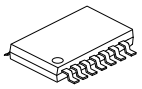
4-BIT DUAL SUPPLY TRANSLATING TRANSCEIVER; OPEN DRAIN; AUTO DIRECTION SENSING



TSSOP-14

■ DESCRIPTION

The UTC **UNTS0304** is a 4-bit, dual supply translating transceiver family with auto direction sensing, that enables bidirectional voltage level translation. It features eight 1-bit input-output ports (A and B), one output enable input (OE) and two supply pins (V_{CCA} and V_{CCB}). V_{CCA} can be supplied at any voltage between 0.95V and 3.6V. V_{CCB} can be supplied at any voltage between 1.65V and 5.5V. This flexibility makes the device suitable for translating between any of the voltage nodes (0.95V, 1.2V, 1.8V, 2.5V, 3.3V and 5.0V). Pins A and OE are referenced to V_{CCA} and pin B is referenced to V_{CCB}. A LOW level at pin OE causes the outputs to assume a high-impedance OFF-state.

■ FEATURES

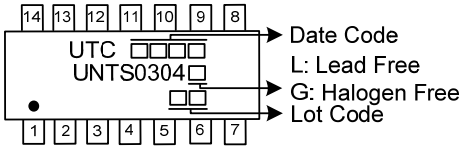
* Wide supply voltage range:
  V_{CCA}: 0.95V to 3.6V
  V_{CCB}: 1.65V to 5.5V
* No power-sequencing required
* Maximum data rate: Open-drain: 2 Mbps; Push-pull: 20 Mbps
* Longer one-shot pulse for driving larger capacitive loads with much reduced ringing and overshoot
* A-side and OE inputs accept voltages up to 3.6V and are 3.6V tolerant
* B-side inputs accept voltages up to 5.5V and are 5.5V tolerant
* Package options: TSSOP14 and WLCSP12
* Specified from -40 °C to +125 °C

■ ORDERING INFORMATION

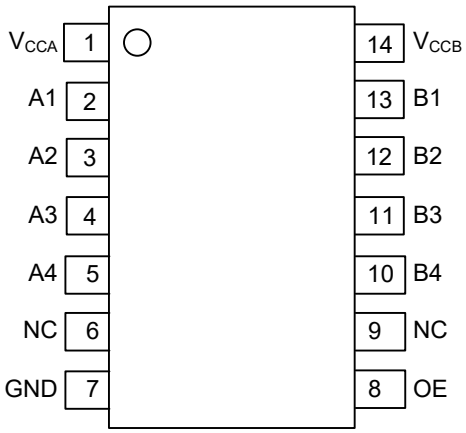
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UNTS0304L-P14-R	UNTS0304G-P14-R	TSSOP-14	Tape Reel

UNTS0304G-P14-R (1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) P14: TSSOP-14 (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION



