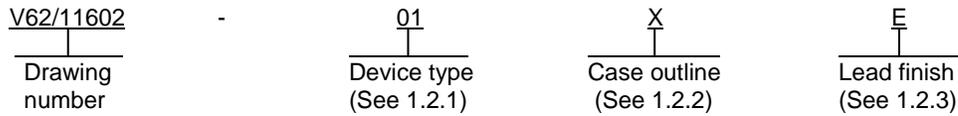


REVISIONS																			
LTR	DESCRIPTION										DATE	APPROVED							
A	Add device types 02 and 03. - ro										12-10-31	C. SAFFLE							
Prepared in accordance with ASME Y14.24																			
															Vendor item drawing				
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REV STATUS 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 RICK OFFICER								DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990 <a href="http://www.landandmaritime.dla.mil/">http://www.landandmaritime.dla.mil/</a>								
Original date of drawing YY-MM-DD  10-12-07			CHECKED BY RAJESH PITHADIA								TITLE MICROCIRCUIT, LINEAR, LOW NOISE, VOLTAGE REFERENCE, MONOLITHIC SILICON								
			APPROVED BY CHARLES F. SAFFLE																
			SIZE A	CODE IDENT. NO. 16236							DWG NO. <b>V62/11602</b>								
			REV			A					PAGE 1 OF 10								

1. SCOPE

1.1 Scope. This drawing documents the general requirements of a high performance low noise voltage reference 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:



1.2.1 Device type(s).

<u>Device type</u>	<u>Generic</u>	<u>Circuit function</u>
01	ADR434-EP	Low noise voltage reference
02	ADR435-EP	Low noise voltage reference
03	ADR431-EP	Low noise voltage reference

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 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

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1.3 Absolute maximum ratings. 1/

Supply voltage ( $V_{IN}$ ) .....	20 V
Output short circuit duration .....	Indefinite
Differential input voltage .....	+ $V_S$ and - $V_S$
Power dissipation ( $P_D$ ) .....	14.4 mW
Storage temperature range ( $T_{STG}$ ) .....	-65°C to +125°C
Junction temperature range ( $T_J$ ) .....	-65°C to +150°C
Lead temperature range (soldering, 60 seconds) .....	+300°C

1.4 Recommended operating conditions. 2/

Input voltage range ( $V_{IN}$ ) :	
Device type 01 .....	6.1 V to 18 V
Device type 02 .....	7.0 V to 18 V
Device type 03 .....	4.5 V to 18 V
Operating temperature range ( $T_A$ ) .....	-55°C to +125°C

1.5 Thermal characteristics.

Thermal resistance, junction to ambient ( $\theta_{JC}$ ) .....	43°C/W
Thermal resistance, junction to ambient ( $\theta_{JA}$ ) .....	130°C/W

- 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/ 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.

<p align="center"><b>DLA LAND AND MARITIME COLUMBUS, OHIO</b></p>	<p align="center"><b>SIZE A</b></p>	<p align="center"><b>CODE IDENT NO. 16236</b></p>	<p align="center"><b>DWG NO. V62/11602</b></p>
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TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Conditions <u>2/</u> $I_L = 0 \text{ mA}$ , unless otherwise specified	Temperature, $T_A$	Device type	Limits		Unit
					Min	Max	
Output voltage	$V_{OUT}$		+25°C	01	4.0945	4.0975	V
				02	4.998	5.002	
				03	2.499	2.501	
Initial accuracy	$V_{OERR}$		+25°C	01		±1.5	mV
							±0.04
				02		±2.0	mV
							±0.04
				03		±1.0	mV
							±0.04
Temperature coefficient	$TCV_O$		-55°C to +125°C	01, 02		3	ppm/ °C
				03		5	
Line regulation	$\Delta V_O / \Delta V_{IN}$	$V_{IN} = 6.1 \text{ V to } 18 \text{ V}$	-55°C to +125°C	01		20	ppm/V
		$V_{IN} = 7.0 \text{ V to } 18 \text{ V}$		02		20	
		$V_{IN} = 4.5 \text{ V to } 18 \text{ V}$		03		20	
Load regulation	$\Delta V_O / \Delta I_L$	$I_L = 0 \text{ mA to } 10 \text{ mA}, V_{IN} = 7 \text{ V}$	-55°C to +125°C	01		15	ppm/ mA
		$I_L = -10 \text{ mA to } 0 \text{ mA}, V_{IN} = 7 \text{ V}$				15	
		$I_L = 0 \text{ mA to } 10 \text{ mA}, V_{IN} = 8 \text{ V}$		02		15	
		$I_L = -10 \text{ mA to } 0 \text{ mA}, V_{IN} = 8 \text{ V}$				15	
		$I_L = 0 \text{ mA to } 10 \text{ mA}, V_{IN} = 5 \text{ V}$		03		15	
		$I_L = -10 \text{ mA to } 0 \text{ mA}, V_{IN} = 5 \text{ V}$				15	
Quiescent current	$I_{IN}$	No load	-55°C to +125°C	01, 02, 03		800	µA

