

## Description

The 74AVC4T774 device is 4-bit, dual supply transceiver that enables bi-directional level translation, designed for asynchronous communication between two data buses. It has four 1-bit input-output ports (An and Bn), 4 direction control input (DIRn), an output enable input (OE) and dual supply pins (VCCA and VCCB). Both VCCA and VCCB can be supplied at any voltage features 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 An, OE and DIRn are referenced to VCCA and pins Bn are referenced to VCCB. A HIGH on DIRn allows transmission from An to Bn and a LOW on DIRn allows transmission from Bn to An. The output enable input (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 An and Bn are in the high-impedance OFF-state.

The 74AVC4T774 is available in 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.

## 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 ( $\pm 12\text{mA}$  at 3.3V)
- Each Channel Has an Independent DIR Control Input
- 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.**

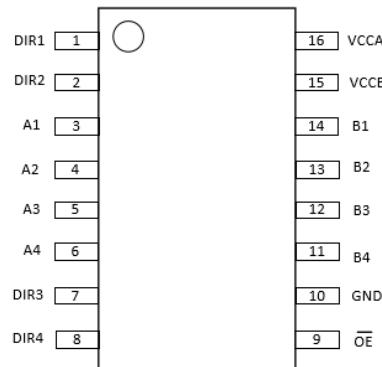
<https://www.diodes.com/quality/product-definitions/>

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 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.
- 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 Assignments

### Top View



**TSSOP-16**

## Applications

- Personal electronics
- Industrial
- Enterprises
- Telecoms

## Pin Descriptions

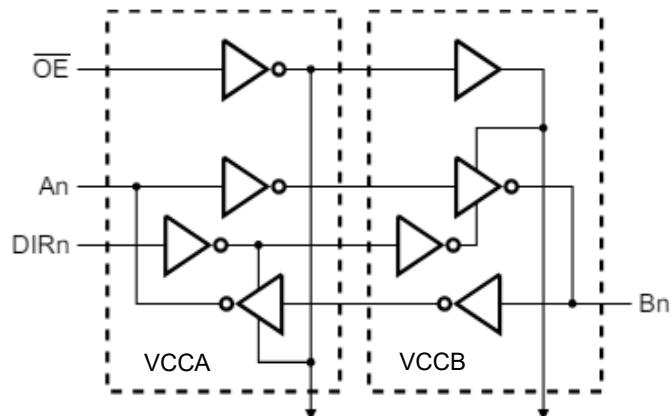
Pin Name	Pin Number	Function
DIR1	1	Direction Control Pin for Port "1".
DIR2	2	Direction Control Pin for Port "2".
A1	3	Input/Output A1. Referenced to VCCA.
A2	4	Input/Output A2. Referenced to VCCA.
A3	5	Input/Output A3. Referenced to VCCA.
A4	6	Input/Output A4. Referenced to VCCA.
DIR3	7	Direction Control Pin for Port "3".
DIR4	8	Direction Control Pin for Port "4".
$\overline{OE}$	9	3-State Output-Mode Enable. Pull to High to place port "2" outputs in high-impedance mode. Referenced to VCCA.
GND	10	Ground
B4	11	Input/Output B4. Referenced to VCCB.
B3	12	Input/Output B3. Referenced to VCCB.
B2	13	Input/Output B2. Referenced to VCCB.
B1	14	Input/Output B1. Referenced to VCCB.
VCCB	15	B Port Supply Voltage
VCCA	16	A 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



