74AVCH4T245

4-BIT DUAL POWER SUPPLY TRANSLATING BUFFER WITH 3-STATE OUTPUTS

Description

The 74AVCH4T245 device is 4-bit, dual supply transceiver that enables bi-directional level translation, designed for asynchronous communication between two data buses. It features four 2-bit input-output ports (nAn and nBn), a direction control input (nDIR), an output enable input (n$\overline{OE}$) and dual supply pins (VCCA and VCCB). Both VCCA and VCCB can be supplied at any voltage between 0.8V and 3.6V making the device suitable for translating between any of the low voltage nodes (0.8V, 1.2V, 1.5V, 1.8V, 2.5V and 3.3V). Pins nAn, n$\overline{OE}$ and nDIR are referenced to VCCA and pins nBn are referenced to VCCB. A HIGH on nDIR allows transmission from nAn to nBn and a LOW on nDIR allows transmission from nBn to nAn. The output enable input (n$\overline{OE}$) can be used to disable the outputs so the buses are effectively isolated. The device is fully specified for partial power-down applications using IOFF. The IOFF circuitry disables the output, preventing any damaging backflow current through the device when it is powered down. In suspend mode when either VCCA or VCCB are at GND level, both nAn and nBn are in the high-impedance OFF-state. The 74AVCH4T245 has active bus hold circuitry which is provided to hold unused or floating data inputs at a valid logic level. This feature eliminates the need for external pullup or pulldown resistors.

The 74AVCH4T245 is available in the TSSOP-16 package, and is specified for operation from -40°C to +125°C among all supply voltages. The wide temperature ranges and high ESD tolerance facilitate its use in harsh applications.

Pin Assignments
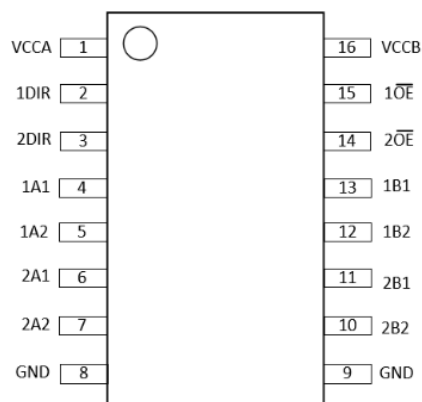
Top View

TSSOP-16

Features

- Supply Voltage Range: VCCA/ VCCB: from 0.8V to 3.6V
- Max Data Rates:
  - 380Mbps (1.8V to 3.3V Translation)
  - 200Mbps (< 1.8V to 3.3V Translation)
  - 200Mbps (Translate to 2.5V or 1.8V)
  - 150Mbps (Translate to 1.5V)
  - 100Mbps (Translate to 1.2V)
  - 50Mbps (Translate to 0.8V-1.1V)
- High Drive Strength (±12mA at 3.3V)
- IOFF Supports Partial-Power-Down Mode Operation
- ESD Protection Exceeds JESD 22
  - Exceeds 8000V Human Body Model (A114)
  - Exceeds 1000V Charged Device Model (C101)
- Latchup Exceeds 100mA per JESD 78, Class II
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
  https://www.diodes.com/quality/product-definitions/

Applications

- Personal electronics
- Industrial
- Enterprises
- Telecoms

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Pin Descriptions

Pin Name	Pin Number	Function
VCCA	1	A Port Supply Voltage
1DIR	2	Direction Control Pin for Port "1".
2DIR	3	Direction Control Pin for Port "2".
1A1	4	Input/Output 1A1. Referenced to VCCA.
1A2	5	Input/Output 1A2. Referenced to VCCA.
2A1	6	Input/Output 2A1. Referenced to VCCA.
2A2	7	Input/Output 2A2. Referenced to VCCA.
GND	8	Ground
GND	9	Ground
2B2	10	Input/Output 2B2. Referenced to VCCB.
2B1	11	Input/Output 2B1. Referenced to VCCB.
1B2	12	Input/Output 1B2. Referenced to VCCB.
1B1	13	Input/Output 1B1. Referenced to VCCB.
$\overline{2OE}$	14	3-State Output-Mode Enable. Pull to High to place port "2" outputs in high-impedance mode. Referenced to VCCA.
$\overline{1OE}$	15	3-State Output-Mode Enable. Pull to High to place port "1" outputs in high-impedance mode. Referenced to VCCA.
VCCB	16	B Port Supply Voltage

Function Table

Control Functional		Output Status		Operation
$\overline{OE}$	DIR	A Port	B Port	
L	L	Enabled	Hi-Z	B to A
L	H	Hi-Z	Enabled	A to B
H	X	Hi-Z	Hi-Z	Isolation

Note: 4. Floating input pin is allowed for this case.

