查询CD4041UB供应商 捷多邦，专业PCB打样工厂，24小时加急出货

National Semiconductor

February 1988

CD4041UB/CD4041UBC
Quad True/Complement Buffer

General Description

The CD4041UB/CD4041UBC is a quad true/complement buffer consisting of N- and P-channel enhancement mode transistors having low-channel resistance and high current (sourcing and sinking) capability. The CD4041 is intended for use as a buffer, line driver, or CMOS-to-TTL driver.

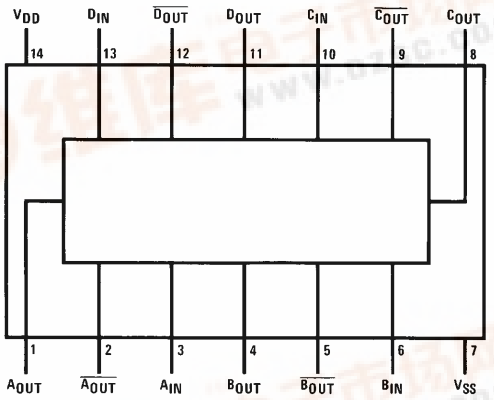
All inputs are protected from static discharge by diode clamps to V_{DD} and V_{SS}.

Features

- Wide supply voltage range 3.0V to 15V
- High noise immunity 40% V_{DD} (typ.)
- True output
  High current source and sink capability
  8 mA (typ.) @ V_O = 9.5V, V_{DD} = 10V
  3.2 mA (typ.) @ V_O = 0.4V, V_{DD} = 5V (two TTL loads)
- Complement output
  Medium current source and sink capability
  3.6 mA (typ.) @ V_O = 9.5V, V_{DD} = 10V
  1.6 mA (typ.) @ V_O = 0.4V, V_{DD} = 5V

Connection and Schematic Diagrams

Dual-In-Line Package

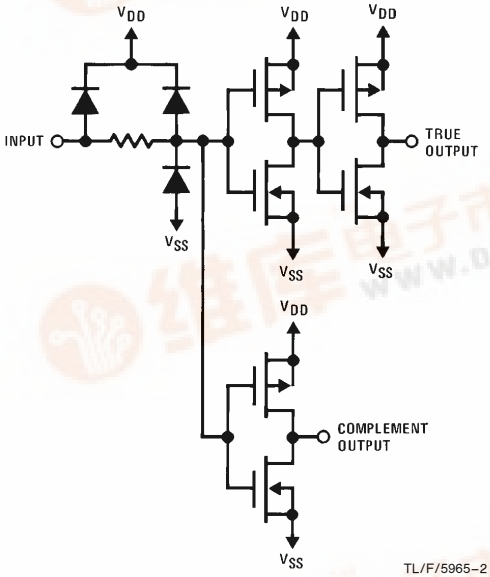


TL/F/5965–1

Top View

Order Number CD4041UB

1 of 4 Identical Units



TL/F/5965–2

©1995 National Semiconductor Corporation

找PDF 维库一下 pdf.dzsc.com

Absolute Maximum Ratings (Notes 1 and 2)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage (V_{DD})	−0.5V to +18V
Input Voltage (V_{IN})	−0.5V to V_{DD} +0.5V
Storage Temperature Range (T_S)	−65°C to +150°C
Power Dissipation (P_D)	
Dual-In-Line	700 mW
Small Outline	500 mW
Lead Temp. (T_L) (Soldering, 10 sec.)	260°C

Recommended Operating Conditions (Note 2)

Supply Voltage (V_{DD})	3V to 15V
Input Voltage (V_{IN})	0V to V_{DD}
Operating Temperature Range (T_A)	
CD4041UB	−55°C to +125°C
CD4041UBC	−40°C to +85°C

DC Electrical Characteristics CD4041UBM (Note 2)

