

REVISIONS

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Boilerplate update and part of five-year review. tcr	08-01-04	Robert M. Heber
B	Update drawing to meet current MIL-PRF-38535 requirements. - glg	16-05-12	Charles Saffle

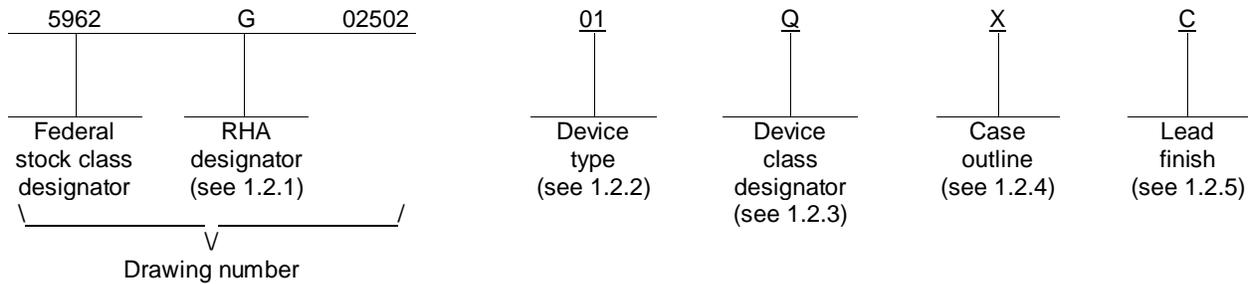


REV																					
SHEET																					
REV	B	B																			
SHEET	15	16																			
REV STATUS OF SHEETS	REV			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
	SHEET			1	2	3	4	5	6	7	8	9	10	11	12	13	14				
PMIC N/A	PREPARED BY Kenneth Rice					<p style="text-align: center;">DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990 http://www.landandmaritime.dla.mil</p> <p style="text-align: center;">MICROCIRCUIT, MEMORY, DIGITAL, CMOS, RADIATION-HARDENED, 3.3 V, 32K X 8-BIT PROM, MONOLITHIC SILICON</p>															
<p style="text-align: center;">STANDARD MICROCIRCUIT DRAWING</p> <p style="text-align: center;">THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE</p> <p style="text-align: center;">AMSC N/A</p>	CHECKED BY Raj Pithadia																				
	APPROVED BY Raymond Monnin																				
	DRAWING APPROVAL DATE 01 OCT 29																				
	REVISION LEVEL B					SIZE A	CAGE CODE 67268	5962-02502													
						SHEET 1 OF 16															

1. SCOPE

1.1 Scope. This drawing documents two product assurance class levels consisting of high reliability (device class Q) 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 example:



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. A dash (-) indicates a non-RHA device.

1.2.2 Device type(s). The device type(s) identify the circuit function as follows:

<u>Device type</u>	<u>Generic number 1/</u>	<u>Circuit function</u>	<u>Access time</u>
01	LMP2568T3V	3.3 V 32K X 8-bit Radiation hardened PROM	100 ns

1.2.3 Device class designator. The device class designator is a single letter identifying the product assurance level as follows:

<u>Device class</u>	<u>Device requirements documentation</u>
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	CDFP3-F28	28	Flat Pack

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.

^{1/} Generic numbers are listed on the Standard Microcircuit Drawing Source Approval Bulletin at the end of this document and will also be listed in QML-38535 and MIL-HDBK-103 (see 6.6.2 herein).

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1.3 Absolute maximum ratings. 2/

Supply voltage range-0.5 V dc to +7.0 V dc
 Voltage on any pin with respect to ground-0.5 V dc to V_{DD} +0.5 V dc
 Maximum power dissipation (P_D)1.5 W
 Lead temperature (soldering, 5 seconds maximum)+250°C
 Thermal resistance, junction-to-case (θ_{JC})3.7°C/W
 Junction temperature (T_J).....+175°C
 Storage temperature range-65°C to +150°C
 Temperature under bias.....-55°C to +125°C

1.4 Recommended operating conditions.

Supply voltage (V_{DD})+3.14 V dc to +3.46 V dc
 Ground voltage (GND)0.0 V dc
 Input high voltage (V_{IH}).....+2.2 V dc minimum to V_{DD}
 Input Low voltage (V_{IL})0.0 V dc to +0.8 V dc maximum
 Case operating temperature range (T_C)-55°C to +125°C

1.5 Radiation features.

Maximum total dose available (dose rate = 50-300 rad/s) .. 500 KRads
 Single event phenomenon (SEP) effective
 linear energy threshold (LET) with no upsets≥ 120 MEV-cm²/mg
 Neutron irradiation1 x 10¹⁴ neutrons/cm² 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard Microcircuits.
 MIL-STD-1835 - Interface Standard For Microcircuit Case Outlines.