■ PIN DESCRIPTION

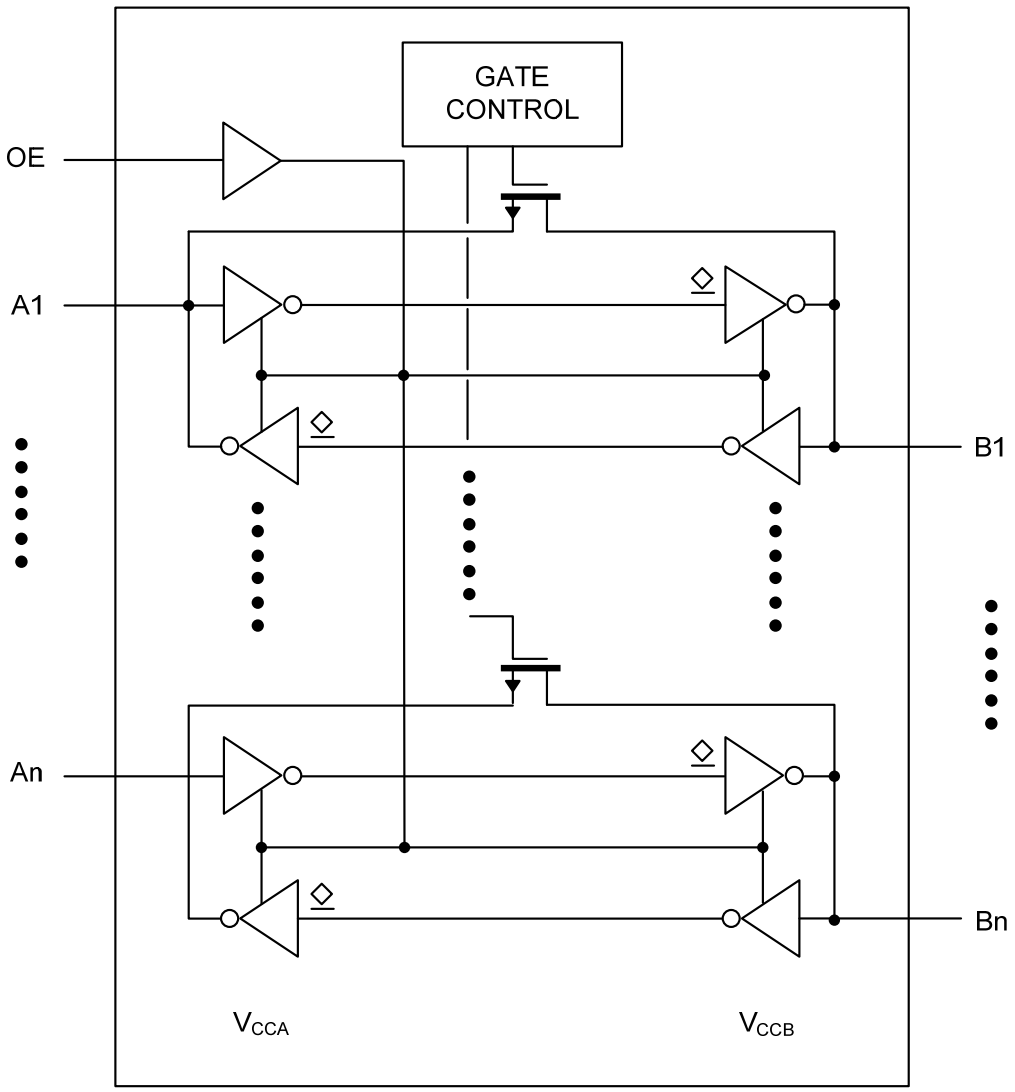
PIN NO.	PIN NAME	DESCRIPTION
1	V_{CCA}	Supply Voltage A
2, 3, 4, 5	A1, A2, A3, A4	Data Input Or Output (Referenced To V_{CCA})
6, 9	NC	Not Connected
7	GND	Ground (0V)
8	OE	Output Enable Input (Active High; Referenced To V_{CCA})
10, 11, 12, 13	B4, B3, B2, B1	Data Input Or Output (Referenced To V_{CCB})
14	V_{CCB}	Supply Voltage B

■ FUNCTIONAL DESCRIPTION (NOTE 1)

Supply Voltage		Input	Input/Output	
V_{CCA}	V_{CCB}	OE	A	B
0.95V to V_{CCB}	1.65V to 5.5V	L	Z	Z
0.95V to V_{CCB}	1.65V to 5.5V	H	Input or Output	Input or Output
GND(Note 2)	GND(Note 2)	X	Z	Z

Notes: 1. H = HIGH voltage level; L = LOW voltage level; X = don't care; Z = high-impedance OFF-state.
2. When either V_{CCA} or V_{CCB} is at GND level, the device goes into power-down mode.

■ FUNCTIONAL DIAGRAM



■ ABSOLUTE MAXIMUM RATING

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground=0V).

