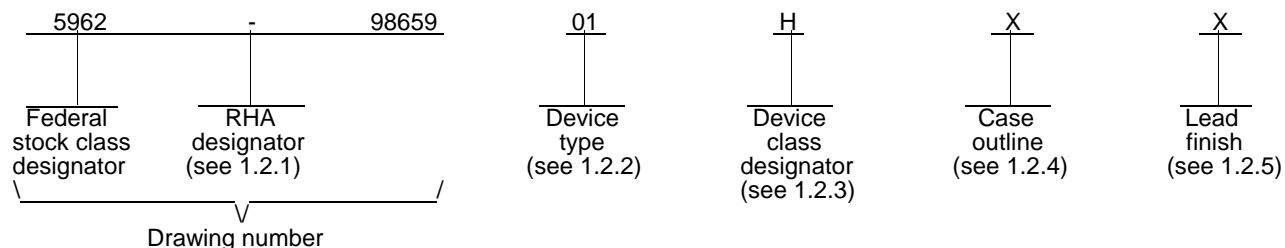


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PMIC N/A					PREPARED BY Gary Zahn					DEFENSE SUPPLY CENTER COLUMBUS POST OFFICE BOX 3990 COLUMBUS, OHIO 43216-5000 http://www.dscc.dla.mil													
STANDARD MICROCIRCUIT DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE AMSC N/A					CHECKED BY Michael C. Jones																		
					APPROVED BY Raymond Monnin																		
					DRAWING APPROVAL DATE 01-06-18																		
					REVISION LEVEL					SIZE A	CAGE CODE 67268		5962-98659										
										SHEET		1 OF 11											

1. SCOPE

1.1 Scope. This drawing documents five product assurance classes as defined in paragraph 1.2.3 and MIL-PRF-38534. A choice of case outlines and lead finishes which are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of radiation hardness assurance levels are reflected in the PIN.

1.2 PIN. The PIN shall be as shown in the following example:



1.2.1 Radiation hardness assurance (RHA) designator. RHA marked devices shall meet the MIL-PRF-38534 specified RHA levels and shall be marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

1.2.2 Device type(s). The device type(s) identify the circuit function as follows:

Device type	Generic number	Circuit function
01	AD10265BZ	Dual channel, 12-bit, 65 MSPS, MCM, analog to digital converter

1.2.3 Device class designator. This device class designator shall be a single letter identifying the product assurance level. All levels are defined by the requirements of MIL-PRF-38534 and require QML Certification as well as qualification (Class H, K, and E) or QML Listing (Class G and D). The product assurance levels are as follows:

Device class	Device performance documentation
K	Highest reliability class available. This level is intended for use in space applications.
H	Standard military quality class level. This level is intended for use in applications where non-space high reliability devices are required.
G	Reduced testing version of the standard military quality class. This level uses the Class H screening and In-Process Inspections with a possible limited temperature range, manufacturer specified incoming flow, and the manufacturer guarantees (but may not test) periodic and conformance inspections (Group A, B, C, and D).
E	Designates devices which are based upon one of the other classes (K, H, or G) with exception(s) taken to the requirements of that class. These exception(s) must be specified in the device acquisition document; therefore the acquisition document should be reviewed to ensure that the exception(s) taken will not adversely affect system performance.
D	Manufacturer specified quality class. Quality level is defined by the manufacturers internal, QML certified flow. This product may have a limited temperature range.

1.2.4 Case outline(s). The case outline(s) are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
X	See figure 1	68	Leaded ceramic chip carrier

1.2.5 Lead finish. The lead finish shall be as specified in MIL-PRF-38534.

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1.3 Absolute maximum ratings. 1/

Positive supply voltage (V_{CC})	0 V dc to +7.0 V dc
Negative supply voltage (V_{EE})	0 V dc to -7.0 V dc
Analog input voltage	-7.0 V dc to +7.0 V dc
Analog input current	-10 mA to +10 mA
Digital input voltage (ENCODE)	0 V dc to +7.0 V dc
ENCODE, ENCODE differential voltage	4 V dc
Digital output current	-40 mA to +40 mA
Digital input voltage range	+0.5 V to V_{EE}
Power dissipation (P_D)	2.4 W
Thermal resistance junction-to-case (θ_{JC})	2.2°C/W
Thermal resistance junction-to-ambient (θ_{JA})	24.3°C/W
Junction temperature (T_J)	+175°C
Storage temperature	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C

