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В	Cha thro	nges ughou	in foot ut.	tnotes	at the	e end	of tab	le I. E	ditoria	al cha	nges		92-10-29				M. A. Frye			
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AND AGEN DEPARTMEN	CIES (T OF)	OF TH DEFEN	E SE	DRAV	VING /	4PPRO' 90-0	VAL DA 18-08	TE		SIZE CAG		CAG	GE CODE		5962-		62-	897	710	
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DESC FORM 193								_	_	-										-

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DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1. SCOPE										
1.1 <u>Scope</u> . This drawi "Provisions for the use of	ing describes device requirements for cla MIL-STD-883 in conjunction with compl	ass B microcircuits liant non-JAN devic	in accordance with 1.2.1 of ces".	MIL-STD-883,						
1.2 Part or Identifying I	Number (PIN). The complete PIN shall b	be as shown in the	following example:							
<u>5962-89710</u>	$\frac{01}{1}$ X		X							
Drawing number	Device type Case ou (see 1.2.1) (see 1.2	utline .2)	Lead finish (see 1.2.3)							
1.2.1 <u>Device type(s)</u> . The device type(s) shall identify the circuit function as follows:										
Device type	Generic number		Circuit function							
01 02	ADG526A ADG527A		CMOS 16-channel multip CMOS 8-channel multipl	olexer latched exer latched						
1.2.2 Case outline(s). The case outline(s) shall be as designated in MIL-STD-1835 and as follows:										
Outline letter	Descriptive designator	Ter	minals Packag	<u>le style</u>						
X 3	GDIP1-T28 or CDIP2-T28 CQCC1-N28	28 28	Dual-in-line Square leadless c	hip carrier						
1.2.3 <u>Lead finish</u> . The lead finish shall be as specified in MIL-M-38510. Finish letter "X" shall not be marked on the microcircuit or its packaging. The "X" designation is for use in specifications when lead finishes A, B, and C are considered acceptable and interchangeable without preference.										
1.3 <u>Absolute maximum ratings</u> .										
1.3 Absolute maximum ratings. Supply voltage (VDD) to VSS 44 M.dc. Supply voltage (VDD) to GND 25 V dc VSS to GND -25 V dc Analog inputs: 1/ VQS -20 V dc to VDD +2.0 V dc or Voltage at S or D 20 mA, whichever occurs first Continuous current, S or D 20 mA, whichever occurs first DC input voltages 1/ VSS -20 V dc to VDD +4.0 V dc or 20 mA 9 mA Pulsed current, S or D VSS -40 V dc to VDD +4.0 V dc or 20 mA whichever occurs first Storage temperature range -65 °C to +150 °C Lead temperature (soldering, 10 seconds) +300 °C Power dissipation to +75 °C (PD) 470 mW 2/ Thermal resistance, junction-to-case (0 _J C): See MIL-STD-1835 Junction temperature (TJ) +175 °C 1.4 Recommended operating conditions. -15 V dc Supply voltage to ground (VSS) -15 V dc Ambient operating temperature range (TA) -55 °C to +125 °C 1/ Overvoltage at A, EN, WR, RS, S, or D will be clamped by diodes. Current should be limited to the maximum rating above. 2/ Derate above TA = +75 °C at 6.0 mW/°C.										
ST MILI	ANDARDIZED TARY DRAWING	SIZE A		5962-89710						
DEFENSE ELEC DAY	TRONICS SUPPLY CENTER TON, OHIO 45444		REVISION LEVEL B	SHEET 2						

2. APPLICABLE DOCUMENTS

2.1 <u>Government specification, standards, and bulletin</u>. Unless otherwise specified, the following specification, standards, and bulletin 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.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARDS

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics. MIL-STD-1835 - Microcircuit Case Outlines.

BULLETIN

MILITARY

MIL-BUL-103 - List of Standardized Military Drawings (SMD's).

(Copies of the specification, standards, and bulletin 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 <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 shall take precedence.

3. REQUIREMENTS

3.1 <u>Item requirements</u>. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN 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-M-38510 and herein.

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

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

3.2.3 Case outlines. The case outlines shall be in accordance with 1.2.2 herein.

3.3 <u>Electrical performance characteristics</u>. Unless otherwise specified herein, the electrical performance characteristics are as specified in table I and 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-STD-883 (see 3.1 herein). 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 MIL-BUL-103 (see 6.6 herein).

