CMOS Digital Integrated Circuits Silicon Monolithic

74AVC4T345FT

1. Functional Description

- 3-Bit+1-Bit Dual-Supply Bus Transceiver with Configurable Power Supply

2. General

The 74AVC4T345FT is a dual power supply type high-speed CMOS 3-bit + 1-bit bus transceiver that enables interfacing between two systems with power supply voltages from 0.7 V to 3.6 V.

The two supply voltages can be user-configurable within the operating range and the sequence of supply voltage ON/OFF can be freely set.

The Enable input $\overline{OE}$ is H level, both A-bus and B-bus become floating state (high-impedance). When the transmission direction switching input DIR is set to "H", bus A becomes an input and bus B becomes an output, and when set to "L", bus A becomes an output and bus B becomes an input. The input (DIR and $\overline{OE}$) has a tolerant function that allows input of up to 3.6 V regardless of the supply voltage. When either power supply is at the GND level, the bus terminals are placed in a high impedance mode and a voltage of up to 3.6 V is allowed to be applied.

This function enables application to partial power-down interfaces.

All inputs are equipped with protection circuits to protect the devices from electrostatic discharge damage.

3. Features

(1) Wide operating temperature range: T_{opr} = -40 to 125 °C

(2) Wide supply voltage value: V_{CCA} = 0.7 to 3.6 V, V_{CCB} = 0.7 to 3.6 V (Note1)

(3) Bidirectional interface

(4) High-speed operation: t_{pd} = 3.6 ns (max) (V_{CCA} = 3.3 ± 0.3 V, V_{CCB} = 3.3 ± 0.3 V)

(5) Output current: $|I_{OH}|/I_{OL}$ = ± 12 mA (min) (V_{CC} = 3.0 V)
$|I_{OH}|/I_{OL}$ = ± 9 mA (min) (V_{CC} = 2.3 V)
$|I_{OH}|/I_{OL}$ = ± 6 mA (min) (V_{CC} = 1.65 V)
$|I_{OH}|/I_{OL}$ = ± 4 mA (min) (V_{CC} = 1.4 V)
$|I_{OH}|/I_{OL}$ = ± 2 mA (min) (V_{CC} = 1.1 V)
$|I_{OH}|/I_{OL}$ = ± 0.5 mA (min) (V_{CC} = 0.85 V)
$|I_{OH}|/I_{OL}$ = ± 0.2 mA (min) (V_{CC} = 0.76 V)
$|I_{OH}|/I_{OL}$ = ± 0.05 mA (min) (V_{CC} = 0.7 V)

(6) Small package: TSSOP16B

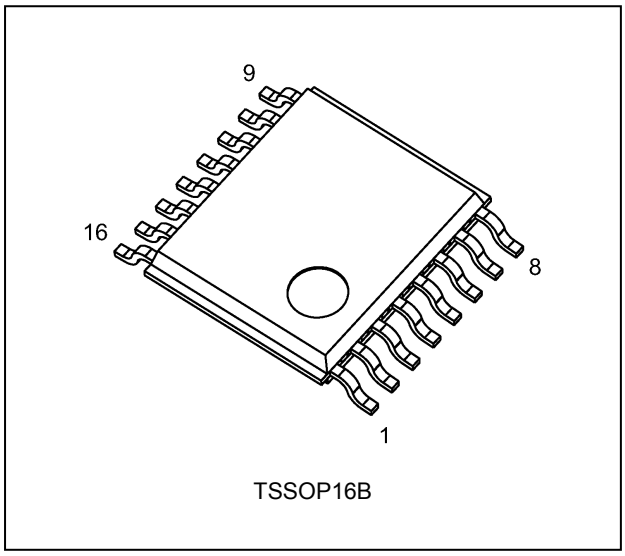
(7) Low power dissipation: Suitable for battery-driven applications such as PDAs and cellular phones.

(8) 3.6 V tolerance and power-down protection are provided to all inputs and outputs.

Note1: The operating voltage range of 0.7 V to 3.6 V applies to products manufactured after September 2025.