Logic Diagram

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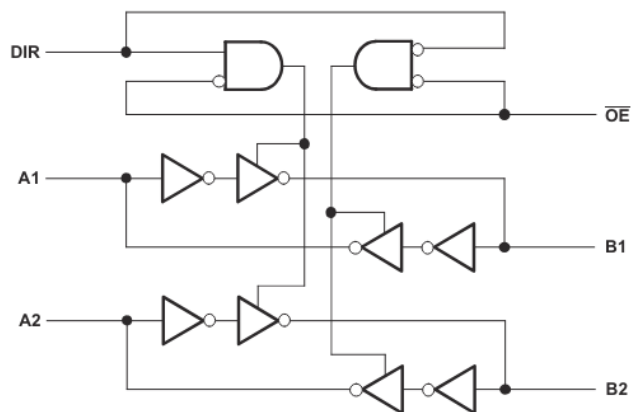
Absolute Maximum Ratings (Note 5) (@T$_A$ = +25°C, unless otherwise specified.)

Symbol	Parameter	Rating	Unit
ESD HBM	Human Body Model ESD Protection	7.5	kV
ESD CDM	Charged Device Model ESD Protection	1	kV
V$_{CCA}$, V$_{CCB}$	Supply Voltage Range	-0.5 to +4.6	V
V$_I$	Input Voltage Range	-0.5 to +4.6	V
V$_O$	Voltage Applied to Output in High Impedance or I$_{OFF}$ State	-0.5 to +4.6	V
V$_O$	Voltage Applied to Output in High or Low State	-0.5 to V$_{CCO}$+0.5	V
I$_{IK}$	Input Clamp Current V$_I$ < 0	-50	mA
I$_{OK}$	Output Clamp Current	-50	mA
I$_O$	Continuous Output Current	±50	mA
—	Continuous Current Through V$_{CCA}$ or GND	±100	mA
T$_J$	Operating Junction Temperature	+150	°C
T$_{STG}$	Storage Temperature	-65 to +150	°C

Note: 5. Stresses greater than those listed under *Absolute Maximum Ratings* can cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to *Absolute Maximum Ratings* for extended periods can affect device reliability.

Recommended Operating Condition (Notes 6, 7 & 8) (@T$_A$ = +25°C, unless otherwise specified.)

Symbol	Parameter	V$_{CCI}$	V$_{CCO}$	Min	Max	Unit
V$_{CCA}$	Operating Voltage	—	—	0.8	3.6	V
V$_{CCB}$	Operating Voltage	—	—	0.8	3.6	V
I$_{OH}$	High-Level Output Current Data Input, nDIR, nOE Input	1.1V	—	—	-3	mA
		1.4V to 1.6V	—	—	-6	
		1.65V to 1.95V	—	—	-8	
		2.3V to 2.7V	—	—	-9	
		3V to 3.6V	—	—	-12	
I$_{OL}$	Low-Level Output Current Data Input, nDIR, nOE Input	1.1V	—	—	3	mA
		1.4V to 1.6V	—	—	6	
		1.65V to 1.95V	—	—	8	
		2.3V to 2.7V	—	—	9	
		3V to 3.6V	—	—	12	
V$_I$	Input Voltage			0	3.6	V
V$_O$	Output Voltage	Active State		0	V$_{CCO}$	V
		Tri-State		0	3.6	V
T$_A$	Operating Free-Air Temperature			-40	+125	°C

Notes: 6. V$_{CCI}$ is the V$_{CC}$ associated with the input port.
7. V$_{CCO}$ is the V$_{CC}$ associated with the output port.
8. All unused data inputs of the device must be held at V$_{CCI}$ or GND to ensure proper device operation.