**Absolute Maximum Ratings** (Note 5) (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	Rating	Unit
ESD HBM	Human Body Model ESD Protection	7.5	kV
ESD CDM	Charged Device Model ESD Protection	1.5	kV
V <sub>CCA</sub> , V <sub>CCB</sub>	Supply Voltage Range	-0.5 to +4.6	V
V <sub>I</sub>	Input Voltage Range	-0.5 to +4.6	V
V <sub>O</sub>	Voltage Applied to Output in High Impedance or I <sub>OFF</sub> State	-0.5 to +4.6	V
V <sub>O</sub>	Voltage Applied to Output in High or Low State	-0.5 to V <sub>CCO</sub> +0.5	V
I <sub>IK</sub>	Input Clamp Current V <sub>I</sub> < 0	-50	mA
I <sub>OK</sub>	Output Clamp Current	-50	mA
I <sub>O</sub>	Continuous Output Current	$\pm 50$	mA
—	Continuous Current Through V <sub>CCA</sub> or GND	$\pm 100$	mA
T <sub>J</sub>	Operating Junction Temperature	+150	°C
T <sub>STG</sub>	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) (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	V <sub>CCI</sub>	V <sub>CCO</sub>	Min	Max	Unit
V <sub>CCA</sub>	Operating Voltage	—	—	0.8	3.6	V
V <sub>CCB</sub>	Operating Voltage	—	—	0.8	3.6	V
I <sub>OH</sub>	High-Level Output Current Data Input, DIRn, OE 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 <sub>OL</sub>	Low-Level Output Current Data Input, DIRn, OE 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 <sub>I</sub>	Input Voltage			0	3.6	V
V <sub>O</sub>	Output Voltage	Active State		0	V <sub>CCO</sub>	V
		Tri-State		0	3.6	V
T <sub>A</sub>	Operating Free-Air Temperature			-40	+125	°C

Notes: 6. V<sub>CCI</sub> is the V<sub>CC</sub> associated with the input port.

7. V<sub>CCO</sub> is the V<sub>CC</sub> associated with the output port.

8. All unused data inputs of the device must be held at V<sub>CCI</sub> or GND to ensure proper device operation.

**Electrical Characteristics** (Notes 6, 7, 8, 9 & 10) (@ $T_A = +40^\circ\text{C}$  to  $+125^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	$V_{\text{CCI}}$	$V_{\text{CCO}}$	$T_A = +25^\circ\text{C}$			$T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$		$T_A = -40^\circ\text{C}$ to $+125^\circ\text{C}$		Unit
					Min	Typ	Max	Min	Max	Min	Max	
$V_{\text{IH}}$	High-Level Input Voltage	Data Input, DIRn, $\overline{\text{OE}}$ Input	0.8V	—	0.70 $V_{\text{CCI}}$	—	—	0.70 $V_{\text{CCI}}$	—	0.70 $V_{\text{CCI}}$	—	V
			1.1V to 1.95V	—	0.65 $V_{\text{CCI}}$	—	—	0.65 $V_{\text{CCI}}$	—	0.65 $V_{\text{CCI}}$	—	
			1.95V to 2.7V	—	1.6	—	—	1.6	—	1.6	—	
			2.7V to 3.6V	—	2	—	—	2	—	2	—	
$V_{\text{IL}}$	Low-Level Input Voltage	Data Input, DIRn, $\overline{\text{OE}}$ Input	0.8V	—	—	—	0.3 $V_{\text{CCI}}$	—	0.3 $V_{\text{CCI}}$	—	0.3 $V_{\text{CCI}}$	V
			1.1V to 1.95V	—	—	—	0.35 $V_{\text{CCI}}$	—	0.35 $V_{\text{CCI}}$	—	0.35 $V_{\text{CCI}}$	
			1.95V to 2.7V	—	—	—	0.7	—	0.7	—	0.7	
			2.7V to 3.6V	—	—	—	0.8	—	0.8	—	0.8	
$V_{\text{OH}}$	High-Level Output Voltage	$I_{\text{OH}} = -0.1\text{mA}$	0.8V-3.6V	0.8V-3.6V	$V_{\text{CCO}} - 0.1$	—	—	$V_{\text{CCO}} - 0.1$	—	$V_{\text{CCO}} - 0.1$	—	V
		$I_{\text{OH}} = -3\text{mA}$	1.1V	1.1V	0.95	—	—	0.85	—	0.85	—	
		$I_{\text{OH}} = -6\text{mA}$	1.4V	1.4V	1.05	—	—	1.05	—	1.05	—	
		$I_{\text{OH}} = -8\text{mA}$	1.65V	1.65V	1.2	—	—	1.2	—	1.2	—	
		$I_{\text{OH}} = -9\text{mA}$	2.3V	2.3V	1.75	—	—	1.75	—	1.75	—	
		$I_{\text{OH}} = -12\text{mA}$	3V	3V	2.3	—	—	2.3	—	2.3	—	
$V_{\text{OL}}$	Low-Level Output Voltage	$I_{\text{OL}} = 0.1\text{mA}$	0.8V-3.6V	0.8V-3.6V	—	—	0.1	—	0.1	—	0.1	V
		$I_{\text{OL}} = 3\text{mA}$	1.1V	1.1V	—	—	0.25	—	0.25	—	0.27	
		$I_{\text{OL}} = 6\text{mA}$	1.4V	1.4V	—	—	0.35	—	0.35	—	0.35	
		$I_{\text{OL}} = 8\text{mA}$	1.65V	1.65V	—	—	0.45	—	0.45	—	0.45	
		$I_{\text{OL}} = 9\text{mA}$	2.3V	2.3V	—	—	0.55	—	0.55	—	0.55	
		$I_{\text{OL}} = 12\text{mA}$	3V	3V	—	—	0.7	—	0.7	—	0.7	

