

NOTICE OF REVISION (NOR)		1. DATE (YYMMDD) 97-06-23	Form Approved OMB No. 0704-0188
THIS REVISION DESCRIBED BELOW HAS BEEN AUTHORIZED FOR THE DOCUMENT LISTED.			
<small>Public reporting burden for this collection is estimated to average 2 hours 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 Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. PLEASE DO NOT RETURN YOUR COMPLETED FORM TO EITHER OF THESE ADDRESSED. RETURN COMPLETED FORM TO THE GOVERNMENT ISSUING CONTRACTING OFFICER FOR THE CONTRACT/PROCURING ACTIVITY NUMBER LISTED IN ITEM 2 OF THIS FORM.</small>		2. PROCURING ACTIVITY NO.	
		3. DODAAC	
4. ORIGINATOR	b. ADDRESS (Street, City, State, Zip Code) Defense Supply Center Columbus 3990 East Broad Street Columbus, OH 43216-5000	5. CAGE CODE 67268	6. NOR NO. 5962-R368-97
a. TYPED NAME (First, Middle Initial, Last)		7. CAGE CODE 67268	8. DOCUMENT NO. 5962-85127
9. TITLE OF DOCUMENT MICROCIRCUIT, LINEAR, MICROPROCESSOR COMPATIBLE, 12-BIT ANALOG-TO-DIGITAL CONVERTERS, MONOLITHIC SILICON		10. REVISION LETTER	
		a. CURRENT C	b. NEW D
11. ECP NO. NA			
12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES All			
13. DESCRIPTION OF REVISION			
<p>Sheet 1: Revisions Itr column; add "D". Revisions description column; add "Changes in accordance with NOR 5962-R368-97". Revisions date column; add "97-06-23". Revision level block; change from "C" to "D". Rev status of sheets; for sheets 1, 5, 19, and 20 change from "C" to "D".</p> <p>Sheet 5: 3.10; delete this paragraph in its entirety. Revision level block; change from "C" to "D".</p> <p>Sheet 19: TABLE IIA; delete entire table and substitute with table on sheet 2, block 13 continuation sheet. Revision level block; change from "C" to "D".</p> <p>Sheet 20: 4.4.1 <u>Group A inspection</u> ; for 4.4.1b, delete "and 8" in two places. Add 4.4.1c "Subgroups 5, 6, and 8 in table I, method 5005 of MIL-STD-883 shall be omitted". Add 4.4.1d "Optional subgroup 12, for device type 01, is used for grading the part selection at 25 ° C". Revision level block; change from "C" to "D".</p>			
14. THIS SECTION FOR GOVERNMENT USE ONLY			
a. (X one)	X	(1) Existing document supplemented by the NOR may be used in manufacture.	
		(2) Revised document must be received before manufacturer may incorporate this change.	
		(3) Custodian of master document shall make above revision and furnish revised document.	
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT DSCC-VAS		c. TYPED NAME (First, Middle Initial, Last) Raymond Monnin	
d. TITLE Chief, Custom Microelectronics	e. SIGNATURE Raymond Monnin		f. DATE SIGNED (YYMMDD) 97-06-23
15a. ACTIVITY ACCOMPLISHING REVISION DSCC-VAS	b. REVISION COMPLETED (Signature) Dan Wonnell		c. DATE SIGNED (YYMMDD) 97-06-23

Sheet 19: Add the following:

TABLE IIA. Electrical test requirements ..

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, 4, 12 <u>1/</u>	1, 2, 3, 4, 12 <u>1/</u>	1, 2, 3, 4, 12 <u>1/ 2/</u>
Group A test requirements (see 4.4)	1, 2, 3, 4, 7, 9, 10, 11, 12	1, 2, 3, 4, 7, 9, 10, 11, 12	1, 2, 3, 4, 7, 9, 10, 11, 12
Group C end-point electrical parameters (see 4.4)	1, 4	1, 4	1, 4 <u>2/</u>
Group D end-point electrical parameters (see 4.4)	1, 4	1, 4	1, 4

1/ PDA applies to subgroup 1.2/ Delta limits as specified in table IIB shall be required where specified, and the delta limits shall be computed with reference to the previous interim electrical parameters.

REVISIONS

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Add two packages, C-5 and C-4. Make changes to table I, and throughout. For case X, the dimensions have been changed and figure 2 has been replaced with D-10 configuration. Inactivate devices 01XX and 02XX for new design. Use M38510 device. Add a truth table.	90-01-24	M. A. Frye
B	Add device types 05, 06, 07, and 08. Add vendors CAGES 1ES66, OH9K9, and 33256. Editorial changes throughout.	93-03-15	M. A. Frye
C	Add class V devices. Add Z package. Editorial changes throughout.	97-04-15	R. Monnin

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED

REV																				
SHEET																				
REV	C	C	C	C	C	C	C													
SHEET	15	16	17	18	19	20	21													
REV STATUS OF SHEETS	REV			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
	SHEET			1	2	3	4	5	6	7	8	9	10	11	12	13	14			

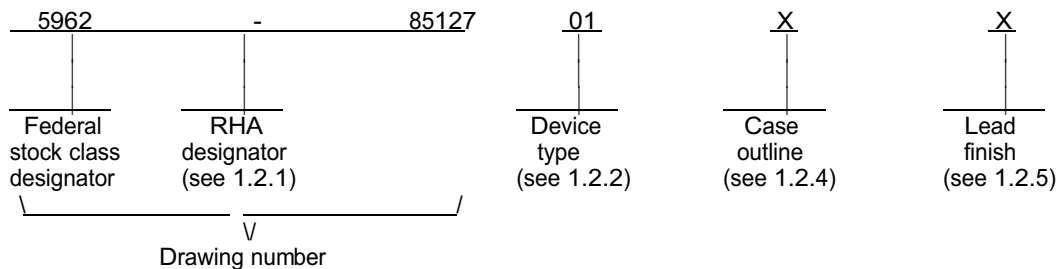
<p align="center">STANDARD MICROCIRCUIT DRAWING</p> <p>THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE</p> <p align="center">AMSC N/A</p>	PMIC N/A	PREPARED BY Sandra B. Rooney	<p align="center">DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216</p> <p>MICROCIRCUIT, LINEAR, MICROPROCESSOR COMPATIBLE, 12-BIT ANALOG-TO-DIGITAL CONVERTERS, MONOLITHIC SILICON</p>	
		CHECKED BY Charles E. Besore		
		APPROVED BY Michael A. Frye		
		DRAWING APPROVAL DATE 86-07-10		
		REVISION LEVEL C		
	SIZE A	CAGE CODE 67268	5962-85127	
SHEET		1	OF	21

