		REVISIONS																
LTR			C	DESCR	IPTIO	N					DA	TE (YI	R-MO-I	DA)		APPR	OVED	
A	Changes in accord	dance wi	ith NO	R 5962	-R008-	92.						91-1	0-18			M. A	. Frye	
В	Changes in footno	tes at er	nd of ta	able I.	Editoria	al chan	ges thr	oughou	ut.			92-1	0-29			M. A	. Frye	
С	Update drawing to	current	require	ements	. Edito	orial cha	anges	through	out. –	drw	04-09-14			R	Raymond Monnin			
D	Redrawn. Update	paragra	phs to	MIL-P	RF-385	535 req	uireme	ents d	lrw			16-1	1-02		C	Charles	F. Saff	le
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				Rick C.	Office	r								MAR		E		
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MICROCIRCUIT Charles E. Besore																		
DRAWING APPROVED BY				NAC	יססי	יספוי	י דוו				י א ד	С П С	o					
Michael A. Frye THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS 90-08-08				ANI MO	D 16- NOL		NNEI		את, נ ALO(G MU			RS,					
AND AGEN DEPARTMEN	ICIES OF THE IT OF DEFENSE	REVIS	SION L	EVEL				SI	ZE	CA	GE CC	DE						
AMS	SC N/A			۵)			4	4		67268	3		5 40	5962-	8971	0	
							SH	EFL		10	⊦ 12							

1. SCOPE

1.1 <u>Scope</u>. This drawing describes device requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A.

1.2 Part or Identifying Number (PIN). The complete PIN is as shown in the following example:

5962-89710 Drawing number	Device type	Case outlin	e Lead fi	nish 2 3)			
1.2.1 <u>Device types</u> . The d	evice types identify the	e circuit functio	on as follows:	2.3)			
Device type	Generic	number		Circuit function			
01 02	AD AD	G526A G527A		CMOS 16-channel multiplexer latched CMOS 8-channel multiplexer latched			
1.2.2 Case outlines. The c	ase outlines are as de	esignated in M	IL-STD-1835 as i	follows:			
Outline letter	Descriptive design	ator	Terminals	Package style			
X 3	GDIP1-T28 or CDIF CQCC1-N28	P2-T28	28 28	Dual-in-line Square leadless chip c	arrier		
1.2.3 Lead finish. The lead	finish is as specified	in MIL-PRF-38	3535, appendix A	λ.			
1.3 Absolute maximum rat	ngs.						
Supply voltage (VDD) to Vss44 V dcSupply voltage (VDD) to GND25 V dcVss to GND-25 V dcAnalog inputs: $1/$ 7Voltage at S or DVss -2.0 V dc to VDD +2.0 V dc orContinuous current, S or D20 mA, whichever occurs firstDC input voltages $1/$ Vss -4.0 V dc to VDD +4.0 V dc orStorage temperature range-65°C to +125°CLead temperature (soldering, 10 seconds)+300°CPower dissination to +75°C (PD)470 mW - 2/							
Cases X and 3 Junction temperature (TJ)			See MIL-STD-1835 +175°C			
1.4 <u>Recommended operati</u>	ng conditions.						
Supply voltage to ground (V _{SS})							
above. <u>2</u> / Derate above $T_A = +75^{\circ}C$	c at 6.0 mW/°C.						
STAN MICROCIRC	IDARD UIT DRAWING		SIZE A		5962-89710		
DLA LAND A COLUMBUS, (ND MARITIME DHIO 43218-3990			REVISION LEVEL D	SHEET 2		

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 <u>http://quicksearch.dla.mil</u> 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 shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein. Product built to this drawing that is produced by a Qualified Manufacturer Listing (QML) certified and qualified manufacturer or a manufacturer who has been granted transitional certification to MIL-PRF-38535 may be processed as QML product in accordance with the manufacturers approved program plan and qualifying activity approval in accordance with MIL-PRF-38535. This QML flow as documented in the Quality Management (QM) plan may make modifications to the requirements herein. These modifications shall not affect form, fit, or function of the device. These modifications shall not affect the PIN as described herein. A "Q" or "QML" certification mark in accordance with MIL-PRF-38535 is required to identify when the QML flow option is used.

3.2 <u>Design, construction, and physical dimensions</u>. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535, appendix A and herein.

3.2.1 <u>Case outlines</u>. The case outlines shall be in accordance with 1.2.2 herein.

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

3.2.3 <u>Truth tables</u>. The truth tables shall be as specified on figure 2.

3.3 <u>Electrical performance characteristics</u>. Unless otherwise specified herein, the electrical performance characteristics 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 II. The electrical tests for each subgroup are described in table I.

3.5 <u>Marking</u>. Marking shall be in accordance with MIL-PRF-38535, appendix A. 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.

