

The documentation and process conversion measures necessary to comply with this revision shall be completed by: 14 September 2023.

INCH-POUND

MIL-M-38510/245B
w/AMENDMENT 1
14 June 2023

SUPERSEDING
MIL-M-38510/245B
13 March 2006

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, CMOS, 4096 BIT, STATIC RANDOM ACCESS MEMORY (SRAM), BULK SILICON AND SILICON ON SAPPHIRE

Inactive for new design after 24 July 1995.

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF-38535.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for bulk silicon and silicon on sapphire (SOS), static, 4096 bit, random access memory microcircuits. Two product assurance classes, four radiation hardness assurance levels, and a choice of case outlines and lead finishes are provided and are reflected in the part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.4).

1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as follows:

<u>Device type</u>	<u>Circuit</u>	<u>Access times</u>
01 (bulk silicon)	4096x1 bit RAM	120 ns
02 (bulk silicon)	1024x4 bit RAM	120 ns
03 (synchronous; bulk silicon)	4096x1 bit RAM	320 ns
04 (synchronous; bulk silicon)	1024x4 bit RAM	320 ns
05 (asynchronous; SOS)	4096x1 bit RAM	250 ns
06 (asynchronous; SOS)	1024x4 bit RAM	250 ns

1.2.2 Device class. The device class is the product assurance level as defined in MIL-PRF-38535.

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, ATTN: VAS, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to Memory@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database <https://assist.dla.mil>.

AMSC N/A

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1.2.3 Case outlines. The case outlines 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>
V	GDIP1-T18 or CDIP2-T18	18	Dual-in-line
K	GDFP2-F24 or CDFP3-F24	24	Flat pack

1.2.4 Radiation hardness level. Radiation hardness levels are as defined in MIL-PRF-38535.

1.3	<u>Absolute maximum ratings.</u>	<u>Device types 01, 02, 03, 04</u>	<u>Device types 05, 06</u>	
	Supply voltage range ($V_{DD} - V_{SS}$)	-0.3 to +7.0 V	-0.5 V to +7.0 V	
	Input voltage range	$V_{SS} - 0.3$ V to $V_{DD} + 0.3$ V	$V_{SS} - 0.5$ V to $V_{DD} + 0.5$ V	
	Input current, any one point		10 mA	
	Storage temperature range	-65° C to +150°C	-65° C to +150°C	
	Maximum power dissipation	200 mW	500 mW	
	MPD per output transistor		100 mW	
	Lead temperature (soldering)	300°C	300°C	
	10 seconds maximum			
	Thermal resistance	0.04°C/mW		
	junction to case			
	Junction temperature	175°C	175°C	
	Radiation level	As indicated by RHA level designator		
1.4	<u>Recommended operating conditions.</u>	<u>Device types 01, 02, 04</u>	<u>Device types 03</u>	<u>Device types 05, 06</u>
	Supply voltage ($V_{DD} - V_{SS}$)	4.5 V to 5.5 V	4.5 V to 5.5 V	4.75 V to 5.25 V
	Input low (V_{IL}) voltage range	$V_{SS} - 0.3$ V to $V_{SS} + 0.8$ V	$V_{SS} - 0.3$ V to $V_{SS} + 0.8$ V	$V_{SS} + 0.8$ V maximum
	Input high (V_{IH}) voltage range	$V_{DD} - 2.0$ V to V_{DD}	$\overline{CE}, \overline{W}$: $V_{DD} - 1.5$ V to V_{DD} Others: $V_{DD} - 2.0$ V to V_{DD}	$V_{DD}/2$ minimum
	Case operating temperature range	-55°C to +125°C	-55°C to +125°C	-55°C to +125°C
	Timing parameters	(See figure 4)	(See figure 4)	(See figure 4)

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and Standards. The following specifications and standards form a part of this specification 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 Electronic Component Case Outlines.

(Copies of these documents are available online at <https://quicksearch.dla.mil/>.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, (except for associated detail specifications, specification sheets, or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.3).

3.2 Item requirements. The individual item requirements 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.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein. At present epoxy die bonding may be performed using qualified conductive silver paste or qualified (nonepoxy) silver filled glass. All epoxies must be qualified to method 5011 to of MIL-STD-883. Laser scribing shall be allowed only for SOS technology product and only to the back side of the wafer.

3.3.1 Terminal connections. The terminal connections and logic diagrams shall be as specified on figures 1.

3.3.2 Block diagram. The block diagram shall be as specified on figures 2.

3.3.3 Switching time test circuit. The switching time test circuit shall be as specified on figure 3.

3.3.4 Truth table and timing waveforms. The truth tables and timing waveforms shall be as specified on figure 4.

3.3.5 Case outlines. The case outlines shall be as specified in 1.2.3.

3.4 Lead material and finish. The lead material and finish shall be in accordance with MIL-PRF-38535 (see 6.6).

3.5 Electrical performance characteristics. The electrical performance characteristics are as specified in table I, and apply over the full recommended case operating temperature range, unless otherwise specified.

3.5.1 Post-irradiation performance characteristics. The electrical performance characteristics of radiation hardness assured devices following exposure to the designated radiation levels are as specified in table VI and apply at an ambient temperature of +25°C.

3.6 Electrical test requirements. The electrical test requirements for each device class shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table III.

3.6.1 Functional tests. The functional tests used to test these devices are contained in the appendix. If the test patterns cannot be implemented due to test equipment limitations, then alternate test patterns to accomplish the same results shall be submitted to the qualifying activity for approval.

3.7 Marking. Marking shall be in accordance with MIL-PRF-38535.

3.7.1 Serialization. All class S devices shall be serialized in accordance with MIL-PRF-38535.

3.7.2 Correctness of indexing and marking. All devices shall be subjected to the final electrical test specified in table II after marking to verify that they are correctly indexed and identified by part number. Optionally, an approved electrical test may be devised especially for this requirement.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 41 (see MIL-PRF-38535.)

4. VERIFICATION

4.1 Sampling and inspection. 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 effect the form, fit, or function as described herein.

4.2 Screening. Screening shall be in accordance with MIL-PRF-38535 and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

- a. Delete the sequence specified in 3.1.9 through 3.1.13 of method 5004 and substitute lines 1 through 5 of table II herein.
- b. Burn-in test (method 1015 of MIL-STD-883).
 - (1) Static test (test condition A) Ambient temperature (T_A) shall be +125°C minimum. Test duration for the static test shall be 48 hours minimum for class S. The 48 hour burn-in shall be broken into two sequences of 24 hours each (static I and static II) followed by interim electrical measurements. Static II for class B is a minimum of 168 hours.
 - (2) Dynamic test (test condition D or E) Test duration and temperature shall be in accordance with method 5004 of MIL-STD-883.
- c. Interim and final electrical test parameters shall be as specified in table II (see 3.6).
- d. 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 control by 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.
- e. For Class S devices, post dynamic burn-in, or Class B devices, post dynamic burn-in, electrical parameter measurements may, at the manufacturer's option, be performed separately or included in the final electrical parameter measurements.
- f. The manufacturer's of SOS devices shall use a high temperature stress test prior to the static burn-in. Conditions shall be static, $T_A = 125^\circ\text{C}$, supply voltage at 6.5 V minimum, and a duration of 48 hours minimum for classes S and B. The stress test circuit is figure 3, static I, all ones pattern. A PDA of 5 percent shall be imposed. Devices need not be serialized prior to stress testing.
- g. At the manufacturer's option, the following visual inspection method shall be used. For class S, visual inspection is to be performed to MIL-STD-883, method 2010, condition A except as follows:
 - (1) High magnification inspection is performed at 100X to 300X.
 - (2) Condition A criteria 3.1.1.1 and 3.1.1.2 shall be replaced by condition B criteria 3.1.1.1 and 3.1.1.2 respectively, however the 75 percent of the original metal width over a passivation step requirements shall be reduced to 50 percent, and underlying oxide must also be exposed.
 - (3) Criteria 3.1.1.7 shall apply to 3 areas, two opposite corners and one area in the center of sufficient complexity to assure general alignment and contact coverage, and consist only of the area in the immediate field of view.
 - (4) Condition A criteria 3.1.3c shall be replaced by condition B criteria 3.1.3c. Cracks greater than 5 mils are rejected only if they point to or cross the scribe grid line.
 - (5) Burn in testing shall be performed at an operating voltage of 6 ± 0.5 volts, if this option is chosen.

- h. At the manufacturer's option, the class B visual inspection is to be performed to MIL-STD-883, method 2010, condition B except as follows:
 - (1) Condition B criteria 3.1.1.1 and 3.1.1.2 metallization scratches and voids, the 75 percent of the original metal width over a passivation step requirements shall be reduced to 50 percent, and underlying oxide must also be exposed.
 - (2) Condition B criteria 3.1.1.7 shall apply to 3 areas, two opposite corners and one area in the center of sufficient complexity to assure general alignment and contact coverage, and consist only of the area in the immediate field of view.
 - (3) Condition B criteria 3.1.3c. Cracks greater than 5 mils are rejected only if they point or cross the scribe grid line.
 - (4) Burn in testing shall be performed at an operating voltage of 5.5 volts for device types 01 through 04, 6.5 volts minimum for device types 05 and 06, if this option is chosen.
- i. For SOS product, diffusion fault criteria, passivation fault criteria, and oxide gate bridge inspection criteria are difficult to apply. Therefore inspect these devices for complete islands, bridging between islands, and missing adjacent contacts from a row in a contact chain.
- j. The alternate screening procedures of MIL-STD-883, method 5004, shall be permitted as approved by the qualifying activity.

4.2.1 Percent defective allowable (PDA).

- a. The class S device PDA shall be 5 percent for static burn-in and 5 percent for dynamic burn-in for all failures, with a 3 percent maximum on functional failures for either burn-in. Static burn-in failures for the split sequence shall be cumulative for determining PDA.
- b. If interim electrical parameter measurements are made to remove defective devices from the lot prior to the burn-in sequence, the number of devices that fail these measurements may be excluded from the PDA calculations for class S and B devices. Following this, pre and post burn-in electrical parameter measurements results shall be used as specified to compute PDA's.
- c. Those devices whose measured characteristics after burn-in exceed the specified delta (Δ) limits or specified electrical parameter limits are failures and shall be removed from the lot (see 3.6 and 4.5.3). The verified failures divided by the total number of devices in the lot initially submitted to burn-in shall be used to determine the percent defective for the lot and the lot shall be accepted or rejected based on the specified PDA or one device whichever is greater.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.

4.4 Technology Conformance inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table III of MIL-PRF-38535 and as follows:

- a. Tests shall be as specified in table II herein.
- b. Subgroups 5, 6, and 7 shall be omitted.
- c. Subgroup 4 (C_i measurement) shall be measured only for initial qualification and after process or design changes which may affect input capacitance. Capacitance shall be measured between the designated terminal and V_{SS} at a frequency of 1 MHz. This test shall be performed using a fixed sample size of 25 devices and an acceptance number of zero.

- d. Subgroup 12 shall be added to the group A inspection requirements using an sample size serial number = 15 and consist of the procedures, test conditions, and limits specified in table III.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II MIL-PRF-38535.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein.
- b. 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 burn-in test circuit shall be maintained under document control by 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 1005 of MIL-STD-883.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $V_{SS} = 0\text{ V}$, $V_{DD} = 5.5\text{ V}$ $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ unless otherwise specified	Device Type	Limits		Units
				Min	Max	
Low level output voltage	V_{OL}	$V_{DD} = 4.5\text{ V}$, $I_{OL} = 2\text{ mA}$	01 - 04		0.4	V
Output low drive current	I_{OL}	$V_{DD} = 4.75\text{ V}$, $V_{OUT} = 0.4\text{ V}$	05	2.5		mA
			06	1.7		
High level output voltage	V_{OH}	$V_{DD} = 4.5\text{ V}$, $V_{IN} = -1\text{ mA}$	01 - 04	2.4		V
Output high drive current	I_{OH}	$V_{DD} = 4.75\text{ V}$, $V_{IN} = 4.35\text{ V}$	05	2.0		mA
			06	1.1		
Positive clamping voltage	$V_{IC(POS)}$	$I_{IN} = 100\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	01, 02	0.1	2.0	V
		$I_{IN} = 50\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	03, 04	0.1	2.0	
		$I_{IN} = 100\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	05	0.1	3.0	
			06	0.2	3.0	
Negative clamping voltage	$V_{IC(NEG)}$	$I_{IN} = -100\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	01, 02	-0.1	-2.0	V
		$I_{IN} = -50\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	03, 04	-0.1	-2.0	
		$I_{IN} = -100\text{ }\mu\text{A}$, $T_C = +25^{\circ}\text{C}$	05	-0.1	-3.0	
			06	-0.2	-3.0	
Input leakage current	I_{IH}	$V_{DD} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	01 – 04		1.0	μA
		$V_{DD} = 5.25\text{ V}$, $V_{IN} = 5.25\text{ V}$	05, 06		10	
Input leakage current	I_{IL}	$V_{DD} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	01 – 04		-1	μA
		$V_{DD} = 5.25\text{ V}$, $V_{IN} = 0\text{ V}$	05, 06		-10	
High-impedance output leakage	I_{OHZ}	$V_{DD} = 5.5\text{ V}$, $V_{OUT} = 5.5\text{ V}$	01, 02		1.0	μA
			03, 04		10	
		$V_{DD} = 5.25\text{ V}$, $V_{OUT} = 5.25\text{ V}$	05		30	
			06		50	
High-impedance output leakage	I_{OLZ}	$V_{DD} = 5.5\text{ V}$, $V_{OUT} = \text{GND}$	01, 02		-1.0	μA
			03, 04		-10	
		$V_{DD} = 5.25\text{ V}$, $V_{OUT} = \text{GND}$	05		-30	
			06		-50	

See footnotes at end of table I.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V _{SS} = 0 V, V _{DD} = 5.5 V -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device Type	Limits		Units
				Min	Max	
Quiescent supply current	I _{DD} or I _{SS}	V _{DD} = 5.5 V	01, 02		50	μA
			03		200	
			04		250	
		V _{DD} = 5.25 V	05, 06		-1000	
Data retention supply voltage	PWRDWN	Functional test	01, 02	2.0		V
			03, 04	3.0		
			05, 06	2.5		
Operating current	I _{DDOP}	V _{DD} = 5.5 V, T _C = +25°C, f = 1 MHz	01 – 04		7	mA
		V _{DD} = 5.25 V, T _C = +25°C f = 1 MHz	05		4.5	
			06		6	
Data retention quiescent supply current	I _{CCDR}	V _{DD} = 2 V, I _{OUT} = 0 V _{IN} = rail voltages	01, 02		25	μA
		V _{DD} = 3 V, I _{OUT} = 0 V _{IN} = rail voltages	03		100	
			04		100	
		V _{DD} = 2.5 V, I _{OUT} = 0 V _{IN} = rail voltages	05		400	
			06		500	
Input capacitance	C _I	V _{DD} = 5.5 V, V _{IN} = rail voltage, f = 1 MHz	01		8	pF
			02		10	
			03 <u>1/</u>		8	
			04 <u>1/</u>		10	
			05, 06 <u>1/</u>		5	
Address access time	t _{AVQV}	See table III	01, 02		120	ns
			03, 04		320	
			05, 06		250	
Chip enable access time	t _{ELQV}		01, 02		120	ns
			03, 04		300	
			05		280	
			06		280	
Chip enable output time <u>1/</u>	t _{ELQX}		01, 02	5		ns
			03, 04	50		
			06	20		

See footnotes at end of table I.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V _{SS} = 0 V, V _{DD} = 5.5 V -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device Type	Limits		Units
				Min	Max	
Chip enable output disable time <u>1</u> /	t _{EHQZ}	See table III	01, 02		50	ns
			03, 04		100	
			05		100	
			06		140	
Chip enable pulse negative width	t _{ELEH}		01, 02	120		ns
			03, 04	300		
			05	220		
			06	200		
Chip enable pulse positive width	t _{EHEL}		01, 02	50		ns
			03, 04	120		
Address setup time	t _{AVEL}		01, 02	0		ns
			03, 04	20		
Address hold time	t _{ELAX}		01, 02	40		ns
			03	50		
			04	100		
Address hold time from write	t _{WHAX}		05	45		ns
			06	40		
Write enable pulse width	t _{WLWH}		01	20		ns
			02	120		
			03	80		
			04	300		
			05	145		
			06	150		
Write enable pulse setup time	t _{WLEH}		01	70		ns
			02	120		
			03	200		
		04	300			
Early write pulse setup time	t _{WLEL}	01 – 04	0		ns	

See footnotes at end of table I.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V _{SS} = 0 V, V _{DD} = 5.5 V -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device Type	Limits		Units
				Min	Max	
Write enable read mode setup time	t _{WHEL}	See table III	01, 03	0		ns
Early write pulse hold time	t _{ELWH}		01	40		ns
			02	120		
			03	80		
			04	300		
			05	205		
			06	200		
Data setup time	t _{DVWL}		01, 03	0		ns
Early write data setup time	t _{DVEL}		01, 03	0		ns
Data hold time	t _{WLDX}		01	25		ns
			03	80		
Early write data hold time	t _{ELDX}		01	25		ns
			03	80		
Data valid to write time	t _{QVWL}		01, 03	0		ns
Read or write cycle time	t _{ELEL}		01, 02	170		ns
	t _{AVAV}		03, 04	420		
			05, 06	250		
Write enable output disable time <u>1</u> /	t _{WLQZ}		02		50	ns
			04		100	
Data hold time	t _{WHDX}		02	0		ns
			04	30		
			05	10		
			06	5		
Write data delay time	t _{WLDV}		02	70		ns
			04	100		
Late output high-Z time	t _{EHWH}		02, 04	0		ns
Address setup to end of write time	t _{AVWH}		05	205		ns
			06	200		

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $V_{SS} = 0\text{ V}$, $V_{DD} = 5.5\text{ V}$ $-55^{\circ}\text{C} \leq T_C \leq +125^{\circ}\text{C}$ unless otherwise specified	Device Type	Limits		Units
				Min	Max	
Address to write setup time	t_{AVWL}		05	0		ns
			06	0		
Output hold from address change time <u>1/</u>	t_{AVQZ}	See table III	05		100	ns
			06		150	
Data setup time	t_{DVWH}		02	50		ns
			04	200		
			05	120		
			06	105		

1/ This parameter is guaranteed but not tested.

TABLE II. Electrical test requirements.

Line no.	MIL-STD-883 test requirements	Class S device <u>1/</u> <u>2/</u>			Class B device <u>1/</u> <u>2/</u>		
		Ref par.	Table III subgroups <u>3/</u>	Table IV delta limits <u>4/</u>	Ref par.	Table III subgroups <u>3/</u>	Table IV delta limits <u>4/</u>
1	Interim electrical parameters method 5004	4.2f	1		4.2f	1	
2	Static burn-in I method 1015	4.2b, f 4.2g (5) 4.5.2				Not required	
3	Same as line 1		1*	Δ			
4	Static burn-in II method 1015	4.2g (5) 4.5.2			4.2b, h(4) 4.5.2	Not required	
5	Same as line 1	4.2c	1*	Δ			
6	Dynamic burn-in method 1015	4.2b,g(6) 4.5.2	<u>5/</u>			<u>5/</u> required	
7	Same as line 1	4.2c	1*	Δ	4.2c	1*	Δ
8	Final electrical parameters method 5004		1*, 2, 3 8, 9, 10, 11			1*, 2, 3, 8, 9	
9	Group A test requirements method 5005	4.4.1	1, 2, 3, 4, 8, 9, 10, 11, 12		4.4.1	1, 2, 3, 4, 9, 10, 11	
10	Group B test requirements method 5005	4.4.2 4.5.3	1, 2, 3, 8, 9, 10, 11	Δ			
11	Group C end-point electrical parameters method 5005				4.4.3 4.5.3	1,2	Δ
12	Group D end-point electrical parameters method 5005	4.4.4	1, 2, 3		4.4.4	1, 2	
13	Group E test requirements method 1019	4.5.6	Table VI		4.5.6	Table VI	

1/ Blank spaces indicate tests are not applicable.

2/ For subgroups 9, 10, and 11, only the worst value measured per device need be recorded when variables data is required (e.g., during qualification).

3/ (*) indicates PDA applies to subgroup 1 (see 4.2.1).

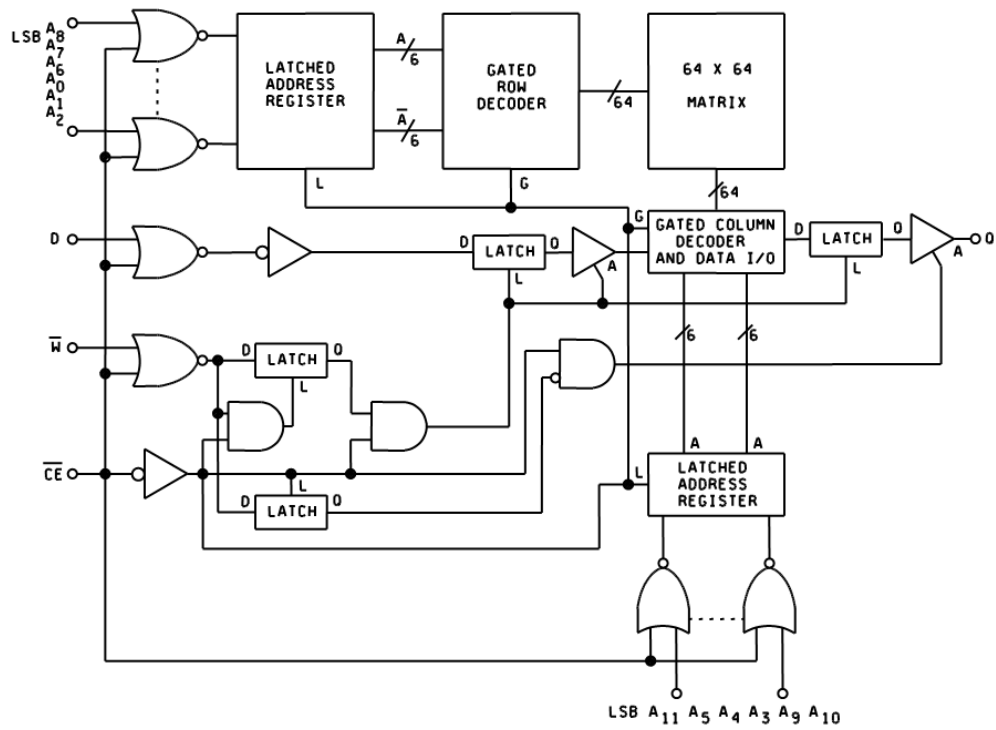
4/ (Δ) indicates delta limits shall be required, and delta values shall be computed with reference to either the initial recorded electrical parameters (see 4.5.3), or to the previous interim electrical parameters, as indicated to the qualifying activity.

