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LTR	DESCRIPTION	DATE	APPROVED																

Prepared in accordance with ASME Y14.24
Vendor item drawing

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PMIC N/A	PREPARED BY RICK OFFICER	DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	
Original date of drawing YY-MM-DD 08-03-11	CHECKED BY RAJESH PITHADIA	TITLE MICROCIRCUIT, LINEAR, DUAL DIFFERENTIAL COMPARATOR, MONOLITHIC SILICON	
	APPROVED BY ROBERT M. HEBER		
	SIZE A	CODE IDENT. NO. 16236	DWG NO. V62/06675
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1. SCOPE

1.1 Scope. This drawing documents the general requirements of a high performance dual differential comparator microcircuit, with an operating temperature range of -55°C to +125°C.

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

<u>V62/06675</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	TLC372-EP	Dual differential comparator

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	8	MS-012-AA	Plastic surface mount

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

<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

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1.3 Absolute maximum ratings. 1/

Supply voltage (V _{DD})	+18 V maximum 2/
Differential input voltage (V _{ID})	±18 V maximum 3/
Input voltage range (V _{IN})	-0.3 V to +18 V
Output voltage (V _{OUT})	+18 V maximum
Input current (I _{IN})	±5 mA maximum
Output current (I _{OUT})	+20 mA maximum
Duration of output short-circuit to ground	Unlimited 4/
Continuous total power dissipation (P _D)	See 1.5, dissipation rating table
Storage temperature range	-65°C to +150°C
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds	+260°C

1.4 Recommended operating conditions. 5/

Supply voltage (V _{DD})	+4 V minimum to +16 V maximum
Common mode input voltage (V _{IC}):	
V _{DD} = 5 V	0 V minimum to +3.5 V maximum
V _{DD} = 10 V	0 V minimum to +8.5 V maximum
Operating free-air temperature range (T _A)	-55°C to +125°C

1.5 Dissipation rating table.

Case	T _A ≤ 25°C power rating	Derating factor	Derate above T _A	T _A = 70°C power rating	T _A = 85°C power rating	T _A = 125°C power rating
X	500 mW	5.8 mW/°C	64°C	464 mW	377 mW	145 mW

-
- 1/ Stresses beyond those listed under “absolute maximum rating” 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/ All voltage values except differential voltages are with respect to network ground.
 - 3/ Differential voltages are at the +INPUT terminal with respect to the -INPUT terminal.
 - 4/ Short circuits from outputs to V_{DD} can cause excessive heating and eventual device destruction.
 - 5/ 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.

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2. APPLICABLE DOCUMENTS

JEDEC PUB 95 – Registered and Standard Outlines for Semiconductor Devices

(Applications for copies should be addressed to the Electronic Industries Alliance, 2500 Wilson Boulevard, Arlington, VA 22201-3834 or online at <http://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. 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.

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TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Conditions <u>2/</u> $V_{DD} = 5\text{ V}$, unless otherwise specified	Temperature, T_A	Device type	Limits		Unit
					Min	Max	
Input offset voltage	V_{IO}	$V_{IC} = V_{ICRmin}$ <u>3/</u>	+25°C	01		5	mV
			-55°C to +125°C			10	
Input offset current	I_{IO}		+25°C	01	1 typical		pA
			+125°C			10	nA
Input bias current	I_{IB}		+25°C	01	5 typical		pA
			+125°C			20	nA
Common mode input voltage range	V_{ICR}		+25°C	01	0 to V_{DD} - 1		V
			-55°C to +125°C		0 to V_{DD} - 1.5		
High level output current	I_{OH}	$V_{OH} = 5\text{ V}$, $V_{ID} = 1\text{ V}$	+25°C	01	0.1 typical		nA
		$V_{OH} = 15\text{ V}$, $V_{ID} = 1\text{ V}$	-55°C to +125°C			3	μA
Low level output voltage	V_{OL}	$I_{OL} = 4\text{ mA}$, $V_{ID} = -1\text{ V}$	+25°C	01		400	mV
			-55°C to +125°C			700	
Low level output current	I_{OL}	$V_{OL} = 1.5\text{ V}$, $V_{ID} = -1\text{ V}$	+25°C	01	6		mA
Supply current (two comparators)	I_{DD}	$V_{ID} = 1\text{ V}$, no load	+25°C	01		300	μA
			-55°C to +125°C			400	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics – Continued. 1/

Test	Symbol	Conditions	Temperature, T _A	Device type	Limits		Unit
					Min	Max	
Response time		R _L connected to 5 V through 5.1 kΩ, C _L = 15 pF, <u>4/ 5/</u> 100 mV input step with 5 mV overdrive	+25°C	01	650 typical		ns
		R _L connected to 5 V through 5.1 kΩ, C _L = 15 pF, <u>4/ 5/</u> TTL level input step			200 typical		

- 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/ Unless otherwise specified, all characteristics are measured with zero common mode input voltage.
- 3/ The offset voltage limits given are the maximum values required to drive the output above 4 V or below 400 mV with a 10 kΩ resistor between the output and V_{DD}. They can be verified by applying the limit value to the input and checking for the appropriate output state.
- 4/ C_L includes probe and jig capacitance.
- 5/ The response time specified is the interval between the input step function and the instant when the output crosses 1.4 V.

