

REVISIONS																
REV	DESCRIPTION	DATE (YR-MO-DA)					APPROVED									
A	Added end-point limit to table I, SNR test. Update document to current requirements of MIL-H-38534. Editorial changes throughout.	93-01-25					K. A. Cottongim									
B	Table I; deleted tests Aperature jitter (t_{AJ}), Aperature delay (t_{AD}), and track/hold acquisition $t_{A(T/H)}$. Table I; For the VOL test changed $I_{OL} = 4.8$ mA to 3.2 mA. For the VOL test changed the max limit from 0.4 V to 0.5 V.	95-06-16					K. A. Cottongim									
C	Table I; For the enable data input loading current (ILED) changed the min/max limits from -100/+100 μ A to -150/+150 μ A.	97-04-03					K. A. Cottongim									
D	Figure 1; corrected the width of case outline Y. Changed from .120 inches maximum to 1.20 inches maximum. Redrew entire document. -sld	99-09-29					Ray Monnin									
REV																
SHEET																
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REV STATUS OF SHEETS	REV	D	D	D	D	D	D	D	D	D	D	D	D	D	D	
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13		
PMIC N/A	PREPARED BY Robert M. Heber	DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216														
STANDARD MICROCIRCUIT DRAWING	CHECKED BY Donald R. Osborne	MICROCIRCUIT, HYBRID, LINEAR, 12-BIT, A/D CONVERTER														
THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE	APPROVED BY William K. Heckman															
AMSC N/A	DRAWING APPROVAL DATE 90-05-31															
	REVISION LEVEL D	SIZE A	CAGE CODE 67268	5962-88542												
		SHEET 1 OF 13														

DSCC FORM 2233
APR 97

5962-E493-99

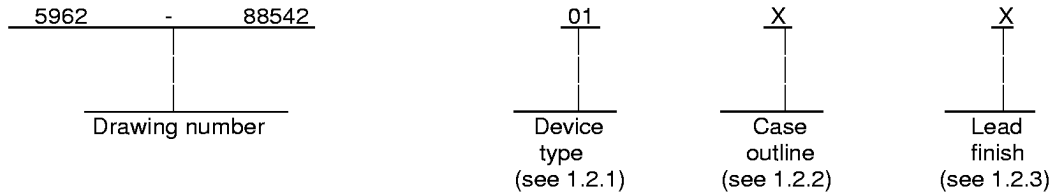
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1. SCOPE

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1.1 Scope. This drawing describes the device requirements for class H hybrid microcircuits to be processed in accordance with MIL-PRF-38534.

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



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

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>
01	ADC00300II	A/D converter, track/hold, 12-bit

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
X	See figure 1	40	Dual-in-line
Y	See figure 1	40	Flat package

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

1.3 Absolute maximum ratings. 1/

Positive supply voltage range (V_{CC})	-0.3 V dc to +18 V dc
Negative supply voltage range (V_{EE})	+0.3 V dc to -18 V dc
Logic supply voltage range (V_{DD})	-0.3 V dc to +7.0 V dc
Analog input voltage	± 20 V dc
Logic input voltage range	-0.3 V dc to V_{DD}
Power dissipation ($T_C = +125^\circ\text{C}$)	4.5 W
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J)	+150°C
Thermal resistance, junction-to-case (θ_{JC})	5.7°C/W
Thermal resistance, case-to-ambient (θ_{CA})	15°C/W

1.4 Recommended operating conditions.

Positive supply voltage range (V_{CC})	+14.25 V dc to +15.75 V dc
Negative supply voltage range (V_{EE})	-14.25 V dc to -15.75 V dc
Logic supply voltage range (V_{DD})	+4.75 V dc to +5.25 V dc
Logic input voltage range	0 V dc to +5.0 V dc
Analog input voltage	± 10 V dc
Case operating temperature range (T_C)	-55°C to +125°C

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

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2. APPLICABLE DOCUMENTS

[查询"5962-8854201XA"供应商](#)
 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-973 - Configuration Management.
- MIL-STD-1835 - Interface Standard for Microcircuit Case Outlines.

