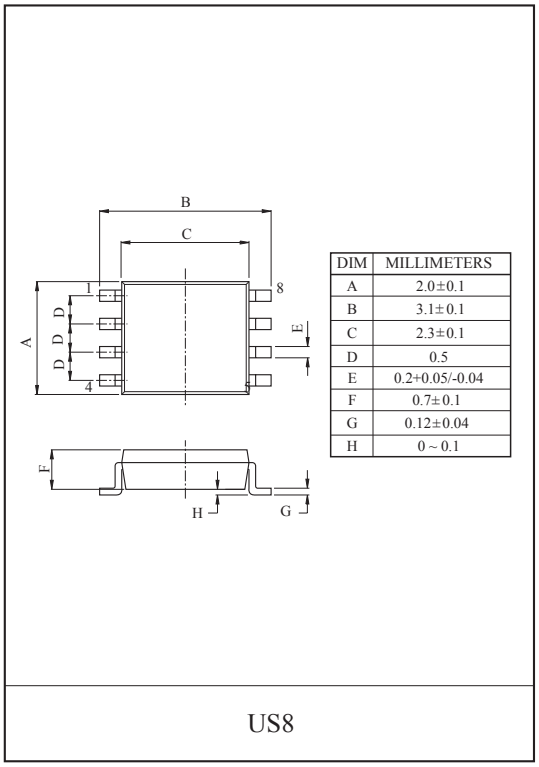
KIC7WZ86FK

SILICON MONOLITHIC CMOS DIGITAL INTEGRATED CIRCUIT

2 INPUT EXCLUSIVE OR GATE

FEATURES

- High output drive : ±24mA(min.) @V_{CC}=3V.
- Super high speed operation : tpd 2.9ns(typ.) @V_{CC}=5V, 50pF.
- Operation voltage range : $V_{CC(opr)}$=1.65~5.5V.
- Latch-up performance : ±200V or more (EIAJ)
  : ±2000V or more (MIL)
- Power down protection is provided on all inputs and outputs.



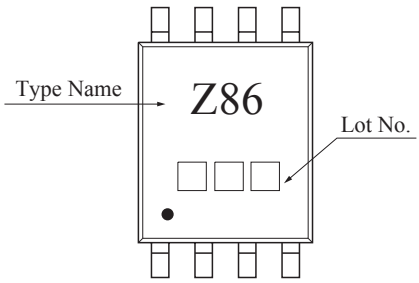
DIM	MILLIMETERS
A	2.0±0.1
B	3.1±0.1
C	2.3±0.1
D	0.5
E	0.2+0.05/-0.04
F	0.7±0.1
G	0.12±0.04
H	0 ~ 0.1

US8

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC}	-0.5~7	V
DC Input Voltage	V_{IN}	-0.5~7	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}	-55 ~ 150	℃
Lead Temperature (10s)	T_L	-55 ~ 150	℃

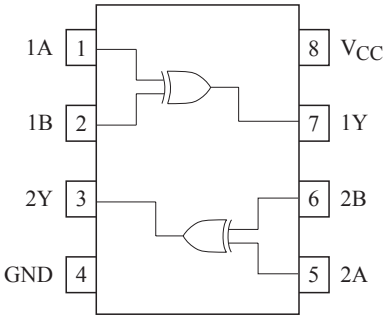
MARKING



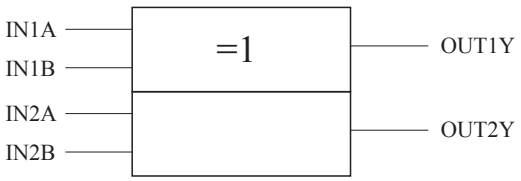
Truth Table

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

PIN CONNECTION(TOP VIEW)