1.4 Recommended operating conditions.

Positive supply voltage (V_{CC})	+4.75 V dc to +5.25 V dc
Negative supply voltage (V_{EE})	-5.20 V dc to -4.75 V dc
Case operating temperature range (T_C)	-25°C to +125°C

2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, and handbooks. The following specification, standards, and handbooks form a part of this drawing to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

DEPARTMENT OF DEFENSE

MIL-PRF-38534 - Hybrid Microcircuits, General Specification for.

STANDARDS

DEPARTMENT OF DEFENSE

MIL-STD-883 - Test Method Standard Microcircuits.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines.

HANDBOOKS

DEPARTMENT OF DEFENSE

MIL-HDBK-103 - List of Standard Microcircuit Drawings.
MIL-HDBK-780 - Standard Microcircuit Drawings.

(Unless otherwise indicated, copies of the specification, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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 takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

1/ Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.

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3. REQUIREMENTS

3.1 Item requirements. The individual item performance requirements for device classes D, E, G, H, and K shall be in accordance with MIL-PRF-38534. Compliance with MIL-PRF-38534 may include the performance of all tests herein or as designated in the device manufacturer's Quality Management (QM) plan or as designated for the applicable device class. Therefore, the tests and inspections herein may not be performed for the applicable device class (see MIL-PRF-38534). Furthermore, the manufacturer may take exceptions or use alternate methods to the tests and inspections herein and not perform them. However, the performance requirements as defined in MIL-PRF-38534 shall be met for the applicable device class.

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

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.4 herein and figure 1.

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

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 defined in table I.

3.5 Marking of device(s). Marking of device(s) shall be in accordance with MIL-PRF-38534. The device shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's vendor similar PIN may also be marked in MIL-HDBK-103 and QML-38534.

3.6 Data. In addition to the general performance requirements of MIL-PRF-38534, the manufacturer of the device described herein shall maintain the electrical test data (variables format) from the initial quality conformance inspection group A lot sample, for each device type listed herein. Also, the data should include a summary of all parameters manually tested, and for those which, if any, are guaranteed. This data shall be maintained under document revision level control by the manufacturer and be made available to the preparing activity (DSCC-VA) upon request.

3.7 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to supply to this drawing. The certificate of compliance (original copy) submitted to DSCC-VA shall affirm that the manufacturer's product meets the performance requirements of MIL-PRF-38534 and herein.

3.8 Certificate of conformance. A certificate of conformance as required in MIL-PRF-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-PRF-38534 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

4.2 Screening. Screening shall be in accordance with MIL-PRF-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. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to either DSCC-VA or the acquiring activity upon request. Also, the test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

(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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions <u>1/</u> -25°C ≤ T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Offset error	OFF _{ERROR}	<u>2/</u>	1,2,3	01	-10	+10	mV
Gain error	AV _{ERROR}	<u>3/</u>	1	01	-1.5	+1.5	%FS
			2,3		-2.5	+2.5	
Analog input resistance	AR _{IN1}	<u>2/</u>	1,2,3	01	99	101	Ω
	AR _{IN2}				198	202	
	AR _{IN3}				396	404	
Input capacitance	C _{IN}	T _A = +25°C <u>2/ 4/</u>	4	01		7.0	pF
Logic "1" voltage (analog)	V _{IH}	<u>2/ 5/ 6/</u>	1,2,3	01	2.0	5.0	V
Logic "0" voltage (analog)	V _{IL}	<u>2/ 5/ 6/</u>	1,2,3	01	0	0.8	V
Logic "1" current (analog)	I _{IH}	V _{INH} = 5 V <u>2/ 5/ 6/</u>	1,2,3	01		800	μA
Logic "0" current (analog)	I _{IL}	V _{INL} = 0 V <u>2/ 5/ 6/</u>	1,2,3	01	-400		μA
Logic "1" voltage (digital)	V _{OH}	<u>7/</u>	1,2,3	01	2.8		V
Logic "0" voltage (digital)	V _{OL}	<u>8/</u>	1,2,3	01		0.5	V
Supply currents	I _{CCTOTAL}		1,2,3	01		520	mA
ENCODE pulse width high	ENC _{HI}	<u>2/</u>	4,5,6	01	6.5		ns
ENCODE pulse width low	ENC _{LO}	<u>2/</u>	4,5,6	01	6.5		ns
Output delay	t _{DD}	T _A = +25°C <u>2/</u>	4	01	7.0	12.5	ns
Maximum conversion rate	CNV _{MAX}		4,5,6	01	65		MSPS