Notes:

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

**Electrical Characteristics** (Notes 6, 7, 8, 9 & 10) (@ $T_A = +40^\circ\text{C}$  to  $+125^\circ\text{C}$ , unless otherwise specified.) (continued)

Symbol	Parameter	Test Conditions		V <sub>CCI</sub>	V <sub>CCO</sub>	T <sub>A</sub> = $+25^\circ\text{C}$			T <sub>A</sub> = $-40^\circ\text{C}$ to $+85^\circ\text{C}$		T <sub>A</sub> = $-40^\circ\text{C}$ to $+125^\circ\text{C}$		Unit	
						Min	Typ	Max	Min	Max	Min	Max		
I <sub>I</sub>	Input Current	V <sub>I</sub> = V <sub>CCA</sub> or GND		0.8V-3.6V	0.8V-3.6V	—	—	$\pm 0.25$	—	$\pm 1$	—	$\pm 1$	$\mu\text{A}$	
I <sub>OFF</sub>	Off-State Current	A or B Port	V <sub>I</sub> or V <sub>O</sub> = 0 to 3.6V	0	0.8V-3.6V	—	—	$\pm 1$	—	$\pm 3$	—	$\pm 10$	$\mu\text{A}$	
				0.8V-3.6V	0	—	—	$\pm 1$	—	$\pm 3$	—	$\pm 10$	$\mu\text{A}$	
I <sub>OZ</sub>	High-Z State Current	A or B Port	V <sub>I</sub> or V <sub>O</sub> = 0 to 3.6V	3.6V	3.6V	—	—	$\pm 1$	—	$\pm 2$	—	$\pm 5$	$\mu\text{A}$	
				3.6V	0	—	—	$\pm 1$	—	$\pm 2$	—	$\pm 5$	$\mu\text{A}$	
				0	3.6V	—	—	$\pm 1$	—	$\pm 2$	—	$\pm 5$	$\mu\text{A}$	
I <sub>CCA</sub>	Supply Current	V <sub>I</sub> = V <sub>CCI</sub> or GND I <sub>O</sub> = 0		0.8V-3.6V	0.8V-3.6V	—	—	$\pm 1$	—	$\pm 10$	—	$\pm 35$	$\mu\text{A}$	
				0.8V-1.1V	0.8V-1.1V	—	—	$\pm 1$	—	$\pm 8$	—	$\pm 25$		
				0-3.6V	0	—	—	$\pm 1$	—	$\pm 10$	—	$\pm 35$		
				0	0-3.6V	—	—	$\pm 1$	—	$\pm 1$	—	$\pm 1$		
I <sub>CCB</sub>	Supply Current	V <sub>I</sub> = V <sub>CCI</sub> or GND I <sub>O</sub> = 0		0.8V-3.6V	0.8V-3.6V	—	—	$\pm 1$	—	$\pm 10$	—	$\pm 35$	$\mu\text{A}$	
				0.8V-1.1V	0.8V-1.1V	—	—	$\pm 1$	—	$\pm 8$	—	$\pm 25$		
				0-3.6V	0	—	—	$\pm 1$	—	$\pm 1$	—	$\pm 1$		
				0	0-3.6V	—	—	$\pm 1$	—	$\pm 10$	—	$\pm 35$		
I <sub>CCA</sub> + I <sub>CCB</sub>	Supply Current	V <sub>I</sub> = V <sub>CCI</sub> or GND I <sub>O</sub> = 0		0.8V-3.6V	0.8V-3.6V	—	—	$\pm 2$	—	$\pm 20$	—	$\pm 70$	$\mu\text{A}$	
C <sub>I</sub>	Control Input Capacitance	DIRn, OE Input	V <sub>I</sub> = 3.3V or GND	3.3V	3.3V	—	3.5	—	—	4.5	—	4.5	pF	
C <sub>O</sub>	Input/Output Capacitance	A or B	V <sub>O</sub> = 3.3V or GND	3.3V	3.3V	—	6	—	—	7	—	7	pF	

