

INCH POUND

MIL-M-38510/504B
28 October 2005
SUPERSEDING
MIL-M-38510/504A (USAF)
30 August 1984

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR PROGRAMMABLE LOGIC, MONOLITHIC SILICON

Inactive for new design after 28 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 monolithic silicon, bipolar, programmable logic microcircuits which employ titanium tungsten (TiW) resistors as the fusible link or programming element. Two product assurance classes and a choice of case outlines and lead materials and finishes are provided for each type and are reflected in the complete 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.4).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 type. The device type is as follows:

<u>Device type</u>	<u>Circuit</u>
01	16 input 8 output and or invert gate array
02	16 input 8 output registered and or gate array
03	16 input 6 output registered and or gate array
04	16 input 4 output registered and or gate array
05	16 input 4 output registered and or exclusive or array
06	16 input 4 output registered and carry or exclusive or gate array
07	16 input 8 output and or invert gate array
08	16 input 8 output registered and or gate array
09	16 input 6 output registered and or gate array
10	16 input 4 output registered and or gate array

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: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, P. O. Box 3990, Columbus, OH 43218-3990, or emailed to memory@dsccl.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

1.2.3 Case outline. 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>
R	GDIP1-T20, CDIP2-T20	20	Dual in line package
2	CQCC1-N20	20	Square chip carrier package
Y	Figure 1 (20 lead, 3/8" x3/8")	20	Flat package

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V to +12.0 V
Input voltage range	-1.5 V to +12.0 V
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	260°C
Thermal resistance, junction-to-case (θ_{JC}) ^{1/}	(See MIL-STD-1835)
Output voltage applied	-1.5 V to +12.0 V
Output sink current	100 mA
Maximum power dissipation (P_D) ^{2/}	
Device types 01, 02, 03, 04, 05, 06	2.0 W
Device types 07, 08, 09, 10	1.1 W
Maximum junction temperature (T_J)	+175°C

1.4 Recommended operating conditions.

Supply voltage	4.5 V minimum to 5.5 V maximum
Minimum high level input voltage (V_{IH})	2.0 V
Maximum low level input voltage (V_{IL})	0.8 V
Case operating temperature range (T_C)	-55°C to 125°C

2.0 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. Unless otherwise specified, the following specifications and standards of the issue cited in the solicitation or contract, form a part of this specification to the extent specified herein.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

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

^{1/} Heat sinking is recommended to reduce the junction temperature.

^{2/} Must withstand the added P_D due to short circuit (e.g., I_{OS}) test

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, 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). When manufacturer programmed devices are delivered to the user, an altered item drawing shall be prepared by the acquiring activity to specify the required program configuration.

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.

3.3.1 Terminal connections. Terminal connections shall be as specified on figure 2.

3.3.2 Truth tables.

3.3.2.1 Unprogrammed Devices. The truth table for unprogrammed devices for contracts involving no altered item drawing shall be as specified on Figure 3. When required in groups A, B, or C (see 4.4), the devices shall be programmed by the manufacturer prior to test. A minimum of 50 percent of the total number of fuses shall be programmed or to any altered item drawing pattern which programs at least 25 percent of the total number of fuses.

3.3.2.2 Programmed Devices. The truth table for programmed devices shall be as specified by the altered item drawing.

3.3.3 Logic diagram. The logic diagram for unprogrammed devices shall be as specified on figure 4.

3.3.4 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.

3.6 Electrical test requirements. Electrical test requirements shall be as specified in table II and (where applicable), the altered item drawing for the applicable device type and device class. The subgroups of Table III which constitute the minimum electrical test requirements for screening, qualification, and quality conformance, by device class, are specified in table II.

3.7 Marking. Marking shall be in accordance with MIL-PRF-38535. For programmed devices, the altered item drawing number shall be added to the marking by the programming activity.

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

3.8.1 Unprogrammed device delivered to the user. All testing shall be verified through group A testing as defined in 3.3.2.1, tables II and III. It is recommended that users perform subgroups 7 and 9 after programming to verify the specific program configuration.