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions <u>1/</u> -25°C ≤ T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Spurious free dynamic range <u>10/</u>	SFDR	Analog input at 1.24 MHz	4	01	75		dBFS
			5,6		74		
		Analog input at 17 MHz	4		71		
			5,6		70		
Signal-to-noise ratio <u>11/</u>	SNR	Analog input at 1.24 MHz	4	01	62		dBFS
			5,6		60.5		
		Analog input at 17 MHz	4		61		
			5,6		60		
		Analog input at 32 MHz	4		61		
			5,6		59.5		
Signal-to-noise and distortion <u>12/</u>	SINAD	Analog input at 1.24 MHz	4	01	61		dBFS
			5,6		60		
		Analog input at 17 MHz	4		61		
			5,6		59.5		
		Analog input at 32 MHz	4		61		
			5,6		59		
Two tone intermodulation distortion rejection <u>13/</u>	IMD	f1 and f2 are -7 dB	4,5,6	01	66		dBc

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions <u>1/</u> -25°C T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Channel to channel isolation <u>14/</u>	ISO	T _A = +25°C <u>2/</u>	4	01	80		dB
Power supply rejection ratio	PSRR	+4.75 V ≤ V _{CC} ≤ +5.25 V <u>2/</u>	7,8	01		0.02	%FSR/ % V _{CC}
		-5.20 V ≤ V _{EE} ≤ -4.75 V <u>2/</u>				0.02	%FSR/ % V _{EE}

1/ V_{CC}(analog) = +5 V dc, V_{EE} = -5 V dc, and V_{CC}(digital) = +5 V dc, unless otherwise specified.

2/ Parameter shall be tested as part of device initial characterization and after design and process changes. Parameter shall be guaranteed to the limits specified in table I for all lots not specifically tested.

3/ Gain test is preformed on A_{IN1} over the specified input voltage range.

4/ Input capacitance specifications combines die and package capacitance..

5/ ENCODE (pins 29 and 51) driven single-ended source: ENCODE (pins 28 and 52) bypassed to ground through 0.01 μF capacitor.

6/ ENCODE (pins 29 and 51) may also be driven differentially in conjunction with ENCODE (pins 28 and 52).

7/ Outputs sourcing 10 μA or less.

8/ Outputs sinking 10 μA or less.

9/ Maximum conversion rate allows for variation in ENCODE DUTY CYCLE of 50%, ±5%.

10/ Analog input signal equals -1 dBFS; SFDR is the ratio of converter full scale to worst spur.

11/ Analog input signal power at -1 dBFS; signal-to-noise ratio (SNR) is the ratio of signal level to total noise (first 5 harmonics removed). ENCODE = 65 MSPS.

12/ Analog input signal power at -1 dBFS; signal-to-noise and distortion (SINAD) is the ratio of signal level to total noise plus harmonics. ENCODE = 65 MSPS.

13/ Both input zones at -7 dBFS; two tone intermodulation distortion (IMD) rejection is the ratio of either tone to the worst third order intermod product. f₁ = 17.0 MHz ±100 kHz, f₂ = 18.0 MHz ±100 kHz.

14/ Channel to channel isolation tested with A channel / 50 ohm terminated (A_{IN2}) grounded and a full scale signal applied to B channel (A_{IN1}).

