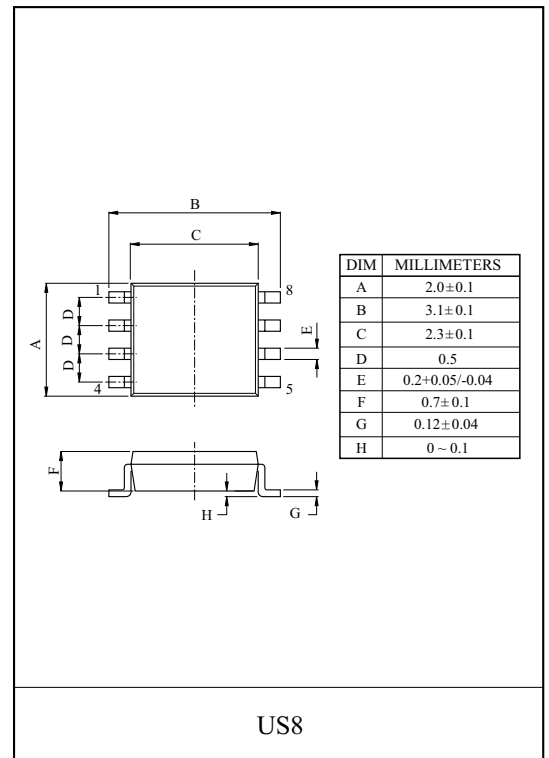
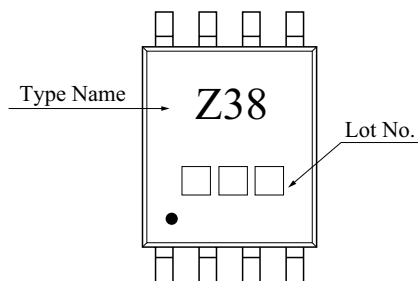


DUAL 2 INPUT NAND GATE (OPEN DRAIN)

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 : $V_{CC(oper)}=1.65\sim 5.5V$.
- 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.

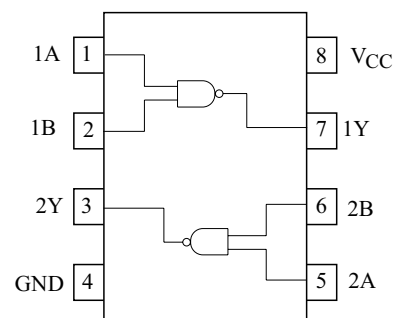
MARKING



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)



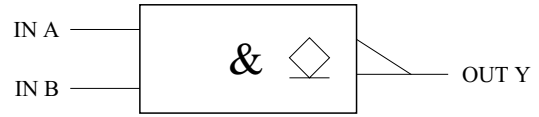
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Truth Table

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		Ta=25℃			Ta=-40~85℃		UNIT	
						V _{CC} (V)	MIN.	TYP.	MAX.		MIN.
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	Low Level	V _{OL}	V _{IN} =V _{IL}	I _{OH} =100μA	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	-	-	±1	-	±10	μA	
Off-state Carrent		I _{OZ}	V _{IN} =V _{IL} , V _{OUT} =V _{CC} or GND	5.5	-	-	±5	-	±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	

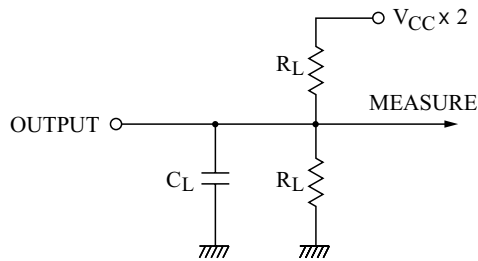
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AC Characteristics (unless otherwise specified, Input : $t_r=t_f=3\text{ns}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85℃		UNIT
			V _{CC} (V)	MIN.	TYP.	MAX.	MIN.	MAX.	
Propagation delay time	t _{pZL}	C _L =50pF, R _L =500Ω	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 _{pLZ}	C _L =50pF, R _L =500Ω	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 _{IN}	-	0~5.5	-	3.0	-	-	-	pF
Output Capacitance	C _{OUT}	-	0~5.5	-	2.5	-	-	-	pF
Power Dissipation Capacitance	C _{PD}	(Note)	3.3	-	6.9	-	-	-	pF
			5.5	-	13	-	-	-	

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 : $I_{CC(opr)}=C_{PD} \cdot V_{CC} \cdot f_{IN}+I_{CC}/2$

TEST CIRCUIT



AC Waveform

