

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Update boilerplate to current MIL-PRF-38535 requirements. - PHN	15-01-27	Thomas M. Hess

CURRENT DESIGN ACTIVITY CAGE CODE 16236
HAS CHANGED NAMES TO:
DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990



Prepared in accordance with ASME Y14.24

Vendor item drawing

REV																					
PAGE																					
REV																					
PAGE																					
REV STATUS OF PAGES	REV	A	A	A	A	A	A	A	A	A	A	A									
	PAGE	1	2	3	4	5	6	7	8	9	10										
PMIC N/A	PREPARED BY Phu H. Nguyen							DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO													
Original date of drawing YY MM DD 07-02-21	CHECKED BY Phu H. Nguyen							TITLE MICROCIRCUIT, LINEAR, DUAL SCHMITT TRIGGER BUFFER, MONOLITHIC SILICON													
	APPROVED BY Thomas M. Hess																				
	SIZE A	CODE IDENT. NO. 16236							DWG NO. V62/07617												
	REV A							PAGE 1 OF 10													

1. SCOPE

1.1 Scope. This drawing documents the general requirements of a high performance dual Schmitt trigger buffer 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>V62/07617</u> Drawing number	-	<u>01</u> Device type (See 1.2.1)	<u>X</u> Case outline (See 1.2.2)	<u>E</u> Lead finish (See 1.2.3)
---------------------------------------	---	---	---	--

1.2.1 Device type(s).

<u>Device type</u>	<u>Generic</u>	<u>Circuit function</u>
01	SN74LVC2G17-EP	Dual Schmitt Trigger buffer

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

<u>Outline letter</u>	<u>Number of pins</u>	<u>JEDEC PUB 95</u>	<u>Package style</u>
X	6	MO-203	Plastic small outline

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
Z	Other

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 2

1.3 Absolute maximum ratings. 1/

Supply voltage range (V_{CC})	-0.5 V to 6.5 V
Input voltage range (V_I)	-0.5 V to 6.5 V 2/
Voltage range applied to any output in the high impedance or power off state (V_O)	-0.5 V to 6.5 V
Voltage range applied to any output in the high or low state (V_O)	-0.5 V to $V_{CC} + 0.5$ V 2/ 3/
Input clamp current (I_{IK}) ($V_I < 0$)	-50 mA
Output clamp current (I_{OK}) ($V_O < 0$)	-50 mA
Continuous output current (I_O)	± 50 mA
Continuous current through V_{CC} or GND	± 100 mA
Package thermal impedance (θ_{JA}), Case outline X	259°C/W 4/
Storage temperature range (T_{STG})	-65°C to 150°C

1.4 Recommended operating conditions. 5/

Supply voltage range (V_{CC}): Operating	1.65 V to 5.5 V
Input voltage (V_I)	0 V to 5.5 V
Output voltage (V_O)	0 to V_{CC}
Maximum high level output current (I_{OH}):	
$V_{CC} = 1.65$ V	-4 mA
$V_{CC} = 2.3$ V	-8 mA
$V_{CC} = 3$ V	-16 mA
$V_{CC} = 3$ V	-24 mA
$V_{CC} = 4.5$ V	-32 mA
Maximum low level output current (I_{OL}):	
$V_{CC} = 1.65$ V	4 mA
$V_{CC} = 2.3$ V	8 mA
$V_{CC} = 3$ V	16 mA
$V_{CC} = 3$ V	24 mA
$V_{CC} = 4.5$ V	32 mA
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 voltage ratings may be exceeded if the input and output current ratings are observed.
- 3/ This value of V_{CC} is provided in the recommended operating conditions stable.
- 4/ The package thermal impedance is calculated in accordance with JESD 51-7.
- 5/ All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 3

2. APPLICABLE DOCUMENTS

JEDEC – SOLID STATE TECHNOLOGY ASSOCIATION (JEDEC)

JEP95 – Registered and Standard Outlines for Semiconductor Devices

(Copies of these documents are available online at <http://www.jedec.org> or from JEDEC – Solid State Technology Association, 3103 North 10th Street, Suite 240–S, Arlington, VA 22201-2107).

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. The case outline shall be as shown in 1.2.2 and figure 1.