1. SCOPE

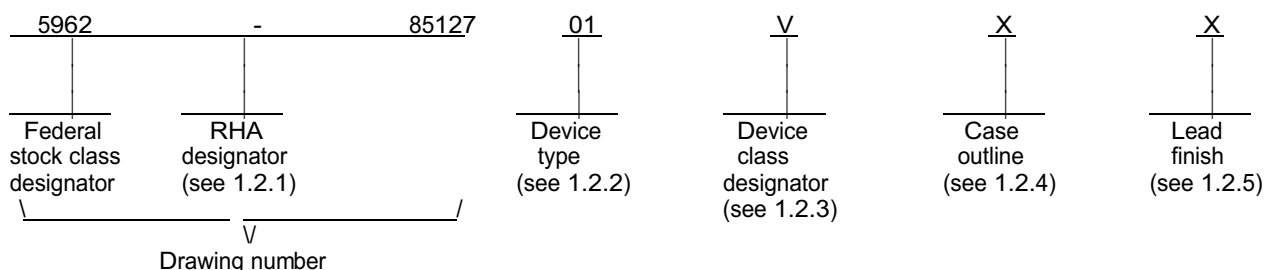
1.1 Scope. This drawing documents two product assurance class levels consisting of high reliability (device classes Q and M) and space application (device class V). A choice of case outlines and lead finishes are available and are reflected in the Part or Identifying Number (PIN). When available, a choice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

1.2 PIN. The PIN is as shown in the following examples.

For device classes M and Q:



For device class V:



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

Device type	Generic number	Circuit function
01	574AU	Monolithic, high performance, 12-bit A/D converter with microprocessor interface
02	574AT	Monolithic, medium performance, 12-bit A/D converter with microprocessor interface
03	574AU	Multi-chip, high performance, 12-bit A/D converter with microprocessor interface
04	574AT	Multi-chip, medium performance, 12-bit A/D converter with microprocessor interface
05	574ZA	Monolithic, high performance, low power, 12-bit A/D converter with microprocessor interface
06	574ZB	Monolithic, medium performance, low power, 12-bit A/D converter with microprocessor interface
07	574AU	Monolithic, high performance, low power, 12-bit A/D converter with microprocessor interface
08	574AT	Monolithic, medium performance, low power, 12-bit A/D converter with microprocessor interface

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 2

1.2.3 Device class designator . 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.

<u>Device class</u>	<u>Device requirements documentation</u>
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

1.2.4 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	GDIP1-T28 or CDIP2-T28	28	dual-in-line
Y	CQCC1-N44	44	square leadless chip carrier
Z	GDFP2-F28	28	flat pack
3	CQCC1-N28	28	square leadless chip carrier

1.2.5 Lead finish . 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 Absolute maximum ratings . 1/

V_{CC} to digital common	0 to +16.5 V dc
V_{EE} to digital common	0 to -16.5 V dc
V_{LOG} to digital common	0 to +7 V dc
Analog common to digital common:	
Device types 01, 02, 03, 04	+1 V dc
Device types 05, 06, 07, 08	-0.5 V dc to +1 V dc
Control inputs (CE, CS, A_0 , 12/8, R/C) to digital common	-0.5 V dc to V_{LOG} +0.5 V dc
Analog inputs (REF IN, BIP OFF, 10 V_{IN}) to analog common	V_{EE} to V_{CC}
20 V_{IN} analog input voltage to analog common	+24 V dc
$V_{REF OUT}$	Indefinite short to common 10 ms short to V_{CC}
Power dissipation at 75 °C:	
Device types 01, 02, 05, 06, 07, 08	1,000 mW ^{2/}
Device types 03, 04	2,080 mW ^{2/}
Lead temperature (soldering, 10 seconds)	+300° C
Storage temperature	-65° C to +150° C
Thermal resistance, junction-to-ambient (Θ_{JA}):	
Cases X and 3	70° C/W
Case Y	38° C/W
Case Z	60° C/W
Thermal resistance, junction-to-case (Θ_{JC})	See MIL-STD-1835
Junction temperature (T _J)	+175° C

1.4 Recommended operating conditions .

Power supply	
Operating voltage range:	
Positive supply (V_{LOG})	+4.5 V dc to +5.5 V dc
Positive supply (V_{CC})	+11.4 V dc to +16.5 V dc
Negative supply (V_{EE})	-11.4 V dc to -16.5 V dc
Ambient operating temperature range (T _A)	-55° C to +125° C

- 1/ 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.
- 2/ For cases X and 3, derate linearly above T_A = +75° C at 20.8 mW/° C.
 For case Y, derate linearly above T_A = +75° C at 22.7 mW/° C.
 For case Z, derate linearly above T_A = +115° C at 17 mW/° C.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 3

2. APPLICABLE DOCUMENTS

2.1 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

MILITARY

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

STANDARDS

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.
MIL-STD-973 - Configuration Management.
MIL-STD-1835 - Microcircuit Case Outlines.

HANDBOOKS

MILITARY

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 handbooks 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 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 Design, construction, and physical dimensions. 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 Case outline(s). The case outline(s) shall be in accordance with 1.2.4 herein.

