



UCD4043B

Preliminary

CMOS IC

CMOS QUAD 3-STATE NOR R/S LATCHES

DESCRIPTION

UTC **UCD4043B** types are quad cross-coupled 3-state CMOS NOR latches. Each latch has a separate Q output and individual SET and RESET inputs. The Q outputs are controlled by a common ENABLE input. A logic high on the ENABLE input connects the latch states to the Q outputs. A logic low on the ENABLE input disconnects the latch states from the Q outputs, resulting in an open circuit condition on the Q outputs. The open circuit feature allows common bussing of the outputs.

FEATURES

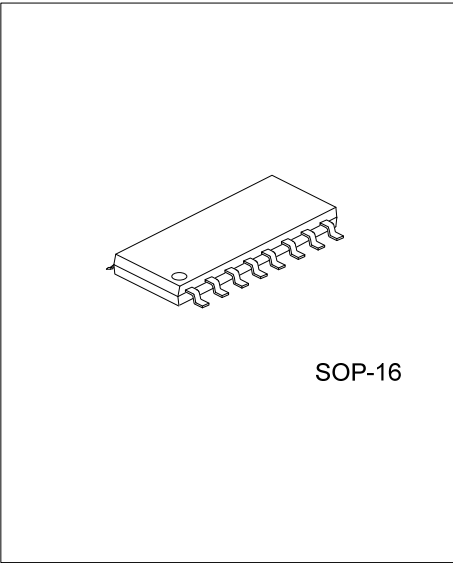
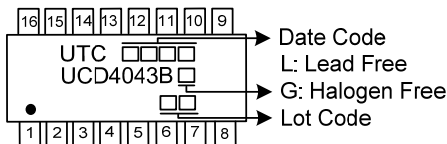
- * 3-state outputs with common output ENABLE
- * Separate SET and RESET inputs for each latch
- * NOR configurations
- * 5V, 10V_r and 15V parametric ratings
- * Standardized symmetrical output characteristics
- * Maximum input current of 1uA at 18V over full package temperature range; 100nA at 18V and 25°C

ORDERING INFORMATION

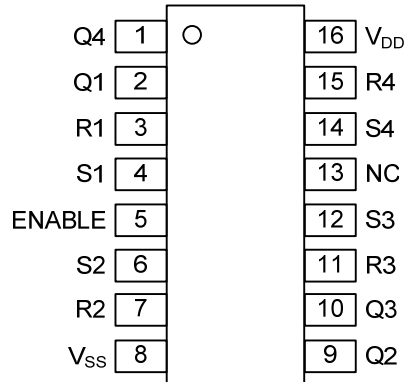
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UCD4043BL-S16-R	UCD4043BG-S16-R	SOP-16	Tape Reel

<p>UCD4043BG-S16-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S16: SOP-16</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ PIN CONFIGURATION

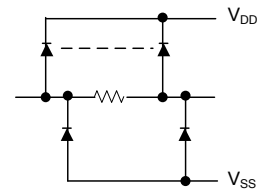
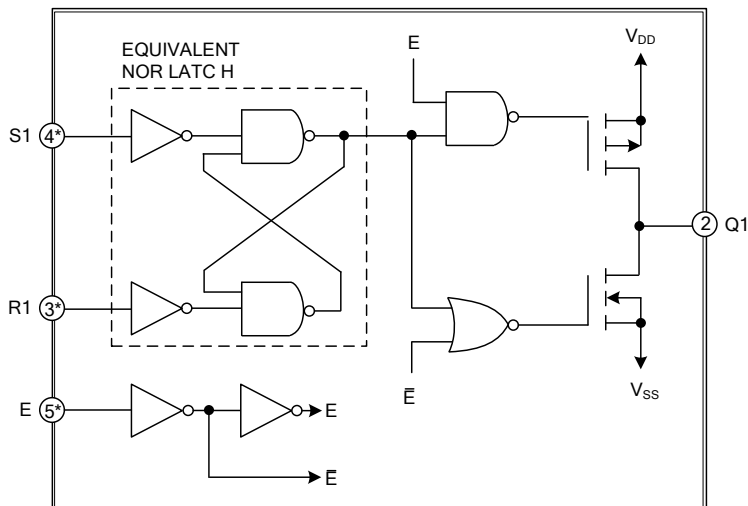
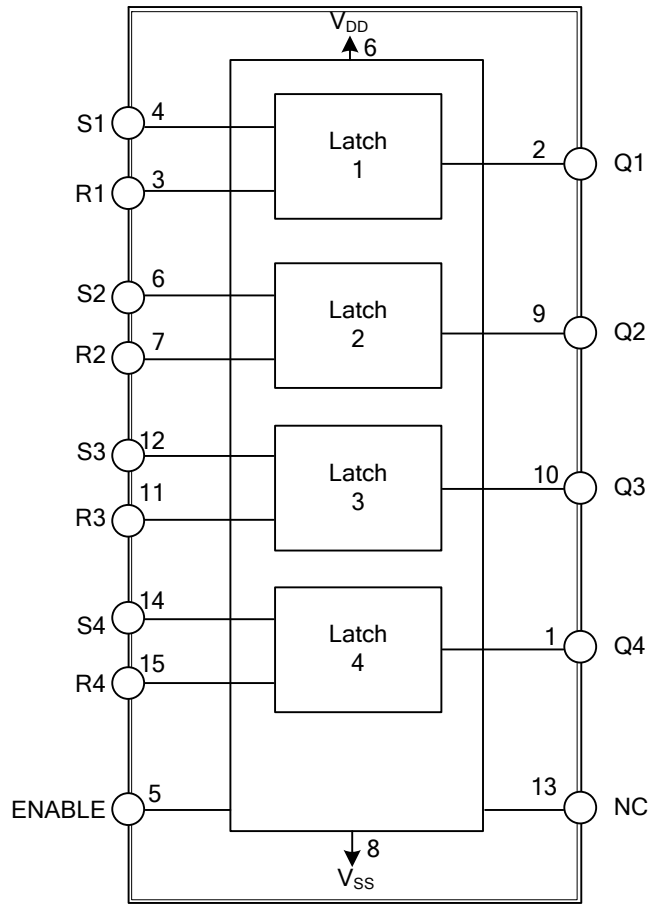


