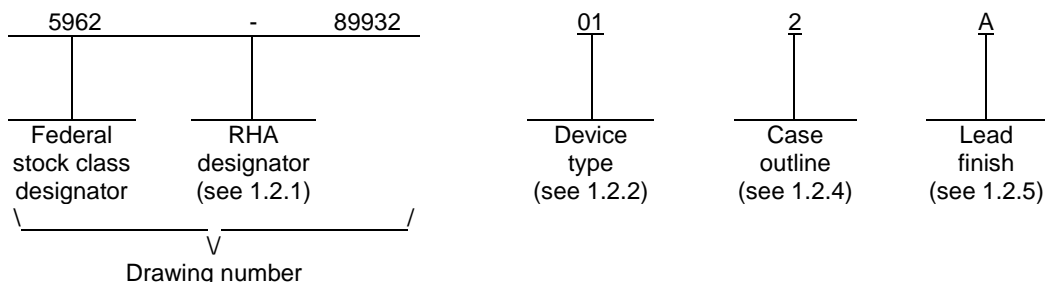| REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Changes in accordance with NOR 5962-R106-92.	92-01-09	M. A. FRYE
B	Add RHA requirements. Add device type 02. Add case outlines E and F. Update boilerplate. – rrp	98-10-09	R. MONNIN
C	Make changes to 1.5, RHA designators in table I, and table IIA. – rrp	99-07-30	R. MONNIN
D	Make change to full range current test as specified in table I. Add new footnote to 1.5 and table I. - ro	00-12-22	R. MONNIN
E	Make correction to the t_{PLH} and t_{PHL} tests conditions column as specified under Table I. Make correction to figure 2. Delete 4.4.4.1.1, Accelerated aging test. - ro	06-06-19	R. MONNIN
F	Make change to Nonlinearity max limit in table I for device type 02. Update to latest Boilerplate. - jt	11-08-09	C. SAFFLE
G	Add device type 03 tested at low dose rate. Make change to paragraphs 1.2.2, 1.5, and 3.2.3. Make changes to footnotes 1/ and 2/ as specified under Table I. Removed figure 2. Make change to Table IIB and paragraph 4.4.4.1. -rrp	12-05-03	C. SAFFLE

THE ORIGINAL FIRST SHEET OF THIS DRAWING HAS BEEN REPLACED.

REV															
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SHEET															

REV STATUS		REV	G	G	G	G	G	G	G	G	G	G	G	G	
OF SHEETS		SHEET	1	2	3	4	5	6	7	8	9	10	11	12	

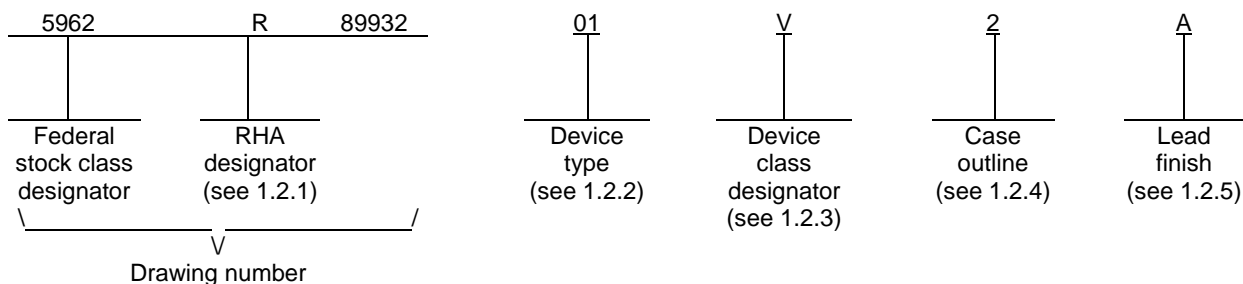| PMIC N/A	PREPARED BY RICK C. OFFICER	**DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990** **http://www.landandmaritime.dla.mil**
STANDARD MICROCIRCUIT DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE	CHECKED BY CHARLES E. BESORE	
	APPROVED BY MICHAEL A. FRYE	MICROCIRCUIT, DIGITAL-LINEAR, 8-BIT, HIGH SPEED, MULTIPLYING D/A CONVERTER, MONOLITHIC SILICON
	DRAWING APPROVAL DATE 90-09-07	
AMSC N/A	REVISION LEVEL G	SIZE A / CAGE CODE 67268 / 5962-89932
		SHEET 1 OF 12