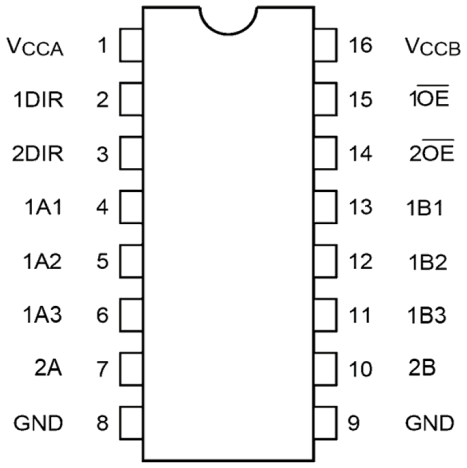
Start of commercial production
2024-09

4. Packaging



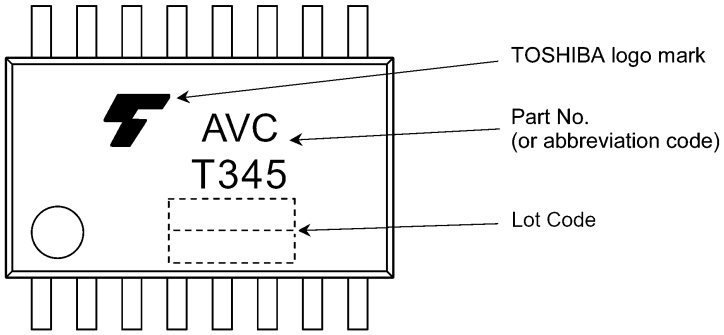
TSSOP16B

5. Pin Assignment

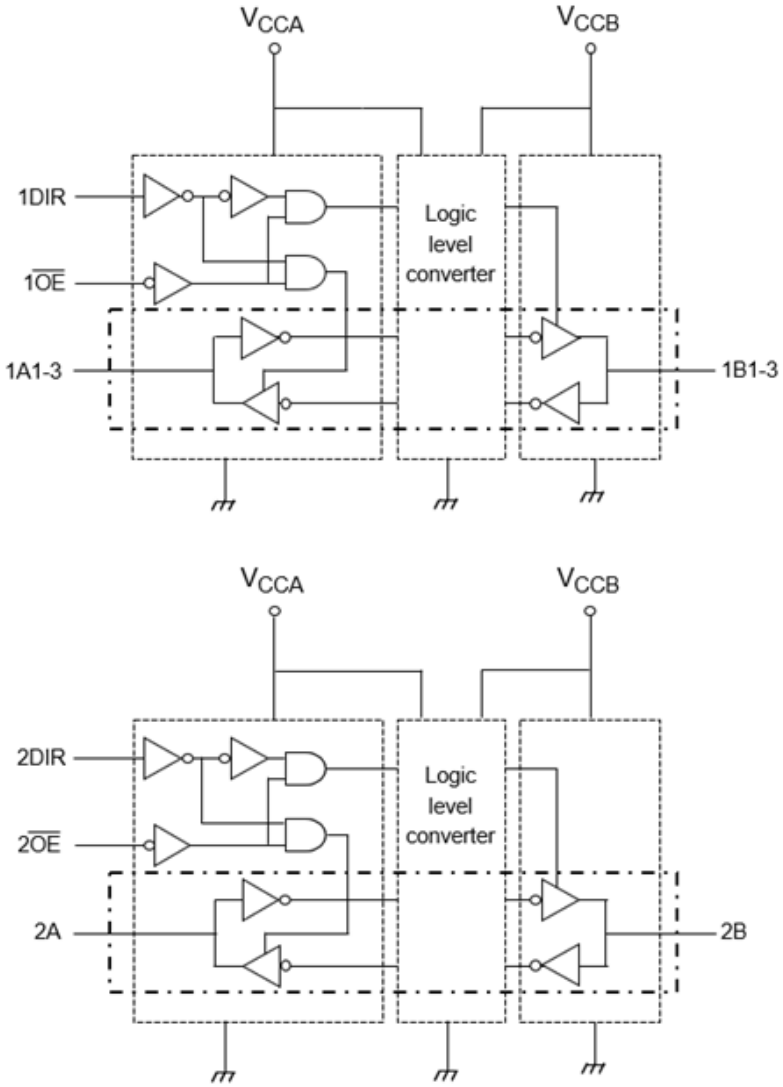


(top view)

6. Marking



7. Block Diagram



8. Truth Table

Supply voltage V_{CCA}	Supply voltage V_{CCB}	Input $\overline{nOE}$	Input nDIR	Input/Output Bus nA	Input/Output Bus nB	Function
0.7 to 3.6 V	0.7 to 3.6 V	L	L	Output	Input	A = B
0.7 to 3.6 V	0.7 to 3.6 V	L	H	Input	Output	B = A
0.7 to 3.6 V	0.7 to 3.6 V	H	X	Z	Z	Z
GND	0.7 to 3.6 V	X	X	Z	Z	Z
0.7 to 3.6 V	GND	X	X	Z	Z	Z
GND	GND	X	X	Z	Z	Z

X: Don't care
Z: High impedance

9. Absolute Maximum Ratings (Note)

Characteristics	Symbol	Note	Rating	Unit
Supply voltage	V_{CCA}		-0.5 to 4.6	V
	V_{CCB}		-0.5 to 4.6	
Input voltage (nDIR, $n\overline{OE}$)	V_{IN}		-0.5 to 4.6	V
Bus I/O voltage	$V_{I/OA}$	(Note 1)	-0.5 to 4.6	V
		(Note 2)	-0.5 to V_{CCA} + 0.5	
	$V_{I/OB}$	(Note 1)	-0.5 to 4.6	
		(Note 2)	-0.5 to V_{CCB} + 0.5	
Input diode current	I_{IK}		-50	mA
I/O diode current	$I_{I/OK}$	(Note 3)	-50	mA
Output current	I_{OUTA}		±50	mA
	I_{OUTB}		±50	
V_{CC}/ground current per supply pin	I_{CCA}		100	mA
	I_{CCB}		100	
Power dissipation	P_D	(Note 4)	180	mW
Storage temperature	T_{stg}		-65 to 150	°C

Note: Exceeding any of the absolute maximum ratings, even briefly, lead to deterioration in IC performance or even destruction.
Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Input state or high impedance state.

Note 2: Output state. I_{OUT} absolute maximum rating must be observed.

Note 3: V_{OUT} < GND

Note 4: 180 mW in the range of T_a = -40 to 85 °C. From T_a = 85 to 125 °C a derating factor of -3.25 mW/°C shall be applied until 50 mW.

10. Operating Ranges (Note)

Characteristics	Symbol	Note	Test Condition	Rating	Unit
Supply voltage	V_{CCA}		—	0.7 to 3.6	V
	V_{CCB}		—	0.7 to 3.6	
Input voltage(nDIR, $n\overline{OE}$)	V_{IN}		—	0 to 3.6	V
Bus I/O voltage	$V_{I/OA}$	(Note 1)	—	0 to 3.6	V
		(Note 2)	—	0 to V_{CCA}	
	$V_{I/OB}$	(Note 1)	—	0 to 3.6	
		(Note 2)	—	0 to V_{CCB}	
Output current	I_{OUTA}		V_{CCA} = 3.0 to 3.6 V	±12	mA
			V_{CCA} = 2.3 to 2.7 V	±9	
			V_{CCA} = 1.65 to 1.95 V	±6	
			V_{CCA} = 1.4 to 1.6 V	±4	
			V_{CCA} = 1.1 to 1.3 V	±2	
			V_{CCA} = 0.85 to 0.95 V	±0.5	
			V_{CCA} = 0.76 to 0.84 V	±0.2	
			V_{CCA} = 0.7 V	±0.05	
	I_{OUTB}		V_{CCB} = 3.0 to 3.6 V	±12	
			V_{CCB} = 2.3 to 2.7 V	±9	
			V_{CCB} = 1.65 to 1.95 V	±6	
			V_{CCB} = 1.4 to 1.6 V	±4	
			V_{CCB} = 1.1 to 1.3 V	±2	
			V_{CCA} = 0.85 to 0.95 V	±0.5	
			V_{CCA} = 0.76 to 0.84 V	±0.2	
			V_{CCA} = 0.7 V	±0.05	
Operating temperature	T_{opr}		—	-40 to 125	°C
Input rise and fall times	dt/dv	(Note 3)	V_{CC} = 0.7 V	0 to 20	ns/V
			V_{CC} = 0.76 to 1.6 V	0 to 20	
			V_{CC} = 1.65 to 1.95 V	0 to 20	
			V_{CC} = 2.3 to 2.7 V	0 to 20	
			V_{CC} = 3.0 to 3.6 V	0 to 10	

Note: The operating ranges must be maintained to ensure the normal operation of the device.
Unused inputs and bus inputs must be tied to either V_{CC} or GND.

