{OH}	V _{IN} = V _{IL}	IOH = −100μA	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	—		
			IOH = −8mA	2.3	1.9	2.15	—	1.9	—	V	
				IOH = −16mA	3.0	2.4	2.8	—	2.4		—
				IOH = −24mA	3.0	2.3	2.68	—	2.3		—
				IOH = −32mA	4.5	3.8	4.2	—	3.8		—
Low-Level Output Voltage	V _{OL}	V _{IN} = V _{IH}	IOH = 100μA	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		
			IOH = 8mA	2.3	—	0.1	0.3	—	0.3	V	
				IOH = 16mA	3.0	—	0.15	0.4	—		0.4
				IOH = 24mA	3.0	—	0.22	0.55	—		0.55
				IOH = 32mA	4.5	—	0.22	0.55	—		0.55
Input Leakage Current	I _{IN}	V _{IN} = 5.5V or GND	0 – 5.5	—	—	± 1	—	± 10	μA		
Power Off Leakage Current	I _{OFF}	V _{IN} or V _{OUT} = 5.5V	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 $t_r = t_f = 3\text{ns}$)

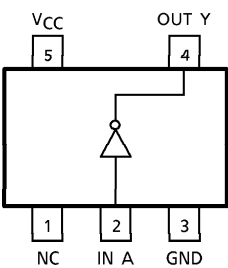
CHARACTERISTIC	SYM-BOL	TEST CONDITION	V _{CC} (V)	Ta = 25°C			Ta = -40~85°C		UNIT
				MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay Time	t _{PLH} t _{PHL}	CL = 15pF, RL = 1MΩ	1.8	2.0	4.4	9.5	2.0	10.0	ns
			2.5 ± 0.2	0.8	2.9	6.5	0.8	7.0	
			3.3 ± 0.3	0.5	2.1	4.5	0.5	4.7	
			5.0 ± 0.5	0.5	1.8	3.9	0.5	4.1	
		CL = 50pF, RL = 500Ω	3.3 ± 0.3	1.5	2.9	5.0	1.5	5.2	
			5.0 ± 0.5	0.8	2.4	4.3	0.8	4.5	
Input Capacitance	C _{IN}		0 - 5.5	—	4	—	—	—	pF
Power Dissipation Capacitance	C _{PD}	(Note 1)	3.3	—	20	—	—	—	pF
			5.5	—	26	—	—	—	

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

MARKING



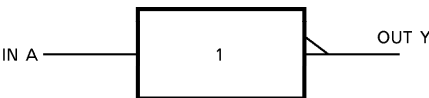
PIN ASSIGNMENT (TOP VIEW)



TRUTH TABLE

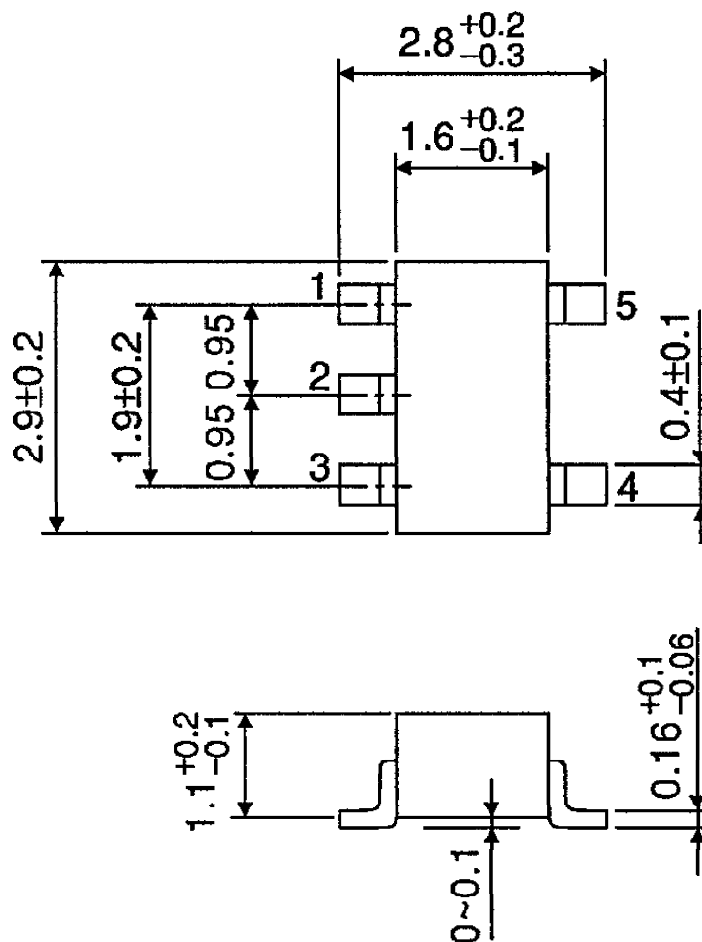
A	Y
L	H
H	L

LOGIC DIAGRAM



OUTLINE DRAWING
SSOP5-P-0.95

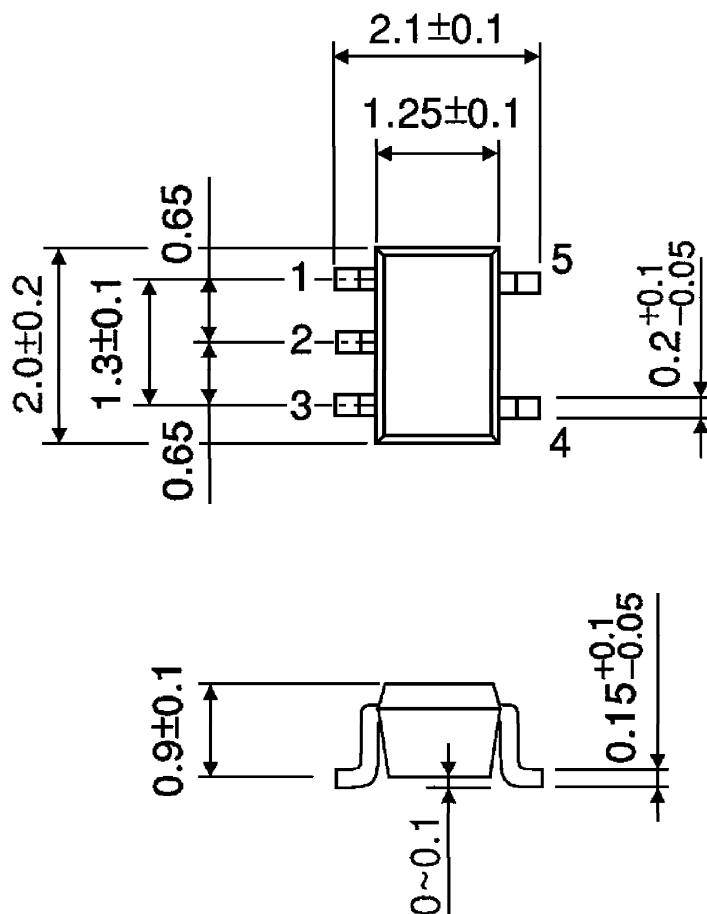
Unit : mm



Weight : 0.016g (Typ.)

OUTLINE DRAWING
SSOP5-P-0.65A

Unit : mm



Weight : 0.006g (Typ.)