3.5.1 <u>Certification/compliance mark</u>. A compliance indicator "C" shall be marked on all non-JAN devices built in compliance to MIL-PRF-38535, appendix A. The compliance indicator "C" shall be replaced with a "Q" or "QML" certification mark in accordance with MIL-PRF-38535 to identify when the QML flow option is used.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-89710
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	TA	BLE I. Electrical perfo	ormance o	character	istics.				
Test	Symbol	Conditions $1 - 55^{\circ}C \le T_{A} \le +12$ unless otherwise sp	/ 25°C becified	Group subgro	o A oups	Device type	Lim	nits	Unit
							Min	Max	
Dual supply		Γ							[
Analog signal range	Vanalog	T _A = +25°C <u>2</u> /	$T_{A} = +25^{\circ}C 2/$			01, 02	-15	+15	V
Drain-source "ON" resistance	Rds(on)	$V_{DD} = 14.25 V,$ $V_{SS} = -14.25 V,$		1		01, 02		300	Ω
		$I_{DS} = 1.0 \text{ mA}, V_D = 5$ $V_S = V_D + (I_{DS} X R_{ON})$.0 V,)	2, 3	3			400	
		V _{DD} = 10.8 V, V _{SS} = -10.8 V,		1				450	
		$I_{DS} = 1.0 \text{ mA}, V_D = 5$ $V_S = V_D + (I_{DS} X R_{ON})$.0 V,)	2, 3	3			600	
Source "OFF" leakage current	IS(OFF)	<u>3</u> /		1		01, 02		1.0	nA
				2, 3	3			50	
Drain "OFF" leakage current	ID(OFF)	<u>3</u> /		1		01		1.0	nA
				2, 3				200	
				1		02		1.0	
				2, 3				100	
Drain "ON" leakage current	I _{D(ON)}	<u>3</u> /		1		01		1.0	nA
			2, 3		3			200	
						02		1.0	
				2, 3	3			100	
Differential "OFF" output leakage current	IDIFF(OFF)	<u>3</u> /		2, 3	3	02		25	nA
High level input current	linh	V _{DD} = 16.5V, V _{SS} = - V _{IN} = 16.5 V	16.5 V,	1, 2,	3	01, 02		1.0	μA
Low level input current	linl	$V_{DD} = 16.5V, V_{SS} = -$ $V_{IN} = 0 V$	16.5 V,	1, 2,	3	01, 02		1.0	μA
Supply current	lod	$\label{eq:VDD} \begin{array}{l} V_{DD} = 16.5 \ V, \ V_{SS} = \\ V_{INH} = 2.4/15 \ V, \\ V_{INL} = 0.8/0 \ V \end{array}$	-16.5 V	1, 2,	3	01, 02		1.5	mA
Supply current	lss			1, 2,	3	01, 02		0.2	mA
See footnotes at end of table.									
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	TABLE I.	Electrical performan	ce charac	teristics - o	continued.			
Test	Symbol	$\begin{array}{c} Conditions & \underline{1}\\ -55^{\circ}C \leq T_A \leq +12\\ unless otherwise space \\ \end{array}$	<u>l/</u> 25°C becified	Group / subgrou	A Device ps type	Lim	nits	Unit
						Min	Max	
Dual supply - continued				[
Delay time	topen	$V_1 = \pm 10 V$, See figu	ire 3	9	01, 02	25		ns
		4/		10, 11		10		
Enable delay time	ton/off (EN)	See figure 3 <u>4</u> /		9	01, 02		300	ns
				10, 11			400	
Functional test	Fτ	See 4.3.1d		7, 8	01, 02			
Single supply								
Analog signal range	Vanalog	T _A = +25°C, V _{SS} = 0	V <u>2</u> /	4	01, 02	0	+15	V
Drain-source "ON" resistance	RDS(ON)	$V_{DD} = 10.8 V,$ $V_{SS} = 0 V,$		1	01, 02		700	Ω
		$I_{DS} = 0.5 \text{ mA}, V_D = 5$ $V_S = V_D + (I_{DS} X R_{ON})$	5.0 V, 1)	2, 3			1000	
Source "OFF" leakage current	Is(OFF)	<u>5</u> /		1	01, 02		1.0	nA
				2, 3			50	
Drain "OFF" leakage current	ID(OFF)	<u>5</u> /		1	01		1.0	nA
				2, 3			200	
				1	02		1.0	
				2, 3			100	
Drain "ON" leakage current	I _{D(ON)}	<u>5</u> /		1	01		1.0	nA
				2, 3			200	
				1	02		1.0	
				2, 3			100	
See footnotes at end of table.								
STANE MICROCIRCU	DARD IT DRAW	ING	SII A	ZE A			5962	2-89710
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Unit
nA
μA
μΑ
mA
ns
ns
UT pin
89710
6

Device types	01	02		
Case outlines	X and 3	X and 3		
Terminal number	Terminal	symbol		
1	V _{DD}	V _{DD}		
2	NC	DB		
3	RS	RS		
4	S16	S8B		
5	S15	S7B		
6	S14	S6B		
7	S13	S5B		
8	S12	S4B		
9	S11	S3B		
10	S10	S2B		
11	S9	S1B		
12	GND	GND		
13	WR	WR		
14	A3	NC		
15	A2	A2		
16	A1	A1		
17	A0	A0		
18	EN	EN		
19	S1	S1A		
20	S2	S2A		
21	S3	S3A		
22	S4	S4A		
23	S5	S5A		
24	S6	S6A		
25	S7	S7A		
26	S8	S8A		
27	Vss	Vss		
28	D	DA		

NC = No connection

FIGURE 1. Terminal connections.