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

3.2.3 Truth table(s). The truth table(s) shall be as specified on figure 2.

3.2.4 Block or logic diagram(s). The block or logic diagram(s) shall be as specified on figure 3.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 4

3.3 Electrical performance characteristics and postirradiation parameter limits. 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 Electrical test requirements. 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 Marking. 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-HDBK-103. 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.

3.5.1 Certification/compliance mark. 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 Certificate of compliance. 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 DSCC-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 Certificate of conformance. 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 Notification of change for device class M. For device class M, notification to DSCC-VA of change of product (see 6.2 herein) involving devices acquired to this drawing is required for any change as defined in MIL-STD-973.

3.9 Verification and review for device class M. For device class M, DSCC, DSCC'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 Microcircuit group assignment for device class M. Device class M devices covered by this drawing shall be in microcircuit group number 81 (see MIL-PRF-38535, appendix A).

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. 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 Screening. 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 Additional criteria for device class M

- 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.
 - (2) $T_A = +125^\circ\text{C}$, minimum.
- b. Interim and final electrical test parameters shall be as specified in table IIA herein.
- c. Optional subgroup 12, for device 01, is used for grading the part selection at 25 °C.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 5

TABLE I. Electrical performance characteristics .

Test	Symbol	Conditions -55° C ≤ T _A ≤ +125° C V _{CC} = +15 V, V _{LOG} = +5 V, V _{EE} = -15 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Power supply current from V _{LOG}	I _{LOG}		1, 2, 3	01, 02, 03, 04		40	mA
				05, 06 07, 08		1	
Power supply current from V _{CC}	I _{CC}		1, 2, 3	01,02		5	
				03, 04		15	
				05, 06 07, 08		9	
Power supply current from V _{EE}	I _{EE}		1, 2, 3	01, 02, 03, 04	-30		
				05, 06 07, 08	0		
Resolution			1, 2, 3	All	12		Bits
Integral linearity error	ILE		1	All	-0.5	0.5	LSB
			2, 3	All	-1.0	1.0	
Differential linearity error (minimum resolution for which no missing codes guaranteed)	DLE		1	All	12		Bits
			2, 3		12		
Unipolar offset voltage error	V _{IO}	T _A = +25° C	1	All	-2.0	2.0	LSB
			12	01	-1.0	1.0	
Unipolar offset drift	$\frac{\Delta V_{IO}}{\Delta T}$	Using internal reference	2, 3	All	-1.0	1.0	
Bipolar zero offset error	BZ	T _A = +25° C	1	All	-4.0	4.0	
			12	01	-2.0	2.0	

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 6

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C V _{CC} = +15 V, V _{LOG} = +5 V, V _{EE} = -15 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Bipolar zero offset drift	$\frac{\Delta B_Z}{T}$	Using internal reference	2, 3	01, 03, 05, 07	-1.0	1.0	LSB
				02, 04, 06, 08	-2.0	2.0	
Gain error	ΔA_E	With 50Ω resistor from REF OUT to REF IN T _A = +25°C	1	01, 02		0.25	% of F.S.
				03, 04 05, 06 07, 08		0.30	
			12	01		0.125	
Gain error drift	$\frac{\Delta A_E}{\Delta T}$	Using internal reference	2, 3	01, 03, 05, 07	-12.5	12.5	ppm/°C
				02, 04, 06, 08	-25.0	25.0	
Power supply sensitivity (Maximum change in full scale calibration)	+P _{SS1}	+13.5 V ≤ V _{CC} ≤ +16.5 V T _A = +25°C	1	All	-1.0	1.0	LSB
	+P _{SS2}	+11.4 V ≤ V _{CC} ≤ +12.6 V T _A = +25°C					
	+P _{SS3}	+4.5 V ≤ V _{LOG} ≤ +5.5 V T _A = +25°C	1	All	-0.5	0.5	
	-P _{SS1}	-16.5 V ≤ V _{EE} ≤ -13.5 V T _A = +25°C	1	All	-1.0	1.0	
	-P _{SS2}	-12.6 V ≤ V _{EE} ≤ -11.4 V T _A = +25°C					
Input impedance	Z _{IN}	10 V span, T _A = +25°C	4	All	3	7	kΩ
		20 V span, T _A = +25°C	4	01, 02, 03, 04	6	14	
				05, 06 07, 08	15	25	

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 7

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ $V_{CC} = +15\text{ V}, V_{LOG} = +5\text{ V},$ $V_{EE} = -15\text{ V}$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Internal reference voltage	V_{REF}	$T_A = +25^{\circ}\text{C}$ 1/	1	01, 02	9.98	10.02	V
				03, 04 07, 08	9.90	10.10	
				05, 06	9.97	10.03	
			12	01	9.99	10.01	
Output current 2/	I_O	Available for external loads $T_A = +25^{\circ}\text{C}$	1	01, 02, 03, 04		1.5	mA
				05, 06 07, 08		2.0	
Input voltage (CE, \overline{CS} , 12/8, R/C, A _O) 3/	V_{IH}	Logic "1" $T_A = +25^{\circ}\text{C}$	1	01, 02, 05, 06 07, 08	2.0	5.5	V
	V_{IL}	Logic "0" $T_A = +25^{\circ}\text{C}$		All	-0.5	0.8	
Input current	I_{IN}	$T_A = +25^{\circ}\text{C}$	1	01, 02 03, 04 07, 08	-20	+20	μA
				05, 06	-1	1	
Output voltage (DB11-DB0, STS)	V_{OL}	Logic "0" $T_A = +25^{\circ}\text{C}$ $I_{sink} = +1.6\text{ mA}$	1	All		0.4	Volts
Output voltage (DB11-DB0)	V_{OH}	Logic "1" $T_A = +25^{\circ}\text{C}$ $I_{source} = +500\ \mu\text{A}$			2.4		