■ FUNCTION TABLE

S	R	ENABLE	Q
X	X	L	Hi-Z
L	L	H	Q ₀
H	L	H	H
L	H	H	L
H	H	H	H

Note: H: HIGH voltage level; L: LOW voltage level, X=Don't care, Q₀=No change

■ BLOCK DIAGRAM



* All inputs protected by CMOS input protected network

■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
DC Supply-Voltage Range Voltages Referenced to V_{SS} Terminal	V_{DD}	-0.5 ~ +18	V
Input or Output Voltage Range	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
Storage Temperature Range	T_{STG}	-55 ~ +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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Low Voltage	V_{IL}	$V_{DD}=5V$, $V_O=0.5V$ or $4.5V$			1.5	V
		$V_{DD}=10V$, $V_O=1.0V$ or $9.0V$			3	V
		$V_{DD}=15V$, $V_O=1.5V$ or $13.5V$			4	V
Input High Voltage	V_{IH}	$V_{DD}=5V$, $V_O=0.5V$ or $4.5V$	3.5			V
		$V_{DD}=10V$, $V_O=1.0V$ or $9.0V$	7			V
		$V_{DD}=15V$, $V_O=1.5V$ or $13.5V$	11			V
Output Voltage Low-Level	V_{OL}	$V_{DD}=5V$, $V_{IN}=0$ or V_{DD}		0	0.05	V
		$V_{DD}=10V$, $V_{IN}=0$ or V_{DD}		0	0.05	V
		$V_{DD}=15V$, $V_{IN}=0$ or V_{DD}		0	0.05	V
Output Voltage High-Level	V_{OH}	$V_{DD}=5V$, $V_{IN}=0$ or V_{DD}	4.95	5		V
		$V_{DD}=10V$, $V_{IN}=0$ or V_{DD}	9.95	10		V
		$V_{DD}=15V$, $V_{IN}=0$ or V_{DD}	14.95	15		V
Output Low (Sink) 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
Output High (Source) Current	I_{OH}	$V_{DD}=5V$, $V_{OUT}=2.5V$	-1.6	-3.2		V
		$V_{DD}=5V$, $V_{OUT}=4.6V$	-0.51	-1		V
		$V_{DD}=10V$, $V_{OUT}=9.5V$	-1.3	-2.6		V
		$V_{DD}=15V$, $V_{OUT}=13.5V$	-3.4	-6.8		V
Input Current	I_{IN}	$V_{IN}=0V$, $V_{DD}=18V$			±0.1	μA
Quiescent Device Current	I_{DD}	$V_{DD}=5V$			1	μA
		$V_{DD}=10V$			2	μA
		$V_{DD}=15V$			4	μA
		$V_{DD}=20V$			20	μA
3-State Output Leakage Current	I_{OUT}	$V_{IN}=0V, 15V$, $V_{OUT}=0V, 15V$, $V_{DD}=15V$			±3	μA