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	1						
A3	A2	A1	A0	EN	WR	RS	ON SWITCH
Х	Х	Х	Х	Х		1	Retains previous switch condition
Х	Х	Х	Х	Х	Х	0	None (address and enable latches cleared)
Х	Х	Х	Х	0	0	1	None
0	0	0	0	1	0	1	1
0	0	0	1	1	0	1	2
0	0	1	0	1	0	1	3
0	0	1	1	1	0	1	4
0	1	0	0	1	0	1	5
0	1	0	1	1	0	1	6
0	1	1	0	1	0	1	7
0	1	1	1	1	0	1	8
1	0	0	0	1	0	1	9
1	0	0	1	1	0	1	10
1	0	1	0	1	0	1	11
1	0	1	1	1	0	1	12
1	1	0	0	1	0	1	13
1	1	0	1	1	0	1	14
1	1	1	0	1	0	1	15
1	1	1	1	1	0	1	16

Device type 01

Device type 02

A2	A1	A0	EN	WR	RS	ON SWITCH
Х	Х	Х	Х	_ -	1	Retains previous switch condition
Х	Х	Х	Х	Х	0	None (address and enable latches cleared)
Х	Х	Х	0	0	1	None
0	0	0	1	0	1	1
0	0	1	1	0	1	2
0	1	0	1	0	1	3
0	1	1	1	0	1	4
1	0	0	1	0	1	5
1	0	1	1	0	1	6
1	1	0	1	0	1	7
1	1	1	1	0	1	8

X = Do not care_|⁻ = Signal is switching from low to high

FIGURE 2. Truth tables.

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3.6 <u>Certificate of compliance</u>. 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 herein). The certificate of compliance submitted to DLA Land and Maritime -VA prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-PRF-38535, appendix A and the requirements herein.

3.7 <u>Certificate of conformance</u>. A certificate of conformance as required in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 <u>Notification of change</u>. Notification of change to DLA Land and Maritime -VA shall be required for any change that affects this drawing.

3.9 <u>Verification and review</u>. 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.

4. VERIFICATION

4.1 <u>Sampling and inspection</u>. Sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 <u>Screening</u>. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. 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 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 of MIL-STD-883.
 - (2) $T_A = +125^{\circ}C$, minimum.
- 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.

MIL-STD-883 test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table I)
Interim electrical parameters (method 5004)	1
Final electrical test parameters (method 5004)	1*, 2, 3, 7, 8, 9
Group A test requirements (method 5005)	1, 2, 3, 4, 7, 8, 9, 10**, 11**
Groups C and D end-point electrical parameters (method 5005)	1

TABLE II. Electrical test requirements.

* PDA applies to subgroup 1.

* Subgroups 10 and 11, if not tested, shall be guaranteed to the limits specified in table I.

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4.3 <u>Quality conformance inspection</u>. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

- a. Tests shall be as specified in table II herein.
- b. Subgroups 5 and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.
- c. Subgroup 4 (analog signal range) shall be measured only for the initial test and after process or design changes which may affect analog signal range.
- d. Subgroups 7 and 8 shall include verification of the truth table.

4.3.2 Groups C and D inspections.

- 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. 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.
 - (2) $T_A = +125^{\circ}C$, minimum.
 - (3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535, appendix A.

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.

6.2 <u>Replaceability</u>. Microcircuits covered by this drawing will replace the same generic device covered by a contractorprepared specification or drawing.

6.3 <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.

6.4 <u>Record of users</u>. Military and industrial users shall inform DLA Land and Maritime when a system application requires configuration control and the applicable SMD 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 microelectronics devices (FSC 5962) should contact DLA Land and Maritime-VA, telephone (614) 692-8108.

6.5 <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.

6.6 <u>Approved sources of supply</u>. Approved sources of supply are listed in MIL-HDBK-103 and QML-38535. The vendors listed in MIL-HDBK-103 and QML-38535 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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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 16-11-02

Approved sources of supply for SMD 5962-89710 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 https://landandmaritimeapps.dla.mil/programs/smcr/.

Standard	Vendor	Vendor
microcircuit drawing	CAGE	similar
PIN <u>1</u> /	number	PIN <u>2</u> /
5962-89710013A	24355	ADG526ATE/883B
5962-8971001XA	24355	ADG526ATQ/883B
5962-89710023A	24355	ADG527ATE/883B
5962-8971002XA	<u>3</u> /	ADG527ATQ/883B

- 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.
- <u>2</u>/ <u>Caution</u>. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.
- $\underline{3}$ / Not available from an approved source of supply.

Vendor CAGE <u>number</u> Vendor name and address

24355

Analog Devices Rt 1 Industrial Park PO Box 9106 Norwood, MA 02062 Point of contact: Raheen Business Park Limerick, Ireland

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