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 8

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ $V_{CC} = +15\text{V}, V_{LOG} = +5\text{V},$ $V_{EE} = -15\text{V}$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
High impedance state output current	I _Z	High-Z state $T_A = +25^{\circ}\text{C}$ DB11 - DB0 only	1	01, 02 03, 04 07, 08	-20	+20	μA
				05, 06	-5	+5	
Functional tests		See section 4.4.1b $T_A = +25^{\circ}\text{C}$	7	All			
Low R/C pulse width 4/	t _{HRL}	See figure 4	9, 10, 11	01, 02	250		ns
				03, 04	350		
STS delay from R/C 4/	t _{DS}			01, 02 03, 04		600	
				05, 06 07, 08		200	
Data valid after R/C low 4/	t _{HDR}			01, 02, 05, 06 07, 08	25		
				03, 04	15		
STS delay after valid data 4/	t _{HS}			01, 02, 05, 06 07, 08	300	1000	
				03, 04	300	1200	
High R/C pulse width 5/	t _{HRH}			01, 02, 03, 04	300		
				05, 06 07, 08	150		

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 9

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C V _{CC} = +15 V, V _{LOG} = +5 V, V _{EE} = -15 V unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Data access time <u>5/</u>	t _{DDR}	See figure 4	9, 10, 11	01, 02, 03, 04		250	ns
				05, 06 07, 08		150	
STS delay from CE <u>5/</u>	t _{DSC}	See figure 5	9, 10, 11	01, 02, 03, 04		350	ns
				05, 06 07, 08		200	
CE pulse width <u>5/</u>	t _{HEC}			01, 02, 03, 04	300		
				05, 06 07, 08	50		
Conversion time <u>6/</u>	t _C	8-bit cycle		01,02 <u>4/</u>	10	24	μs
				03, 04 05, 06 07, 08	10	17	
		12-bit cycle		01,02 <u>4/</u>	15	35	
		03, 04 05, 06 07, 08		15	25		
Access time (from CE) <u>4/</u>	t _{DD}	See figure 6		01, 02		200	ns
				03, 04		250	
				05, 06 07, 08		150	

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 10

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C V _{CC} = +15 V, V _{LOG} = +5 V, V _{EE} = -15 V unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Data valid after CE low 4/	t _{HD}	See figure 6	9, 10, 11	01, 02, 05, 06 07, 08	25		ns
				03, 04	15		
Output float delay 4/	t _{HL}	See figure 6	9, 10, 11	01, 02		100	
				03, 04, 05, 06 07, 08		150	

1/ The reference voltage external load current shall be a constant dc and shall not exceed 1.5 mA.

2/ Reference should be buffered for operation on ±12 V supplies. External load should not change during conversion.

3/ For devices 01 and 02, 12/8 is not TTL compatible and must be hard wired to V_{LOG} or digital common.

4/ Subgroups 10 and 11, if not tested, shall be guaranteed to the specified limits.

5/ Parameters t_{HRH}, t_{DDR}, t_{DSC} and t_{HEC}, if not tested, shall be guaranteed to the specified limits.

6/ For devices 03 and 04, time is measured from 50 percent level of digital transitions, tested with a 50 pF and 3.0 kΩ load.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 11

Device types	All	02	01, 02, 05, 06, 07, 08	01, 02, 03, 04
Case outlines	X	Z	3	Y
Terminal number	Terminal symbol	Terminal symbol	Terminal symbol	Terminal symbol
1	V _{LOG}	V _{LOG}	V _{LOG}	V _{LOG}
2	12/8	12/8	12/8	12/8
3	CS	CS	CS	CS
4	AO	AO	AO	AO
5	R/C	R/C	NC	NC
6	CE	CE	NC	NC
7	V _{CC}	V _{CC}	NC	NC
8	REF OUT	REF OUT	NC	NC
9	AGND	AGND	R/C	R/C
10	REF IN	REF IN	CE	CE
11	V _{EE}	V _{EE}	V _{CC}	V _{CC}
12	BIP OFF	BIP OFF	REF OUT	REF OUT
13	10 V _N	10 V _N	AGND	AGND
14	20 V _N	20 V _N	REF IN	REF IN
15	DGND	DGND	V _{EE}	V _{EE}
16	DB0	DB0	NC	NC
17	DB1	DB1	BIP OFF	BIP OFF
18	DB2	DB2	10 V _N	10 V _N
19	DB3	DB3	20 V _N	20 V _N
20	DB4	DB4	NC	NC
21	DB5	DB5	NC	NC
22	DB6	DB6	NC	NC
23	DB7	DB7	NC	NC
24	DB8	DB8	DGND	DGND
25	DB9	DB9	NC	NC
26	DB10	DB10	NC	NC
27	DB11 (MSB)	DB11 (MSB)	DB0	DB0
28	STS	STS	DB1	DB1
29	-	-	DB2	DB2
30	-	-	NC	NC
31	-	-	DB3	DB3
32	-	-	DB4	DB4
33	-	-	DB5	DB5
34	-	-	DB6	DB6
35	-	-	DB7	DB7
36	-	-	DB8	DB8
37	-	-	DB9	DB9
38	-	-	NC	NC
39	-	-	NC	NC
40	-	-	NC	NC
41	-	-	NC	NC
42	-	-	DB10	DB10
43	-	-	DB11 (MSB)	DB11 (MSB)
44	-	-	STS	STS

FIGURE 1. Terminal connections.