1. SCOPE

1.1 <u>Scope</u>. This drawing documents two product assurance class levels consisting of high reliability (device classes Q and M) and space application (device class V). A choice of case outlines and lead finishes are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of Radiation Hardness Assurance (RHA) levels is reflected in the PIN.

1.2 <u>PIN</u>. The PIN is as shown in the following examples.

For device classes M and Q:

```
    5962    -    89932         01          2          A
     |           |             |           |          |
  Federal       RHA          Device      Case       Lead
stock class   designator      type      outline     finish
 designator   (see 1.2.1)  (see 1.2.2) (see 1.2.4) (see 1.2.5)
  _____/
               V
          Drawing number
```

For device class V:

```
    5962    R    89932         01          V          2          A
     |           |             |           |          |          |
  Federal       RHA          Device      Device      Case       Lead
stock class   designator      type       class      outline     finish
 designator   (see 1.2.1)  (see 1.2.2) designator (see 1.2.4) (see 1.2.5)
  _____/    (see 1.2.3)
               V
          Drawing number
```

1.2.1 <u>RHA designator</u>. Device classes Q and V RHA marked devices meet the MIL-PRF-38535 specified RHA levels and are marked with the appropriate RHA designator. Device class M RHA marked devices meet the MIL-PRF-38535, appendix A specified RHA levels and are marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

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

Device type	Generic number	Circuit function
01	DAC08	8-bit, high-speed, multiplying D/A converter
02	DAC08A	Radiation hardened, 8-bit, high-speed, multiplying D/A converter
03	DAC08A	Radiation hardened, 8-bit, high-speed, multiplying D/A converter

1.2.3 <u>Device class designator</u>. The device class designator is a single letter identifying the product assurance level as listed below. Since the device class designator has been added after the original issuance of this drawing, device classes M and Q designators will not be included in the PIN and will not be marked on the device.

Device class	Device requirements documentation
M	Vendor self-certification to the requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A
Q or V	Certification and qualification to MIL-PRF-38535

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1.2.4 <u>Case outline(s)</u>. 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>
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat pack
2	CQCC1-N20	20	Square leadless chip carrier

1.2.5 <u>Lead finish</u>. The lead finish is as specified in MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

1.3 <u>Absolute maximum ratings</u>. <u>1</u>/

Supply voltage (V+ to V-) .... 36 V dc
Logic inputs .... V- to (V- plus 36 V dc)
Logic control voltage (V_{LC}) .... V- to V+
Analog current outputs (at V- = 15 V) .... 4.25 mA
Reference input (V_{REF+} to V_{REF-}) .... V- to V+
Reference input differential voltage (V_{REF+} to V_{REF-}) .... ±18 V dc
Reference input current (I_{VREF+}) .... 5.0 mA
Power dissipation (P_D):
  Cases E, F, and 2 .... 500 mW
Maximum junction temperature (T_J) .... +150°C
Lead temperature (soldering, 60 seconds) .... +300°C
Storage temperature .... -65°C to +125°C
Thermal resistance, junction-to-case (θ_{JC}) .... See MIL-STD-1835
Thermal resistance, junction-to-ambient (θ_{JA}):
  Case E .... 91°C/W
  Case F .... 120°C/W
  Case 2 .... 110°C/W

1.4 <u>Recommended operating conditions</u>.

