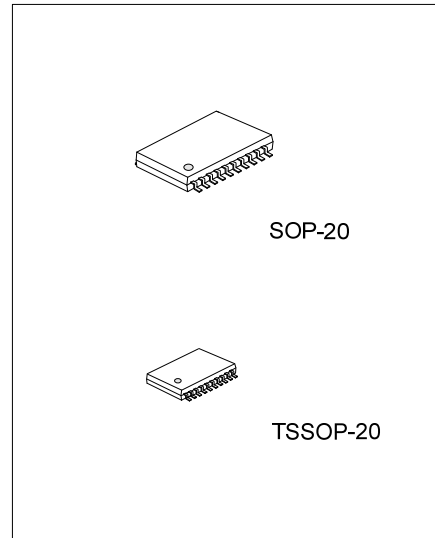




U74HC563

CMOS IC

OCTAL TRANSPARENT D-TYPE LATCHES WITH 3-STATE OUTPUTS



DESCRIPTION

The UTC **74HC563** are octal D-type transparent latches featuring separated D-type inputs for each latch and inverting 3-state outputs for bus-oriented applications.

FEATURES

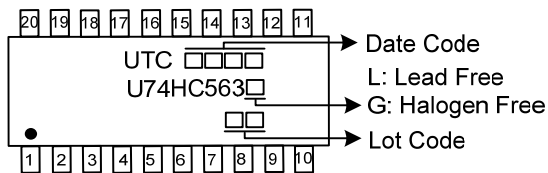
- * Operation Voltage Range: 2~6V
- * 3-state Inverting Outputs for Bus-oriented Applications
- * Common 3-state Output Enable Input

ORDERING INFORMATION

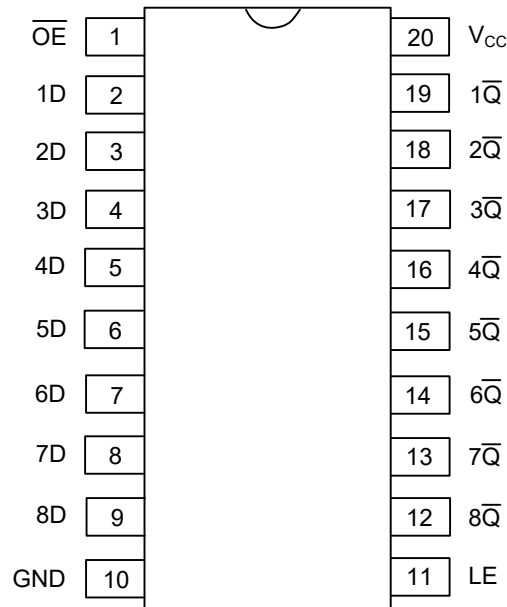
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74HC563L-S20-R	U74HC563G-S20-R	SOP-20	Tape Reel
U74HC563L-P20-R	U74HC563G-P20-R	TSSOP-20	Tape Reel

<p>U74HC563G-S20-R</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) S20: SOP-20, P20: TSSOP-20 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



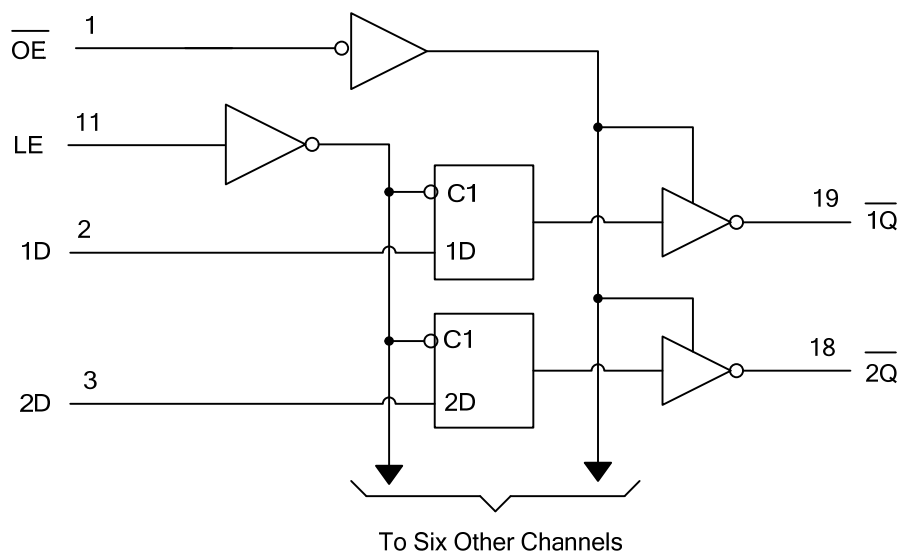
■ PIN CONFIGURATION



■ FUNCTION TABLE

INPUTS(\overline{OE})	INPUTS(LE)	INPUTS(D)	OUTPUT(\overline{Q})
L	H	H	L
L	H	L	H
L	L	X	\overline{Q}_0
H	X	X	Z

