

1. SCOPE

1.1 Scope. This drawing documents the general requirements of a high performance 36-bit bus transceiver with three-state outputs microcircuit, with an operating temperature range of -55°C to +125°C.

1.2 Vendor Item Drawing Administrative Control Number. The manufacturer's PIN is the item of identification. The vendor item drawing establishes an administrative control number for identifying the item on the engineering documentation:

<u>V62/03620</u>	-	<u>01</u>	<u>X</u>	<u>E</u>
Drawing number		Device type (See 1.2.1)	Case outline (See 1.2.2)	Lead finish (See 1.2.3)

1.2.1 Device type(s).

<u>Device type</u>	<u>Generic</u>	<u>Circuit function</u>
01	74ABTH32245-EP	36-bit bus transceiver with three-state outputs

1.2.2 Case outline(s). The case outline(s) are as specified herein.

<u>Outline letter</u>	<u>Number of pins</u>	<u>JEDEC PUB 95</u>	<u>Package style</u>
X	100	MS-026	Plastic quad flatpack

1.2.3 Lead finishes. The lead finishes are as specified below or other lead finishes as provided by the device manufacturer:

<u>Finish designator</u>	<u>Material</u>
A	Hot solder dip
B	Tin-lead plate
C	Gold plate
D	Palladium
E	Gold flash palladium
F	Tin-lead alloy
Z	Other

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 2

1.3 Absolute maximum ratings. 1/

Supply voltage range (V_{CC})	-0.5 V to 7.0 V
Input voltage range (V_I) (except I/O ports)	-0.5 V to 7.0 V <u>2/</u>
Voltage range applied to any output in the high or power-off state (V_O).....	-0.5 V to 5.5 V
Current into any output in the low state (I_O).....	96 mA
Input clamp current (I_{IK}) ($V_I < 0$)	-18 mA
Output clamp current (I_{OK}) ($V_O < 0$)	-50 mA
Storage temperature range (T_{STG}).....	-65°C to 150°C
Package thermal impedance (θ_{JA}): <u>3/</u>	
X package	50°C/W

1.4 Recommended operating conditions. 4/ 5/

Supply voltage range (V_{CC})	4.5 V to 5.5 V
Input voltage range (V_I)	0.0 V to V_{CC}
Minimum high level input voltage (V_{IH})	2.0 V
Maximum low level input voltage (V_{IL})	0.8 V
Maximum high level output current (I_{OH})	-24 mA
Maximum low level output current (I_{OL})	48 mA
Maximum input transition rise or fall rate ($\Delta t/\Delta v$) (Outputs enabled).....	10 ns/V
Minimum power-up ramp rate ($\Delta t/\Delta V_{CC}$).....	200 μ s/V
Operating free-air temperature range (T_A)	-55°C to +125°C

-
- 1/ Stresses beyond those listed under “absolute maximum ratings” may 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-rated conditions for extended periods may affect device reliability.
- 2/ The input and output negative-voltage ratings may be exceeded if the input and output clamp-current ratings are observed.
- 3/ The package thermal impedance is calculated in accordance with JESD 51-7.
- 4/ Use of this product beyond the manufacturers design rules or stated parameters is done at the user's risk. The manufacturer and/or distributor maintain no responsibility or liability for product used beyond the stated limits.
- 5/ Unused control pins must be held high or low to prevent them from floating.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 3

2. APPLICABLE DOCUMENTS

JEDEC – SOLID STATE TECHNOLOGY ASSOCIATION (JEDEC)

- JEDEC PUB 95 - Registered and Standard Outlines for Semiconductor Devices
- JEDEC STD 51-7 - High Effective Thermal Conductivity Test Board for Leaded Surface Mount Packages

(Applications for copies should be addressed to the Electronic Industries Alliance, 3103 North 10th Street, Suite 240–S, Arlington, VA 22201-2107 or online at <https://www.jedec.org>)

3. REQUIREMENTS

3.1 Marking. Parts shall be permanently and legibly marked with the manufacturer's part number as shown in 6.3 herein and as follows:

- A. Manufacturer's name, CAGE code, or logo
- B. Pin 1 identifier
- C. ESDS identification (optional)

3.2 Unit container. The unit container shall be marked with the manufacturer's part number and with items A and C (if applicable) above.