PARAMETER		SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage A		V_{CCA}		-0.5 ~ 4.6	V
Supply Voltage B		V_{CCB}		-0.5 ~ 6.5	V
Input Voltage		V_I	A Port and OE Input (Note 1, 2)	-0.5 ~ 6.5	V
			B Port (Note 1, 2)	-0.5 ~ 6.5	V
Output Voltage	A or B Port	V_O	Active Mode (Note 1, 2)	-0.5 ~ V_{CCO}+0.5	V
	A Port		Power-Down or 3-State Mode (Note 1)	-0.5 ~ 4.6	V
	B Port			-0.5 ~ 6.5	V
Input Clamp Current		I_{IK}	V_I<0V	-50	mA
Output Clamp Current		I_{OK}	V_O<0V	-50	mA
Output Current		I_O	V_O =0 V to V_{CCO} (Note 2)	±50	mA
Supply Current		I_{CC}	I_{CCA} or I_{CCB}	±100	mA
Ground Current		I_{GND}		-100	mA
Storage Temperature Range		T_{STG}		-65 ~ +150	°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 minimum input and minimum output voltage ratings may be exceeded if the input and output current ratings are observed.
3. V_{CCO} is the supply voltage associated with the output.

■ RECOMMENDED OPERATING CONDITIONS (Note 1, 2)

PARAMETER		SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage A		V_{CCA}	(Note 2)	0.95		3.6	V
Supply Voltage B		V_{CCB}		1.65		5.5	V
En Input Voltage		V_{I_EN}		-0.3		V_{CCA}+0.3	V
Ambient Temperature		T_{Amb}		-40		+125	°C
Input Transition Rise or Fall Rate	A or B Port Push-Pull Driving	Δt/Δv	V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V (Note 2)			10	ns/V
	OE Input		V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V			10	ns/V
Operating Temperature		T_A		-40		+125	°C

Notes: 1. The A and B sides of an unused I/O pair must be held in the same state, both at V_{CCI} or both at GND.
2. V_{CCA} must be less than or equal to V_{CCB}.

■ ELECTRICAL CHARACTERISTICS

PARAMETER		SYMBOL	TEST CONDITIONS		T_A=25°C			T_A=-40°C ~+125°C			UNIT
					MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Input Voltage	A Port	V_{IH}	V_{CCA}=0.95V to 1.65V V_{CCB}=1.65V to 5.5V (Note1)		V_{CCI} -0.2			V_{CCI} - 0.2			V
			V_{CCA}=1.65V to 3.6V V_{CCB}=2.3V to 5.5V (Note1)		V_{CCI} -0.35			V_{CCI} -0.35			V
	B Port		V_{CCA}=0.95Vto3.6V V_{CCB}=1.65Vto5.5V (Note1)		V_{CCI} -0.35			V_{CCI} -0.35			V
	OE Input		V_{CCA}=0.95Vto3.6V V_{CCB}=1.65Vto5.5V		0.65× V_{CCA}			0.65× V_{CCA}			V
Low-Level Input Voltage	A Port	V_{IL}	V_{CCA}=0.95V to 1.65V V_{CCB}=1.65V to 5.5V (Note1)				0.13			0.13	V
			V_{CCA}=1.65V to 3.6V V_{CCB}=2.3V to 5.5V (Note1)				0.15			0.15	V
	OE Input		V_{CCA}=0.95Vto3.6V V_{CCB}=1.65Vto5.5V				0.3× V_{CCA}			0.3× V_{CCA}	V
High-Level Output Voltage		V_{OHA}	I_O=-20μA	V_{CCB}=1.65V to 5.5V V_{CCI}=V_{CCB}-0.4V (Note 2)							V
				V_{CCA}=1.65V to 3.6V (Note 2)	0.8× V_{CCA}			0.75× V_{CCA}			V
				V_{CCA}=0.95V to 1.65V (Note 2)	0.65× V_{CCA}			0.62× V_{CCA}			V
			I_O=-20μA	V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V V_{CCI}=V_{CCA}-0.2V (Note 2)	0.8× V_{CCB}			0.75× V_{CCB}			V
Low-Level Output Voltage	A or B Port	V_{OL}	I_O=1mA (Note2)	V_I≤0.15V, V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V			0.3			0.3	V
Input leakage Current	OE Input	I_I	V_I=0V to 3.6V V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V				±2			±12	μA
OFF-State Output Current	A or B Port	I_{OZ}	V_O=0V or V_{CCO} V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V (Note2)				±2			±12	μA

■ ELECTRICAL CHARACTERISTICS (Cont.)