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-103 - List of Standard Microcircuit Drawings (SMD's).
 MIL-HDBK-780 - Standard Microcircuit Drawings.

(Copies of these documents are available online at <http://quicksearch.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2/ 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.

3/ Guaranteed, but not tested

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2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are the issues of the documents cited in the solicitation.

JEDEC – SOLID STATE TECHNOLOGY ASSOCIATION (JEDEC)

JESD 78 - IC Latch-Up Test.

(Copies of these documents are available online at <http://www.jedec.org> or from JEDEC – Solid State Technology Association, 3103 North 10th Street, Suite 240-S, Arlington, VA 22201-2107.)

ASTM INTERNATIONAL (ASTM)

ASTM Standard F1192 - Standard Guide for the Measurement of Single Event Phenomena from Heavy Ion Irradiation of Semiconductor Devices.

(Applications for copies of ASTM publications should be addressed to: ASTM International, PO Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; <http://www.astm.org>.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 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.

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.

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).

3.2.3.1 Unprogrammed devices. The truth table for unprogrammed devices for contracts involving no altered item drawing shall be as specified on figure 2. When required in screening (see 4.2 herein) or conformance inspection, groups A, B, or C (see 4.4), the devices shall be programmed by the manufacturer prior to test. A minimum of 50 percent of the total number of cells shall be programmed or at least 25 percent of the total number of cells to any altered item drawing

3.2.3.2 Programmed devices. The truth table or test vectors for programmed devices shall be as specified by an attached altered item drawing.

3.2.4 Switching test circuit and waveforms. The switching test circuit and waveforms diagram shall be as specified on figure 3.

3.2.5 Radiation exposure circuit. The radiation test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing and acquiring activity upon request.

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 case operating temperature range.

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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. 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.

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.

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). The certificate of compliance submitted to DLA Land and Maritime-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.

3.7 Certificate of conformance. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Processing options. Since the device is capable of being programmed by either the manufacturer or the user to result in a wide variety of configurations; two processing options are provided for selection in the contract, using an altered item drawing.

3.8.1 Unprogrammed device delivered to the user. All testing shall be verified through group A testing as defined in 4.4.1 and table IIA. It is recommended that users perform subgroups 7 and 9 after programming to verify the specific program configuration.

3.8.2 Manufacturer-programmed device delivered to the user. All testing requirements and quality assurance provisions herein, including the requirements of the altered item drawing, shall be satisfied by the manufacturer prior to delivery.

4. VERIFICATION

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.

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.

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4.2.1 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 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.

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.

4.4.1 Group A inspection.

- a. Tests shall be as specified in table IIA herein.
- b. Subgroups 5 and 6 of table I of method 5005 of MIL-STD-883 shall be omitted.
- c. Subgroup 4 (C_{IN} and $C_{I/O}$ measurements) shall be measured only for initial qualification and after any process or design changes, which may affect input or output capacitance. Capacitance shall be measured between the designated terminal and GND at a frequency less than 1 MHz. Sample size is 15 devices with no failures on a minimum of ten worst case pins from each device.
- d. O/V (latch-up) tests shall be measured only for initial qualification and after any design or process changes which may affect the performance of the device. For device classes Q and V, the procedures and circuits shall be under the control of the device manufacturer's technical review board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the preparing activity or acquiring activity upon request. Testing shall be on all pins, on a minimum of five devices with zero failures. Latch-up test shall be considered destructive. Information contained in JESD78 may be used for reference.
- e. 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 that allows the manufacturer to verify programmability and ac performance without programming the user array. If this is done, the resulting test patterns shall be verified on all devices during subgroups 9, 10, and 11, group A testing in accordance with the sampling plan specified in MIL-STD-883, method 5005.

