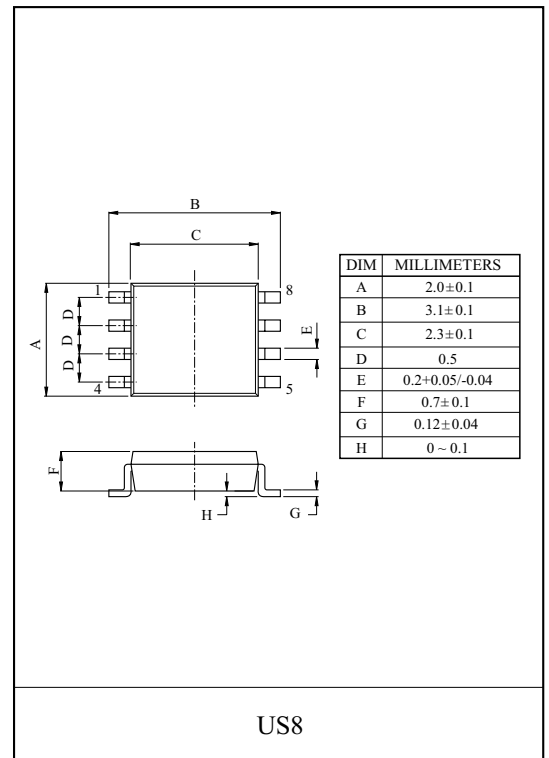
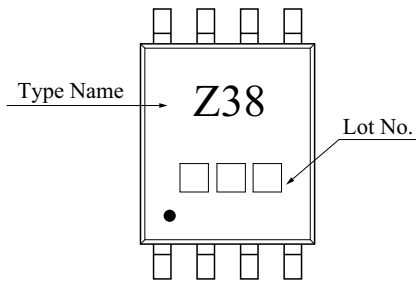


## DUAL 2 INPUT NAND GATE (OPEN DRAIN)

### FEATURES

- High output drive : 24mA(min.) @  $V_{CC}=3V$ .
- Super high speed operation :  $t_{pZL}$  2.2ns(typ.) @  $V_{CC}=5V$ , 50pF.
- Operation voltage range :  $V_{CC(opr)}=1.65\sim 5.5V$ .
- Latch-up performance :  $\pm 500mA$  or more
- ESD performance :  $\pm 200V$  or more (EIAJ)  
 $\pm 2000V$  or more (MIL)
- Power down protection is provided on all inputs and outputs.

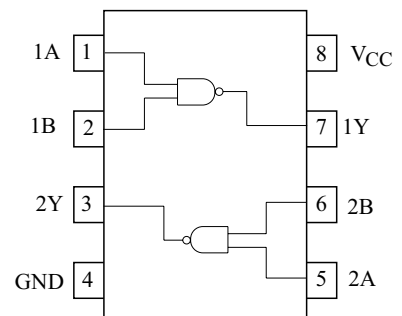
### MARKING



### MAXIMUM RATINGS (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Power Supply Voltage	$V_{CC}$	-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	$I_{IK}$	-20	mA
Output Diode Current	$I_{OK}$	-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 Range	$T_{stg}$	-65 ~ 150	°C
Lead Temperature (10s)	$T_L$	260	°C

### PIN CONNECTION(TOP VIEW)



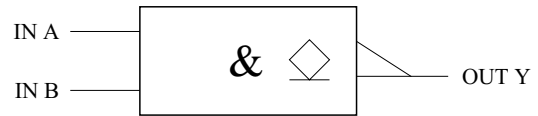
# KIC7WZ38FK

Truth Table

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

\* : High impedance

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	°C
Input Rise and Fall Time	$d_i/d_v$	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 ( $V_{CC}=5.5V \pm 0.5V$ )5	

Note1 : Data retention only, Note2 :  $V_{CC}=0V$ , Note3 : Low state

## ELECTRICAL CHARACTERISTICS

### DC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION	$T_a=25^\circ C$			$T_a=-40\sim 85^\circ C$		UNIT		
			$V_{CC}(V)$	MIN.	TYP.	MAX.	MIN.		MAX.	
Input Voltage	High Level	-	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	-	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	Low Level	$V_{IN}=V_{IL}$	$I_{OH}=100\mu A$	1.65	-	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	-	-	$\pm 1$	-	$\pm 10$	$\mu A$	
Off-state Current	$I_{OZ}$	$V_{IN}=V_{IL}$ , $V_{OUT}=V_{CC}$ or GND	5.5	-	-	$\pm 5$	-	$\pm 10$	$\mu A$	
Power Off Leakage Current	$I_{OFF}$	$V_{IN}$ or $V_{OUT}=5.5V$	0.0	-	-	1	-	10	$\mu A$	
Quiescent Supply Current	$I_{CC}$	$V_{IN}=5.5V$ or GND	1.65~5.5	-	-	1	-	10	$\mu A$	

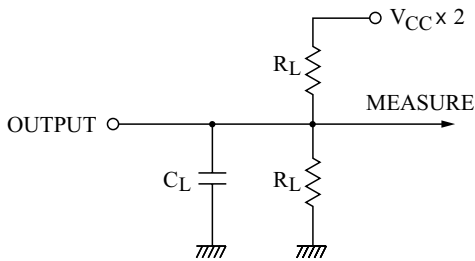
# KIC7WZ38FK

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta=25 °C			Ta=-40~85 °C		UNIT	
			V <sub>CC</sub> (V)	MIN.	TYP.	MAX.	MIN.		MAX.
Propagation delay time	t <sub>pZL</sub>	C <sub>L</sub> =50pF, R <sub>L</sub> =500 Ω	1.8 ±0.15	2.0	5.2	9.2	2.0	9.6	ns
			2.5 ±0.2	1.5	3.5	5.7	1.5	6.1	
			3.3 ±0.3	1.0	2.8	4.1	1.0	4.5	
			5.0 ±0.5	0.5	2.2	3.4	0.5	3.6	
	t <sub>pLZ</sub>	C <sub>L</sub> =50pF, R <sub>L</sub> =500 Ω	1.8 ±0.15	2.0	4.6	9.2	2.0	9.6	ns
			2.5 ±0.2	1.5	3.2	5.7	1.5	6.1	
			3.3 ±0.3	1.0	2.4	4.1	1.0	4.5	
			5.0 ±0.5	0.5	1.6	3.4	0.5	3.6	
Input Capacitance	C <sub>IN</sub>	-	0~5.5	-	3.0	-	-	-	pF
Output Capacitance	C <sub>OUT</sub>	-	0~5.5	-	2.5	-	-	-	pF
Power Dissipation Capacitance	C <sub>PD</sub>	(Note)	3.3	-	6.9	-	-	-	pF
			5.5	-	13	-	-	-	

Note : C<sub>PD</sub> 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 :  $I_{CC(opt)}=C_{PD} \cdot V_{CC} \cdot f_{IN}+I_{CC}/2$

TEST CIRCUIT



AC Waveform