Notes:

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

**Package Characteristics**

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

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

**Switching Characteristics** (@ $T_A = -40^\circ\text{C}$  to  $+125^\circ\text{C}$ , unless otherwise specified.)

**V<sub>CCA</sub> = 0.8V**

Parameter	Test Conditions	Direction	V <sub>CCB</sub>						Unit
			0.8V	1.2V $\pm$ 0.1V	1.5V $\pm$ 0.1V	1.8V $\pm$ 0.15V	2.5V $\pm$ 0.2V	3.3V $\pm$ 0.3V	
			Typ	Typ	Typ	Typ	Typ	Typ	
tpd	Propagation Delay	An to Bn	11.0	7.3	6.5	6.2	6.5	7.0	ns
		Bn to An	11.0	10.0	12.4	12.3	12.1	12.0	
ten	Enable Time	$\bar{OE}$ to An	18.2	18.2	18.2	18.2	18.2	18.2	ns
		$\bar{OE}$ to Bn	19.2	12.7	11.4	10.9	10.7	11.1	
tdis	Disable Time	$\bar{OE}$ to An	14.3	14.3	14.3	14.3	14.3	14.3	ns
		$\bar{OE}$ to Bn	12.6	9.9	9.0	9.4	9.0	9.7	

**V<sub>CCB</sub> = 0.8V**

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

**Switching Characteristics** (@ $T_A = -40^\circ\text{C}$  to  $+125^\circ\text{C}$ , unless otherwise specified.) (continued)

**V<sub>CCA</sub> = 1.2V  $\pm 0.1\text{V}$** 

Parameter	Test Conditions	Direction	V <sub>CCB</sub>															Unit	
			1.2V $\pm 0.1\text{V}$			1.5V $\pm 0.1\text{V}$			1.8V $\pm 0.15\text{V}$			2.5V $\pm 0.2\text{V}$			3.3V $\pm 0.3\text{V}$				
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max		
tpd	Propagation Delay	An to Bn	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	
		Bn to An	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	$\bar{OE}$ to An	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	ns	
		$\bar{OE}$ to Bn	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	$\bar{OE}$ to An	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	ns	
		$\bar{OE}$ to Bn	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<sub>CCA</sub> = 1.5V  $\pm 0.1\text{V}$** 

Parameter	Test Conditions	Direction	V <sub>CCB</sub>												Unit
			1.2V $\pm 0.1\text{V}$		1.5V $\pm 0.1\text{V}$		1.8V $\pm 0.15\text{V}$		2.5V $\pm 0.2\text{V}$		3.3V $\pm 0.3\text{V}$				
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	An to Bn	0.3	7.8	0.3	6.3	0.3	5.2	0.4	4.2	0.4	4.2	ns	ns	
		Bn to An	0.7	6.3	0.7	6.3	0.5	5.9	0.4	5.7	0.3	5.6			
ten	Enable Time	$\bar{OE}$ to An	1.8	10.5	1.4	9.6	1.1	9.5	0.7	9.7	0.4	9.4	ns	ns	
		$\bar{OE}$ to Bn	1.9	11.0	1.4	9.6	1.1	7.7	0.9	7.1	0.9	6.9			
tdis	Disable Time	$\bar{OE}$ to An	1.1	10.2	1.8	10.2	1.5	10.2	1.3	10.2	1.6	10.2	ns	ns	
		$\bar{OE}$ to Bn	1.4	10.4	1.9	10.3	1.9	9.1	1.4	7.4	1.2	7.6			