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(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 3.2.3.2). 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 4 total device failures allowable. Ten devices from the programmability sample shall be submitted to the requirements of group A, subgroups 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 4 total device failures allowable.

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 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 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). RHA levels for device classes Q and V shall be as specified in MIL-PRF-38535. End-point electrical parameters shall be as specified in table IIA herein.

4.4.4.1 Total dose irradiation testing. Total dose irradiation testing shall be performed in accordance with MIL-STD-883 method 1019, condition A, and as specified herein.

4.4.4.1.1 Accelerated aging test. Accelerated aging tests shall be performed on all devices requiring a RHA level greater than 5k rads(Si). The post-anneal end-point electrical parameter limits shall be as specified in table I herein and shall be the pre-irradiation end-point electrical parameter limit at 25°C ±5°C. Testing shall be performed at initial qualification and after any design or process changes which may affect the RHA response of the device.

4.4.4.2 Dose rate induced latchup testing. Dose rate induced latchup testing shall be performed in accordance with method 1020 of MIL-STD-883 and as specified herein. Tests shall be performed on devices, SEC, or approved test structures at technology qualification and after any design or process changes which may effect the RHA capability of the process.

4.4.4.3 Dose rate upset testing. Dose rate upset testing shall be performed in accordance with method 1021 of MIL-STD-883 and herein.

a. Transient dose rate upset testing for class Q and V devices shall be performed as specified by a TRB approved radiation hardness assurance plan and MIL-PRF-38535.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _c ≤ +125°C 3.14 V ≤ V _{DD} ≤ 3.46 V unless otherwise specified	Group A subgroups	Device type	Limits		Unit	
					Min	Max		
Output low voltage (CMOS)	V _{OL1}	V _{DD} = 3.14 V, I _{OL} = 200 μA	1, 2, 3	All		V _{SS} +0.1	V	
			M - G	1 1/		2/		
Output low voltage (CMOS)	V _{OL2}	V _{DD} = 3.14V, I _{OL} = 4.0mA	1, 2, 3	All		V _{SS} + .4	V	
			M - G	1 1/		2/		
Output high voltage (CMOS)	V _{OH1}	V _{DD} = 3.14V, I _{OH} = -200μA	1, 2, 3	All	V _{DD} -0.1		V	
	V _{OH2}		I _{OH} = -2.0mA		1, 2, 3	2.4		
			M - G		1 1/			2/
Low-level input voltage (TTL)	V _{IL}		1, 2, 3	All		0.8	V	
			M - G	1 1/		2/		
High-level input voltage (TTL)	V _{IH}		1, 2, 3	All	2.2		V	
			M - G	1 1/		2/		
Input leakage current	I _{LI}	V _{IN} = V _{DD}	1, 2, 3	All	-5	5	μA	
			M - G	1 1/		2/		2/
Three-state output leakage current	I _{LO}	V _{DD} = 3.46 V, \overline{OE} = 3.46 V, V _{OUT} = 0 V to V _{DD}	1, 2, 3	All	-10	10	μA	
			M - G	1 1/		2/		2/
Short-circuit output current 3/ 4/	I _{OS}	V _O = V _{DD} , V _{DD} = 3.46 V	1, 2, 3	All		90	mA	
		V _{DD} = 3.6 V, V _O = 0V				-90		

