

REVISIONS

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Added case outline Y. Updated to reflect MIL-H-38534 processing. Editorial changes throughout.	91-04-16	W. Heckman

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REV STATUS OF SHEETS	REV	A	A	A	A	A	A	A	A	A	A									
	SHEET	1	2	3	4	5	6	7	8	9										

<p>STANDARDIZED MILITARY DRAWING</p> <p>THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE</p> <p>AMSC N/A</p>	PREPARED BY Donald R. Osborne	<p align="center">DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444</p> <p align="center">MICROCIRCUIT, LINEAR, 8-BIT DIGITAL TO ANALOG CONVERTER, HYBRID</p>
	CHECKED BY Robert M. Heber	
	APPROVED BY William K. Heckman	
	DRAWING APPROVAL DATE 88-10-11	
	REVISION LEVEL	
SIZE A	CAGE CODE 67268	5962-87688
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2. APPLICABLE DOCUMENTS

2.1 Government specifications and standard. Unless otherwise specified, the following specifications, and standard of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATIONS

MILITARY

- MIL-M-38510 - Microcircuits, General Specification for.
- MIL-H-38534 - Hybrid Microcircuits, General Specification for.

STANDARD

MILITARY

- MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of the specifications and standard required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with MIL-H-38534 and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-H-38534 and herein.

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.2 herein.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 2.

3.2.3 Truth table(s). The truth table(s) shall be as specified on figure 3.

3.3 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in table I and shall apply over the full specified operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table I.

3.5 Marking. Marking shall be in accordance with MIL-H-38534. The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in QML-38534 (see 6.6 herein).

3.6 Manufacturer eligibility. In addition to the general requirements of MIL-H-38534, the manufacturer of the part described herein shall submit for DESC-ECC review and approval electrical test data (variables format) on 22 devices from the initial quality conformance inspection group A lot sample, produced on the certified line, for each device type listed herein. The data should also include a summary of all parameters manually tested, and for those which, if any, are guaranteed.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions ^{1/} -55° C ≤ T _A ≤ +125° C, unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Input high voltage	V _{IH}		1, 2, 3	2.0		V
Input low voltage	V _{IL}		1, 2, 3		0.8	V
Input high current	I _{IH}	V _{IH} = 2.4 V	1, 2, 3		40	μA
Input low current	I _{IL}	V _{IL} = 0.4 V	1, 2, 3		-1.0	mA
+Full scale output accuracy (unipolar)	A+FS	Input bits = 1111 1111 device 01	4, 5, 6	+3.9442	+4.0238	V
(bipolar)		Input bits = 0000 0000 device 02		-1.960	-2.040	
-Full scale output accuracy (bipolar)	A-FS	Input bits = 1111 1111 device 02	4, 5, 6	-2.024	-1.944	V
Zero scale output accuracy (unipolar)	AZS	Input bits = 0000 0000 device 01	4, 5, 6	-0.0398	+0.0398	V
(bipolar)		Input bits = 1000 0000 device 02		+1.9652	+2.0038	
Linearity error	LE		1, 2, 3	-0.5	+0.5	LSB
Output load current	IO		1, 2, 3	-3.0	+3.0	mA
Power supply drain current	+ICC	Input bits = all 1's and all 0's, T _A = +25° C	1		+25	mA
	-ICC		1		-25	mA
Power supply rejection ratio	+PSRR	V _{CC} = +14.550 V dc to +15.450 V dc, T _A = +25° C, input bits = 0000 0000	1		<u>2/</u>	<u>2/</u>
	-PSRR	V _{EE} = -14.550 V dc to -15.450 V dc, T _A = +25° C, input bits = 0000 0000	1		<u>3/</u>	<u>3/</u>
Settling time	tS	Input bits = all 1's and all 0's T _A = 25° C	9		1.0	μs

^{1/} Unless otherwise specified, V_{CC} (pin 16) = +15 V dc and V_{EE} (pin 11) = -15 V dc.

^{2/} +PSRR = 0.010 V dc ±0.04 percent FSR/percent V_S maximum.

^{3/} -PSRR = 0.005 V dc ±0.02 percent FSR/percent V_S maximum.

