KEC

SEMICONDUCTOR
TECHNICAL DATA

KIC7WZ02FK
SILICON MONOLITHIC CMOS
DIGITAL INTEGRATED CIRCUIT

2 INPUT NOR GATE

FEATURES

· High output drive : ±24mA(min.) @V_{CC}=3V.

· Super high speed operation : tpd 2.4ns(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.

MARKING

Type Name → Z02   Lot No.

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
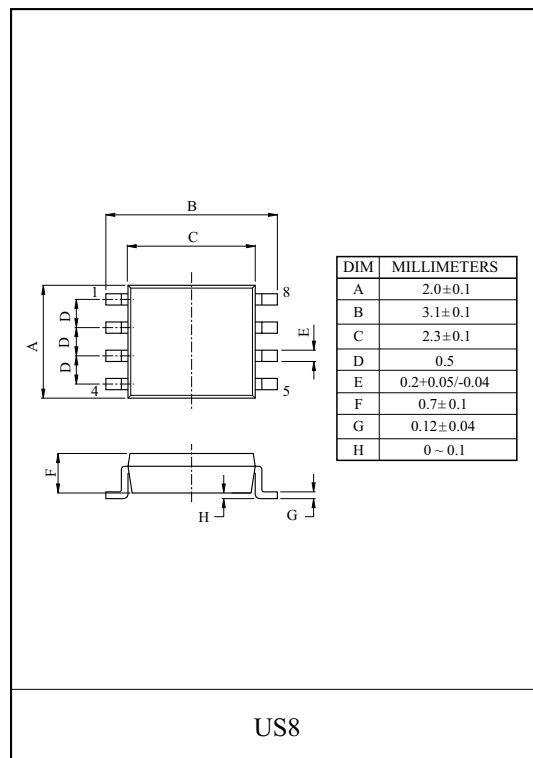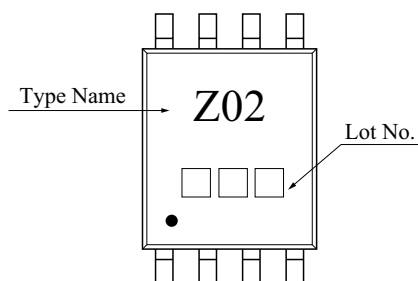
MAXIMUM RATINGS (Ta=25℃)

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	℃

PIN CONNECTION(TOP VIEW)

1A	1		8	V_{CC}
1B	2		7	1Y
2Y	3		6	2B
GND	4		5	2A
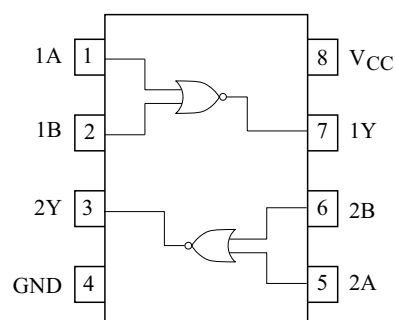
KIC7WZ02FK

Truth Table

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

Logic Diagram

IN A ——————
IN B ——————
≥ 1
—————— OUT Y
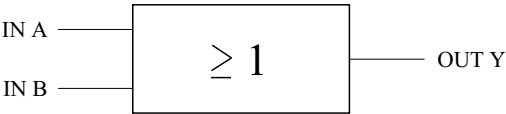
Recommended Operating Conditions

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 $\pm$0.15V, 2.5V $\pm$0.2V)	ns/V
		0~10 (V_{CC}=3.3V $\pm$0.3V)	
		0~5 (V_{CC}=5.5V $\pm$0.5V)	