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Electrical Characteristics (Notes 6, 7, 8, 9 & 10) (@T$_A$ = +40°C to +125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	V$_{CCI}$	V$_{CCO}$	T$_A$ = +25°C			T$_A$ = -40°C to +85°C		T$_A$ = -40°C to +125°C		Unit
					Min	Typ	Max	Min	Max	Min	Max	
V$_{IH}$	High-Level Input Voltage	Data Input, nDIR, nOE Input	0.8V	—	0.70V$_{CCI}$	0.70V$_{CCI}$	—	—	0.70V$_{CCI}$	—	0.70V$_{CCI}$	V
			1.1V to 1.95V	—	0.65V$_{CCI}$	0.65V$_{CCI}$	—	—	0.65V$_{CCI}$	—	0.65V$_{CCI}$	
			1.95V to 2.7V	—	1.6	1.6	—	—	1.6	—	1.6	
			2.7V to 3.6V	—	2	2	—	—	2	—	2	
V$_{IL}$	Low-Level Input Voltage	Data Input, nDIR, nOE Input	0.8V	—	—	—	—	0.3V$_{CCI}$	—	0.3V$_{CCI}$	—	V
			1.1V to 1.95V	—	—	—	—	0.35V$_{CCI}$	—	0.35V$_{CCI}$	—	
			1.95V to 2.7V	—	—	—	—	0.7	—	0.7	—	
			2.7V to 3.6V	—	—	—	—	0.8	—	0.8	—	
V$_{OH}$	High-Level Output Voltage	I$_{OH}$ = -0.1mA	0.8V-3.6V	0.8V-3.6V	—	—	—	—	V$_{CCO}$ − 0.1	—	V$_{CCO}$ − 0.1	V
		I$_{OH}$ = -3mA	1.1V	1.1V	0.95	0.95	—	—	0.85	—	0.85	
		I$_{OH}$ = -6mA	1.4V	1.4V	1.05	1.05	—	—	1.05	—	1.05	
		I$_{OH}$ = -8mA	1.65V	1.65V	1.2	1.2	—	—	1.2	—	1.2	
		I$_{OH}$ = -9mA	2.3V	2.3V	1.75	1.75	—	—	1.75	—	1.75	
		I$_{OH}$ = -12mA	3V	3V	2.3	2.3	—	—	2.3	—	2.3	
V$_{OL}$	Low-Level Output Voltage	I$_{OL}$ = 0.1mA	0.8V-3.6V	0.8V-3.6V	0.1	0.1	—	—	—	0.1	—	V
		I$_{OL}$ = 3mA	1.1V	1.1V	0.25	0.25	—	—	—	0.25	—	
		I$_{OL}$ = 6mA	1.4V	1.4V	0.35	0.35	—	—	—	0.35	—	
		I$_{OL}$ = 8mA	1.65V	1.65V	0.45	0.45	—	—	—	0.45	—	
		I$_{OL}$ = 9mA	2.3V	2.3V	0.55	0.55	—	—	—	0.55	—	
		I$_{OL}$ = 12mA	3V	3V	0.7	0.7	—	—	—	0.7	—	

Notes: 6. V$_{CCI}$ is the V$_{CC}$ associated with the input port.
7. V$_{CCO}$ is the V$_{CC}$ associated with the output port.
8. All unused data inputs of the device must be held at V$_{CCI}$ or GND to ensure proper device operation.
9. For V$_{CCI}$ values not specified in the data sheet, V$_{IH}$ min = V$_{CCI}$ × 0.7V, V$_{IL}$ max = V$_{CCI}$ × 0.3V.
10. For $\overline{OE}$ and DIR V$_{CCI}$ values not specified in the data sheet, V$_{IH}$ min = V$_{CCA}$ × 0.7V, V$_{IL}$ max = V$_{CCA}$ × 0.3V.

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Electrical Characteristics (Notes 6, 7, 8, 9 & 10) (@T$_A$ = +40°C to +125°C, unless otherwise specified.) (continued)

