

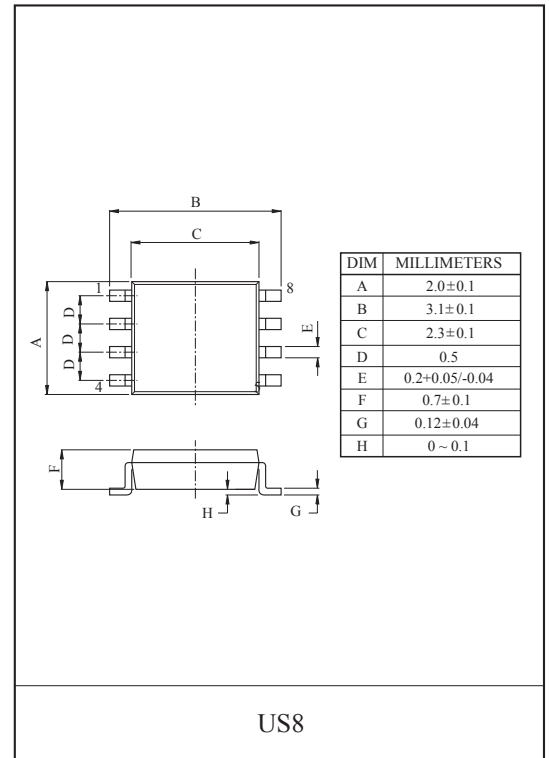
Triple Inverter (unbuffer)

#### FEATURES

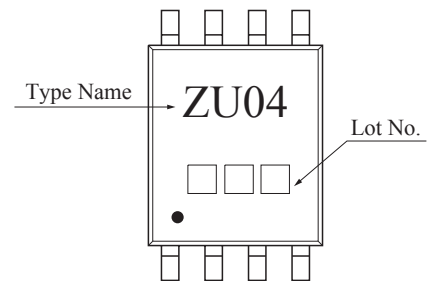
- High output drive :  $\pm 8\text{mA}(\text{min.}) @V_{CC}=4.5\text{V}$ .
- Super high speed operation :  $t_{pd} 3.4\text{ns}(\text{typ.}) @V_{CC}=5\text{V}, 50\text{pF}$ .
- Operation voltage range :  $V_{CC(\text{opr})}=1.65\sim 5.5\text{V}$ .

#### MAXIMUM RATINGS (Ta=25°C)

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	$I_{OK}$	$\pm 50$	mA
DC Output Current	$I_{OUT}$	$\pm 50$	mA
DC $V_{CC}$ /ground Current	$I_{CC}$	$\pm 100$	mA
Power Dissipation	$P_D$	200	mW
Storage Temperature Range	$T_{stg}$	-65 ~ 150	°C
Lead Temperature (10s)	$T_L$	260	°C