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

3.9 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 14 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ T _C = -55°C to +125°C	Device type	Limits		Unit
				Min	Max	
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V; I _I = -18 mA	All	---	-1.5	V
High level output voltage	V _{OH}	V _{CC} = 4.5 V; V _{IL} = 0.0 V V _{IH} = 3.0 V, I _{OH} = -2 mA	01-06	2.4	---	V
			07-10	2.3	---	
Low level output voltage	V _{OL}	V _{CC} = 4.5 V, V _{IL} = 0.0 V I _{IH} = 3.0 V; I _{OL} = 12 mA	All	---	0.5	V
High level input voltage	V _{IH}	V _{CC} = 5.5 V	All	2.0	---	V
Low level input voltage	V _{IL}	V _{CC} = 5.5 V	All	---	0.8	V
High level input current	I _{IH}	V _{CC} = 5.5 V, V _I = 2.4 V 3/	All	---	25	μA
Low level input current	I _{IL}	V _{CC} = 5.5 V, V _I = 0.4 V 3/	All	---	-0.25	mA
Output short circuit current	I _{OS}	V _{CC} = 5 V, V _O = 0.0 V 2/	All	-30	-250	mA
Input current	I _I	V _{CC} = 5.5 V, V _I = 5.5 V	All	---	1.0	mA
Off-state output current	I _{OZL}	V _{CC} = 5.5 V, V _{IL} = 0.0 V V _{IH} = 3.0 V, V _O = 0.4 V 3/	All	---	-100	μA
Off-state output current	I _{OZH}	V _{CC} = 5.5 V, V _{IL} = 0.0 V V _{IH} = 3.0 V, V _O = 2.4 V 3/	All	---	100	μA
Supply current	I _{CC}	V _{CC} = 5.5 V	01,02 03,04	---	180	mA
			05	---	225	mA
			06	---	240	mA
			07	---	105	mA
			08	---	90	
			09,10	---		
Propagation delay data input to output	t _{PHL}	See figure 5 4/	01,03 04	---	30	ns
			05,06	---	45	ns
			07,09 10	---	50	ns
Propagation delay data input to output	t _{PLH}		01,03 04	---	30	ns
			05,06	---	45	ns
			07,09 10	---	50	ns
Propagation delay high impedance to output high	t _{PZH}		01,03 04	---	30	ns
			05,06 07,09 10	---	45	ns
Propagation delay high impedance to output low	t _{PZL}		01,03 04	---	30	ns
			05,06 07,09 10	---	45	ns
Propagation delay high to high impedance	t _{PHZ}		01,03 04	---	30	ns
			05,06 07,09 10	---	45	ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions 1/ T _C = -55°C to +125°C	Device type	Limits		Unit
				Min	Max	
Propagation delay low to high impedance	t _{PLZ}	See figure 5 <u>4/</u>	01,03 04	---	30	ns
			05,06 07,09 10	---	45	ns
Propagation delay high impedance to output high (pin 11 to output enable)	t _{PZH}	See figure 5 <u>5/</u>	02,03 04,05 06,08 09,10	---	25	ns
Propagation delay high impedance to output low (pin 11 to output enable)	t _{PZL}		02,03 04,05 06,08 09,10	---	25	ns
Propagation delay output high to high impedance (pin 11 to output disable)	t _{PHZ}		02,03 04,05 06,08 09,10	---	25	ns
Propagation delay output low to high impedance (pin 11 to output disable)	t _{PLZ}		02,03 04,05 06,08 09,10	---	25	ns
Clock to output high	t _{PCH}		See figure 5 <u>5/</u>	02,03 04	---	25
Clock to output low	t _{PCL}	05,06 08,09 10		---	25	ns
		02,03 04		---	20	ns
		05,06 08,09 10		---	25	ns
		02,03 04		20	---	ns
Minimum clock pulse width	t _{P(CL)}	05,06 08,09 10		25	---	ns
		02,03 04		30	---	ns
Minimum setup time	t _{SU}	05,06		55	---	ns
		08,09 10		50	---	ns
Minimum hold time	t _H	See figure 5 <u>5/</u>	All	0	---	ns
Maximum clock frequency	f _{MAX}	See figure 5 <u>5/</u>	02,03 04	---	20	MHz
			05,06	---	12	MHz
			08,09 10	---	14	MHz

1/ Complete terminal conditions shall be as specified in table III.2/ Only one output shorted at a time.3/ I/O terminal leakage is the worst case I_{IX} or I_{OZH} .4/ Applies to nonregistered outputs only, with internal output enables.5/ Applies to registered outputs only, with external output enables (pin 11).