■ LOGIC DIAGRAM



■ ABSOLUTE MAXIMUM RATING (Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	-0.5~7.0	V
Input Voltage	V_{IN}	-0.5~ $V_{CC}+0.5$	V
Output Voltage(active mode)	V_{OUT}	-0.5~ $V_{CC}+0.5$	V
Input Clamp Current ($V_{IN}<0$)	I_{IK}	±20	mA
Output Clamp Current ($V_{OUT}<0$)	I_{OK}	±20	mA
Output Current	I_{OUT}	±35	mA
V_{CC} or GND Current	I_{CC}	±70	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.

■ RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	6	V
Input Voltage	V_{IN}		0		V_{CC}	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Input Transition Rise or Fall Rate	t_R	$V_{CC}=2V$			1000	ns
		$V_{CC}=4.5V$			500	ns
		$V_{CC}=6V$			400	ns
Operating Temperature	T_A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-level input voltage	V_{IH}	$V_{CC}=2V$	1.5			V
		$V_{CC}=4.5V$	3.15			V
		$V_{CC}=6V$	4.2			V
Low-lever output voltage	V_{IL}	$V_{CC}=2V$			0.5	V
		$V_{CC}=4.5V$			1.35	V
		$V_{CC}=6V$			1.8	V
High-Level Output Voltage	V_{OH}	$V_{CC}=2V, I_{OH}=-20\mu A$	1.9	1.998		V
		$V_{CC}=4.5V, I_{OH}=-20\mu A$	4.4	4.499		V
		$V_{CC}=6V, I_{OH}=-20\mu A$	5.9	5.999		V
		$V_{CC}=4.5V, I_{OH}=-6mA$	3.98	4.3		V
		$V_{CC}=6V, I_{OH}=-7.8mA$	5.48	5.8		V
Low-Level Output Voltage	V_{OL}	$V_{CC}=2V, I_{OL}=20\mu A$		0.002	0.1	V
		$V_{CC}=4.5V, I_{OL}=20\mu A$		0.001	0.1	V
		$V_{CC}=6V, I_{OL}=20\mu A$		0.001	0.1	V
		$V_{CC}=4.5V, I_{OL}=6mA$		0.17	0.26	V
		$V_{CC}=6V, I_{OL}=7.8mA$		0.15	0.26	V
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND		±0.1	±100	nA
Output OFF -state current	I_{OZ}	$V_{CC}=6V, V_{OUT}=V_{CC}$ or GND		±0.01	±0.5	μA
Quiescent Supply Current	I_Q	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			8	μA
Input Capacitance	C_{IN}	$V_{CC}=6V, V_{IN}=V_{CC}$ or GND		3	10	pF

■ TIMING REQUIREMENTS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Pulse Duration, LE High	t_w	$V_{CC}=2V$	80			ns
		$V_{CC}=4.5V$	16			ns
		$V_{CC}=6V$	14			ns
Setup Time, Data Before LE↓	t_{SU}	$V_{CC}=2V$	50			ns
		$V_{CC}=4.5V$	10			ns
		$V_{CC}=6V$	9			ns
Hold Time, Data After LE↓	t_H	$V_{CC}=2V$	5			ns
		$V_{CC}=4.5V$	5			ns
		$V_{CC}=6V$	5			ns