Note 1: Input state or high impedance state.

Note 2: Output state. I_{OUT} absolute maximum rating must be observed.

Note 3: V_{CC} = V_{CCA}, V_{CCB}

11. Electrical Characteristics

11.1. DC Characteristics (Unless otherwise specified, T_a = -40 to 85 °C)

Characteristics	Symbol	Test Condition		V_{CCA} (V)	V_{CCB} (V)	Min	Max	Unit
High-level input voltage	V_{IHA}	nA, nDIR, $n\overline{OE}$		0.7	0.7 to 3.6	V_{CCA} × 0.80	—	V
				0.8 to 1.95	0.7 to 3.6	V_{CCA} × 0.70	—	
				2.3 to 2.7	0.7 to 3.6	1.6	—	
				3.0 to 3.6	0.7 to 3.6	2.0	—	
	V_{IHB}	nB		0.7 to 3.6	0.7	V_{CCB} × 0.80	—	
				0.7 to 3.6	0.8 to 1.95	V_{CCB} × 0.70	—	
				0.7 to 3.6	2.3 to 2.7	1.6	—	
				0.7 to 3.6	3.0 to 3.6	2.0	—	
Low-level input voltage	V_{ILA}	nA, nDIR, $n\overline{OE}$		0.7	0.7 to 3.6	—	V_{CCA} × 0.20	V
				0.8 to 1.95	0.7 to 3.6	—	V_{CCA} × 0.30	
				2.3 to 2.7	0.7 to 3.6	—	0.7	
				3.0 to 3.6	0.7 to 3.6	—	0.9	
	V_{ILB}	nB		0.7 to 3.6	0.7	—	V_{CCB} × 0.20	
				0.7 to 3.6	0.8 to 1.95	—	V_{CCB} × 0.30	
				0.7 to 3.6	2.3 to 2.7	—	0.7	
				0.7 to 3.6	3.0 to 3.6	—	0.9	
High-level output voltage	V_{OH}	nA, nB Output H	I_{OH} = -0.1 mA	0.7 to 3.6	0.7 to 3.6	V_{CCO} -0.1	—	V
			I_{OH} = -0.2 mA	0.76	0.76	0.58	—	
			I_{OH} = -0.5 mA	0.85	0.85	0.65	—	
			I_{OH} = -2 mA	1.1	1.1	0.85	—	
			I_{OH} = -4 mA	1.4	1.4	1.05	—	
			I_{OH} = -6 mA	1.65	1.65	1.2	—	
			I_{OH} = -9 mA	2.3	2.3	1.75	—	
			I_{OH} = -12 mA	3.0	3.0	2.3	—	
Low-level output voltage	V_{OL}	nA, nB Output L	I_{OL} = 0.1 mA	0.7 to 3.6	0.7 to 3.6	—	0.1	V
			I_{OL} = 0.2 mA	0.76	0.76	—	0.18	
			I_{OL} = 0.5 mA	0.85	0.85	—	0.2	
			I_{OL} = 2 mA	1.1	1.1	—	0.25	
			I_{OL} = 4 mA	1.4	1.4	—	0.35	
			I_{OL} = 6 mA	1.65	1.65	—	0.45	
			I_{OL} = 9 mA	2.3	2.3	—	0.55	
			I_{OL} = 12 mA	3.0	3.0	—	0.7	

Characteristics	Symbol	Note	Test Condition	V_{CCA} (V)	V_{CCB} (V)	Min	Max	Unit
3-state output OFF-state leakage current	I_{OZA}	(Note 1)	Function OFF State, V_{IOA} = 0 V or 3.6 V	0.7 to 3.6	0.7 to 3.6	—	±5	μA
	I_{OZB}	(Note 1)	Function OFF State, V_{IOB} = 0 V or 3.6 V	0.7 to 3.6	0.7 to 3.6	—	±5	
Input leakage current	I_{IN}	(Note 1)	Input = 0 V to 3.6 V	0.7 to 3.6	0 to 3.6	—	±1	μA
Power-OFF leakage current	I_{OFFA}	(Note 1)	V_{IOA} = 0 V to 3.6 V	0	0.7 to 3.6	—	±5	μA
	I_{OFFB}	(Note 1)	V_{IOB} = 0 V to 3.6 V	0.7 to 3.6	0	—	±5	
Quiescent supply current	I_{CCA}	(Note 1)	—	0.7 to 3.6	0.7 to 3.6	—	8	μA
				3.6	0	—	8	
	I_{CCB}	(Note 1)	—	0.7 to 3.6	0.7 to 3.6	—	8	
				0	3.6	—	8	
	I_{CCTA}		V_{CCA} - 0.6V (per input)	3.0 to 3.6	0.7 to 3.6	—	500	
	I_{CCTB}		V_{CCB} - 0.6V (per input)	0.7 to 3.6	3.0 to 3.6	—	500	

Note 1: Fix the input terminal to each power supply terminal or 0V.

