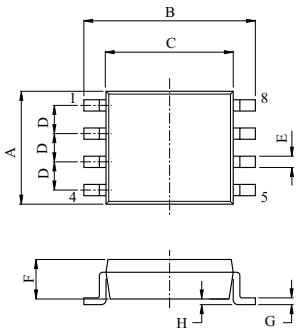
KIC7WZ14FK

SILICON MONOLITHIC CMOS DIGITAL INTEGRATED CIRCUIT

SCHMITT INVERTER

FEATURES

- High output drive : ±24mA(min.) @V_{CC}=3V.
- Super high speed operation : tpd 3.2ns(typ.) @V_{CC}=5V, 50pF.
- Operation voltage range : $V_{CC(opr)}$=1.65~5.5V.
- Power down protection is provided on all inputs and outputs.



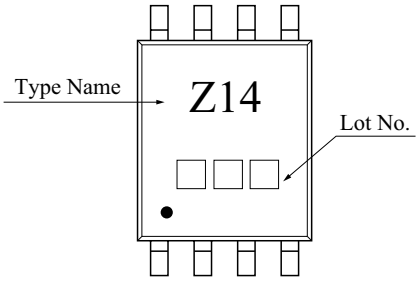
DIM	MILLIMETERS
A	2.0±0.1
B	3.1±0.1
C	2.3±0.1
D	0.5
E	0.2+0.05/-0.04
F	0.7±0.1
G	0.12±0.04
H	0 ~ 0.1

US8

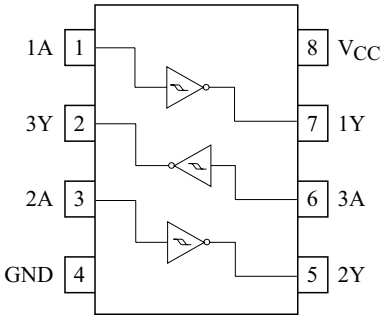
MAXIMUM RATINGS (Ta=25℃)

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

MARKING



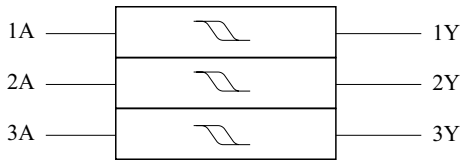
PIN CONNECTION(TOP VIEW)



Truth Table

A	Y
L	H
H	L

Logic Diagram



Recommended Operating Conditions

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	1.65~5.5	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	℃
Input Rise and Fall Time	d_t/d_v	0~20 (V_{CC}=1.8V±0.15V, 2.5V±0.2V)	ns/V
		0~10 (V_{CC}=3.3V±0.3V)	
		0~5 (V_{CC}=5.5V±0.5V)	

Note1 : Data retention only.

Note2 : V_{CC}=0V.

Note3 : High or low state

ELECTRICAL CHARACTERISTICS

DC Characteristics

CHARACTERISTIC		SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
				V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Positive Threshold Voltage		V_P	-	1.65	0.6	-	1.4	0.6	1.4	V
				1.8	0.7	-	1.5	0.7	1.5	
				2.3	1.0	-	1.8	1.0	1.8	
				3.0	1.3	-	2.2	1.3	2.2	
				4.5	1.9	-	3.1	1.9	3.1	
				5.5	2.2	-	3.6	2.2	3.6	
Negative Threshold Voltage		V_N	-	1.65	0.2	0.5	0.8	0.2	0.8	
				1.8	0.25	0.56	0.9	0.25	0.9	
				2.3	0.40	0.75	1.15	0.40	1.15	
				3.0	0.6	0.98	1.5	0.6	1.5	
				4.5	1.0	1.42	2.0	1.0	2.0	
				5.5	1.2	1.68	2.3	1.2	2.3	
Hysteresis Voltage		V_H	-	1.65	0.1	0.48	0.9	0.1	0.9	
				1.8	0.15	0.51	1.0	0.15	1.0	
				2.3	0.25	0.62	1.1	0.25	1.1	
				3.0	0.4	0.76	1.2	0.4	1.2	
				4.5	0.6	1.01	1.5	0.6	1.5	
				5.5	0.7	1.20	1.7	0.7	1.7	
Output Voltage	High Level	V_{OH}	V_{IN}=V_{IL}	1.65	1.55	1.65	-	1.55	-	V
			I_{OH}=-100 μA	1.8	1.7	1.8	-	1.7	-	
				2.3	2.2	2.3	-	2.2	-	
				3.0	2.9	3.0	-	2.9	-	
				4.5	4.4	4.5	-	4.4	-	
				1.65	1.29	1.52	-	1.29	-	
			I_{OH}=-4mA	2.3	1.9	2.14	-	1.9	-	
			I_{OH}=-8mA	3.0	2.4	2.75	-	2.4	-	
			I_{OH}=-16mA	3.0	2.3	2.62	-	2.3	-	
			I_{OH}=-24mA	4.5	3.8	4.13	-	3.8	-	
			I_{OH}=-32mA							
	Low Level	V_{OL}	V_{IN}=V_{IH}	1.65	-	0.0	0.1	-	0.1	V
			I_{OL}=100 μA	1.8	-	0.0	0.1	-	0.1	
				2.3	-	0.0	0.1	-	0.1	
				3.0	-	0.0	0.1	-	0.1	
				4.5	-	0.0	0.1	-	0.1	
			I_{OL}=4mA	1.65	-	0.08	0.24	-	0.24	
			I_{OL}=8mA	2.3	-	0.10	0.3	-	0.3	
			I_{OL}=16mA	3.0	-	0.16	0.4	-	0.4	
			I_{OL}=24mA	3.0	-	0.24	0.55	-	0.55	
			I_{OL}=32mA	4.5	-	0.25	0.55	-	0.55	
Input Leakage Current		I_{IN}	V_{IN}=5.5V or GND	0~5.5	-	-	±0.1	-	±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}=5.5V or GND	1.65~5.5	-	-	1.0	-	10	μA