3.3 Electrical characteristics. The maximum and recommended operating conditions and electrical performance characteristics are as specified in 1.3, 1.4, and table I herein.

3.4 Design, construction, and physical dimension. The design, construction, and physical dimensions are as specified herein.

3.5 Diagrams.

3.5.1 Case outline(s). The case outline(s) shall be as shown in 1.2.2 and figure 1.

3.5.2 Truth table. The truth table shall be as shown in figure 2.

3.5.3 Logic diagram. The logic diagram shall be as shown in figure 3.

3.5.4 Terminal connections. The terminal connections shall be as shown in figure 4.

3.5.5 Test circuit and timing waveforms. The test circuit and timing waveforms shall be as shown in figure 5.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 4

TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Conditions		V _{CC}	Temperature, T _A	Device type	Limits		Unit
							Min	Max	
Input clamp voltage	V _{IK}	I _I = -18 mA		4.5 V	25°C, -55°C to 125°C	All		-1.2	V
High level output voltage	V _{OH}	I _{OH} = -3 mA		4.5 V	25°C, -55°C to 125°C	All	2.5		V
		I _{OH} = -3 mA		5.0 V			3		
		I _{OH} = -24 mA		4.5 V			2		
Low level output voltage	V _{OL}	I _{OL} = 48 mA		4.5 V	25°C, -55°C to 125°C	All		0.55	V
Hysteresis (V _{T+} - V _{T-})	V _{hys}			5.0 V	25°C	All	100 typical		mV
Input current	I _I	V _I = V _{CC} or GND	Control inputs	5.5 V	25°C, -55°C to 125°C	All		±1	μA
			A or B ports					±20	
Input bus hold current	I _{I(hold)}	V _I = 0.8 V	A or B ports	4.5 V	25°C, -55°C to 125°C	All	100		μA
		V _I = 2.0 V					-100		
Three-state power-up current	I _{OZPU} <u>2/</u>	V _O = 0.5 V to 2.7 V OE = X		0 V to 2.1 V	25°C, -55°C to 125°C	All		±50	μA
Three-state power-down current	I _{OZPD} <u>2/</u>	V _O = 0.5 V to 2.7 V OE = X		2.1 V to 0 V	25°C, -55°C to 125°C	All		±50	μA
High-state leakage current	I _{CEX}	V _O = 5.5 V Outputs high		5.5 V	25°C, -55°C to 125°C	All		50	μA
Output current	I _O <u>3/</u>	V _O = 2.5 V		5.5 V	25°C, -55°C to 125°C	All	-50	-180	mA
Quiescent supply current	I _{CC}	V _I = V _{CC} or GND I _O = 0 A	Outputs high	5.5 V	25°C, -55°C to 125°C	All		3	mA
			Outputs low					20	
			Output disabled					2	
Quiescent supply current delta, TTL input level	ΔI _{CC} <u>4/</u>	One input at 3.4 V, other inputs at V _{CC} or GND		5.5 V	25°C, -55°C to 125°C	All		1	mA
Input capacitance	C _I	V _I = 2.5 V or 0.5 V Control inputs		5.0 V	25°C	All	3.5 typical		pF
I/O capacitance	C _{IO}	V _O = 2.5 V or 0.5 V A or B ports		5.0 V	25°C	All	9.5 typical		pF

See footnotes at end of table.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 5

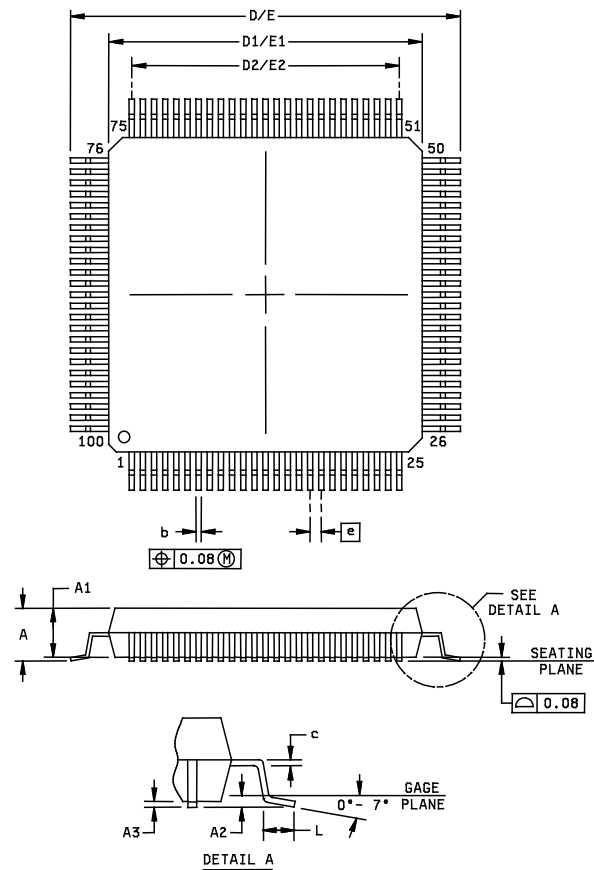
TABLE I. Electrical performance characteristics - Continued. 1/

