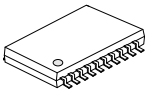
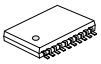
U74HCT541B

CMOS IC

OCTAL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS



SOP-20



TSSOP-20U

■ DESCRIPTION

The **U74HCT541B** is octal buffers and line drivers are with 3-state outputs and 8 channels.

The 3-state control gate is a 2-input NOR. If either output-enable ($\overline{OE1}$ or $\overline{OE2}$) input is high,all eight outputs are in the high-impedance state. The **U74HCT541B** devices provide true data at the outputs.

■ FEATURES

* Operating Voltage Range of 4.5V to 5.5V
* High-Current 3-State Outputs Interface Directly With System Bus or Can Drive Up To 15 LSTTL Loads
* Low Power Consumption I_{CC}: 8μA (Max.)
* ±6mA Output Drive at 5V
* Low Input Current of 1μA (Max.)
* Inputs Are TTL-Voltage Compatible
* Data Flow-Through Pinout (All Inputs on Opposite Side From Outputs)

■ ORDERING INFORMATION

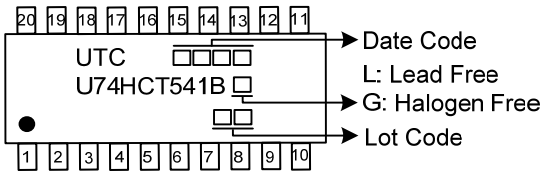
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HCT541BL-S20-R	U74HCT541BG-S20-R	SOP-20	Tape Reel
U74HCT541BL-ULA-R	U74HCT541BG-ULA-R	TSSOP-20U	Tape Reel

U74HCT541BG-S20-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) S20: SOP-20, ULA: TSSOP-20U
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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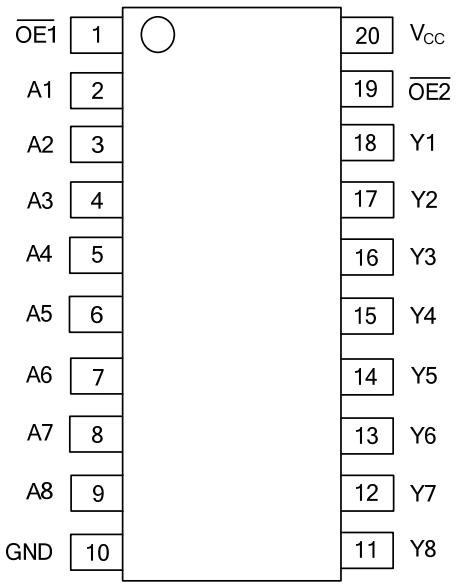
■ PIN CONFIGURATION

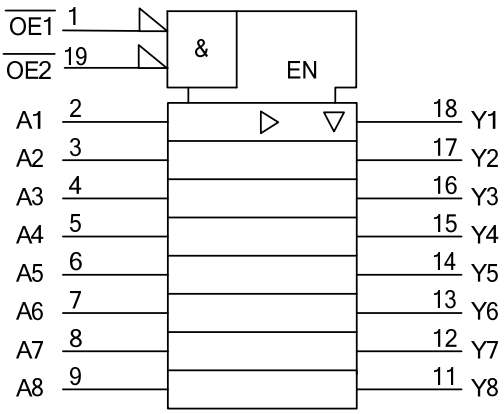


■ FUNCTION TABLE (each gate)

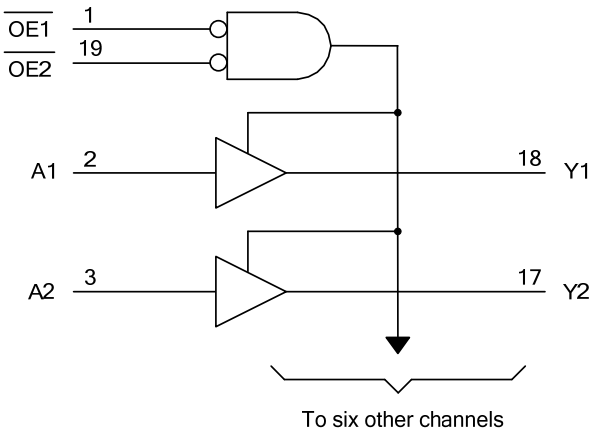
INPUTS($\overline{OE1}$)	INPUTS($\overline{OE2}$)	INPUTS(A)	OUTPUT(Y)
L	L	L	L
L	L	H	H
H	X	X	Z
X	H	X	Z

