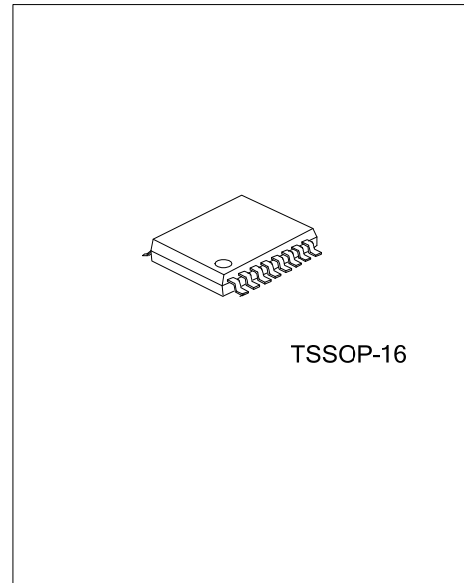


**U74AVC4T774****CMOS IC****4-BIT DUAL-SUPPLY BUS
TRANSCEIVER WITH
CONFIGURABLE
VOLTAGE-LEVEL SHIFTING
AND 3-STATE OUTPUTS WITH
INDEPENDENT DIRECTION
CONTROL INPUTS****■ DESCRIPTION**

The **U74AVC4T774** is a 4-bit noninverting bus transceiver uses two separate configurable power-supply rails. The A port is designed to track V_{CCA} . V_{CCA} accepts any supply voltage from 1.1V to 3.6V. The B port is designed to track V_{CCB} . V_{CCB} accepts any supply voltage from 1.1 to 3.6V. The control pins (DIR1, DIR2, DIR3, DIR4, and OE) are supplied by V_{CCA} . The data transmits from A port to B port when DIR is high, the data transmits from B port to A port when DIR is low.

The device is fully specified for partial power-down applications using I_{OFF} . The I_{OFF} circuitry disables the output, preventing any damaging backflow current through the device when it is powered down.

■ FEATURES

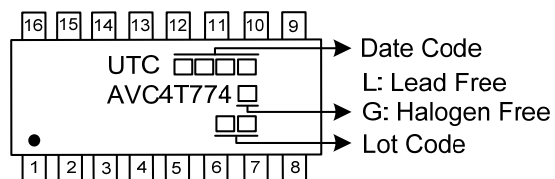
- * Each channel has an independent DIR control input
- * Control inputs V_{IH}/V_{IL} levels are referenced to V_{CCA} voltage
- * Fully configurable dual-rail design allows each port to operate over the full 1.1V to 3.6V power-supply range
- * Partial-power-down mode operation

■ ORDERING INFORMATION

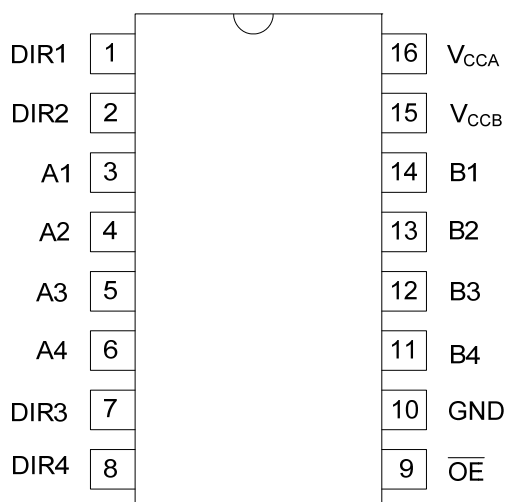
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AVC4T774L-P16-R	U74AVC4T774G-P16-R	TSSOP-16	Tape Reel

U74AVC4T774G-P16-R	
(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) P16: TSSOP-16
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



