



## UCD4075B

Preliminary

CMOS IC

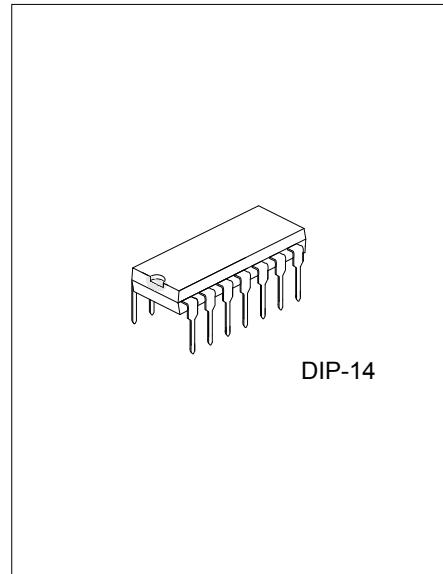
### TRIPLE 3-INPUT OR GATE

#### DESCRIPTION

The UTC **UCD4075B** OR gates provide the system designer with direct implementation of the positive-logic OR function and supplement the existing family of CMOS gates.

#### FEATURES

- \* Supply Voltage Range = 3.0V to 18V
- \* All Outputs Buffered
- \* Capable of Driving Two Low-power TTL Loads or One Low-power Schottky TTL Load Over the Rated Temperature Range.

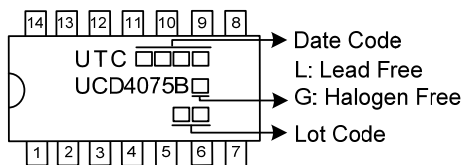


#### ORDERING INFORMATION

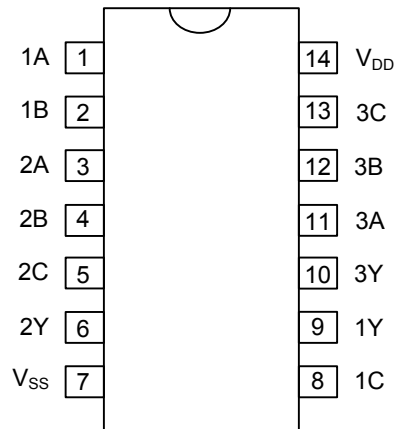
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4075BL-D14-T	UCD4075BG-D14-T	DIP-14	Tube

<p>UCD4075BG-D14-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) T: Tube</li> <li>(2) D14: DIP-14</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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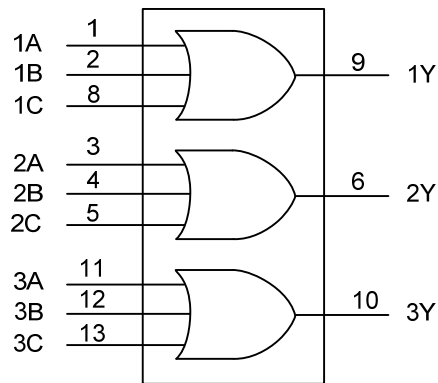
#### MARKING



■ PIN CONFIGURATION



■ LOGIC DIAGRAMS



■ ABSOLUTE MAXIMUM RATING (Voltages Referenced to  $V_{SS}$ )

PARAMETER	SYMBOL	RATINGS	UNIT
DC Supply Voltage Range	$V_{DD}$	-0.5 ~ +18	V
Input or Output Voltage	$V_{IN}, V_{OUT}$	-0.5 ~ $V_{DD} + 0.5$	V
Input or Output Current	$I_{IN}, I_{OUT}$	±10	mA
Power Dissipation	$P_D$	500	mW
Operating Temperature	$T_{STG}$	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{DD}$	3 ~ 18	V
Operating Temperature	$T_A$	-40 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS (Voltages Referenced to  $V_{SS}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	$V_{OH}$	$V_{DD}=5V$	4.95	5.0		V
		$V_{DD}=10V$	9.95	10		V
		$V_{DD}=15V$	14.95	15		V
Low-Level Output Voltage	$V_{OL}$	$V_{DD}=5V$		0	0.05	V
		$V_{DD}=10V$		0	0.05	V
		$V_{DD}=15V$		0	0.05	V
High-Level Output Voltage	$V_{IH}$	$V_{DD}=5V, V_{OUT}=0.5V$ or $4.5V$	3.5	2.75		V
		$V_{DD}=10V, V_{OUT}=1.0V$ or $9.0V$	7.0	5.5		V
		$V_{DD}=15V, V_{OUT}=1.5V$ or $13.5V$	11	8.25		V
Low-Level Output Voltage	$V_{IL}$	$V_{DD}=5V, V_{OUT}=4.5V$ or $0.5V$		2.25	1.5	V
		$V_{DD}=10V, V_{OUT}=9.0V$ or $1.0V$		4.5	3.0	V
		$V_{DD}=15V, V_{OUT}=13.5V$ or $1.5V$		6.75	4.0	V
High-Level Output Current	$I_{OH}$	$V_{DD}=5V, V_{OUT}=2.5V$	-1.6	-3.2		mA
		$V_{DD}=5V, V_{OUT}=4.6V$	-0.51	-1		mA
		$V_{DD}=10V, V_{OUT}=9.5V$	-1.3	-2.6		mA
		$V_{DD}=15V, V_{OUT}=13.5V$	-3.4	-6.8		mA
Low-Level Output Current	$I_{OL}$	$V_{DD}=5V, V_{OUT}=0.4V$	0.51	1		mA
		$V_{DD}=10V, V_{OUT}=0.5V$	1.3	2.6		mA
		$V_{DD}=15V, V_{OUT}=1.5V$	3.4	6.8		mA
Input Current	$I_{IN}$	$V_{DD}=15V$		±0.00001	± 0.1	µA
Quiescent Supply Current	$I_{DD}$	$V_{DD}=5V$		0.0005	0.25	µA
		$V_{DD}=10V$	Per Package	0.0010	0.5	µA
		$V_{DD}=15V$		0.0015	1.0	µA

Note:  $I_{OL}$  and  $I_{OH}$  are tested one output at a time.