Symbol	Parameter	Test Conditions		V$_{CCI}$	V$_{CCO}$	T$_A$ = +25°C			T$_A$ = -40°C to +85°C		T$_A$ = -40°C to +125°C		Unit
						Min	Typ	Max	Min	Max	Min	Max	
I$_I$	Input Current	V$_I$ = V$_{CCA}$ or GND		0.8V-3.6V	0.8V-3.6V	—	—	±0.25	—	±1	—	±1	µA
I$_{OFF}$	Off-State Current	A or B Port	V$_I$ or V$_O$ = 0 to 3.6V	0	0.8V-3.6V	—	—	±1	—	±3	—	±10	µA
				0.8V-3.6V	0	—	—	±1	—	±3	—	±10	µA
I$_{OZ}$	High-Z State Current	A or B Port	V$_I$ or V$_O$ = 0 to 3.6V	3.6V	3.6V	—	—	±1	—	±2	—	±5	µA
		A Port		3.6V	0	—	—	±1	—	±2	—	±5	µA
		B Port		0	3.6V	—	—	±1	—	±2	—	±5	µA
I$_{CCA}$	Supply Current	V$_I$ = V$_{CCI}$ or GND I$_O$ = 0		0.8V-3.6V	0.8V-3.6V	—	—	±1	—	±10	—	±35	µA
				0.8V-1.1V	0.8V-1.1V	—	—	±1	—	±8	—	±25	
				0-3.6V	0	—	—	±1	—	±10	—	±35	
				0	0-3.6V	—	—	±1	—	±1	—	±1	
I$_{CCB}$	Supply Current	V$_I$ = V$_{CCI}$ or GND I$_O$ = 0		0.8V-3.6V	0.8V-3.6V	—	—	±1	—	±10	—	±35	µA
				0.8V-1.1V	0.8V-1.1V	—	—	±1	—	±8	—	±25	
				0-3.6V	0	—	—	±1	—	±1	—	±1	
				0	0-3.6V	—	—	±1	—	±10	—	±35	
I$_{CCA}$ + I$_{CCB}$	Supply Current	V$_I$ = V$_{CCI}$ or GND I$_O$ = 0		0.8V-3.6V	0.8V-3.6V	—	—	±2	—	±20	—	—	µA
C$_I$	Control Input Capacitance	nDIR, $\overline{nOE}$ Input	V$_I$ = 3.3V or GND	3.3V	3.3V	—	3.5	—	—	4.5	—	4.5	pF
C$_O$	Input/Output Capacitance	A or B	V$_O$ = 3.3V or GND	3.3V	3.3V	—	6	—	—	7	—	7	pF

Notes:
6. V$_{CCI}$ is the V$_{CC}$ associated with the input port.
7. V$_{CCO}$ is the V$_{CC}$ associated with the output port.
8. All unused data inputs of the device must be held at V$_{CCI}$ or GND to ensure proper device operation.
9. For V$_{CCI}$ values not specified in the data sheet, V$_{IH}$ min = V$_{CCI}$ × 0.7V, V$_{IL}$ max = V$_{CCI}$ × 0.3V.
10. For $\overline{OE}$ and DIR V$_{CCI}$ values not specified in the data sheet, V$_{IH}$ min = V$_{CCA}$ × 0.7V, V$_{IL}$ max = V$_{CCA}$ × 0.3V.

Package Characteristics

Symbol	Parameter	Package	Test Conditions	Min	Typ	Max	Unit
θ$_{JA}$	Thermal Resistance Junction-to-Ambient	TSSOP-16	(Note 11)	—	100	—	°C/W
θ$_{JC}$	Thermal Resistance Junction-to-Case	TSSOP-16	(Note 11)	—	43	—	°C/W

Note:
11. Test condition for the package type: device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

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Switching Characteristics (@T$_A$ = -40°C to +125°C, unless otherwise specified.)

V$_{CCA}$ = 0.8V

Parameter	Test Conditions	Direction	V$_{CCB}$						Unit
			0.8V	1.2V ± 0.1V	1.5V ± 0.1V	1.8V ± 0.15V	2.5V ± 0.2V	3.3V ± 0.3V	
			Typ	Typ	Typ	Typ	Typ	Typ	
tpd	Propagation Delay	nAn to nBn	11.0	7.3	6.5	6.2	6.5	7.0	ns
		nBn to nAn	11.0	10.0	12.4	12.3	12.1	12.0	
ten	Enable Time	nOE to nAn	18.2	18.2	18.2	18.2	18.2	18.2	
		nOE to nBn	19.2	12.7	11.4	10.9	10.7	11.1	
tdis	Disable Time	nOE to nAn	14.3	14.3	14.3	14.3	14.3	14.3	
		nOE to nBn	12.6	9.9	9.0	9.4	9.0	9.7	