PIN CONFIGURATION

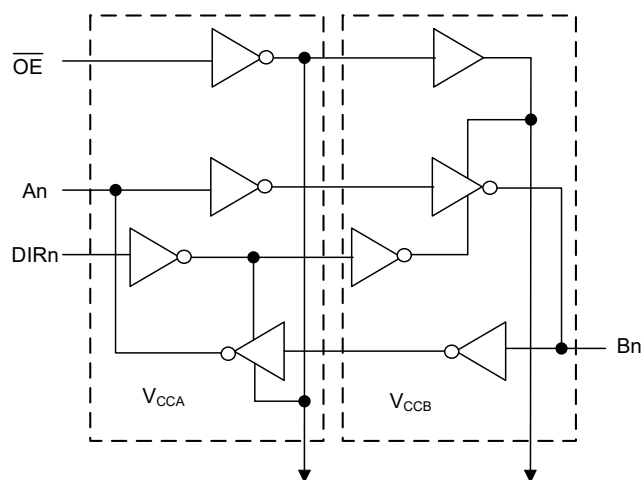
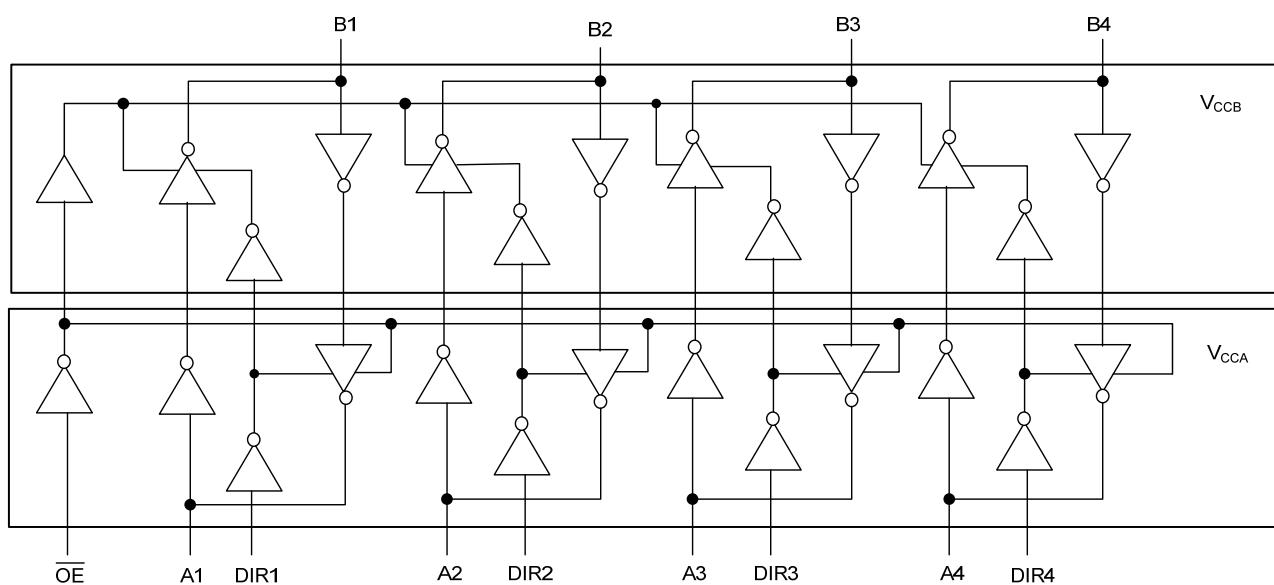


FUNCTION TABLE

CONTROL INPUT		OUTPUT		OPERATION
OE	DIRn	An	Bn	
L	L	Enabled	Z	B Data to A Data
L	H	Z	Enabled	A Data to B Data
H	X	Z	Z	Isolation

Note: H: HIGH voltage level, L: LOW voltage level, X =Don't care, Z = HIGH-Impedance OFF-State

■ LOGIC DIAGRAM



■ **ABSOLUTE MAXIMUM RATING** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage A	V_{CCA}		-0.5 ~ +4.6	V
Supply Voltage B	V_{CCB}		-0.5 ~ +4.6	V
Input Voltage	V_{IN}		-0.5 ~ +4.6	V
Output Voltage	V_{OUT}	Active mode	-0.5 ~ $V_{CC} + 0.5$	V
		Suspend or 3-state mode	-0.5 ~ +4.6	V
Input Clamp Current	I_{IK}	$V_{IN} < 0\text{V}$	-50	mA
Output Clamp Current	I_{OK}	$V_{OUT} < 0\text{V}$	-50	mA
Continuous V_{CC} or GND Current	I_{CC}	I_{CCA} or I_{CCB}	± 100	mA
Continuous Output Current	I_{OUT}	$V_{OUT}=0\text{V}$ to V_{CCO}	± 50	mA
Storage Temperature	T_{STG}		-65 ~ +150	$^{\circ}\text{C}$