PARAMETER		SYMBOL	TEST CONDITIONS		T_A=-25°C			T_A=-40°C ~+125°C			UNIT
					MIN	TYP	MAX	MIN	TYP	MAX	
Supply Current	I_{CCA}	I_{CC}	V_I=0V or V_{CCI}, I_O=0A (Note1)	V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V			2.4			15	μA
				V_{CCA}=3.6V; V_{CCB}=0V			2.2			15	μA
				V_{CCA}=0V; V_{CCB}=5.5V			-1			-8	μA
	I_{CCB}			V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V			18			51	μA
				V_{CCA}=3.6V V_{CCB}=0V			-1			-5	μA
				V_{CCA}=0V, V_{CCB}=5.5V			18			46	μA
	I_{CCA}+I_{CCB}			V_{CCA}=0.95V to 3.6V V_{CCB}=1.65V to 5.5V			14.4			59	μA

Notes: 1. V_{CCI} is the supply voltage associated with the input .
2. V_{CCO} is the supply voltage associated with the output.

■ SWITCHING CHARACTERISTICS (T_A=-40°C ~+125°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay From Input (A) to Output (B)	t_{PHL}	V_{CCA}=0.95V	V_{CCB}=1.8V			20	ns
			V_{CCB}=3.3V			11.1	ns
			V_{CCB}=5V			12.3	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			5.8	ns
			V_{CCB}=3.3V			5.9	ns
			V_{CCB}=5V			7.3	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			4.0	ns
			V_{CCB}=3.3V			4.2	ns
			V_{CCB}=5V			4.3	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			3.0	ns
			V_{CCB}=5V			3.9	ns
Propagation Delay From Input (A) to Output (B)	t_{PLH}	V_{CCA}=0.95V	V_{CCB}=1.8V			14.8	ns
			V_{CCB}=3.3V			12.5	ns
			V_{CCB}=5V			12.2	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			8.5	ns
			V_{CCB}=3.3V			8.5	ns
			V_{CCB}=5V			8.8	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			4.4	ns
			V_{CCB}=3.3V			5.2	ns
			V_{CCB}=5V			5.5	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			5.3	ns
			V_{CCB}=5V			5.5	ns

■ SWITCHING CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay From Input (B) to Output (A)	t_{PHL}	V_{CCA}=0.95V	V_{CCB}=1.8V			9.2	ns
			V_{CCB}=3.3V			5.2	ns
			V_{CCB}=5V			5.2	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			5.5	ns
			V_{CCB}=3.3V			5.7	ns
			V_{CCB}=5V			5.9	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			3.8	ns
			V_{CCB}=3.3V			4.5	ns
			V_{CCB}=5V			5.4	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			3.2	ns
			V_{CCB}=5V			4.2	ns
Propagation Delay From Input (B) to Output (A)	t_{PLH}	V_{CCA}=0.95V	V_{CCB}=1.8V			8.8	ns
			V_{CCB}=3.3V			2.9	ns
			V_{CCB}=5V			1.4	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			6.7	ns
			V_{CCB}=3.3V			5.7	ns
			V_{CCB}=5V			1.4	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			3.2	ns
			V_{CCB}=3.3V			2.0	ns
			V_{CCB}=5V			1.5	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			3.2	ns
			V_{CCB}=5V			3.3	ns
Enable Time From Input (OE) to Output (A or B)	t_{en}	V_{CCA}=0.95V	V_{CCB}=1.8V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
Disable Time From Input (OE) to Output (A) No External Load (Note 2)	t_{dis}	V_{CCA}=0.95V	V_{CCB}=1.8V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns

■ SWITCHING CHARACTERISTICS (Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Disable Time From Input (OE) to Output (B) No External Load (Note 2)	t_{dis}	V_{CCA}=0.95V	V_{CCB}=1.8V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			100	ns
			V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			100	ns
			V_{CCB}=5V			100	ns
Disable Time From Input (OE) to Output (A)	t_{dis}	V_{CCA}=0.95V	V_{CCB}=1.8V			250	ns
			V_{CCB}=3.3V			250	ns
			V_{CCB}=5V			250	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			250	ns
			V_{CCB}=3.3V			250	ns
			V_{CCB}=5V			250	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			280	ns
			V_{CCB}=5V			280	ns
Disable Time From Input (OE) to Output (B)	t_{dis}	V_{CCA}=0.95V	V_{CCB}=1.8V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=1.8V	V_{CCB}=2.5V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=2.5V	V_{CCB}=2.5V			220	ns
			V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns
		V_{CCA}=3.3V	V_{CCB}=3.3V			220	ns
			V_{CCB}=5V			220	ns

■ SWITCHING CHARACTERISTICS (Cont.)

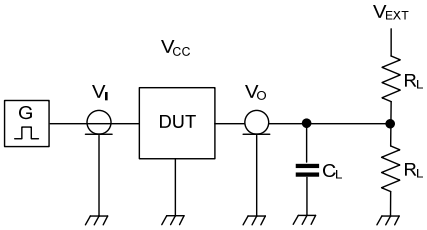
PARAMETER		SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay	A Port	t_{TLH}	V_{CCA}=0.95V	V_{CCB}=1.8V	6.0		15.3	ns
				V_{CCB}=3.3V	2.2		15.1	ns
				V_{CCB}=5V	1.8		11.1	ns
			V_{CCA}=1.8V	V_{CCB}=2.5V	3.2		11.9	ns
				V_{CCB}=3.3V	1.2		11.7	ns
				V_{CCB}=5V	1.1		9.5	ns
			V_{CCA}=2.5V	V_{CCB}=2.5V	2.8		10	ns
				V_{CCB}=3.3V	1.4		8.3	ns
				V_{CCB}=5V	1.2		7.8	ns
			V_{CCA}=3.3V	V_{CCB}=3.3V	1.2		13.1	ns
				V_{CCB}=5V	1.1		7.4	ns
	B Port		V_{CCA}=0.95V	V_{CCB}=1.8V	6.0		17	ns
				V_{CCB}=3.3V	4.0		14	ns
				V_{CCB}=5V	4.0		20	ns
			V_{CCA}=1.8V	V_{CCB}=2.5V	3.3		13.5	ns
				V_{CCB}=3.3V	2.7		14.5	ns
				V_{CCB}=5V	2.7		13.5	ns
			V_{CCA}=2.5V	V_{CCB}=2.5V	3.2		10.4	ns
				V_{CCB}=3.3V	2.9		15.5	ns
				V_{CCB}=5V	2.4		16.9	ns
			V_{CCA}=3.3V	V_{CCB}=3.3V	2.5		14.2	ns
				V_{CCB}=5V	2.1		16	ns
Propagation Delay	A Port	t_{THL}	V_{CCA}=0.95V	V_{CCB}=1.8V	0.9		18	ns
				V_{CCB}=3.3V	0.7		9.0	ns
				V_{CCB}=5V	0.6		9.0	ns
			V_{CCA}=1.8V	V_{CCB}=2.5V	1.2		7.4	ns
				V_{CCB}=3.3V	1.0		7.5	ns
				V_{CCB}=5V	1.0		16.7	ns
			V_{CCA}=2.5V	V_{CCB}=2.5V	1.0		7.2	ns
				V_{CCB}=3.3V	1.0		6.9	ns
				V_{CCB}=5V	1.0		6.7	ns
			V_{CCA}=3.3V	V_{CCB}=3.3V	1.0		6.8	ns
				V_{CCB}=5V	1.0		6.3	ns
	B Port		V_{CCA}=0.95V	V_{CCB}=1.8V	1.6		22	ns
				V_{CCB}=3.3V	2.8		10.7	ns
				V_{CCB}=5V	3.2		14.2	ns
			V_{CCA}=1.8V	V_{CCB}=2.5V	2.6		9.5	ns
				V_{CCB}=3.3V	2.2		9.4	ns
				V_{CCB}=5V	2.8		12.5	ns
			V_{CCA}=2.5V	V_{CCB}=2.5V	2.2		9.8	ns
				V_{CCB}=3.3V	2.4		8.4	ns
				V_{CCB}=5V	2.6		8.3	ns
			V_{CCA}=3.3V	V_{CCB}=3.3V	2.3		9.3	ns
				V_{CCB}=5V	2.4		9.5	ns