**V<sub>CCA</sub> = 1.8V  $\pm 0.15\text{V}$** 

Parameter	Test Conditions	Direction	V <sub>CCB</sub>												Unit
			1.2V $\pm 0.1\text{V}$		1.5V $\pm 0.1\text{V}$		1.8V $\pm 0.15\text{V}$		2.5V $\pm 0.2\text{V}$		3.3V $\pm 0.3\text{V}$				
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
tpd	Propagation Delay	An to Bn	0.1	7.7	0.1	5.9	0.1	4.9	0.1	3.9	0.3	3.9	ns	ns	
		Bn to An	0.6	5.5	0.6	5.3	0.5	4.9	0.3	4.6	0.3	4.5			
ten	Enable Time	$\bar{OE}$ to An	1.8	9.0	1	8.6	1	7.3	0.6	7.3	0.4	7.2	ns	ns	
		$\bar{OE}$ to Bn	1.7	10.5	1.2	9.2	1	7.4	0.8	6.7	0.8	6.5			
tdis	Disable Time	$\bar{OE}$ to An	1.0	8.9	1.6	8.6	1.8	8.7	1.3	8.7	1.6	8.7	ns	ns	
		$\bar{OE}$ to Bn	1.2	10.0	1.7	9.9	1.6	8.7	1.2	7.4	1	6.9			

**Switching Characteristics** (@ $T_A = -40^\circ\text{C}$  to  $+125^\circ\text{C}$ , unless otherwise specified.) (continued)

 **$V_{CCA} = 2.5\text{V} \pm 0.2\text{V}$** 

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

 **$V_{CCA} = 3.3\text{V} \pm 0.3\text{V}$** 

Parameter	Test Conditions	Direction	V <sub>CCB</sub>										Unit	
			1.2V $\pm 0.1\text{V}$		1.5V $\pm 0.1\text{V}$		1.8V $\pm 0.15\text{V}$		2.5V $\pm 0.2\text{V}$		3.3V $\pm 0.3\text{V}$			
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
tpd	Propagation Delay	An to Bn	0.1	7.3	0.1	5.6	0.1	4.5	0.1	3.7	0.1	2.9	ns	
		Bn to An	0.6	4.6	0.6	4.2	0.4	3.9	0.2	3.7	0.1	2.8		
ten	Enable Time	$\bar{OE}$ to An	0.7	9.2	0.6	8.7	0.6	5.9	0.6	5.6	0.4	3.8	ns	
		$\bar{OE}$ to Bn	1.4	9.5	0.8	8.7	0.6	6.8	0.5	5.7	0.5	3.8		
tdis	Disable Time	$\bar{OE}$ to An	0.6	9.5	0.7	9.3	0.7	8.3	0.7	5.6	0.7	6.6	ns	
		$\bar{OE}$ to Bn	0.8	9.5	1.4	9.3	1.2	8.1	1	6.4	0.8	6.2		

**Operating Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Parameter	Test Conditions			0.8V	1.2V	1.5V	1.8V	2.5V	3.3V	Unit
CpdA	A to B	Enabled	$C_L = 0$ $R_L = \text{Open}$ $f = 10\text{MHz}$ $tr = tf = 1\text{ns}$ $V_{CCA} = V_{CCB}$	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	$C_L = 0$ $R_L = \text{Open}$ $f = 10\text{MHz}$ $tr = tf = 1\text{ns}$ $V_{CCA} = V_{CCB}$	9.5	9.7	9.8	9.9	10.7	11.9	pF
		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