Symbol	Parameter	Conditions	−55°C		+25°C			+125°C		Units
			Min	Max	Min	Typ	Max	Min	Max	
I_{DD}	Quiescent Device Current	V_{DD} = 5V		1		0.01	1		30	μA
		V_{DD} = 10V		2		0.01	2		60	μA
		V_{DD} = 15V		4		0.01	4		120	μA
V_{OL}	Low Level Output Voltage	$\|I_O\| < 1$ μA, V_{IL} = 0V, V_{IH} = V_{DD}								
		V_{DD} = 5V		0.05		0	0.05		0.05	V
		V_{DD} = 10V		0.05		0	0.05		0.05	V
		V_{DD} = 15V		0.05		0	0.05		0.05	V
V_{OH}	High Level Output Voltage	$\|I_O\| < 1$ μA, V_{IL} = 0V, V_{IH} = V_{DD}								
		V_{DD} = 5V	4.95		4.95	5		4.95		V
		V_{DD} = 10V	9.95		9.95	10		9.95		V
		V_{DD} = 15V	14.95		14.95	15		14.95		V
V_{IL}	Low Level Input Voltage	$\|I_O\| < 1$ μA								
		V_{DD} = 5V, V_O = 0.5V or 4.5V		1.0		2	1.0		1.0	V
		V_{DD} = 10V, V_O = 1V or 9V		2.0		4	2.0		2.0	V
		V_{DD} = 15V, V_O = 1.5V or 13.5V		3.0		6	3.0		3.0	V
V_{IH}	High Level Input Voltage	$\|I_O\| < 1$μA								
		V_{DD} = 5V, V_O = 0.5V or 4.5V	4.0		4.0	3		4.0		V
		V_{DD} = 10V, V_O = 1V or 9V	8.0		8.0	6		8.0		V
		V_{DD} = 15V, V_O = 1.5V or 13.5V	12.0		12.0	9		12.0		V
I_{OL}	Low Level Output Current	V_{IL} = 0V								
	True Output	V_{DD} = 5V, V_O = 0.4V	2.1		1.6	3.2		1.2		mA
	(Note 3)	V_{DD} = 10V, V_O = 0.5V	6.25		5.0	10		3.5		mA
		V_{DD} = 15V, V_O = 1.5V	14		12	24		8		mA
I_{OL}	Low Level Output Current	V_{IH} = V_{DD}								
	Complement Output	V_{DD} = 5V, V_O = 0.4V	1.0		0.8	1.6		0.55		mA
	(Note 3)	V_{DD} = 10V, V_O = 0.5V	2.5		2	4.0		1.4		mA
		V_{DD} = 15V, V_O = 1.5V	5.5		4.5	9.0		3.0		mA
I_{OH}	High Level Output Current	V_{IH} = V_{DD}								
	True Output	V_{DD} = 5V, V_O = 4.6V	−1.75		−1.4	−2.8		−1.0		mA
	(Note 3)	V_{DD} = 10V, V_O = 9.5V	−5.0		−4	−8.0		−2.8		mA
		V_{DD} = 15V, V_O = 13.5V	−11		−9	−18		−6		mA
I_{OH}	High Level Output Current	V_{IL} = 0V								
	Complement Output	V_{DD} = 5V, V_O = 4.6V	−0.75		−0.6	−1.2		−0.4		mA
	(Note 3)	V_{DD} = 10V, V_O = 9.5V	−2.25		−1.8	−3.6		−1.25		mA
		V_{DD} = 15V, V_O = 13.5V	−4.8		−4	−8		−2.7		mA
I_{IN}	Input Current	V_{DD} = 15V, V_{IN} = 0V		−0.1		-10^{-5}	−0.1		−1.0	μA
		V_{DD} = 15V, V_{IN} = 15V		0.1		10^{-5}	0.1		1.0	μA

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the devices should be operated at these limits. The tables of 'Recommended Operating Conditions" and "Electrical Characteristics" provide conditions for actual device operation.

Note 2: V_{SS} = 0V unless otherwise specified.

Note 3: I_{OH} and I_{OL} are tested one output at a time.

DC Electrical Characteristics CD4041UBC (Note 2)