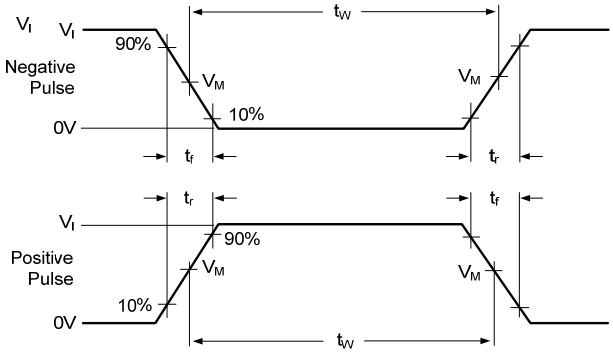
■ SWITCHING CHARACTERISTICS (Cont.)

PARAMETER		SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Pulse Duration	Data Inputs	t_W	V_{CCA}=0.95V	V_{CCB}=1.8V	49			ns
				V_{CCB}=3.3V	49			ns
				V_{CCB}=5V	49			ns
			V_{CCA}=1.8V	V_{CCB}=2.5V	49			ns
				V_{CCB}=3.3V	49			ns
				V_{CCB}=5V	49			ns
			V_{CCA}=2.5V	V_{CCB}=2.5V	49			ns
				V_{CCB}=3.3V	49			ns
				V_{CCB}=5V	49			ns
			V_{CCA}=3.3V	V_{CCB}=3.3V	49			ns
				V_{CCB}=5V	49			ns
Data Rate (Note 3)		f_{data}	V_{CCA}=0.95V	V_{CCB}=1.8V			20	Mbps
				V_{CCB}=3.3V			20	Mbps
				V_{CCB}=5V			20	Mbps
			V_{CCA}=1.8V	V_{CCB}=2.5V			20	Mbps
				V_{CCB}=3.3V			20	Mbps
				V_{CCB}=5V			20	Mbps
			V_{CCA}=2.5V	V_{CCB}=2.5V			20	Mbps
				V_{CCB}=3.3V			20	Mbps
				V_{CCB}=5V			20	Mbps
			V_{CCA}=3.3V	V_{CCB}=3.3V			20	Mbps
				V_{CCB}=5V			20	Mbps

Notes: 1. t_{en} is the same as t_{PZL} and t_{PZH}.
t_{dis} is the same as t_{PLZ} and t_{PHZ}.
2. Delay between OE going LOW and when the outputs are disabled.
3. Assuming a maximum one-shot accelerator pulse length of 50ns and equal time for 1 and 0 bit information.

■ TEST CIRCUIT AND WAVEFORMS





Notes: 1. All input pulses are supplied by generators having the following characteristics: PRR ≤ 10 MHz; ZO = 50 Ω; dV/dt ≥ 1.0 V/ns.
2. t_{en} is the same as t_{PZL} and t_{PZH}.
t_{dis} is the same as t_{PLZ} and t_{PHZ}.
3. V_{CCI} is the supply voltage associated with the input.
4. V_{CCO} is the supply voltage associated with the input.