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		TABLE I. <u>Electrical perf</u>	ormance characteri	<u>stics</u> .				
Test	Symbol	Conditions <u>1</u> / -55° C ≤ T _A ≤ +125° C	Device type	Group A subgroups	Limits		Unit	
		unless otherwise specified			Min	Max		
Dual supply								
Analog signal range	VANALOG	T _A = +25°C <u>2</u> /	01,02	4	-15	+15	V	
Drain-source "ON" resistance	R _{DS(ON)}	$V_{DD} = 14.25 \text{ V}, \\ V_{SS} = -14.25 \text{ V}, \\ I_{DS} = 1.0 \text{ mA}, \text{ V}_{D} = 5.0 \text{ V} \\ \text{V}_{S} = \text{V}_{D} + (I_{DS} \times \text{R}_{ON})$	01,02	1		300	Ω	
		$V_{DD} = 14.25 V,$ $V_{SS} = -14.25 V,$ $I_{DS} = 1.0 mA, V_{D} = 5.0 V$ $V_{S} = V_{D} + (I_{DS} \times R_{ON})$	01,02	2,3		400	Ω	
		$V_{DD} = 10.8 V,$	01,02	1		450	Ω	
		$V_{SS} = 10.8 \text{ V},$ $I_{DS} = 1.0 \text{ mA}, V_{D} = 5.0 \text{ V}$ $V_{S} = V_{D} + (I_{DS} \times R_{ON})$		2,3		600	-	
Source "OFF"	I _{S(OFF)}	<u>3</u> /	01,02			1.0	nA	
current				2,3		50		
Drain "OFF"	ID(OFF)	<u>3</u> /	01			1.0	nA	
current				2,3		200	-	
			02			1.0	_	
				2,3		100		
Drain "ON"	ID(ON)	<u>3</u> /	01			1.0	nA	
current				2,3		200	_	
			02	1		1.0	_	
				2,3		100		
Differential "OFF" output leakage	IDIFF(OFF)	<u>3</u> /	02	2,3		25	nA	
See footnotes at en	d of table.	!			<u>. </u>			
		ZED	SIZE A			59	962-8971	
DEFENSE	ELECTRONICS DAYTON, OHIO	SUPPLY CENTER 45444		REVISION L B	EVEL	SHE	ET 4	

T = =1				0				
Test	Symbol	Conditions $\underline{1}/$ -55°C \leq T _A \leq +125°C unless otherwise specified	Device type	Group A subgroups	Limits Min	Max	_ Unit	
Dual supply - Cont	inued	+	L L		<u> </u>	_ <u> </u>		
High level input current	INH	V _{DD} = 16.5 V, V _{SS} = -16.5 V _{IN} = 16.5 V	V, 01,02	1,2,3		1.0	μΑ	
Low level input current	INL	V _{DD} = 16.5 V, V _{SS} = -16.5 V _{IN} = 0 V	V, 01,02	1,2,3		1.0	μΑ	
Supply current	IDD	V _{DD} = 16.5 V, V _{SS} = -16.5 V _{INH} = 2.4/15 V, V _{INL} = 0.8	V, 01,02 8/0 V	1,2,3		1.5	mA	
Supply current	ISS	V _{DD} = 16.5 V, V _{SS} = -16.5 V _{INH} = 2.4/15 V, V _{INL} = 0.4	V, 01,02 8/0 V	1,2,3		0.2	mA	
Delay time	^t OPEN	V ₁ = ±10 V, See figure 3	01,02	9	25		ns	
		<u>4</u> /		10,11	10			
Enable delay t _{ON} / See figure 3 time t <u>OFF 4</u> /		01,02	9		300	ns		
	(EN)			10,11		400		
Single supply								
Analog signal range	VANALOG	T _A = +25°C <u>2</u> / V _{SS} = 0 V	01,02	4	0	+15	V	
Drain-source "ON" resistance	R _{DS(ON)}	$V_{DD} = 10.8 V,$ $V_{SS} = 0 V,$ $V_{SS} = 0.5 m^{4}, V_{D} = 5.0 V.$	01,02	1		700	Ω	
resistance		$V_{\rm S} = V_{\rm D} + (I_{\rm DS} * R_{\rm ON})$		2,3		1000	0	
Source "OFF" leakage	I _{S(OFF)}	<u>5</u> /	01,02	1		1.0	nA	
current				2,3		50		
See footnotes at en	d of table.							
		ZED	SIZE A			5	962-897 1	
MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444						SHE	SHEET	

Test	Symbol	Conditions <u>1</u> /	Device	Group A	Limi	Unit	
		$-55^{\circ}C \le T_A \le +125^{\circ}C$ unless otherwise specified	types	subgroups	Min	Max	
Single supply - con	tinued		·			·	·
Drain "OFF"	ID(OFF)	<u>5</u> /	01			1.0	nA
current				2,3		200	_
			02			1.0	_
				2,3		100	
Drain "ON"	I _{D(ON)}	<u>5</u> /	01	1		1.0	nA
leakage current				2,3		200	_
			02	1		1.0	
				2,3		100	
Differential "OFF" output leakage	IDIFF(OFF)	<u>5</u> /	02	2,3		25	nA
High level input current	INH	V _{DD} = 16.5 V, V _{SS} = 0 V, V _{IN} = 16.5 V	01,02	1,2,3		1.0	μA
Low level input current	INL	V _{DD} = 16.5 V, V _{SS} = 0 V, V _{IN} = 0 V	01,02	1,2,3		1.0	μA
Supply current	IDD	V _{DD} = 16.5 V, V _{SS} = 0 V, V _{INH} = 2.4/15 V, V _{INL} = 0.8/0 V	01,02	1,2,3		1.5	mA
Delay time	^t OPEN	V ₁ = 10/0 V, V _{SS} = 0 V	01,02	9	25		ns
		See figure 3 <u>4</u> /		10,11	10		
Enable delay	^t ON/	See figure 3, V _{SS} = 0 V	01,02	9		450	ns
time	tOFF (EN)	<u>4</u> /		10,11		600	