Supply voltage (V_S) .... ±15 V dc
Input reference current (I_{REF}) .... 2.0 mA
Ambient operating temperature range (T_A) .... -55°C to +125°C

1.5 <u>Radiation features</u>:

Device types 01 and 02:
  Maximum total dose available (dose rate = 50 – 300 rads(Si)/s) .... 100 krads(Si) <u>2</u>/
Device type 03:
  Maximum total dose available (dose rate ≤ 10 mrads(Si)/s) .... 50 krads(Si) <u>3</u>/

<u>1</u>/ 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.
<u>2</u>/ Device types 01 and 02 may be dose rate sensitive in a space environment and may demonstrate enhanced low dose rate effects. Radiation end point limits for the noted parameters are guaranteed only for the conditions specified in MIL-STD-883, method 1019, condition A.
<u>3</u>/ For device type 03, radiation end point limits for the noted parameters are guaranteed only for the conditions specified in MIL-STD-883, method 1019, condition D.

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2. APPLICABLE DOCUMENTS

2.1 <u>Government specification, standards, and handbooks</u>. 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-38535   -   Integrated Circuits, Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

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

DEPARTMENT OF DEFENSE HANDBOOKS

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

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 <u>Order of precedence</u>. 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 <u>Item requirements</u>. The individual item requirements for device classes Q and V shall be in accordance with MIL-PRF-38535 and as specified herein 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. The individual item requirements for device class M shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein.

3.2 <u>Design, construction, and physical dimensions</u>. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein for device classes Q and V or MIL-PRF-38535, appendix A and herein for device class M.

3.2.1 <u>Case outlines</u>. The case outlines shall be in accordance with 1.2.4 herein.

3.2.2 <u>Terminal connections</u>. The terminal connections shall be as specified on figure 1.

3.2.3 <u>Radiation exposure circuit</u>. The radiation exposure circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing and acquiring activity upon request.

3.3 <u>Electrical performance characteristics and postirradiation parameter limits</u>. Unless otherwise specified herein, the electrical performance characteristics and postirradiation parameter limits are as specified in table I and shall apply over the full ambient operating temperature range.

3.4 <u>Electrical test requirements</u>. The electrical test requirements shall be the subgroups specified in table IIA. The electrical tests for each subgroup are defined in table I.

3.5 <u>Marking</u>. The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked. For packages where marking of the entire SMD PIN number is not feasible due to space limitations, the manufacturer has the option of not marking the "5962-" on the device. For RHA product using this option, the RHA designator shall still be marked. Marking for device classes Q and V shall be in accordance with MIL-PRF-38535. Marking for device class M shall be in accordance with MIL-PRF-38535, appendix A.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ 2/ $-55°C \leq T_A \leq +125°C$ $V_S = \pm 15$ V, $I_{REF} = 2$ mA unless otherwise specified	Group A subgroups	Device type	Limits Min	Limits Max	Unit
Power supply 3/	I+	$V_S = \pm 15$ V or +5 V, -15 V	1, 2, 3	All		3.8	mA
			M,D,P,L,R 1	01, 02		4	
			M,D,P,L 1	03		4	
		$V_S = \pm 5$ V, $I_{REF} = 1$ mA	1, 2, 3	All		3.8	
			M,D,P,L,R 1	01, 02		4	
			M,D,P,L 1	03		4	
	I-	$V_S = \pm 15$ V or +5 V, -15 V	1, 2, 3	All		-7.8	mA
			M,D,P,L,R 1	01, 02		-8	
			M,D,P,L 1	03		-8	
		$V_S = \pm 5$ V, $I_{REF} = 1$ mA	1, 2, 3	All		-5.8	
			M,D,P,L,R 1	01, 02		-8	
			M,D,P,L 1	03		-8	
Full range current	I_{FR}	$V_{REF} = 10$ V, V_{REF+}, $V_{REF-} = 5$ kΩ	1, 2, 3	01	1.94	2.04	mA
			M,D,P,L,R 1		1.925	2.04	
		$V_{REF} = 10$ V,	1	02, 03	1.984	2	
		V_{REF+}, $V_{REF-} = 5$ kΩ	2, 3		1.94	2.04	
			M,D,P,L,R 1	02	1.97	2	
			M,D,P,L 1	03	1.97	2	
Output voltage compliance	V_{OC}	Full range current change < ½ LSB 4/	1, 2, 3	All	-10	+18	V
Zero scale current	I_{ZS}		1, 2, 3	01		2	μA
			M,D,P,L,R 1			2	
			1, 2, 3	02, 03		1	
			M,D,P,L,R 1	02		1	
			M,D,P,L 1	03		1	
Full range symmetry	I_{FRS}	$I_{FR} - \overline{I_{FR}}$ 4/	1, 2, 3	01		±8	μA
				02, 03		±4	