HANDBOOKS

DEPARTMENT OF DEFENSE

- MIL-HDBK-103 - List of Standard Microcircuit Drawings (SMD's).
- MIL-HDBK-780 - Standard Microcircuit Drawings.

(Unless otherwise indicated, copies of the specification, standards, and handbook 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.

3. REQUIREMENTS

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

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 1.2.2 herein and figure 1.

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

3.2.3 Block diagram. The block diagram shall be as specified on figure 3.

3.2.4 Timing diagram(s). The timing diagram(s) shall be as specified on figure 4.

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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ -55°C ≤ T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Positive supply current	I _{CC}	+14.25 V ≤ V _{CC} ≤ +15.75 V	1, 2, 3	01		+100	mA
Negative supply current	I _{EE}	-14.25 V ≤ V _{EE} ≤ -15.75 V	1, 2, 3	01	-120		mA
Logic supply current	I _{DD}	+4.5 V ≤ V _{DD} ≤ +5.5 V	1, 2, 3	01		+250	mA
Linearity error	LE	Best straight line of readings +FS, +1/2 FS, 0, -1/2 FS, and - FS, [(Max deviation) / (V range in)] x 100	4	01	-0.25	+0.25	%FSR
			5		-0.045	+0.045	
			6		-0.041	+0.041	
Gain error	AE	[(V _{+FS} - V _{-FS}) / (V range in) - 1] x 100	4	01	-0.3	+0.3	%FSR
			5		-0.6	+0.6	
			6		-0.52	+0.52	
Offset error	OE	[(V for zero code reading) / (V range in)] x 100	4		-0.5	+0.5	%FSR
			5		-0.7	+0.7	
			6		-0.66	+0.66	
Differential linearity error	DLE	6 V _{p-p} ±5%, 100 kHz ±10% sine wave to 5 V range in > 400 k point histogram corrected for the sine wave probability density function	4	01	-1	+1	LSB
			5, 6		-3	+3	
Conversion rate	f _C	Encode command rate 2 MHz	4, 5, 6	01	0	2	MHz
In - band harmonics	IBH	rms signal - rms harmonic, V _{IN} = 4.8 V _{p-p} ±2% at 97656 Hz ±1000 ppm	4	01	68		dB below FSR
			5, 6		66		
See footnotes at end of table.							
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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions <u>1</u> / -55°C ≤ T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Signal to noise ratio	SNR	rms signal - rms noise	4, 5, 6	01	65		dB
		End-point, T _C = +25°C, rms signal - rms noise	4	01	63.5		
Input bandwidth, large signal	LSBW	V _{IN} = 1 dB below full <u>2</u> / scale	4, 5, 6	01	10		MHz
Positive output reference voltage	+V _{REF}	+I _{REF} = +2 mA	4	01	+9.935	+10.065	V
			5		+9.895	+10.105	
			6		+9.919	+10.081	
Negative output reference voltage	-V _{REF}	-I _{REF} = -2 mA	4	01	-9.950	-10.050	V
			5		-9.930	-10.070	
			6		-9.934	-10.066	
Encode command input pulse width	t _{PW}	<u>2</u> /	9, 10, 11	01	50	<u>3</u> /	ns
Encode command input current	I _{IN(EC)}	V _{IN} = V _{DD} or GND	1, 2, 3	01	-100	+100	μA
Output data invert input loading current	I _{LOD}	V _{IN} = V _{DD} or GND	1, 2, 3	01	-150	+150	μA
Enable data input loading current	I _{LED}	V _{IN} = V _{DD} or GND	1, 2, 3	01	-150	+150	μA

See footnotes at end of table.