11.2. DC Characteristics (Unless otherwise specified, T_a = -40 to 125 °C)

Characteristics	Symbol	Test Condition		V_{CCA} (V)	V_{CCB} (V)	Min	Max	Unit
High-level input voltage	V_{IHA}	nA, nDIR, $n\overline{OE}$		0.7	0.7 to 3.6	V_{CCA} × 0.80	—	V
				0.8 to 1.95	0.7 to 3.6	V_{CCA} × 0.70	—	
				2.3 to 2.7	0.7 to 3.6	1.6	—	
				3.0 to 3.6	0.7 to 3.6	2.0	—	
	V_{IHB}	nB		0.7 to 3.6	0.7	V_{CCB} × 0.80	—	
				0.7 to 3.6	0.8 to 1.95	V_{CCB} × 0.70	—	
				0.7 to 3.6	2.3 to 2.7	1.6	—	
				0.7 to 3.6	3.0 to 3.6	2.0	—	
Low-level input voltage	V_{ILA}	nA, nDIR, $n\overline{OE}$		0.7	0.7 to 3.6	—	V_{CCA} × 0.20	V
				0.8 to 1.95	0.7 to 3.6	—	V_{CCA} × 0.30	
				2.3 to 2.7	0.7 to 3.6	—	0.7	
				3.0 to 3.6	0.7 to 3.6	—	0.9	
	V_{ILB}	nB		0.7 to 3.6	0.7	—	V_{CCB} × 0.20	
				0.7 to 3.6	0.8 to 1.95	—	V_{CCB} × 0.30	
				0.7 to 3.6	2.3 to 2.7	—	0.7	
				0.7 to 3.6	3.0 to 3.6	—	0.9	
High-level output voltage	V_{OH}	nA, nB Output H	I_{OH} = -0.1 mA	0.7 to 3.6	0.7 to 3.6	V_{CCO} -0.1	—	V
			I_{OH} = -0.2 mA	0.76	0.76	0.58	—	
			I_{OH} = -0.5 mA	0.85	0.85	0.65	—	
			I_{OH} = -2 mA	1.1	1.1	0.85	—	
			I_{OH} = -4 mA	1.4	1.4	1.05	—	
			I_{OH} = -6 mA	1.65	1.65	1.2	—	
			I_{OH} = -9 mA	2.3	2.3	1.75	—	
			I_{OH} = -12 mA	3.0	3.0	2.3	—	
Low-level output voltage	V_{OL}	nA, nB Output L	I_{OL} = 0.1 mA	0.7 to 3.6	0.7 to 3.6	—	0.1	V
			I_{OL} = 0.2 mA	0.76	0.76	—	0.18	
			I_{OL} = 0.5 mA	0.85	0.85	—	0.2	
			I_{OL} = 2 mA	1.1	1.1	—	0.25	
			I_{OL} = 4 mA	1.4	1.4	—	0.35	
			I_{OL} = 6 mA	1.65	1.65	—	0.45	
			I_{OL} = 9 mA	2.3	2.3	—	0.55	
			I_{OL} = 12 mA	3.0	3.0	—	0.7	

Characteristics	Symbol	Note	Test Condition	V_{CCA} (V)	V_{CCB} (V)	Min	Max	Unit
3-state output OFF-state leakage current	I_{OZA}	(Note 1)	Function OFF State, V_{IOA} = 0 V or 3.6 V	0.7 to 3.6	0.7 to 3.6	—	±7.5	μA
	I_{OZB}	(Note 1)	Function OFF State, V_{IOB} = 0 V or 3.6 V	0.7 to 3.6	0.7 to 3.6	—	±7.5	
Input leakage current	I_{IN}	(Note 1)	Input = 0 V to 3.6 V	0.7 to 3.6	0 to 3.6	—	±5	μA
Power-OFF leakage current	I_{OFFA}	(Note 1)	V_{IOA} = 0 V to 3.6 V	0	0.7 to 3.6	—	±10	μA
	I_{OFFB}	(Note 1)	V_{IOB} = 0 V to 3.6 V	0.7 to 3.6	0	—	±10	
Quiescent supply current	I_{CCA}	(Note 1)	—	0.7 to 3.6	0.8 to 3.6	—	18	μA
				3.6	0	—	18	
	I_{CCB}	(Note 1)	—	0.7 to 3.6	0.7 to 3.6	—	18	
				0	3.6	—	18	
	I_{CCTA}		V_{CCA} - 0.6 V (per input)	3.0 to 3.6	0.7 to 3.6	—	500	
	I_{CCTB}		V_{CCB} - 0.6 V (per input)	0.7 to 3.6	3.0 to 3.6	—	500	

Note 1: Fix the input terminal to each power supply terminal or 0V.

11.3. AC Characteristics (Note) (V_{CCA} = 0.7 V, T_a = 25 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Typ.	V_{CCB} 0.8 V Typ.	V_{CCB} 0.9 V Typ.	V_{CCB} 1.2 V Typ.	V_{CCB} 1.5 V Typ.	V_{CCB} 1.8 V Typ.	V_{CCB} 2.5 V Typ.	V_{CCB} 3.3 V Typ.	Unit
Propagation delay time(B → A)	t_{PLH}/t_{PHL}	16.2	14.1	13.0	11.9	11.0	10.6	10.6	11.1	ns
Propagation delay time (B → A)		16.2	13.5	12.0	10.0	9.2	8.8	8.3	8.1	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	24.1	24.1	24.1	24.1	24.1	24.1	24.0	23.2	
3-state output disable time ($\overline{OE}$ → B)		25.9	21.7	19.7	13.0	12.0	12.3	11.9	12.8	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	26.9	26.9	26.9	26.9	26.9	26.9	26.8	26.7	
3-state output enable time ($\overline{OE}$ → B)		44.6	34.0	28.4	22.1	19.5	18.3	17.7	17.8	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.4. AC Characteristics (Note) (V_{CCB} = 0.7 V, T_a = 25 °C)

