

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

Prepared in accordance with ASME Y14.24

Vendor item drawing

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PMIC N/A	PREPARED BY Phu H. Nguyen	DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990 http://www.landandmaritime.dla.mil/	
Original date of drawing YY MM DD 13-01-11	CHECKED BY Phu H. Nguyen	TITLE MICROCIRCUIT, LINEAR, ULTRACOMPACT, PRECISION 10.0 V VOLTAGE REFERENCE, MONOLITHIC SILICON	
	APPROVED BY Thomas M. Hess		
	SIZE A	CODE IDENT. NO. 16236	DWG NO. V62/12658
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1. SCOPE

1.1 Scope. This drawing documents the general requirements of a high performance ultracompact, precision 10.0 V 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:

<u>V62/12658</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	ADR01-EP	Ultracompact, precision 10.0 V voltage reference

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	10	JEDEC MO-193-AB	Thin Small Outline Transistor Package

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	36.0 V
Output short circuit duration to GND	Indefinite
Operating temperature range:	-55°C to +125°C
Storage temperature range	-65°C to 150°C
Junction temperature range	-65°C to 150°C
Lead temperature (Soldering, 60 sec)	300°C

1.4 Thermal characteristics.

Thermal resistance

Case outline	θ_{JA}	θ_{JC}	Unit
Case X	230	146	°C/W

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.)

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.

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.

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TABLE I. Electrical performance characteristics. 1/

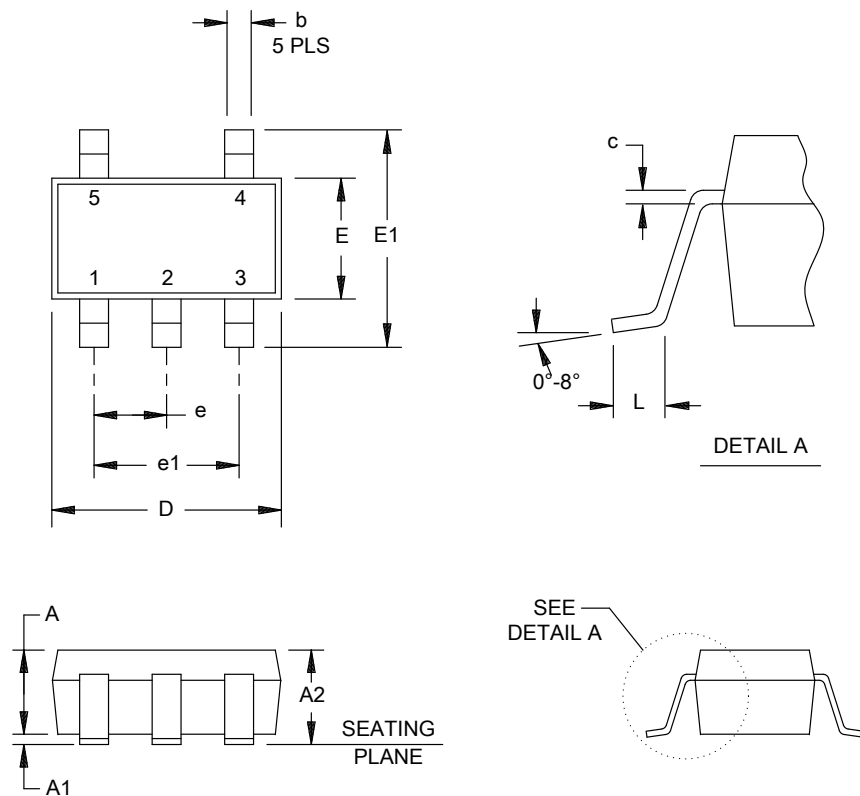
Test	Symbol	Test conditions 12.0 V ≤ V _{IN} ≤ 28.0 V T _A = +25°C unless otherwise noted.	Limits			Unit
			Min	Typ	Max	
Output voltage	V _O	T grade	9.985	10.000	10.015	V
Initial accuracy	V _{OERR}	T grade			15	mV
					0.15	%
Temperature coefficient	TCV _O	T grade, Case X, -55°C ≤ T _A ≤ +125°C			25	ppm/°C
Dropout voltage	V _{DO}		2			V
Line regulation	ΔV _O /ΔV _{IN}	V _{IN} = 12.0 V to 28.0 V, -55°C ≤ T _A ≤ +125°C		7	30	ppm/V
Load regulation	ΔV _O /ΔI _{LOAD}	I _{LOAD} = 0 mA to 10 mA, -55°C ≤ T _A ≤ +125°C V _{IN} = 15.0 V		40	70	ppm/mA
Quiescent current	I _{IN}	No load, -55°C ≤ T _A ≤ +125°C		0.65	1	mA
Voltage noise	e _{N p-p}	0.1 Hz to 10.0 Hz		20		μV p-p
Voltage noise density	e _N	1 kHz		510		nV/√Hz
Turn on settling time	t _R			4		μs
Long term stability 2/	ΔV _O	1000 hours		50		ppm
Output voltage hysteresis	ΔV _{O HYS}			70		ppm
Ripple rejection ratio	RRR	f _{IN} = 10 kHz		-75		dB
Short circuit to GND	I _{SC}			30		mA
Temperature sensor						
Voltage output at TEMP pin	V _{TEMP}			550		mV
Temperature Sensitivity	TCV _{TEMP}			1.96		mV/°C

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/ The long term stability specification is noncumulative. The drift in subsequent 1000 hour periods is significantly lower than in the first 1000 hour period.

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Case X



Dimensions					
Symbol	Millimeters		Symbol	Millimeters	
	Min	Max		Min	Max
A	0.70	0.90	E	1.60 BSC	
A1		0.10	E1	2.80 BSC	
A2		1.00	e	0.95 BSC	
b	0.30	0.50	e1	1.90 BSC	
c	0.08	0.20	L	0.30	0.60
D	2.90 BSC				

NOTES:

1. All linear dimensions are in millimeters.
2. Falls within JEDEC MO-193-AB with exception of package height and thickness.

FIGURE 1. Case outline.

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Case outline X			
Terminal number	Terminal symbol	Terminal number	Terminal symbol
1	TEMP	5	TRIM
2	GND	4	V _{OUT}
3	V _{IN}		

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	Vendor part number
V62/12658-01XE	24355	ADR01TUJZ-EP-R7

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
 1 Technology Way
 P.O. Box 9106
 Norwood, MA 02062-9106

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