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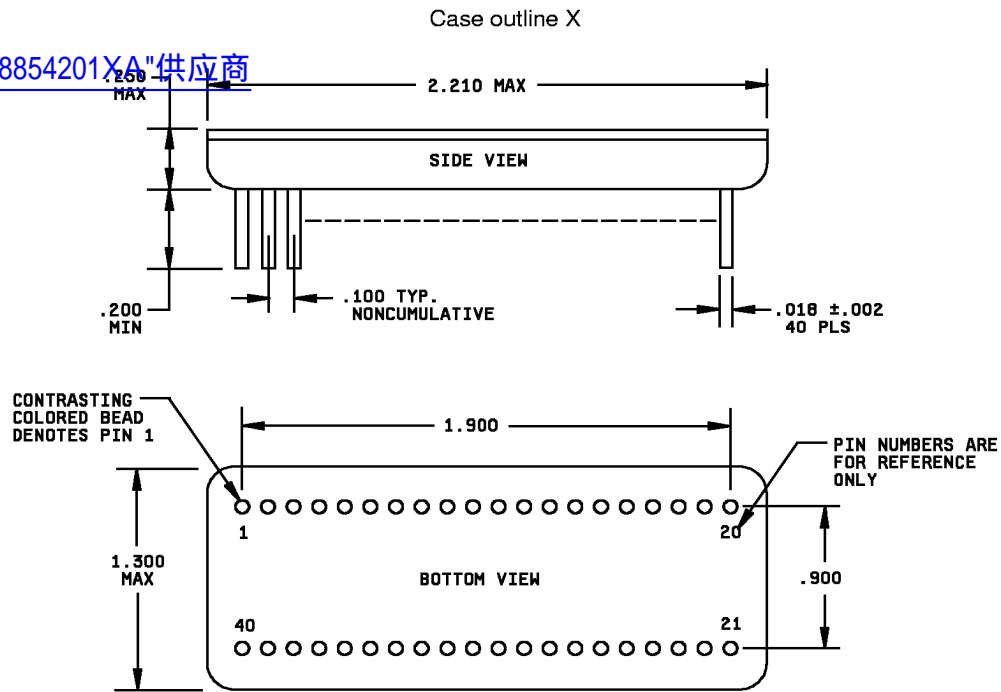
TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions <u>1/</u> -55°C ≤ T _C ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Logic "0" output voltage (data ready and MUX enable outputs)	V _{OL}	I _{OL} = 3.2 mA	1, 2, 3	01		0.5	V
Logic "1" output voltage (data ready and MUX enable outputs)	V _{OH}	I _{OH} = -80 μA	1, 2, 3	01	3.7		V
Output high - impedance current (parallel data)	I _{OZH}	V _{OZH} = 2.4 V	1, 2, 3	01		+50	μA
	I _{OZL}	V _{OZL} = 0.7 V				-50	

- 1/ All tests of table I shall be performed with t_{PW} set at 50 ns minimum, t_r and t_f at 10 to 90 percent set to 25 ns minimum, and an encode command rate of 2 MHz maximum.
- 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/ Maximum encode command pulse width = (1/f_c) - 50.

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Inches	mm
.002	0.05
.018	0.46
.100	2.54
.200	5.08
.250	6.35
.900	22.86
1.300	33.02
1.900	48.26
2.210	56.13

NOTES:

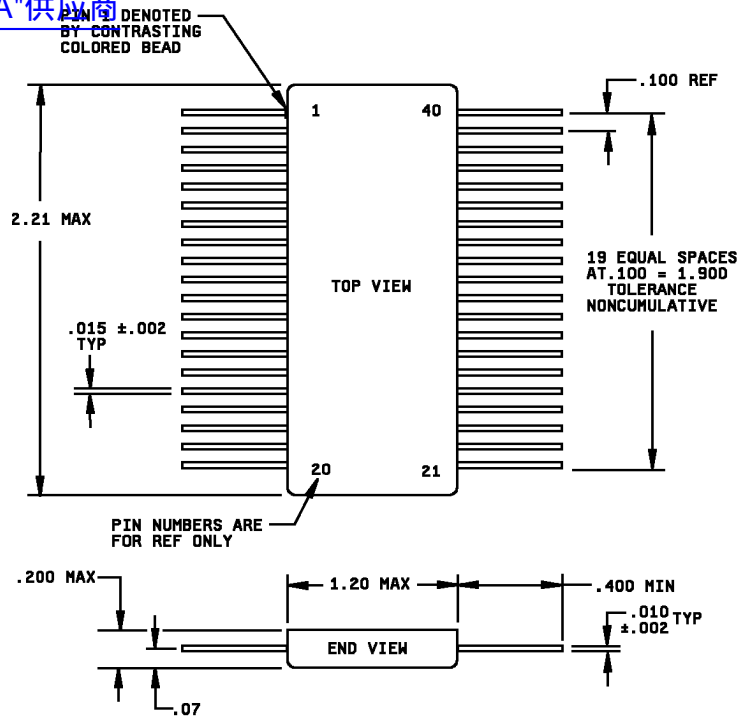
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.005 (0.13 mm).