5/ The device manufacturer may, at their option, either perform delta measurements or within 24 hours after burn-in (removal of temperature of bias) perform the final electrical parameter measurements, subgroup A1.

MIL-M-38510/245B w/AMENDMENT 1

Device types	01, 03, 05	03, 05	02, 04, 06	04, 06
Case outlines	V	K	V	K
Terminal number	Terminal symbol			
1	A ₀	NC	A ₆	NC
2	A ₁	A ₀	A ₅	A ₆
3	A ₂	A ₁	A ₄	A ₅
4	A ₃	A ₂	A ₃	A ₄
5	A ₄	A ₃	A ₀	A ₃
6	A ₅	NC	A ₁	NC
7	Q	A ₄	A ₂	A ₀
8	$\overline{W}$	A ₅	$\overline{CE}$	A ₁
9	V _{SS}	Q	V _{SS}	A ₂
10	$\overline{CE}$	NC	$\overline{W}$	NC
11	D	$\overline{W}$	D ₃ /Q ₃	$\overline{CS}$
12	A ₁₁	V _{SS}	D ₂ /Q ₂	V _{SS}
13	A ₁₀	$\overline{CE}$	D ₁ /Q ₁	$\overline{W}$
14	A ₉	NC	D ₀ /Q ₀	NC
15	A ₈	D	A ₉	D ₃ /Q ₃
16	A ₇	A ₁₁	A ₈	D ₂ /Q ₂
17	A ₆	A ₁₀	A ₇	D ₁ /Q ₁
18	V _{DD}	A ₉	V _{DD}	D ₀ /Q ₀
19	---	NC	---	NC
20	---	NC	---	NC
21	---	A ₈	---	A ₉
22	---	A ₇	---	A ₈
23	---	A ₆	---	A ₇
24	---	V _{DD}	---	V _{DD}

FIGURE 1. Terminal connections.



DEVICE TYPES 02 AND 04

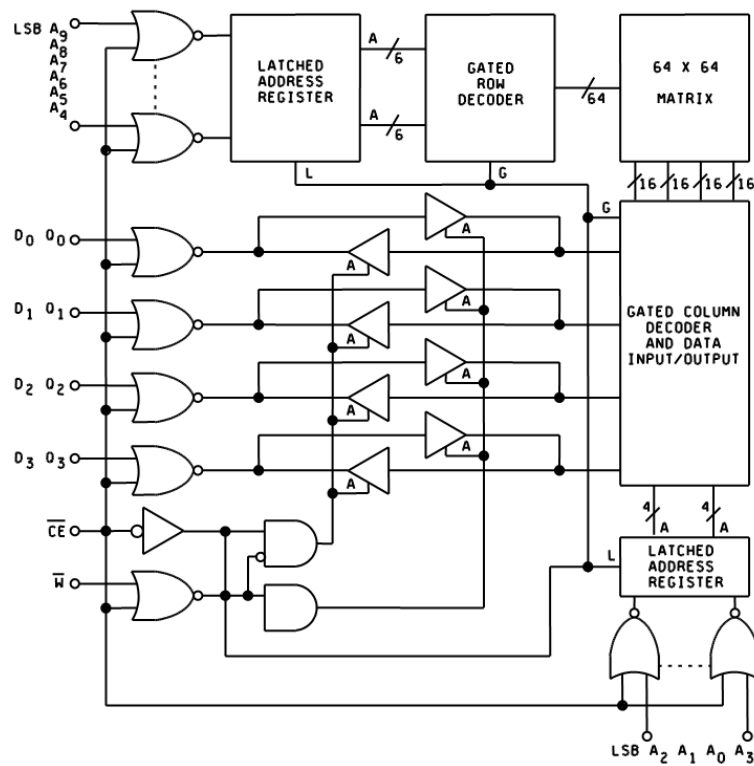


FIGURE 2. Block diagrams.

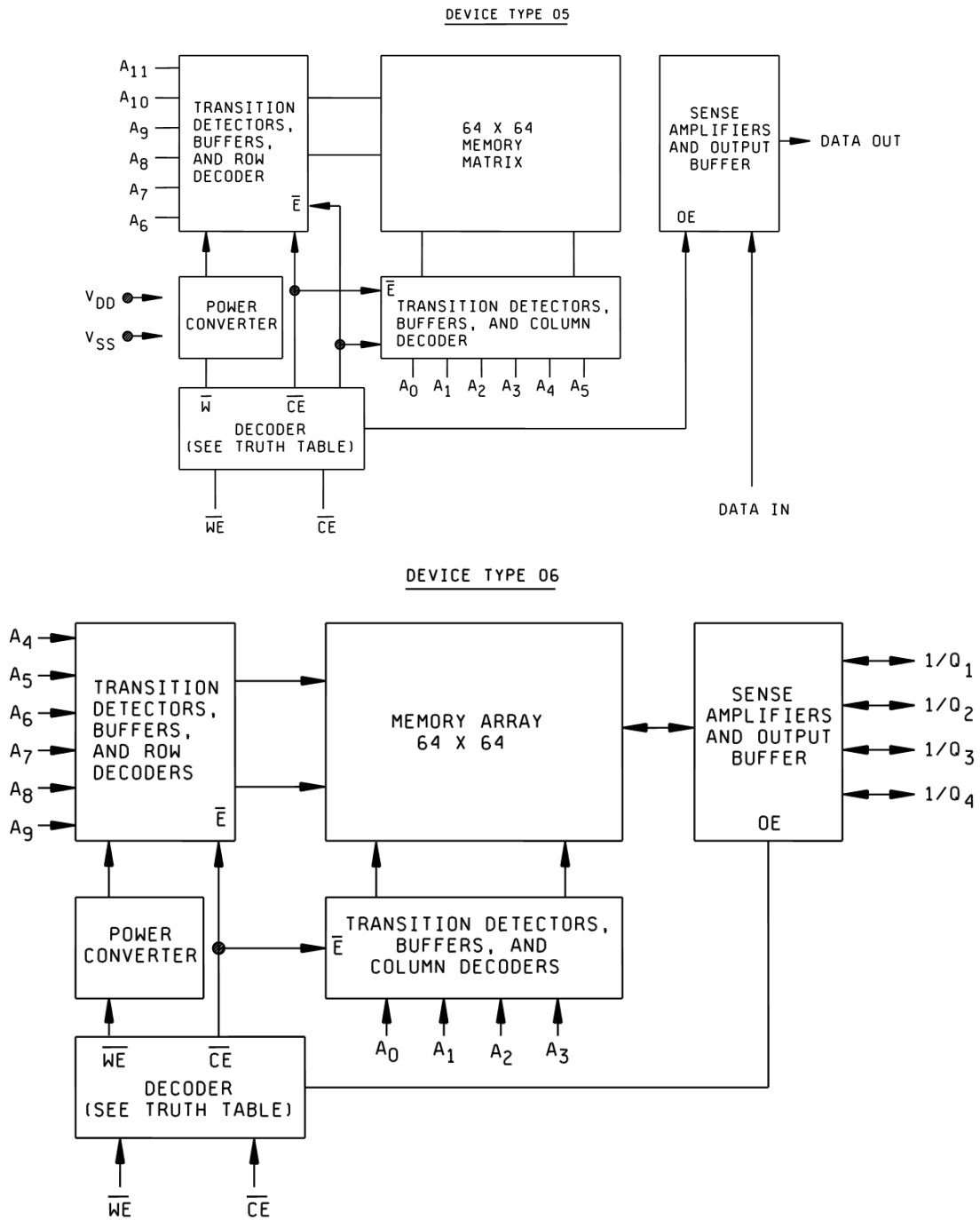
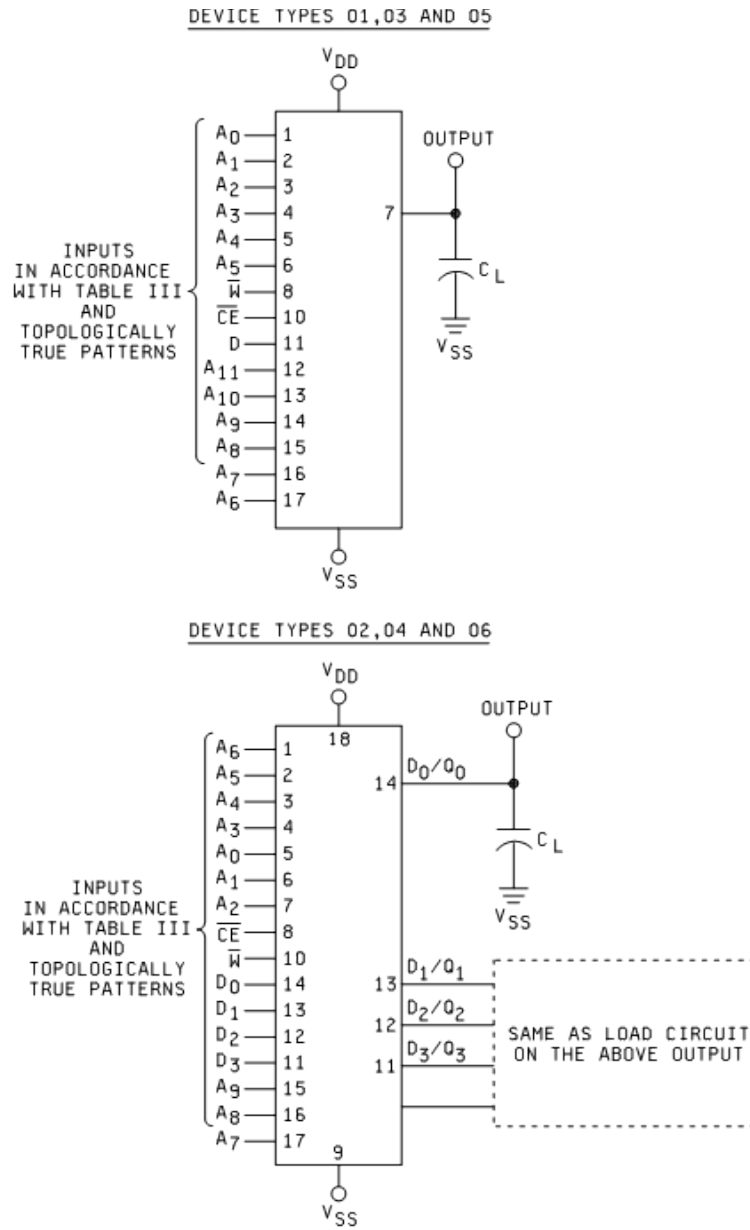


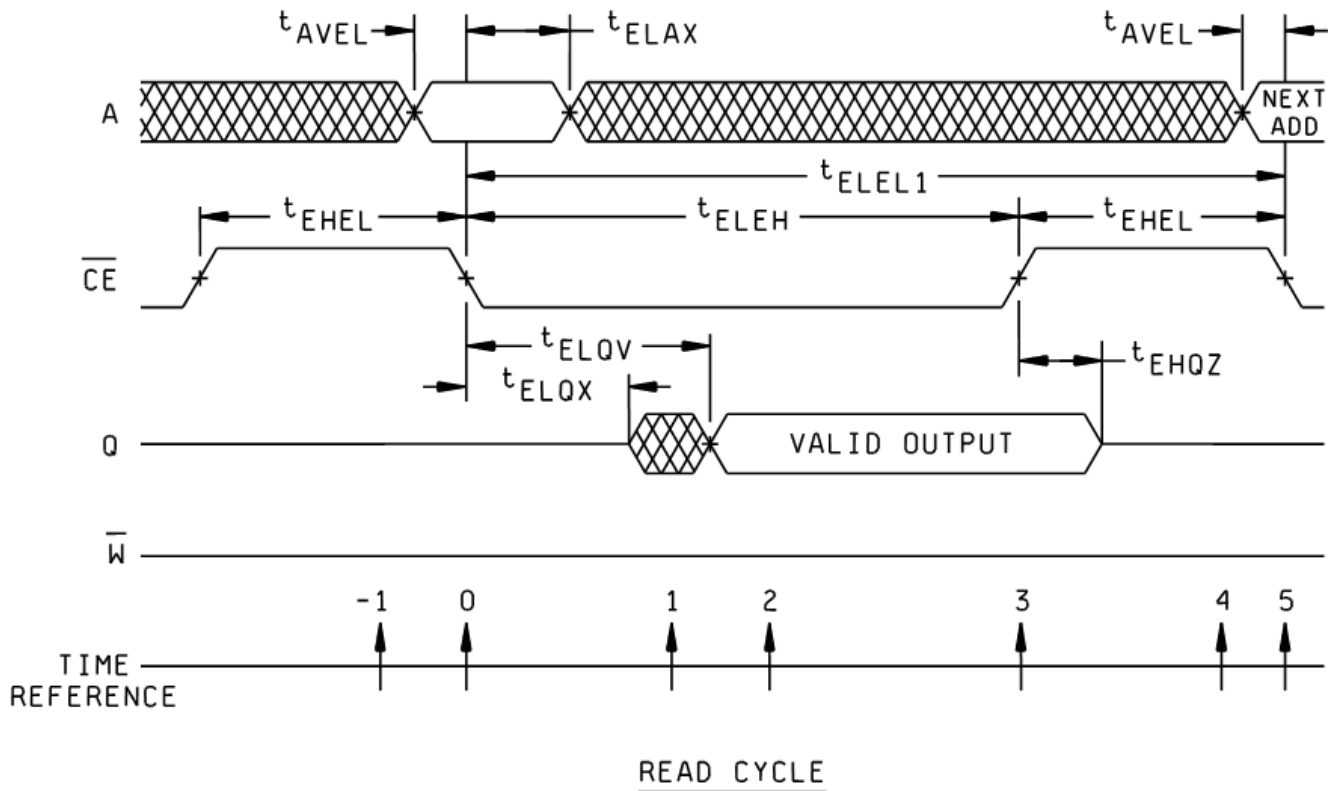
FIGURE 2. Block diagrams – Continued.



NOTES:

1. $C_L = 50 \text{ pF} \pm 10\%$
2. Dynamic current load forces if used by tester. $I_{OL} = 2.0 \text{ mA}$ and $I_{OH} = -1.0 \text{ mA}$.
3. All t_{TLH} and $t_{THL} \leq 10 \text{ ns}$.
4. All generator output impedance = 50Ω .
5. All voltages measured with respect to GND terminal.
6. Load should be modified for high Z measurements.
7. See figure 4 for waveforms and timing conditions.

FIGURE 3. Switching time test circuit.

DEVICE TYPES 01 AND 03

TRUTH TABLE

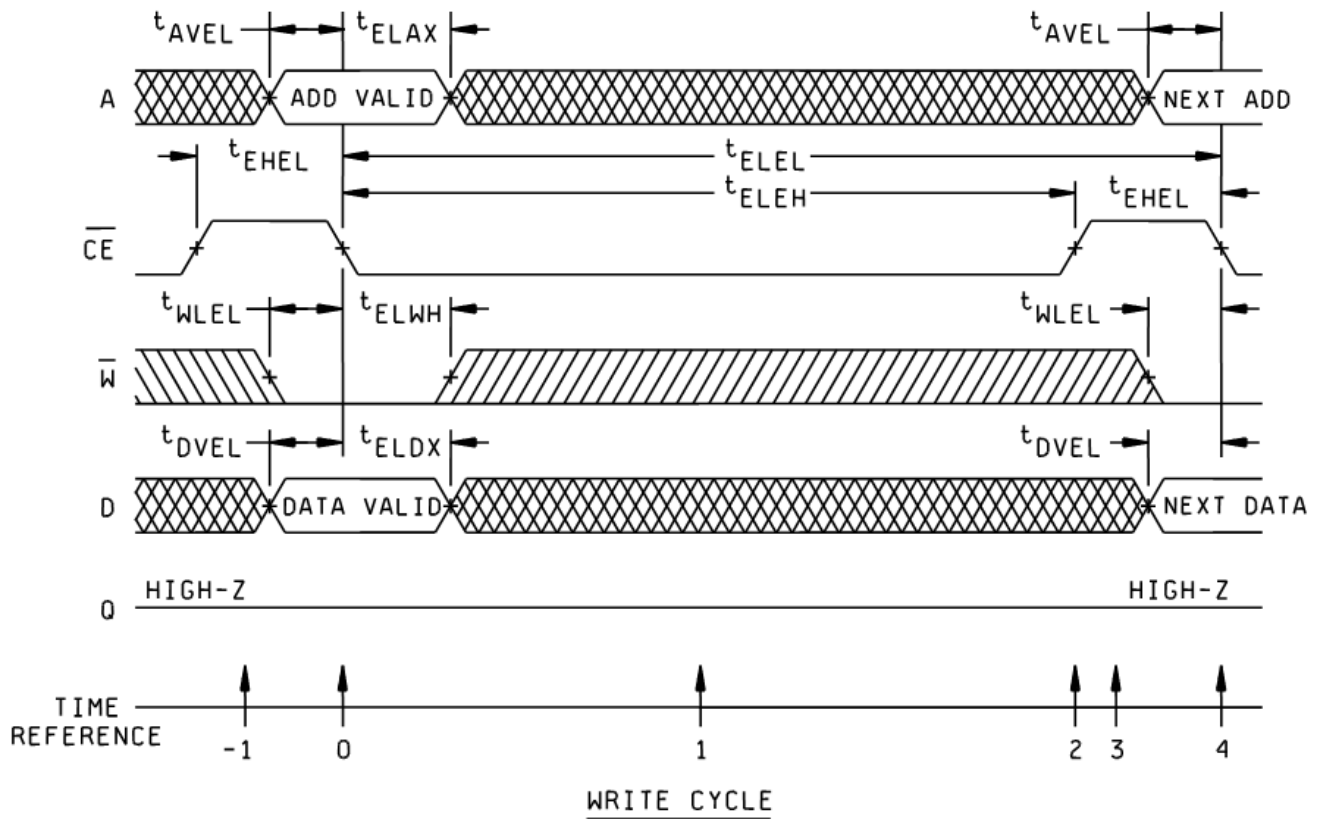
Time reference	Inputs			Output	Function
	$\overline{CE}$	$\overline{W}$	A	Q	
-1	H	X	X	Z	Memory disable
0	$\downarrow$	H	V	Z	Cycle begins, addresses are latched
1	L	H	X	X	Output enabled
2	L	H	X	V	Output valid
3	$\uparrow$	H	X	V	Read accomplished
4	H	X	X	Z	Prepare for next cycle (same as -1)
5	$\downarrow$	H	V	Z	Cycle ends, next cycle begins (same as 0)

The address information is latched in on the chip registers on the falling edge of $\overline{CE}$ (T = 0). Minimum address set up and hold time requirements must be met. After the required hold time, the addresses may change state without affecting device operation. During time (T = 1) the output becomes enabled but data is not valid until during time (T = 2). $\overline{W}$ must remain high until after time (T = 2). After the output data has been read, $\overline{CE}$ may return high (T = 3). This will disable the output buffer and ready the SRAM for the next memory cycle (T = 4).

NOTE: See figure 5 for test conditions.

FIGURE 4. Read cycle, write cycle, read/modify/write cycle waveforms and truth tables.

