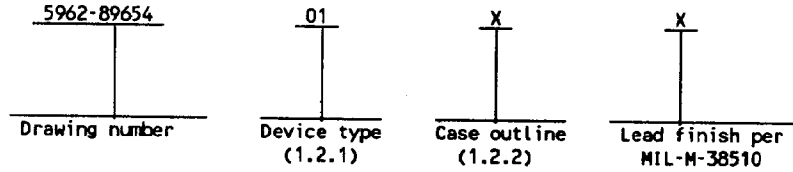


NOTICE OF REVISION (NOR) (See MIL-STD-480 for instructions) This revision described below has been authorized for the document listed.		DATE (YYMMDD) 92/06/19	Form Approved OMB No. 0704-0188
Public reporting burden for this collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.			
1. ORIGINATOR NAME AND ADDRESS Defense Electronics Supply Center Dayton, Ohio 45444-5277	2. CAGE CODE 67268	3. NOR NO. 5962-R213-92	
	4. CAGE CODE 67268	5. DOCUMENT NO. 5962-89654	
6. TITLE OF DOCUMENT Microcircuit, Linear, High Speed, 8-Bit, A/D Converter, Monolithic Silicon.	7. REVISION LETTER (Current)	(New) A	
	8. ECP NO. 5962-89654ECP-1		
9. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES			
10. DESCRIPTION OF REVISION Sheet 1: Revisions ltr column; add "A" Revisions description column; add "Changes in accordance with NOR 5962-R213-92". Revisions date column; add "92-06-19". Sheet 5: Table I. Top of reference ladder test: for Group A subgroup 1, change max limit from 10 mV to 15 mV; for Group A subgroups 2, 3, change max limit from 13 mV to 18 mV. Bottom of reference ladder test: for Group A subgroup 4, change max limit from 15 mV to 10 mV; for Group A subgroups 5, 6, change max limit from 18 mV to 13 mV. Low level input current test, I _{IL} : change max limit from 220 μA to 400 μA. Sheet 6: Table I. Output delay test, t _{PD} : for Group A subgroup 9, change min limit from 5.0 ns to 4.0 ns; for Group A subgroups 10, 11, change min limit from 4.5 ns to 3.5 ns.			
11. THIS SECTION FOR GOVERNMENT USE ONLY			
a. CHECK ONE <input checked="" type="checkbox"/> EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE. <input type="checkbox"/> REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE. <input type="checkbox"/> CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:			
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT DESC-ECS	SIGNATURE AND TITLE BRANCH CHIEF	DATE (YYMMDD) 92/06/19	
12. ACTIVITY ACCOMPLISHING REVISION DESC-ECS	REVISION COMPLETED (Signature)	DATE (YYMMDD) 92/06/19	

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits 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".

1.2 Part number. The complete part number shall be as shown in the following example:



1.2.1 Device type. The device type shall identify the circuit function as follows:

Device type	Generic number	Circuit function
01	AD9012S	8 Bit A/D
02	AD9012T	8 Bit A/D

1.2.2 Case outlines. The case outlines shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
X	D-10 (28- lead, 1.490" x .610" x .232"), dual-in-line package
3	C-4 (28- terminal, .460" x .460" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Positive supply voltage (V_{S+})	- - - - -	+6 V dc
Negative supply voltage (V_{S-})	- - - - -	-6 V dc
Analog input voltage	- - - - -	-2.1 V dc to +0.5 V dc
Power dissipation (P_D) ($T_A = +25^\circ\text{C}$):		
Case outline X	- - - - -	2.5 W
Case outline 3	- - - - -	1.8 W
Storage temperature range	- - - - -	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	- - - - -	+300°C
Junction temperature (T_J)	- - - - -	+175°C
Thermal resistance, junction-to-case (θ_{JC})	- - - - -	See MIL-M-38510, appendix C
Thermal resistance, junction-to-ambient (θ_{JA}):		
Case outline X	- - - - -	60°C/W
Case outline 3	- - - - -	80°C/W
ENCODE input voltage	- - - - -	0 V to +5 V dc
OVERFLOW INH input voltage	- - - - -	0 V to -5.2 V dc
Reference input voltage ($+V_{REF}$ - $-V_{REF}$)	- - - - -	-3.5 to +0.1 V dc ^{1/}
Reference midpoint current	- - - - -	±4 mA
Digital output current	- - - - -	30 mA
Differential reference voltage	- - - - -	2.1 V dc

1.4 Recommended operating conditions.

Ambient operating temperature range (T_A)	- - - - -	-55°C to +125°C
Positive supply voltage (V_{S+})	- - - - -	+5.0 V
Negative supply voltage (V_{S-})	- - - - -	-5.2 V

^{1/} $+V_{REF} \geq -V_{REF}$ under all circumstances.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 2

2. APPLICABLE DOCUMENTS

2.1 Government specification, standard, and bulletin. Unless otherwise specified, the following specification, standard, 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.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

BULLETIN

MILITARY

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

(Copies of the specification, standard, 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 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 shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. 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 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.2 System timing diagram and load circuit. The system timing diagram and load circuit 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 Electrical performance characteristics. 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 Electrical test requirements. 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 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in MIL-BUL-103 (see 6.6 herein).