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Case X

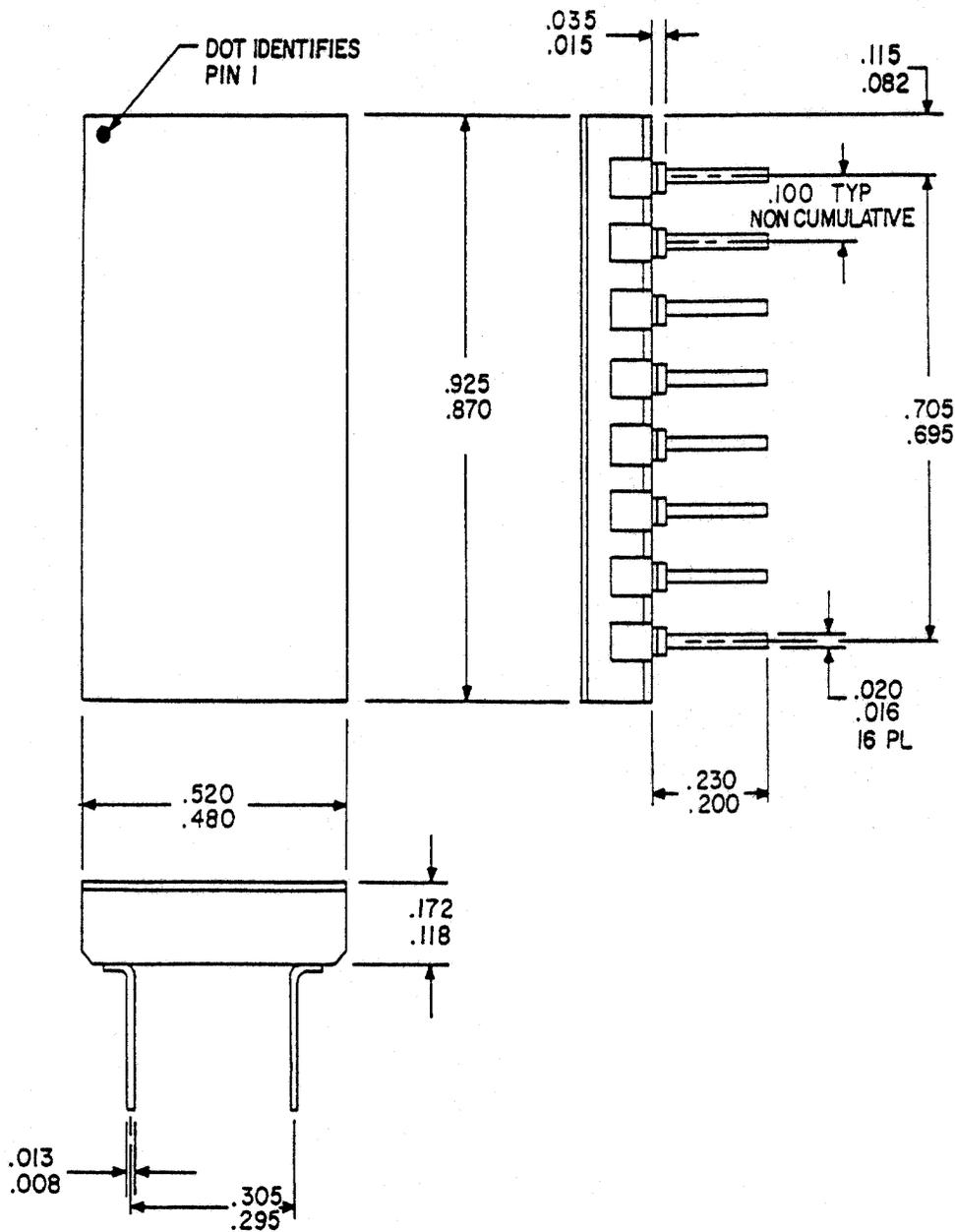


FIGURE 1. Case outlines.

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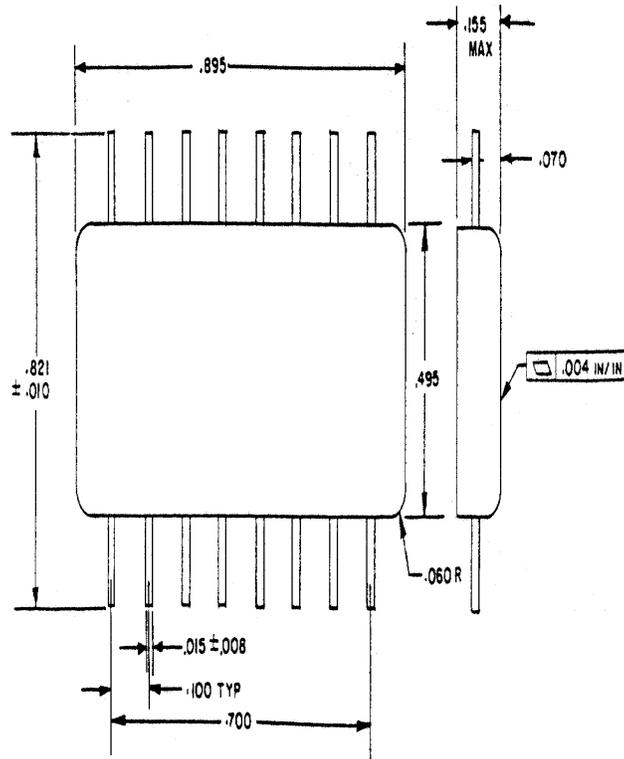
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Case Y



Inches	mm	Inches	mm	Inches	mm
.002	0.05	.070	1.78	.480	12.19
.004	0.10	.082	2.08	.495	12.57
.005	0.13	.100	2.54	.520	13.21
.008	0.20	.115	2.92	.695	17.65
.010	0.25	.118	3.00	.700	17.78
.013	0.33	.172	4.37	.705	17.91
.015	0.38	.200	5.08	.821	20.85
.016	0.41	.230	5.84	.870	22.10
.020	0.51	.295	7.49	.895	22.73
.035	0.89	.305	7.75	.925	23.50
.060	1.52				

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Case outlines - Continued.