DEVICE TYPES 01 AND 03



TRUTH TABLE

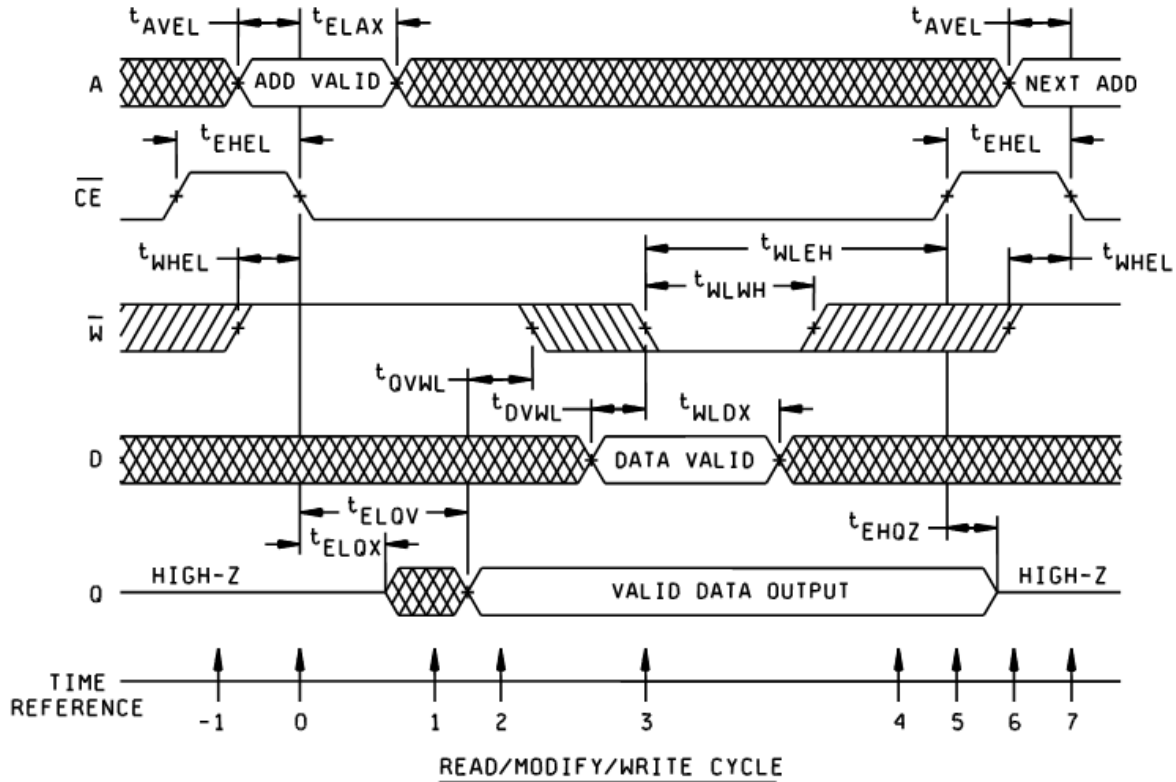
Time reference	Inputs				Output	Function
	$\overline{\text{CE}}$	$\overline{\text{W}}$	A	D	Q	
-1	H	X	X	X	Z	Memory disable
0	$\downarrow$	L	V	V	Z	Cycle begins, addresses are latched
1	L	X	X	X	Z	Output enabled
2	$\uparrow$	X	X	X	Z	Output valid
3	H	X	X	X	Z	Read accomplished
4	$\downarrow$	L	V	V	Z	Prepare for next cycle (same as -1)

The early write cycle is the only cycle where the output is guaranteed not to become active. On the falling edge of $\overline{\text{CE}}$ ($T = 0$), the addresses, the write signal, and the data input are latched in on chip registers. The logic value of W at the time $\overline{\text{CE}}$ falls determines the state of the output buffer for that cycle. Since $\overline{\text{W}}$ is low in the early write cycle, the output buffer is latched into the high impedance state and will remain in the state until $\overline{\text{CE}}$ returns high ($T = 2$). For this cycle, the data input is latched by $\overline{\text{CE}}$ going low; therefore data set up and hold times should be referenced to $\overline{\text{CE}}$. When $\overline{\text{CE}}$ ($T = 2$) returns to the high state, the output buffer disables and signals are unlatched. The device is now ready for the next cycle.

NOTE: See figure 5 for test conditions.

FIGURE 4. Read cycle, write cycle, read/modify/write cycle waveforms and truth tables – Continued.

MIL-M-38510/245B w/AMENDMENT 1
 DEVICE TYPES 01 AND 03



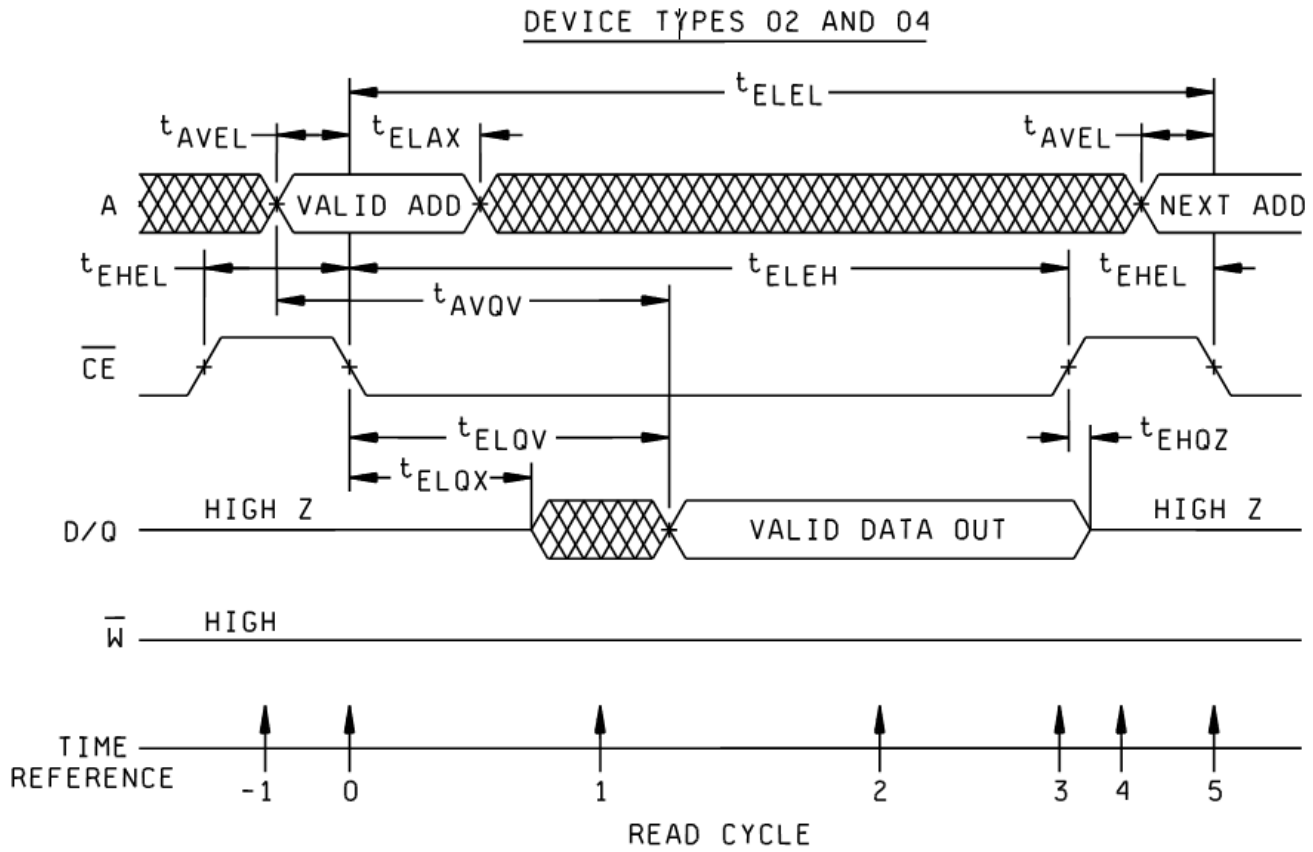
TRUTH TABLE

Time reference	Inputs				Output	Function
	$\overline{CE}$	$\overline{W}$	A	D	Q	
-1	H	X	X	X	Z	Memory disable
0	$\downarrow$	H	V	X	Z	Cycle begins, addresses are latched
1	L	H	X	X	X	Output enabled
2	L	H	X	X	V	Output valid, read and modify time
3	L	$\downarrow$	X	V	V	Write begins, data is latched
4	L	X	X	X	V	Write in progress internally
5	$\uparrow$	X	X	X	V	Write completed
6	H	X	X	X	Z	Prepare for next cycle (same as -1)
7	$\downarrow$	H	V	X	Z	Cycle ends, next cycle begins (same as 0)

The read/modify/write cycle begins as all other cycles on the falling edge of $\overline{CE}$ (T = 0). The $\overline{W}$ line should be high at (T = 0) in order to latch the output buffers in the active state. During (T = 1) the output will be active but not valid until (T = 2). On the falling edge of the $\overline{W}$ (T = 3), the data present at the output and input are latched. The $\overline{W}$ signal also latches itself on its low going edge. All input signals excluding CE have been latched and have no further effect on the SRAM. The rising edge of CE (T = 5) completes the write portion of the cycle and unlatches all inputs and the output. The output goes to a high impedance and the SRAM is ready for the next cycle.

NOTE: See figure 5 for test conditions.

FIGURE 4. Read cycle, write cycle, read/modify/write cycle waveforms and truth tables – Continued.



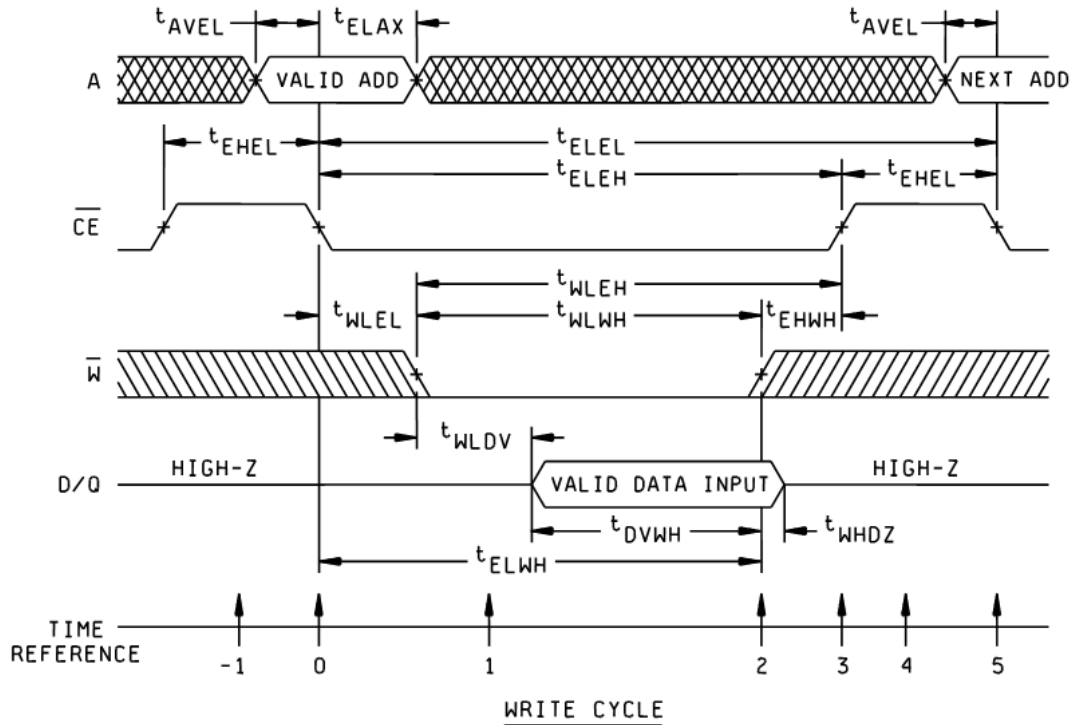
TRUTH TABLE

Time reference	Inputs			Data I/O	Function
	$\overline{\text{CE}}$	$\overline{\text{W}}$	A	DQ	
-1	H	X	X	Z	Memory disable
0	$\downarrow$	H	V	Z	Cycle begins, addresses are latched
1	L	H	X	X	Output enabled
2	L	H	X	V	Output valid
3	$\uparrow$	H	X	V	Read accomplished
4	H	X	X	Z	Prepare for next cycle (same as -1)
5	$\downarrow$	H	V	Z	Cycle ends, next cycle begins (same as 0)

The address information is latched in on the chip registers on the falling edge of $\overline{\text{CE}}$ ($T = 0$). Minimum address setup and hold time requirements must be met. After the required hold time, the addresses may change state without affecting device operation. During time ($T = 1$), the outputs become enabled, but data is not valid until time ($T = 2$). $\overline{\text{W}}$ must remain high throughout the read cycle. After the data has been read, $\overline{\text{CE}}$ may return high ($T = 3$). This will force the output buffers into a high impedance mode at time ($T = 4$). The memory is now ready for the next cycle.

NOTE: See figure 5 for test conditions.

FIGURE 4. Read cycle, write cycle, read/modify/write cycle wave forms and truth tables – Continued.



TRUTH TABLE

Time reference	Inputs			Data I/O		Function
	$\overline{CE}$	$\overline{W}$	A	DQ		
-1	H	X	X	Z		Memory disable
0	$\downarrow$	X	V	Z		Cycle begins, addresses are latched
1	L	L	X	Z		Write period begins
2	L	$\uparrow$	X	V		Data in is written
3	$\uparrow$	H	X	Z		Write completed
4	H	X	X	Z		Prepare for next cycle (same as -1)
5	$\downarrow$	H	V	Z		Cycle ends, next cycle begins (same as 0)

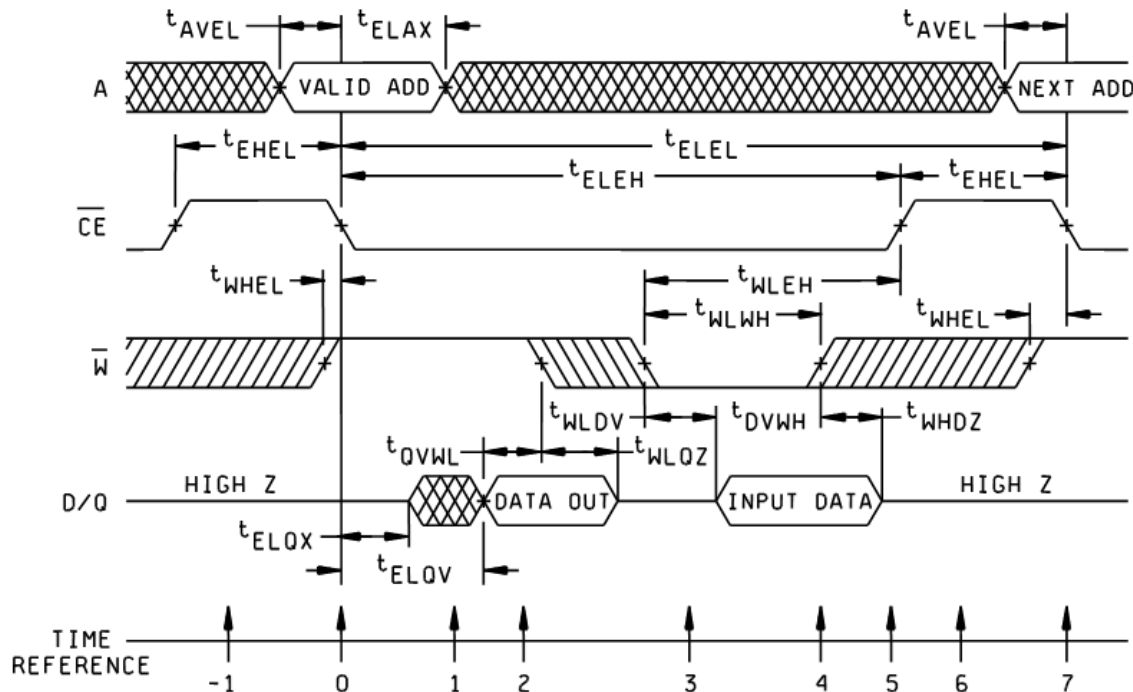
The write cycle is initiated on the falling edge of $\overline{CE}$ ($T = 0$), which latches the address information in on chip registers. If a dedicated write cycle is to be performed and the outputs are not to become active, t_{WLEL} and t_{EHWH} must be met. Under these conditions, t_{WLDV} is unnecessary and input data may be applied at any convenient time if t_{DVWH} is still met. If t_{WLEL} is not met, then the outputs may become enabled momentarily near the beginning of the cycle and a disable time (t_{ELQZ}) must be met before the input data is applied ($t_{WLQZ} = t_{WLDV}$). Similarly, if t_{EHWH} is not met the outputs may enable briefly near the end of the cycle.

The write operation is terminated by the first rising edge of $\overline{W}$ ($T = 2$) or $\overline{CE}$ ($T = 3$). After the minimum required $\overline{CE}$ high time (t_{EHEL}), the next cycle may begin. If a series of consecutive write cycles are to be performed, the $\overline{W}$ line may be held low until all desired location have been written. In this case, data setup and hold times must be referenced to the rising edge of $\overline{CE}$.

NOTE: See figure 5 for test conditions.

FIGURE 4. Read cycle, write cycle, read/modify/write cycle waveforms and truth tables – Continued.

DEVICE TYPES 02 AND 04



READ/MODIFY/WRITE CYCLE

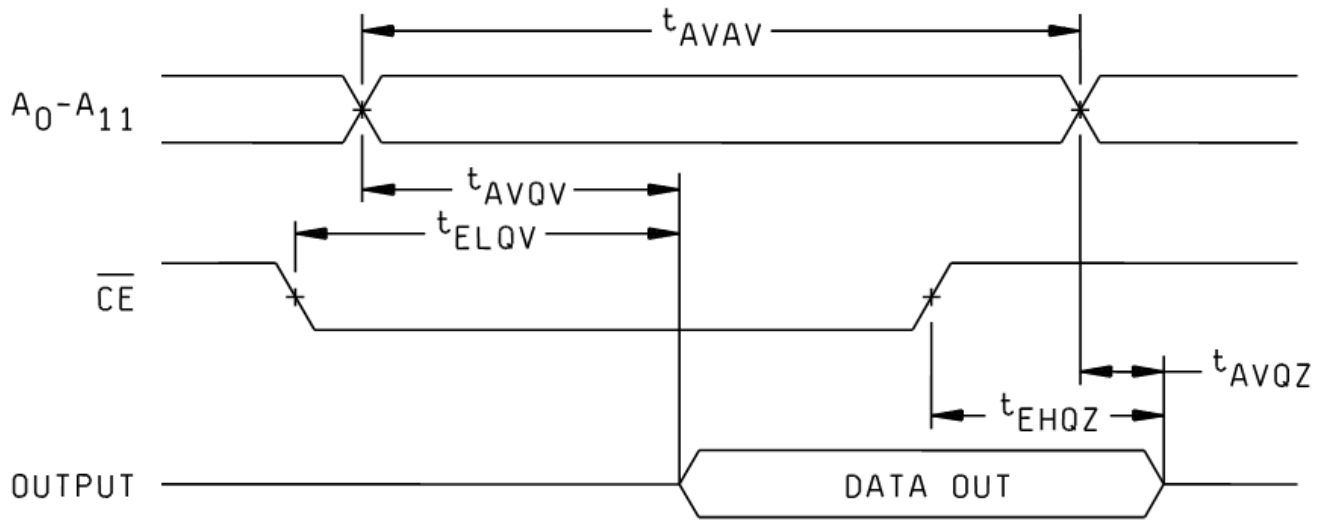
TRUTH TABLE

Time reference	Inputs			Data I/O		Function
	$\overline{CE}$	$\overline{W}$	A	DQ		
-1	H	X	X	Z		Memory disable
0	$\overline{L}$	H	V	Z		Cycle begins, addresses are latched
1	L	H	X	X		Read mode, output enabled
2	L	H	X	V		Read mode, output valid
3	L	L	X	Z		Write mode, output high Z
4	L	$\overline{H}$	X	V		Write mode, data is written
5	$\overline{H}$	H	X	Z		Write completed
6	H	X	X	Z		Prepare for next cycle (same as -1)
7	$\overline{L}$	H	V	Z		Cycle ends, next cycle begins (same as 0)

If the pulse width of $\overline{W}$ is relatively short in relation to that of $\overline{CE}$, a combination read-write cycle may be performed. If $\overline{W}$ remains high for the first part of the cycle, the outputs will become active during time (T = 1). Data out will be valid during time (T = 2). After the data is read, $\overline{W}$ can go low. After minimum t_{WLWH} , $\overline{W}$ may return high. The information just written may now be read or $\overline{CE}$ may return high, disabling the output buffers and preparing the device for the next cycle. Any number or sequence of read-write operations may be performed while $\overline{CE}$ is low providing all timing requirements are met.

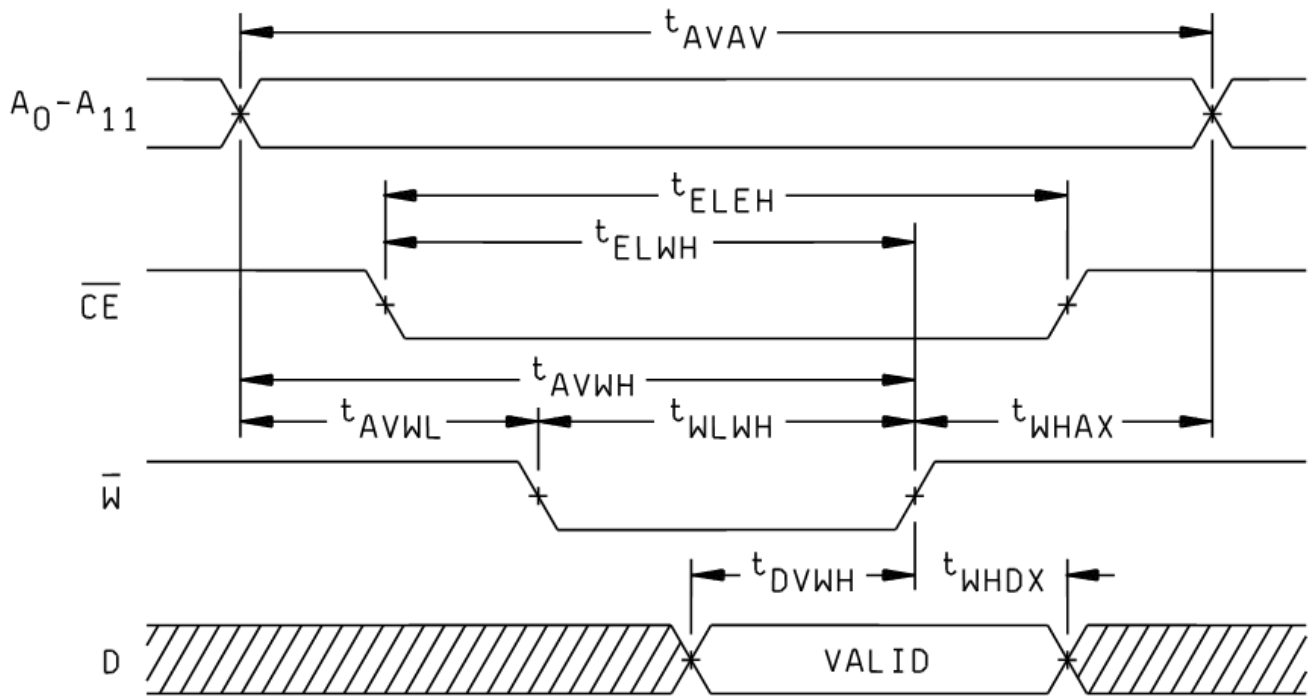
NOTE: See figure 5 for test conditions.