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C 3.14 V ≤ V _{DD} ≤ 3.46 V unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Operating supply current <u>5/</u>	I _{DDOP1}	CMOS inputs (I _{OUT} = 0), V _{IL} = 0.8V, V _{IH} = 3.14 V f = f maximum	1, 2, 3	All		150	mA
			M - G	1 <u>1/</u>		<u>2/</u>	
Standby supply current	I _{DDSB}	CMOS inputs (I _{OUT} = 0), $\overline{CE} = V_{PP} = V_{IH} = V_{DD} = 3.46V$, V _{IL} = V _{SS} +0.25V V _{IH} = V _{DD} -0.25 V	1, 2, 3	All		2.0	mA
			M - G	1 <u>1/</u>		<u>2/</u>	
Input capacitance <u>5/</u>	C _{IN}	V _{IN} = 0 V, V _{DD} = 3.3V, f = 1MHz, T _A = 25°C, see 4.4.1c	4	All		7	pF
Bidirectional input/ output capacitance <u>5/</u> <u>6/</u>	C _{I/O}	V _{OUT} = 0 V, V _{DD} = 3.3 V, f = 1MHz, T _A = 25°C, see 4.4.1c	4	All		10	pF
Functional testing		See 4.4.1e,	7, 8A, 8B	All			
			M - G	7 <u>1/</u>		<u>2/</u>	
Read cycle time <u>6/</u>	t _{AVAV}	See figure 4 <u>7/</u> <u>8/</u>	7, 8A, 8B	All	100		ns
			M - G	7 <u>1/</u>		<u>2/</u>	
Read access time	t _{AVQV}		9, 10, 11	All		100	ns
			M - G	9 <u>1/</u>		<u>2/</u>	
\overline{CE} access time	t _{ELQV}		9, 10, 11	All		100	ns
			M - G	9 <u>1/</u>		<u>2/</u>	
\overline{OE} access time	t _{GLQV}		9, 10, 11	All		100	ns
			M - G	9 <u>1/</u>		<u>2/</u>	
Output hold time	t _{AXQX}		9, 10, 11	All	0		ns
			M - G	9 <u>1/</u>		<u>2/</u>	
\overline{OE} controlled output enable time	t _{GLQX}		9, 10, 11	All	0		ns
			M - G	9 <u>1/</u>		<u>2/</u>	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C 3.14 V ≤ V _{DD} ≤ 3.46 V unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
$\overline{\text{OE}}$ controlled output three-state time	t _{GHQZ}	See figure 4 <u>7/</u> <u>8/</u>	9, 10, 11	All		15	ns
			M - G		9 <u>1/</u>		<u>2/</u>
$\overline{\text{CE}}$ controlled output enable time	t _{ELQX}		9, 10, 11	All	0		ns
			M - G		9 <u>1/</u>	<u>2/</u>	
$\overline{\text{CE}}$ controlled output three-state time	t _{EHQZ}		9, 10, 11	All		15	ns
			M - G		9 <u>1/</u>		<u>2/</u>

1/ When performing postirradiation electrical measurements for any RHA level T_A = +25°C. Limits shown are guaranteed at T_A = +25°C. The (M - G); M, D, P, L, R, F, and G in the test condition column are the postirradiation limits for the device types specified in the device types column.

2/ Preirradiation values for RHA marked devices shall also be the postirradiation values, unless otherwise specified.

3/ Supplied as a design limit but not guaranteed or tested.

4/ Not more than one output may be shorted at a time for maximum duration of one second.

5/ Measured only for initial qualification and after process or design changes that could affect input/output capacitance.

6/ Functional test.

7/ Test conditions assume input rise and fall time of ≤ 2 ns/V, timing reference levels of V_{DD}/2, input pulse levels of 0 V to V_{DD}, and output loading of the specified I_{OL}/I_{OH} and 50 pF load capacitance.

8/ AC conditions use V_{OL} = 1.23 V, V_{OH} = 2.23 V.

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Device types	ALL
Case outlines	X
Terminal number	Terminal symbol
1	A14
2	A12
3	A7
4	A6
5	A5
6	A4
7	A3
8	A2
9	A1
10	A0
11	DQ0
12	DQ1
13	DQ2
14	GND
15	DQ3
16	DQ4
17	DQ5
18	DQ6
19	DQ7
20	\overline{CE}
21	A10
22	\overline{OE}
23	A11
24	A9
25	A8
26	A13
27	V _{PP}
28	V _{DD}

FIGURE 1. Terminal connections.

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Read modes

\overline{OE}	V _{PP}	\overline{CE}	I/O Mode	Mode
X <u>1/</u>	1	1	Three-state	Standby
0	1	0	Data out	Read
1	<u>3/</u>	0	Data in	Program
1	1	0	Three-state	Read <u>2/</u>

NOTES:

1/ X can be 1 or 0.

2/ Device active; outputs disabled.

3/ During programming, V_{DD} = +5.0 V and V_{PP} = + 17.0 V ±0.5 V

FIGURE 2. Truth table.