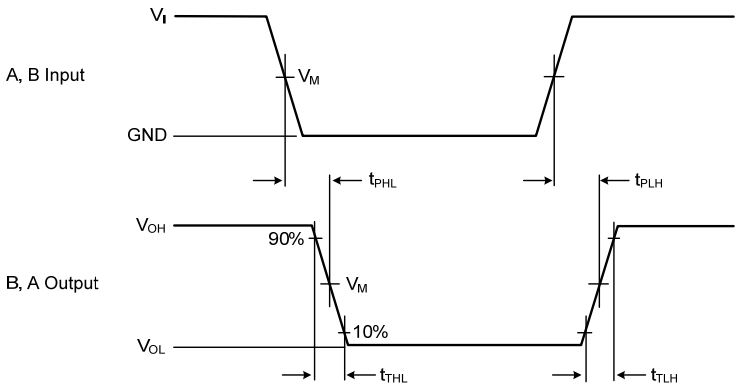
Figure 1. Test circuit for measuring switching times

Table 1. TEST DATA

Supply Voltage		Input		LOAD		V_{EXT}		
V_{CCA}	V_{CCB}	$V_{I(Note1)}$	$\Delta t/\Delta v$	C_L	$R_{L(Note2)}$	t_{PLH}, t_{PHL}	t_{PZH}, t_{PHZ}	t_{PZL}, $t_{PLZ(Note3)}$
0.95V to 3.6 V	1.65V to 5.5 V	V_{CCI}	≤1.0 ns/V	15pF	50kΩ 1MΩ	OPEN	OPEN	$2V_{CCO}$

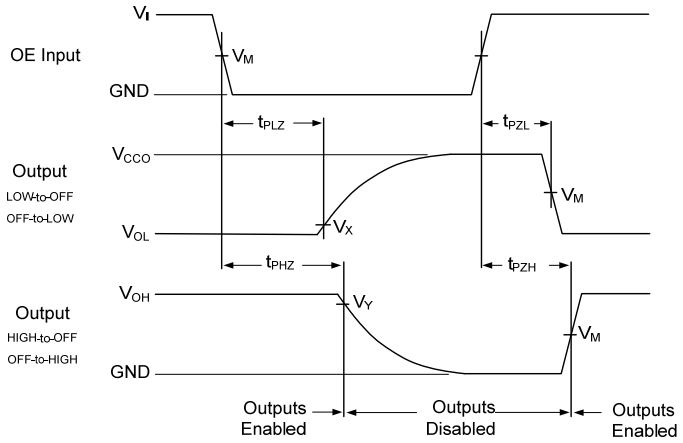
Notes: 1. V_{CCI} is the supply voltage associated with the input.
2. For measuring data rate, pulse width, propagation delay and output rise and fall measurements, R_L=1MΩ. For measuring enable and disable times, R_L = 50 KΩ.
3. V_{CCO} is the supply voltage associated with the output.

■ TEST CIRCUIT AND WAVEFORMS



Note: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Figure 2. The data input (A, B) to data output (B, A) propagation delay times



Note: V_{OL} and V_{OH} are typical output voltage levels that occur with the output load.

Figure 3. Enable and disable times

Table 2. Measurement points (Note 1, 2)

Supply Voltage	Input	Output		
V_{CCO}	V_M	V_M	V_X	V_Y
0.95V	$0.5V_{CCI}$	$0.5V_{CCO}$	V_{OL} + 0.1 V	V_{OH} - 0.1 V
1.8 V ± 0.15 V	$0.5V_{CCI}$	$0.5V_{CCO}$	V_{OL} + 0.15 V	V_{OH} - 0.15 V
2.5 V ± 0.2 V	$0.5V_{CCI}$	$0.5V_{CCO}$	V_{OL} + 0.15 V	V_{OH} - 0.15 V
3.3 V ± 0.3 V	$0.5V_{CCI}$	$0.5V_{CCO}$	V_{OL} + 0.3 V	V_{OH} - 0.3 V
5.0 V ± 0.5 V	$0.5V_{CCI}$	$0.5V_{CCO}$	V_{OL} + 0.3 V	V_{OH} - 0.3 V

Notes: 1. V_{CCI} is the supply voltage associated with the input.
2. V_{CCO} is the supply voltage associated with the output.