V$_{CCB}$ = 0.8V

Parameter	Test Conditions	Direction	V$_{CCA}$						Unit
			0.8V	1.2V ± 0.1V	1.5V ± 0.1V	1.8V ± 0.15V	2.5V ± 0.2V	3.3V ± 0.3V	
			Typ	Typ	Typ	Typ	Typ	Typ	
tpd	Propagation Delay	nAn to nBn	14.5	12.7	12.4	12.3	12.1	12.0	ns
		nBn to nAn	14.5	7.3	6.5	6.2	5.9	6.0	
ten	Enable Time	nOE to nAn	18.2	13.0	12.1	9.6	7.3	6.4	
		nOE to nBn	19.2	15.8	15.3	15.0	15.0	14.8	
tdis	Disable Time	nOE to nAn	14.3	9.6	8.5	7.5	7.7	8.6	
		nOE to nBn	17.0	13.8	13.4	13.1	12.9	12.7	

Switching Characteristics (@T$_A$ = -40°C to +125°C, unless otherwise specified.) (continued)

V$_{CCA}$ = 1.2V ± 0.1V

Parameter	Test Conditions	Direction	V$_{CCB}$															Unit
			1.2V ± 0.1V			1.5V ± 0.1V			1.8V ± 0.15V			2.5V ± 0.2V			3.3V ± 0.3V			
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
tpd	Propagation Delay	nAn to nBn	0.5	3	8.3	0.5	2.9	6.3	0.5	2.1	5.5	0.5	2.1	4.6	0.5	2.3	4.6	ns
		nBn to nAn	0.5	3	8.3	0.5	3.1	7.8	0.5	2.8	7.7	0.5	2.1	7.4	0.5	2.2	7.3	
ten	Enable Time	nOE to nAn	1.8	3.9	11.7	1.8	4.2	11.7	1.8	4.3	11.7	1.8	3.5	11.7	1.8	3.5	11.7	
		nOE to nBn	1.9	4	13.0	1.9	2.5	9.5	1.9	3.3	8.2	1.4	3.6	7.9	1.2	4.5	7.7	
tdis	Disable Time	nOE to nAn	1.4	3.2	11.5	1.4	2.3	11.5	1.4	3	11.5	1.4	3	11.5	1.4	3.1	11.5	
		nOE to nBn	1.1	3	10.0	1.1	2.2	8.1	1.1	2.9	7.5	1.0	2.5	6.3	1.0	5.5	6.3	

V$_{CCA}$ = 1.5V ± 0.1V

Parameter	Test Conditions	Direction	V$_{CCB}$										Unit
			1.2V ± 0.1V		1.5V ± 0.1V		1.8V ± 0.15V		2.5V ± 0.2V		3.3V ± 0.3V		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	nAn to nBn	0.3	7.8	0.3	6.3	0.3	5.2	0.4	4.2	0.4	4.2	ns
		nBn to nAn	0.7	6.3	0.7	6.3	0.5	5.9	0.4	5.7	0.3	5.6	
ten	Enable Time	nOE to nAn	1.8	10.5	1.4	9.6	1.1	9.5	0.7	9.7	0.4	9.4	
		nOE to nBn	1.9	11.0	1.4	9.6	1.1	7.7	0.9	7.1	0.9	6.9	
tdis	Disable Time	nOE to nAn	1.1	10.2	1.8	10.2	1.5	10.2	1.3	10.2	1.6	10.2	
		nOE to nBn	1.4	10.4	1.9	10.3	1.9	9.1	1.4	7.4	1.2	7.6	

V$_{CCA}$ = 1.8V ± 0.15V

Parameter	Test Conditions	Direction	V$_{CCB}$										Unit
			1.2V ± 0.1V		1.5V ± 0.1V		1.8V ± 0.15V		2.5V ± 0.2V		3.3V ± 0.3V		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	nAn to nBn	0.1	7.7	0.1	5.9	0.1	4.9	0.1	3.9	0.3	3.9	ns
		nBn to nAn	0.6	5.5	0.6	5.3	0.5	4.9	0.3	4.6	0.3	4.5	
ten	Enable Time	nOE to nAn	1.8	9.0	1	8.6	1	7.3	0.6	7.3	0.4	7.2	
		nOE to nBn	1.7	10.5	1.2	9.2	1	7.4	0.8	6.7	0.8	6.5	
tdis	Disable Time	nOE to nAn	1.0	8.9	1.6	8.6	1.8	8.7	1.3	8.7	1.6	8.7	
		nOE to nBn	1.2	10.0	1.7	9.9	1.6	8.7	1.2	7.4	1	6.9	

