REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Change to military drawing format. Change from a suggested source drawing to an approved source drawing. Add CAGE 34335 and device type 02. Add case outline letters K, L, X, and 3. Change drawing CAGE to 67268.	15 Jan. 1988	

CURRENT CAGE CODE 67268

REV																														
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REV STATUS OF PAGES	REV	A	A	A	A	A	A	A	A	A	A	A	A	A																
	PAGES	1	2	3	4	5	6	7	8	9	10	11	12	13																

Defense Electronics Supply Center
Dayton, Ohio

PREPARED BY: Rick C. Officer
CHECKED BY: Charles Reusing
APPROVED BY: Mike Lyle

Original date of drawing:
13 August 1979

AMSC N/A

SIZE: A
CAGE CODE (CENT. NO.): 14933
REV: A

MILITARY DRAWING

This drawing is available for use by all Departments and Agencies of the Department of Defense

TITLE: MICROCIRCUITS, DIGITAL, 8192 BIT, SWITCHABLE SCHOTTKY, BIPOLAR PROM, WITH TRI-STATE OUTPUT, MONOLITHIC SILICON

DWG NO. 79024

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5962-E598

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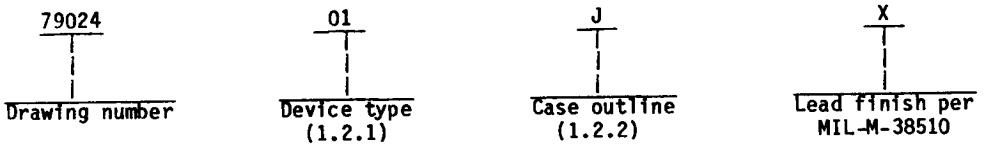
DESC FORM 193
MAY 86

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	Access time
01	(see 6.4)	1K x 8-Bit power switched bipolar PROM	90 ns
02	(see 6.4)	1K x 8-Bit power switched bipolar PROM	75 ns

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
J	D-3 (24-lead, 0.600" row spacing), dual-in-line package
K	F-6 (24-lead, 0.640" x 0.420" x 0.090", max), flat package
L	D-9 (24-lead, 0.300" row spacing), dual-in-line package
X	C-12 (32-lead, 0.560" x 0.458" x 0.120", max), rectangular chip carrier package
3	C-4 (28-lead, 0.460" sq x 0.100", max), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V dc to +7 V dc
Address/Enable input voltages	-0.5 V to +5.5 V dc
Address/Enable input current	-30 mA dc to +5.5 mA dc
Storage temperature range	-65°C to +150°C
Lead temperature (soldering 10 seconds)	+300°C
Thermal resistance, junction-to-case (θ_{JC}):	
Cases J, K, L, X, and 3	See MIL-M-38510, appendix C

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	4.5 V dc to 5.5 V dc
Case operating temperature (T_C)	-55°C to +125°C

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 Truth tables.

3.2.2.1 Unprogrammed devices. Testing to the applicable truth table, or alternate testing as specified in 4.3.1d, shall be used for unprogrammed devices for contracts involving no altered item drawing. When testing is required per 4.3 herein, the devices shall be programmed by the manufacturer prior to test in a checkerboard pattern (a minimum of 50 percent of the total number of bits programmed) or to any altered item drawing pattern which includes at least 25 percent of the total number of bits programmed.

3.2.2.2 Programmed devices. The truth table programmed devices shall be as specified by an altered item drawing.

3.2.3 Logic diagram. The logic diagram shall be as specified on figure 2.

3.2.4 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 recommended case operating temperature range.

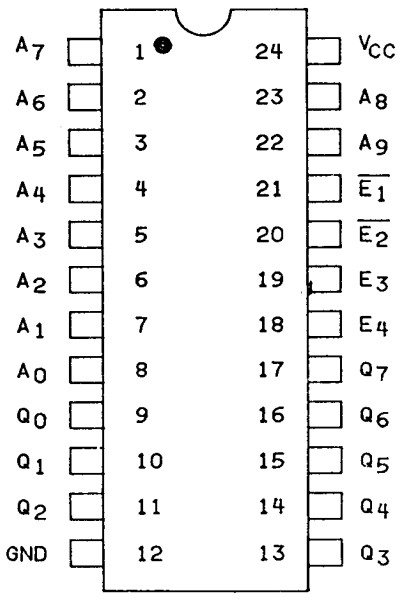
3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein.

