

REVISIONS																			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED																
B	Convert to military drawing format. Change CAGE code to 67268. Add case outline 2. Changes to 1.3 and 1.4. Changes to conditions and limits in table I. Change C and D end-point electricals in table II.	89 JUNE 10	<i>[Signature]</i>																
CURRENT CAGE CODE 67268																			

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REV STATUS OF SHEETS	REV	B	B	B	B	B	B	B	B	B										
	SHEET	1	2	3	4	5	6	7	8	9										

PMIC N/A STANDARDIZED MILITARY DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE AMSC N/A	PREPARED BY <i>Joseph A. Herby</i> CHECKED BY <i>Ray Monnin</i> APPROVED BY <i>[Signature]</i> DRAWING APPROVAL DATE 26 SEPTEMBER 1980 REVISION LEVEL B	DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 MICROCIRCUITS, LINEAR, SAMPLE AND HOLD, HIGH SPEED, MONOLITHIC SILICON <table style="width: 100%; border: none;"> <tr> <td style="width: 15%; border: none;">SIZE A</td> <td style="width: 40%; border: none;">CAGE CODE 14933</td> <td style="width: 45%; border: none;">80016</td> </tr> <tr> <td style="border: none;">SHEET</td> <td style="border: none;">1</td> <td style="border: none;">OF 9</td> </tr> </table>	SIZE A	CAGE CODE 14933	80016	SHEET	1	OF 9
SIZE A	CAGE CODE 14933	80016						
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SEP 87

U.S. GOVERNMENT PRINTING OFFICE: 1987 — 748-129/60912

5962-E1095

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

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:

80016	01	C	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

Device type	Generic number	Circuit function
01	2420	Sample and hold amplifier

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
C	D-1 (14-lead, .785" x .310" x .200"), dual-in-line package
2	C-2 (20-terminal, .358" x .358" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage (V ⁺)	- - - - -	+20 V dc
Supply voltage (V ⁻)	- - - - -	-20 V dc
Digital input voltage (S/H pin)	- - - - -	+8 V dc, -15 V dc
Storage temperature range	- - - - -	-65°C to +150°C
Power dissipation (P _D):		
Case outline C	- - - - -	1.03 W at +75°C
Case outline 2	- - - - -	1.14 W at +75°C
Differential input voltage range (V _{ID})	- - - - -	+24 V
Lead temperature (soldering, 10 seconds)	- - - - -	+300°C
Junction temperature (T _J)	- - - - -	+175°C
Output current (I _O)	- - - - -	Short circuit protected
Thermal resistance, junction-to-case (θ _{JC})	- - - - -	See MIL-M-38510, appendix C.
Thermal resistance, junction-to-ambient (θ _{JA}):		
Case outline C	- - - - -	96°C/W
Case outline 2	- - - - -	88°C/W

1.4 Recommended operating conditions.

Supply voltage (V ⁺)	- - - - -	+15 V dc
Supply voltage (V ⁻)	- - - - -	-15 V dc
Analog input voltage	- - - - -	+10 V
Ambient operating temperature range (T _A)	- - - - -	-55°C to +125°C
High level input voltage (V _{IH})	- - - - -	+2.0 V
Low level input voltage (V _{IL})	- - - - -	+0.8 V

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		80016
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* U. S. GOVERNMENT PRINTING OFFICE: 1985-649-804

2. APPLICABLE DOCUMENTS

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

(Copies of the specification and standard 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 Case outlines. The case outlines shall be in accordance with 1.2.2 herein.

3.3 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full ambient operating temperature range.

3.4 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 6.4 herein.

3.5 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 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.6 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.

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

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★ U. S. GOVERNMENT PRINTING OFFICE: 1985-549-904

TABLE 1. Electrical performance characteristics.

Test	Symbol	Conditions $-55^{\circ}\text{C} < T_A < +125^{\circ}\text{C}$ unless otherwise specified	1/ Group A subgroups	Limits		Unit
				Min	Max	
Input offset voltage	V_{IO}	$V_{CM} = 0$	1		± 4.0	mV
			2, 3		± 6.0	
Input common mode range	V_{CM}		1, 2, 3	± 10		V
Input offset current	I_{IO}	$V_{CM} = 0$	1		± 50	nA
			2, 3		± 100	
Input bias current	I_{IB}	$V_{CM} = 0$	1		± 200	nA
			2, 3		± 400	
Supply current	I^+		1		5.5	mA
			2, 3		7.0	
	I^-		1		-3.5	
			2, 3		-5.0	
Power supply rejection ratio	+PSRR	$V^+ = 10\text{ V}, V^- = -15\text{ V},$ $V^+ = 20\text{ V}, V^- = -15\text{ V}$	1, 2, 3	80		dB
	-PSRR	$V^- = -10\text{ V}, V^+ = 15\text{ V},$ $V^- = -20\text{ V}, V^+ = 15\text{ V}$			80	
Drift current	I_D	$V_{IN} = 0\text{ V}, R_L = 2\text{ k}\Omega,$ $C_L = 50\text{ pF}, V_{S/H} = 4.0\text{ V}$	2		± 10	nA
			1, 3 2/		± 10	
Hold step error	V_{ERROR}	$V_{IN} = 0\text{ V}, 4\text{ V},$ $t_r (V_{S/H}) = 30\text{ ns}$ $C_H = 1,000\text{ pF}$	4		± 20	mV
Large signal voltage gain	$A_{VS}(\pm)$	$R_L = 2\text{ k}\Omega, C_L = 50\text{ pF},$ $V_{OUT} = \pm 10\text{ V}$	1, 2, 3	25		V/mV
Common mode rejection ratio	+CMRR	$V^+ = 25\text{ V}, V^- = -5\text{ V},$ $V_{OUT} = +10\text{ V}, V_{S/H} = 10.8\text{ V}$	1, 2, 3	80		dB
	-CMRR	$V^+ = 5\text{ V}, V^- = -25\text{ V},$ $V_{OUT} = -10\text{ V}, V_{S/H} = -9.2\text{ V}$			80	

See footnotes at end of table.