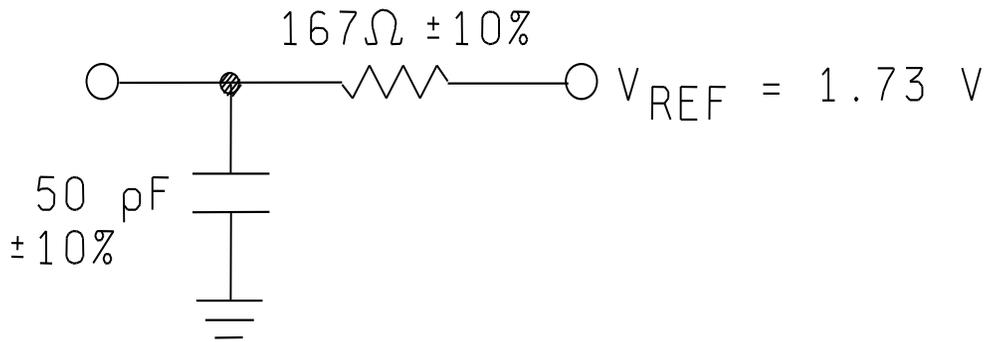


FIGURE 3. Output load circuit or equivalent.

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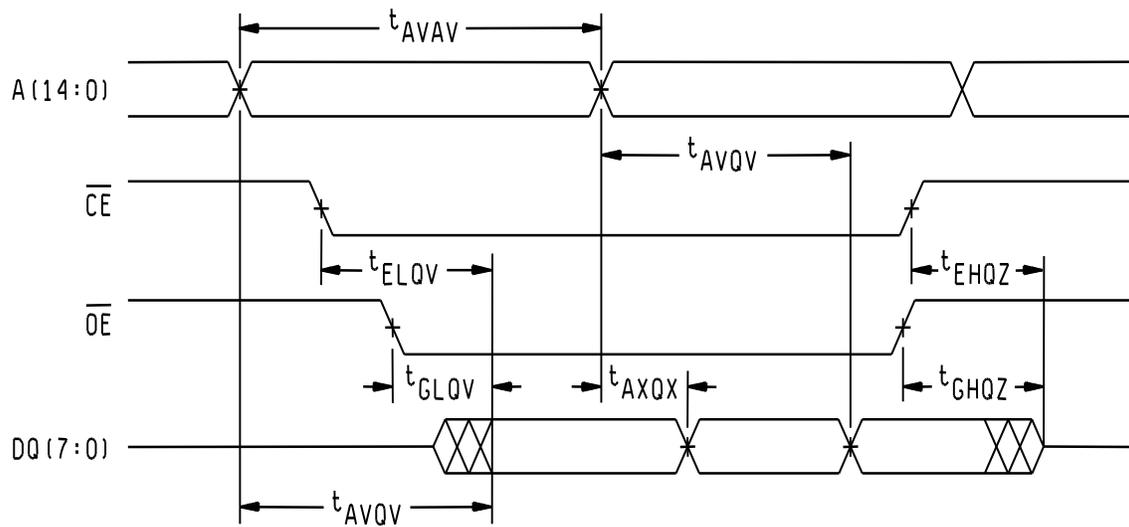


FIGURE 4. Read cycle waveform.

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TABLE IIA. Electrical test requirements. 1/ 2/ 3/ 4/ 5/ 6/ 7/

Line no.	Test requirements	Subgroups (in accordance with MIL-PRF-38535, table III)	
		Device class Q	Device class V
1	Interim electrical parameters (see 4.2)	1, 7, 9	1, 7, 9
2	Static burn-in (method 1015)	Not required	Not required
3	Same as line 1		1*, 7* Δ
4	Dynamic burn-in (method 1015)	Required	Required
5	Same as line 1		1*, 7* Δ
6	Final electrical parameters (see 4.2)	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11
7	Group A test requirements (see 4.4)	1, 2, 3, 4**, 7, 8A, 8B, 9, 10, 11	1, 2, 3, 4**, 7, 8A, 8B, 9, 10, 11
8	Group C end-point electrical parameters (see 4.4)	1, 2, 3, 7, 8A, 8B	1, 2, 3, 7, 8A, 8B, 9, 10, 11 Δ
9	Group D end-point electrical parameters (see 4.4)	1, 7, 9	1, 7, 9
10	Group E end-point electrical parameters (see 4.4)	1, 7, 9	1, 7, 9

1/ Blank spaces indicate tests are not applicable.