See footnotes at end of table.

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Test	Symbol	Conditions $\underline{1}/ \underline{2}/$ $-55°C \leq T_A \leq +125°C$ $V_S = \pm15$ V, $I_{REF} = 2$ mA unless otherwise specified	Group A subgroups	Device type	Limits Min	Limits Max	Unit
Output current range	I_{OR1}	$V_{REF} = 15$ V, V- = -10 V, V_{REF+}, $V_{REF-} = 5$ kΩ $\underline{4}/$	1, 2, 3	All	2.1		mA
	I_{OR2}	$V_{REF} = 25$ V, V- = -12 V, V_{REF+}, $V_{REF-} = 5$ kΩ $\underline{4}/$			4.2		
Power supply sensitivity	$PSSI_{FS+}$	V+ = 4.5 V to 18 V, $\underline{4}/$ V- = -18 V, $I_{REF} = 1$ mA	1, 2, 3	All		±0.01	$\dfrac{\%\Delta I_O}{\%\Delta V+}$
	$PSSI_{FS-}$	V- = -4.5 V to -18 V, $\underline{4}/$ V+ = 18 V, $I_{REF} = 1$ mA				±0.01	
Reference bias current	I_{VREF-}	$\underline{4}/$	1, 2, 3	All	0	-3	μA
Logic input levels	V_{IL}	Logic "0", $V_{LC} = 0$ V	1, 2, 3	All		0.8	V
			M,D,P,L,R	01, 02		0.8	
			M,D,P,L	03		0.8	
	V_{IH}	Logic "1", $V_{LC} = 0$ V	1, 2, 3	All	2		
			M,D,P,L,R	01, 02	2		
			M,D,P,L	03	2		
Logic input current (each bit)	I_{IL}	$V_{IN} = -10$ V, $V_{LC} = 0$ V	1, 2, 3	All		-10	μA
			M,D,P,L,R	01, 02		-30	
			M,D,P,L	03		-30	
	I_{IH}	$V_{IN} = 18$ V, $V_{LC} = 0$ V	1, 2, 3	All		10	
			M,D,P,L,R	01, 02		10	
			M,D,P,L	03		10	
Logic input swing	V_{IS}	$I_{FR} = 1.94$ mA (minimum), $I_{FR} = 2.04$ mA (maximum) $\underline{4}/$	1, 2, 3	All	-10	+18	V
Monotonicity		$\underline{4}/$	1, 2, 3	All	8		Bits
Nonlinearity	NL		1, 2, 3	01		±0.19	%FS
			M,D,P,L,R			±0.45	
			1, 2, 3	02, 03		±0.11	
			M,D,P,L,R	02		±0.35	
			M,D,P,L	03		±0.35	

See footnotes at end of table.

TABLE I. <u>Electrical performance characteristics</u> - Continued.