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Case X

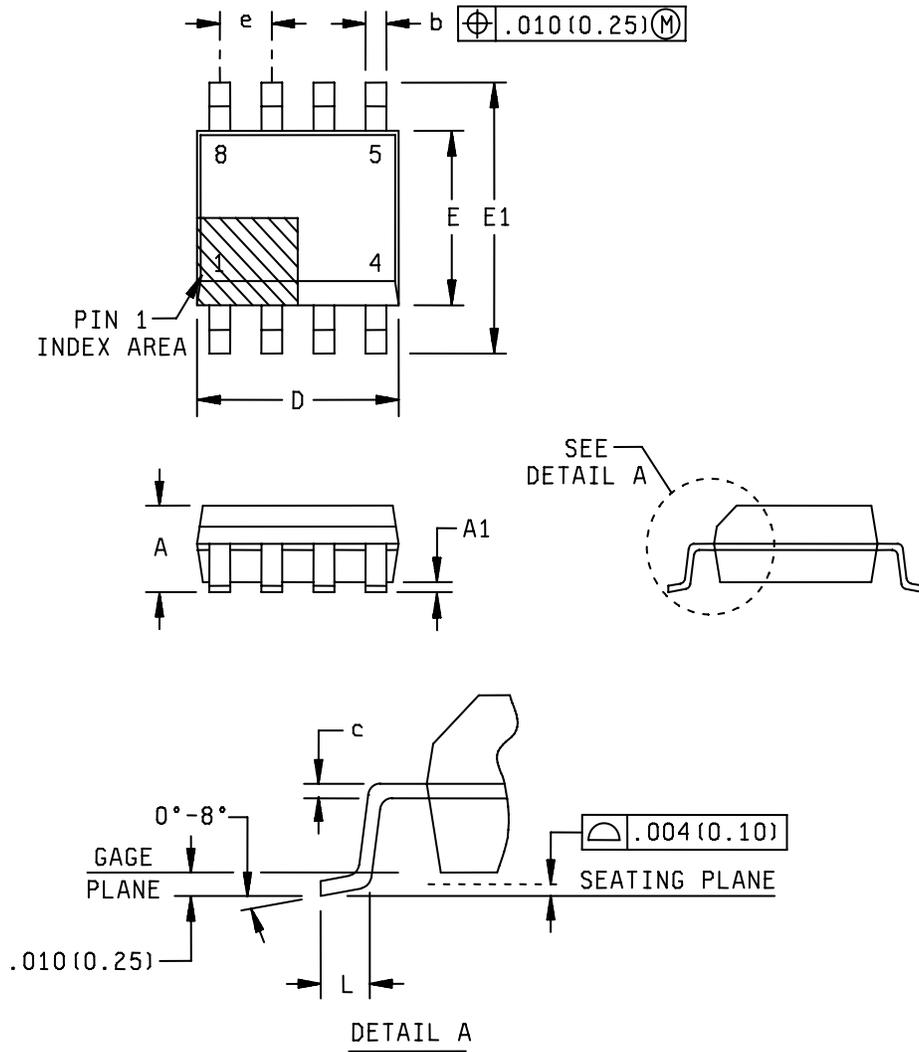


FIGURE 1. Case outline.

<p>DEFENSE SUPPLY CENTER, COLUMBUS COLUMBUS, OHIO</p>	<p>SIZE A</p>	<p>CODE IDENT NO. 16236</p>	<p>DWG NO. V62/06675</p>
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Case X - continued

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	---	0.069	---	1.75
A1	0.004	0.010	0.10	0.25
b	0.012	0.020	0.31	0.51
c	0.007	0.010	0.17	0.25
D	0.189	0.197	4.80	5.00
E	0.150	0.157	3.80	4.00
E1	0.228	0.244	5.80	6.20
e	0.050 BSC		1.27 BSC	
L	0.016	0.050	0.40	1.27
n	8		8	

NOTES:

1. Controlling dimensions are inch, millimeter dimensions are given for reference only.
2. Body length does not include mold flash, protrusion, or gate burrs. Mold flash, protrusion, or gate burrs shall not exceed 0.006 inch (0.15 mm) per end.
3. Body width does not include interlead flash. Interlead flash shall not exceed 0.017 inch (0.43 mm) per side.
4. Falls within reference to JEDEC MS-012-AA.

FIGURE 1. Case outline - Continued.

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Device type	01
Case outlines	X and Y
Terminal number	Terminal symbol
1	OUTPUT 1
2	-INPUT 1
3	+INPUT 1
4	GND
5	+INPUT 2
6	-INPUT 2
7	OUTPUT 2
8	V _{DD}

FIGURE 2. Terminal connections.

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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.

Vendor item drawing administrative control number <u>1/ 2/</u>	Device manufacturer CAGE code	Package <u>3/</u>	Package marking	Vendor part number
V62/06675-01XE	01295	Tape and reel	372MEP	TLC372MDREP

- 1/ The vendor item drawing establishes an administrative control number for identifying the item on the engineering documentation.
- 2/ For the most current package and ordering information, see the package option addendum at the end of the manufacturer’s data sheet , or use website www.ti.com.
- 3/ Package drawings, standard packaging quantities, thermal data, symbolization, and printed circuit board (PCB) design guidelines are available at www.ti.com/sc/package.

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

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