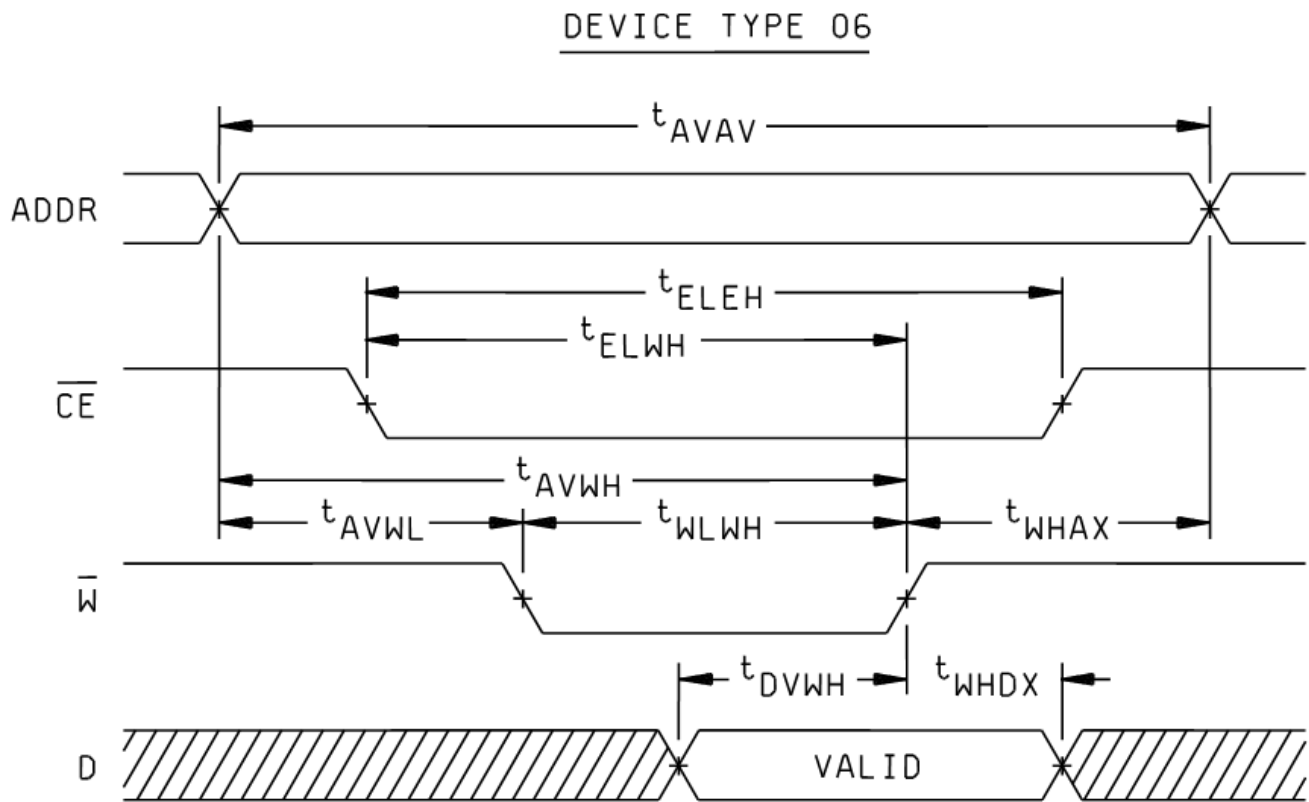
FIGURE 4. Read cycle, write cycle, read /modify/write cycle waveforms and truth tables – Continued.

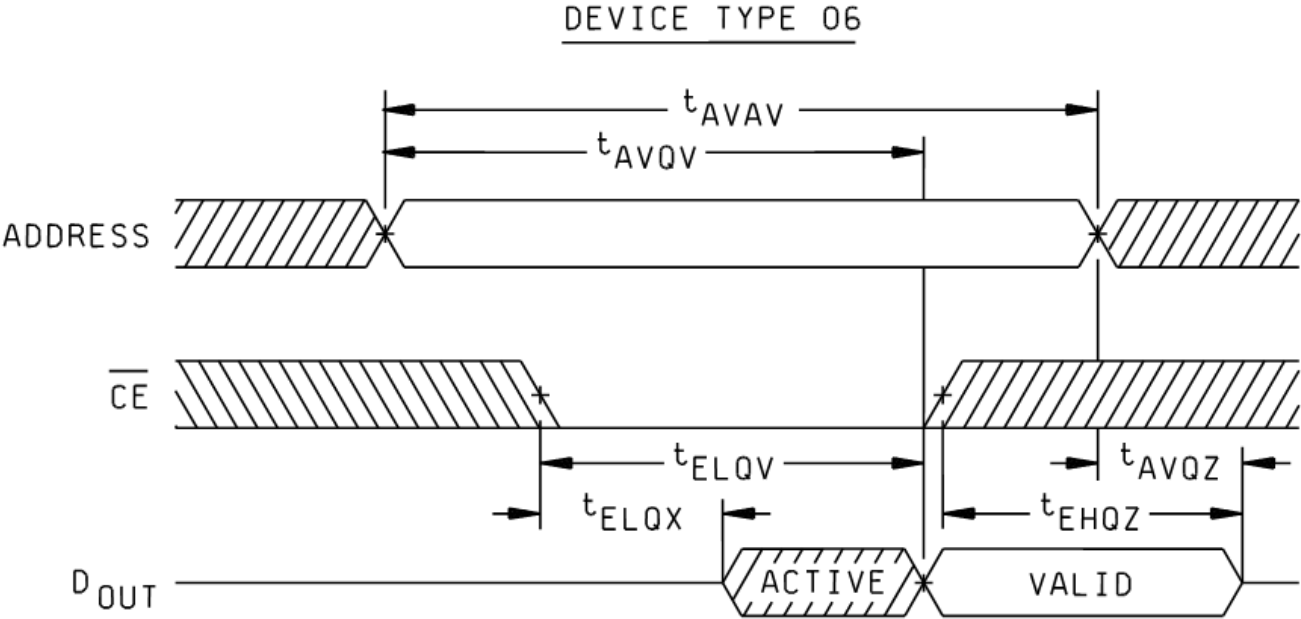
DEVICE TYPE 05

$\overline{CE}$	$\overline{W}$	Mode	Output
H	X	Not Selected	High Z
L	L	Write	High Z
L	H	Read	D out

FIGURE 4. Read cycle, write cycle, read /modify/write cycle waveforms and truth tables – Continued.

DEVICE TYPE 05FIGURE 4. Read cycle, write cycle, read /modify/write cycle waveforms and truth tables – Continued.

FIGURE 4. Read cycle, write cycle, read /modify/write cycle waveforms and truth tables – Continued.



Function	$\overline{CE}$	$\overline{W}$	Data pins
Read	0	1	Output dependent on data
Write	0	0	Input
Not selected	1	X	High Z

FIGURE 4. Read cycle, write cycle, read /modify/write cycle waveforms and truth tables – Continued.

Timing parameter	Description	Device types				
		01		02		Unit
		Min	Max	Min	Max	
t _{ELQV}	Chip enable access time		120		120	ns
t _{AVQV}	Address access time		120		120	ns
t _{ELQX}	Chip enable output enable time	5		5		ns
t _{WLQZ}	Write enable output disable time				50	ns
t _{EHQZ}	Chip enable output disable time		50		50	ns
t _{ELEH}	Chip enable pulse negative width	120		120		ns
t _{EH}	Chip enable pulse positive width	50		50		ns
t _{AVEL}	Address setup time	0		0		ns
t _{ELAX}	Address hold time	40		40		ns
t _{WLWH}	Write enable pulse negative width	20		120		ns
t _{WLEH}	Write enable pulse setup time to chip disable	70		120		ns
t _{WLEL}	Write enable pulse setup time to chip enable	0		0		ns
t _{ELWH}	Write enable pulse hold time from chip enable	40		120		ns
t _{ELDX}	Write data hold time	25				ns
t _{DVWH}	Data setup time			50		ns
t _{WHDX}	Data hold time			0		ns
t _{ELEL}	Read or write cycle time	170		170		ns
t _{DVEL}	Write data setup time	0				ns
t _{WHEH}	Write enable high to chip enable high	10				ns
t _{QVWL}	Data valid to write time			0		ns
t _{EHWH}	Output high-Z time			0		ns
t _{DVWL}	Data setup time	0				ns
t _{WLDX}	Data hold time	25				ns
t _{WLDV}	Write data delay time			70		ns
t _{WHEL}	Write enable read mode setup time	0				ns

FIGURE 5. Timing test conditions over operating temperature range.

Timing parameter	Description	Device types								
		03		04		05		06		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	
t _{ELQV}	Chip enable access time		300		300		280		280	ns
t _{AVQV}	Address access time		320		320		250		250	ns
t _{ELQX}	Chip enable output enable time		50		50			20		ns
t _{WLQZ}	Write enable output disable time				100					ns
t _{LEH}	Chip enable pulse negative width	300		300		220		200		ns
t _{EHEL}	Chip enable pulse positive width	120		120						ns
t _{AVEL}	Address setup time	20		20						ns
t _{ELAX}	Address hold time	50		100						ns
t _{WHAX}	Address hold time					45		40		ns
t _{WLWH}	Write enable pulse negative width	80		300		145		150		ns
t _{WLEH}	Write enable pulse setup time to chip disable	200		300						ns
t _{WLEL}	Write enable pulse setup time to chip enable	0		0						ns
t _{ELWH}	Write enable pulse hold time from chip enable	80		300						ns
t _{ELDX}	Write data hold time	80								ns
t _{DVWH}	Data setup time			200		120		105		ns
t _{WHDX}	Data hold time			30		10		5		ns
t _{ELEL}	Read or write cycle time	420		420						ns
t _{AVAV}	Read or write address cycle time					250		250		ns
t _{DVEL}	Write data setup time	0								ns
t _{WHEH}	Write enable high to chip enable high	0								ns
t _{ELWL}	Write output high-Z time	0		0						ns
t _{QVWL}	Data valid to write time	0		0						ns
t _{EHWH}	Output high-Z time	0		0						ns
t _{DVWL}	Data setup time	0								ns
t _{WLDX}	Data hold time	80								ns
t _{ELDX}	Early write data	80								ns
t _{WLDV}	Write data delay time			100						ns
t _{WHEL}	Write enable read mode setup time	0								ns
t _{AVWH}	Address setup to end write time					205		200		ns

FIGURE 5. Timing test conditions over operating temperature range – Continued.

TABLE III. Group A inspection for device type 01.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max	Min	Max	Min	Max		
V _{IC} (POS)		1	100 μA	GND	GND	GND	GND	GND		GND		GND	A ₀	0.1	2.0				V		
		2	GND	100 μA	GND								A ₁								
		3		GND	100 μA								A ₂								
		4			GND	100 μA							A ₃								
		5				GND	100 μA						A ₄								
		6					GND	100 μA					A ₅								
		7						GND		100 μA			$\overline{W}$								
		8								GND		100 μA	$\overline{CE}$								
		9										GND	D								
		10											A ₁₁								
		11											A ₁₀								
		12											A ₉								
		13											A ₈								
		14											A ₇								
		15											A ₆								
V _{IC} (NEG)		16	-100 μA								GND		A ₀	-0.1	-2.0						
		17	GND	-100 μA									A ₁								
		18		GND	-100 μA								A ₂								
		19			GND	-100 μA							A ₃								
		20				GND	-100 μA						A ₄								
		21					GND	-100 μA					A ₅								
		22						GND		-100 μA			$\overline{W}$								
		23								GND		-100 μA	$\overline{CE}$								
		24										GND	D								
		25											A ₁₁								
		26											A ₁₀								
		27											A ₉								
		28											A ₈								
		29											A ₇								
		30											A ₆								
V _{OL}	3007	31	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	2/	2.5 V		0.8 V	Q		0.4		0.4		0.4		
V _{OH}	3006	32	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	3/	2.5 V		0.8 V	Q	2.4		2.4		2.4			
I _{IH} 4/	3010	33	5.5 V	GND	GND	GND	GND	GND	GND		GND		GND	A ₀				1.0			μA
		34	GND	5.5 V	GND								A ₁								
		35		GND	5.5 V								A ₂								
		36			GND	5.5 V							A ₃								
		37				GND	5.5 V						A ₄								
		38					GND	5.5 V					A ₅								
		39						GND		5.5 V			$\overline{W}$								
		40								GND		5.5 V	$\overline{CE}$								
		41										GND	D								
		42											A ₁₁								
		43											A ₁₀								
		44											A ₉								
		45											A ₈								
		46											A ₇								
		47											A ₆								

See footnotes at end of table III.

TABLE III. Group A inspection for device type 01 – Continued.

Symbol	MIL-STD-883 method	Case V Test No.	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
			D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1	GND	GND	GND	GND	GND	GND	GND	GND	A ₀	0.1	2.0				V	
		2	"	"	"	"	"	"	"	"	A ₁	"	"				"	
		3	"	"	"	"	"	"	"	"	A ₂	"	"				"	
		4	"	"	"	"	"	"	"	"	A ₃	"	"				"	
		5	"	"	"	"	"	"	"	"	A ₄	"	"				"	
		6	"	"	"	"	"	"	"	"	A ₅	"	"				"	
		7	"	"	"	"	"	"	"	"	W	"	"				"	
		8	"	"	"	"	"	"	"	"	CE	"	"				"	
		9	100 μA	"	"	"	"	"	"	"	D	"	"				"	
		10	GND	100 μA	"	"	"	"	"	"	A ₁₁	"	"				"	
		11	"	GND	100 μA	"	"	"	"	"	A ₁₀	"	"				"	
		12	"	"	GND	100 μA	"	"	"	"	A ₉	"	"				"	
		13	"	"	"	GND	100 μA	"	"	"	A ₈	"	"				"	
		14	"	"	"	"	GND	100 μA	"	"	A ₇	"	"				"	
V _{IC} (NEG)		15	"	"	"	"	GND	GND	100 μA	"	A ₆	"	"				"	
		16	"	"	"	"	"	"	GND	"	A ₀	-0.1	-2.0				"	
		17	"	"	"	"	"	"	"	"	A ₁	"	"				"	
		18	"	"	"	"	"	"	"	"	A ₂	"	"				"	
		19	"	"	"	"	"	"	"	"	A ₃	"	"				"	
		20	"	"	"	"	"	"	"	"	A ₄	"	"				"	
		21	"	"	"	"	"	"	"	"	A ₅	"	"				"	
		22	"	"	"	"	"	"	"	"	W	"	"				"	
		23	"	"	"	"	"	"	"	"	CE	"	"				"	
		24	100 μA	"	"	"	"	"	"	"	D	"	"				"	
		25	GND	-100 μA	"	"	"	"	"	"	A ₁₁	"	"				"	
		26	"	GND	-100 μA	"	"	"	"	"	A ₁₀	"	"				"	
		27	"	"	GND	-100 μA	"	"	"	"	A ₉	"	"				"	
		28	"	"	"	GND	-100 μA	"	"	"	A ₈	"	"				"	
		29	"	"	"	"	GND	-100 μA	"	"	A ₇	"	"				"	
		30	"	"	"	"	GND	GND	-100 μA	"	A ₆	"	"				"	
V _{OL}	3007	31	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	Q		0.4		0.4		0.4	"	
V _{OH}	3006	32	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	Q	2.4		2.4		2.4		"	
I _{IH} 4/	3010	33	GND	GND	GND	GND	GND	GND	GND	5.5 V	A ₀				1.0		μA	
		34	"	"	"	"	"	"	"	"	A ₁				"		"	
		35	"	"	"	"	"	"	"	"	A ₂				"		"	
		36	"	"	"	"	"	"	"	"	A ₃				"		"	
		37	"	"	"	"	"	"	"	"	A ₄				"		"	
		38	"	"	"	"	"	"	"	"	A ₅				"		"	
		39	"	"	"	"	"	"	"	"	W				"		"	
		40	"	"	"	"	"	"	"	"	CE				"		"	
		41	5.5 V	"	"	"	"	"	"	"	D				"		"	
		42	GND	5.5 V	"	"	"	"	"	"	A ₁₁				"		"	
		43	"	GND	5.5 V	"	"	"	"	"	A ₁₀				"		"	
		44	"	"	GND	5.5 V	"	"	"	"	A ₉				"		"	
		45	"	"	"	GND	5.5 V	"	"	"	A ₈				"		"	
		46	"	"	"	"	GND	5.5 V	"	"	A ₇				"		"	
		47	"	"	"	"	GND	GND	5.5 V	"	A ₆				"		"	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 01 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max	Min	Max	Min	Max	
I _{IL} 4/	3009	48	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		5.5 V	GND	5.5 V	A ₀				-1.0			μA
		49	5.5 V	GND	5.5 V									A ₁						
		50	"	5.5 V	GND	"	"	"	"	"	"	"	"	A ₂				"		
		51	"	"	5.5 V	GND	"	"	"	"	"	"	"	A ₃				"		
		52	"	"	"	5.5 V	GND	"	"	"	"	"	"	A ₄				"		
		53	"	"	"	"	5.5 V	GND	"	"	"	"	"	A ₅				"		
		54	"	"	"	"	"	5.5 V		GND	"	"	"	$\overline{W}$				"		
		55	"	"	"	"	"	"		5.5 V	"	GND	"	$\overline{CE}$				"		
		56	"	"	"	"	"	"	"	"	"	5.5 V	"	D				"		
		57	"	"	"	"	"	"	"	"	"	"	"	A ₁₁				"		
		58	"	"	"	"	"	"	"	"	"	"	"	A ₁₀				"		
		59	"	"	"	"	"	"	"	"	"	"	"	A ₉				"		
		60	"	"	"	"	"	"	"	"	"	"	"	A ₈				"		
61	"	"	"	"	"	"	"	"	"	"	"	A ₇				"				
62	"	"	"	"	"	"	"	"	"	"	"	A ₆				"				
I _{OHZ}		63	GND	GND	GND	GND	GND	GND	5.5 V	"	"	5.5 V	Q		1.0		1.0		1.0	"
		64	GND	GND	GND	GND	GND	GND	5.5 V	0.8 V	"	GND	Q		1.0		1.0		1.0	"
I _{OLZ}		65	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V	"	5.5 V	Q		-1.0		-1.0		-1.0	"
		66	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	0.8 V	"	GND	Q		-1.0		-1.0		-1.0	"
I _{DD1}	3005	67	GND	GND	GND	GND	GND	GND		GND	"	"	V _{DD} 5/		50		50		50	"
I _{DD2}		68	"	"	"	"	"	"	"	"	"	"	V _{DD} 6/		"		"		"	"
I _{DD3}		69	"	"	"	"	"	"	"	"	"	"	V _{DD} 7/		"		"		"	"
I _{DD4}		70	"	"	"	"	"	"	"	"	"	"	V _{DD} 13/		"		"		"	"
													Subgroup 4 T _C = +25°C							
													Min	Max						
C _I	3012	71	8/	8/	8/	8/	8/	8/		8/	GND	8/	Each input		8					pF
													Subgroup 8 T _C = +125°C							
													Min	Max						
PWR DWN 16/		72	9/	9/	9/	9/	9/	9/		9/	GND	9/	V _{DD}	2.0						V
ADD COMP 16/		73	10/	10/	10/	10/	10/	10/		10/	GND	10/	Q	10/	10/					V

See footnotes at end of table III.