Test	Symbol	Conditions 1/ 2/ -55°C ≤ T_A ≤ +125°C V_S = ±15 V, I_{REF} = 2 mA unless otherwise specified	Group A subgroups	Device type	Limits Min	Limits Max	Unit
Power dissipation 5/	P_D	V_S = ±5 V, I_{REF} = 1 mA 4/	1, 2, 3	All		48	mW
		V_S = +5 V, -15 V, 4/ I_{REF} = 2 mA				136	
		V_S = ±15 V, I_{REF} = 2 mA 4/				174	
Full scale tempco	TCI_{FS}	4/	8	All		±80	ppm/°C
Settling time	t_S	To ±1/2 LSB, T_A = +25°C 4/	9	01		150	ns
				02, 03		135	
Reference input slew rate	dl/dt	R_{EQ} = 200 Ω, C_C = 0 pF, R_L = 100 Ω, T_A = +25°C 4/	9	All	4		mA/μs
Propagation delay all bits switched	t_{PLH}	Low to high transition, 4/ V_L = 0.7 V, f = 250 kHz	9, 10, 11	All		60	ns
	t_{PHL}	High to low transition, 4/ V_L = 2.7 V, f = 250 kHz				60	

1/   Device types 01 and 02 supplied to this drawing have been characterized through all levels P, L, and R of irradiation. Device type 03 supplied to this drawing has been characterized at level L of irradiation. However, device types 01 and 02 are only tested at the "R" level and device type 03 is only tested at the "L" level.
   Pre and Post irradiation values are identical unless otherwise specified in table I.

2/   Device types 01 and 02 may be dose rate sensitive in a space environment and may demonstrate enhanced low dose rate effects. Radiation end point limits for the noted parameters are guaranteed only for the conditions specified in MIL-STD-883, method 1019, condition A for device types 01 and 02 and condition D for device type 03. Device type 03 has been tested at low dose rate.

3/   When the device is used in an un-biased state at high temperature only, and subsequently biased, the device supply currents may rise 30% above specification for as long as 30 seconds.

4/   This parameter is not tested post-irradiation.

5/   Power dissipation limits are guaranteed by supply current testing.

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Device types	01, 02, and 03	
Case outlines	E and F	2
Terminal number	Terminal symbol	
1	V_{LC}	NC
2	$\overline{I_{OUT}}$	V_{LC}
3	V-	$\overline{I_{OUT}}$
4	I_{OUT}	V-
5	MSB B1	I_{OUT}
6	B2	NC
7	B3	B1 (MSB)
8	B4	B2
9	B5	B3
10	B6	B4
11	B7	NC
12	B8 LSB	B5
13	V+	B6
14	V_{REF+}	B7
15	V_{REF-}	B8 (LSB)
16	COMP	NC
17	---	V+
18	---	V_{REF+}
19	---	V_{REF-}
20	---	COMP

FIGURE 1. Terminal connections.

3.5.1 <u>Certification/compliance mark</u>. The certification mark for device classes Q and V shall be a "QML" or "Q" as required in MIL-PRF-38535. The compliance mark for device class M shall be a "C" as required in MIL-PRF-38535, appendix A.

3.6 <u>Certificate of compliance</u>. For device classes Q and V, a certificate of compliance shall be required from a QML-38535 listed manufacturer in order to supply to the requirements of this drawing (see 6.6.1 herein). For device class M, a certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in MIL-HDBK-103 (see 6.6.2 herein). The certificate of compliance submitted to DLA Land and Maritime-VA prior to listing as an approved source of supply for this drawing shall affirm that the manufacturer's product meets, for device classes Q and V, the requirements of MIL-PRF-38535 and herein or for device class M, the requirements of MIL-PRF-38535, appendix A and herein.

3.7 <u>Certificate of conformance</u>. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 or for device class M in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 <u>Notification of change for device class M</u>. For device class M, notification to DLA Land and Maritime-VA of change of product (see 6.2 herein) involving devices acquired to this drawing is required for any change that affects this drawing.