Note: H: HIGH Voltage Level L: LOW Voltage Level Z: High Impedance X: Don' Care

■ LOGIC SYMBOL



■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ 7	V
Input Voltage	V_{IN}		-0.5 ~ 7	V
V_{CC} or GND Current	I_{CC}		±70	mA
Output Current	I_{OUT}	V_{OUT}= 0 to V_{CC}	±35	mA
Input Clamp Current	I_{IK}	V_{IN} < 0 or V_{IN} > V_{CC}	±20	mA
Output Clamp Current	I_{OK}	V_{OUT} < 0 or V_{OUT} > V_{CC}	±20	mA
Storage 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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOP-20	θ_{JA}	85	°C/W
	TSSOP-20U		110	°C/W

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		4.5	5	5.5	V
High-level Input Voltage	V_{IH}	V_{CC}=4.5V~5.5V	2			V
Low-level Input Voltage	V_{IL}	V_{CC}=4.5V~5.5V			0.8	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input transition Rise or Fall rate	Δt/Δv				500	ns/V
Operating Temperature	T_A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Output Voltage	V_{OH}	V_{CC}=4.5V, V_I=V_{IH} or V_{IL}, I_{OH}=-20μA	4.4	4.499		4.4			V
		V_{CC}=4.5V, V_I=V_{IH} or V_{IL}, I_{OH}=-6mA	3.98			3.7			V
Low-Level Output Voltage	V_{OL}	V_{CC}=4.5V, V_I=V_{IH} or V_{IL}, I_{OL}=20μA		0.001	0.1			0.1	V
		V_{CC}=4.5V, V_I=V_{IH} or V_{IL}, I_{OL}=6mA			0.26			0.4	V
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=5.5V, V_{IN}= V_{CC} or GND			±0.1			±1	μA
3-state Output Off-state Current	I_{OZ}	V_{CC}=5.5V, V_{OUT}= V_{CC} or GND, V_I=V_{IH} or V_{IL}			±0.5			±10	μA
Quiescent Supply Current	I_{CC}	V_{CC}=5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0			8			160	μA
Additional Quiescent Device Current Per Input Pin	ΔI_{CC}	V_{CC}=5.5V, One input at 0.5V or 2.4V Other inputs at V_{CC} or GND			2.4			3	mA

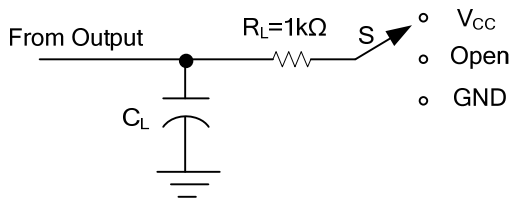
■ SWITCHING CHARACTERISTICS (C_L=15pF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T_A=25°C			T_A=-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (An) to Output (Yn)	t_{PLH}/t_{PHL}	V_{CC}=4.5V			28			42	ns
Propagation Delay From Input $\overline{OE}$ to Output (Yn)	t_{PZL}/t_{PZH}	V_{CC}=4.5V			35			53	ns
Propagation Delay From Input $\overline{OE}$ to Output (Yn)	t_{PLZ}/t_{PHZ}	V_{CC}=4.5V			35			53	ns
Propagation Delay From Input (Y)	t_t	V_{CC}=4.5V			12			18	ns

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

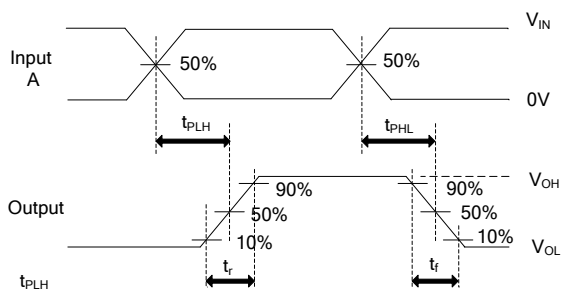
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_I	V_{CC}=4.5V~5.5V			10	pF
Power Dissipation Capacitance Per buffer/driver	C_{PD}	No Load		35		pF

■ TEST CIRCUIT AND WAVEFORMS

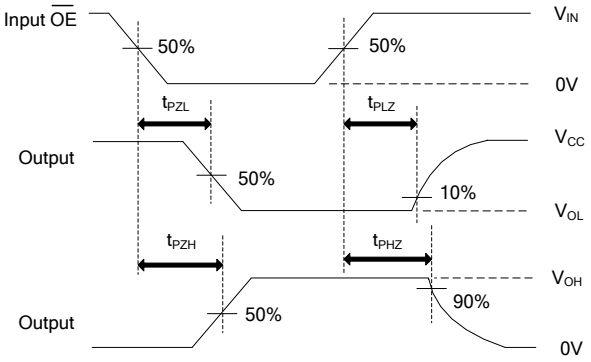


TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{CC}

TEST CIRCUIT



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Notes: 1. C_L includes probe and jig capacitance.
2. All input pulses are supplied by generators having the following characteristics: $P_{RR} \leq$ 1MHz, Z_O = 50Ω, t_r = 6ns, t_f = 6ns.

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