TABLE III. Group A inspection for device type 01 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/									Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18	Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C				
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}	Min		Max	Min	Max	Min	Max		
I _{IL} 4/	3009	48	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	A ₀				-1.0			μA	
		49	"	"	"	"	"	"	"	"	"	A ₁				"		"	
		50	"	"	"	"	"	"	"	"	"	A ₂				"		"	
		51	"	"	"	"	"	"	"	"	"	A ₃				"		"	
		52	"	"	"	"	"	"	"	"	"	A ₄				"		"	
		53	"	"	"	"	"	"	"	"	"	A ₅				"		"	
		54	"	"	"	"	"	"	"	"	"	W				"		"	
		55	"	"	"	"	"	"	"	"	"	CE				"		"	
		56	GND	"	"	"	"	"	"	"	"	D				"		"	
		57	5.5 V	GND	"	"	"	"	"	"	"	A ₁₁				"		"	
		58	"	5.5 V	GND	"	"	"	"	"	"	A ₁₀				"		"	
		59	"	"	5.5 V	GND	"	"	"	"	"	A ₉				"		"	
		60	"	"	"	5.5 V	GND	"	"	"	"	A ₈				"		"	
61	"	"	"	"	5.5 V	GND	"	"	"	A ₇				"		"			
62	"	"	"	"	"	5.5 V	5.5 V	GND	"	A ₆				"		"			
I _{OHZ}		63	GND	GND	GND	GND	GND	GND	GND	5.5 V	Q		1.0		1.0		1.0	"	
		64	GND	GND	GND	GND	GND	GND	GND	GND	"	Q		1.0		1.0		1.0	"
I _{OLZ}		65	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	Q		-1.0		-1.0		-1.0	"
		66	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	Q		-1.0		-1.0		-1.0	"
I _{DD1}	3005	67	GND	GND	GND	GND	GND	GND	GND	GND	V _{DD} 5/		50		50		50	"	
I _{DD2}		68	"	"	"	"	"	"	"	"	V _{DD} 6/		"		"		"	"	
I _{DD3}		69	"	"	"	"	"	"	"	"	V _{DD} 7/		"		"		"	"	
I _{DD4}		70	"	"	"	"	"	"	"	"	"	V _{DD} 13/		"		"		"	"
												Subgroup 4 T _C = +25°C							
												Min	Max						
C _I	3012	71	8/	8/	8/	8/	8/	8/	8/	8/	GND	Each input		8					pF
												Subgroup 8 T _C = +125°C							
												Min	Max						
PWR DWN 16/		72	9/	9/	9/	9/	9/	9/	9/	9/	V _{DD}	2.0						V	
ADD COMP 16/		73	10/	10/	10/	10/	10/	10/	10/	10/	Q	10/	10/					V	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 01 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	74	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		120		120		120	ns	
t _{ELQV}		75	"	"	"	"	"	"		"	"	"	"		120		120		120	"	
t _{ELQX} 14/		76	"	"	"	"	"	"		"	"	"	"	5		5		5		"	
t _{EHQZ} 14/		77	"	"	"	"	"	"		"	"	"	"		50		50		50	"	
														Subgroup 12 T _C = +25°C							
														Min	Max						
I _{DDOP}		78	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	GND	<u>12/</u>			7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 01 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	74	11/	11/	11/	11/	11/	11/	11/	4.5 V	Q		120		120		120	ns	
t _{ELQV}		75	"	"	"	"	"	"	"	"	"		120		120		120	"	
t _{ELQX} 14/		76	"	"	"	"	"	"	"	"	"	5		5		5		"	
t _{EHQZ} 14/		77	"	"	"	"	"	"	"	"	"		50		50		50	"	
												Subgroup 12 T _C = +25°C							
												Min	Max						
I _{DDOP}		78	12/	12/	12/	12/	12/	12/	12/	5.5 V			7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 02.

Symbol	MIL-STD-883 method	Case V	Terminal conditions										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	CE	V _{SS}	W	Min	Max	Min	Max	Min	Max			
V _{IC} (POS)		1	100 μA										A ₆	0.1	2.0					V	
		2		100 μA									A ₅	"	"					"	
		3			100 μA								A ₄	"	"					"	
		4				100 μA							A ₃	"	"					"	
		5					100 μA						A ₀	"	"					"	
		6						100 μA					A ₁	"	"					"	
		7							100 μA				A ₂	"	"					"	
		8								100 μA			CE	"	"					"	
		9									100 μA		W	"	"					"	
		10											D ₃ /Q ₃	"	"					"	
		11											D ₂ /Q ₂	"	"					"	
		12											D ₁ /Q ₁	"	"					"	
		13											D ₀ /Q ₀	"	"					"	
		14											A ₉	"	"					"	
		15											A ₈	"	"					"	
		16											A ₇	"	"					"	
V _{IC} (NEG)		17	-100 μA								GND		A ₆	-0.1	-2.0					"	
		18		-100 μA									A ₅	"	"					"	
		19			-100 μA								A ₄	"	"					"	
		20				-100 μA							A ₃	"	"					"	
		21					-100 μA						A ₀	"	"					"	
		22						-100 μA					A ₁	"	"					"	
		23							-100 μA				A ₂	"	"					"	
		24								-100 μA			CE	"	"					"	
		25									-100 μA		W	"	"					"	
		26											D ₃ /Q ₃	"	"					"	
		27											D ₂ /Q ₂	"	"					"	
		28											D ₁ /Q ₁	"	"					"	
		29											D ₀ /Q ₀	"	"					"	
		30											A ₉	"	"					"	
		31											A ₈	"	"					"	
		32											A ₇	"	"					"	
V _{OL}	3007	33	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	0.8 V	"	2.5 V	Q		0.4		0.4		0.4	"	
V _{OH}	3006	34	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	0.8 V	"	2.5 V	Q	2.4		2.4		2.4		"	
I _{IH1} 4/	3010	35	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	5.5 V	All inputs together		1.0					μA	
I _{IH2}		36	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND	"	GND	A ₆		1.0		1.0			"
		37	GND	5.5 V	GND	"	"	"	"	"	"	"	A ₅		"		"			"	
		38	"	GND	5.5 V	"	"	"	"	"	"	"	A ₄		"		"			"	
		39	"	"	GND	5.5 V	"	"	"	"	"	"	A ₃		"		"			"	
		40	"	"	"	GND	5.5 V	"	"	"	"	"	A ₀		"		"			"	
		41	"	"	"	"	GND	5.5 V	"	"	"	"	A ₁		"		"			"	
		42	"	"	"	"	"	GND	5.5 V	"	"	"	A ₂		"		"			"	
		43	"	"	"	"	"	"	GND	5.5 V	"	"	CE		"		"			"	
		44	"	"	"	"	"	"	"	GND	5.5 V	"	W		"		"			"	
		45	"	"	"	"	"	"	"	"	GND	"	D ₃ /Q ₃		"		"			"	
		46	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"			"	
		47	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"			"	
		48	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"			"	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 02 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions								Measured terminal	Test limits						Unit
				11	12	13	14	15	16	17		18	Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C	
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1								GND	A ₆	0.1	2.0				V	
		2									A ₅	"	"				"	
		3									A ₄	"	"				"	
		4									A ₃	"	"				"	
		5									A ₀	"	"				"	
		6									A ₁	"	"				"	
		7									A ₂	"	"				"	
		8									CE	"	"				"	
		9									W	"	"				"	
		10	100 μA								D ₃ /Q ₃	"	"				"	
		11		100 μA							D ₂ /Q ₂	"	"				"	
		12			100 μA						D ₁ /Q ₁	"	"				"	
		13				100 μA					D ₀ /Q ₀	"	"				"	
		14					100 μA				A ₉	"	"				"	
		15						100 μA			A ₈	"	"				"	
		16							100 μA		A ₇	"	"				"	
V _{IC} (NEG)		17									A ₆	-0.1	-2.0				"	
		18									A ₅	"	"				"	
		19									A ₄	"	"				"	
		20									A ₃	"	"				"	
		21									A ₀	"	"				"	
		22									A ₁	"	"				"	
		23									A ₂	"	"				"	
		24									CE	"	"				"	
		25									W	"	"				"	
		26	-100 μA								D ₃ /Q ₃	"	"				"	
		27		-100 μA							D ₂ /Q ₂	"	"				"	
		28			-100 μA						D ₁ /Q ₁	"	"				"	
		29				-100 μA					D ₀ /Q ₀	"	"				"	
		30					-100 μA				A ₉	"	"				"	
		31						-100 μA			A ₈	"	"				"	
		32							-100 μA		A ₇	"	"				"	
V _{OL}	3007	33	2/	2/	2/	2/	4.5 V	4.5 V	4.5 V	4.5 V	Q		0.4		0.4		0.4	"
V _{OH}	3006	34	3/	3/	3/	3/	4.5 V	4.5 V	4.5 V	4.5 V	Q	2.4		2.4		2.4		"
I _{IH} 4/	3010	35	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	All inputs together		1.0					μA
I _{IH2}		36	GND	GND	GND	GND	GND	GND	GND	GND	A ₆		1.0		1.0			"
		37	"	"	"	"	"	"	"	"	A ₅		"		"			"
		38	"	"	"	"	"	"	"	"	A ₄		"		"			"
		39	"	"	"	"	"	"	"	"	A ₃		"		"			"
		40	"	"	"	"	"	"	"	"	A ₀		"		"			"
		41	"	"	"	"	"	"	"	"	A ₁		"		"			"
		42	"	"	"	"	"	"	"	"	A ₂		"		"			"
		43	"	"	"	"	"	"	"	"	CE		"		"			"
		44	"	"	"	"	"	"	"	"	W		"		"			"
		45	5.5 V	"	"	"	"	"	"	"	D ₃ /Q ₃		"		"			"
		46	GND	5.5 V	"	"	"	"	"	"	D ₂ /Q ₂		"		"			"
		47	"	GND	5.5 V	"	"	"	"	"	D ₁ /Q ₁		"		"			"
		48	"	"	GND	5.5 V	"	"	"	"	D ₀ /Q ₀		"		"			"

See footnotes at end of table III.

TABLE III. Group A inspection for device type Q2 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	CE	V _{SS}	W		Min	Max	Min	Max	Min	Max	
I _{IH2}	3010	49	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	A ₉		1.0		1.0			μA
		50	"	"	"	"	"	"	"	"	"	"	A ₈		"		"			"
		51	"	"	"	"	"	"	"	"	"	"	A ₇		"		"			"
I _{IL1} 4/	3009	52	"	"	"	"	"	"	"	"	"	All inputs together		-1.0					"	
I _{IL2}	3009	53	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	5.5 V	A ₆		-1.0		-1.0			"
		54	5.5 V	GND	"	"	"	"	"	"	"	"	A ₅		"		"			"
		55	"	5.5 V	GND	"	"	"	"	"	"	"	A ₄		"		"			"
		56	"	"	5.5 V	GND	"	"	"	"	"	"	A ₃		"		"			"
		57	"	"	"	5.5 V	GND	"	"	"	"	"	A ₀		"		"			"
		58	"	"	"	"	5.5 V	GND	"	"	"	"	A ₁		"		"			"
		59	"	"	"	"	"	5.5 V	GND	"	"	"	A ₂		"		"			"
		60	"	"	"	"	"	"	5.5 V	GND	"	"	CE		"		"			"
		61	"	"	"	"	"	"	"	5.5 V	"	GND	W		"		"			"
		62	"	"	"	"	"	"	"	"	"	5.5 V	D ₃ /Q ₃		"		"			"
		63	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"			"
		64	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"			"
		65	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"			"
		66	"	"	"	"	"	"	"	"	"	"	A ₉		"		"			"
		67	"	"	"	"	"	"	"	"	"	"	A ₈		"		"			"
		68	"	"	"	"	"	"	"	"	"	"	A ₇		"		"			"
I _{OHZ}		69	GND	GND	GND	GND	GND	GND	GND	5.5 V	"	"	Q ₃ /Q ₃		1.0		1.0		1.0	"
		70	"	"	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"	"
		71	"	"	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"	"
		72	"	"	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"	"
		73	"	"	"	"	"	"	"	GND	"	0.8 V	Q ₃ /Q ₃		"		"		"	"
		74	"	"	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"	"
		75	"	"	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"	"
		76	"	"	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"	"
I _{OLZ}		77	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	5.5 V	Q ₃ /Q ₃		-1.0		-1.0		-1.0	"
		78	"	"	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"	"
		79	"	"	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"	"
		80	"	"	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"	"
		81	"	"	"	"	"	"	"	GND	"	0.8 V	Q ₃ /Q ₃		"		"		"	"
		82	"	"	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"	"
		83	"	"	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"	"
		84	"	"	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"	"
I _{DD1}	3005	85	GND	GND	GND	GND	GND	GND	GND	"	"	GND	V _{DD} 5/		50		50		50	"
I _{DD2}		86	"	"	"	"	"	"	"	"	"	V _{DD} 6/		"		"		"	"	
I _{DD3}		87	"	"	"	"	"	"	"	"	"	V _{DD} 7/		"		"		"	"	
I _{DD4}		88	"	"	"	"	"	"	"	"	"	"	V _{DD} 13/		"		"		"	"
													Subgroup 4 T _C = +25°C							
													Min	Max						
C _i	3012	89	8/	8/	8/	8/	8/	8/		8/	GND	8/	Each input		10					pF

See footnotes at end of table III.

TABLE III. Group A inspection for device type 02 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}		Min	Max	Min	Max	Min	Max		
I _{IH2}	3010	49	GND	GND	GND	GND	5.5 V	GND	GND	5.5 V	A ₉		1.0		1.0			μA	
		50	"	"	"	"	GND	5.5 V	"	"	A ₈		"		"		"		
		51	"	"	"	"	GND	GND	5.5 V	"	A ₇		"		"		"		
I _{IL1} 4/	3009	52	"	"	"	"	"	GND	"	All inputs together		-1.0					"		
I _{IL2}	3009	53	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	A ₆		-1.0		-1.0			"	
		54	"	"	"	"	"	"	"	"	A ₅		"		"		"		
		55	"	"	"	"	"	"	"	"	A ₄		"		"		"		
		56	"	"	"	"	"	"	"	"	A ₃		"		"		"		
		57	"	"	"	"	"	"	"	"	A ₀		"		"		"		
		58	"	"	"	"	"	"	"	"	A ₁		"		"		"		
		59	"	"	"	"	"	"	"	"	A ₂		"		"		"		
		60	"	"	"	"	"	"	"	"	CE		"		"		"		
		61	"	"	"	"	"	"	"	"	W		"		"		"		
		62	GND	"	"	"	"	"	"	"	"	D ₃ /Q ₃		"		"		"	
		63	5.5 V	GND	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"		"	
		64	"	5.5 V	GND	"	"	"	"	"	"	D ₁ /Q ₁		"		"		"	
		65	"	"	5.5 V	GND	"	"	"	"	"	D ₀ /Q ₀		"		"		"	
		66	"	"	"	5.5 V	GND	"	"	"	"	A ₉		"		"		"	
		67	"	"	"	"	5.5 V	GND	"	"	"	A ₈		"		"		"	
		68	"	"	"	"	5.5 V	5.5 V	GND	"	"	A ₇		"		"		"	
I _{OHZ}		69	5.5 V	5.5 V	5.5 V	5.5 V	GND	GND	GND	"	Q ₃ /Q ₃		1.0		1.0		1.0	"	
		70	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"		
		71	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"		
		72	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"		
		73	"	"	"	"	"	"	"	"	Q ₃ /Q ₃		"		"		"		
		74	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"		
		75	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"		
		76	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"		
I _{OLZ}		77	GND	GND	GND	GND	5.5 V	5.5 V	5.5 V	"	Q ₃ /Q ₃		-1.0		-1.0		-1.0	"	
		78	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"		
		79	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"		
		80	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"		
		81	"	"	"	"	"	"	"	"	Q ₃ /Q ₃		"		"		"		
		82	"	"	"	"	"	"	"	"	Q ₂ /Q ₂		"		"		"		
		83	"	"	"	"	"	"	"	"	Q ₁ /Q ₁		"		"		"		
		84	"	"	"	"	"	"	"	"	Q ₀ /Q ₀		"		"		"		
I _{DD1}	3005	85					GND	GND	GND	"	V _{DD} 5/		50		50		50	"	
I _{DD2}		86					"	"	"	"	V _{DD} 6/		"		"		"		
I _{DD3}		87					"	"	"	"	V _{DD} 7/		"		"		"		
I _{DD4}		88					"	"	"	"	V _{DD} 13/		"		"		"		
												Subgroup 4 T _C = +25°C							
												Min	Max						
C _I	3012	89						8/	8/	8/	GND	Each input		10				pF	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 02 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions											Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	Subgroup 8 T _C = +25°C								
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	$\overline{\text{CE}}$	V _{SS}	$\overline{\text{W}}$	Min	Max							
PWR DWN 16/ ADD COMP 16/		90	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>		<u>9/</u>	GND	<u>9/</u>	V _{DD}	2.0						V	
		91	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>		<u>10/</u>	GND	<u>10/</u>	Q	<u>10/</u>	<u>10/</u>					V	
														Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
														Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	92	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		120		120		120	ns	
t _{ELQV}		93	"	"	"	"	"	"	"	"	"	"	"		120		120		120	"	
t _{ELOX} 14/		94	"	"	"	"	"	"	"	"	"	"	"	5		5		5		"	
t _{EHQZ} 14/		95	"	"	"	"	"	"	"	"	"	"	"		50		50		50	"	
														Subgroup 12 T _C = +25°C							
														Min	Max						
I _{DDP}		96	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	GND	<u>12/</u>	V _{DD}		7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 02 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 8 T _C = +125°C							
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}		Min	Max						
PWR DWN 16/		90					9/	9/	9/	9/	V _{DD}	2.0					V		
ADD COMP 16/		91					10/	10/	10/	10/	Q	10/	10/				V		
												Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
												Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	92	11/	11/	11/	11/	11/	11/	11/	4.5 V	Q		120		120		120	ns	
t _{ELQV}		93	"	"	"	"	"	"	"	"	"		120		120		120	"	
t _{ELQX} 14/		94	"	"	"	"	"	"	"	"	"	5		5		5		"	
t _{EHQZ} 14/		95	"	"	"	"	"	"	"	"	"		50		50		50	"	
												Subgroup 12 T _C = +25°C							
												Min	Max						
I _{DDOP}		96	12/	12/	12/	12/	12/	12/	12/	5.5 V	V _{DD}		7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max	
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1	50 μA										A ₀	0.1	2.0					V
		2		50 μA									A ₁	"	"					"
		3			50 μA								A ₂	"	"					"
		4				50 μA							A ₃	"	"					"
		5					50 μA						A ₄	"	"					"
		6						50 μA					A ₅	"	"					"
		7							50 μA				W	"	"					"
		8									50 μA		CE	"	"					"
		9											D	"	"					"
		10											A ₁₁	"	"					"
		11											A ₁₀	"	"					"
		12											A ₉	"	"					"
		13											A ₈	"	"					"
		14											A ₇	"	"					"
		15											A ₆	"	"					"
V _{IC} (NEG)		16	-50 μA								GND		A ₀	-0.1	-2.0					"
		17		-50 μA								"	A ₁	"	"					"
		18			-50 μA							"	A ₂	"	"					"
		19				-50 μA						"	A ₃	"	"					"
		20					-50 μA					"	A ₄	"	"					"
		21						-50 μA				"	A ₅	"	"					"
		22							-50 μA			"	W	"	"					"
		23									-50 μA	"	CE	"	"					"
		24										"	D	"	"					"
		25										"	A ₁₁	"	"					"
		26										"	A ₁₀	"	"					"
		27										"	A ₉	"	"					"
		28										"	A ₈	"	"					"
		29										"	A ₇	"	"					"
		30										"	A ₆	"	"					"
V _{OL}	3007	31	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	2/	4.5 V	"	GND	Q		0.4		0.4		0.4	"
V _{OH}	3006	32	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	3/	4.5 V	"	GND	Q	2.4		2.4		2.4		"

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	15	16	17	18	21	22	23	24								
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1								GND	A ₀	0.1	2.0				V	
		2									A ₁	"	"				"	
		3									A ₂	"	"				"	
		4									A ₃	"	"				"	
		5									A ₄	"	"				"	
		6									A ₅	"	"				"	
		7									W	"	"				"	
		8									CE	"	"				"	
		9	50 μA								D	"	"				"	
		10		50 μA							A ₁₁	"	"				"	
		11			50 μA						A ₁₀	"	"				"	
		12				50 μA					A ₉	"	"				"	
		13					50 μA				A ₈	"	"				"	
		14						50 μA			A ₇	"	"				"	
		15							50 μA		A ₆	"	"				"	
V _{IC} (NEG)		16									A ₀	"	"				"	
		17									A ₁	-0.1	-2.0				"	
		18									A ₂	"	"				"	
		19									A ₃	"	"				"	
		20									A ₄	"	"				"	
		21									A ₅	"	"				"	
		22									W	"	"				"	
		23									CE	"	"				"	
		24	-50 μA								D	"	"				"	
		25		-50 μA							A ₁₁	"	"				"	
		26			-50 μA						A ₁₀	"	"				"	
		27				-50 μA					A ₉	"	"				"	
		28					-50 μA				A ₈	"	"				"	
		29						-50 μA			A ₇	"	"				"	
		30							-50 μA		A ₆	"	"				"	
V _{OL}	3007	31	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	Q		0.4		0.4		0.4	"	
V _{OH}	3006	32	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	Q	2.4		2.4		2.4		"	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
		Case V	1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max	
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max	Min	Max	Min	Max	
I _{IH}	3010	33	5.5 V	GND	GND	GND	GND	GND		GND	GND	GND	A ₀				1.0			μA
		34	GND	5.5 V	GND	"	"	"		"	"	"	A ₁				"			"
		35	"	GND	5.5 V	"	"	"		"	"	"	A ₂				"			"
		36	"	"	GND	5.5 V	"	"		"	"	"	A ₃				"			"
		37	"	"	"	GND	5.5 V	"		"	"	"	A ₄				"			"
		38	"	"	"	"	GND	5.5 V	5.5 V		"	"	A ₅				"			"
		39	"	"	"	"	"	GND		5.5 V	"	"	W				"			"
		40	"	"	"	"	"	"		GND	"	5.5 V	CE				"			"
		41	"	"	"	"	"	"	"		"	GND	D				"			"
		42	"	"	"	"	"	"	"		"	"	A ₁₁				"			"
		43	"	"	"	"	"	"	"		"	"	A ₁₀				"			"
		44	"	"	"	"	"	"	"		"	"	A ₉				"			"
		45	"	"	"	"	"	"	"		"	"	A ₈				"			"
		46	"	"	"	"	"	"	"		"	"	A ₇				"			"
		47	"	"	"	"	"	"	"		"	"	A ₆				"			"
I _{IL}	3009	48	GND	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		5.5 V	"	5.5 V	A ₀				-1.0			"
		49	5.5 V	GND	5.5 V	"	"	"		"	"	"	A ₁				"			"
		50	"	5.5 V	GND	"	"	"		"	"	"	A ₂				"			"
		51	"	"	5.5 V	GND	"	"		"	"	"	A ₃				"			"
		52	"	"	"	5.5 V	GND	"		"	"	"	A ₄				"			"
		53	"	"	"	"	5.5 V	GND		"	"	"	A ₅				"			"
		54	"	"	"	"	"	5.5 V		GND	"	"	W				"			"
		55	"	"	"	"	"	"		5.5 V	"	GND	CE				"			"
		56	"	"	"	"	"	"		"	"	5.5 V	D				"			"
		57	"	"	"	"	"	"		"	"	"	A ₁₁				"			"
		58	"	"	"	"	"	"		"	"	"	A ₁₀				"			"
		59	"	"	"	"	"	"		"	"	"	A ₉				"			"
		60	"	"	"	"	"	"		"	"	"	A ₈				"			"
		61	"	"	"	"	"	"		"	"	"	A ₇				"			"
		62	"	"	"	"	"	"		"	"	"	A ₆				"			"
I _{OHZ}		63	GND	GND	GND	GND	GND	GND	5.5 V	"	"	"	Q		10		10		10	"
		64	GND	GND	GND	GND	GND	GND	5.5 V	GND	"	GND	Q		10		10		10	"
I _{OLZ}		65	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V	"	5.5 V	Q		-10		-10		-10	"
		66	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	GND	"	GND	Q		-10		-10		-10	"