■ APPLICATION INFORMATION

Applications

Voltage level-translation applications. The **UTC UNTS0304** can be used in point-to-point applications to interface between devices or systems operating at different supply voltages. The device is primarily targeted at I^2C or 4-wire which use open-drain drivers. It may also be used in applications where push-pull drivers are connected to the ports, however the **UTC UNTS0304X** or the newer lower voltage **UTC UNTS0304X** series of devices are more suitable.

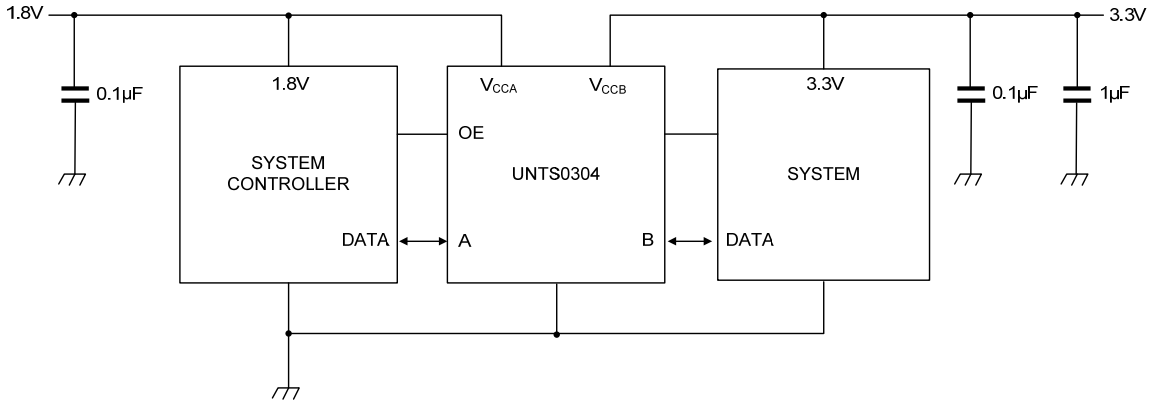


Figure 4. Typical operating circuit

Architecture

The architecture of the **UTC UNTS0304** is shown in Figure 4. The device does not require an extra input signal to control the direction of data flow from A to B or B to A.

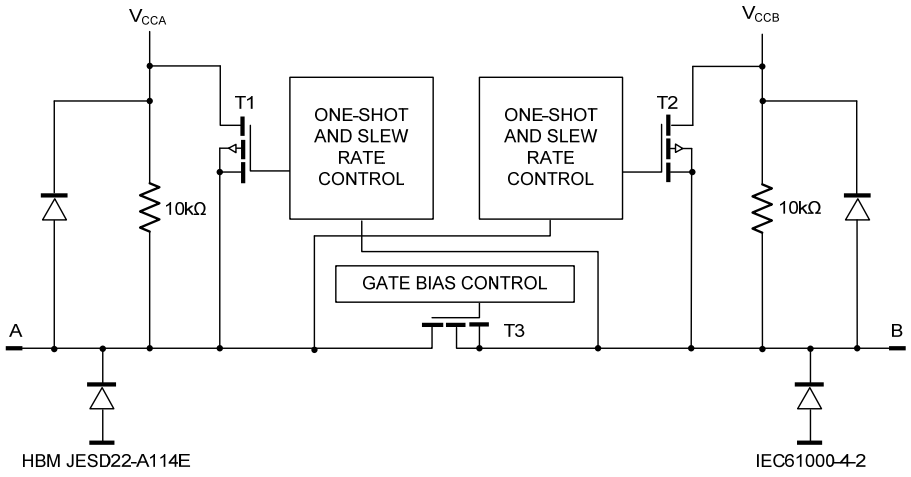


Figure 5. Architecture of NTS0304E I/O cell