■ SWITCHING CHARACTERISTICS (Note 1)

( $C_L = 50\text{pF}$ ,  $t_R = t_F = 20\text{ns}$ ,  $R_L = 200\text{K}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 2)	MAX	UNIT
Propagation Delay Time	$t_{PLH} / t_{PHL}$	$V_{DD} = 5\text{V}$		80	300	ns
		$V_{DD} = 10\text{V}$		50	130	ns
		$V_{DD} = 15\text{V}$		40	100	ns
Transition Time	$t_{TLH} / t_{THL}$	$V_{DD} = 5\text{V}$		100	200	ns
		$V_{DD} = 10\text{V}$		55	100	ns
		$V_{DD} = 15\text{V}$		45	80	ns

Notes: 1. The formulas given are for the typical characteristics only at  $25^\circ\text{C}$ .

2. Data labelled "Typ" is not to be used for design purposes but is intended as an indication of the IC's potential performance.

■ OPERATING CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	$C_{IN}$	Any Input.		5	7.5	pF

■ TEST CIRCUIT AND WAVEFORMS

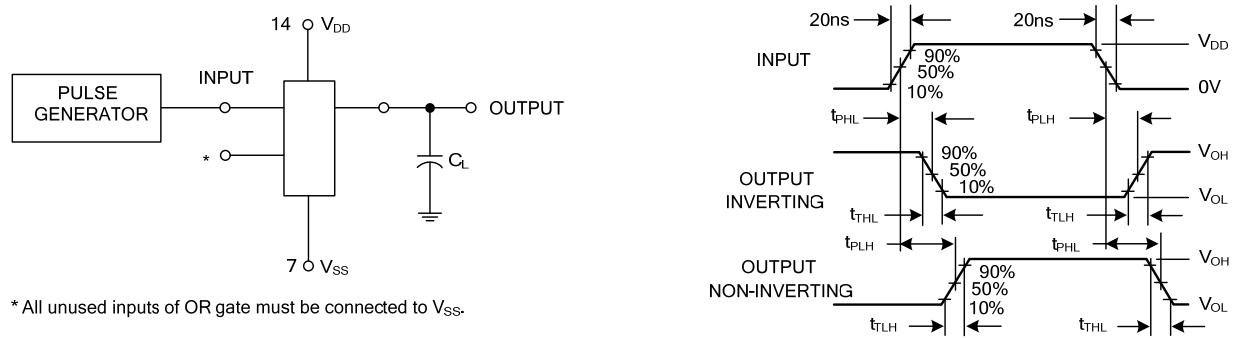
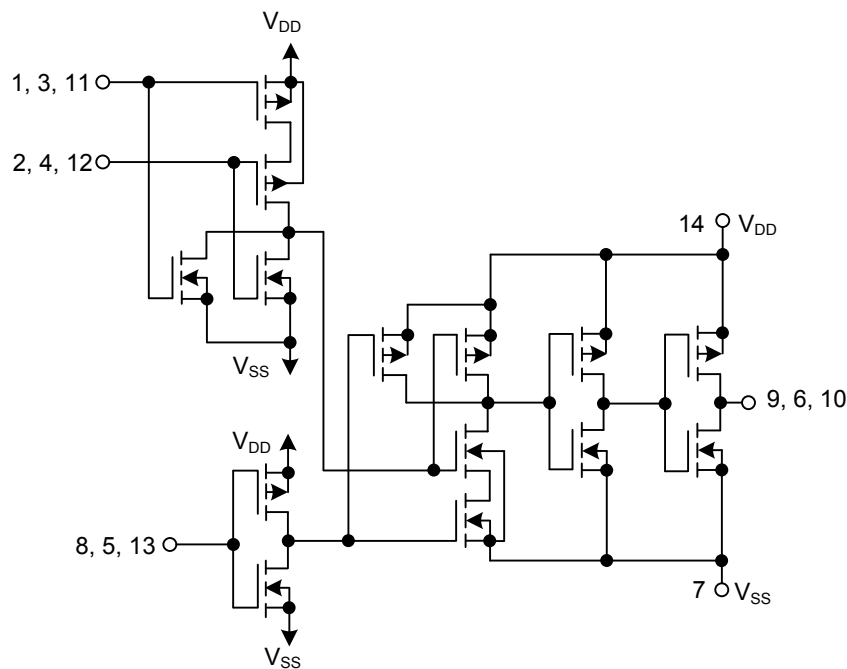


Figure 1. Switching Time Test Circuit and Waveforms

■ TYPICAL APPLICATION CIRCUIT

One of Three Gates Shown



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