Switching Characteristics (@T$_A$ = -40°C to +125°C, unless otherwise specified.) (continued)

V$_{CCA}$ = 2.5V ± 0.2V

Parameter	Test Conditions	Direction	V$_{CCB}$										Unit
			1.2V ± 0.1V		1.5V ± 0.1V		1.8V ± 0.15V		2.5V ± 0.2V		3.3V ± 0.3V		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	nAn to nBn	0.1	7.4	0.1	5.7	0.1	4.6	0.2	3.9	0.1	3.6	ns
		nBn to nAn	0.6	4.6	0.6	4.2	0.4	4.1	0.2	3.9	0.2	3.3	
ten	Enable Time	nOE to nAn	1.0	8.0	0.7	6.7	0.7	6.5	0.6	5.9	0.4	4.8	
		nOE to nBn	1.5	9.8	0.9	8.8	0.8	7.0	0.6	5.8	0.6	4	
tdis	Disable Time	nOE to nAn	0.7	9.0	1	8.4	1	8.4	1	6.2	1	6.6	
		nOE to nBn	0.9	9.9	1.5	9.4	1.3	8.2	1.1	6.2	0.9	5.2	

V$_{CCA}$ = 3.3V ± 0.3V

Parameter	Test Conditions	Direction	V$_{CCB}$										Unit
			1.2V ± 0.1V		1.5V ± 0.1V		1.8V ± 0.15V		2.5V ± 0.2V		3.3V ± 0.3V		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	nAn to nBn	0.1	7.3	0.1	5.6	0.1	4.5	0.1	3.7	0.1	2.9	ns
		nBn to nAn	0.6	4.6	0.6	4.2	0.4	3.9	0.2	3.7	0.1	2.8	
ten	Enable Time	nOE to nAn	0.7	9.2	0.6	8.7	0.6	5.9	0.6	5.6	0.4	3.8	
		nOE to nBn	1.4	9.5	0.8	8.7	0.6	6.8	0.5	5.7	0.5	3.8	
tdis	Disable Time	nOE to nAn	0.6	9.5	0.7	9.3	0.7	8.3	0.7	5.6	0.7	6.6	
		nOE to nBn	0.8	9.5	1.4	9.3	1.2	8.1	1	6.4	0.8	6.2	

Operating Characteristics (@T$_A$ = +25°C, unless otherwise specified.)

| Parameter	Test Conditions			0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	Unit
CpdA	A to B	Enabled	C$_L$ = 0 R$_L$ = Open f = 10MHz tr = tf = 1ns V$_{CCA}$ = V$_{CCB}$	0.2	0.2	0.2	0.2	0.3	0.4	pF
		Disabled		0.2	0.2	0.2	0.2	0.3	0.4	
	B to A	Enabled		9.5	9.7	9.8	9.9	10.7	11.9	
		Disabled		0.6	0.6	0.6	0.6	0.7	0.7	
CpdB	A to B	Enabled	C$_L$ = 0 R$_L$ = Open f = 10MHz tr = tf = 1ns V$_{CCA}$ = V$_{CCB}$	9.5	9.7	9.8	9.9	10.7	11.9	
		Disabled		0.6	0.6	0.6	0.6	0.7	0.7	
	B to A	Enabled		0.2	0.2	0.2	0.2	0.3	0.4	
		Disabled		0.2	0.2	0.2	0.2	0.3	0.4	