Characteristics	Symbol	V_{CCA} 0.7 V Typ.	V_{CCA} 0.8 V Typ.	V_{CCA} 0.9 V Typ.	V_{CCA} 1.2 V Typ.	V_{CCA} 1.5 V Typ.	V_{CCA} 1.8 V Typ.	V_{CCA} 2.5 V Typ.	V_{CCA} 3.3 V Typ.	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	16.2	13.5	12.0	10.0	9.2	8.8	8.3	8.1	ns
Propagation delay time (B → A)		16.2	14.1	13.0	11.9	11.0	10.6	10.6	11.1	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	24.1	18.6	15.0	6.8	5.1	4.8	3.4	3.7	
3-state output disable time ($\overline{OE}$ → B)		25.9	22.8	21.5	19.8	19.1	18.5	17.7	17.4	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	26.9	18.7	14.3	9.4	7.1	6.1	5.2	5.1	
3-state output enable time ($\overline{OE}$ → B)		44.6	41.2	39.6	37.6	37.2	37.1	37.2	37.2	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.5. AC Characteristics (Note) (V_{CCA} = 0.7 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	40.9	33.9	28.7	24.4	23.2	23.1	25.3	31.2	ns
Propagation delay time (B → A)		40.9	33.7	29.1	24.4	22.9	22.5	22.0	21.7	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	
3-state output disable time ($\overline{OE}$ → B)		51.9	42.5	34.8	26.3	24.3	24.5	25.1	27.4	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5	
3-state output enable time ($\overline{OE}$ → B)		117.4	86.3	63.5	45.7	40.0	38.4	38.4	40.1	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.6. AC Characteristics (Note) (V_{CCA} = 0.8 ± 0.04 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	33.7	26.9	21.6	18.2	16.4	16.0	16.5	17.8	ns
Propagation delay time (B → A)		33.9	26.9	22.0	17.4	16.1	15.6	15.1	14.9	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	
3-state output disable time ($\overline{OE}$ → B)		46.0	36.6	28.7	20.0	17.9	17.9	17.5	19.1	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	
3-state output enable time ($\overline{OE}$ → B)		107.9	76.4	53.3	35.6	29.6	27.6	26.6	27.2	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.7. AC Characteristics (Note) (V_{CCA} = 0.9 ± 0.045 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	29.1	22.0	16.6	13.9	12.2	11.2	10.9	11.0	ns
Propagation delay time (B → A)		28.7	21.6	16.6	12.5	11.1	10.5	9.8	9.5	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	
3-state output disable time ($\overline{OE}$ → B)		40.9	31.9	24.0	15.9	13.4	13.1	12.0	13.1	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	
3-state output enable time ($\overline{OE}$ → B)		101.6	69.7	46.3	30.1	23.7	21.2	18.8	17.9	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.8. AC Characteristics (Note) (V_{CCA} = 1.2 ± 0.1 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	24.4	17.4	12.5	10.2	9.0	8.5	7.6	7.3	ns
Propagation delay time (B → A)		24.4	18.2	13.9	10.2	8.2	7.5	6.7	6.4	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	12.3	12.2	12.2	12.2	12.2	12.2	12.2	12.3	
3-state output disable time ($\overline{OE}$ → B)		37.1	27.4	21.1	13.6	10.8	9.5	7.9	7.3	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	18.0	17.9	17.8	17.7	18.0	18.0	18.0	18.1	
3-state output enable time ($\overline{OE}$ → B)		97.1	64.3	40.3	27.7	20.0	17.0	13.7	12.5	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.9. AC Characteristics (Note) (V_{CCA} = 1.5 ± 0.1 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.9	16.1	11.1	8.2	6.9	6.5	5.9	5.5	ns
Propagation delay time (B → A)		23.2	16.4	12.2	9.0	6.9	6.0	5.2	4.9	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	8.5	8.4	8.4	8.4	8.4	8.4	8.3	8.2	
3-state output disable time ($\overline{OE}$ → B)		35.9	25.9	20.0	12.1	9.1	7.6	6.1	5.4	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	11.9	11.8	11.7	11.6	11.7	11.9	11.8	11.8	
3-state output enable time ($\overline{OE}$ → B)		95.9	63.0	38.7	25.1	17.4	14.4	11.0	9.7	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.10. AC Characteristics (Note) (V_{CCA} = 1.8 ± 0.15 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.5	15.6	10.5	7.5	6.0	5.5	5.1	4.8	ns
Propagation delay time (B → A)		23.1	16.0	11.2	8.5	6.5	5.5	4.6	4.3	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.2	
3-state output disable time ($\overline{OE}$ → B)		35.3	25.5	19.7	12.6	9.3	7.7	6.0	5.2	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	9.4	9.3	9.2	9.2	9.2	9.3	9.3	9.3	
3-state output enable time ($\overline{OE}$ → B)		95.9	62.9	38.2	24.2	16.5	13.4	10.0	8.6	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.11. AC Characteristics (Note) (V_{CCA} = 2.5 ± 0.2 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.0	15.1	9.8	6.7	5.2	4.6	4.0	3.9	ns
Propagation delay time (B → A)		25.3	16.5	10.9	7.6	5.9	5.1	4.0	3.5	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	5.1	5.1	5.1	4.9	4.9	4.9	4.9	4.9	
3-state output disable time ($\overline{OE}$ → B)		34.0	24.6	18.7	11.8	8.5	7.0	5.3	4.5	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	8.1	7.7	7.4	6.7	6.5	6.5	6.5	6.5	
3-state output enable time ($\overline{OE}$ → B)		97.3	63.4	38.3	23.7	15.8	12.5	9.0	7.5	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.12. AC Characteristics (Note) (V_{CCA} = 3.3 V, T_a = -40 to 85 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	21.7	14.9	9.5	6.4	4.9	4.3	3.5	3.3	ns
Propagation delay time (B → A)		31.2	17.8	11.0	7.3	5.5	4.8	3.9	3.3	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	5.2	5.2	5.2	5.0	5.0	5.0	5.0	5.0	
3-state output disable time ($\overline{OE}$ → B)		34.6	24.2	18.6	15.7	11.4	9.3	6.5	5.3	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	7.1	6.4	6.1	5.9	5.3	5.3	5.2	5.2	
3-state output enable time ($\overline{OE}$ → B)		98.5	64.0	38.5	23.7	15.5	12.1	8.6	7.1	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.13. AC Characteristics (Note) (V_{CCA} = 0.7 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Min	V_{CCB} 1.5 ± 0.1 V Min	V_{CCB} 1.8 ± 0.15 V Min	V_{CCB} 2.5 ± 0.2 V Min	V_{CCB} 3.3 ± 0.3 V Min	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	40.9	33.9	28.7	24.4	23.2	23.1	25.3	31.2	ns
Propagation delay time (B → A)		40.9	33.7	29.1	24.4	22.9	22.5	22.0	21.7	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	
3-state output disable time ($\overline{OE}$ → B)		51.9	42.5	34.8	26.3	24.3	24.5	25.1	27.4	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	68.5	68.5	68.5	68.5	68.5	68.5	68.5	68.5	
3-state output enable time ($\overline{OE}$ → B)		117.4	86.3	63.5	45.7	40.0	38.4	38.4	40.1	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.14. AC Characteristics (Note) (V_{CCA} = 0.8 ± 0.04 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	33.7	26.9	21.6	18.2	16.4	16.0	16.5	17.8	ns
Propagation delay time (B → A)		33.9	26.9	22.0	17.4	16.1	15.6	15.1	14.9	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	
3-state output disable time ($\overline{OE}$ → B)		46.0	36.6	28.7	20.0	17.9	17.9	17.5	19.1	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	
3-state output enable time ($\overline{OE}$ → B)		107.9	76.4	53.3	35.6	29.6	27.6	26.6	27.2	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.15. AC Characteristics (Note) (V_{CCA} = 0.9 ± 0.045 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	29.1	22.0	16.6	14.1	12.5	11.4	10.9	11.0	ns
Propagation delay time (B → A)		28.7	21.6	16.6	12.5	11.1	10.6	9.8	9.5	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	
3-state output disable time ($\overline{OE}$ → B)		40.9	31.9	24.0	15.9	13.4	13.1	12.0	13.1	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	
3-state output enable time ($\overline{OE}$ → B)		101.6	69.7	46.3	30.1	23.7	21.2	18.8	17.9	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.16. AC Characteristics (Note) (V_{CCA} = 1.2 ± 0.1 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	24.4	17.4	12.5	10.5	9.4	8.9	7.9	7.6	ns
Propagation delay time (B → A)		24.4	18.2	14.1	10.5	8.6	7.9	7.0	6.7	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	12.6	12.5	12.5	12.5	12.5	12.5	12.5	12.6	
3-state output disable time ($\overline{OE}$ → B)		37.1	27.4	21.1	14.1	11.3	10.0	8.2	7.6	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	18.5	18.4	18.4	18.2	18.5	18.6	18.6	18.7	
3-state output enable time ($\overline{OE}$ → B)		97.1	64.3	40.3	28.6	21.0	18.0	14.5	13.1	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.17. AC Characteristics (Note) (V_{CCA} = 1.5 ± 0.1 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.9	16.1	11.1	8.6	7.3	6.9	6.3	5.8	ns
Propagation delay time (B → A)		23.2	16.4	12.5	9.4	7.3	6.4	5.5	5.2	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	8.9	8.9	8.8	8.8	8.9	8.8	8.8	8.7	
3-state output disable time ($\overline{OE}$ → B)		35.9	25.9	20.0	12.8	9.6	8.0	6.4	5.7	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	12.7	12.6	12.4	12.3	12.5	12.6	12.5	12.5	
3-state output enable time ($\overline{OE}$ → B)		95.9	63.0	38.7	26.2	18.4	15.4	11.8	10.3	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.18. AC Characteristics (Note) (V_{CCA} = 1.8 ± 0.15 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.5	15.6	10.6	7.9	6.4	5.9	5.5	5.1	ns
Propagation delay time (B → A)		23.1	16.0	11.4	8.9	6.9	5.9	4.9	4.6	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	7.7	7.7	7.7	7.7	7.7	7.6	7.6	7.5	
3-state output disable time ($\overline{OE}$ → B)		35.3	25.5	19.7	13.4	9.8	8.1	6.3	5.5	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	10.0	9.9	9.8	9.9	9.9	9.9	10.0	10.0	
3-state output enable time ($\overline{OE}$ → B)		95.9	62.9	38.2	25.1	17.5	14.4	10.7	9.2	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.19. AC Characteristics (Note) (V_{CCA} = 2.5 ± 0.2 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	22.0	15.1	9.8	7.0	5.5	4.9	4.3	4.2	ns
Propagation delay time (B → A)		25.3	16.5	10.9	7.9	6.3	5.5	4.3	3.8	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	5.4	5.4	5.4	5.2	5.2	5.2	5.2	5.2	
3-state output disable time ($\overline{OE}$ → B)		34.0	24.6	18.7	12.6	8.9	7.3	5.6	4.7	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	8.1	7.7	7.4	7.2	7.0	6.9	6.9	7.0	
3-state output enable time ($\overline{OE}$ → B)		97.3	63.4	38.3	24.5	16.8	13.4	9.6	8.0	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.20. AC Characteristics (Note) (V_{CCA} = 3.3 ± 0.3 V, T_a = -40 to 125 °C)