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89654
		REVISION LEVEL	SHEET 3

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ -55°C ≤ T _A ≤ +125°C unless otherwise specified	Device types	Group A subgroups	Limits		Units
					Min	Max	
Input bias current	I _B	Analog input = 0 V	All	1		100	μA
				2, 3		200	
Input resistance	R _{IN}		All	1	150		kΩ
				2, 3 2/	85		
Reference ladder resistance	R		All	1	64	110	Ω
				2, 3 2/	47	145	
Overflow inhibit 0 V input current	I _{IN}		All	1, 2, 3		250	μA
High level output voltage 3/	V _{OH}		All	1, 2, 3	2.4		V
Low level output voltage 3/	V _{OL}		All	1, 2, 3		0.4	
Positive supply current 4/	+I _{CC}	V _S ⁺ = +5.0 V	All	1		45.0	mA
				2, 3		48.0	
Negative supply current 4/	-I _{CC}	V _S ⁻ = -5.2 V	All	1		179	mA
				2, 3		191	
Conversion rate	F _S		All	4, 5, 6	75		MSPS
Encode pulse width (low) 5/	t _{PWL}		All	4	2.5		ns
				5, 6	3		
Encode pulse width (high) 5/	t _{PWH}		All	4	2.5		ns
				5, 6	3		

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 4

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions ^{1/} -55°C ≤ T _A ≤ +125°C unless otherwise specified	Device types	Group A subgroups	Limits		Units
					Min	Max	
Signal-to-noise ratio ^{6/}	SNR	Analog input signal = 1.23 MHz	All	4	46		dB
				5, 6	44.5		
Differential linearity	DNL		01	4		0.75	LSB
			02			0.5	
			01	5,6		1.0	
			02			0.75	
Integral linearity	INL		01	4		1.0	LSB
			02			0.5	
			All	5,6		1.2	
Top of reference ladder			All	1		10	mV
				2,3		13	
Bottom of reference ladder			All	4		15	mV
				5,6		18	
High level input voltage	V _{IH}		All	4,5,6	2.0		V
Low level input voltage	V _{IL}		All	4,5,6		0.8	V
High level input current	I _{IH}		All	4,5,6		250	μA
Low level input current	I _{IL}		All	4,5,6		220	μA
Power supply rejection ratio ^{4/ 7/}	PSRR		All	4		2.5	mV/V
				5, 6		3.0	

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 5

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions ^{1/} -55°C ≤ T _A ≤ +125°C unless otherwise specified	Device types	Group A subgroups	Limits		Units
					Min	Max	
Input capacitance ^{8/}	C _{IN}		All	4		18	pF
Output delay ^{3/ 9/}	t _{PD}		All	9	5.0	11.0	ns
				10, 11	4.5	11.5	
Output rise time ^{3/}	t _r		All	9		8.0	ns
				10, 11		9.6	
Output fall time ^{3/}	t _f		All	9		4.3	ns
				10, 11		5.9	
In-band harmonics ^{10/}		Analog input signal = 1.23 MHz	All	4	48		dB
				5, 6	46		

^{1/} V_{S+} = 5.0 V, V_{S-} = -5.2 V, differential reference voltage = 2.0 V.

^{2/} Guaranteed if not tested to the limits specified.

^{3/} Outputs terminated with two equivalent LS00 type loads.

^{4/} Supplies should remain stable within ±5 % for normal operation.

^{5/} ENCODE signal rise/fall times should be less than 30 ns for normal operation.

^{6/} RMS signal to RMS noise, including harmonics with 1.23 MHz analog input signal.

^{7/} Measured at -5.2 V ±5 % and +5.0 V ±5 %.

^{8/} Subgroup 4 (C_{IN} measurement) shall be measured only for the initial test and after process or design changes which may affect input capacitance.

^{9/} Measured from ENCODE into data out for LSB only.