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

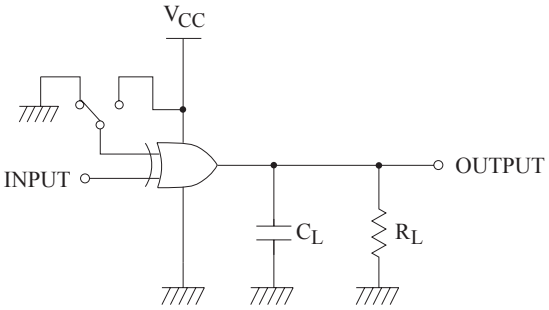
CHARACTERISTIC		SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
				V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Input Voltage	High Level	V_{IH}	-	1.65~1.95	0.75×V_{CC}	-	-	0.75×V_{CC}	-	V
				2.3~5.5	0.7×V_{CC}	-	-	0.7×V_{CC}	-	
	Low Level	V_{IL}	-	1.65~1.95	-	-	0.25×V_{CC}	-	0.25×V_{CC}	
				2.3~5.5	-	-	0.3×V_{CC}	-	0.3×V_{CC}	
Output Voltage	High Level	V_{OH}	V_{IN}= V_{IH} or V_{IL}	I_{OH}=-100μA 1.65	1.55	1.65	-	1.55	-	V
				I_{OH}=-100μA 2.3	2.2	2.3	-	2.2	-	
				I_{OH}=-100μA 3.0	2.9	3.0	-	2.9	-	
				I_{OH}=-100μA 4.5	4.4	4.5	-	4.4	-	
				I_{OH}=-4mA 1.65	1.29	1.52	-	1.29	-	
				I_{OH}=-8mA 2.3	1.9	2.15	-	1.9	-	
				I_{OH}=-16mA 3.0	2.4	2.80	-	2.4	-	
				I_{OH}=-24mA 3.0	2.3	2.68	-	2.3	-	
				I_{OH}=-32mA 4.5	3.8	4.20	-	3.8	-	
	Low Level	V_{OL}	V_{IN}= V_{IH} or V_{IL}	I_{OL}=100μA 1.65	-	0	0.1	-	0.1	V
				I_{OL}=100μA 2.3	-	0	0.1	-	0.1	
				I_{OL}=100μA 3.0	-	0	0.1	-	0.1	
				I_{OL}=100μA 4.5	-	0	0.1	-	0.1	
				I_{OL}=4mA 1.65	-	0.08	0.24	-	0.24	
				I_{OL}=8mA 2.3	-	0.10	0.30	-	0.30	
				I_{OL}=16mA 3.0	-	0.15	0.40	-	0.40	
				I_{OL}=24mA 3.0	-	0.22	0.55	-	0.55	
				I_{OL}=32mA 4.5	-	0.22	0.55	-	0.55	
Input Leakage Current		I_{IN}	V_{IN}=5.5V or GND	0~5.5	-	-	±1	-	±1	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	-	10	μA

AC Characteristics (unless otherwise specified, Input : $t_r=t_f=3ns$)

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
			V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation delay time	t_{PLH} t_{PHL}	C_L=15pF, R_L=1MΩ	1.8±0.15	2.0	6.7	12.5	2.0	13.0	ns
			2.5±0.2	1.0	4.1	7.0	1.2	7.5	
			3.3±0.3	0.8	3.0	4.8	0.8	5.2	
			5.0±0.5	0.5	2.2	3.5	0.5	3.8	
		C_L=50pF, R_L=500Ω	3.3±0.3	1.2	3.8	5.4	1.2	5.9	ns
			5.0±0.5	0.8	2.9	4.2	1.0	4.6	
Input Capacitance	C_{IN}	-	0~5.5	-	2.5	-	-	-	pF
Power Dissipation Capacitance	C_{PD}	(Note)	3.3	-	15	-	-	-	pF
			5.5	-	19	-	-	-	

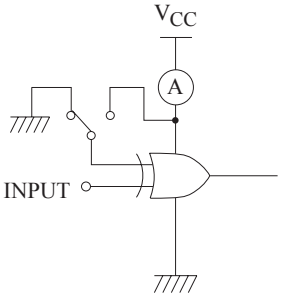
Note : C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. (See Figure 2.) C_{PD} is related to I_{CCD} dynamic operating current by the exprssion : $I_{CCD}=C_{PD}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

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=10MHz ; Duty Cycle=50%

FIGURE 2. I_{CCD} Test Circuit

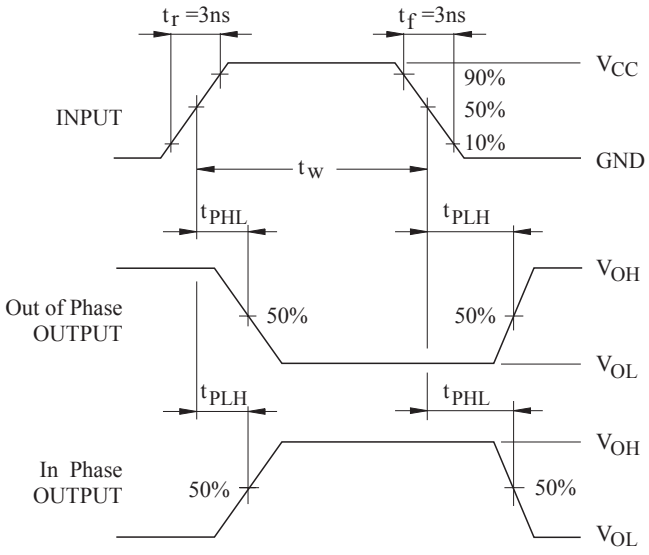


FIGURE 3. AC Waveforms