Test	Symbol	Conditions	V _{CC}	Temperature, T _A	Device type	Limits		Unit
						Min	Max	
Propagation delay time, A to B or B to A	t _{PLH}	C _L = 50 pF See figure 5	4.5 V to 5.5 V	25°C, -55°C to 125°C	All	1	5.3	ns
	t _{PHL}					1	5.3	
Propagation delay time, output enable, $\overline{\text{OE}}$ to B or A	t _{PZH}		4.5 V to 5.5 V	25°C, -55°C to 125°C	All	1	7.6	ns
	t _{PZL}					1.5	8.2	
Propagation delay time, output disable, $\overline{\text{OE}}$ to B or A	t _{PHZ}		4.5 V to 5.5 V	25°C, -55°C to 125°C	All	0.8	6.7	ns
	t _{PLZ}					1	7.2	

- 1/ Testing and other quality control techniques are used to the extent deemed necessary to assure product performance over the specified temperature range. Product may not necessarily be tested across the full temperature range and all parameters may not necessarily be tested. In the absence of specific parametric testing, product performance is assured by characterization and/or design.
- 2/ This parameter is specified by characterization.
- 3/ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.
- 4/ This is the increase in supply current for each input that is at the specified TTL voltage level rather than V_{CC} or GND.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 6

Case X



Dimensions					
Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A		1.60	D/E	15.80	16.20
A1	1.35	1.45	D1/E1	13.80	14.20
A2	0.25		D2/E2	12.00 TYP	
A3	0.05		e	0.50 BSC	
b	0.17	0.27	L	0.45	0.75
c	0.13 NOM				

NOTES:

1. All linear dimensions are in millimeters.
2. This case outline is subject to change without notice.
3. Fall within JEDEC MS-026.

FIGURE 1. Case outline.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 7

Each 9-bit section		
Inputs		Operation
$\overline{OE}$	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

H = High voltage level
L = Low voltage level
X = Don't care

FIGURE 2. Truth table.