Notes: 1. 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.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ **THERMAL DATA**

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	110	$^{\circ}\text{C/W}$

■ **RECOMMENDED OPERATING COMDITIONS**

PARAMETER	SYMBOL	CONDITIONS	MIN	TPY	MAX	UNIT
Supply Voltage A	V_{CCA}		1.1		3.6	V
Supply Voltage B	V_{CCB}		1.1		3.6	V
Input Voltage	V_{IN}		0		3.6	V
Output Voltage	V_{OUT}	Active mode	0		V_{CCO}	V
		Suspend or 3-state mode	0		3.6	V
Input Transition Rise and Fall Rate	$\Delta t / \Delta v$				10	ns/V
Operating Temperature	T_A		-40		+125	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS (Note 1, 2, 3)

PARAMETER		SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =-40~-+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	Data Inputs	V _{IH}	V _{CCI} =1.1V ~ 1.95V	0.65× V _{CCI}			0.65× V _{CCI}			V
			V _{CCI} =1.95V ~ 2.7V	1.6			1.6			V
			V _{CCI} =2.7V ~ 3.6V	2			2			V
	DIR, OE Input		V _{CCA} =1.1V ~ 1.95V	0.65× V _{CCA}			0.65× V _{CCA}			V
			V _{CCA} =1.95V ~ 2.7V	1.6			1.6			V
			V _{CCA} =2.7V ~ 3.6V	2			2			V
Low-Level Input Voltage	Data Inputs	V _{IL}	V _{CCI} =1.1V ~ 1.95V			0.35× V _{CCI}			0.35× V _{CCI}	V
			V _{CCI} =1.95V ~ 2.7V			0.7			0.7	V
			V _{CCI} =2.7V ~ 3.6V			0.8			0.8	V
	DIR, OE Input		V _{CCA} =1.1V ~ 1.95V			0.35× V _{CCA}			0.35× V _{CCA}	V
			V _{CCA} =1.95V ~ 2.7V			0.7			0.7	V
			V _{CCA} =2.7V ~ 3.6V			0.8			0.8	V
High-Level Output Voltage		V _{OH}	V _{CCA} = V _{CCB} =1.1V ~ 3.6V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-100μA	V _{CCO} - 0.1			V _{CCO} - 0.2			V
			V _{CCA} = V _{CCB} =1.2V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-3mA	0.85			0.85			V
			V _{CCA} = V _{CCB} =1.4V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-6mA	1.05			1.05			V
			V _{CCA} = V _{CCB} =1.65V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-8mA	1.2			1.2			V
			V _{CCA} = V _{CCB} =2.3V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-9mA	1.75			1.75			V
			V _{CCA} = V _{CCB} =3.0V, V _{IN} =V _{IH} or V _{IL} , I _{OH} =-12mA	2.3			2.3			V
Low-Level Output Voltage		V _{OL}	V _{CCA} = V _{CCB} =1.1V ~ 3.6V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =100μA			0.1			0.2	V
			V _{CCA} = V _{CCB} =1.2V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =3mA			0.25			0.25	V
			V _{CCA} = V _{CCB} =1.4V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =6mA			0.35			0.35	V
			V _{CCA} = V _{CCB} =1.65V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =8mA			0.45			0.45	V
			V _{CCA} = V _{CCB} =2.3V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =9mA			0.55			0.55	V
			V _{CCA} = V _{CCB} =3.0V, V _{IN} =V _{IH} or V _{IL} , I _{OL} =12mA			0.7			0.7	V