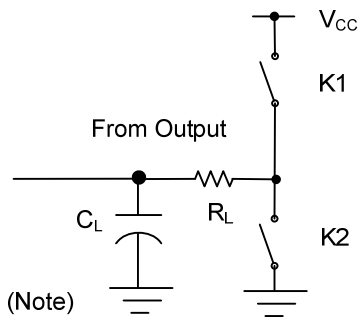
■ DYNAMIC CHARACTERISTICS ($R_L=1k\Omega$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (D) to output (\bar{Q})	t_{PD} (t_{PLH}/t_{PHL})	$C_L=50pF$	$V_{CC}=2V$	77	175	ns
			$V_{CC}=4.5V$	26	35	ns
			$V_{CC}=6V$	23	30	ns
		$C_L=150pF$	$V_{CC}=2V$	95	200	ns
			$V_{CC}=4.5V$	33	40	ns
			$V_{CC}=6V$	29	34	ns
Propagation delay from input (LE) to output (\bar{Q})	t_{PD} (t_{PLH}/t_{PHL})	$C_L=50pF$	$V_{CC}=2V$	90	175	ns
			$V_{CC}=4.5V$	27	35	ns
			$V_{CC}=6V$	23	30	ns
		$C_L=150pF$	$V_{CC}=2V$	103	225	ns
			$V_{CC}=4.5V$	33	45	ns
			$V_{CC}=6V$	29	38	ns
3-state output enable time from input (\overline{OE}) to output (\bar{Q})	t_{EN} (t_{PZL}/t_{PZH})	$C_L=50pF$	$V_{CC}=2V$	70	150	ns
			$V_{CC}=4.5V$	24	30	ns
			$V_{CC}=6V$	21	26	ns
		$C_L=150pF$	$V_{CC}=2V$	85	200	ns
			$V_{CC}=4.5V$	29	40	ns
			$V_{CC}=6V$	26	34	ns
3-state output disable time from input (\overline{OE}) to output (\bar{Q})	t_{DIS} (t_{PLZ}/t_{PHZ})	$C_L=50pF$	$V_{CC}=2V$	47	150	ns
			$V_{CC}=4.5V$	23	30	ns
			$V_{CC}=6V$	21	26	ns
Output transition time, (\bar{Q})	t_T (t_R/t_F)	$C_L=50pF$	$V_{CC}=2V$	28	60	ns
			$V_{CC}=4.5V$	8	12	ns
			$V_{CC}=6V$	6	10	ns
		$C_L=150pF$	$V_{CC}=2V$	60	210	ns
			$V_{CC}=4.5V$	17	42	ns
			$V_{CC}=6V$	14	36	ns

■ OPERATING CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Power Dissipation Capacitance	C_{PD}	No load	50	pF

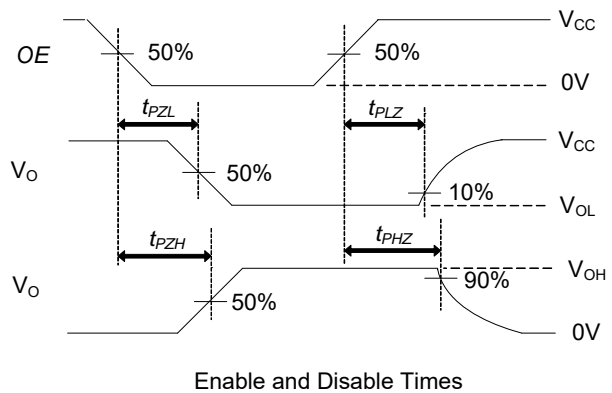
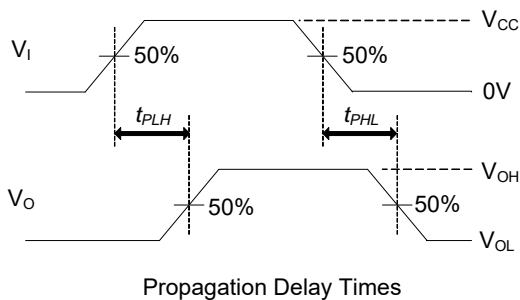
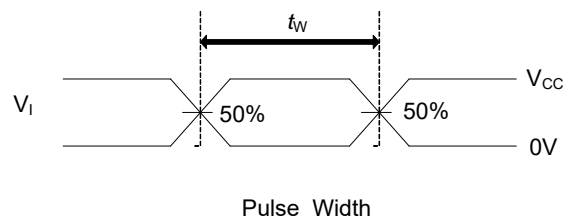
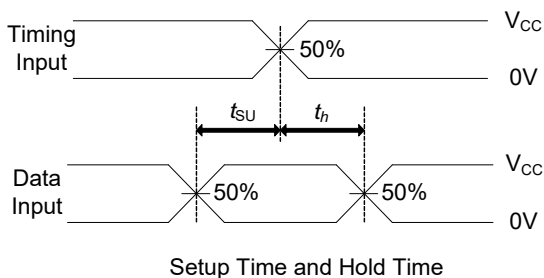
TEST CIRCUIT AND WAVEFORMS



TEST	K1	K2
t_{PLH}/t_{PHL}	Open	Open
t_{PHZ}/t_{PZH}	Open	Close
t_{PLZ}/t_{PZL}	Close	Open

Note: C_L includes probe and jig capacitance.

$$PRR \leq 1\text{MHz}, Z_o = 50\Omega, t_r \leq 6\text{ns}, t_f \leq 6\text{ns}$$



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