#### MARKING



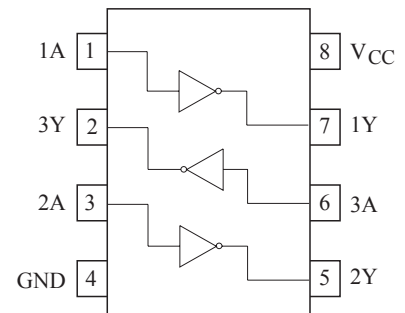
#### Logic Diagram



#### Truth Table

A	Y
L	H
H	L

#### PIN CONNECTION(TOP VIEW)



# KIC7WZU04FK

## 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	°C

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

## ELECTRICAL CHARACTERISTICS

### DC Characteristics

CHARACTERISTIC		SYMBOL	TEST CONDITION	$T_a=25^\circ\text{C}$			$T_a=-40\sim 85^\circ\text{C}$		UNIT			
			$V_{CC}(V)$	MIN.	TYP.	MAX.	MIN.	MAX.				
Input Voltage	High Level	$V_{IH}$	-	1.8~2.7	$0.85 \times V_{CC}$	-	-	$0.85 \times V_{CC}$	-	V		
				3.0~5.5	$0.8 \times V_{CC}$	-	-	$0.8 \times V_{CC}$	-			
	Low Level	$V_{IL}$	-	1.8~2.7	-	-	$0.15 \times V_{CC}$	-	$0.15 \times V_{CC}$			
				3.0~5.5	-	-	$0.2 \times V_{CC}$	-	$0.3 \times V_{CC}$			
Output Voltage	High Level	$V_{OH}$	$V_{IN}=V_{IL}$ $I_{OH}=-100\mu A$	1.65	1.55	1.65	-	1.55	-	V		
				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	$V_{OL}$	$V_{IN}=V_{IH}$ $I_{OL}=100\mu A$	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	-	-	$\pm 0.1$	-	$\mu A$			
Quiescent Supply Current		$I_{CC}$	$V_{IN}=5.5V, GND$	1.65~5.5	-	-	1.0	-	10 $\mu A$			
Peak Supply Current in Analog Operation		$I_{CCPEAK}$	$V_{OUT}=\text{Open}$ $V_{IN}=\text{Adjust for Peak } I_{CC}$ Current	1.8	-	0.2	-	-	-	mA		
				2.5	-	2	-	-	-			
				3.3	-	5	-	-	-			
				5.0	-	15	-	-	-			

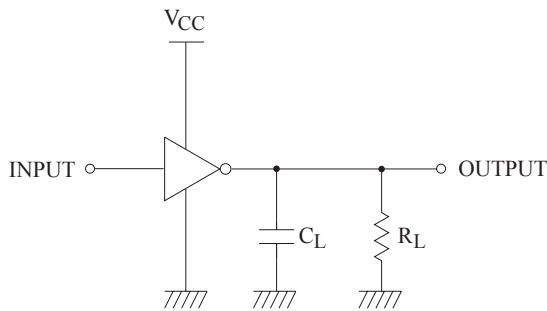
# KIC7WZU04FK

## AC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta=25°C			Ta=-40~85°C		UNIT	
			V <sub>CC</sub> (V)	MIN.	TYP.	MAX.	MIN.		MAX.
Propagation Delay (Figures 1,3)	t <sub>PLH</sub> t <sub>PHL</sub>	C <sub>L</sub> =15pF, R <sub>L</sub> =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	
	t <sub>PLH</sub> t <sub>PHL</sub>	C <sub>L</sub> =50pF, R <sub>L</sub> =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 <sub>IN</sub>		0	-	3	-	-	pF	
Power Dissipation Capacitance (Figure 2)	C <sub>PD</sub>	(Note)	3.3	-	3.5	-	-	-	pF
			5.0	-	5.5	-	-	-	

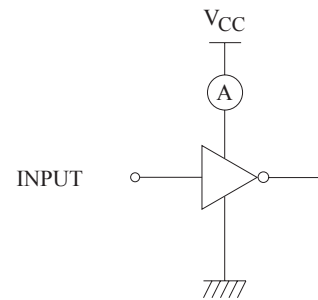
Note : C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I<sub>CCD</sub>) at no output loading and operating at 50% duty cycle. (See Figure 2.) C<sub>PD</sub> is related to I<sub>CCD</sub> dynamic operating current by the expression : I<sub>CCD</sub>=C<sub>PD</sub> · V<sub>CC</sub> · f<sub>IN</sub>+I<sub>CC</sub>

## AC Loading and Waveforms



C<sub>L</sub> includes load and stray capacitance  
Input PRR=1.0MHz ; t<sub>w</sub>=500ns

FIGURE 1. AC Test Circuit



Input=AC Waveform ; t<sub>r</sub>=t<sub>f</sub>=1.8ns  
PRR=variable ; Duty Cycle=50%

FIGURE 2. I<sub>CCD</sub> Test Circuit

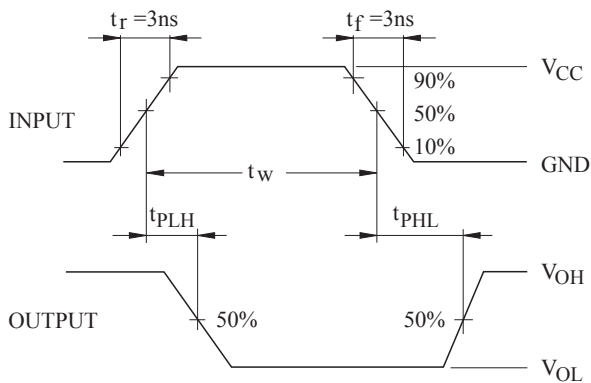


FIGURE 3. AC Waveforms