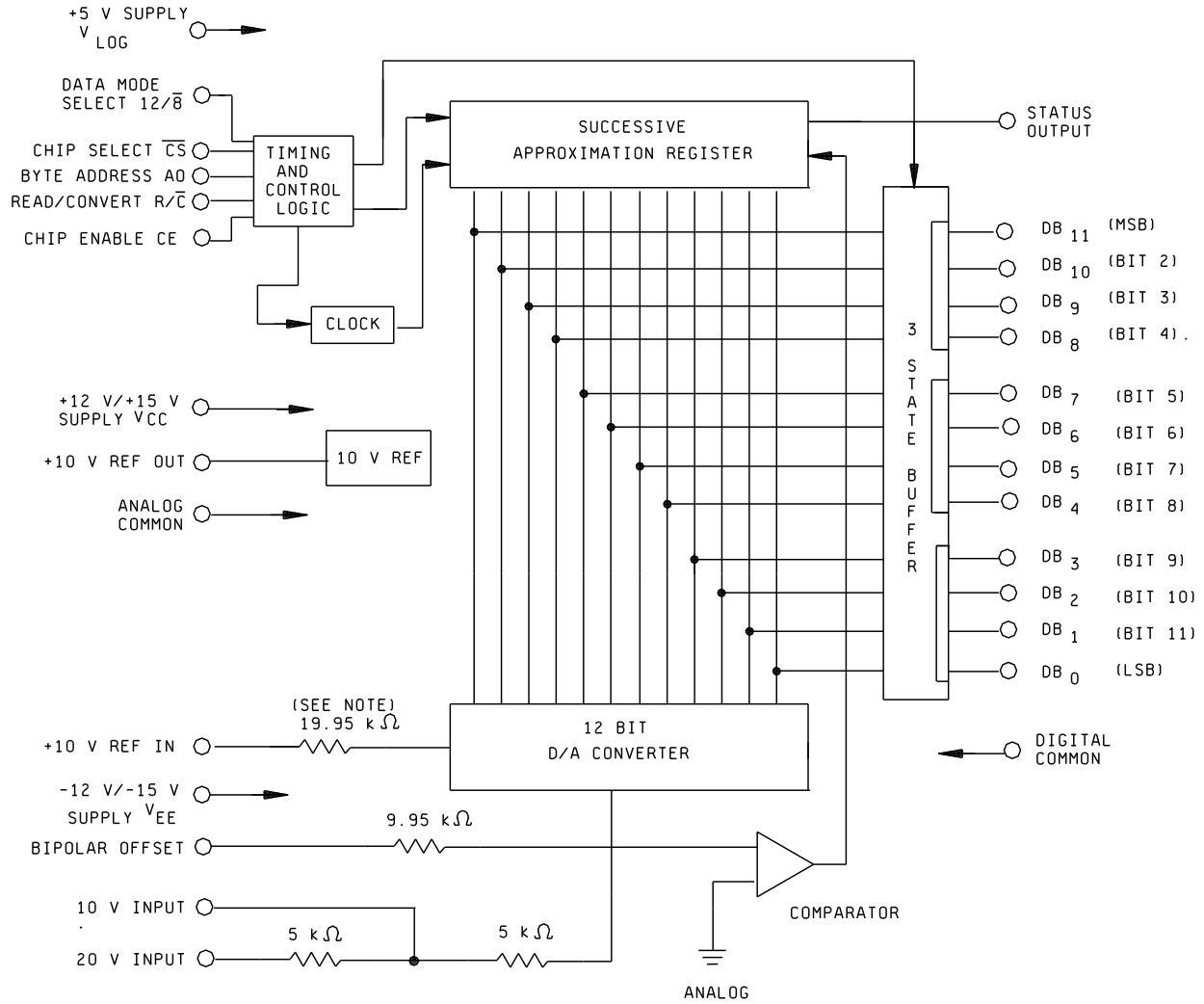
STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 12

CE	CS	R/C	12/8	A ₀	Operation
0	X	X	X	X	None
X	1	X	X	X	None
1	0	0	X	0	Initiate 12-bit conversion
1	0	0	X	1	Initiate 8-bit conversion
1	0	1	1	X	Enable 12-bit parallel output
1	0	1	0	0	Enable 8 most significant bits
1	0	1	0	1	Enable 4 LSBs + 4 trailing zeros

FIGURE 2. Truth table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 13

Device types 01, 02, 03, and 04



NOTE: For device types 03 and 04, the resistor value is 9.95 k Ω .