3.5.2 Terminal connections. The terminal connections shall be as shown in figure 2.

3.5.3 Function table. The Function table shall be as shown in figure 3.

3.5.4 Logic diagram. The logic diagram shall be as shown in figure 4.

3.5.5 Load circuit and timing waveforms. The load circuit and timing waveforms shall be as shown in figures 5.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 4

TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Conditions -55°C ≤ T _A ≤ 125°C unless otherwise specified	V _{CC}	Limits		Unit
				Min	Max	
Positive going input threshold voltage	V _{T+}		1.65 V	0.7	1.4	V
			2.3 V	1.0	1.7	
			3.0 V	1.3	2.2	
			4.5 V	1.9	3.1	
			5.5 V	2.2	3.7	
Negative going input threshold voltage	V _{T+}		1.65 V	0.19	0.7	V
			2.3 V	0.25	1.0	
			3.0 V	0.45	1.3	
			4.5 V	0.9	2.0	
			5.5 V	1.4	2.5	
Hysteresis (V _{T+} - V _{T-})	ΔV _T		1.65 V	0.3	1.15	V
			2.3 V	0.4	1.2	
			3.0 V	0.4	1.5	
			4.5 V	0.6	1.9	
			5.5 V	0.7	2.0	
High level output voltage	V _{OH}	I _{OH} = -100 mA	1.65 V to 5.5 V	V _{CC} - 0.1		V
		I _{OH} = -4 mA	1.65 V	1.2		
		I _{OH} = -8 mA	2.3 V	1.9		
		I _{OH} = -16 mA	3.0 V	2.4		
		I _{OH} = -24 mA	3.0 V	2.3		
		I _{OH} = -32 mA	4.5 V	3.8		
Low level output voltage	V _{OL}	I _{OL} = 100 mA	1.65 V to 5.5 V		0.1	V
		I _{OL} = 4 mA	1.65 V		0.45	
		I _{OL} = 8 mA	2.3 V		0.3	
		I _{OL} = 16 mA	3.0 V		0.4	
		I _{OL} = 24 mA	3.0 V		0.55	
		I _{OL} = 32 mA	4.5 V		0.55	
Input current	A input	I _I	V _I = 5.5 V or GND	0 to 5.5 V	±5	μA
Off current		I _{off}	V _I or V _O = 5.5 V	0	±10	μA
Supply current		I _{CC}	V _I = V _{CC} or GND, I _O = 0,	1.65 V to 5.5V	10	μA
		ΔI _{CC}	One input at V _{CC} - 0.6 V, Other input at V _{CC} or GND	3.0 V to 5.5V	500	μA
Input capacitance		C _i	V _I = V _{CC} or GND, T _A = 25°C	3.3 V	4.5 Typ	pF

See footnotes at end of table.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 5

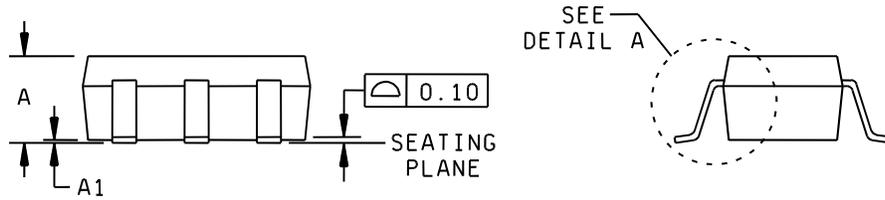
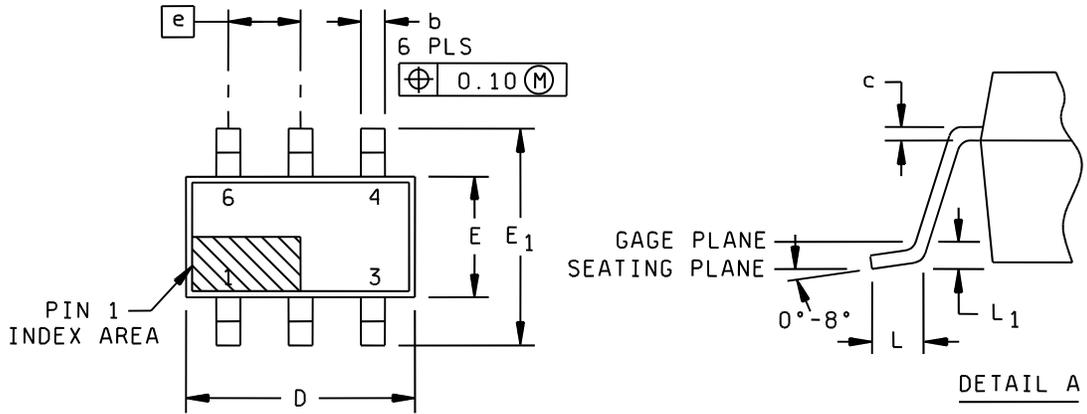
TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ 125°C unless otherwise specified	V _{CC}	Limits		Unit
				Min	Max	
Propagation from input A to output Y	t _{PD}	See figure 5	1.8 V ±0.15 V	3.9	13.0	ns
			2.5 V ±0.2 V	1.9	8.7	
			3.3 V ±0.3 V	2.2	7.4	
			5.0 V ±0.5 V	1.5	6.3	
Power dissipation capacitance	C _{PD}	T _A = 25°C, f = 10 MHz	1.8 V	17 Typ		pF
			2.5 V	18 Typ		
			3.3 V	19 Typ		
			5.0 V	21 Typ		

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.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 6

Case X



Dimension					
Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A	0.80	1.10	E	1.10	1.40
A1	0.00	0.10	E1	1.80	2.40
b	0.15	0.30	e	0.65 NOM	
c	0.08	0.22	L	0.26	0.46
D	1.85	2.15			

NOTES:

1. All linear dimensions are in millimeters.
2. This drawing is subject to change without notice.
3. Body dimensions do not include mold flash or protrusion not to exceed 0.15 mm (0.006 inches) per side.
4. Falls within JEDEC MO-203.