TABLE I. Electrical performance characteristics.

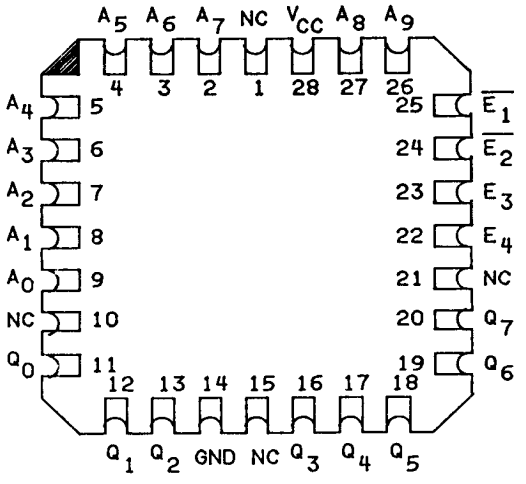
Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ $4.5\ V \le V_{CC} \le 5.5\ V$ unless otherwise specified	Device type	Group A subgroups	Limits Min	Limits Max	Unit
High level output voltage	V_{OH}	V_{CC} = 4.5 V dc; I_{OH} = -2 mA V_{IL} = 0.8 V, V_{IH} = 2.0 V	All	1, 2, 3	2.4	---	V
Low level output voltage	V_{OL}	V_{CC} = 4.5 V dc; I_{OL} = 16 mA V_{IL} = 0.8 V, V_{IH} = 2.0 V	All	1, 2, 3	---	0.5	V
Low level input voltage	V_{IL}	V_{CC} = 5.5 V dc	All	1, 2. 3	---	0.8	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V dc; I_{IN} = -18 mA T_A = 25°C	All	1, 2. 3	---	0.8	V
Input threshold voltage	V_{IH}	V_{CC} = 4.5 V dc	All	1, 2. 3	2.0	---	V
Address/enable input	I_{IH} I_{IL}	V_{IH} = 5.5 V dc V_{IN} = 0.45 V dc	All	1, 2, 3	--- ---	+40 -250	µA µA
Short circuit output current 1/ 2/	I_{OS}	V_{OUT} = 0.2 V	All	1, 2, 3	-12	-100	mA
Output disable current	I_{OHE} I_{OLE}	V_{CC} = 5.5 V dc; V_{OUT} = 2.4 V dc V_{OL} = 0.45 V dc; V_{OUT} = 5.5 V dc 2/	All	1, 2, 3	--- ---	+40 -40	µA µA
Supply current	I_{CC}	V_{CC} = 5.5 V dc Disabled All inputs grounded Enabled	All	1, 2, 3	--- ---	80 185	mA
Input capacitace	C_{IN}	V_{IN} = 2.0 V dc; f = 1 MHz T_A = 25°C	All	4	---	8	pF
Address access time	tAVQV	See figures 3, 4	01 02	9,10,11	---	90 75	ns
Chip power-down delay to tri-state	tGVQZ	See figures 3, 4	All	9,10,11	---	50	ns
Chip power-up access time	tGVQV	See figures 3, 4	01 02	9,10,11	--- ---	115 225	ns

1/ Not more than one output should be shorted at a time for a maximum duration of one second.
2/ Device is in the three state.

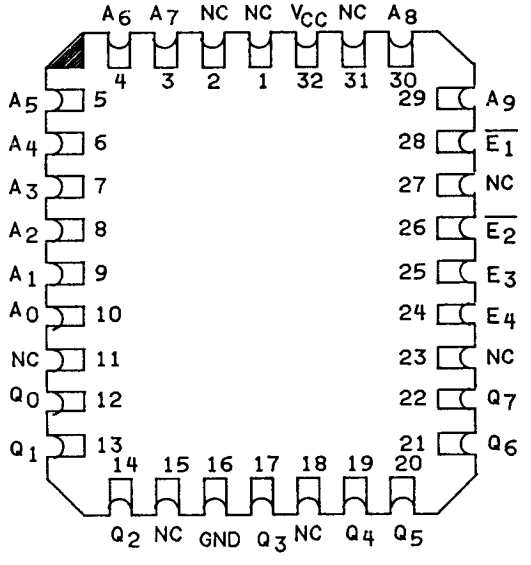
Cases J, K, L



Case 3



Case X



NOTES:
1. Pins A_0 to A_9 are address inputs.
2. Pins Q_0 to Q_7 are address outputs.
3. Pins $\overline{E}_1$, $\overline{E}_2$, E_3, and E_4 are power-down inputs.