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER		SYMBOL	TEST CONDITIONS	T _A =25°C			T _A =−40~+125°C			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Input Leakage Current	DIR, $\overline{\text{OE}}$ Input	I _{I(LEAK)}	V _{CCA} =V _{CCB} =1.1V~3.6V V _{IN} =0V or 3.6V			±1			±5	μA
Power OFF Leakage Current	A Port	I _{OFF}	V _{CCA} =0V, V _{CCB} =1.1V~3.6V V _{IN} or V _{OUT} =0V~3.6V			±5			±30	μA
	B Port		V _{CCB} =0V, V _{CCA} =1.1V~3.6V V _{IN} or V _{OUT} =0V~3.6V			±5			±30	μA
Output OFF-State Current	A or B Port (Note 3)	I _{OZ}	V _{CCA} =V _{CCB} =3.6V V _O = V _{CCO} or GND, V _I = V _{CCI} or GND, OE = V _{IH}			±5			±30	μA
Quiescent Supply Current	A Port	I _{CCA}	V _{CCA} =1.1V~3.6V V _{CCB} =1.1V~3.6V V _{IN} =0V or V _{CCI} , I _O =0A			8			50	μA
			V _{CCA} =0V~3.6V, V _{CCB} =0V V _{IN} =0V or V _{CCI} , I _O =0A			8			50	μA
			V _{CCA} =0V, V _{CCB} =0V~3.6V V _{IN} =0V or V _{CCI} , I _O =0A	−2		−12			μA	
Quiescent Supply Current	B Port	I _{CCB}	V _{CCA} =1.1V~3.6V V _{CCB} =1.1V~3.6V V _{IN} =0V or V _{CCI} , I _O =0A			8			50	μA
			V _{CCA} =0V~3.6V, V _{CCB} =0V V _{IN} =0V or V _{CCI} , I _O =0A	−2		−12			μA	
			V _{CCA} =0V, V _{CCB} =0V~3.6V V _{IN} =0V or V _{CCI} , I _O =0A			8			50	μA
Quiescent Supply Current		I _{CCA} +I _{CCB}	V _{CCA} =1.1V~3.6V V _{CCB} =1.1V~3.6V V _{IN} =0V or V _{CCI} , I _O =0A			16			65	μA
Input Capacitance	Control Inputs	C _{IN}	V _{CCA} =V _{CCB} =3.3V V _{IN} =0V or 3.3V		2.5				4.5	pF
Input / Output Capacitance	A or B Port	C _{IO}	V _{CCA} =V _{CCB} =3.3V V _{OUT} =3.3V or 0V		5				7	pF

Notes: 1. V_{CCI} is the V_{CC} associated with the input port.

2. V_{CCO} is the V_{CC} associated with the output port.

3. For I/O ports, the parameter I_{OZ} includes the input leakage current.

■ SWITCHING CHARACTERISTICS

(Over recommended operating free-air temperature range, $V_{CCA}=1.2\pm0.1V$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (A) to Output (B)	t_{PLH} t_{PHL}	$V_{CCB}=1.2\pm0.1V$	0.1		20	0.1		25	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		19	0.1		24	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		18	0.1		23	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		15.6	0.1		20.6	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		11.5	0.1		16.5	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH} t_{PHL}	$V_{CCB}=1.2\pm0.1V$	0.1		18	0.1		23	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		17	0.1		22	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		16	0.1		21	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		15	0.1		20	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		14	0.1		19	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2\pm0.1V$	0.1		18	0.1		20	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		18	0.1		20	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		18	0.1		20	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		18	0.1		20	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		18	0.1		20	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2\pm0.1V$	0.1		19	0.1		23	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		17	0.1		21	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		16	0.1		20	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		13.5	0.1		17.5	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		13	0.1		17	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PZH} t_{PZL}	$V_{CCB}=1.2\pm0.1V$	0.1		23	0.1		27	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		23	0.1		27	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		23	0.1		27	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		23	0.1		27	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		23	0.1		27	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PZH} t_{PZL}	$V_{CCB}=1.2\pm0.1V$	0.1		25	0.1		28	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		22	0.1		25	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		18	0.1		21	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		15	0.1		18	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		14	0.1		17	ns