FIGURE 3. Block diagram.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 14

Device types 05, 06, 07, and 08

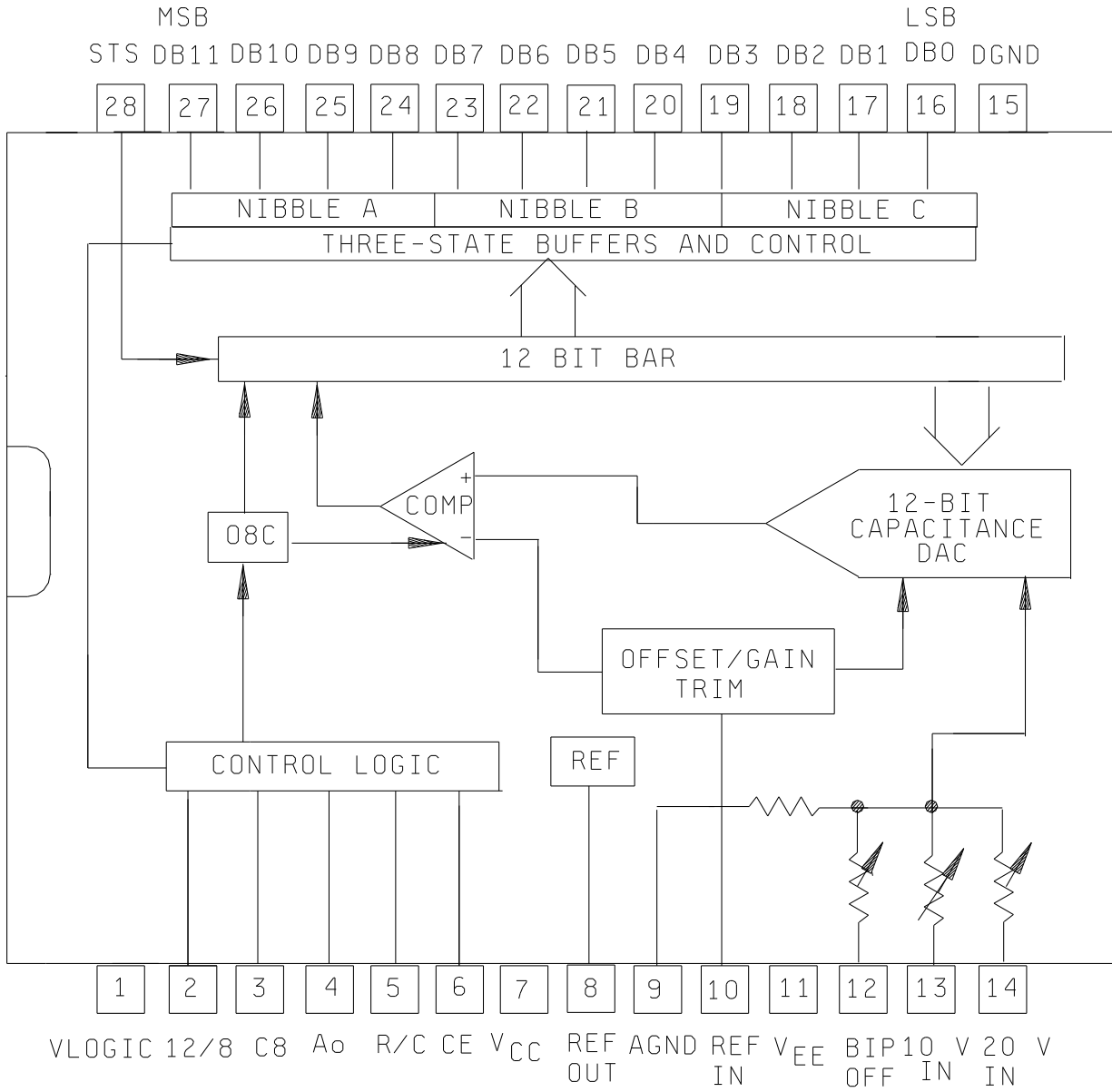
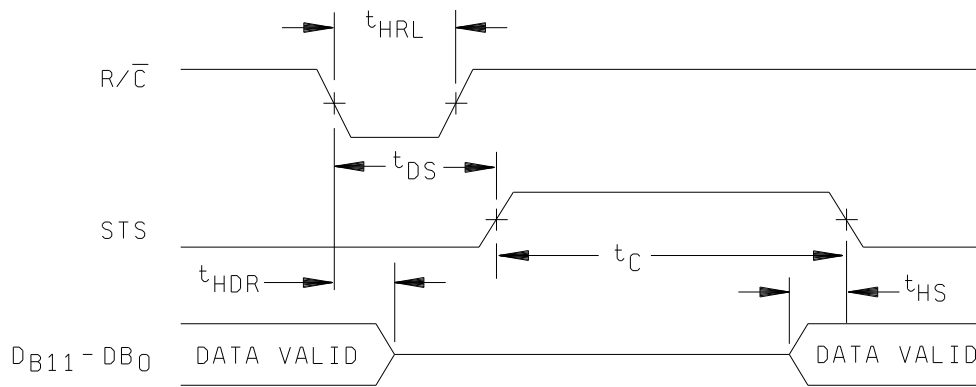
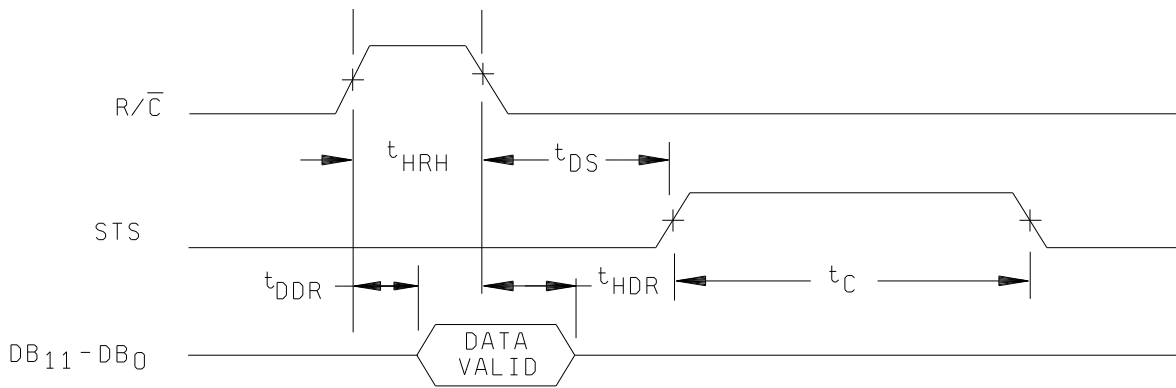


FIGURE 3. Block diagram - Continued.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A	5962-85127
	REVISION LEVEL C	SHEET 15



LOW PULSE FOR R/\bar{C} - OUTPUTS ENABLED
AFTER CONVERSION



HIGH PULSE FOR R/\bar{C} - OUTPUTS ENABLED WHILE
 R/\bar{C} HIGH, OTHERWISE HIGH-Z

FIGURE 4. High/low pulse for R/\bar{C} outputs.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 16