TABLE II. Electrical test requirements.

MIL-PRF-38535 Test requirements	Subgroups (see table III)	
	Class S Devices	Class B Devices
Interim electrical test parameters (pre burn in)	1	1
Final electrical test parameters for unprogrammed devices	1*, 2, 3, 7*, 8	1*, 2, 3, 7*, 8
Final electrical test parameters for programmed devices	1*, 2, 3, 7*, 8, 9, 10, 11	1*, 2, 3, 7*, 8, 9
Group A test requirements	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 8, 9, 10, 11
Group B electrical test parameters when using the method 5005 QCI option 2/	1, 2, 3, 7, 8, 9, 10, 11	N/A
Group C end-point electrical parameters	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 8
Group D end point electrical parameters	1, 2, 3, 7, 8	1, 2, 3, 7, 8

NOTES:

1. (*) indicates PDA applies to subgroup 1 and 7.
2. Any or all subgroups may be combined when using high speed testers.
3. Subgroups 7 and 8 shall consist of verifying the pattern specified.

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 prior to qualification, and conformance inspection. The following additional criteria shall apply:

- a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document 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.
- b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.
- c. Additional screening for space level product shall be as specified in MIL-PRF-38535.
- d. All devices processed by the manufacturer to an altered item drawing shall be programmed prior to burn in.

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535. Qualification data for subgroups 7, 8, 9, 10 and 11 shall be by attributes only.

4.4 Technology Conformance Inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535.

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.
- b. Subgroups 4, 5, and 6 shall be omitted.
- c. For unprogrammed devices, a sample shall be selected to satisfy programmability requirements. Twelve devices shall be submitted to programming (see 3.3.2.1). If more than 2 devices fail to program, the lot shall be rejected. At the manufacturers option, the sample may be increased to 24 total devices with no more than 4 total device failures allowable.
- d. For unprogrammed devices, 10 devices from the programmability sample shall be submitted to the requirements of the specified tests of subgroups 1, 2, 3 designated for programmed devices only. If any device fails, the lot shall be rejected.
- e. For unprogrammed devices, 10 devices from the programmability sample shall be submitted to the requirements of group A, subgroups 9, 10, 11. If more than two total devices fail the lot shall be rejected. At the manufacturers option, the sample may be increased to 20 total devices with no more than 4 total device failures allowable.

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

- a. Electrical parameters shall be as specified in table II herein.

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.
- 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.
- c. For qualification, at least 50 percent of the sample selected for testing in subgroup 1 shall be programmed (see 3.2.2). For quality conformance inspection, the programmability sample (see 4.4.1c) shall be included in the life tests.

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

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

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

4.6 Programming / verifying procedure for circuit A, B, and C. The programming specifications on figure 6a, figure 7 and table IV for circuit A; figure 6b, figure 7, and table V for circuit B; and figure 6c, figure 7 and table VI for circuit C, and the following procedures shall be used for programming the device.

4.6.1 Pre-verification.

- a. Raise V_{CC} to 5.0 V.
- b. Raise output disable pin, OD, to V_{IH} .

- c. Select an input line by specifying inputs and L/R as shown in table VII for circuits A, B, and C.
- d. Select a product line by specifying A_0 , A_1 , and A_2 one of eight. Select as shown in table VIII for circuits A, B, and C.
- e. Pulse the CLOCK pin and verify (with CLOCK at V_{IL}) that the output pins, O_0 through O_3 , are in the state corresponding to an unblown fuse. Use the minimum timing conditions as specified on figure 6a for circuit A, figure 6b for circuit B, and figure 6c for circuit C.
 - For verified unblown condition, continue procedure from C through E.
 - For verified blown condition, stop procedure.

4.6.2 Programming Algorithm.

- a. Raise output disable pin, OD to V_{IHH} .
- b. Lower CLOCK pin to V_{IL} .
- c. Select an input line as specified in 4.6.1c.
- d. Select a product line as specified in 4.6.1d.
- e. Raise V_{CC} to V_{IHH} .
- f. Program the fuse by pulsing the output pins of the selected group - one at a time - to V_{IHH} , see figure 6a for circuit A, figure 6b for circuit B, and figure 6c for circuit C.
- g. Lower V_{CC} to 5.0 V.
- h. Repeat this procedure from c until pattern is complete.

