

EXCLUSIVE OR GATE

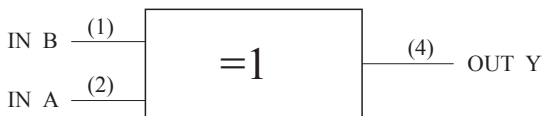
FEATURES

- Super High Speed : $t_{PD}=2.9ns$ (Typ.) into 50pF at $V_{CC}=5V$.
- High Output Driver : $\pm 24mA$ at $V_{CC}=3V$.
- Power Down High Impedance inputs/outputs.
- Wide Operating Voltage Range : $V_{CC(oper)}=1.65\sim 5.5V$.

MAXIMUM RATINGS (Ta=25°C)

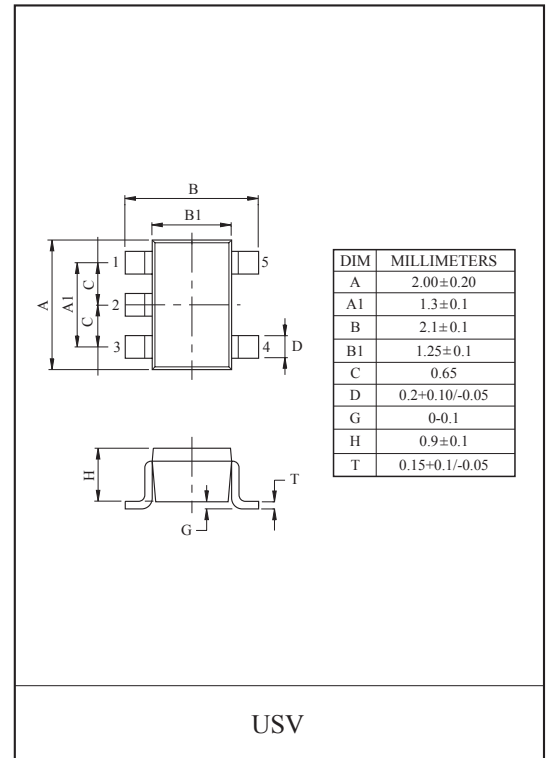
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	V_{CC}	-0.5 ~ 6	V
DC Input Voltage	V_{IN}	-0.5 ~ 6	V
DC Output Voltage	V_{OUT}	-0.5 ~ 6	V
Input Diode Current	I_{IK}	-50~20	mA
Output Diode Current	I_{OK}	-50~20	mA
DC Output Current	I_{OUT}	± 50	mA
DC V_{CC} /Ground Current	I_{CC}	± 50	mA
Power Dissipation	P_D	200	mW
Storage Temperature	T_{stg}	-65 ~ 150	°C
Lead Temperature (10s)	T_L	260	°C

Logic Diagram

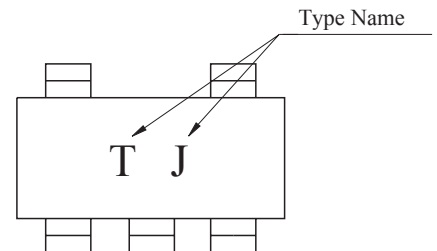


TRUTH TABEL

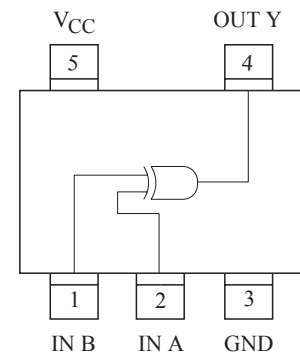
A	B	Y
H	H	L
L	H	H
H	L	H
L	L	L



MARKING



PIN CONNECTION(TOP VIEW)



KIC7SZ86FU

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	1.65 ~ 5.5	V
Input Voltage	V_{IN}	0 ~ 5.5	V
Output Voltage	V_{OUT}	0 ~ V_{CC}	V
Operating Temperature	T_{opr}	-40 ~ 85	°C
Input Rise and Fall Time	t_r, t_f	0 ~ 20 ($V_{CC}=1.8V, 2.5V \pm 0.2V$) 0 ~ 10 ($V_{CC}=3.3V \pm 0.3V$) 0 ~ 5 ($V_{CC}=5.0V \pm 0.5V$)	ns/V