Symbol	Parameter	Conditions	−40°C		+25°C			+85°C		Units
			Min	Max	Min	Typ	Max	Min	Max	
I_{DD}	Quiescent Device Current	V_{DD} = 5V		4		0.01	4		30	μA
		V_{DD} = 10V		8		0.01	8		60	μA
		V_{DD} = 15V		16		0.01	16		120	μA
V_{OL}	Low Level Output Voltage	$\|I_O\| < 1$ μA, V_{IL} = 0V, $V_{IH} = V_{DD}$								
		V_{DD} = 5V		0.05		0	0.05		0.05	V
		V_{DD} = 10V		0.05		0	0.05		0.05	V
		V_{DD} = 15V		0.05		0	0.05		0.05	V
V_{OH}	High Level Output Voltage	$\|I_O\| < 1$ μA, V_{IL} = 0V, $V_{IH} = V_{DD}$								
		V_{DD} = 5V	4.95		4.95	5		4.95		V
		V_{DD} = 10V	9.95		9.95	10		9.95		V
		V_{DD} = 15V	14.95		14.95	15		14.95		V
V_{IL}	Low Level Input Voltage	$\|I_O\| < 1$ μA								
		V_{DD} = 5V, V_O = 0.5V or 4.5V		1.0		2	1.0		1.0	V
		V_{DD} = 10V, V_O = 1V or 9V		2.0		4	2.0		2.0	V
		V_{DD} = 15V, V_O = 1.5V or 13.5V		3.0		6	3.0		3.0	V
V_{IH}	High Level Input Voltage	$\|I_O\| < 1$μA								
		V_{DD} = 5V, V_O = 0.5V or 4.5V	4.0		4.0	3		4.0		V
		V_{DD} = 10V, V_O = 1V or 9V	8.0		8.0	6		8.0		V
		V_{DD} = 15V, V_O = 1.5V or 13.5V	12.0		12.0	9		12.0		V
I_{OL}	Low Level Output Current	V_{IL} = 0V								
	True Output	V_{DD} = 5V, V_O = 0.4V	1.7		1.5	3.2		1.2		mA
	(Note 3)	V_{DD} = 10V, V_O = 0.5V	4.9		4.3	10		3.5		mA
		V_{DD} = 15V, V_O = 1.5V	11		10	24		8		mA
I_{OL}	Low Level Output Current	$V_{IH} = V_{DD}$								
	Complement Output	V_{DD} = 5V, V_O = 0.4V	0.75		0.68	1.6		0.55		mA
	(Note 3)	V_{DD} = 10V, V_O = 0.5V	2.0		1.8	4.0		1.4		mA
		V_{DD} = 15V, V_O = 1.5V	4.4		3.8	9.0		3.0		mA
I_{OH}	High Level Output Current	$V_{IH} = V_{DD}$								
	True Output	V_{DD} = 5V, V_O = 4.6V	−1.5		−1.3	−2.8		−1.0		mA
	(Note 3)	V_{DD} = 10V, V_O = 9.5V	−4.0		−3.5	−8.0		−2.8		mA
		V_{DD} = 15V, V_O = 13.5V	−8.7		−7.5	−18		−6		mA
I_{OH}	High Level Output Current	V_{IL} = 0V								
	Complement Output	V_{DD} = 5V, V_O = 4.6V	−0.57		−0.50	−1.2		−0.4		mA
	(Note 3)	V_{DD} = 10V, V_O = 9.5V	−1.8		−1.6	−3.6		−1.25		mA
		V_{DD} = 15V, V_O = 13.5V	−3.9		−3.4	−8.0		−2.7		mA
I_{IN}	Input Current	V_{DD} = 15V, V_{IN} = 0V		−0.3		-10^{-5}	−0.3		−1.0	μA
		V_{DD} = 15V, V_{IN} = 15V		0.3		10^{-5}	0.3		1.0	μA

AC Electrical Characteristics*

T_A = 25°C, C_L = 50 pF, R_L = 200k, Input $t_r = t_f$ = 20 ns, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{PHL}, t_{PLH}	Propagation Delay Time	V_{DD} = 5V		60	120	ns
	True Output	V_{DD} = 10V		35	70	ns
		V_{DD} = 15V		25	50	ns
t_{PHL}, t_{PLH}	Propagation Delay Time	V_{DD} = 5V		75	150	ns
	Complement Output	V_{DD} = 10V		40	80	ns
		V_{DD} = 15V		30	65	ns
t_{THL}, t_{TLH}	Output Transition Time	V_{DD} = 5V		55	110	ns
	True Output	V_{DD} = 10V		30	60	ns
		V_{DD} = 15V		25	50	ns

AC Electrical Characteristics* (Continued)

$T_A = 25°C$, $C_L = 50$ pF, $R_L = 200k$, Input $t_r = t_f = 20$ ns, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
t_{THL}, t_{TLH}	Output Transition Time Complement Output	$V_{DD} = 5V$ $V_{DD} = 10V$ $V_{DD} = 15V$		90 45 35	180 90 75	ns ns ns
C_{IN}	Input Capacitance	Any Input		10	15	pF

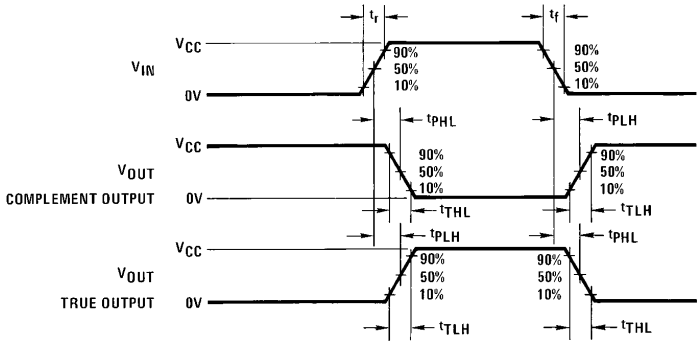
*AC Parameters are guaranteed by DC correlated testing.