FIGURE 1. Terminal connections - top view.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		79024
		REVISION LEVEL A	SHEET 5

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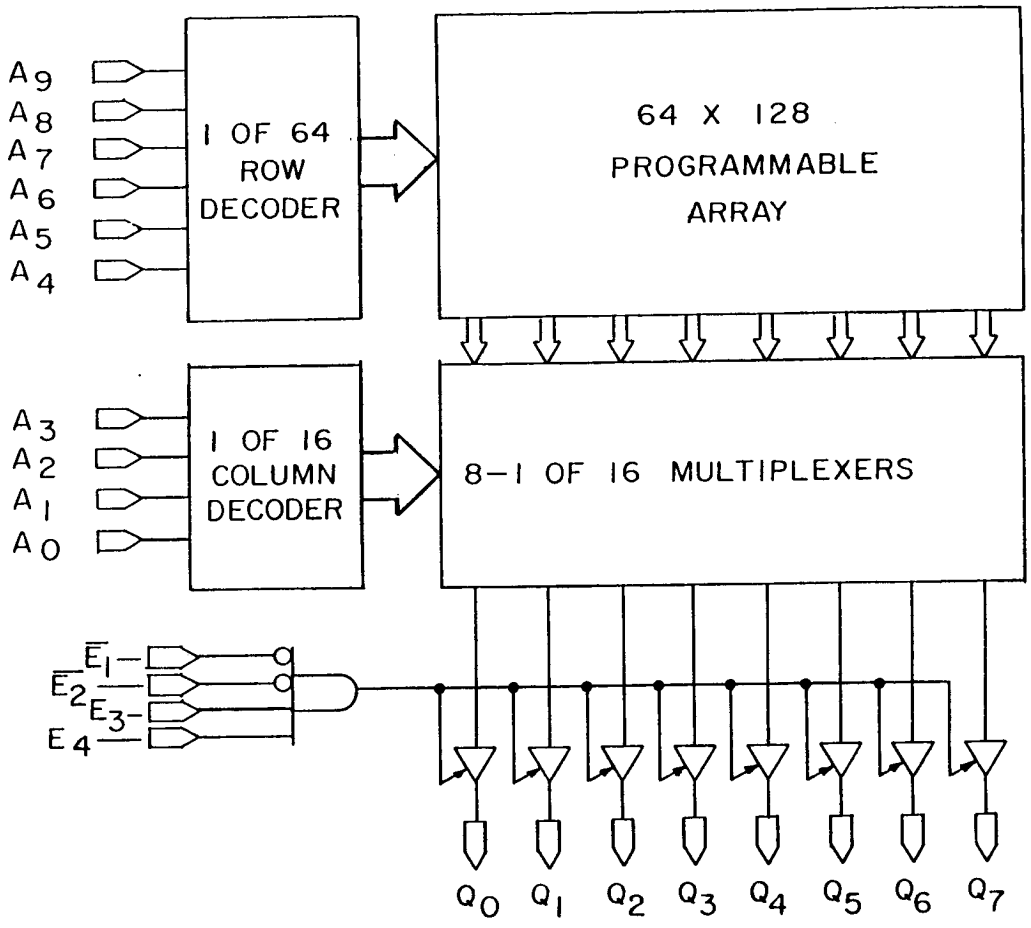

FIGURE 2. Logic diagram.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		79024
		REVISION LEVEL A	SHEET 6