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max		
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}									
I _{IH}	3010	33	GND	GND	GND	GND	GND	GND	GND	GND	5.5 V	A ₀				1.0			μA
		34	"	"	"	"	"	"	"	"	"	A ₁				"			"
		35	"	"	"	"	"	"	"	"	"	A ₂				"			"
		36	"	"	"	"	"	"	"	"	"	A ₃				"			"
		37	"	"	"	"	"	"	"	"	"	A ₄				"			"
		38	"	"	"	"	"	"	"	"	"	A ₅				"			"
		39	"	"	"	"	"	"	"	"	"	W				"			"
		40	"	"	"	"	"	"	"	"	"	CE				"			"
		41	5.5 V	"	"	"	"	"	"	"	"	D				"			"
		42	GND	5.5 V	"	"	"	"	"	"	"	A ₁₁				"			"
		43	"	GND	5.5 V	"	"	"	"	"	"	A ₁₀				"			"
		44	"	"	GND	5.5 V	"	"	"	"	"	A ₉				"			"
		45	"	"	"	GND	5.5 V	"	"	"	"	A ₈				"			"
		46	"	"	"	"	GND	5.5 V	"	"	"	A ₇				"			"
		47	"	"	"	"	GND	GND	5.5 V	"	"	A ₆				"			"
		I _{IL}	3009	48	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	A ₀				-1.0		
49	"			"	"	"	"	"	"	"	"	A ₁				"			"
50	"			"	"	"	"	"	"	"	"	A ₂				"			"
51	"			"	"	"	"	"	"	"	"	A ₃				"			"
52	"			"	"	"	"	"	"	"	"	A ₄				"			"
53	"			"	"	"	"	"	"	"	"	A ₅				"			"
54	"			"	"	"	"	"	"	"	"	W				"			"
55	"			"	"	"	"	"	"	"	"	CE				"			"
56	GND			"	"	"	"	"	"	"	"	D				"			"
57	5.5 V			GND	"	"	"	"	"	"	"	A ₁₁				"			"
58	"			5.5 V	GND	"	"	"	"	"	"	A ₁₀				"			"
59	"			"	5.5 V	GND	"	"	"	"	"	A ₉				"			"
60	"			"	"	5.5 V	GND	"	"	"	"	A ₈				"			"
61	"			"	"	"	5.5 V	GND	"	"	"	A ₇				"			"
62	"	"	"	"	5.5 V	5.5 V	GND	"	"	A ₆				"			"		
I _{OHZ}		63	GND	GND	GND	GND	GND	GND	GND	"	Q		10		10		10	"	
		64	GND	GND	GND	GND	GND	GND	GND	"	Q		10		10		10	"	
I _{OLZ}		65	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	Q		-10		-10		-10	"	
		66	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	Q		-10		-10		-10	"	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions <u>1/</u>												Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C				
		K	2	3	4	5	7	8	9	11	12	13	Min		Max	Min	Max	Min	Max		
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$	Min		Max	Min	Max	Min	Max		
I _{DD1}	3005	67	GND	GND	GND	GND	GND	GND		GND	GND	GND	V _{DD} <u>5/</u>		200		200		200	μA	
I _{DD2}		68	"	"	"	"	"	"		"	"	"	V _{DD} <u>6/</u>		"		"		"	"	
I _{DD3}		69	"	"	"	"	"	"		"	"	"	V _{DD} <u>7/</u>		"		"		"	"	
I _{DD4}		70	"	"	"	"	"	"		"	"	"	V _{DD} <u>13/</u>		"		"		"	"	
														Subgroup 4 T _C = +25°C							
														Min	Max						
C _i	3012	71	<u>8/</u>	<u>8/</u>	<u>8/</u>	<u>8/</u>	<u>8/</u>	<u>8/</u>		<u>8/</u>	GND	<u>8/</u>	Each input		8					pF	
														Subgroup 8 T _C = +125°C							
														Min	Max						
PWR DWN <u>16/</u>		72	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>		<u>9/</u>	GND	<u>9/</u>	V _{DD}	3.0						V	
Functional tests <u>16/</u>		73	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>		<u>10/</u>	GND	<u>10/</u>	Q	<u>10/</u>	<u>10/</u>					V	
														Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
														Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	74	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		320		320		320	ns	
t _{ELQV}		75	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		300		300		300	ns
														Subgroup 12 T _C = +25°C							
														Min	Max						
I _{DDOP}		76	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	GND	<u>12/</u>	V _{DD}		7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 03 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	15	16	17	18	21	22	23	24									
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max		
I _{DD1}	3005	67	GND	GND	GND	GND	GND	GND	GND	5.5 V	V _{DD} 5/		200		200		200	μA	
I _{DD2}		68	"	"	"	"	"	"	"	"	V _{DD} 6/		"		"		"	"	
I _{DD3}		69	"	"	"	"	"	"	"	"	V _{DD} 7/		"		"		"	"	
I _{DD4}		70	"	"	"	"	"	"	"	"	V _{DD} 13/		"		"		"	"	
												Subgroup 4 T _C = +25°C							
												Min	Max						
C _i	3012	71	8/	8/	8/	8/	8/	8/	8/	GND	Each input		8					pF	
												Subgroup 8 T _C = +125°C							
												Min	Max						
PWR DWN 16/		72	9/	9/	9/	9/	9/	9/	9/	9/	V _{DD}	3.0					V		
Functional tests 16/		73	10/	10/	10/	10/	10/	10/	10/	10/	Q	10/	10/				V		
												Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
												Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	74	11/	11/	11/	11/	11/	11/	11/	4.5 V	Q		320		320		320	ns	
t _{ELQV}		75	11/	11/	11/	11/	11/	11/	11/	11/	4.5 V	Q		300		300		300	ns
												Subgroup 12 T _C = +25°C							
												Min	Max						
I _{DDOP}		76	12/	12/	12/	12/	12/	12/	12/	5.5 V	V _{DD}		7					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max	
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	$\overline{\text{CE}}$	V _{SS}	W								
V _{IC} (POS)		1	50 μA										A ₆	0.1	2.0					V
		2		50 μA									A ₅	"	"					"
		3			50 μA								A ₄	"	"					"
		4				50 μA							A ₃	"	"					"
		5					50 μA						A ₀	"	"					"
		6						50 μA					A ₁	"	"					"
		7							50 μA				A ₂	"	"					"
		8								50 μA			CE	"	"					"
		9										50 μA	W	"	"					"
		10											D ₃ /Q ₃	"	"					"
		11											D ₂ /Q ₂	"	"					"
		12											D ₁ /Q ₁	"	"					"
		13											D ₀ /Q ₀	"	"					"
		14											A ₉	"	"					"
		15											A ₈	"	"					"
		16											A ₇	"	"					"
V _{IC} (NEG)		17	-50 μA									GND	A ₆	-0.1	-2.0					"
		18		-50 μA									A ₅	"	"					"
		19			-50 μA								A ₄	"	"					"
		20				-50 μA							A ₃	"	"					"
		21					-50 μA						A ₀	"	"					"
		22						-50 μA					A ₁	"	"					"
		23							-50 μA				A ₂	"	"					"
		24								-50 μA			CE	"	"					"
		25										-50 μA	W	"	"					"
		26											D ₃ /Q ₃	"	"					"
		27											D ₂ /Q ₂	"	"					"
		28											D ₁ /Q ₁	"	"					"
		29											D ₀ /Q ₀	"	"					"
		30											A ₉	"	"					"
		31											A ₈	"	"					"
		32											A ₇	"	"					"
V _{OL}	3007	33	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	GND	"	4.5 V	Q ₃ – Q ₀		0.4		0.4		0.4	"
V _{OH}	3006	34	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	GND	"	4.5 V	Q ₃ – Q ₀	2.4		2.4		2.4		"
I _{IH1} 4/	3010	35	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	5.5 V	All inputs together		1.0					μA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max	
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}								
V _{IC} (POS)		1								GND	A ₆	0.1	2.0				V	
		2									A ₅							
		3									A ₄	"	"				"	
		4									A ₃	"	"				"	
		5									A ₀	"	"				"	
		6									A ₁	"	"				"	
		7									A ₂	"	"				"	
		8									W	"	"				"	
		9									CE	"	"				"	
		10	50 μA								D ₃ /Q ₃	"	"				"	
		11		50 μA							D ₂ /Q ₂	"	"				"	
		12			50 μA						D ₁ /Q ₁	"	"				"	
		13				50 μA					D ₀ /Q ₀	"	"				"	
		14					50 μA				A ₉	"	"				"	
		15						50 μA			A ₈	"	"				"	
		16							50 μA		A ₇	"	"				"	
V _{IC} (NEG)		17									A ₆	-0.1	-2.0				"	
		18									A ₅	"	"				"	
		19									A ₄	"	"				"	
		20									A ₃	"	"				"	
		21									A ₀	"	"				"	
		22									A ₁	"	"				"	
		23									A ₂	"	"				"	
		24									W	"	"				"	
		25									CE	"	"				"	
		26	-50 μA								D ₃ /Q ₃	"	"				"	
		27		-50 μA							D ₂ /Q ₂	"	"				"	
		28			-50 μA						D ₁ /Q ₁	"	"				"	
		29				-50 μA					D ₀ /Q ₀	"	"				"	
		30					-50 μA				A ₉	"	"				"	
		31						-50 μA			A ₈	"	"				"	
		32							-50 μA		A ₇	"	"				"	
V _{OL}	3007	33	2/	2/	2/	2/	4.5 V	4.5 V	4.5 V	4.5 V	Q ₃ – Q ₀		0.4		0.4		0.4	"
V _{OH}	3006	34	3/	3/	3/	3/	4.5 V	4.5 V	4.5 V	4.5 V	Q ₃ – Q ₀	2.4		2.4		2.4		"
I _{IH1} 4/	3010	35	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	All inputs together		1.0					μA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13								
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	$\overline{\text{CE}}$	V _{SS}	$\overline{\text{W}}$		Min	Max	Min	Max	Min	Max	
I _{IH2}	3010	36	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND	GND	A ₆		1.0		1.0			μA
		37	GND	5.5 V	GND								A ₅							
		38		GND	5.5 V								A ₄							
		39			GND	5.5 V							A ₃							
		40				GND	5.5 V						A ₀							
		41					GND	5.5 V					A ₁							
		42						GND	5.5 V				A ₂							
		43							GND	5.5 V			$\overline{\text{CE}}$							
		44								GND		5.5 V	W							
		45										GND	D ₃ /Q ₃							
		46											D ₂ /Q ₂							
		47											D ₁ /Q ₁							
		48											D ₀ /Q ₀							
		49											A ₉							
		50											A ₈							
		51											A ₇							
I _{IL1} 4/	3009	52										All inputs together								
I _{IL2}		53		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		5.5 V	A ₆		-1.0		-1.0			
		54	5.5 V	GND	5.5 V								A ₅							
		55		5.5 V	GND								A ₄							
		56			5.5 V	GND							A ₃							
		57				5.5 V	GND						A ₀							
		58					5.5 V	GND					A ₁							
		59						5.5 V	GND				A ₂							
		60							5.5 V	GND			$\overline{\text{CE}}$							
		61								5.5 V		GND	W							
		62										5.5 V	D ₃ /Q ₃							
		63											D ₂ /Q ₂							
		64											D ₁ /Q ₁							
		65											D ₀ /Q ₀							
		66											A ₉							
		67											A ₈							
		68											A ₇							
I _{OHZ}		69	GND	GND	GND	GND	GND	GND	GND	5.5 V		5.5 V	D ₃ /Q ₃		10		10		10	
		70											D ₂ /Q ₂							
		71											D ₁ /Q ₁							
		72											D ₀ /Q ₀							
		73								GND		GND	D ₃ /Q ₃							
		74											D ₂ /Q ₂							
		75											D ₁ /Q ₁							
76												D ₀ /Q ₀								
I _{OLZ}		77	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		5.5 V	D ₃ /Q ₃		-10		-10		-10	
		78											D ₂ /Q ₂							
		79											D ₁ /Q ₁							
		80											D ₀ /Q ₀							
		81								GND		GND	D ₃ /Q ₃							
		82											D ₂ /Q ₂							
		83											D ₁ /Q ₁							
		84											D ₀ /Q ₀							

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	15	16	17	18	21	22	23	24	Min	Max	Min	Max	Min	Max		
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}								
I _{IH2}	3010	36	GND	GND	GND	GND	GND	GND	GND	5.5 V	A ₆		1.0		1.0			μA
		37										A ₅						
		38										A ₄						
		39										A ₃						
		40										A ₀						
		41										A ₁						
		42										A ₂						
		43										CE						
		44										W						
		45	5.5 V									D ₃ /Q ₃						
		46	GND	5.5 V								D ₂ /Q ₂						
		47		GND	5.5 V							D ₁ /Q ₁						
		48			GND	5.5 V						D ₀ /Q ₀						
		49				GND	5.5 V					A ₉						
		50					GND	5.5 V				A ₈						
		51					GND	GND	5.5 V			A ₇						
		I _{IL1} 4/	3009	52									All inputs together					
I _{IL2}	53	5.5 V		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V			A ₆		-1.0		-1.0			
	54										A ₅							
	55										A ₄							
	56										A ₃							
	57										A ₀							
	58										A ₁							
	59										A ₂							
	60										CE							
	61										W							
	62	GND									D ₃ /Q ₃							
	63	5.5 V		GND							D ₂ /Q ₂							
	64			5.5 V	GND						D ₁ /Q ₁							
	65				5.5 V	GND					D ₀ /Q ₀							
	66					5.5 V	GND				A ₉							
	67						5.5 V	GND			A ₈							
	68						5.5 V	5.5 V	GND		A ₇							
I _{OHZ}		69	5.5 V	5.5 V	5.5 V	5.5 V	GND	GND			D ₃ /Q ₃		10		10		10	
70										D ₂ /Q ₂								
71										D ₁ /Q ₁								
72										D ₀ /Q ₀								
73										D ₃ /Q ₃								
74										D ₂ /Q ₂								
75										D ₁ /Q ₁								
76									D ₀ /Q ₀									
I _{OLZ}		77	GND	GND	GND	GND	5.5 V	5.5 V	5.5 V		D ₃ /Q ₃		-10		-10		-10	
78										D ₂ /Q ₂								
79										D ₁ /Q ₁								
80										D ₀ /Q ₀								
81										D ₃ /Q ₃								
82										D ₂ /Q ₂								
83										D ₁ /Q ₁								
84									D ₀ /Q ₀									

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max	
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	CE	V _{SS}	W								
I _{DD1}	3005	85	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	V _{DD} 5/		250		250		250	μA
I _{DD2}		86	"	"	"	"	"	"		"	"	"	V _{DD} 6/		"		"	"	"	
I _{DD3}		87	"	"	"	"	"	"		"	"	"	V _{DD} 7/		"		"	"	"	
I _{DD4}		88	"	"	"	"	"	"	"	"	"	"	V _{DD} 13/		"		"	"	"	
													Subgroup 4 T _C = +25°C							
													Min	Max						
C _i	3012	89	8/	8/	8/	8/	8/	8/	8/	8/	GND	8/	Each input		10					pF
													Subgroup 8 T _C = +125°C							
													Min	Max						
PWR DWN 16/		90	9/	9/	9/	9/	9/	9/	9/	9/	GND	9/	V _{DD}	3.0						V
Functional tests 16/		91	10/	10/	10/	10/	10/	10/	10/	10/	GND	10/	Q	10/	10/					V
													Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
													Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	92	11/	11/	11/	11/	11/	11/	11/	11/	GND	11/	Q		320		320		320	ns
t _{ELQV}		93	11/	11/	11/	11/	11/	11/	11/	11/	11/	GND	11/	Q		300		300		300
													Subgroup 12 T _C = +25°C							
													Min	Max						
I _{DDOP}		94	12/	12/	12/	12/	12/	12/	12/	12/	GND	12/	V _{DD}		7					mA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 04 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions <u>1/</u>								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max		
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}									
I _{DD1}	3005	85					GND	GND	GND	5.5 V	V _{DD} <u>5/</u>		250		250		250	μA	
I _{DD2}		86					"	"	"	"	V _{DD} <u>6/</u>		"		"		"	"	
I _{DD3}		87					"	"	"	"	V _{DD} <u>7/</u>		"		"		"	"	
I _{DD4}		88					"	"	"	"	V _{DD} <u>13/</u>		"		"		"	"	
												Subgroup 4 T _C = +25°C							
												Min	Max						
C _I	3012	89					<u>8/</u>	<u>8/</u>	<u>8/</u>	GND	Each input		10					pF	
												Subgroup 8 T _C = +125°C							
												Min	Max						
PWR DWN <u>16/</u>		90					<u>9/</u>	<u>9/</u>	<u>9/</u>	<u>9/</u>	V _{DD}	3.0						V	
Functional tests <u>16/</u>		91					<u>10/</u>	<u>10/</u>	<u>10/</u>	<u>10/</u>	Q	<u>10/</u>	<u>10/</u>					V	
												Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
												Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4	92	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	4.5 V	Q		320		320		320	ns	
t _{ELQV}		93	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	4.5 V	Q		300		300		300	ns
												Subgroup 12 T _C = +25°C							
												Min	Max						
I _{DDOP}		94	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	5.5 V	V _{DD}		7				mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13	Min	Max	Min	Max	Min	Max		
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	W	V _{SS}	CE		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1	100 μA										A ₀	0.1	3.0					V
		2		100 μA									A ₁	"	"					"
		3			100 μA								A ₂	"	"					"
		4				100 μA							A ₃	"	"					"
		5					100 μA						A ₄	"	"					"
		6						100 μA					A ₅	"	"					"
		7								100 μA			W	"	"					"
		8										100 μA	CE	"	"					"
		9											D	"	"					"
		10											A ₁₁	"	"					"
		11											A ₁₀	"	"					"
		12											A ₉	"	"					"
		13											A ₈	"	"					"
		14											A ₇	"	"					"
		15											A ₆	-0.1	-3.0					"
V _{IC} (NEG)		16	-100μA									GND	A ₀	"	"					"
		17		-100μA									A ₁	"	"					"
		18			-100μA								A ₂	"	"					"
		19				-100μA							A ₃	"	"					"
		20					-100μA						A ₄	"	"					"
		21						-100μA					A ₅	"	"					"
		22								-100μA			W	"	"					"
		23										-100μA	CE	"	"					"
		24											D	"	"					"
		25											A ₁₁	"	"					"
		26											A ₁₀	"	"					"
		27											A ₉	"	"					"
		28											A ₈	"	"					"
		29											A ₇	"	"					"
		30											A ₆	"	"					"
I _{OL}	3007	31	GND	GND	GND	GND	GND	GND	0.4 V	4.75 V	"	GND	Q	4.0		2.5		4.0		mA
I _{OH}	3006	32	GND	GND	GND	GND	GND	GND	4.35 V	4.75 V	"	GND	Q	-3.0		-2.0		-3.0		mA
I _{IH}	3010	33	5.25 V	GND	GND	GND	GND	GND		GND	"	GND	A ₀		2.0		10			μA
		34	GND	5.25 V	GND	"	"	"		"	"	"	A ₁		"		"			"
		35	"	GND	5.25 V	"	"	"		"	"	"	A ₂		"		"			"
		36	"	"	GND	5.25 V	"	"		"	"	"	A ₃		"		"			"
		37	"	"	"	GND	5.25 V	"		"	"	"	A ₄		"		"			"
		38	"	"	"	"	GND	5.25 V		"	"	"	A ₅		"		"			"
		39	"	"	"	"	"	GND		5.25 V	"	"	W		"		"			"
		40	"	"	"	"	"	"		GND	"	5.25 V	CE		"		"			"
		41	"	"	"	"	"	"		"	"	GND	D		"		"			"
		42	"	"	"	"	"	"		"	"	"	A ₁₁		"		"			"
		43	"	"	"	"	"	"		"	"	"	A ₁₀		"		"			"
		44	"	"	"	"	"	"		"	"	"	A ₉		"		"			"
		45	"	"	"	"	"	"		"	"	"	A ₈		"		"			"
		46	"	"	"	"	"	"		"	"	"	A ₇		"		"			"
		47	"	"	"	"	"	"		"	"	"	A ₆		"		"			"