4.6.3 First verification pass / for all fuse locations.

- a. Raise V_{CC} to 4.5 V.
- b. Select input line as specified in 4.6.1c.
- c. Select a product line as specified in 4.6.1d.
- d. Pulse the CLOCK pin and verify (with CLOCK at V_{IL}) that the output pins, O_0 through O_3 , are in the correct state.
 - For verified output state, continue procedure.
 - For overblown conditions, stop procedure.
 - For underblown condition, reject part.
- e. Repeat this procedure from b until the entire array is exercised.

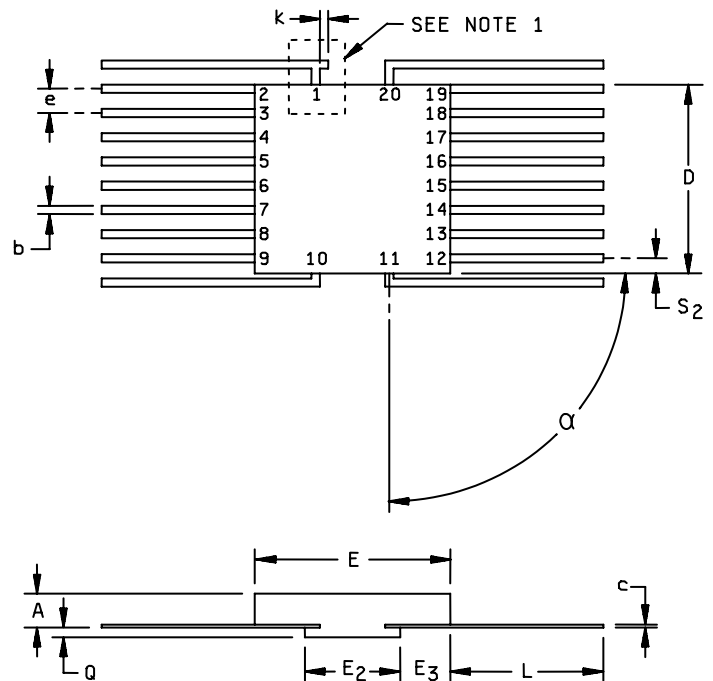
4.6.4 High voltage verify / for all fuse locations.

- a. Raise V_{CC} to 5.5 V.
- b. Repeat from 4.6.3b to 4.6.3d until the entire array is exercised.

Programming should be attempted at room temperature, 15°C to 30°C.

To prevent further programming, security fuses may be blown. Raise V_{CC} to 6.0 V, and raise pins 1 and 11 to V_P volts for 10 ms to 1s.

Symbol	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	.006	.090	.15	2.29	
b	.015	.019	3.81	.48	5
c	.003	.006	.08	.15	5
D	.37	.41	9.4	10.41	3
E	.37	.41	9.4	10.41	
E ₂	.130		3.3		
E ₃	.030		.76		9
e	.050 BSC		1.27 BSC		4, 6
k					8
L		.305		7.75	
Q	.010	.040	.25	1.02	2
S ₂	.005		.13		8
α	30	90	30	90	8, 9



NOTES:

1. Index area; a notch or a pin one identification mark shall be located adjacent to pin one and shall be located within the shaded area shown. The manufacturer's identification shall not be used as a pin one identification mark. Alternatively, a tab (dimension k) may be used to identify pin one.
2. Dimension Q shall be measured at the point of exit of the lead from the body. Dimension Q shall be .0085 (.216 mm) minimum when lead finish A is applied.
3. This dimension allows for off center lid, meniscus and glass overrun.
4. The basic pin spacing is .050 (1.25 mm) between centerlines. Each pin centerline shall be located within .005 (.13 mm) of its exact longitudinal position relative to pins 1 and 20.
5. All leads – Increase maximum limit by .003 (.08 mm) measured at the center of the flat, when lead finish A is applied.
6. Eighteen spaces.
7. Optional, see note 1. If a pin one identification mark is used in addition to this tab, the minimum limit of dimension k does not apply.
8. Applies to leads number 1, 10, 11 and 20.
9. Lead configuration is optional within dimension E except dimensions b and c apply (see MIL-STD-1835)

FIGURE 1. Case outline Y (20 lead, 3/8 " x 3/8" flat pack).

