TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT   SILICON MONOLITHIC
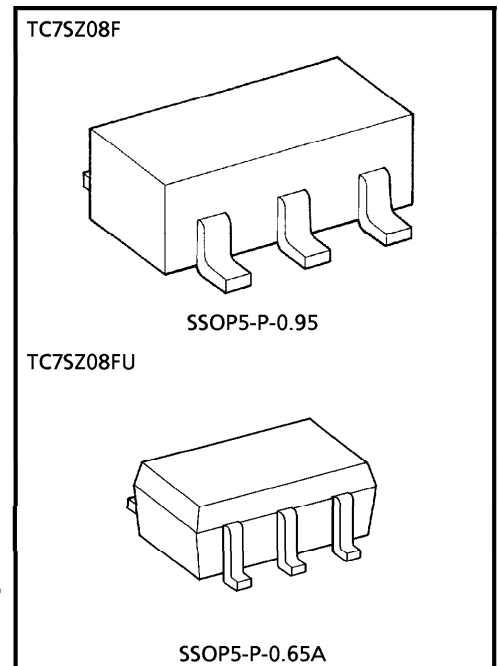
TC7SZ08F, TC7SZ08FU

2 INPUT AND GATE

FEATURES

- High Output Drive   : ± 24 mA (Typ.)
  (V_{CC} = 3 V)

- Super High Speed Operation : t_{PD} = 2.7 ns (Typ.)
  (V_{CC} = 5 V, 50 pF)

- Operation Voltage Range   : $V_{CC\,(opr)}$ = 1.8~5.5 V

- Supply Voltage Data Retention : V_{CC} = 1.5~5.5 V

- 5 V Toleratnt Function

- Matches the Performance of TC74LCX Series when Operated at 3.3 V V_{CC}

TC7SZ08F

SSOP5-P-0.95

TC7SZ08FU

SSOP5-P-0.65A

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

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

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 Voltage	V_{OH}	$V_{IN} = V_{IH}$	$I_{OH} = -100\,\mu A$	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	—	
			$I_{OH} = -8\,mA$	2.3	1.9	2.15	—	1.9	—	
			$I_{OH} = -16\,mA$	3.0	2.4	2.8	—	2.4	—	
			$I_{OH} = -24\,mA$	3.0	2.3	2.68	—	2.3	—	
			$I_{OH} = -32\,mA$	4.5	3.8	4.2	—	3.8	—	
Low-Level Output Voltage	V_{OL}	$V_{IN} = V_{IH}$ or V_{IL}	$I_{OL} = 100\,\mu A$	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	
			$I_{OL} = 16\,mA$	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 $t_r = t_f = 3$ 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_{PLH} t_{PHL}	$C_L = 15$ pF, $R_L = 1$ 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	
		$C_L = 50$ pF, $R_L = 500$ 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	C_{IN}		0~5.5	—	4	—	—	—	pF
Power Dissipation Capacitance	C_{PD}	(Note 1)	3.3	—	20	—	—	—	pF
			5.5	—	25	—	—	—	

(Note 1) C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.
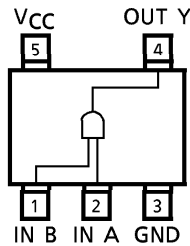Average operating current can be obtained by the equation.

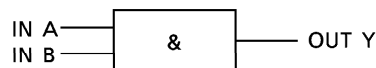$$I_{CC}\text{(opr)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}$$

MARKING

Type Name

J 2
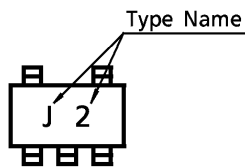
PIN ASSIGNMENT (TOP VIEW)

TRUTH TABLE

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

LOGIC DIAGRAM

PACKAGE DIMENSIONS
SSOP5-P-0.95   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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