■ SWITCHING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time From SET or RESET to Q	t_{PHL} / t_{PLH}	$V_{DD}=5V$		70	300	ns
		$V_{DD}=10V$		45	140	ns
		$V_{DD}=15V$		35	100	ns
3-State Propagation Delay Time From ENABLE to Q	t_{PHZ} / t_{PZH}	$V_{DD}=5V$		55	230	ns
		$V_{DD}=10V$		30	110	ns
		$V_{DD}=15V$		25	80	ns
	t_{PLZ} / t_{PZL}	$V_{DD}=5V$		40	180	ns
		$V_{DD}=10V$		25	100	ns
		$V_{DD}=15V$		20	70	ns
Transition Time	t_{THL} / t_{TLH}	$V_{DD}=5V$		60	200	ns
		$V_{DD}=10V$		45	100	ns
		$V_{DD}=15V$		40	80	ns
SET or RESET Pulse Width	t_w	$V_{DD}=5V$		80		ns
		$V_{DD}=10V$		40		ns
		$V_{DD}=15V$		20		ns

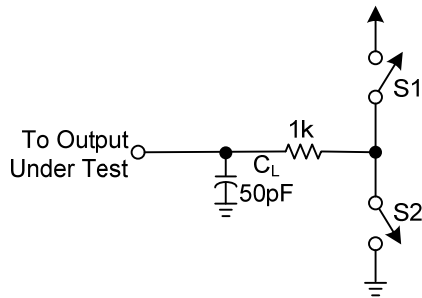
Notes: 1. The formulas give are for the typical characteristics only at 25°C.

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

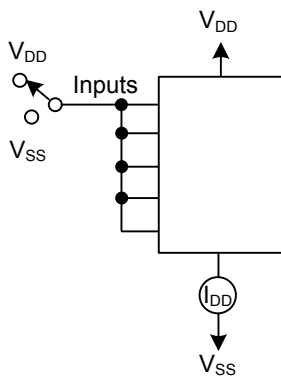
■ OPERATING CHARACTERISTICS ($T_A=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance (Any Input)	C_{IN}			5		pF

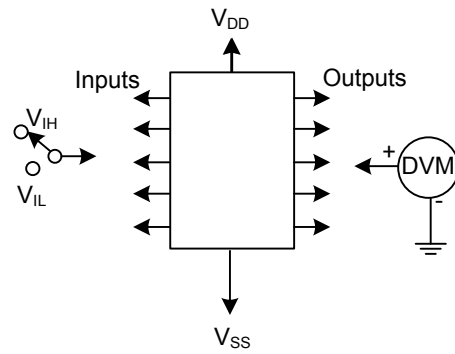
■ TEST CIRCUITS



Test	Enable	S1	S2	Q	S	R
t_{PHZ}		Open	Closed	A	V_{DD}	V_{SS}
t_{PLZ}		Closed	Open	B	V_{SS}	V_{DD}
t_{PZH}		Open	Closed	A	V_{DD}	V_{SS}
t_{PZL}		Closed	Open	B	V_{SS}	V_{DD}

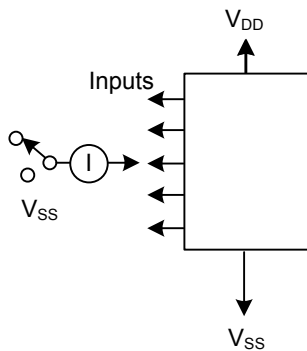


Quiescent device current



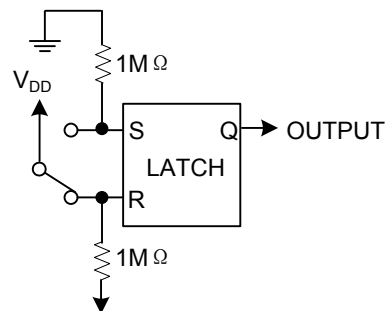
Note: Test any combination of inputs

Input Voltage



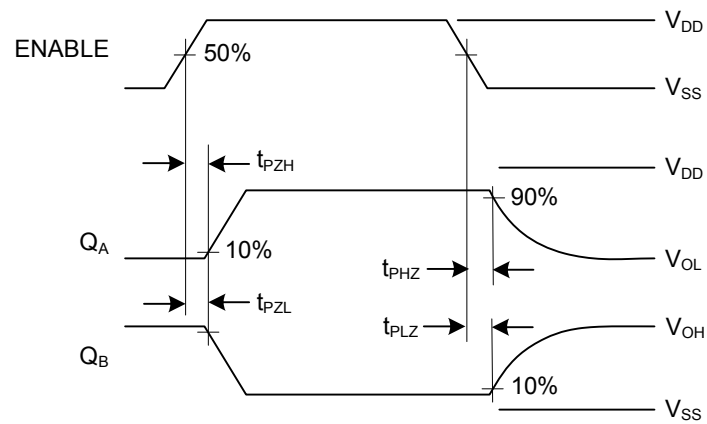
Input Current

Note: Measure inputs sequentially, to both V_{DD} and V_{SS} connect all unused inputs to either V_{DD} or V_{SS} .



Switch Bounce Eliminator

■ TEST CIRCUITS (Cont)



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