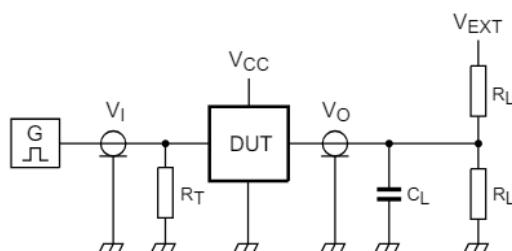
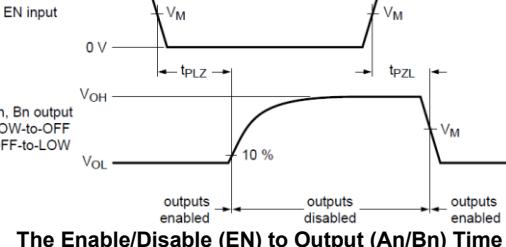
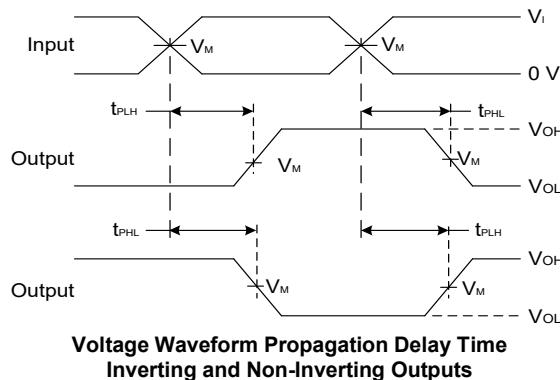
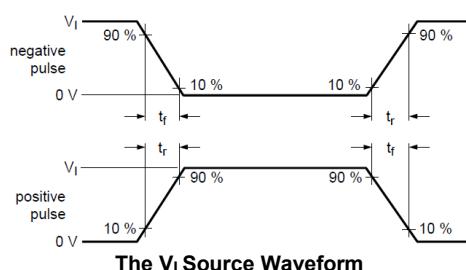
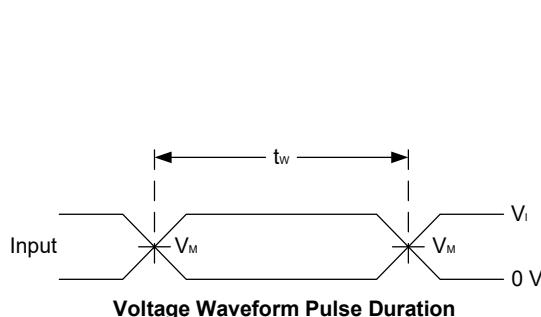


Figure 1. Load Circuit and Voltage Waveforms

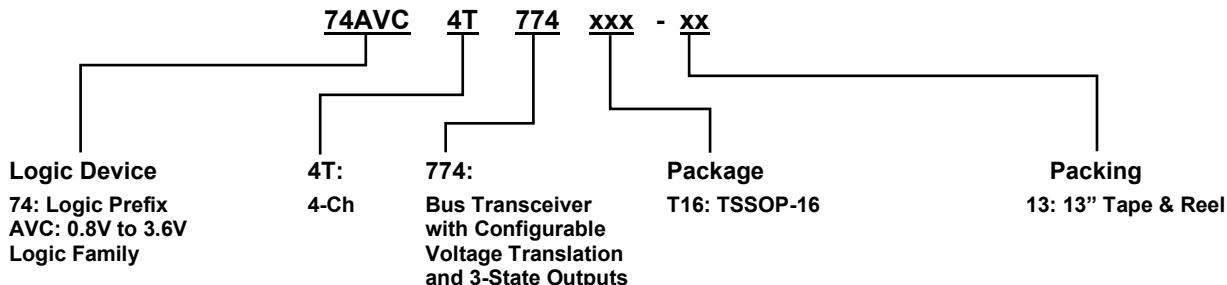
Parameter	S1
tpd	Open
ten/tdis	$2 \times V_{CC0}$
ten/tdis	GND

$V_{CC}$	$R_L$	$C_L$	$V_{TP}$
0.8V-1.6V	$2\text{k}\Omega$	15pF	0.1V
1.65V-2.7V	$2\text{k}\Omega$	15pF	0.15V
3.0V-3.6V	$2\text{k}\Omega$	15pF	0.3V

Notes:

12. Includes test lead and test apparatus capacitance.
13.  $f = 1\text{MHz}$ ,  $\Delta t/\Delta V < 1\text{ns/V}$ .
14.  $t_{PLH}$  and  $t_{PHL}$  are the same as  $t_{PD}$ .
15.  $t_r, t_f < 1\text{ns}$ .