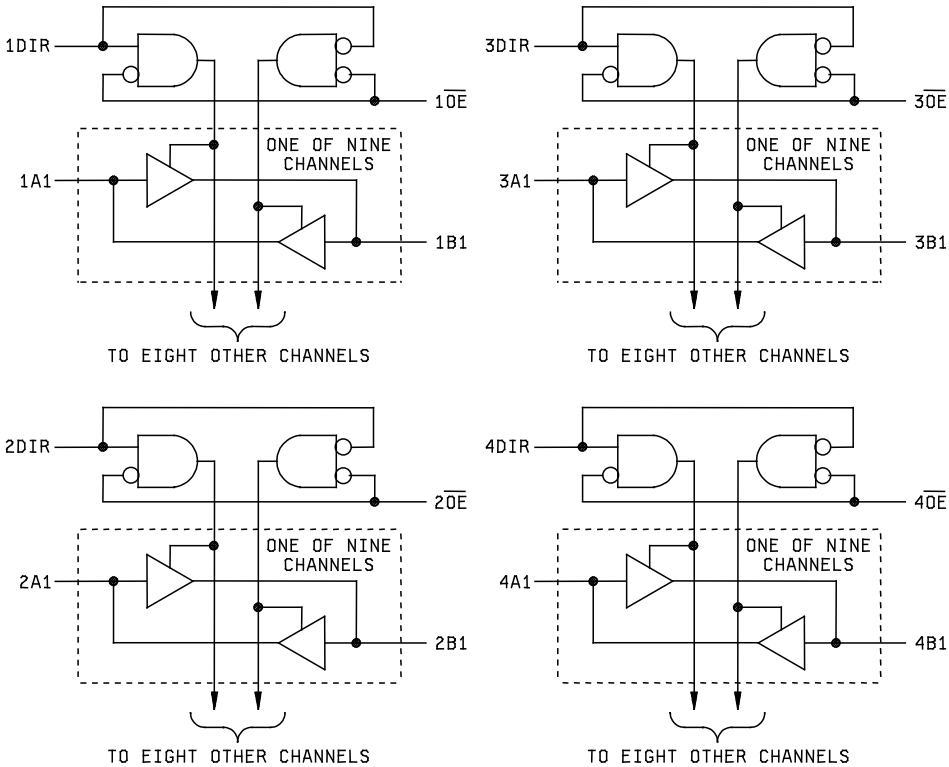


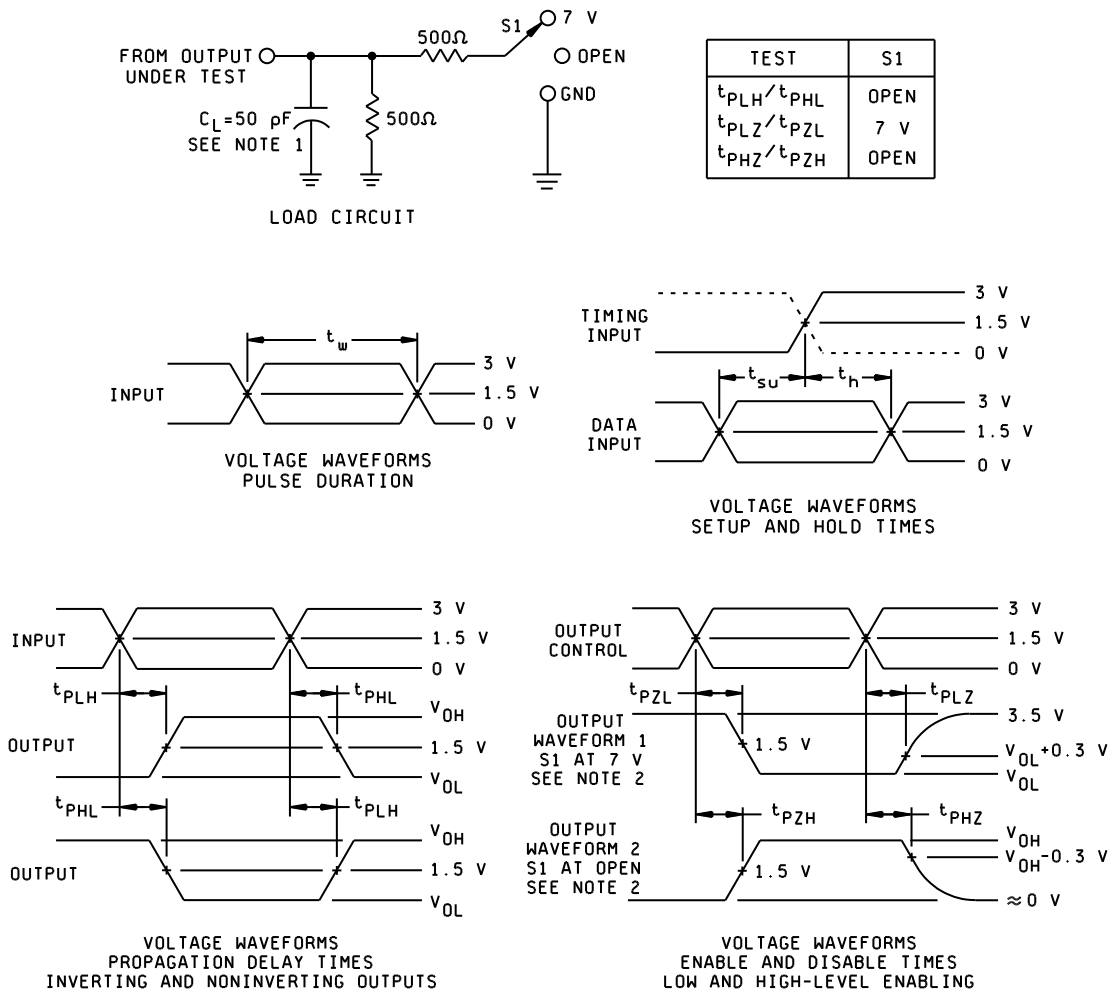
FIGURE 3. Logic diagram.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 8