FIGURE 1. Case outline - Continued.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 7

Case X

Terminal number	Terminal symbol
1	1A
2	GND
3	2A
4	2Y
5	V _{CC}
6	1Y

FIGURE 2. Terminal connections.

Input A	Output Y
H	H
L	L

FIGURE 3. Function table.

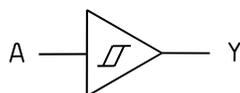
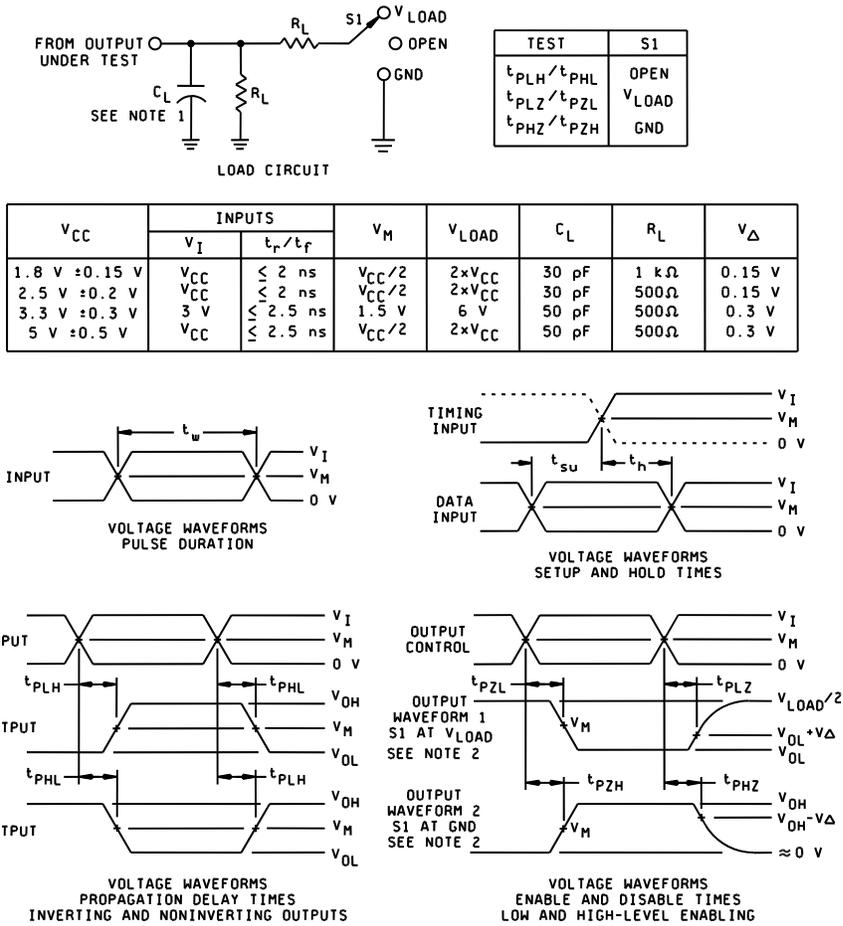


FIGURE 4. Logic diagram.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE A	CODE IDENT NO. 16236	DWG NO. V62/07617
		REV A	PAGE 8



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.
3. 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 ≤ 10 MHz, Z_O = 50 Ω.
4. The outputs are measured one at a time with one input transition per measurement.
5. t_{PLZ} and t_{PHZ} are the same as t_{dis}.
6. t_{PZL} and t_{PZH} are the same as t_{en}.
7. t_{PHL} and t_{PLH} are the same as t_{pd}.
8. All parameters and waveforms are not applicable to all devices.

FIGURE 5. Load circuit and timing waveforms.

DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO	SIZE	CODE IDENT NO.	DWG NO.
	A	16236	V62/07617
	REV	A	PAGE 9

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 <http://www.landandmaritime.dla.mil/Programs/Smcr/>.

Vendor item drawing administrative control number <u>1/</u>	Device manufacturer CAGE code	Vendor part number	Top side marking
V62/07617-01XE	01295	SN74LVC2G17MDCKREP	BZV

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. V62/07617
		REV A	PAGE 10