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. They are not meant to imply that the devices should be operated at these limits. The tables of 'Recommended Operating Conditions" and "Electrical Characteristics" provide conditions for actual device operation.

Note 2: $V_{SS} = 0V$ unless otherwise specified.

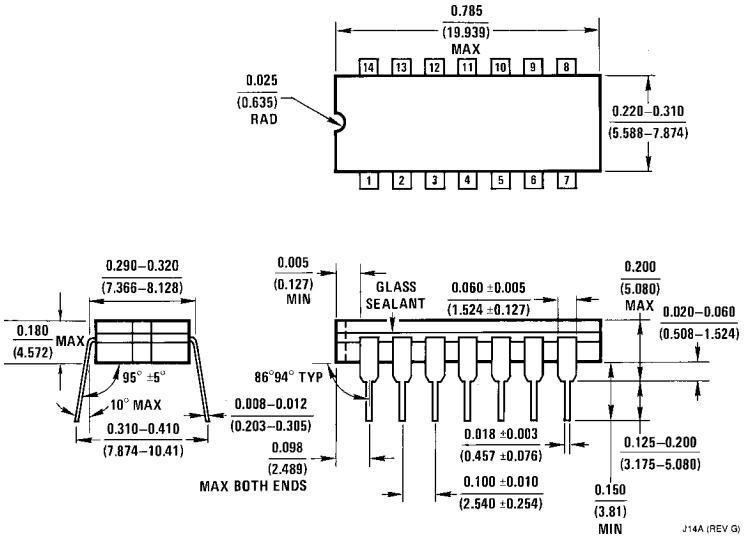
Note 3: I_{OH} and I_{OL} are tested one output at a time.

Switching Time Waveforms



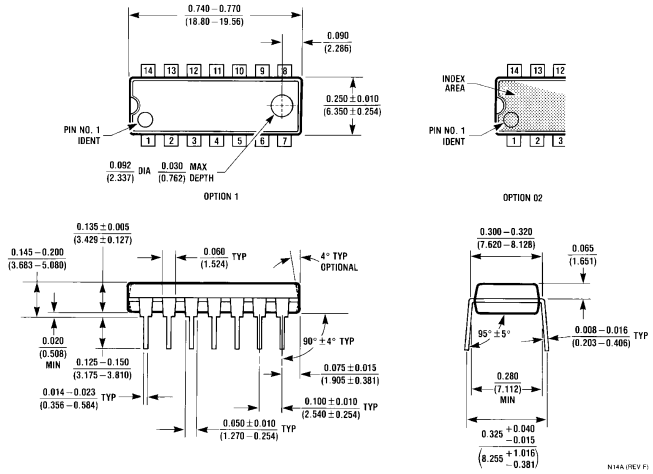
TL/F/5965–3

Physical Dimensions inches (millimeters)



Ceramic Dual-In-Line Package (J)
Order Number CD4041UBMJ or CD4041UBCJ
NS Package Number J14A

Physical Dimensions inches (millimeters) (Continued)



Molded Dual-In-Line Package (N)
Order Number CD4041UBN or CD4041UBCN
NS Package Number N14A

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

National Semiconductor Corporation
1111 West Bardin Road
Arlington, TX 76017
Tel: 1(800) 272-9959
Fax: 1(800) 737-7018

National Semiconductor Europe
Fax: (+49) 0-180-530 85 86
Email: cnjwge@tevm2.nsc.com
Deutsch Tel: (+49) 0-180-530 85 85
English Tel: (+49) 0-180-532 78 32
Français Tel: (+49) 0-180-532 93 58
Italiano Tel: (+49) 0-180-534 16 80

National Semiconductor Hong Kong Ltd.
13th Floor, Straight Block,
Ocean Centre, 5 Canton Rd.
Tsimshatsui, Kowloon
Hong Kong
Tel: (852) 2737-1600
Fax: (852) 2736-9960

National Semiconductor Japan Ltd.
Tel: 81-043-299-2309
Fax: 81-043-299-2408

National does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and National reserves the right at any time without notice to change said circuitry and specifications.