Device type 01							
Case outline X							
Terminal number	Terminal symbol	Terminal number	Terminal symbol	Terminal number	Terminal symbol	Terminal number	Terminal symbol
1	1A9	26	4A2	51	4B1	76	1B8
2	2A1	27	4A3	52	3B9	77	1B7
3	GND	28	4A4	53	GND	78	1B6
4	2A2	29	GND	54	3B8	79	GND
5	2A3	30	4A5	55	3B7	80	1B5
6	2A4	31	4A6	56	3B6	81	1B4
7	2A5	32	4A7	57	3B5	82	1B3
8	GND	33	4A8	58	GND	83	1B2
9	2A6	34	4A9	59	3B4	84	1B1
10	2A7	35	GND	60	3B3	85	GND
11	2A8	36	4DIR	61	3B2	86	2DIR
12	2A9	37	4 $\overline{\text{OE}}$	62	3B1	87	2 $\overline{\text{OE}}$
13	V _{CC}	38	V _{CC}	63	V _{CC}	88	V _{CC}
14	3A1	39	3 $\overline{\text{OE}}$	64	2B9	89	1 $\overline{\text{OE}}$
15	3A2	40	3DIR	65	2B8	90	1DIR
16	3A3	41	GND	66	2B7	91	GND
17	3A4	42	4B9	67	2B6	92	1A1
18	GND	43	4B8	68	GND	93	1A2
19	3A5	44	4B7	69	2B5	94	1A3
20	3A6	45	4B6	70	2B4	95	1A4
21	3A7	46	4B5	71	2B3	96	1A5
22	3A8	47	GND	72	2B2	97	GND
23	GND	48	4B4	73	GND	98	1A6
24	3A9	49	4B3	74	2B1	99	1A7
25	4A1	50	4B2	75	1B9	100	1A8

FIGURE 4. Terminal connections.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 9



NOTES:

1. C_L includes probe and jig capacitance.
2. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
3. All input pulses are supplied by generators having the following characteristics: $PRR \leq 10 \text{ MHz}$, $Z_o = 50 \Omega$, $t_r \leq 2.5 \text{ ns}$, $t_f \leq 2.5 \text{ ns}$.
4. The outputs are measured one at a time with one input transition per measurement.

FIGURE 5. Test circuit and timing waveforms.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 10

4. VERIFICATION

4.1 Product assurance requirements. The manufacturer is responsible for performing all inspection and test requirements as indicated in their internal documentation. Such procedures should include proper handling of electrostatic sensitive devices, classification, packaging, and labeling of moisture sensitive devices, as applicable.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Preservation, packaging, labeling, and marking shall be in accordance with the manufacturer's standard commercial practices for electrostatic discharge sensitive devices.

6. NOTES

6.1 ESDS. Devices are electrostatic discharge sensitive and are classified as ESDS class 1 minimum.

6.2 Configuration control. The data contained herein is based on the salient characteristics of the device manufacturer's data book. The device manufacturer reserves the right to make changes without notice. This drawing will be modified as changes are provided.

6.3 Suggested source(s) of supply. Identification of the suggested source(s) of supply herein is not to be construed as a guarantee of present or continued availability as a source of supply for the item. DLA Land and Maritime maintains an online database of all current sources of supply at <https://landandmaritimeapps.dla.mil/programs/smcr/>.

Vendor item drawing administrative control number <u>1</u> /	Device manufacturer CAGE code	Vendor part number	Top side marking
V62/03620-01XE	01295	SN74ABTH32245MPZEP	74ABTH32245MEP

1/ The vendor item drawing establishes an administrative control number for identifying the item on the engineering documentation.

CAGE code

01295

Source of supply

Texas Instruments, Inc.
Semiconductor Group
8505 Forest Lane
P.O. Box 660199
Dallas, TX 75243
Point of contact: U.S. Highway 75 South
P.O. Box 84, M/S 853
Sherman, TX 75090-9493

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/03620
		REV B	PAGE 11