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued. 1/

Test	Symbol	Conditions <u>2/</u> $I_L = 0 \text{ mA}$ , unless otherwise specified	Temperature, $T_A$	Device type	Limits		Unit
					Min	Max	
Voltage noise	$e_{n\text{-p}}$	0.1 Hz to 10.0 Hz	+25°C	01	6.25 typical		$\mu\text{V}_{\text{P-P}}$
				02	8 typical		
				03	3.5 typical		
Voltage noise density	$e_N$	1 kHz	+25°C	01	100 typical		$\text{nV} / \sqrt{\text{Hz}}$
				02	115 typical		
				03	80 typical		
Turn on settling time	$t_R$	$C_L = 0 \mu\text{F}$	+25°C	01, 02, 03	10 typical		$\mu\text{s}$
Long term stability <u>3/</u>	$\Delta V_O$	1,000 hours	+25°C	01, 02, 03	40 typical		ppm
Output voltage hysteresis	$V_{O\_HYS}$		+25°C	01, 02, 03	20 typical		ppm
Ripple rejection ratio	RRR	$f_{IN} = 1 \text{ kHz}$	+25°C	01, 02, 03	-70 typical		dB
Short circuit to GND	$I_{SC}$		+25°C	01, 02, 03	40 typical		mA
Supply voltage operating range	$V_{IN}$		+25°C	01	6.1	18	V
				02	7.0	18	
				03	4.5	18	
Supply voltage headroom	$V_{IN} - V_O$		+25°C	01, 02, 03	2		V

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,  $T_A = +25^\circ\text{C}$ , for device type 01,  $V_{IN} = 6.1 \text{ V}$  to 18 V, for device type 02,  $V_{IN} = 7.0 \text{ V}$  to 18 V, and for device type 03,  $V_{IN} = 4.5 \text{ V}$  to 18 V.

3/ The long term stability specification is noncumulative. The drift in subsequent 1,000 hour periods is significantly lower than in the first 1,000 hour period.