Parameter Measurement Information
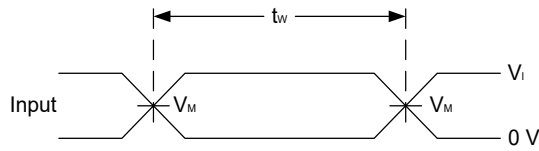
Voltage Waveform Pulse Duration
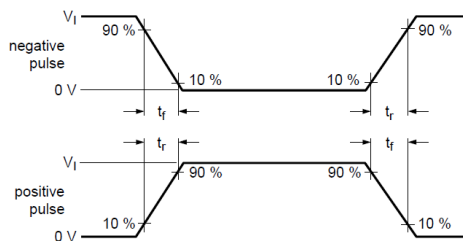
The VI Source Waveform
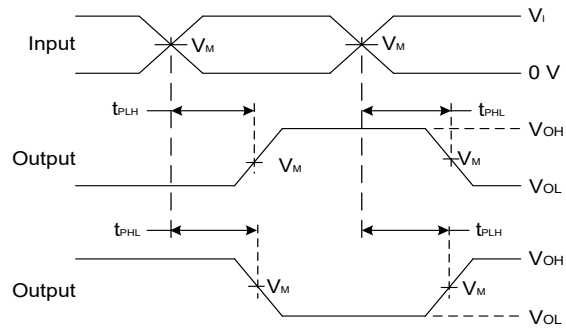
Voltage Waveform Propagation Delay Time Inverting and Non-Inverting Outputs
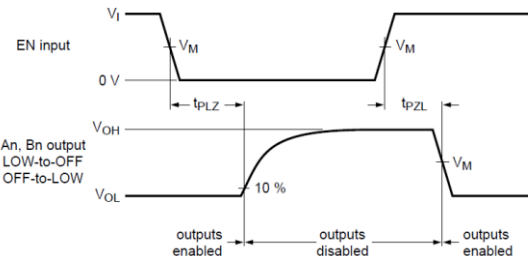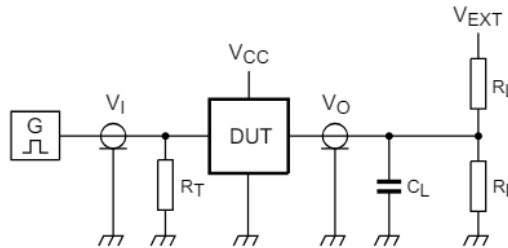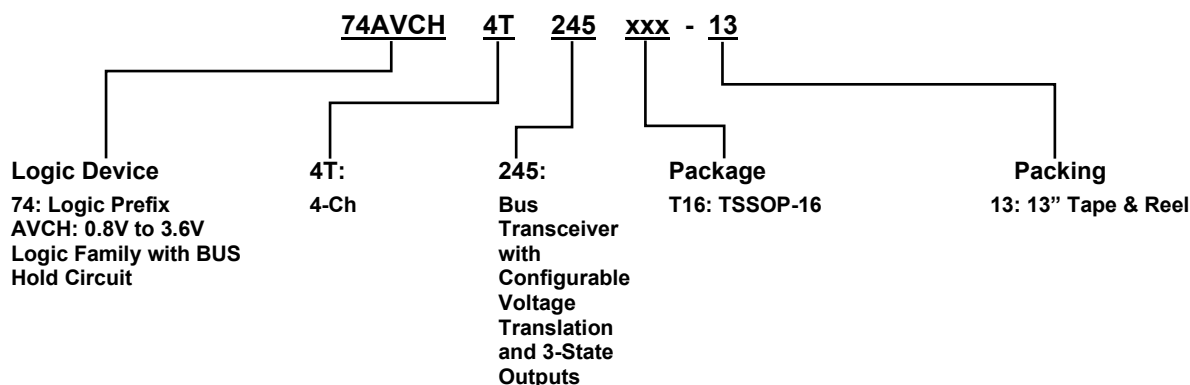
The Enable/Disable (EN) to Output (nAn/nBn) Time

Figure 1. Load Circuit and Voltage Waveforms

Parameter	S1
tpd	Open
ten/ tdis	2*VCCO
ten/ tdis	GND

V_{CC}	R_L	C_L	V_{TP}
0.8V-1.6V	2kΩ	15pF	0.1V
1.65V-2.7V	2kΩ	15pF	0.15V
3.0V-3.6V	2kΩ	15pF	0.3V

Notes: 12. Includes test lead and test apparatus capacitance.
13. f = 1MHz, Δt/ΔV < 1ns/V
14. t_{PLH} and t_{PHL} are the same as t_{PD}.
15. t_r, t_f < 1ns.

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Ordering Information (Notes 16, 17 & 18)

74AVCH **4T** **245** **xxx** **- 13**

Logic Device
74: Logic Prefix
AVCH: 0.8V to 3.6V
Logic Family with BUS
Hold Circuit

4T:
4-Ch

245:
Bus
Transceiver
with
Configurable
Voltage
Translation
and 3-State
Outputs

Package
T16: TSSOP-16

Packing
13: 13" Tape & Reel

Orderable Part Number	Package Code	Packae	Packing	
			Qty.	Carrier
74AVCH4T245T16-13	T16	TSSOP-16	2500	Tape & Reel

Notes: 16. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.
17. Pad layout as shown in Diodes Incorporated's package outline PDFs, which can be found on our website at http://www.diodes.com/package-outlines.html.
18. The taping orientation is located on our website at https://www.diodes.com/assets/Packaging-Support-Docs/AP02007.pdf.