3.9 <u>Verification and review for device class M</u>. For device class M, DLA Land and Maritime, DLA Land and Maritime 's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

3.10 <u>Microcircuit group assignment for device class M</u>. Device class M devices covered by this drawing shall be in microcircuit group number 56 (see MIL-PRF-38535, appendix A).

4. VERIFICATION

4.1 <u>Sampling and inspection</u>. For device classes Q and V, sampling and inspection procedures shall be in accordance with MIL-PRF-38535 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. For device class M, sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 <u>Screening</u>. For device classes Q and V, screening shall be in accordance with MIL-PRF-38535, and shall be conducted on all devices prior to qualification and technology conformance inspection. For device class M, screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection.

4.2.1 <u>Additional criteria for device class M</u>.

    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 the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1015.

       (2) $T_A = +125°C$, minimum.

    b.   Interim and final electrical test parameters shall be as specified in table IIA herein.

4.2.2 <u>Additional criteria for device classes Q and V</u>.

    a.   The burn-in test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document revision level control of the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1015 of MIL-STD-883.

    b.   Interim and final electrical test parameters shall be as specified in table IIA herein.

    c.   Additional screening for device class V beyond the requirements of device class Q shall be as specified in MIL-PRF-38535, appendix B.

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TABLE IIA. <u>Electrical test requirements</u>.

Test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table I)	Subgroups (in accordance with MIL-PRF-38535, table III)	
	Device class M	Device class Q	Device class V
Interim electrical parameters (see 4.2)	1	1	1
Final electrical parameters (see 4.2)	1, 2, 3 <u>1</u>/	1, 2, 3 <u>1</u>/	1, 2, 3 <u>1</u>/ <u>2</u>/
Group A test requirements (see 4.4)	1, 2, 3, 8, 9, 10, 11	1, 2, 3, 8, 9, 10, 11	1, 2, 3, 8, 9, 10, 11
Group C end-point electrical parameters (see 4.4)	1	1	1 <u>2</u>/
Group D end-point electrical parameters (see 4.4)	1	1	1
Group E end-point electrical parameters (see 4.4)	---	---	1

<u>1</u>/ PDA applies to subgroup 1.
<u>2</u>/ Delta limits as specified in Table IIB shall be required where specified, and delta limits shall be computed with reference to the previous endpoint electrical parameters.

Table IIB. <u>240 hour burn-in and group C end-point electrical parameters</u>.

Parameter	Device type	Limit		Delta
		Min	Max	
I_{FS}	01	1.94 mA	2.04 mA	0.01 mA
	02, 03	1.984 mA	2.000 mA	0.005 mA
$\overline{I_{FS}}$	01	1.94 mA	2.04 mA	0.01 mA
	02, 03	1.984 mA	2.000 mA	0.005 mA
I_{ZS}	01	-2.0 μA	+2.0 μA	0.5 μA
	02, 03	-1.0 μA	+1.0 μA	0.3 μA
$\overline{I_{ZS}}$	01	-2.0 μA	+2.0 μA	0.5 μA
	02, 03	-1.0 μA	+1.0 μA	0.3 μA

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4.3 Qualification inspection for device classes Q and V. Qualification inspection for device classes Q and V shall be in accordance with MIL-PRF-38535. Inspections to be performed shall be those specified in MIL-PRF-38535 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4 Conformance inspection. Technology conformance inspection for classes Q and V shall be in accordance with MIL-PRF-38535 including groups A, B, C, D, and E inspections and as specified. Quality conformance inspection for device class M shall be in accordance with MIL-PRF-38535, appendix A and as specified herein. Inspections to be performed for device class M shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection.

  a. Tests shall be as specified in table IIA herein.

  b. Subgroups 4, 5, 6, and 7 in table I, method 5005 of MIL-STD-883 shall be omitted.