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}	-		1.65~1.95	$0.75 \times V_{CC}$	-	-	$0.75 \times V_{CC}$	-	V
					2.3~5.5	$0.7 \times V_{CC}$	-	-	$0.7 \times V_{CC}$	-	
	Low Level	V_{IL}	-		1.65~1.95	-	-	$0.25 \times V_{CC}$	-	$0.25 \times V_{CC}$	
					2.3~5.5	-	-	$0.3 \times V_{CC}$	-	$0.3 \times V_{CC}$	
Output Voltage	High Level	V_{OH}	$V_{IN}= V_{IL}$	$I_{OH}=-100\mu A$	1.65	1.55	1.65	-	1.55	-	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	-	
				$I_{OH}=-4mA$	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	2.8	-	2.4	-	
				$I_{OH}=-24mA$	3.0	2.3	2.68	-	2.3	-	
				$I_{OH}=-32mA$	4.5	3.8	4.2	-	3.8	-	
	Low Level	V_{OL}	$V_{IN}=V_{IH}$	$I_{OH}=100\mu A$	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	
				$I_{OH}=4mA$	1.65	-	0.08	0.24	-	0.24	
				$I_{OH}=8mA$	2.3	-	0.1	0.3	-	0.3	
				$I_{OH}=16mA$	3.0	-	0.15	0.4	-	0.4	
				$I_{OH}=24mA$	3.0	-	0.22	0.55	-	0.55	
				$I_{OH}=32mA$	4.5	-	0.22	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	-	10	μA

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

| 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
Propagation delay time	t_{PLH} t_{PHL}	C_L=15pF, R_L=1MΩ		1.8 ±0.15	2.0	5.4	9.8	2.0	10	ns
				2.5 ±0.2	1.2	3.3	5.4	1.2	5.8	
				3.3 ±0.3	0.8	2.5	3.8	0.8	4.1	
				5.0 ±0.5	0.5	2.0	3.0	0.5	3.3	
		C_L=50pF, R_L=500Ω		3.3 ±0.3	1.2	3.1	4.6	1.2	5.0	ns
				5.0 ±0.5	0.8	2.4	3.7	0.8	4.0	
Input Capacitance	C_{IN}	-		0	-	2.5	-	-	-	pF
Power Dissipation Capacitance	C_{PD}		(Note)	3.3	-	13.5	-	-	-	pF
				5.5	-	17.5	-	-	-	

Note : 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 : $I_{CC(opr)}=C_{PD} \cdot V_{CC} \cdot f_{IN}+(I_{CC}^{static})$

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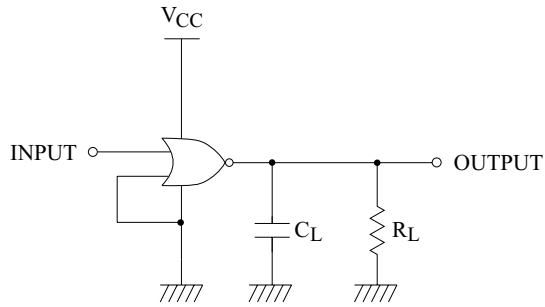
C_L includes load and stray capacitance
Input PRR=1.0MHz ; t_w =500ns

FIGURE 1. AC Test Circuit
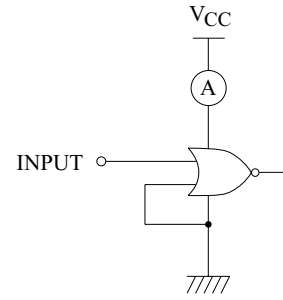
Input=AC Waveform ; t_r=t_f=1.8ns
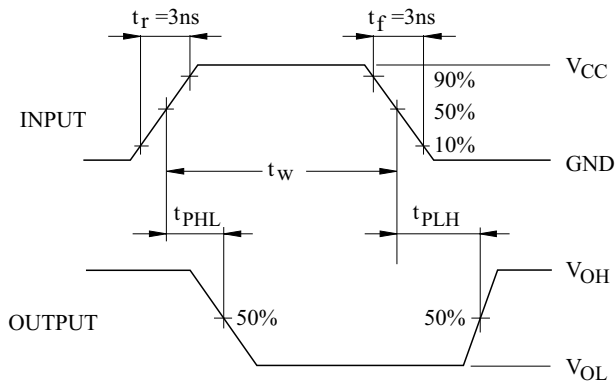PRR=10MHz ; Duty Cycle=50%

FIGURE 2. I_{CCD} Test Circuit

FIGURE 3. AC Waveforms