■ SWITCHING CHARACTERISTICS

(Over recommended operating free-air temperature range, $V_{CCA}=1.5\pm0.1V$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (A) to Output (B)	t_{PLH} t_{PHL}	$V_{CCB}=1.2\pm0.1V$	0.1		19	0.1		24	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		18	0.1		23	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		17.2	0.1		22.2	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		14.6	0.1		19.6	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		10.5	0.1		15.5	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH} t_{PHL}	$V_{CCB}=1.2\pm0.1V$	0.1		17.1	0.1		22.1	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		16.1	0.1		21.1	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		15.1	0.1		20	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		13.9	0.1		18.9	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		12.6	0.1		17.6	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2\pm0.1V$	0.1		16	0.1		18	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		16	0.1		18	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		16	0.1		18	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		16	0.1		18	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		16	0.1		18	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2\pm0.1V$	0.1		18	0.1		20	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		16	0.1		18	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		14	0.1		16	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		12	0.1		14	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		11	0.1		13	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PZH} t_{PZL}	$V_{CCB}=1.2\pm0.1V$	0.1		20.5	0.1		23	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		20.5	0.1		23	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		20.5	0.1		23	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		20.5	0.1		23	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		20.5	0.1		23	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PZH} t_{PZL}	$V_{CCB}=1.2\pm0.1V$	0.1		23.7	0.1		26	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		20.5	0.1		23.5	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		16.2	0.1		19	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		13.6	0.1		16.6	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		12.5	0.1		15.5	ns

■ SWITCHING CHARACTERISTICS

(Over recommended operating free-air temperature range, $V_{CCA}=1.8V\pm0.15V$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (A) to Output (B)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		18.2	0.1		23	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		17.4	0.1		22.4	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		16.5	0.1		21.5	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		13.8	0.1		18.8	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		9.6	0.1		14.6	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		16.3	0.1		21.3	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		15.3	0.1		20.3	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		14	0.1		19	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		13	0.1		18	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		11.4	0.1		15	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		14.6	0.1		17	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		14.6	0.1		17	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		14.6	0.1		17	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		14.6	0.1		17	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		14.6	0.1		17	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		17	0.1		19	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		15	0.1		17	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		13	0.1		15	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		10	0.1		12	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		8.5	0.1		10	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		18	0.1		22	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		18	0.1		22	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		18	0.1		22	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		18	0.1		22	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		18	0.1		22	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		20	0.1		23	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		18	0.1		21	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		14.5	0.1		17.5	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		11	0.1		14	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		9.7	0.1		12.5	ns

SWITCHING CHARACTERISTICS (Cont.)

(Over recommended operating free-air temperature range, $V_{CCA}=2.5V\pm0.2V$, unless otherwise specified)

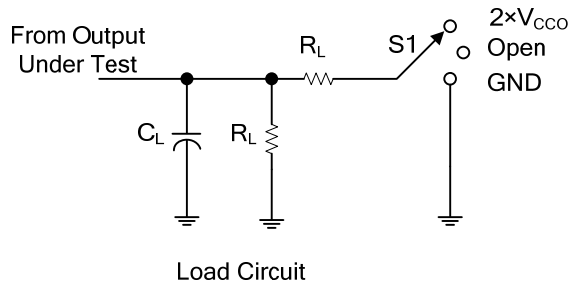
PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (A) to Output (B)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		16.5	0.1		21	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		15.6	0.1		20.6	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		14.6	0.1		19.6	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		11.6	0.1		16	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		7.3	0.1		11.3	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		14.2	0.1		19.2	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		13.2	0.1		18.2	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		12.2	0.1		17	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		10.4	0.1		15.4	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		8.2	0.1		13.2	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		10.7	0.1		12.5	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		10.7	0.1		12.5	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		10.7	0.1		12.5	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		10.7	0.1		12.5	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		10.7	0.1		12.5	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		15	0.1		17	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		13	0.1		15	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		10	0.1		12	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		8	0.1		10	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		7.5	0.1		9	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		11	0.1		14	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		11	0.1		14	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		11	0.1		14	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		11	0.1		14	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		11	0.1		14	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		17	0.1		19	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		15.5	0.1		18	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		12	0.1		15	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		7.8	0.1		10.5	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		6.3	0.1		9.3	ns

■ SWITCHING CHARACTERISTICS (Cont.)