Characteristics	Symbol	V_{CCB} 0.7 V Max	V_{CCB} 0.8 ± 0.04 V Max	V_{CCB} 0.9 ± 0.045 V Max	V_{CCB} 1.2 ± 0.1 V Max	V_{CCB} 1.5 ± 0.1 V Max	V_{CCB} 1.8 ± 0.15 V Max	V_{CCB} 2.5 ± 0.2 V Max	V_{CCB} 3.3 ± 0.3 V Max	Unit
Propagation delay time (A → B)	t_{PLH}/t_{PHL}	21.7	14.9	9.5	6.7	5.2	4.6	3.8	3.6	ns
Propagation delay time (B → A)		31.2	17.8	11.0	7.6	5.8	5.1	4.2	3.6	
3-state output disable time ($\overline{OE}$ → A)	t_{PLZ}/t_{PHZ}	5.4	5.4	5.4	5.2	5.2	5.2	5.2	5.2	
3-state output disable time ($\overline{OE}$ → B)		34.6	24.2	18.6	16.3	11.8	9.6	6.7	5.5	
3-state output enable time ($\overline{OE}$ → A)	t_{PZL}/t_{PZH}	7.5	6.8	6.5	6.3	5.7	5.6	5.6	5.6	
3-state output enable time ($\overline{OE}$ → B)		98.5	64.0	38.5	24.5	16.5	13.0	9.2	7.6	

Note: See Figure 12.1, 13.1, 13.2, table 12.1.1, 12.1.2, 13.1.1 for the measurement circuit.