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}	-	1.65~1.95	$0.75 \times V_{CC}$	-	-	$0.75 \times V_{CC}$	-	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}	$V_{IN}=V_{IH} \cdot V_{IL}$ $I_{OH}=-100\mu\text{A}$	1.65	1.55	1.65	-	1.55	-	V	
				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	-		
				$I_{OH}=-4\text{mA}$	1.65	1.29	1.52	-	1.29		-
				$I_{OH}=-8\text{mA}$	2.3	1.9	2.15	-	1.9		-
				$I_{OH}=-16\text{mA}$	3.0	2.4	2.80	-	2.4		-
				$I_{OH}=-24\text{mA}$	3.0	2.3	2.68	-	2.3		-
	$I_{OH}=-32\text{mA}$	4.5	3.8	4.20	-	3.8	-				
	Low Level	V_{OL}	$V_{IN}=V_{IH} \text{ or } V_{IL}$ $I_{OL}=100\mu\text{A}$	1.65	-	0.0	0.1	-	0.1		
				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		
				$I_{OL}=4\text{mA}$	1.65	-	0.08	0.24	-		0.24
				$I_{OL}=8\text{mA}$	2.3	-	0.10	0.3	-		0.3
				$I_{OL}=16\text{mA}$	3.0	-	0.15	0.4	-		0.4
$I_{OL}=24\text{mA}$				3.0	-	0.22	0.55	-	0.55		
$I_{OL}=32\text{mA}$	4.5	-	0.22	0.55	-	0.55					
Input Leakage Current	I_{IN}	$V_{IN}=5.5V, \text{GND}$	0~5.5	-	-	± 1	-	± 10	μA		
Power Off Leakage Current	I_{OFF}	$V_{IN} \text{ or } V_{OUT}=5.5V$	0.0	-	-	1	-	10	μA		
Quiescent Supply Current	I_{CC}	$V_{IN}=5.5V, \text{GND}$	1.65~5.5	-	-	2.0	-	20	μA		

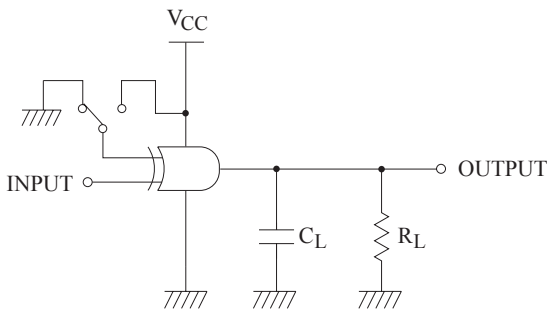
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AC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=25°C			Ta=-40~85°C		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	2.0	6.9	13.8	2.0	14.5	ns
			1.8	2.0	5.7	11.5	2.0	12	
			2.5±0.2	0.8	3.8	8.0	0.8	8.5	
			3.3±0.3	0.5	3.0	5.7	0.5	6.0	
	t _{PLH} t _{PHL}	C _L =50pF, R _L =500Ω	3.3±0.3	1.5	3.5	6.2	1.5	6.5	ns
			5.0±0.5	0.8	2.9	5.4	1.0	5.8	
Input Capacitance	C _{IN}		0	-	4	-	-	-	pF
Power Dissipation Capacitance (Figure 2)	C _{PD}	(Note)	3.3	-	25	-	-	-	pF
			5.0	-	31	-	-	-	

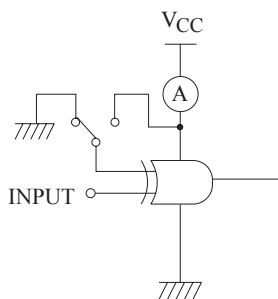
Note : C_{PD} is defined as the value of the internal equivalent capacitance which is derived from dynamic operating current consumption (I_{CCD}) at no output loading and operating at 50% duty cycle. (See Figure 2.) C_{PD} is related to I_{CCD} dynamic operating current by the expression : $I_{CCD}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

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

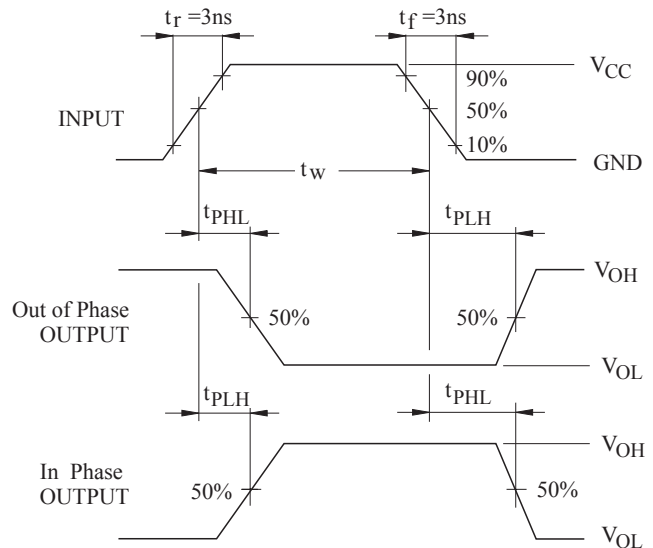


FIGURE 3. AC Waveforms