Marking Information

TSSOP-16

(Top View)

Logo
Identification Code

AVCH4T245
YY WW XX

YY : Year (ex: 25 = 2025)
WW : Week : 01 to 52; 52
         represents week 52 and 53
XX : Internal Code
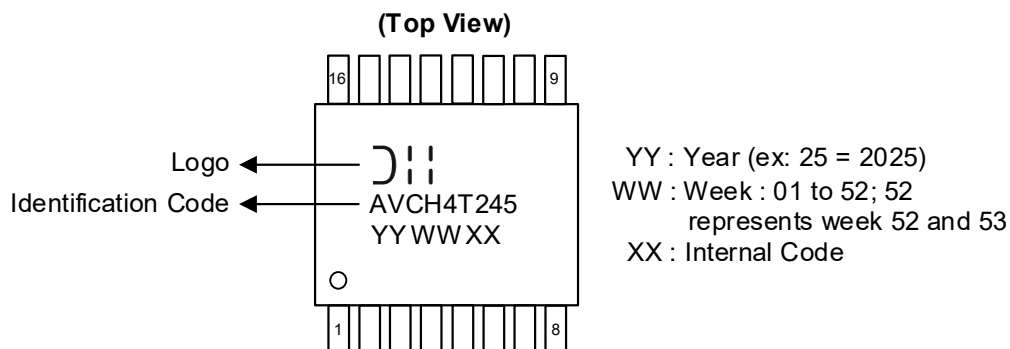
Orderable Part Number	Package	Identification Code
74AVCH4T245T16-13	TSSOP-16	AVCH4T245

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Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.
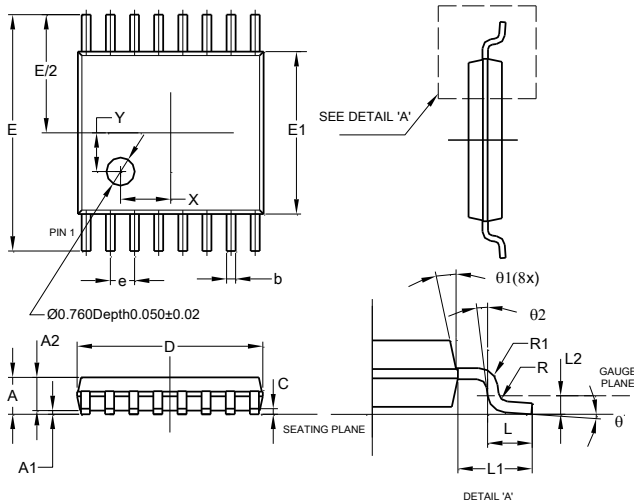
TSSOP-16

TSSOP-16			
Dim	**Min**	**Max**	**Typ**
A	-	1.08	-
A1	0.05	0.15	-
A2	0.80	0.93	-
b	0.19	0.30	-
c	0.09	0.20	-
D	4.90	5.10	-
E	6.40 BSC		
E1	4.30	4.50	-
e	0.65 BSC		
L	0.45	0.75	-
L1	1.00 REF		
L2	0.25 BSC		
R / R1	0.09	-	-
X	-	-	1.350
Y	-	-	1.050
θ	0°	8°	-
θ1	5°	15°	-
θ2	0°	-	-
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.
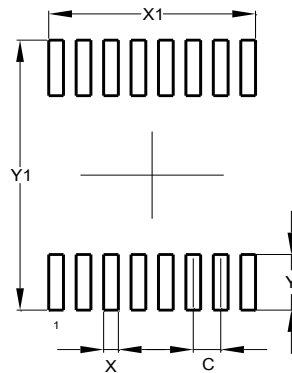
TSSOP-16

Dimensions	Value (in mm)
C	0.650
X	0.350
X1	4.900
Y	1.400
Y1	6.800

Mechanical Data

TSSOP-16

- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Mate Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.055 grams (Approximate)

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