(Over recommended operating free-air temperature range, $V_{CCA}=3.3V\pm0.3V$, unless otherwise specified)

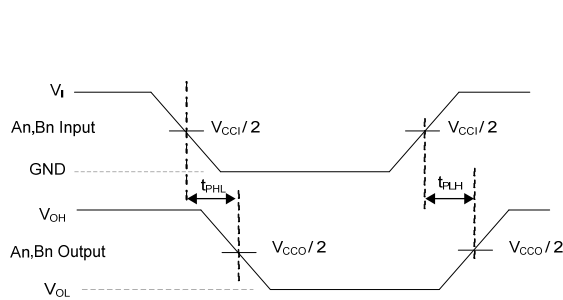
PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$T_A=-40\sim+125^{\circ}C$			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay From Input (A) to Output (B)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		15	0.1		20	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		13.5	0.1		18.5	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		12.3	0.1		17.3	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		8.8	0.1		13.8	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		4.2	0.1		9.2	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH} t_{PHL}	$V_{CCB}=1.2V\pm0.1V$	0.1		11.5	0.1		16.5	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		10.5	0.1		15.5	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		9.5	0.1		14.5	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		7	0.1		12	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		4	0.1		9	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		6	0.1		8	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		6	0.1		8	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		6	0.1		8	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		6	0.1		8	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		6	0.1		8	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PHZ} t_{PLZ}	$V_{CCB}=1.2V\pm0.1V$	0.1		14	0.1		16	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		12	0.1		14	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		9.5	0.1		11	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		7	0.1		9	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		6.5	0.1		8	ns
Propagation Delay From Input ($\overline{OE}$) to Output (A)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		5	0.1		7	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		5	0.1		7	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		5	0.1		7	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		5	0.1		7	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		5	0.1		7	ns
Propagation Delay From Input ($\overline{OE}$) to Output (B)	t_{PZH} t_{PZL}	$V_{CCB}=1.2V\pm0.1V$	0.1		16.5	0.1		18	ns
		$V_{CCB}=1.5V\pm0.1V$	0.1		14.5	0.1		16	ns
		$V_{CCB}=1.8V\pm0.15V$	0.1		11	0.1		14	ns
		$V_{CCB}=2.5V\pm0.2V$	0.1		7	0.1		9	ns
		$V_{CCB}=3.3V\pm0.3V$	0.1		5	0.1		7	ns

TEST CIRCUIT AND WAVEFORMS

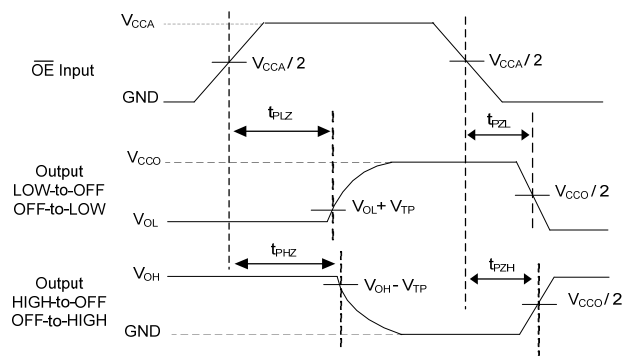


TEST	S1
t_{PD}	Open
t_{PLZ}/t_{PZL}	$2 \times V_{CCO}$
t_{PHZ}/t_{PZH}	GND

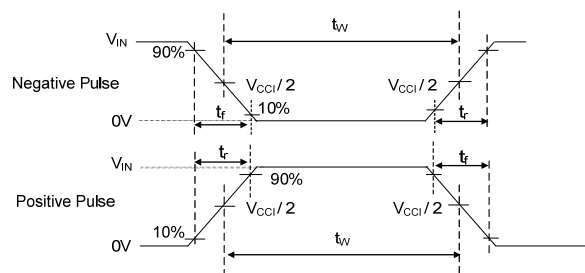
V_{CCO}	C_L	R_L	V_{TP}
1.2V to 0.1V	15pF	2K Ω	0.1
1.55V to 0.1V	15pF	2K Ω	0.1
1.8V $\pm$ 0.15V	15pF	2K Ω	0.15
2.5V $\pm$ 0.2V	15pF	2K Ω	0.15
3.3V $\pm$ 0.3V	15pF	2K Ω	0.3



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES



MEASURING SWITCHING TIMES

Notes: 1. C_L includes probe and jig capacitance.

2. All input pulses are supplied by generators having the following characteristics: $P_{RR} \leq 1\text{MHz}$, $Z_O = 50\Omega$.

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