4.4.2 Group C inspection. The group C inspection end-point electrical parameters shall be as specified in table IIA herein.

4.4.2.1 Additional criteria for device class M. Steady-state life test conditions, method 1005 of MIL-STD-883:

  a. 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 the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1005 of MIL-STD-883.

  b. T_A = +125°C, minimum.

  c. Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

4.4.2.2 Additional criteria for device classes Q and V. The steady-state life test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The test circuit shall be maintained under document revision level control by the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1005 of MIL-STD-883.

4.4.3 Group D inspection. The group D inspection end-point electrical parameters shall be as specified in table IIA herein.

4.4.4 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.5 herein).

  a. End-point electrical parameters shall be as specified in table IIA herein.

  b. For device classes Q and V, the devices or test vehicle shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535 for the RHA level being tested. For device class M, the devices shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535, appendix A for the RHA level being tested. All device classes must meet the post irradiation end-point electrical parameter limits as defined in table I at T_A = +25°C ±5°C, after exposure, to the subgroups specified in table IIA herein.

4.4.4.1 Total dose irradiation testing. Total dose irradiation testing shall be performed in accordance with MIL-STD-883 method 1019, condition A for device types 01 and 02 and condition D for device type 03 and as specified herein.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

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6. NOTES

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

6.1.1 <u>Replaceability</u>. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

6.2 <u>Configuration control of SMD's</u>. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished using DD Form 1692, Engineering Change Proposal.

6.3 <u>Record of users</u>. Military and industrial users should inform DLA Land and Maritime when a system application requires configuration control and which SMD's are applicable to that system. DLA Land and Maritime 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 DLA Land and Maritime-VA, telephone (614) 692-0544.

6.4 <u>Comments</u>. Comments on this drawing should be directed to DLA Land and Maritime-VA, Columbus, Ohio 43218-3990, or telephone (614) 692-0540.

6.5 <u>Abbreviations, symbols, and definitions</u>. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535 and MIL-HDBK-1331.

6.6 <u>Sources of supply</u>.

6.6.1 <u>Sources of supply for device classes Q and V</u>. Sources of supply for device classes Q and V are listed in QML-38535. The vendors listed in QML-38535 have submitted a certificate of compliance (see 3.6 herein) to DLA Land and Maritime-VA and have agreed to this drawing.

6.6.2 <u>Approved sources of supply for device class M</u>. Approved sources of supply for class M are listed in MIL-HDBK-103. The vendors listed in MIL-HDBK-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DLA Land and Maritime-VA.

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Approved sources of supply for SMD 5962-89932 are listed below for immediate acquisition information only and shall be added to MIL-HDBK-103 and QML-38535 during the next revision. MIL-HDBK-103 and QML-38535 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 DLA Land and Maritime -VA. This information bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535. DLA Land and Maritime maintains an online database of all current sources of supply at http://www.landandmaritime.dla.mil/Programs/Smcr/.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-89932012A	24355 (2)	DAC08XRC/883C
5962R8993201VEA	24355 (4)	DAC08XQ/QMLR
5962R8993201V2A	24355 (4)	DAC08XRC/QMLR
5962R8993201VFA	24355 (4)	DAC08XF/QMLR
5962R8993202VEA	24355 (4)	DAC08AQ/QMLR
5962R8993202V2A	24355 (4)	DAC08ARC/QMLR
5962R8993202VFA	24355 (4)	DAC08AF/QMLR
5962L8993203VFA	24355 (4)	DAC08AF/QMLL

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	Vendor name and address
24355	Analog Devices (2) RT 1 Industrial Park PO Box 9106 Norwood, MA 02062 Point of contact: 804 Woburn Street Wilmington, MA 01887-3462
24355	Analog Devices (4) RT 1 Industrial Park PO Box 9106 Norwood, MA 02062 Point of contact: 7910 Triad Center Drive Greensboro, NC 27409-9605

Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.

Как с нами связаться

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