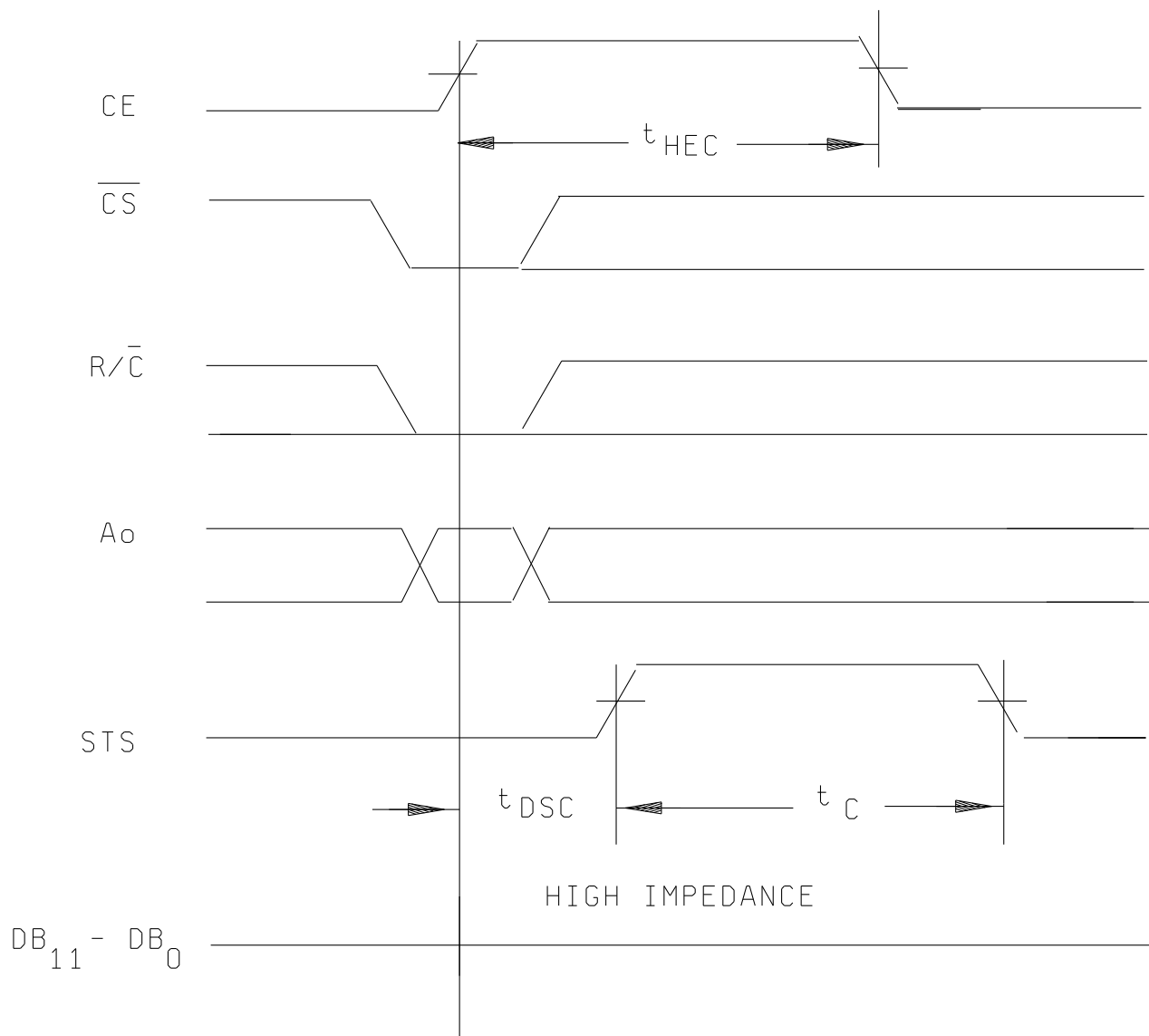


FIGURE 5. Convert start diagram.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 17

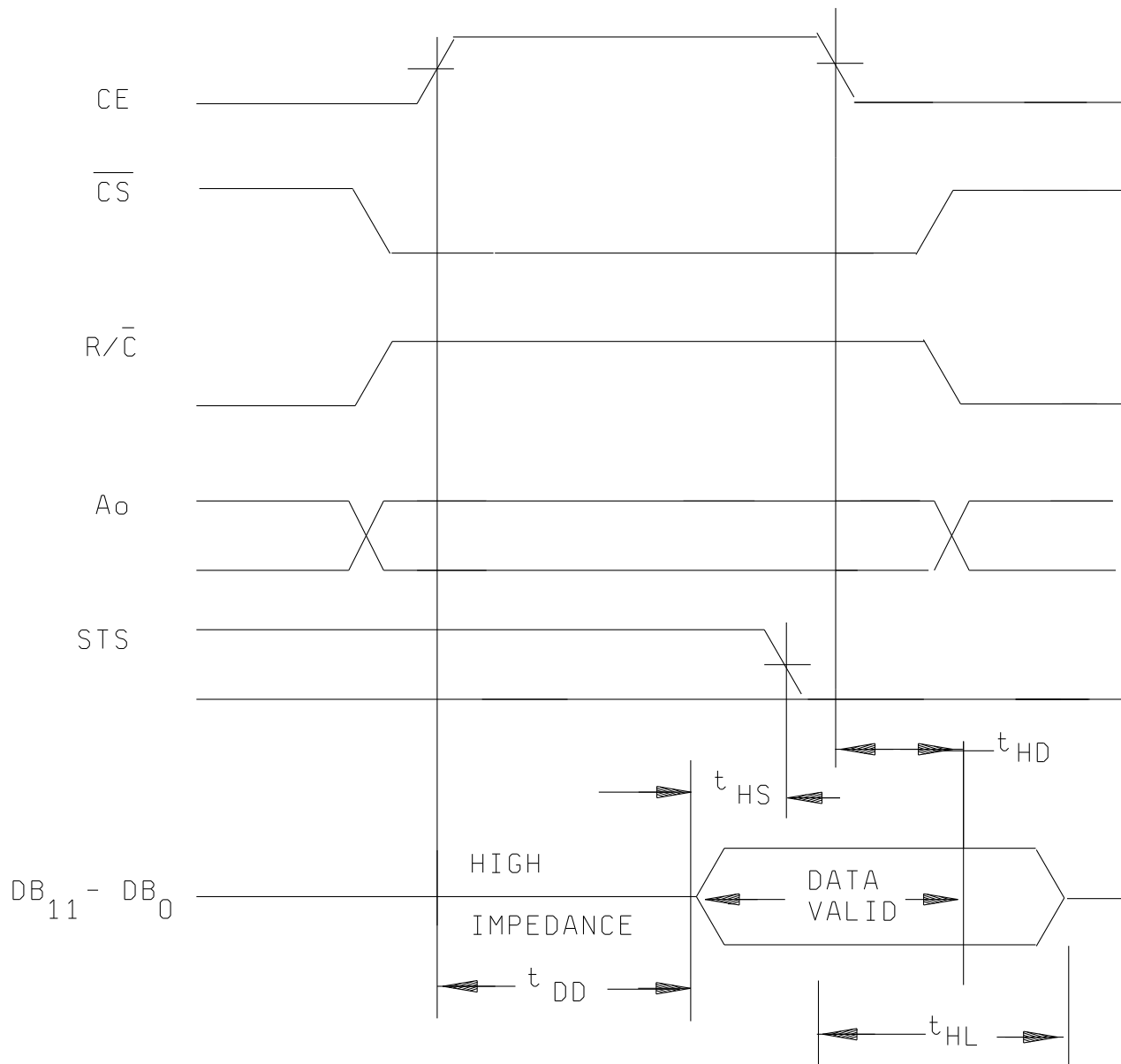


FIGURE 6. Read cycle timing.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 18