Pin number	Pin name					
Cases	Device type 01 and 07	Device type 02 and 08	Device type 03 and 09	Device type 04 and 10	Device type 05	Device type 06
R, Y, and 2	R, Y and 2 1/	R, Y and 2 1/	R, Y and 2 1/	R, Y and 2 1/	R, Y and 2 1/	R, Y and 2 1/
1	I ₀	CLOCK	CLOCK	CLOCK	CLOCK	CLOCK
2	I ₁	I ₀	I ₀	I ₀	I ₀	I ₀
3	I ₂	I ₁	I ₁	I ₁	I ₁	I ₁
4	I ₃	I ₂	I ₂	I ₂	C/I ₂	C/I ₂
5	I ₄	I ₃	I ₃	I ₃	C/I ₃	C/I ₃
6	I ₅	I ₄	I ₄	I ₄	C/I ₄	C/I ₄
7	I ₆	I ₅	I ₅	I ₅	C/I ₅	C/I ₅
8	I ₇	I ₆	I ₆	I ₆	I ₆	I ₆
9	I ₈	I ₇	I ₇	I ₇	I ₇	I ₇
10	GND	GND	GND	GND	GND	GND
11	I ₉	OE	OE	OE	OE	OE
12	O ₀	O ₀	I/O ₀	I/O ₀	I/O ₁	I/O ₀
13	I/O ₁	O ₁	O ₁	I/O ₁	I/O ₂	I/O ₁
14	I/O ₂	O ₂	O ₂	O ₂	O ₃	O ₂
15	I/O ₃	O ₃	O ₃	O ₃	O ₄	O ₃
16	I/O ₄	O ₄	O ₄	O ₄	O ₅	O ₄
17	I/O ₅	O ₅	O ₅	O ₅	O ₆	O ₅
18	I/O ₆	O ₆	O ₆	I/O ₆	I/O ₇	I/O ₆
19	O ₇	O ₇	I/O ₇	I/O ₇	I/O ₈	I/O ₇
20	V _{CC}	V _{CC}	V _{CC}	V _{CC}	V _{CC}	V _{CC}

1/ For Case 2, option A has active terminals on Plane 1.

FIGURE 2. Terminal connections.

Device Type 01 and 07																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
I ₉	I ₈	I ₇	I ₆	I ₅	I ₄	I ₃	I ₂	I ₁	I ₀	O ₇	I/O ₆	I/O ₅	I/O ₄	I/O ₃	I/O ₂	I/O ₁	O ₀
X	X	X	X	X	X	X	X	X	X	Z	Z	Z	Z	Z	Z	Z	Z

Device Type 02 and 08																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
OE	I ₇	I ₆	I ₅	I ₄	I ₃	I ₂	I ₁	I ₀	CLK	O ₇	O ₆	O ₅	O ₄	O ₃	O ₂	O ₁	O ₀
H	X	X	X	X	X	X	X	X	CLK	Z	Z	Z	Z	Z	Z	Z	Z
L	X	X	X	X	X	X	X	X	CLK	H	H	H	H	H	H	H	H

Device Type 03 and 09																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
OE	I ₇	I ₆	I ₅	I ₄	I ₃	I ₂	I ₁	I ₀	CLK	I/O ₇	O ₆	O ₅	O ₄	O ₃	O ₂	O ₁	I/O ₀
H	X	X	X	X	X	X	X	X	CLK	Z	Z	Z	Z	Z	Z	Z	Z
L	X	X	X	X	X	X	X	X	CLK	Z	H	H	H	H	H	H	Z

Device Type 04 and 10																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
OE	I ₇	I ₆	I ₅	I ₄	I ₃	I ₂	I ₁	I ₀	CLK	I/O ₇	I/O ₆	O ₅	O ₄	O ₃	O ₂	I/O ₁	I/O ₀
H	X	X	X	X	X	X	X	X	CLK	Z	Z	Z	Z	Z	Z	Z	Z
L	X	X	X	X	X	X	X	X	CLK	Z	Z	H	H	H	H	Z	Z