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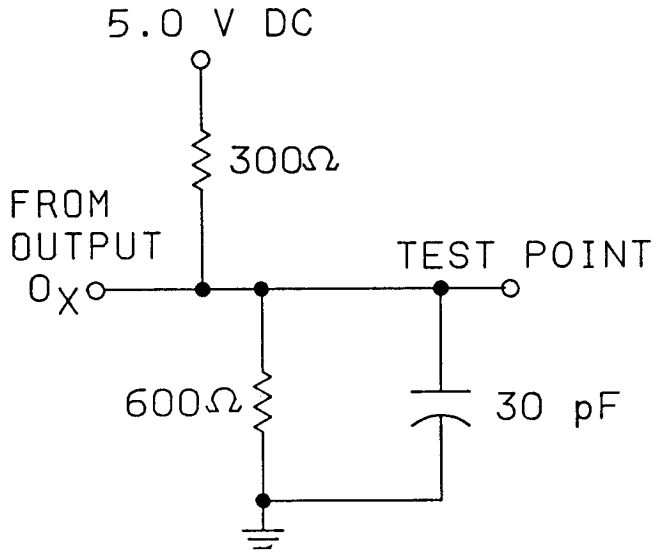

Device type 01

NOTES:
1. The tolerance for all load components is ±5 percent.
2. The load capacitance includes the test jig and probe capacitances.
3. All device test loads should be located within 2 inches of device output pin.
4. Use this circuit or equivalent to test the outputs.

FIGURE 3. AC test load circuit.

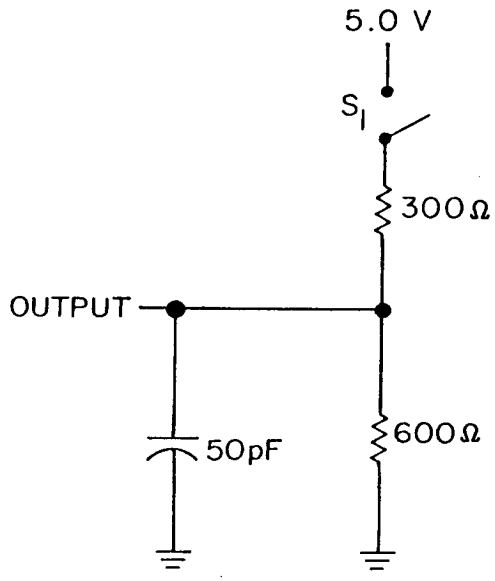

Diagram 1. Output load for all switching tests except TGVQZ

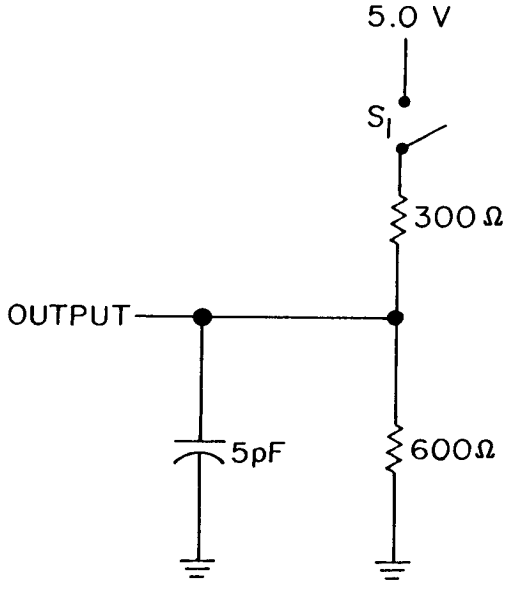

Diagram 2. Output load for TGVQZ

Device type 02

NOTES:
1. All device test loads should be located within 2" of device output pin.
2. S_1 is open for output data high to Hi-Z and Hi-Z to output data high tests. S_1 is closed for all other switching tests.
3. Load capacitance includes all stray and fixture capacitance.

FIGURE 3. AC test load circuits - Continued.