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Device types 01 and 02

Pin	Function	Pin	Function
1	Bit 1 MSB	9	No connection
2	Bit 2	10	Bit 8 LSB
3	Bit 3	11	V _{EE} (-15 V supply)
4	Bit 4	12	Ground
5	Bit 5	13	No connection
6	Bit 6	14	Analog output
7	Bit 7	15	No connection
8	No connection	16	V _{CC} (+15 V supply)

FIGURE 2. Terminal connections.

Digital input MSB LSB	Analog input (V dc)	
	Device 01	Device 02
1111 1111	+3.984	-1.984
1111 1110	+3.969	-1.969
1000 0000	+2.000	0.00
0111 1111	+1.984	+0.016
0000 0001	+0.016	+1.984
0000 0000	0.000	+2.000

FIGURE 3. Truth table.

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3.7 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in QML-38534 (see 6.6 herein). The certificate of compliance submitted to DESC-ECC prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-H-38534 and the requirements herein.

3.8 Certificate of conformance. A certificate of conformance as required in MIL-H-38534 shall be provided with each lot of microcircuits delivered to this drawing.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-H-38534.

4.2 Screening. Screening shall be in accordance with MIL-H-38534. The following additional criteria shall apply:

- a. Burn-in test, method 1015 of MIL-STD-883.
 - (1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.7 herein).
 - (2) T_A as specified in accordance with table I of method 1015 of MIL-STD-883.
- b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-H-38534 and as specified herein.

4.3.1 Group A inspection. Group A inspection shall be in accordance with MIL-H-38534 and as follows:

- a. Tests shall be as specified in table II herein.
- b. Subgroups 7, 8, 9, and 10 shall be omitted.

4.3.2 Group B inspection. Group B inspection shall be in accordance with MIL-H-38534.

4.3.3 Group C inspection. Group C inspection shall be in accordance with MIL-H-38534 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein.
- b. Steady-state life test conditions, method 1005 of MIL-STD-883.
 - (1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.7 herein).
 - (2) T_A as specified in accordance with table I of method 1005 of MIL-STD-883.
 - (3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

4.3.4 Group D inspection. Group D inspection shall be in accordance with MIL-H-38534.

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TABLE II. Electrical test requirements.

MIL-STD-883, method 5008, test requirements	Subgroups (per method 5008, group A test table)
Interim electrical parameters	1
Final electrical test parameters	1*,2,3,4,5,6
Group A test requirements	1,2,3,4,5,6,9
Group C end-point electrical parameters (method 5008)	1,2,3

* PDA applies to subgroup 1.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-H-38534.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for original equipment design applications and logistic support of existing equipment.

6.2 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

6.3 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished in accordance with MIL-STD-481 using DD Form 1693, Engineering Change Proposal (Short Form).

6.4 Record of users. Military and industrial users shall inform Defense Electronics Supply Center when a system application requires configuration control and the applicable SMD. DESC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronics devices (FSC 5962) should contact DESC-ECC, telephone (513) 296-8527.

6.5 Comments. Comments on this drawing should be directed to DESC-ECC, Dayton, Ohio 45444, or telephone (513) 296-8525.

6.6 Approved sources of supply. Approved sources of supply are listed in QML-38534. Additional sources will be added to QML-38534 as they become available. The vendors listed in QML-38534 have agreed to this drawing and a certificate of compliance (see 3.7 herein) has been submitted to and accepted by DESC-ECC.

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STANDARDIZED MILITARY DRAWING SOURCE APPROVAL BULLETIN

DATE: 91-04-16

Approved sources of supply for SMD 5962-87688 are listed below for immediate acquisition only and shall be added to QML-38534 during the next revision. QML-38534 will be revised to include the addition or deletion of sources. The vendors listed below have agreed to this drawing and a certificate of compliance has been submitted to and accepted by DESC-ECC. This bulletin is superseded by the next dated revision of QML-38534.

Standardized Military drawing PIN	Vendor CAGE number	Vendor similar PIN <u>1/</u>
5962-8768801XX	50507	MN3008H/B
5962-8768801YX	50507	MN3008HF/B
5962-8768802XX	50507	MN3009H/B
5962-8768802YX	50507	MN3009HF/B

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

Vendor CAGE number

50507

Vendor name and address

Unitrode Corporation
Micro Networks Division
324 Clark Street
Worcester, MA 01606

The information contained herein is disseminated for convenience only and the Government assumes no liability whatsoever for any inaccuracies in this information bulletin.