TABLE IIA. 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, 4, 12 <u>1/ 2/</u>
Group A test requirements (method 5005)	1, 2, 3, 4, 7, 9 10, 11, 12
Group C and D end-point electrical parameters (method 5005)	1, 4 <u>2/</u>

1/ PDA applies to subgroup 1.

2/ Delta limits as specified in table IIB shall be required where specified, and the delta limits shall be computed with reference to the previous interim electrical parameters.

TABLE IIB. 240 hour burn-in and group C end-point electrical parameters .

Test title	Endpoint limits		Delta limits	Units
	Min	Max		
Uni Vio	-1	2	±0.5	LSB
Bpze	-5.5	4.5	±1	LSB
Ae	-0.35	0.35	±.10	%FSR

4.2.2 Additional criteria for device classes Q and V .

- 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 test 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.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 19

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 herein except where option 2 of MIL-PRF-38535 permits alternate in-line control testing. 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. For device class M, subgroups 7 and 8 tests shall be sufficient to verify the truth table. For device classes Q and V, subgroups 7 and 8 shall include verifying the functionality of the device.

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 test method 1005 of MIL-STD-883.
- b. $T_A = +125^\circ\text{C}$, 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 test 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 postirradiation end-point electrical parameter limits as defined in table I at $T_A = +25^\circ\text{C} \pm 5^\circ\text{C}$, after exposure, to the subgroups specified in table IIA herein.
- c. When specified in the purchase order or contract, a copy of the RHA delta limits shall be supplied.

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.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 20

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.

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

6.2 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.

6.3 Record of users. Military and industrial users should inform Defense Supply Center Columbus when a system application requires configuration control and which SMD's are applicable to that system. 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) 692-0525.

6.4 Comments. Comments on this drawing should be directed to DSCC-VA, Columbus, Ohio 43216-5000, or telephone (614) 692-0674.

6.5 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are listed below and defined in MIL-PRF-38535 and MIL-HDBK-1331.

V _{LOG}	Logic supply
12/8	Data mode select input
CS	Chip select input
A0	Byte address/short cycle input
R/C	Read/convert input
CE	Chip enable input
V _{CC}	Positive power supply
REF OUT	Reference output
AGND	Analog ground
REF IN	Reference input
V _{EE}	Negative power supply
BIPOFF	Bipolar offset input
V _{IN}	Span input
DGND	Digital ground
D0-D11	Three-state data outputs
STS	Status output
NC	No connection

6.6 Sources of supply.

6.6.1 Sources of supply for device classes Q and V. 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 DSCC-VA and have agreed to this drawing.

6.6.2 Approved sources of supply for device class M. 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 DSCC-VA.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216	SIZE A		5962-85127
		REVISION LEVEL C	SHEET 21

STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 97-04-15

Approved sources of supply for SMD 5962-85127 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 DSCC-VA. This bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535.

Standard microcircuit drawing PIN <u>1/</u>	Vendor CAGE number	Vendor similar PIN <u>2/</u>	Reference military specification PIN
5962-8512701XA	24355	AD574AUD/883B MX574AUD/883B OR MX574AUQ/883B	M38510/14001BXA
5962-85127013A	24355	AD574AUE/883B	
5962-8512702XA	24355	AD574ATD/883B MX574ATD/883B OR MX574ATQ/883B	M38510/14002BXA
5962-8512702VXA	24355	AD547ATD/QMLV	
5962-8512702VZA	24355	AD547ATF/QMLV	
5962-85127023A	24355	AD574ATE/883B MX574ATE/883B	
5962-8512703XA	34371	HI1-574AUD/883	M38510/14001BXA
5962-8512703YA	34371	HI4-574AUE/883	
5962-8512704XA	34371	HI1-574ATD/883	M38510/14002BXA
5962-8512704YA	34371	HI4-574ATE/883	
5962-8512705XC	0H9K9	HADC574ZAMJ/883	M38510/14001BXA
5962-85127053A	0H9K9	HADC574ZAMC/883	
5962-8512706XC	0H9K9	HADC574ZBMJ/883	M38510/14002XA
5962-85127063A	0H9K9	HADC574ZBMC/883	
5962-8512707XC	33256	HS574AU/B	M38510/14001XA
5962-85127073C	33256	HS574AU/B-LCC	
5962-8512708XC	33256	HS574AT/B	M38510/14002XA
5962-85127083C	33256	HS574AT/B-LCC	

1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. The device manufacturers listed herein are authorized to supply alternate lead finishes "A", "B", or "C" at their discretion. Contact the listed approved source of supply for further information.
2/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

STANDARD MICROCIRCUIT DRAWING BULLETIN - continued

<u>Vendor CAGE number</u>	<u>Vendor name and address</u>
24355	Analog Devices Incorporated Route 1 Industrial Park PO Box 9106 Norwood, MA 02062-9106 Point of contact: 1500 Space Park Drive PO Box 58020 Santa Clara, CA 95050-8020
34371	Harris Corporation PO Box 883 Melbourne, FL 32902-0883
1ES66	Maxim Integrated Products 120 San Gabriel Drive Sunnyvale, CA 94086-5126
0H9K9	Signal Processing Technologies, Inc 4755 Forge Road Colorado Springs, CO 80907-3519
33256	Sipex Corporation 22 Linnell Circle Billerica, MA 01821-3985

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