FIGURE 1. Case outlines.

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Case outline Y

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Inches	mm
.002	0.05
.010	0.25
.015	0.38
.07	1.8
.200	5.08
.400	10.16
1.20	30.5
1.900	48.26
2.21	56.10

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.005 (0.13 mm).

FIGURE 1. Case outline - Continued

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Device types	All	Device types	All
Case outlines	X and Y	Case outlines	X and Y
Terminal number	Terminal symbol	Terminal number	Terminal symbol
1	Bit 8	21	5 V range in
2	Bit 7	22	10 V range in
3	Bit 6	23	20 V range in
4	Bit 5	24	Offset adjust
5	Bit 4	25	Range offset
6	Bit 3	26	+10 V reference out
7	Bit 2	27	-10 V reference out
8	Bit 1 (MSB)	28	V _{EE}
9	Data ready	29	V _{CC}
10	+ 5 V input	30	NC (factory test point)
11	NC (factory test point)	31	MUX enable
12	V _{DD}	32	NC (factory test point)
13	Digital ground	33	NC (factory test point)
14	Gain adjust	34	Output data invert
15	Analog ground	35	$\overline{\text{Bit 1 (MSB)}}$
16	Analog ground	36	Enable data
17	Analog ground	37	Bit 12 (LSB)
18	Encode command	38	Bit 11
19	NC (factory test point)	39	Bit 10
20	NC (factory test point)	40	Bit 9

NC - No connection

FIGURE 2. Terminal connections.

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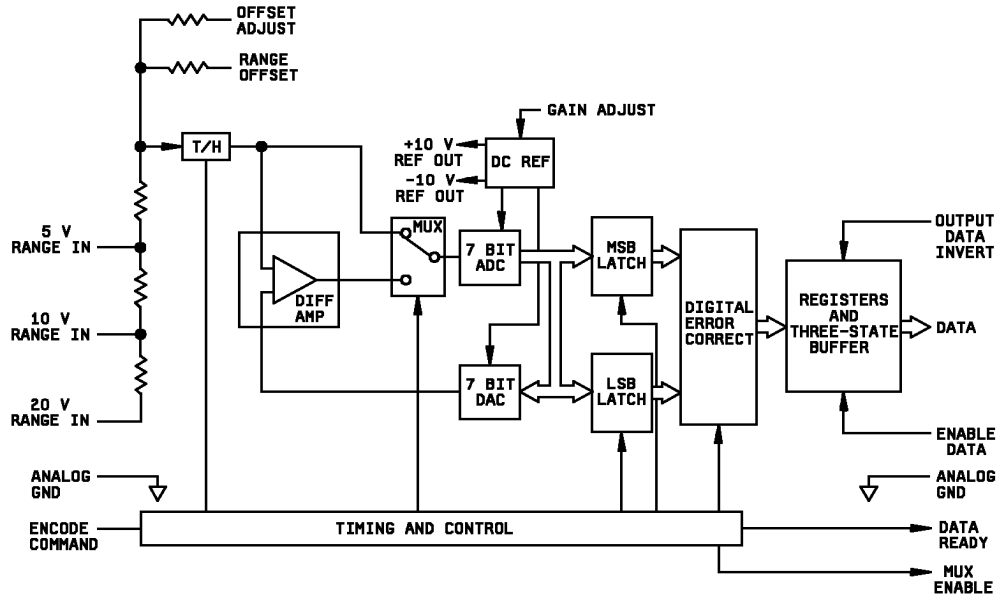


FIGURE 3. Block diagram.