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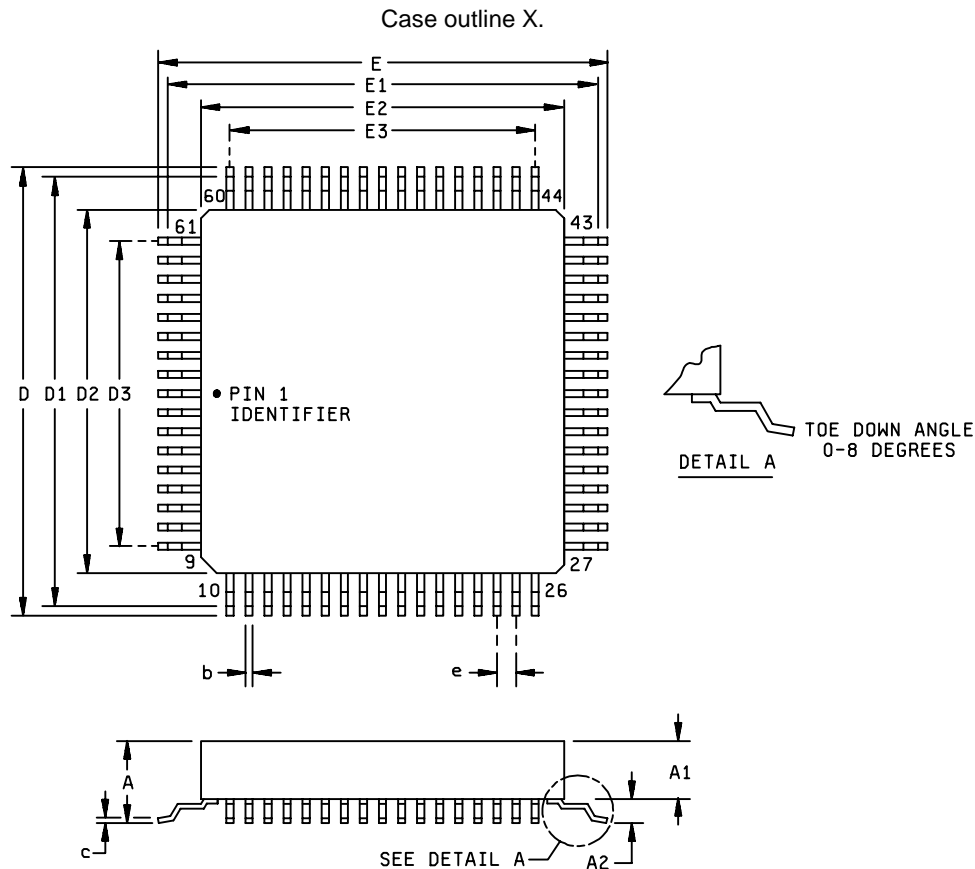
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Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A		5.97		0.235
A1		4.45		0.175
A2	0.18	1.02	0.040	0.060
b	0.36	0.51	0.014	0.020
c	0.18	0.25	0.007	0.010
e	1.14	1.40	0.045	0.055
D/E	29.72	30.23	1.170	1.190
D1/E1	27.18		1.070	
D2/E2	23.88	24.38	0.940	0.960
D3/E3	20.32 BSC		0.800 BSC	

NOTES:

1. The U.S. preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and inch-pound units, the inch-pound units shall rule.
2. Pin 1 dot and pin numbers are for reference only.

FIGURE 1. Case outline(s).