2/ This parameter is tested initially and after any process or changes which may affect it.
3/ V_{DD} = 16.5 V, V_{SS} = -16.5 V, V_D = +10 V/-10 V, V_S = -10 V/+10 V, V_{INL} = 0.8 V, V_{INH} = 2.4 V.
4/ Figure 3 refers to type 01 devices. For 02 devices the test circuits are functionally identical, but there are some DUT pin name changes.
5/ V_{DD} = 16.5 V, V_{SS} = 0 V, V_D = +10 V/-10 V, V_S = 0 V/+10 V, V_{INL} = 0.8 V, V_{INH} = 2.4 V.

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Device types	01	02
Case outlines	X and 3	X and 3
Terminal number	Termin	al symbol
$ \begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 10\\ 11\\ 12\\ 13\\ 14\\ 15\\ 16\\ 17\\ 18\\ 19\\ 20\\ 21\\ 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\end{array} $	VDD NC RS S16 S15 S14 S12 S11 S10 S9 <u>GN</u> D WR A3 A2 A1 A0 EN S1 S2 S3 S4 S5 S6 S7 S8 VSS D	VDD DB RS S8B S7B S6B S5B S4B S3B S2B S1B GND WR NC A2 A1 A0 EN S1A S2A S3A S4A S5A S5A S5A S5A S5A S5A S5A S5A S5A S5

NC = No connection

FIGURE 1. Terminal connections.

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Device type 01

A3	A2	A1	A0	EN	WR	RS	ON SWITCH
X X X X 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 1	X X X 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 1	X X X 0 0 1 1 0 0 1 1 0 0 1 1 1 0 0 1 1	X X X 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0	XX011111111111111111111111111111111111	_x	1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Retains previous switch condition None (address and enable latches cleared) None 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Device type 02

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

X = Do not care = signal is switching from low to high

FIGURE 2. Truth tables.

	0.75		
STANDARDIZED MILITARY DRAWING	A SIZE		5962-89710
DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444		REVISION LEVEL B	SHEET 8





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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-BUL-103 (see 6.6 herein). The certificate of compliance submitted to DESC-EC prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.7 <u>Certificate of conformance</u>. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.8 <u>Notification of change</u>. Notification of change to DESC-EC shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.9 <u>Verification and review</u>. DESC, DESC'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. QUALITY ASSURANCE PROVISIONS

4.1 <u>Sampling and inspection</u>. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

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 test 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.

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. 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.
- c. Subgroups 5 and 6 shall be omitted.
- d. Subgroups 7 and 8 testing shall be sufficient to verify 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 test 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.

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TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (in accordance with 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

* PDA applies to subgroup 1.

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

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for Original Equipment Manufacturer (OEM) application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

6.2 <u>Replaceability</u>. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared 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 in accordance with MIL-STD-481 using DD Form 1693, Engineering Change Proposal (Short Form).

6.4 <u>Record of users</u>. 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-EC, telephone (513) 296-6047.

6.5 <u>Comments</u>. Comments on this drawing should be directed to DESC-EC, Dayton, Ohio 45444, or telephone (513) 296-5377.

6.6 <u>Approved sources of supply</u>. Approved sources of supply are listed in MIL-BUL-103. The vendors listed in MIL-BUL-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-EC.

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STANDARDIZED MILITARY DRAWING SOURCE APPROVAL BULLETIN DATE: 92-10-29

Approved sources of supply for SMD 89710 are listed below for immediate acquisition only and shall be added to MIL-BUL-103 during the next revision. MIL-BUL-103 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-EC. This bulletin is superseded by the next dated revision of MIL-BUL-103.

Standardized military drawing PIN	Vendor CAGE number	Vendor similar PIN <u>1</u> /
5962-8971001XX	24355	ADG526ATQ/883B
5962-89710013X	24355	ADG526ATE/883B
5962-8971002XX	24355	ADG527ATQ/883B
5962-89710023X	24355	ADG527ATE/883B

<u>1</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.

Vendor CAGE <u>number</u>

24355

Vendor name and address

Analog Devices Route 1 Industrial Park P.O. Box 9106 Norwood, MA 02062 Point of contact: 181 Ballardvale Street Wilmington, MA 01887-1024

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