11.21. Capacitive Characteristics (Unless otherwise specified, T_a = 25 °C)

Characteristics	Symbol	Note	Test Condition	V_{CCA}, V_{CCB} 0.7 V Typ.	V_{CCA}, V_{CCB} 0.8 V Typ.	V_{CCA}, V_{CCB} 0.9 V Typ.	V_{CCA}, V_{CCB} 1.2 V Typ.	V_{CCA}, V_{CCB} 1.5 V Typ.	V_{CCA}, V_{CCB} 1.8 V Typ.	V_{CCA}, V_{CCB} 2.5 V Typ.	V_{CCA}, V_{CCB} 3.3 V Typ.	Unit
Input capacitance	C_{IN}		V_{IN} = 0 V or 3.3 V	—	—	—	—	—	—	—	4	pF
Bus I/O capacitance	$C_{I/OA}$		An = OFF, V_{IOA} = 0 V or 3.3 V	—	—	—	—	—	—	—	5	pF
	$C_{I/OB}$		Bn = OFF, V_{IOB} = 0 V or 3.3 V	—	—	—	—	—	—	—	5	
Power dissipation capacitance	C_{PDA}	(Note 1)	A → B	1.5	1.5	1.5	1.5	2	2	2	2.5	pF
			B → A	13	13	13	13.5	13.5	14	14.5	15	
	C_{PDB}	(Note 1)	A → B	13	13	13	13.5	13.5	14	14.5	15	
			B → A	1.5	1.5	1.5	1.5	2	2	2	2.5	

Note 1: C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load. Average operating current can be obtained by the equation.

$I_{CC(opr)} = C_{PD} \times V_{CC} \times f_{IN} + I_{CC}/4$ (per bit)

12. AC Test Circuit

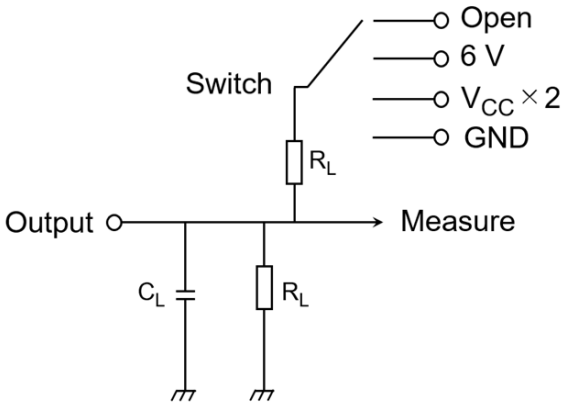


Fig. 12.1 AC Test Circuit

Table 12.1.1 Parameter for AC Test Circuit

Parameter	Switch
t_{PLH}, t_{PHL}	Open
t_{PLZ}, t_{PZL}	$V_{CC} \times 2$
t_{PHZ}, t_{PZH}	GND

Table 12.1.2 Parameter for AC Test Circuit

Symbol	V_{CC} = 3.3 ± 0.3 V	V_{CC} = 2.5 ± 0.2 V	V_{CC} = 1.8 ± 0.15 V	V_{CC} = 1.5 ± 0.1 V	V_{CC} = 1.2 ± 0.1 V	V_{CC} = 0.9 ± 0.045 V	V_{CC} = 0.8 ± 0.04 V	V_{CC} = 0.7 V
R_L	2 kΩ	2 kΩ	2 kΩ	2 kΩ	2 kΩ	10 kΩ	10 kΩ	10 kΩ
C_L	15 pF	15 pF	15 pF	15 pF	15 pF	5 pF	5 pF	5 pF