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/									Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18	Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C				
			K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max	
			Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max	
V _{IC} (POS)		1									GND	A ₀	0.1	3.0				V	
		2										A ₁							
		3										A ₂							
		4										A ₃							
		5										A ₄							
		6										A ₅							
		7										W							
		8										CE							
		9	100μA									D							
		10		100μA								A ₁₁							
		11			100μA							A ₁₀							
		12				100μA						A ₉							
		13					100μA					A ₈							
		14						100μA				A ₇							
		15							100μA			A ₆							
V _{IC} (NEG)		16										A ₀	-0.1	-3.0					
		17										A ₁							
		18										A ₂							
		19										A ₃							
		20										A ₄							
		21										A ₅							
		22										W							
		23										CE							
		24	-100μA									D							
		25		-100μA								A ₁₁							
		26			-100μA							A ₁₀							
		27				-100μA						A ₉							
		28					-100μA					A ₈							
		29						-100μA				A ₇							
		30							-100μA			A ₆							
I _{OL}	3007	31	GND	GND	GND	GND	GND	GND	GND	4.75 V	Q	4.0		2.5		4.0	mA		
I _{OH}	3006	32	GND	GND	GND	GND	GND	GND	GND	4.75 V	Q	-3.0		-2.0		-3.0	mA		
I _{IH}	3010	33									5.25 V	A ₀		2.0		10		μA	
		34										A ₁							
		35										A ₂							
		36										A ₃							
		37										A ₄							
		38										A ₅							
		39										W							
		40										CE							
		41	5.25 V									D							
		42	GND	5.25 V								A ₁₁							
		43		GND	5.25 V							A ₁₀							
		44			GND	5.25 V						A ₉							
		45				GND	5.25 V					A ₈							
		46					GND	5.25 V				A ₇							
		47					GND	GND	5.25 V			A ₆							

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/											Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10	Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C					
		K	2	3	4	5	7	8	9	11	12	13	Min		Max	Min	Max	Min	Max			
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$										
I _{IL}	3009	48	GND	5.25 V	5.25 V	5.25	5.25	5.25		5.25 V	GND	GND	A ₀		-2.0		-10			μA		
		49	5.25 V	GND	5.25 V	"	"	"	"	"	"	"	A ₁		"		"		"			
		50	"	5.25 V	GND	"	"	"	"	"	"	"	A ₂		"		"		"			
		51	"	"	5.25 V	GND	"	"	"	"	"	"	A ₃		"		"		"			
		52	"	"	"	5.25 V	GND	"	"	"	"	"	A ₄		"		"		"			
		53	"	"	"	"	5.25 V	GND	"	"	"	"	A ₅		"		"		"			
		54	"	"	"	"	"	5.25 V		GND	"	"	W		"		"		"			
		55	"	"	"	"	"	"		5.25	"	GND	CE		"		"		"			
		56	"	"	"	"	"	"		"	"	5.25	D		"		"		"			
		57	"	"	"	"	"	"		"	"	"	A ₁₁		"		"		"			
		58	"	"	"	"	"	"		"	"	"	A ₁₀		"		"		"			
		59	"	"	"	"	"	"		"	"	"	A ₉		"		"		"			
		60	"	"	"	"	"	"		"	"	"	A ₈		"		"		"			
		61	"	"	"	"	"	"		"	"	"	A ₇		"		"		"			
I _{OHZ}		62	"	"	"	"	"	"		"	"	"	A ₆		"		"		"			
		63	"	"	"	"	"	"	5.25 V	"	"	"	Q		5.0		30		5.0			
I _{OLZ}		64	"	"	"	"	"	"	5.25 V	GND	"	GND	Q		5.0		30		5.0			
		65	"	"	"	"	"	"	GND	5.25 V	"	5.25 V	Q		-5.0		-30		-5.0			
I _{SS1}	3005	66	"	"	"	"	"	"	GND	GND	"	GND	Q		-5.0		-30		-5.0			
		67	"	"	"	"	"	"		5.25 V	"	5.25 V	V _{SS} 5/		-100		-1000		-100			
		68	"	"	"	"	"	"		"	"	"	V _{SS} 6/		"		"		"			
		69	"	"	"	"	"	"		"	"	"	V _{SS} 7/		"		"		"			
I _{SS4}		70	"	"	"	"	"	"	"	"	"	V _{SS} 13/		"		"		"				
															Subgroup 4 T _C = +25°C							
															Min	Max						
C _i	3012	71	8/	8/	8/	8/	8/	8/		8/	GND	8/	Each input		5					pF		

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max		
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}									
I _{IL}	3009	48	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	A ₀		-2.0		-10			μA	
		49	"	"	"	"	"	"	"	"	"	A ₁		"		"		"	
		50	"	"	"	"	"	"	"	"	"	A ₂		"		"		"	
		51	"	"	"	"	"	"	"	"	"	A ₃		"		"		"	
		52	"	"	"	"	"	"	"	"	"	A ₄		"		"		"	
		53	"	"	"	"	"	"	"	"	"	A ₅		"		"		"	
		54	"	"	"	"	"	"	"	"	"	W		"		"		"	
		55	"	"	"	"	"	"	"	"	"	CE		"		"		"	
		56	GND	"	"	"	"	"	"	"	"	D		"		"		"	
		57	5.25 V	GND	"	"	"	"	"	"	"	A ₁₁		"		"		"	
		58	"	5.25 V	GND	"	"	"	"	"	"	A ₁₀		"		"		"	
		59	"	"	5.25 V	GND	"	"	"	"	"	A ₉		"		"		"	
		60	"	"	"	5.25 V	GND	"	"	"	"	A ₈		"		"		"	
		61	"	"	"	"	5.25 V	GND	"	"	"	A ₇		"		"		"	
		62	"	"	"	"	"	5.25 V	5.25 V	GND	"	A ₆		"		"		"	
I _{OHZ}		63	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	"	Q		5.0		30		5.0	"	
		64	"	"	"	"	"	"	"	"	"	Q		5.0		30		5.0	"
I _{OLZ}		65	"	"	"	"	"	"	"	"	Q		-5.0		-30		-5.0	"	
		66	"	"	"	"	"	"	"	"	Q		-5.0		-30		-5.0	"	
I _{SS1}	3005	67	"	"	"	"	"	"	"	"	V _{SS} 5/		-100		-1000		-100	"	
I _{SS2}		68	"	"	"	"	"	"	"	"	V _{SS} 6/		"		"		"	"	
I _{SS3}		69	"	"	"	"	"	"	"	"	V _{SS} 7/		"		"		"	"	
I _{SS4}		70	"	"	"	"	"	"	"	"	V _{SS} 13/		"		"		"	"	
												Subgroup 4 T _C = +25°C							
												Mon	Max						
C _i	3012	71	8/	8/	8/	8/	8/	8/	8/	GND	Each input		5					pF	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/											Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10			Subgroup 8 T _C = +125°C						
		K	2	3	4	5	7	8	9	11	12	13									
		Test No.	A ₀	A ₁	A ₂	A ₃	A ₄	A ₅	Q	$\overline{W}$	V _{SS}	$\overline{CE}$		Min	Max						
I _{CCDR}	9/	72	9/	9/	9/	9/	9/	9/	9/	9/	GND	9/	V _{DD}		400					μA	
PWR DWN		73	9/	9/	9/	9/	9/	9/		9/	GND	9/	V _{DD}	2.5						V	
Functional tests	15/	74	10/	10/	10/	10/	10/	10/		10/	GND	10/	Q	10/	10/					V	
														Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
														Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4 15/	75	11/	11/	11/	11/	11/	11/	11/	11/	GND	11/	Q		200		250		200	ns	
t _{ELQV}		76	11/	11/	11/	11/	11/	11/	11/	11/	GND	11/	Q		220		280		220	ns	
														Subgroup 12 T _C = +25°C							
														Min	Max						
I _{DDP}		77	12/	12/	12/	12/	12/	12/	12/	12/	GND	12/	V _{DD}		4.5					mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 05 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 8 T _C = +25°C							
		K	15	16	17	18	21	22	23	24									
		Test No.	D	A ₁₁	A ₁₀	A ₉	A ₈	A ₇	A ₆	V _{DD}		Min	Max	Min	Max	Min	Max		
I _{CCDR}	9/	72	9/	9/	9/	9/	9/	9/	9/	9/	V _{DD}		400					μA	
PWR DWN		73	9/	9/	9/	9/	9/	9/	9/	9/	V _{DD}	2.5						V	
Functional tests	15/	74	10/	10/	10/	10/	10/	10/	10/	10/	Q	10/	10/					V	
												Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C			
												Min	Max	Min	Max	Min	Max		
t _{AVQV}	Fig. 4 15/	75	11/	11/	11/	11/	11/	11/	11/	11/	4.75 V	Q		200		250		200	ns
t _{ELQV}		76	11/	11/	11/	11/	11/	11/	11/	11/	11/	4.75 V	Q		220		280		220
												Subgroup 12 T _C = +25°C							
												Min	Max						
I _{DDOP}		77	12/	12/	12/	12/	12/	12/	12/	12/	5.25 V	V _{DD}		4.5					mA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06.

Symbol	MIL-STD-883 method	Case V	Terminal conditions <u>1/</u>										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	2	3	4	5	7	8	9	11	12	13			Min	Max	Min	Max	Min		Max
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	$\overline{\text{CE}}$	V _{SS}	$\overline{\text{W}}$			Min	Max	Min	Max	Min		Max
V _{IC} (POS)		1	100 μA										A ₆	0.2	3.0					V	
		2		100 μA									A ₅	"	"					"	
		3			100 μA								A ₄	"	"					"	
		4				100 μA							A ₃	"	"					"	
		5					100 μA						A ₀	"	"					"	
		6						100 μA					A ₁	"	"					"	
		7							100 μA				A ₂	"	"					"	
		8								100 μA			$\overline{\text{CE}}$	"	"					"	
		9									100 μA		$\overline{\text{W}}$	"	"					"	
		10											D ₃ /Q ₃	"	"					"	
		11											D ₂ /Q ₂	"	"					"	
		12											D ₁ /Q ₁	"	"					"	
		13											D ₀ /Q ₀	"	"					"	
		14											A ₉	"	"					"	
		15											A ₈	"	"					"	
		16											A ₇	"	"					"	
V _{IC} (NEG)		17	-100 μA								GND		A ₆	-0.2	-3.0					"	
		18		-100 μA									A ₅	"	"					"	
		19			-100 μA							"	A ₄	"	"					"	
		20				-100 μA						"	A ₃	"	"					"	
		21					-100 μA					"	A ₀	"	"					"	
		22						-100 μA				"	A ₁	"	"					"	
		23							-100 μA			"	A ₂	"	"					"	
		24								-100 μA		"	$\overline{\text{CE}}$	"	"					"	
		25									"	-100 μA	$\overline{\text{W}}$	"	"					"	
		26									"		D ₃ /Q ₃	"	"					"	
		27									"		D ₂ /Q ₂	"	"					"	
		28									"		D ₁ /Q ₁	"	"					"	
		29									"		D ₀ /Q ₀	"	"					"	
		30									"		A ₉	"	"					"	
		31											A ₈	"	"					"	
		32											A ₇	"	"					"	
I _{OL}	3007	33	GND	GND	GND	GND	GND	GND	GND	GND	"	4.75 V	Q ₃ – Q ₀	2.6		1.7		2.6		mA	
I _{OH}	3006	34	GND	GND	GND	GND	GND	GND	GND	GND	"	4.75 V	Q ₃ – Q ₀	-1.8		-1.1		-1.8		mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C	Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C				
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max		
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}									
V _{IC} (POS)		1								GND	A ₆	0.2	3.0					V	
		2									A ₅	"	"					"	
		3									A ₄	"	"					"	
		4									A ₃	"	"					"	
		5									A ₀	"	"					"	
		6									A ₁	"	"					"	
		7									A ₂	"	"					"	
		8									CE	"	"					"	
		9									W	"	"					"	
		10	100 μA									D ₃ /Q ₃	"	"					"
		11		100 μA								D ₂ /Q ₂	"	"					"
		12			100 μA							D ₁ /Q ₁	"	"					"
		13				100 μA						D ₀ /Q ₀	"	"					"
		14						100 μA				A ₉	"	"					"
		15							100 μA			A ₈	"	"					"
		16								100 μA		A ₇	"	"					"
V _{IC} (NEG)		17									A ₆	-0.2	-3.0					"	
		18									A ₅	"	"					"	
		19									A ₄	"	"					"	
		20									A ₃	"	"					"	
		21									A ₀	"	"					"	
		22									A ₁	"	"					"	
		23									A ₂	"	"					"	
		24									CE	"	"					"	
		25									W	"	"					"	
		26	-100μA									D ₃ /Q ₃	"	"					"
		27		-100μA								D ₂ /Q ₂	"	"					"
		28			-100μA							D ₁ /Q ₁	"	"					"
		29				-100μA						D ₀ /Q ₀	"	"					"
		30					-100μA					A ₉	"	"					"
		31						-100μA				A ₈	"	"					"
		32							-100μA			A ₇	"	"					"
I _{OL}	3007	33	0.4 V	0.4 V	0.4 V	0.4 V	GND	GND	GND	4.75 V	Q ₃ – Q ₀	2.6		1.7		2.6		mA	
I _{OH}	3006	34	4.35 V	4.35 V	4.35 V	4.35 V	GND	GND	GND	4.75 V	Q ₃ – Q ₀	-1.8		-1.1		-1.8		mA	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06– Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max		
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	$\overline{\text{CE}}$	V _{SS}	$\overline{\text{W}}$									
I _{IH1} 4/	3010	35	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	GND	5.25 V	All inputs together		32		160			μA	
I _{IH2}		36	5.25 V	GND	GND	GND	GND	GND	GND	GND	GND	"	GND	A ₆		2.0		10			"
		37	GND	5.25 V	GND	"	"	"	"	"	"	"	"	A ₅		"		"			"
		38	"	GND	5.25 V	"	"	"	"	"	"	"	"	A ₄		"		"			"
		39	"	"	GND	5.25 V	"	"	"	"	"	"	"	A ₃		"		"			"
		40	"	"	"	GND	5.25 V	"	"	"	"	"	"	A ₀		"		"			"
		41	"	"	"	"	GND	5.25 V	"	"	"	"	"	A ₁		"		"			"
		42	"	"	"	"	"	GND	5.25 V	5.25 V	"	"	"	A ₂		"		"			"
		43	"	"	"	"	"	"	"	GND	5.25 V	"	"	$\overline{\text{CE}}$		"		"			"
		44	"	"	"	"	"	"	"	"	GND	5.25 V	5.25 V	$\overline{\text{W}}$		"		"			"
		45	"	"	"	"	"	"	"	"	"	"	GND	D ₃ /Q ₃		"		"			"
		46	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"			"
		47	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"			"
		48	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"			"
		49	"	"	"	"	"	"	"	"	"	"	"	A ₉		"		"			"
		50	"	"	"	"	"	"	"	"	"	"	"	A ₈		"		"			"
		51	"	"	"	"	"	"	"	"	"	"	"	A ₇		"		"			"
I _{IL1} 4/	3009	52	"	"	"	"	"	"	"	"	"	"	All inputs together		-32		-160			"	
I _{IL2}		53	GND	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	"	5.25 V	A ₆		-2.0		-10			"	
		54	5.25 V	GND	5.25 V	"	"	"	"	"	"	"	"	A ₅		"		"			"
		55	"	5.25 V	GND	"	"	"	"	"	"	"	"	A ₄		"		"			"
		56	"	"	5.25 V	GND	"	"	"	"	"	"	"	A ₃		"		"			"
		57	"	"	"	5.25 V	GND	"	"	"	"	"	"	A ₀		"		"			"
		58	"	"	"	"	5.25 V	GND	"	"	"	"	"	A ₁		"		"			"
		59	"	"	"	"	"	5.25 V	GND	"	"	"	"	A ₂		"		"			"
		60	"	"	"	"	"	"	5.25 V	GND	"	"	"	$\overline{\text{CE}}$		"		"			"
		61	"	"	"	"	"	"	"	5.25 V	GND	"	"	$\overline{\text{W}}$		"		"			"
		62	"	"	"	"	"	"	"	"	5.25 V	"	"	D ₃ /Q ₃		"		"			"
		63	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"			"
		64	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"			"
		65	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"			"
		66	"	"	"	"	"	"	"	"	"	"	"	A ₉		"		"			"
		67	"	"	"	"	"	"	"	"	"	"	"	A ₈		"		"			"
		68	"	"	"	"	"	"	"	"	"	"	"	A ₇		"		"			"

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06– Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C		
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max	
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}								
I _{IH1} 4/	3010	35	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	All inputs together		32		160			μA
I _{IH2}		36	GND	GND	GND	GND	GND	GND	GND	GND	A ₆		2.0		10			
		37									A ₅							
		38									A ₄							
		39									A ₃							
		40									A ₀							
		41									A ₁							
		42									A ₂							
		43									CE							
		44									W							
		45	5.25 V								D ₃ /Q ₃							
		46	GND	5.25 V							D ₂ /Q ₂							
		47		GND	5.25 V						D ₁ /Q ₁							
		48			GND	5.25 V					D ₀ /Q ₀							
		49				GND	5.25 V				A ₉							
		50					GND	5.25 V			A ₈							
		51					GND	GND	5.25 V		A ₇							
I _{IL1} 4/	3009	52							GND	All inputs together		-32		-160				
I _{IL2}		53	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	A ₆		-2.0		-10				
		54								A ₅								
		55								A ₄								
		56								A ₃								
		57								A ₀								
		58								A ₁								
		59								A ₂								
		60								CE								
		61								W								
		62	GND							D ₃ /Q ₃								
		63	5.25 V	GND						D ₂ /Q ₂								
		64		5.25 V	GND					D ₁ /Q ₁								
		65			5.25 V	GND				D ₀ /Q ₀								
		66				5.25 V	GND			A ₉								
		67					5.25 V	GND		A ₈								
		68					5.25 V	5.25 V	GND	A ₇								

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit	
			1	2	3	4	5	6	7	8	9	10		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max		
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	CE	V _{SS}	W									
I _{OHZ}	Z/	69	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	GND	5.25 V	D ₃ /Q ₃		5.0		50		5.0	μA
		70	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"		"	"
		71	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"		"	"
		72	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"		"	"
		73	"	"	"	"	"	"	"	"	"	GND	GND	D ₃ /Q ₃		"		"		"	"
		74	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"		"	"
		75	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"		"	"
		76	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"		"	"
I _{OLZ}	G/	77	"	"	"	"	"	"	"	"	5.25 V	"	5.25 V	D ₃ /Q ₃		-5.0		-50		-5.0	"
		78	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"		"	"
		79	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"		"	"
		80	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"		"	"
		81	"	"	"	"	"	"	"	"	"	GND	GND	D ₃ /Q ₃		"		"		"	"
		82	"	"	"	"	"	"	"	"	"	"	"	D ₂ /Q ₂		"		"		"	"
		83	"	"	"	"	"	"	"	"	"	"	"	D ₁ /Q ₁		"		"		"	"
		84	"	"	"	"	"	"	"	"	"	"	"	D ₀ /Q ₀		"		"		"	"
I _{SS1}	3005	85	GND	GND	GND	GND	GND	GND	GND	GND	5.25 V	"	5.25 V	V _{SS} 5/		-100		-1000		-100	"
I _{SS2}		86	"	"	"	"	"	"	"	"	"	"	"	V _{SS} 6/		"		"		"	"
I _{SS3}		87	"	"	"	"	"	"	"	"	"	"	"	V _{SS} 7/		"		"		"	"
I _{SS4}		88	"	"	"	"	"	"	"	"	"	"	"	V _{SS} 13/		"		"		"	"
														Subgroup 4 T _C = +25°C							
														Min	Max						
C _I	3012	89	8/	8/	8/	8/	8/	8/	8/	8/	GND	8/	Each input		5						pF
														Subgroup 8 T _C = +125°C							
														Min	Max						
I _{CCDR}		90	9/	9/	9/	9/	9/	9/	9/	9/		9/	V _{DD}		500						μA
PWR DWR		91	9/	9/	9/	9/	9/	9/	9/	9/	GND	9/	Q	2.5							V
Functional tests	15/	92	10/	10/	10/	10/	10/	10/	10/	10/	GND	10/	Q	10/	10/						V

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit	
			11	12	13	14	15	16	17	18		Subgroup 1 T _C = +25°C		Subgroup 2 T _C = +125°C		Subgroup 3 T _C = -55°C			
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max		
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}		Min	Max	Min	Max	Min	Max		
I _{OHZ}	Z/	69	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	5.25 V	D ₃ /Q ₃		5.0		50		5.0	μA	
		70	"	"	"	"	"	"	"	"	"		"		"		"	"	
		71	"	"	"	"	"	"	"	"	"		"		"		"	"	
		72	"	"	"	"	"	"	"	"	"		"		"		"	"	
		73	"	"	"	"	"	"	"	"	"		"		"		"	"	
		74	"	"	"	"	"	"	"	"	"		"		"		"	"	
		75	"	"	"	"	"	"	"	"	"		"		"		"	"	
		76	"	"	"	"	"	"	"	"	"		"		"		"	"	
I _{OLZ}	6/	77	GND	GND	GND	GND	"	"	"	"	D ₃ /Q ₃		-5.0		-50		-5.0	"	
		78	"	"	"	"	"	"	"	"	"		"		"		"	"	
		79	"	"	"	"	"	"	"	"	"		"		"		"	"	
		80	"	"	"	"	"	"	"	"	"		"		"		"	"	
		81	"	"	"	"	"	"	"	"	"		"		"		"	"	
		82	"	"	"	"	"	"	"	"	"		"		"		"	"	
		83	"	"	"	"	"	"	"	"	"		"		"		"	"	
		84	"	"	"	"	"	"	"	"	"		"		"		"	"	
I _{SS1}	3005	85	GND	GND	GND	GND	GND	GND	GND	5.25 V	V _{SS} 5/		-100		-1000		-100	"	
I _{SS2}		86	"	"	"	"	"	"	"	"	V _{SS} 6/		"		"		"	"	
I _{SS3}		87	"	"	"	"	"	"	"	"	V _{SS} 7/		"		"		"	"	
I _{SS4}		88	"	"	"	"	"	"	"	"	V _{SS} 13/		"		"		"	"	
												Subgroup 4 T _C = +25°C							
												Min	Max						
C _i	3012	89					8/	8/	8/	GND	Each input		5					pF	
												Subgroup 8 T _C = +125°C							
												Min	Max						
I _{CCDR}		90					9/	9/	9/	9/	V _{DD}		500					μA	
PWR DWR		91					9/	9/	9/	9/	Q	2.5						V	
Functional tests	15/	92					10/	10/	10/	10/	Q	10/	10/					V	

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 – Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/										Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10		Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C		
		K	2	3	4	5	7	8	9	11	12	13		Min	Max	Min	Max	Min	Max	
		Test No.	A ₆	A ₅	A ₄	A ₃	A ₀	A ₁	A ₂	CE	V _{SS}	W								
t _{AVOV}	Fig.6	93	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		200		250		200	ns
t _{ELQV}		94	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	<u>11/</u>	GND	<u>11/</u>	Q		200		280		200
														Subgroup 12 T _C = +25°C						
														Min	Max					
I _{DDOP}		95	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	<u>12/</u>	GND	<u>12/</u>	V _{DD}		6					mA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 - Continued.