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* U. S. GOVERNMENT PRINTING OFFICE: 1985-549-904

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C < T _A < +125°C unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Output current	+I _O	V _{OUT} = +10 V	1	+15		mA
	-I _O	V _{OUT} = -10 V		-15		
Output voltage swing	+V _{OP}	R _L = 2 kΩ, C _L = 50 pF	1, 2, 3	+10		V
	-V _{OP}				-10	
Digital input current	I _{IN1}	V _{IN1} = 0 V	1, 2, 3		800	μA
	I _{IN2}	V _{IN2} = 5.0 V			20	
Digital input voltage	V _{IL}		1, 2, 3		0.8	V
	V _{IH}				2.0	
Transient response rise time	TR(tr)	C _L = 50 pF, R _L = 2 kΩ A _V = +1, V _{OUT} = 200 mV peak-to-peak	7		100	ns
			8a <u>2/</u>		100	
			8b <u>2/</u>		120	
Transient response overshoot	TR(OS)	C _L = 50 pF, R _L = 2 kΩ A _V = +1, V _{OUT} = 200 mV peak-to-peak	7		40	%
			8a <u>2/</u>		40	
			8b <u>2/</u>		60	
Transient response slew rate	TR(SR)	C _L = 50 pF, R _L = 2 kΩ A _V = +1, V _{OUT} = 10.0 V peak-to-peak	7	3.5		V/μs
			8a <u>2/</u>	3.5		
			8b <u>2/</u>	1.5		
Acquisition time (0.1%) <u>2/</u>	+tacq (0.1%)	T _A = +25°C R _L = 2 kΩ, C _L = 50 pF, A _V = ±1, V _{OUT} = 0 V, +10 V	4		4	μs
	-tacq (0.1%)	T _A = +25°C R _L = 2 kΩ, C _L = 50 pF, A _V = ±1, V _{OUT} = 0 V, -10 V	4		4	

See footnotes at end of table.

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* U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904

TABLE 1. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Acquisition time (0.01%) 2/	+tacq (0.01%)	$T_A = +25^{\circ}\text{C}$ $R_L = 2\text{ k}\Omega$, $C_L = 50\text{ pF}$, $A_V = \pm 1$, $V_{OUT} = 0\text{ V}$, $+10\text{ V}$	4		6	μs
	-tacq (0.01%)	$T_A = +25^{\circ}\text{C}$ $R_L = 2\text{ k}\Omega$, $C_L = 50\text{ pF}$, $A_V = \pm 1$, $V_{OUT} = 0\text{ V}$, -10 V	4		6	

1/ Unless otherwise specified, $V^+ = +15\text{ V}$, $V^- = -15\text{ V}$, $C_H = 1,000\text{ pF}$, digital input $V_{IL} = +0.8\text{ V}$ (Sample), $V_{IH} = +2.0\text{ V}$ (Hold).

2/ If not tested, shall be guaranteed to the specified limits.

3.8 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, C, or D using the circuit submitted with the certificate of compliance (see 3.5 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.

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★ U. S. GOVERNMENT PRINTING OFFICE: 1969-349-904

Device types	01	
Case outlines	C	2
Terminal number	Terminal symbol	
1	IN-	NC
2	IN+	IN-
3	Offset adjust	IN+
4	Offset adjust	Offset adjust
5	V-	NC
6	NC	Offset adjust
7	Output	NC
8	NC	V-
9	V+	NC
10	NC	Output
11	Hold capacitor	NC
12	NC	NC
13	GND	V+
14	Sample/hold	NC
15		NC
16		Hold capacitor
17		NC
18		NC
19		GND
20		Sample/hold

FIGURE 1. Terminal connections.

**STANDARDIZED
MILITARY DRAWING**

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
A

80016

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B

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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 5, 6, 9, 10, and 11 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, C, or D using the circuit submitted with the certificate of compliance (see 3.5 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.

TABLE II. Electrical test requirements.

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

* PDA applies to subgroup 1.

** Subgroup 8 guaranteed if not tested 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.

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

6.4 Approved source of supply. An approved source of supply is listed herein. Additional sources will be added as they become available. The vendor listed herein has agreed to this drawing and a certificate of compliance (see 3.5) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
8001601CX	34371	HA1-2420/883
80016012X	34371	HA4-2420/883

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

34371

Vendor name
and address

Harris Semiconductor
P. O. Box 883
Melbourne, FL 32901

STANDARDIZED MILITARY DRAWING

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
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80016

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B

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★ U. S. GOVERNMENT PRINTING OFFICE: 1968-549-904