2/ Any or all subgroups may be combined when using high-speed testers.

3/ Subgroups 7, 8A, and 8B functional tests shall verify the truth table.

4/ * indicates PDA applies to subgroup 1 and 7.

5/ ** see 4.4.1c.

6/ Δ indicates delta limit (see table IIB) shall be required where specified, and the delta values shall be computed with reference to the zero hour electrical parameters (see line 1).

7/ See 4.4.1d.

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TABLE IIB. Delta limits at +25°C.

Parameter <u>1/</u>	Device types
	All
I _{DDSB}	± 10% of specified value in table I

1/ The above parameter shall be recorded before and after the required burn-in and life tests to determine the delta (Δ).

4.4.4.4 Single event phenomena (SEP). SEP testing shall be required on class V devices (see 1.5 herein). SEP testing shall be performed on a technology process on the Standard Evaluation Circuit (SEC) or alternate SEP test vehicle as approved by the qualifying activity at initial qualification and after any design or process changes which may affect the upset or latchup characteristics. The recommended test conditions for SEP are as follows:

- a. The ion beam angle of incidence shall be between normal to the die surface and 60° to the normal, inclusive (i.e. $0^\circ \leq \text{angle} \leq 60^\circ$). No shadowing of the ion beam due to fixturing or package related effects is allowed.
- b. The fluence shall be ≥ 100 errors or $\geq 10^6$ ions/cm².
- c. The flux shall be between 10^2 and 10^5 ions/cm²/s. The cross-section shall be verified to be flux independent by measuring the cross-section at two flux rates which differ by at least an order of magnitude.
- d. The particle range shall be ≥ 20 microns in silicon.
- e. The test temperature shall be +25 °C and the maximum rated operating temperature $\pm 10^\circ\text{C}$.
- f. Bias conditions, shall be defined by the manufacturer for latchup measurements.
- g. Test four devices with zero failures.

4.5 Delta measurements for device class V. Delta measurements, as specified in table IIA, shall be made and recorded before and after the required burn-in screens and steady-state life tests to determine delta compliance. The electrical parameters to be measured, with associated delta limits are listed in table IIB. The device manufacturer may, at his option, either perform delta measurements or within 24 hours after burn-in perform final electrical parameter tests, subgroups 1, 7, and 9.

4.6 Programming procedures. The programming procedures shall be as specified by the device manufacturer and shall be made available upon request.

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5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535 for device classes Q and V.

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 using DD Form 1692, Engineering Change Proposal.

6.3 Record of users. Military and industrial users should inform DLA Land and Maritime when a system application requires configuration control and which SMD's are applicable to that system. DLA Land and Maritime 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 DLA Land and Maritime-VA, telephone (614) 692-8108.

6.4 Comments. Comments on this drawing should be directed to DLA Land and Maritime-VA, Columbus, Ohio 43218-3990, or telephone (614) 692-0540.

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

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 and MIL-HDBK-103. The vendors listed in QML-38535 and MIL-HDBK-103 have submitted a certificate of compliance (see 3.6 herein) to DLA Land and Maritime-VA and have agreed to this drawing.

6.7 Additional information. When applicable, a copy of the following additional data shall be maintained and available from the device manufacturer:

- a. RHA upset levels.
- b. Test conditions (SEP).
- c. Number of upsets (SEP).
- d. Number of transients (SEP).
- e. Occurrence of latchup (SEP).

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DATE: 16-05-12

Approved sources of supply for SMD 5962-02502 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 DLA Land and Maritime-VA. This information bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535. DLA Land and Maritime maintains an online database of all current sources of supply at <http://www.landandmaritime.dla.mil/Programs/Smcr/>.

Standard microcircuit drawing PIN <u>1/</u>	Vendor CAGE number	Vendor similar PIN <u>2/</u>
5962G0250201QXC	1RU44	LMP2568T3V-Q10X
5962G0250201VXC	1RU44	LMP2568T3V-V10X

- 1/ The lead finish shown for each PIN representing a hermetic package is the most readily available from the manufacturer listed for that part. If the desired lead finish is not listed, contact the Vendor to determine its availability.
- 2/ 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

1RU44

Vendor name and address

BAE Systems
9300 Wellington Road.
Manassas, VA 20110-4122

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