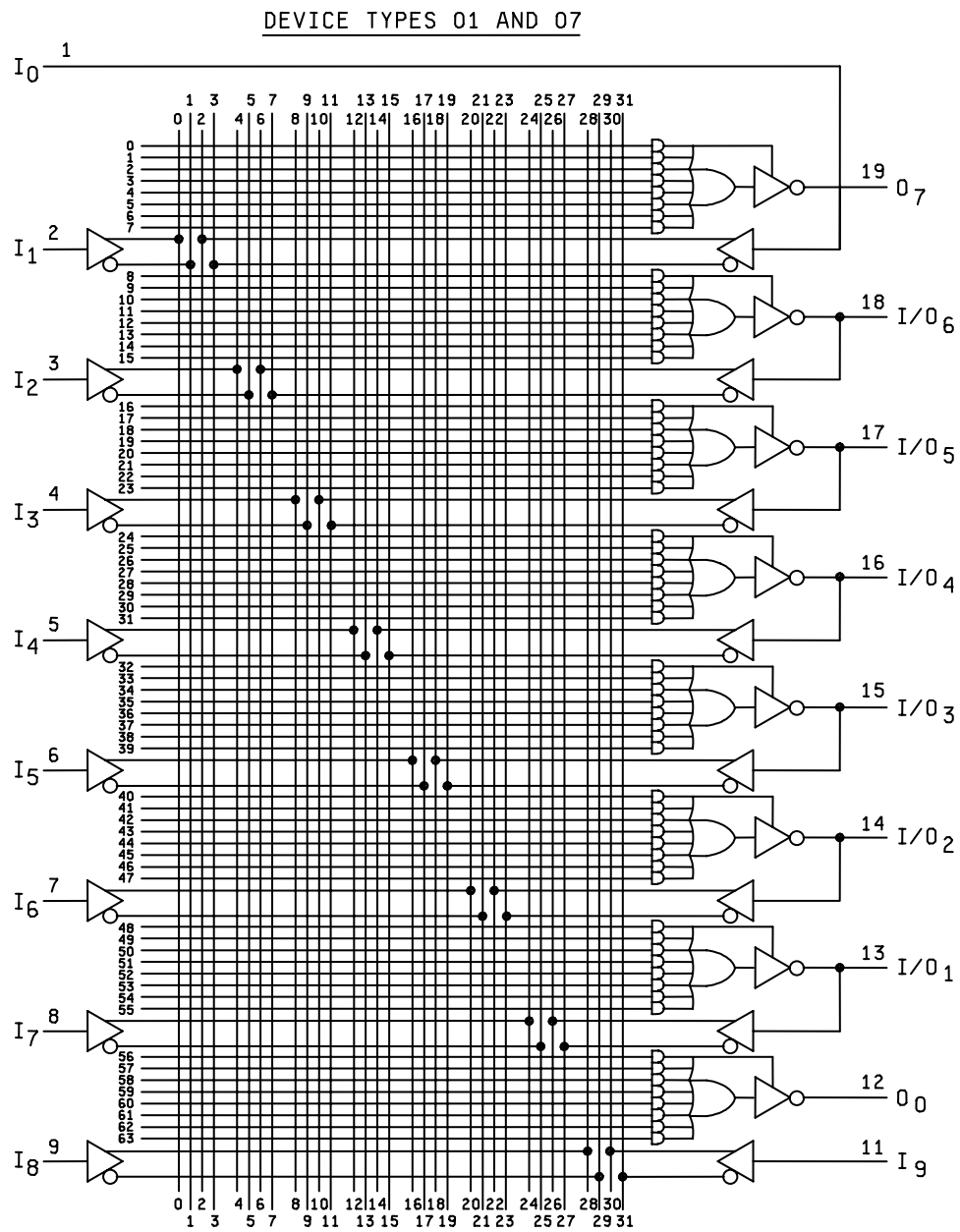
Device Type 05																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
OE	I ₇	I ₆	C/I ₅	C/I ₄	C/I ₃	C/I ₂	I ₁	I ₀	CLK	I/O ₈	I/O ₇	O ₆	O ₅	O ₄	O ₃	I/O ₂	I/O ₁
L	X	X	X	X	X	X	X	X	CLK	Z	Z	H	H	H	H	Z	Z
H	X	X	X	X	X	X	X	X	CLK	Z	Z	Z	Z	Z	Z	Z	Z