Symbol	MIL-STD-883 method	Case V	Terminal conditions 1/								Measured terminal	Test limits						Unit
			11	12	13	14	15	16	17	18		Subgroup 9 T _C = +25°C		Subgroup 10 T _C = +125°C		Subgroup 11 T _C = -55°C		
		K	15	16	17	18	21	22	23	24		Min	Max	Min	Max	Min	Max	
		Test No.	D ₃ /Q ₃	D ₂ /Q ₂	D ₁ /Q ₁	D ₀ /Q ₀	A ₉	A ₈	A ₇	V _{DD}								
t _{AVQV}	Fig.6	93	11/	11/	11/	11/	11/	11/	11/	4.75 V	Q		200		250		200	ns
t _{ELQV}		94	11/	11/	11/	11/	11/	11/	11/	4.75 V	Q		200		280		200	ns
											Subgroup 12 T _C = +25°C							
											Min	Max						
I _{DDOP}		95	12/	12/	12/	12/	12/	12/	12/	5.25 V	V _{DD}		6					mA

See footnotes at end of table III.

TABLE III. Group A inspection for device type 06 - Continued.

- 1/ Pins not designated may be high level logic or low level logic. Exceptions are as follows: $V_{IC(pos)}$ test, the V_{SS} terminal shall be open, or if tester limitations prevent open, the GND condition is permitted; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open; I_{DD} test, the output terminal shall be open.
- 2/ Contents of addressed cell shall be data 0, $I_{OL} = 2$ mA for V_{OL} measurements, or $V_{OL} = 0.4$ V for I_{OL} measurements.
- 3/ Contents of addressed cell shall be data 1, $I_{OH} = -1$ mA for V_{OH} measurements, or $V_{OH} = 4.35$ V for I_{OH} measurements.
- 4/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at $+25^{\circ}\text{C}$ for each individual input or measure all inputs together.
- 5/ Fill memory with checkerboard data pattern.
- 6/ Fill memory with 1's.
- 7/ Fill memory with 0's.
- 8/ See 4.4.1c.
- 9/ Power down test (PWRDWN) terminal conditions shall be as follows:
 - a. Use load specified on figure 3.
 - b. The power down test shall be performed as follows:
 - (1) Power up RAM to full functional voltage.
 - (2) Write topologically true checkerboard pattern into RAM memory array.
 - (3) Reduce V_{DD} to required voltage. All device inputs shall be reduced along with V_{DD} , exercising special care to avoid latch-up.
 - (4) Maintain RAM at reduced voltage.
 - (5) Measure the leakage current during this period.
 - (6) Raise V_{DD} to full functional voltage.
 - (7) Verify RAM contents to be unchanged from pattern written in (2) above.
 - (8) Repeat steps (1) through (6) using the inverse checkerboard pattern.
- 10/ Functional test terminal conditions shall be as follows:
 - a. Use timing parameter and limits specified on figure 5.
 - b. Use several patterns (see appendix).
 - c. Use load specified on figure 3.
 - d. V_{DD} per appropriate type, see table III; $V_{IL} = V_{SS}$; $V_{IH} = V_{DD}$.
- 11/ Timing test terminal conditions shall be as follows:
 - a. Use timing parameter and limits specified on figure 5.
 - b. Use pattern of choice.
 - c. Use load specified on figure 3.
 - d. V_{DD} per appropriate type, see table III; $V_{IL} = V_{SS}$; $V_{IH} = V_{DD}$.
- 12/ Operating current test (I_{DDOP}) terminal conditions shall be as follows:
 - a. Period = 1 μs using a write cycle loop during measurement.
 - b. Use topologically true checkerboard pattern (see appendix).
 - c. $V_{IL} = 0$ V; $V_{IH} = 5.5$ V for device types 01 to 04, $V_{IH} = 5.25$ V for device types 05 and 06.

TABLE III. Group A inspection for device type 06 - Continued.

13/ Inverse checkerboard data pattern.

14/ Guaranteed but not tested.

15/ a. $V_{IL} = V_{SS}$, $V_{IH} = V_{DD}$ for 4.75 V MARCH, MASEST, GALPAT, t_{AVQV} , and t_{ELQV} tests.
b. $V_{IL} = 0.8\text{ V}$, $V_{IH} = V_{DD}/2$ maximum for noise immunity and 4.3 V MARCH tests. 1MHz cycle.

16/ Tested, but no values are printed for this parameter in variable data.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table V of MIL-PRF-38535. End-point electrical parameters shall be as specified in table II herein.

4.4.5 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured. RHA levels for device classes B and S shall be M, D, R, and H.

- a. End-point electrical parameters shall be as specified in table II herein.
- b. For device classes B and S subgroups 1 and 2 of table V method 5005 of MIL-STD-883, shall be tested as appropriate for device construction.

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

- a. Device shall be biased in accordance with table VII herein and meet the postirradiation end-point electrical parameters as defined in table VI herein as +25°C after exposure.
- b. Bias may be interrupted for up to 1 minute to remove devices to remote bias fixture. The start and completion of the end-point electrical parameter measurements shall not exceed 1 hour following irradiation.

4.4.5.1.1 Accelerated aging test. Accelerated aging 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 III herein and shall be the preirradiation 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 effect the RHA response of the device.

4.4.5.2 Additional information. When specified in the purchase order or contract, a copy of the following additional data shall be supplied.

- a. RHA upset levels.
- b. RHA delete limits.

4.4.6 Inspection of packaging. The inspection of package shall be as specified in.

4.5 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows:

NOTE: In order to prevent "latch-up" during device turn-on and also prevent a high initial operating current (I_{DDOP}), set all devices terminals equal to V_{SS} . Raise V_{DD} and $\overline{CE}$ simultaneously to normal system operating V_{DD} . Do not allow V_{IH} at $\overline{CE}$ to exceed $V_{DD} + 0.3$ volts while rising. Not necessary for SOS products.

4.5.1 Voltage and current. All voltages given are referenced to the microcircuit V_{SS} terminal. Currents given are conventional and positive when flowing into the referenced terminal.

4.5.2 Life test, burn-in, cooldown, and electrical test procedure. When devices are measured at +25°C following application of the steady-state life or burn-in test condition, all devices shall be cooled to +35°C prior to removal of bias voltages. Any electrical tests required shall first be performed at -55°C or +25°C prior to any +125°C tests that are required.

4.5.3 Delta measurements. Delta measurements, as specified in table II, 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 IV.

TABLE IV. Delta limits at +25°C.

Parameters <u>1/</u>	Limits <u>2/</u>			
	01, 02	03	04	05, 06
I _{DD}	+5 μ A	+15 μ A	+25 μ A	+30 μ A
V _{OL}	+60 mV	+60 mV	+60 mV	
V _{OH}	-200 mV	-400 mV	-400 mV	
I _{OL} , I _{OH}				$\pm 10\%$
I _{OHZ} , I _{OLZ}				± 500 nA
I _{IL} , I _{IH}	± 50 nA	± 100 nA	± 100 nA	

1/ Conditions and mechanization of measurements shall be as specified in table III, subgroup 1.

2/ Delta limits apply to an increase from the initial value (e.g., pre-life test I_{IH} = -120 nA, post-life test I_{IH} = -170 nA).

4.5.4 ESDS testing. ESDS testing in accordance with MIL-STD-883, method 3015, will be performed at initial qualification and after any processor design changes affecting input protection circuits.

4.5.5 Quiescent supply current test. When performing quiescent supply current measurements, the meter shall be placed so that all currents flow through the meter.

4.6 Data reporting. When specified in the contract or purchase order, a copy of the following data, as applicable, shall be supplied:

- Attributes data for all screening tests (see 4.2) and variables data for all static burn-in, dynamic burn-in, and steady state life test.
- A copy of each radiograph.
- The quality conformance inspection data (see 4.4).
- Parameter distribution data on parameters evaluated during burn-in.
- Final electrical parameters data.

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

TABLE VI. Post-irradiation end-point electrical parameters 1/

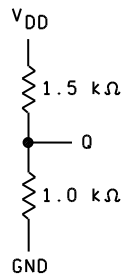
Test	Symbol	Conditions $V_{SS} = 0 \text{ V}$, $T_C = +25^\circ\text{C}$	Device type	Limits		Unit
				Min	Max	
Low level output voltage	V_{OL}	$V_{DD} = 4.5 \text{ V}$ $I_{OL} = 2 \text{ mA}$	03, 04		0.4	V
Output low drive current	I_{OL}	$V_{DD} = 4.75 \text{ V}$ $V_{OUT} = 0.4 \text{ V}$	05	2.5		mA
			06	1.7		
High level output voltage	V_{OH}	$V_{DD} = 4.5 \text{ V}$ $I_{OH} = -1 \text{ mA}$	03, 04	2.4		V
Output high drive current	I_{OH}	$V_{DD} = 4.75 \text{ V}$ $V_{OUT} = 4.35 \text{ V}$	05	2.0		mA
			06	1.1		
Input leakage current	I_{IH} I_{IL}	$V_{DD} = 5.5 \text{ V}$ $V_{IN} = \text{rail}$	03, 04		± 1	μA
		$V_{DD} = 5.25 \text{ V}$ $V_{IN} = \text{rail}$	05, 06		± 10	
High impedance output leakage	I_{OHZ} I_{OLZ}	$V_{DD} = 5.5 \text{ V}$ $V_{OUT} = \text{rail}$	03, 04		± 10	μA
		$V_{DD} = 5.25 \text{ V}$ $V_{OUT} = \text{rail}$	05		± 30	
			06		± 50	
Quiescent supply current	I_{DD}	$V_{DD} = 5.5 \text{ V}$	03		200	μA
			04		250	
	I_{SS}	$V_{DD} = 5.25 \text{ V}$	05, 06		1,000	
		$V_{DD} = 5.5 \text{ V}$ $f = 1 \text{ MHz}$	03, 04		7	mA
Operating current	I_{DDOP}	$V_{DD} = 5.25 \text{ V}$ $f = 1 \text{ MHz}$	05		4	
			06		6	
Address access time	t_{AVQV}	See table III	03, 04		320	ns
			05, 06		250	
Read or write cycle time	t_{EEL}	See table III	03, 04		420	ns
	t_{AVAV}	See table III	05, 06		250	
Data retention quiescent supply current	I_{CCDR}	$V_{DD} = 3 \text{ V}$ $I_{OUT} = 0$, $V_{IN} = \text{rail}$ voltages	03, 04		100	μA
		voltages $V_{DD} = 2.5 \text{ V}$ $I_{OUT} = 0$, $V_{IN} = \text{rail}$	50		400	
			06		500	

1/ The pre-irradiation end-point electrical parameter limit shall be as specified in table III herein at $+25^\circ\text{C}$.

TABLE VII. Bias during exposure to radiation.

Device type	Pin connections	$V_{SS} = \text{GND}$	$V_{DD} = 5 \text{ V dc}$
	V_{DD} (through a 1 k Ω to 60 k Ω resistor)		
03	1, 2, 3, 4, 5, 6, 7*, 8, 10, 11, 12, 13, 14, 15, 16, 17	9	18
04	1, 2, 3, 4, 5, 6, 7, 8, 10, 11*, 12*, 13*, 14*, 15, 16, 17	9	18
05	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17	9	18
06	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17	9	18

* Output pins connected to voltage divider.



6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Microcircuits conforming to this specification are intended for logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. PIN and compliance identifier, if applicable (see 1.2).
- c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- d. Requirements for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
- f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.
- g. Requirements for product assurance options.

- h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements will not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
- i. Requirements for "JAN" marking.
- j. Packaging Requirements (see 5.1)

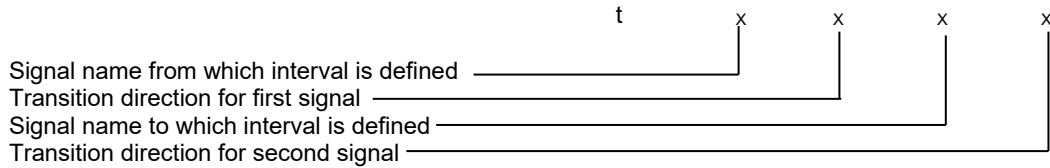
6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML No. 38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DLA Land and Maritime, ATTN: VQC, P.O. Box 3990, Columbus, OH 43218-3990, or e-mail: vqc.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://qpldocs.dla.mil/>.

6.4 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.

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

C _i	Input capacitance.
I _{DD} I _{SS}	Quiescent supply current
I _{DDOP}	Operating supply current
I _i	Input leakage current.
I _{OH}	Logical high output current.
I _{OL}	Logical low output current.
I _{OZ}	Output leakage current.
V _{DD}	Supply voltage
V _{DDR}	Data retention supply voltage.
V _{IH}	Logical high input voltage.
V _{IL}	Logical low input voltage.
V _{OH}	Logical high output voltage.
V _{OL}	Logical low output voltage.
t _{AVEL}	Address setup time.
t _{AVQV}	Address access time
t _{AVWH}	Address to end of write setup time.
t _{AVWL}	Address setup to start of write time.
t _{DVEL}	Write data setup time.
t _{DVWH}	Data setup time.
t _{ELQV}	Chip enable access time.
t _{WHEL}	Write enable high to chip enable low.
t _{WLEL}	Write enable pulse setup time to chip enable.
t _{ELQX}	Chip enable output enable time.
t _{WLQZ}	Write enable output disable time.
t _{EHQZ}	Chip enable output disable time.
t _{EHWH}	Output high-Z time.
t _{ELDX}	Write data hold time.
t _{QVWL}	Data valid to write time.
t _{ELEH}	Chip enable pulse negative width.
t _{EH}	Chip enable pulse positive width.
t _{ELAX}	Address hold time.
t _{WLWH}	Write enable pulse negative width
t _{WLEH}	Write enable pulse setup time to chip enable.
t _{ELWH}	Write enable pulse hold time from chip enable.
t _{WHDX}	Data hold time.
t _{ELEL}	Read or write cycle time.

6.5.1 Timing parameter abbreviations. All timing abbreviations use lower case characters with upper case character subscripts. The initial character is always t and is followed by four descriptors. These characters specify two signal points arranged in a "from-to" sequence that define a timing interval. The two descriptors for each signal point specify the signal name and the signal transitions. Thus the format is:



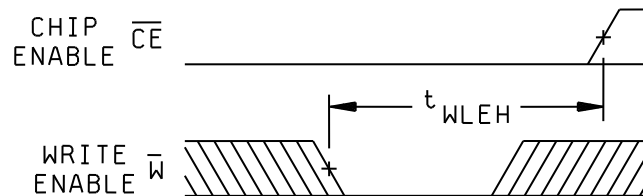
a. Signal definitions:

A = Address
 D = Data in
 Q = Data out
 W = Write enable
 E = Chip enable
 S = Chip select
 G = Output enable

b. Transition definitions:

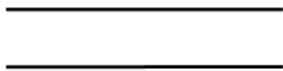
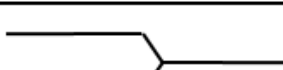
H = Transition to high
 L = Transition to low
 V = Transition to valid
 X = Transition to invalid or don't care
 Z = Transition to off (high impedance)

EXAMPLE:



The example shows write pulse setup time defined as t_{WLEH} – time from write enable low to chip enable high.

- c. Timing limits. The table of timing values shows either a minimum or a maximum limit for each parameter. Input requirements are specified from the external system point of view. Thus, address set-up time is shown as a minimum since the system must supply at least that much time (even though most devices do not require it). On the other hand, responses from the memory are specified from the device point of view. Thus, the access time is shown as a maximum since the device never provides data later than that time.
- d. Waveforms:

WAVEFORM SYMBOL	INPUT	OUTPUT
	MUST BE VALID	WILL BE VALID
	CHANGE FROM H TO L	WILL CHANGE FROM H TO L
	CHANGE FROM L TO H	WILL CHANGE FROM L TO H
	DON'T CARE ANY CHANGE PERMITTED	CHANGING STATE UNKNOWN
		HIGH IMPEDANCE

6.6 Logistic support. Lead materials and finishes (see 3.4) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.4). Longer length leads and lead forming should not affect the part number

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device type	Generic-industry Type
01	6504
02	6514
03	6504RH
04	6514RH
05	CMM5104
06	CMM5114

6.8 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

APPENDIX A

FUNCTIONAL ALGORITHMS

A.1 SCOPE

A.1.1 Scope. Functional algorithms are test patterns which define the exact sequence of events used to verify proper operation of a random access (RAM) memory. Each algorithm serves a specific purpose for testing the different modes of operation of the device. It is understood that all manufacturers do not have the same test equipment; therefore, it becomes the responsibility of each manufacturer to guarantee that the test patterns described herein are followed closely as possible, or equivalent patterns be used that serve the same purpose. Each manufacturer should demonstrate that this condition will be met. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

A.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

A.3 ALGORITHMS

A.3.1 Algorithm A.A.3.1.1 GALPAT.

- a. Write a background pattern of 0's throughout memory.
- b. Write a 1 (test bit) at the first location.
- c. Read location in sequence: read location 2, read test bit, read location 3, read test bit. Read in sequence until every location is read with test bit location.
- d. Move the test bit to second location and repeat the sequence in step C.
- e. Repeat the sequence until each cell is used as test bit location.
- f. Repeat steps b through e with a background pattern of 1's throughout memory.

A.3.2 Algorithm B.A.3.2.1 CHECKERBOARD.

- a. Write 0 and 1 alternately in the first or even row.
- b. Write 1 and 0 alternately in the second or odd row.
- c. Repeat steps a and b through all rows.
- d. Read 0 and 1 alternately in the first or even row.
- e. Read 1 and 0 alternately in the second or odd row.
- f. Repeat steps d and e through all rows.
- g. Repeat steps a through f with complement data.

A.3.3 Algorithm C.

APPENDIX A – Continued.

A.3.3.1 ADDCOMP.

- a. Write a true checkerboard throughout the memory.
- b. Verify each location by the address sequence: address, address complement, address, address +1, etc.
- c. Read out data pattern from memory.

A.3.4 Algorithm D.

A.3.4.1 MARCH.

- a. $i = \text{address } 0 \text{ to } 1023$
- b. Write 0's into all address locations.
- c. Starting at cell 0, read a 0, write a 1, read a 1.
- d. Address sequence: $i, i+1, i+2, \dots, i+n$ ($1 \leq n \leq 1023$) ($T = 0$).
- e. Starting at cell 1023, read a 1, write a 0, read a 0.
- f. Address sequence: $i, i-1, i-2, \dots, i-n$ ($1 \leq n \leq 1023$) ($T = 1023$).
- g. Repeat with opposite data.

A.3.5 Algorithm E.

A.3.5.1 MASEST

- a. $i = \text{address } 0 \text{ to } 1023$
- b. Write alternating pattern 101010 --- into all cells.
- c. Read cell $i+n$, go to cell $i+n$, and read the complement of cell $i+n$.
- d. Address sequence $i, \bar{i}, i+1, \overline{i+1}, \dots, i+n, \overline{i+n}$ ($0 \leq n \leq 1023$) ($i = 0$).
- e. Repeat steps b and c with the complement checkerboard pattern.

A.3.6 Algorithm E.

A.3.6.1 DISTURB.

- a. Write 1's into all memory locations.
- b. Read all 1's.
- c. Disable write as follows: Make $\overline{CS} = V_{DD}$.
- d. Attempt to write 0's into all memory locations.
- e. Read all 1's to verify original data.
- f. Repeat with opposite data.

Custodians:
Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Army – MI, SM
Navy - AS, CG, MC, SH
Air Force – 03,19

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NOTE: The activities listed above were interested in this document as of the date of this document. Since organization and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.