## Ordering Information (Notes 16, 17 & 18)



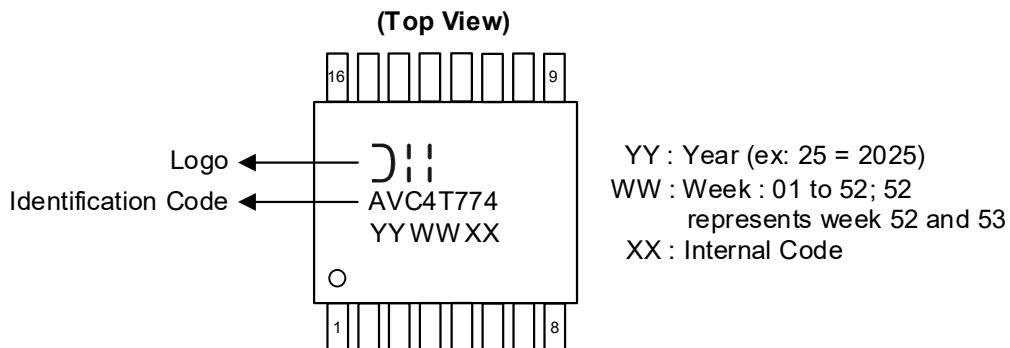
Orderable Part Number	Package Code	Package	Packing	
			Qty.	Carrier
74AVC4T774T16-13	T16	TSSOP-16	2500	Tape & Reel

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

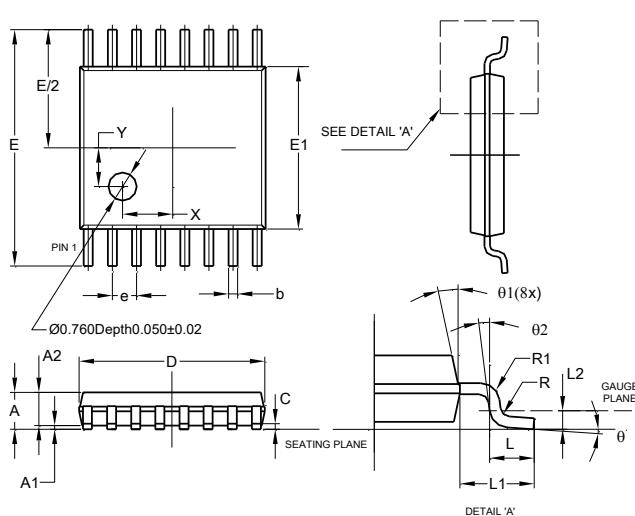


Orderable Part Number	Package	Identification Code
74AVC4T774T16-13	TSSOP-16	AVC4T774

## Package Outline Dimensions

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

TSSOP-16



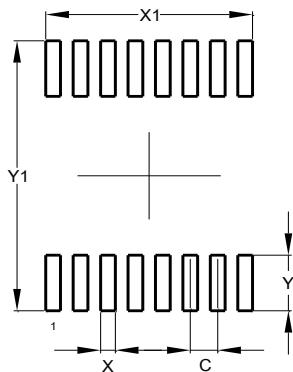
TSSOP-16			
Dim	Min	Max	Typ
<b>A</b>	-	1.08	-
<b>A1</b>	0.05	0.15	-
<b>A2</b>	0.80	0.93	-
<b>b</b>	0.19	0.30	-
<b>c</b>	0.09	0.20	-
<b>D</b>	4.90	5.10	-
<b>E</b>	6.40 BSC		
<b>E1</b>	4.30	4.50	-
<b>e</b>	0.65 BSC		
<b>L</b>	0.45	0.75	-
<b>L1</b>	1.00 REF		
<b>L2</b>	0.25 BSC		
<b>R / R1</b>	0.09	-	-
<b>X</b>	-	-	1.350
<b>Y</b>	-	-	1.050
<b>θ</b>	0°	8°	-
<b>θ1</b>	5°	15°	-
<b>θ2</b>	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)
<b>C</b>	0.650
<b>X</b>	0.350
<b>X1</b>	4.900
<b>Y</b>	1.400
<b>Y1</b>	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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