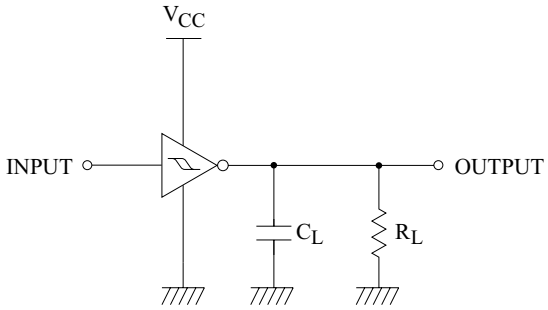
ELECTRICAL CHARACTERISTICS

AC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
			V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation Delay	t_{PLH} t_{PHL}	C_L=15pF, R_L=1MΩ	1.65	2.5	7.6	13.1	2.5	14.5	ns
			1.8	2.5	6.3	10.9	2.5	12	
			2.5±0.2	1.8	4.3	7.4	1.8	8.1	
			3.3±0.3	1.5	3.3	5.0	1.5	5.5	
			5.0±0.5	1.0	2.7	4.1	1.0	4.5	
Propagation Delay	t_{PLH} t_{PHL}	C_L=50pF, R_L=500Ω	3.3±0.3	1.8	4.0	6.0	1.8	6.6	ns
			5.0±0.5	1.2	3.2	4.9	1.2	5.4	
Input Capacitance	C_{IN}	-	0	-	2.5	-	-	-	pF
Power Dissipation Capacitance	C_{PD}	(Note)	3.3	-	11	-	-	-	pF
			5.5	-	12.5	-	-	-	

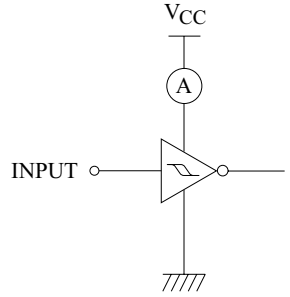
Note : C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. (See Figure2.) C_{PD} is related to I_{CCD} dynamic operating current by the expression : $I_{CC(opr)}=C_{PD} \cdot V_{CC} \cdot f_{IN}+(I_{CC}static)$

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

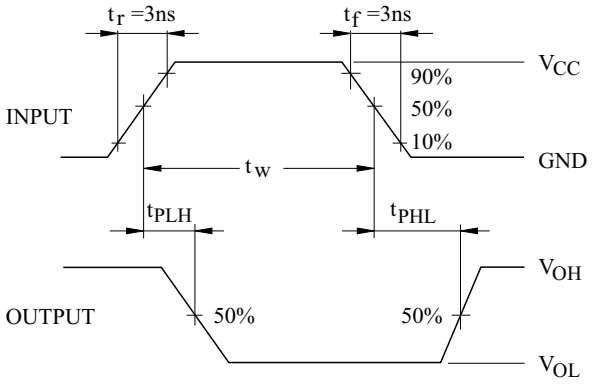


FIGURE 3. AC Waveforms