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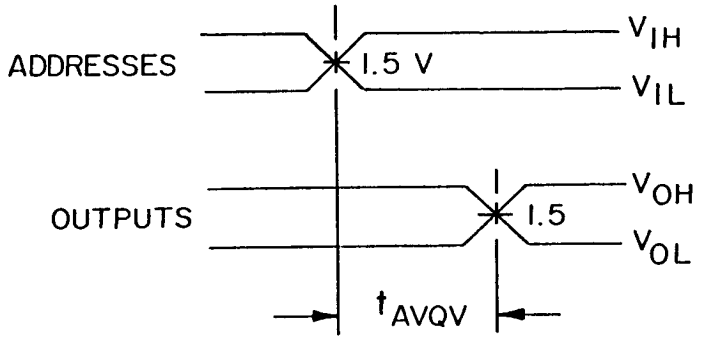

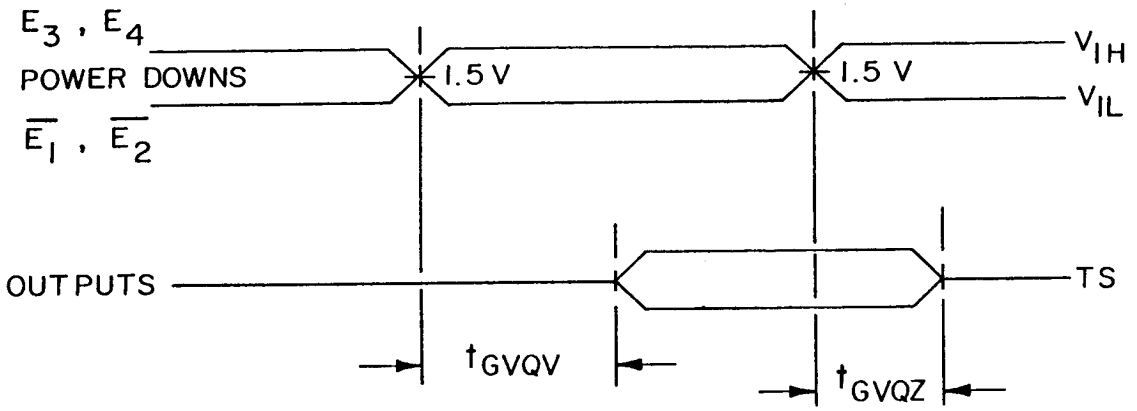

FIGURE 4. Switching time definitions.

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).

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

(2) T_A = +125°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 5 and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

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

d. Unprogrammed devices shall be tested for programmability and ac performance compliance to the requirements of group A, subgroups 9, 10, and 11. Either of two techniques is acceptable:

(1) Testing the entire lot using additional built-in test circuitry which allows the manufacturer to verify programmability and ac performance without programming the user array. If this is done, the resulting test pattern shall be verified on all devices during subgroups 9, 10, 11, group A testing in accordance with the sampling plan specified in MIL-STD-883, method 5005.

(2) If such compliance cannot be tested on an unprogrammed device, a sample shall be selected to satisfy programmability requirements prior to performing subgroups 9, 10, and 11. Twelve devices shall be submitted to programming (see 3.2.2.1). If more than two devices fail to program, the lot shall be rejected. At the manufacturer's option, the sample may be increased to 24 total devices with no more than four total device failures allowable. Ten devices form the programmability sample shall be submitted to the requirements of group A, subgroup 9, 10, and 11. If more than two devices fail, the lot shall be rejected. At the manufacturer's option, the sample may be increased to 20 total devices with no more than four total device failures allowable.

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*,2,3,9
Group A test requirements (method 5005)	1,2,3,7,8,9 10,11
Groups C and D end-point electrical parameters (method 5005)	1, 2, 3

*PDA applies to subgroup 1.

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 (method 1005 of MIL-STD-883) conditions:

(1) Test condition C, D, or E using the circuit submitted with the certificate of compliance (see 3.5 herein).

(2) T_A = +125°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-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 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 herein) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number 1/	Replacement military specification part number
7902401JX	07933	29633DMB	
	2/	HM-7681P-8	
7902402JX	34335	AM27PS181/BJA	
7902402KX	34335	AM27PS181/BKA	
79024023X	34335	AM27PS181/B3A	
7902402XX	34335	AM27PS181/BUA	
7902402LX	34335	AM27PS181/BLA	

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

2/ Not available from an approved source of supply.

Vendor CAGE number	Vendor name and address
34335	Advanced Micro Devices, Incorporated 901 Thompson Place P.O. Box 3453 Sunnyvale, CA 94088
07933	Raytheon Company Semiconductor Divison 350 Ellis Street Mountain View, CA 94040