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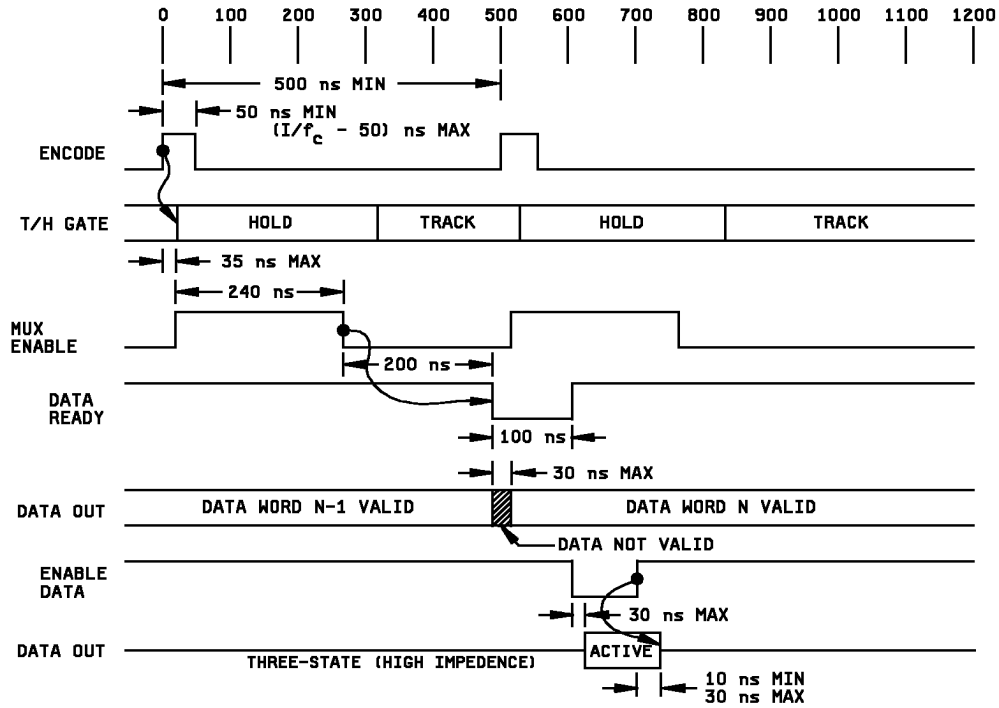


FIGURE 4. Timing diagram.

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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 described herein. This 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.

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, 9
Group A test requirements	1, 2, 3, 4, 5, 6, 9, 10, 11
Group C end-point electrical parameters	1, 2, 3, 4
End-point electrical parameters for Radiation Hardness Assurance (RHA) devices	Not applicable

* PDA applies to subgroup 1.

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_C 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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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.

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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 7 and 8 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_C 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.

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-STD-973 using DD Form 1692, Engineering Change Proposal.

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, 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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Approved sources of supply for SMD 5962-88542 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>
5962-8854201XA	19645	ADC00300II-142
5962-8854201XA	19645	ADC00300II-152
5962-8854201XC	19645	ADC00300II-112
5962-8854201XC	19645	ADC00300II-132
5962-8854201YA	19645	ADC00302II-142
5962-8854201YA	19645	ADC00302II-152
5962-8854201YC	19645	ADC00302II-112
5962-8854201YC	19645	ADC00302II-132

- 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 ksatisfy the performance requirements of this drawing.

Vendor CAGE number

Vendor name and address

19645

ILC Data Device Corporation
105 Wilbur Place
Bohemia, NY 11716

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