KIC7WZU04FK

SILICON MONOLITHIC CMOS DIGITAL INTEGRATED CIRCUIT

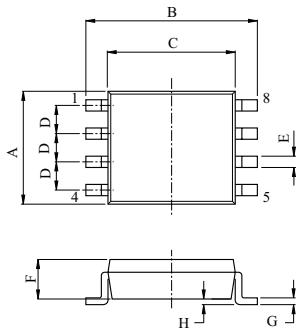
Triple Inverter (unbuffer)

FEATURES

· High output drive : ±8mA(min.) @V_{CC}=4.5V.

· Super high speed operation : tpd 3.4ns(typ.) @V_{CC}=5V, 50pF.

· Operation voltage range : $V_{CC(opr)}$=1.65~5.5V.



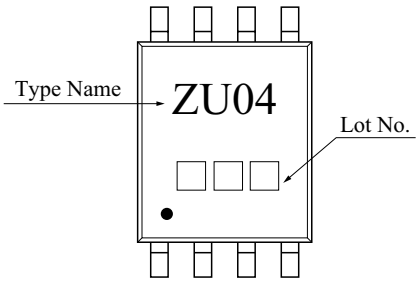
DIM	MILLIMETERS
A	2.0±0.1
B	3.1±0.1
C	2.3±0.1
D	0.5
E	0.2+0.05/-0.04
F	0.7±0.1
G	0.12±0.04
H	0 ~ 0.1

US8

MAXIMUM RATINGS (Ta=25℃)

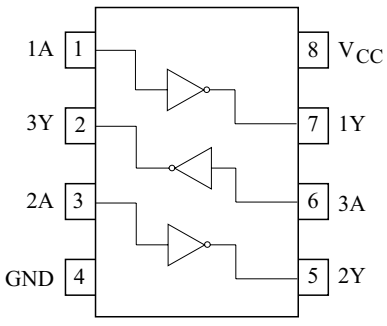
CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC}	-0.5~7	V
DC Input Voltage	V_{IN}	-0.5~7	V
DC Output Voltage	V_{OUT}	-0.5~7	V
Input Diode Current	I_{IK}	-50	mA
Output Diode Current	I_{OK}	±50	mA
DC Output Current	I_{OUT}	±50	mA
DC V_{CC}/ground Current	I_{CC}	±100	mA
Power Dissipation	P_D	200	mW
Storage Temperature Range	T_{stg}	-65 ~150	℃
Lead Temperature (10s)	T_L	260	℃

MARKING



Logic Diagram

PIN CONNECTION(TOP VIEW)



Truth Table

A	Y
L	H
H	L

Recommended Operating Conditions

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	1.8~5.5	V
		1.5~5.5 (Note1)	
Input Voltage	V_{IN}	0~5.5	V
Output Voltage	V_{OUT}	0~5.5 (Note2)	V
		0~V_{CC} (Note3)	
Operating Temperature	T_{opr}	-40~85	℃