Device Type 06																	
TRUTH TABLE																	
INPUTS										OUTPUTS							
OE	I ₇	I ₆	C/I ₅	C/I ₄	C/I ₃	C/I ₂	I ₁	I ₀	CLK	I/O ₇	I/O ₆	O ₅	O ₄	O ₃	O ₂	I/O ₁	I/O ₀
L	X	X	X	X	X	X	X	X	CLK	Z	Z	H	H	H	H	Z	Z
H	X	X	X	X	X	X	X	X	CLK	Z	Z	Z	Z	Z	Z	Z	Z

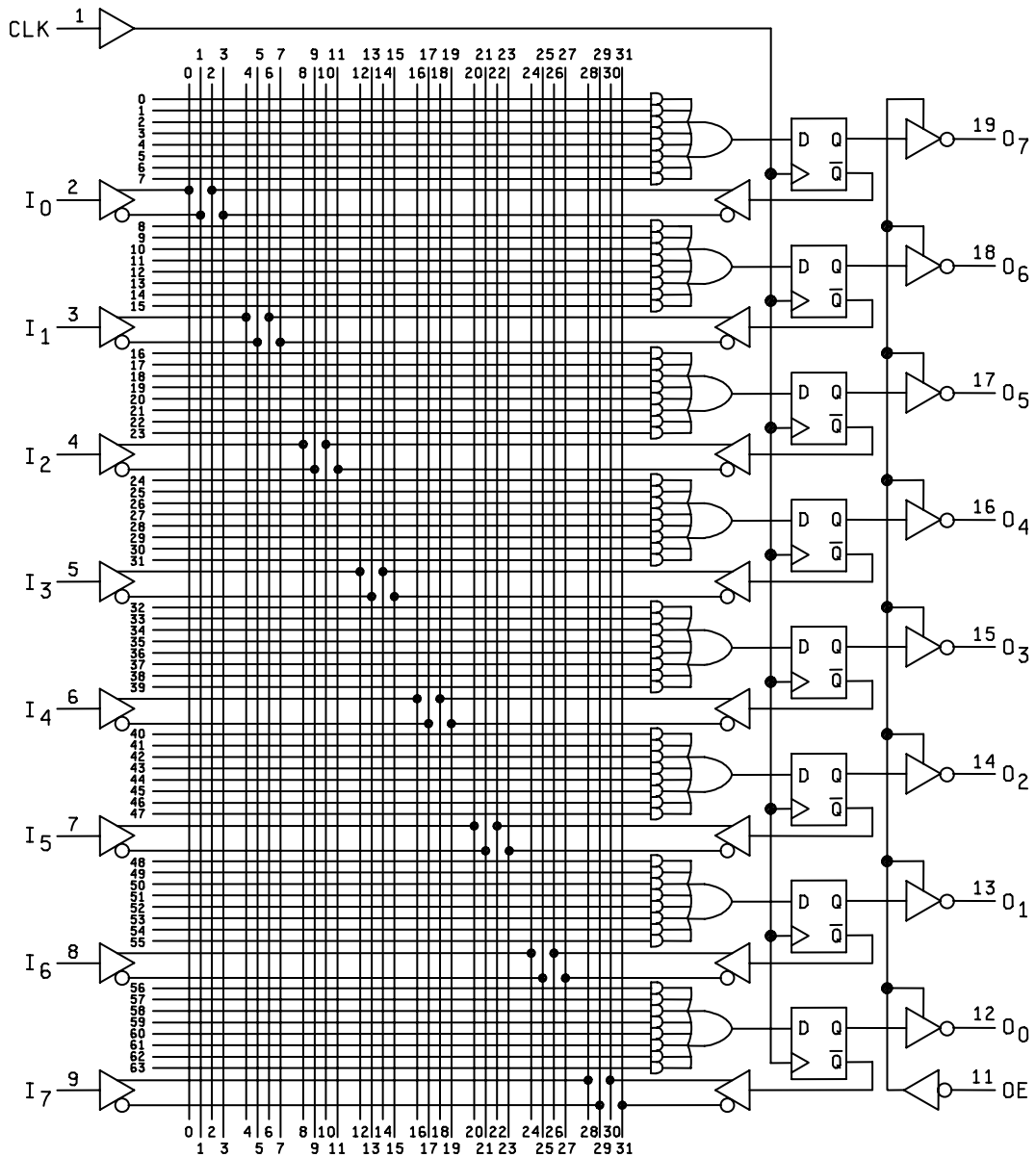
NOTES:

1. Z = High Impedance
2. H = High level
3. L = Low level
4. X = Don't care

Figure 3. Truth Tables (unprogrammed)

FIGURE 4. Unprogrammed logic diagram.