^{10/} Measured at 75 MSPS encode rate. Harmonic data based on worst case harmonics.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 6

Device types	01 and 02
Case outlines	X and 3
Terminal number	Terminal Symbol
1	DIGITAL V_{S+}
2	OVERFLOW INH
3	HYSTERESIS
4	$+V_{REF}$
5	ANALOG INPUT
6	ANALOG GROUND
7	ENCODE
8	DIGITAL V_{S+}
9	ANALOG GROUND
10	ANALOG INPUT
11	$-V_{REF}$
12	REF mid
13	DIGITAL V_{S+}
14	DIGITAL V_{S+}
15	D1 (LSB) S^-
16	D2
17	D3
18	D4
19	D5
20	DIGITAL GROUND
21	ANALOG V_{S-}
22	ANALOG V_{S-}
23	DIGITAL GROUND
24	D6
25	D7
26	D8 (MSB)
27	OVERFLOW
28	DIGITAL V_{S-}

FIGURE 1. Terminal connections.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 7

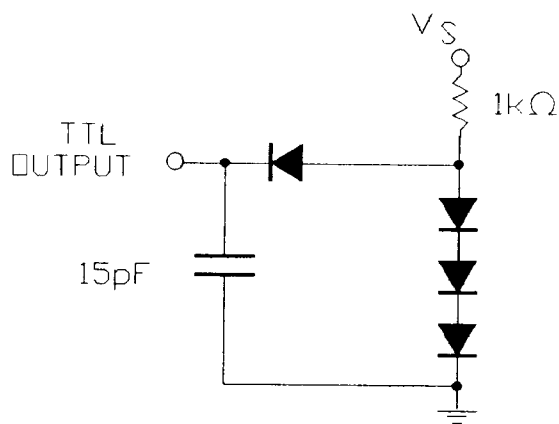
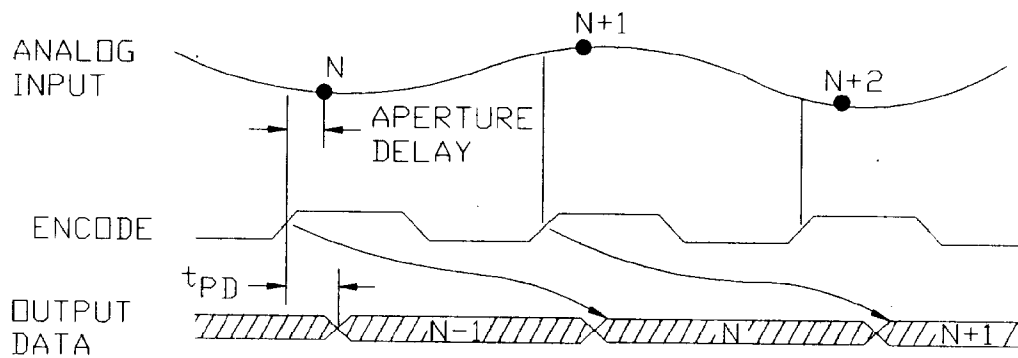


FIGURE 2 System timing diagram and load circuit.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 8

3.6 Certificate of compliance. 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-ECS 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 Certificate of conformance. 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 Notification of change. Notification of change to DESC-ECS shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.9 Verification and review. 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 Sampling and inspection. 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 Screening. 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, or C using the circuit submitted with the certificate of compliance (see 3.6 herein).

(2) $T_A = +125^\circ\text{C}$, 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 Quality conformance inspection. 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 7, and 8 in table I, method 5005 of MIL-STD-883 shall be omitted.

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, or C using the circuit submitted with the certificate of compliance (see 3.6 herein).

(2) $T_A = +125^\circ\text{C}$, minimum.

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654	
		REVISION LEVEL	SHEET 9

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	1
Final electrical test parameters (method 5004)	1*, 2, 3, 4
Group A test requirements (method 5005)	1, 2, 3, 4, 5, 6, 9, 10, 11**
Groups C and D end-point electrical parameters (method 5005)	1

* PDA applies to subgroup 1.

** Subgroups 5, 6, 10, 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 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 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-481 using DD Form 1693, Engineering Change Proposal (Short Form).

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
	REVISION LEVEL	SHEET 10

6.4 Record of users. 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-ECS, telephone (513) 296-6022.

6.5 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone (513) 296-5375.

6.6 Approved source of supply. An approved source of supply is listed in MIL-BUL-103. Additional sources will be added to MIL-BUL-103 as they become available. The vendor listed in MIL-BUL-103 has agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-ECS. The approved source of supply listed below is for information purposes only and is current only to the date of the last action of this document.

Military drawing part number	Vendor CAGE number	Vendor similar part number ^{1/}
5962-89654013X	34031	AD9012SE/883B
5962-8965401XX	34031	AD9012SQ/883B
5962-89654023X	34031	AD9012TE/883B
5962-8965402XX	34031	AD9012TQ/883B

^{1/} 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
 Computer Labs Division
 7910 Triad Center Drive
 Greensboro, NC 27409

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	5962-89654
		REVISION LEVEL