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Device type	01	Device type	01	Device type	01
Case outline	X	Case outline	X	Case outline	X
Terminal number	Terminal symbol	Terminal number	Terminal symbol	Terminal number	Terminal symbol
1	Shield	24	D7A	47	D9B
2	Channel A Ground	25	D8A	48	D10B
3	No connect	26	Channel A Ground	49	D11B (MSB)
4	No connect	27	Channel A Ground	50	DV _{CC}
5	Channel A Ground	28	Encode A	51	Encode B
6	Analog input A1	29	Encode A	52	Encode B
7	Analog input A2	30	DV _{CC}	53	Channel B ground
8	Analog input A3	31	D9A	54	Channel B ground
9	Channel A Ground	32	D10A	55	No connect
10	Channel A Ground	33	D11A (MSB)	56	No connect
11	Channel A Ground	34	No connect	57	No connect
12	No connect	35	No connect	58	Channel B ground
13	AV _{EE}	36	D0B (LSB)	59	Channel B ground
14	AV _{CC}	37	D1B	60	Channel B ground
15	No connect	38	D2B	61	Channel B ground
16	No connect	39	D3B	62	Analog input B1
17	D0A (LSB)	40	D4B	63	Analog input B2
18	D1A	41	D5B	64	Analog input B3
19	D2A	42	D6B	65	Channel B ground
20	D3A	43	Channel B ground	66	AV _{CC}
21	D4A	44	Channel B ground	67	AV _{EE}
22	D5A	45	D7B	68	Channel B ground
23	D6A	46	D8B		

FIGURE 2. Terminal connections.

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TABLE II. Electrical test requirements.

MIL-PRF-38534 test requirements	Subgroups (in accordance with MIL-PRF-38534, group A test table)
Interim electrical parameters	1
Final electrical parameters	1*,2,3,4,5,6,7,8
Group A test requirements	1,2,3,4,5,6,7,8
Group C end-point electrical parameters	1
End-point electrical parameters for radiation hardness assurance (RHA) devices	Not applicable

* PDA applies to subgroup 1.

4.3 Conformance and periodic inspections. Conformance inspection (CI) and periodic inspection (PI) shall be in accordance with MIL-PRF-38534 and as specified herein.

4.3.1 Group A inspection (CI). Group A inspection shall be in accordance with MIL-PRF-38534 and as follows:

- a. Tests shall be as specified in table II herein.
- b. Subgroups 9, 10, and 11 shall be omitted.

4.3.2 Group B inspection (PI). Group B inspection shall be in accordance with MIL-PRF-38534.

4.3.3 Group C inspection (PI). Group C inspection shall be in accordance with MIL-PRF-38534 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein.
- b. Steady-state life test, method 1005 of MIL-STD-883.
 - (1) Test condition A, B, C, or D. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to either DSCC-VA or the acquiring activity upon request. Also, the test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.
 - (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 (PI). Group D inspection shall be in accordance with MIL-PRF-38534.

4.3.5 Radiation Hardness Assurance (RHA) inspection. RHA inspection is not currently applicable to this drawing.

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5. PACKAGING

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

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use for Government microcircuit applications (original equipment), design applications, and logistics purposes.

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-PRF-38534.

6.4 Record of users. Military and industrial users shall inform Defense Supply Center Columbus when a system application requires configuration control and the applicable SMD. DSCC 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 microelectronic devices (FSC 5962) should contact DSCC-VA, telephone (614) 692-0544.

6.5 Comments. Comments on this drawing should be directed to DSCC-VA, Post Office Box 3990, Columbus, Ohio 43216-5000, or telephone (614) 692-0512.

6.6 Sources of supply. Sources of supply are listed in MIL-HDBK-103 and QML-38534. The vendors listed in MIL-HDBK-103 and QML-38534 have submitted a certificate of compliance (see 3.7 herein) to DSCC-VA and have agreed to this drawing.

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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 01-06-18

Approved sources of supply for SMD 5962-98659 are listed below for immediate acquisition information only and shall be added to MIL-HDBK-103 and QML-38534 during the next revisions. MIL-HDBK-103 and 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 DSCC-VA. This bulletin is superseded by the next dated revisions of MIL-HDBK-103 and QML-38534.

Standard microcircuit drawing PIN <u>1</u> /	Vendor CAGE number	Vendor similar PIN <u>2</u> /
5962-9865901HXA	34031	AD10265BZ/QMLH

- 1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. If the desired lead finish is not listed contact the Vendor to determine its availability.
- 2/ 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

34031

Vendor name
and address

Analog Devices, Incorporated
7910 Triad Center Drive
Greensboro, NC 27409-9605

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