

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Add terminal symbol description information under figure 2. Mode of transportation and quantity column under paragraph 6.3. Update document paragraphs to current requirements. - ro	18-10-03	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											
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PMIC N/A	PREPARED BY Phu H. Nguyen	DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990 http://www.dla.mil/landandmaritime	
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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DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

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 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	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
F	Tin-lead alloy (BGA/CGA)
Z	Other

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 seconds)	300°C

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.

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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 PUB 95 – Registered and Standard Outlines for Semiconductor Devices

(Applications for copies should be addressed to the JEDEC – Solid State Technology Association, 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. 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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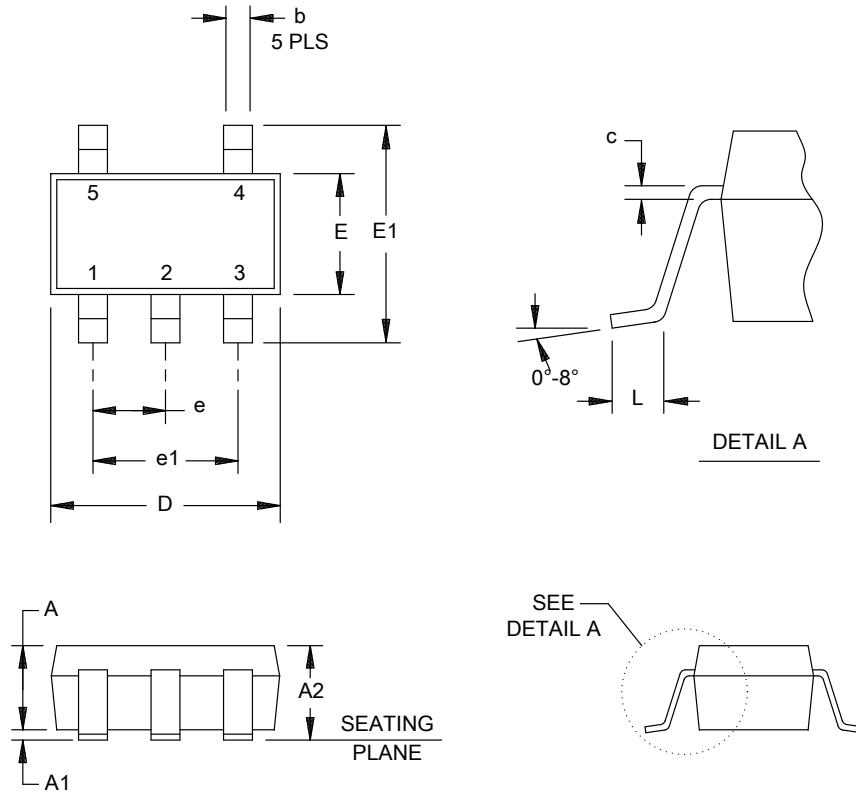
TABLE I. Electrical performance characteristics. 1/

Test	Symbol	Test conditions 12.0 V ≤ VIN ≤ 28.0 V TA = +25°C unless otherwise noted.	Limits			Unit
			Min	Typ	Max	
Output voltage	VO	T grade	9.985	10.000	10.015	V
Initial accuracy	VOERR	T grade			15	mV
					0.15	%
Temperature coefficient	TCVo	T grade, Case X, -55°C ≤ TA ≤ +125°C			25	ppm/°C
Dropout voltage	VDO		2			V
Line regulation	ΔVO/ΔVIN	VIN = 12.0 V to 28.0 V, -55°C ≤ TA ≤ +125°C		7	30	ppm/V
Load regulation	ΔVO/ΔILOAD	ILOAD = 0 mA to 10 mA, -55°C ≤ TA ≤ +125°C VIN = 15.0 V		40	70	ppm/mA
Quiescent current	IIN	No load, -55°C ≤ TA ≤ +125°C		0.65	1	mA
Voltage noise	eN p-p	0.1 Hz to 10.0 Hz		20		μV p-p
Voltage noise density	eN	1 kHz		510		nV/√Hz
Turn on settling time	tR			4		μs
Long term stability 2/	ΔVO	1000 hours		50		ppm
Output voltage hysteresis	ΔVO_HYS			70		ppm
Ripple rejection ratio	RRR	fIN = 10 kHz		-75		dB
Short circuit to GND	ISC			30		mA
Temperature sensor, voltage output at TEMP pin	VTEMP			550		mV
Temperature sensor, temperature sensitivity	TCVTEMP			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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Device type	01	
Case outline	X	
Terminal number	Terminal symbol	Description
1	TEMP	This terminal can be used for temperature sensing and approximation.
2	GND	Ground.
3	VIN	Input voltage
4	VOUT	Output voltage.
5	TRIM	This terminal is provided on the device for fine adjustment of the output voltage.

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 <https://landandmaritimeapps.dla.mil/programs/smcr/>.

Vendor item drawing administrative control number <u>1/</u>	Device manufacturer CAGE code	Mode of transportation and quantity	Vendor part number
V62/12658-01XE	24355	Reel, 3000 units	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
 Route 1 Industrial Park
 P.O. Box 9106
 Norwood, MA 02062
 Point of contact: Raheen Business Park
 Limerick, Ireland

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