13. AC Waveform

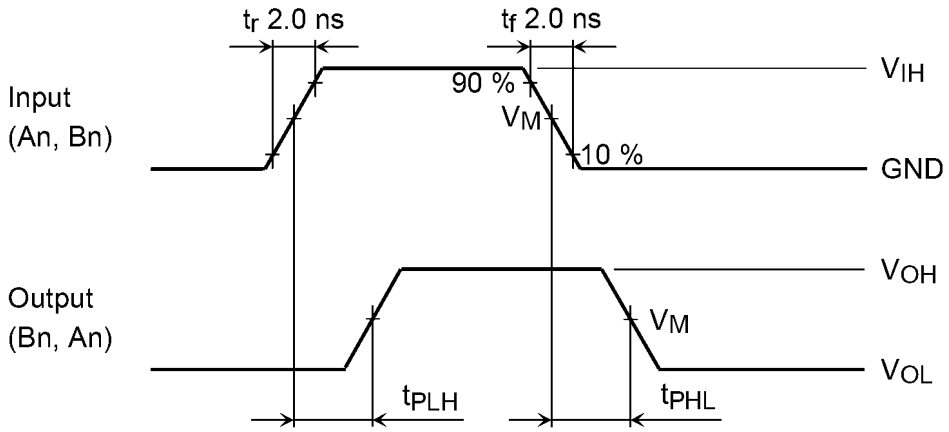


Fig. 13.1 t_{PLH}, t_{PHL}

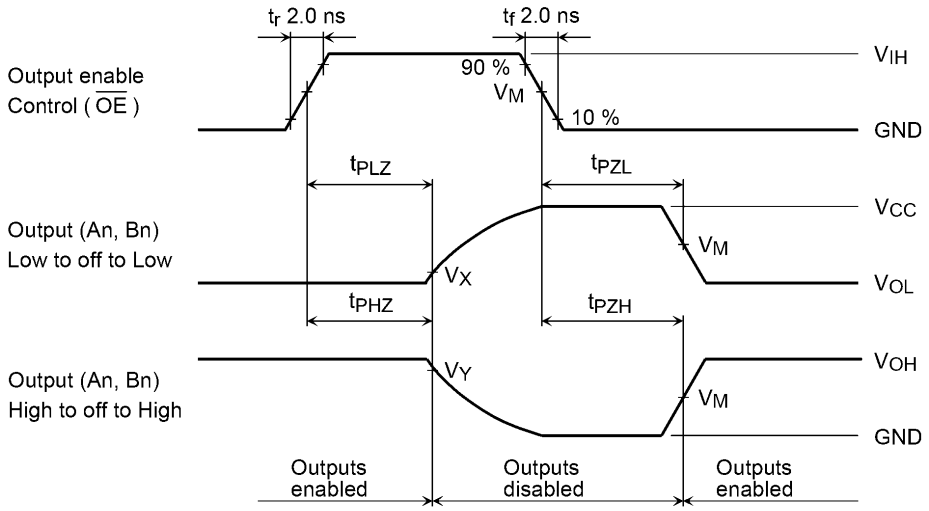


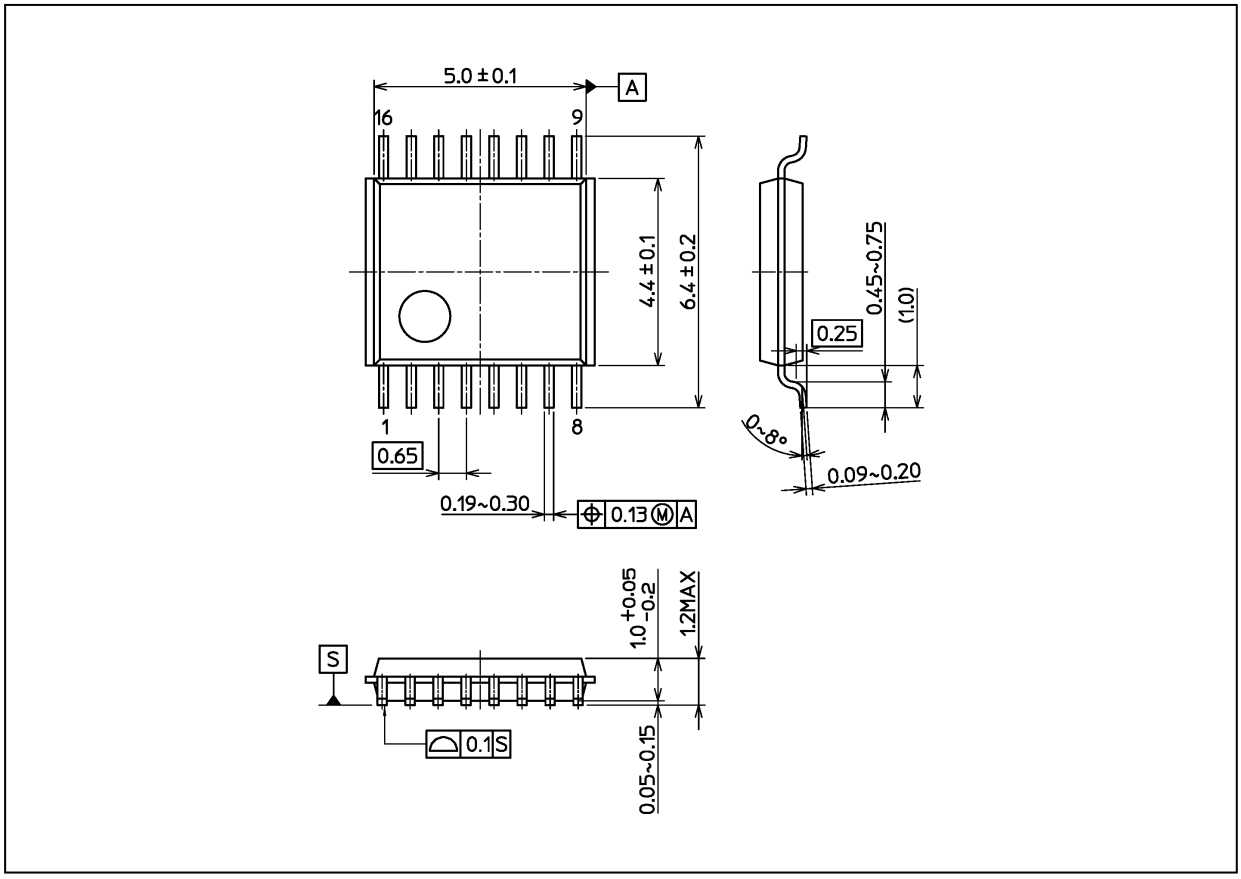
Fig. 13.2 t_{PLZ}, t_{PHZ}, t_{PZL}, t_{PZH}

Table 13.1.1 AC Waveform Symbols

Symbol	V_{CC} = 3.3 ± 0.3 V	V_{CC} = 2.5 ± 0.2 V V_{CC} = 1.8 ± 0.15 V	V_{CC} = 1.5 ± 0.1 V V_{CC} = 1.2 ± 0.1 V	V_{CC} = 0.9 ± 0.045 V V_{CC} = 0.8 ± 0.04 V V_{CC} = 0.7 V
V_{IH}	V_{CC}	V_{CC}	V_{CC}	V_{CC}
V_M	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$	$V_{CC}/2$
V_X	V_{OL} + 0.3 V	V_{OL} + 0.15 V	V_{OL} + 0.1 V	V_{OL} + 0.1 V
V_Y	V_{OH} - 0.3 V	V_{OH} - 0.15 V	V_{OH} - 0.1 V	V_{OH} - 0.1 V

Package Dimensions

Unit: mm



Weight: 0.055 g (typ.)

Package Name(s)
Nickname: TSSOP16B

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