Note1 : Data retention only. Note2 : V_{CC}=0V. Note3 : High or low state

ELECTRICAL CHARACTERISTICS

DC Characteristics

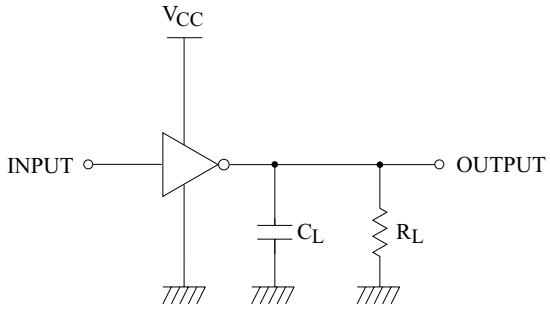
CHARACTERISTIC		SYMBOL	TEST CONDITION		V_{CC}(V)	Ta=25℃ MIN.	Ta=25℃ TYP.	Ta=25℃ MAX.	Ta=-40~85℃ MIN.	Ta=-40~85℃ MAX.	UNIT
Input Voltage	High Level	V_{IH}	-		1.8~2.7	0.85 × V_{CC}	-	-	0.85 × V_{CC}	-	V
					3.0~5.5	0.8 × V_{CC}	-	-	0.8 × V_{CC}	-	
	Low Level	V_{IL}	-		1.8~2.7	-	-	0.15 × V_{CC}	-	0.15 × V_{CC}	
					3.0~5.5	-	-	0.2 × V_{CC}	-	0.3 × V_{CC}	
Output Voltage	High Level	V_{OH}	V_{IN}=V_{IL} I_{OH}=-100㎂		1.65	1.55	1.65	-	1.55	-	V
					1.8	1.6	1.79	-	1.6	-	
					2.3	2.1	2.29	-	2.1	-	
					3.0	2.7	2.99	-	2.7	-	
					4.5	4.0	4.48	-	4.0	-	
			V_{IN}=GND	I_{OH}=-2mA	1.65	1.26	1.52	-	1.26	-	
				I_{OH}=-2mA	2.3	1.9	2.19	-	1.9	-	
				I_{OH}=-4mA	3.0	2.4	2.82	-	2.4	-	
				I_{OH}=-6mA	3.0	2.3	2.73	-	2.3	-	
				I_{OH}=-8mA	4.5	3.8	4.24	-	3.8	-	
	Low Level	V_{OL}	V_{IN}=V_{IH} I_{OL}=100㎂		1.65	-	0.01	0.2	-	0.2	
					1.8	-	0.01	0.2	-	0.2	
					2.3	-	0.01	0.2	-	0.2	
					3.0	-	0.01	0.3	-	0.3	
					4.5	-	0.01	0.5	-	0.5	
			V_{IN}=V_{CC}	I_{OL}=2mA	1.65	-	0.10	0.24	-	0.24	
				I_{OL}=2mA	2.3	-	0.12	0.3	-	0.3	
				I_{OL}=4mA	3.0	-	0.19	0.4	-	0.4	
				I_{OL}=6mA	3.0	-	0.29	0.55	-	0.55	
				I_{OL}=8mA	4.5	-	0.29	0.55	-	0.55	
Input Leakage Current		I_{IN}	V_{IN}=5.5V, GND		0~5.5	-	-	±0.1	-	±1.0	㎂
Quiescent Supply Current		I_{CC}	V_{IN}=5.5V, GND		1.65~5.5	-	-	1.0	-	10	㎂
Peak Supply Current in Analog Operation		I_{CCPEAK}	V_{OUT}=Open V_{IN}=Adjust for Peak I_{CC} Current		1.8	-	0.2	-	-	-	mA
					2.5	-	2	-	-	-	
					3.3	-	5	-	-	-	
					5.0	-	15	-	-	-	

AC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
			V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay (Figures 1,3)	t_{PLH} t_{PHL}	C_L=15pF, R_L=1MΩ	1.65	1.5	5.5	9.8	1.5	11.0	ns
			1.8	1.5	4.6	8.1	1.5	8.9	
			2.5±0.2	1.2	3.3	5.7	1.2	6.3	
			3.3±0.3	0.8	2.7	4.1	0.8	4.5	
			5.0±0.5	0.5	2.2	3.3	0.5	3.6	
	t_{PLH} t_{PHL}	C_L=50pF, R_L=500Ω	3.3±0.3	1.2	4.0	6.4	1.2	7.0	ns
			5.0±0.5	0.8	3.4	5.6	0.8	6.2	
Input Capacitance	C_{IN}		0	-	3	-	-	-	pF
Power Dissipation Capacitance (Figure 2)	C_{PD}	(Note)	3.3	-	3.5	-	-	-	pF
			5.0	-	5.5	-	-	-	

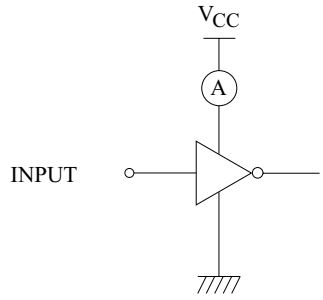
Note : C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. (See Figure 2.) C_{PD} is related to I_{CCD} dynamic operating current by the exprssion : $I_{CCD}=C_{PD} \cdot V_{CC} \cdot f_{IN}+I_{CC}$

AC Loading and Waveforms



C_L includes load and stray capacitance
Input PRR=1.0MHz ; t_w=500ns

FIGURE 1. AC Test Circuit



Input=AC Waveform ; $t_r=t_f$=1.8ns
PRR=variable ; Duty Cycle=50%

FIGURE 2. I_{CCD} Test Circuit

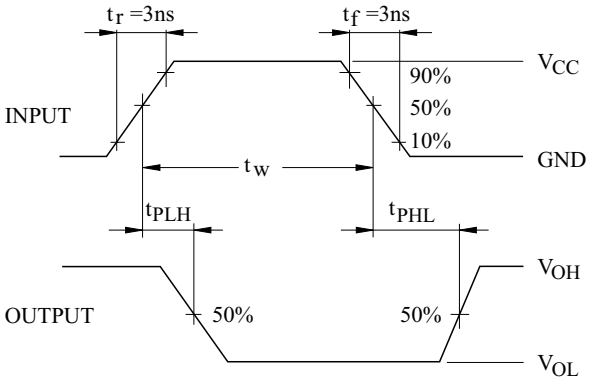


FIGURE 3. AC Waveforms