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Case X

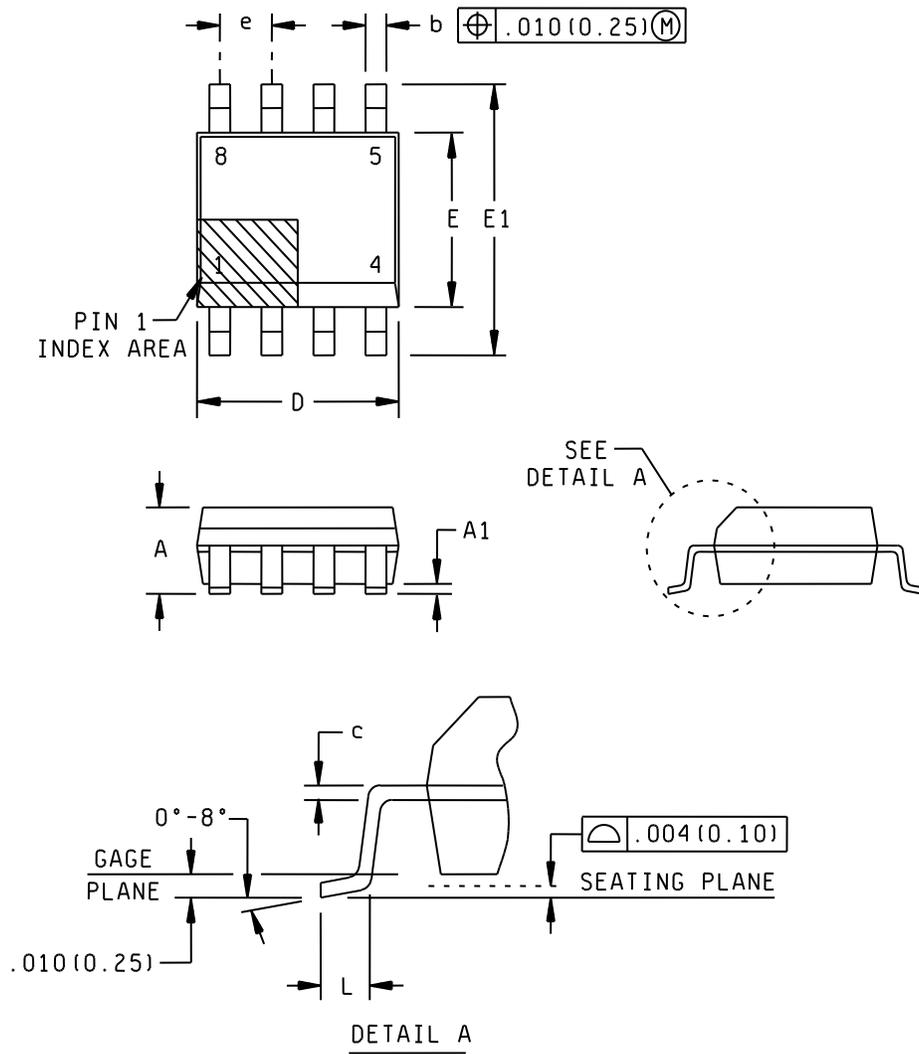


FIGURE 1. Case outline.

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Case X

Symbol	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.0532	0.0688	1.35	1.75
A1	0.0040	0.0098	0.10	0.25
b	0.0122	0.0201	0.31	0.51
c	0.0067	0.0098	0.17	0.25
D	0.1890	0.1968	4.80	5.00
E	0.1497	0.1574	3.80	4.00
E1	0.2284	0.2441	5.80	6.20
e	0.0500 BSC		1.27 BSC	
L	0.0157	0.0500	0.40	1.27
n	8		8	

NOTES:

1. Controlling dimensions are millimeter, inch dimensions are given for reference only and are not appropriate for use in design.
2. Falls with JEDEC MS-012-AA.

FIGURE 1. Case outline – Continued.

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Device types	01, 02, 03
Case outline	X
Terminal number	Terminal symbol
1	TP (SEE NOTE 1)
2	V <sub>IN</sub>
3	NC (SEE NOTE 2)
4	GND
5	TRIM
6	V <sub>OUT</sub>
7	COMPENSATION (COMP)
8	TP (SEE NOTE 1)

NOTES:

1. TP = test pin (do not connect).
2. NC = no connection.

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. 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	Transport media	Vendor part number
V62/11602-01XE	24355	Reel	ADR434TRZ-EP-R7
		Tube	ADR434TRZ-EP
V62/11602-02XE	24355	Reel	ADR435TRZ-EP-R7
		Tube	ADR435TRZ-EP
V62/11602-03XE	24355	Reel	ADR431TRZ-EP-R7
		Tube	ADR431TRZ-EP

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

CAGE code

24355

Source of supply

Analog Devices  
 Route 1 Industrial Park  
 P.O. Box 9106  
 Norwood, MA 02062  
 Point of contact: Raheen Business Park  
 Limerick, Ireland

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