DEVICE TYPES 02 AND 08

FIGURE 4. Unprogrammed logic diagram. - Continued.

DEVICE TYPE 03 AND 09

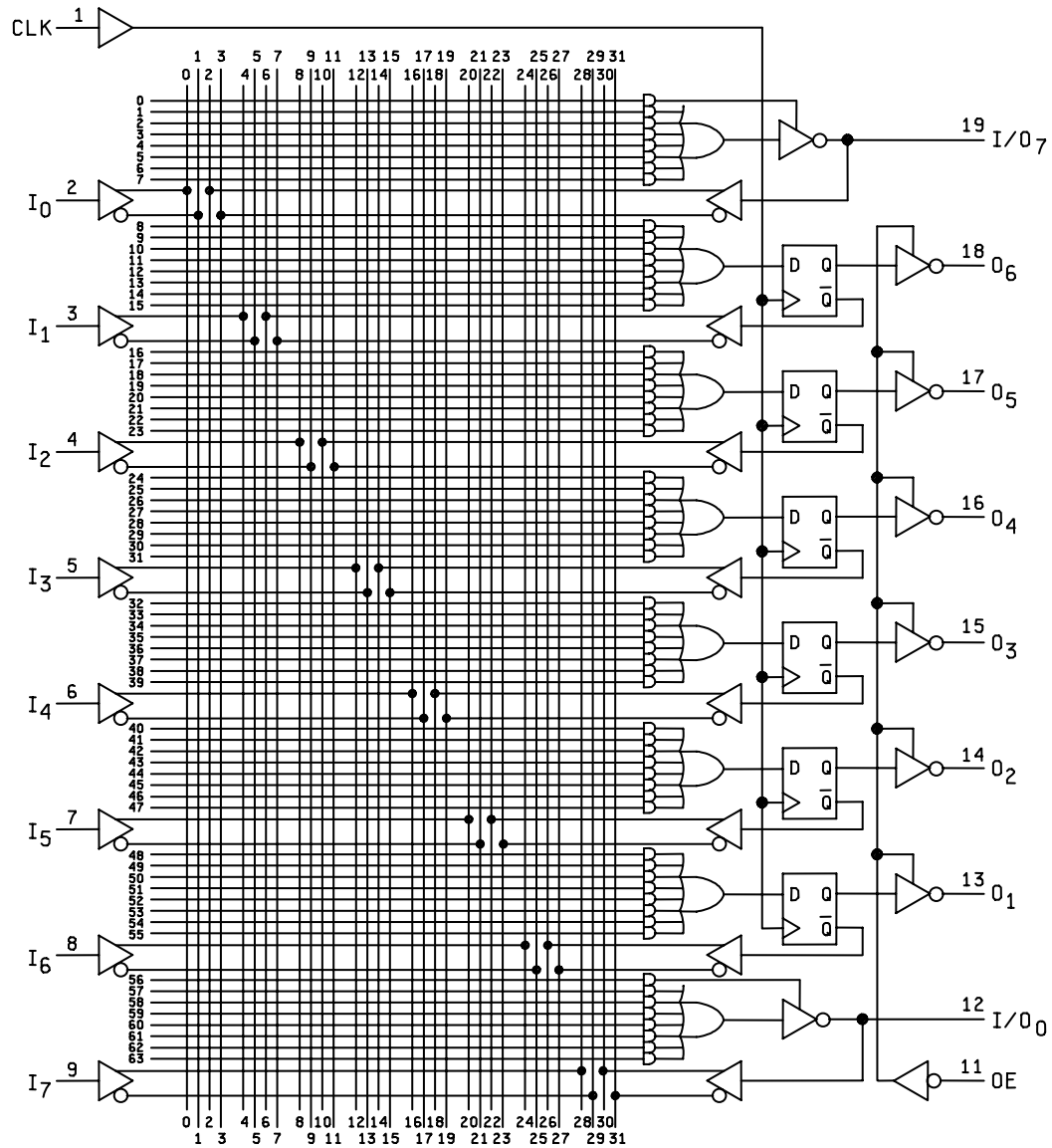
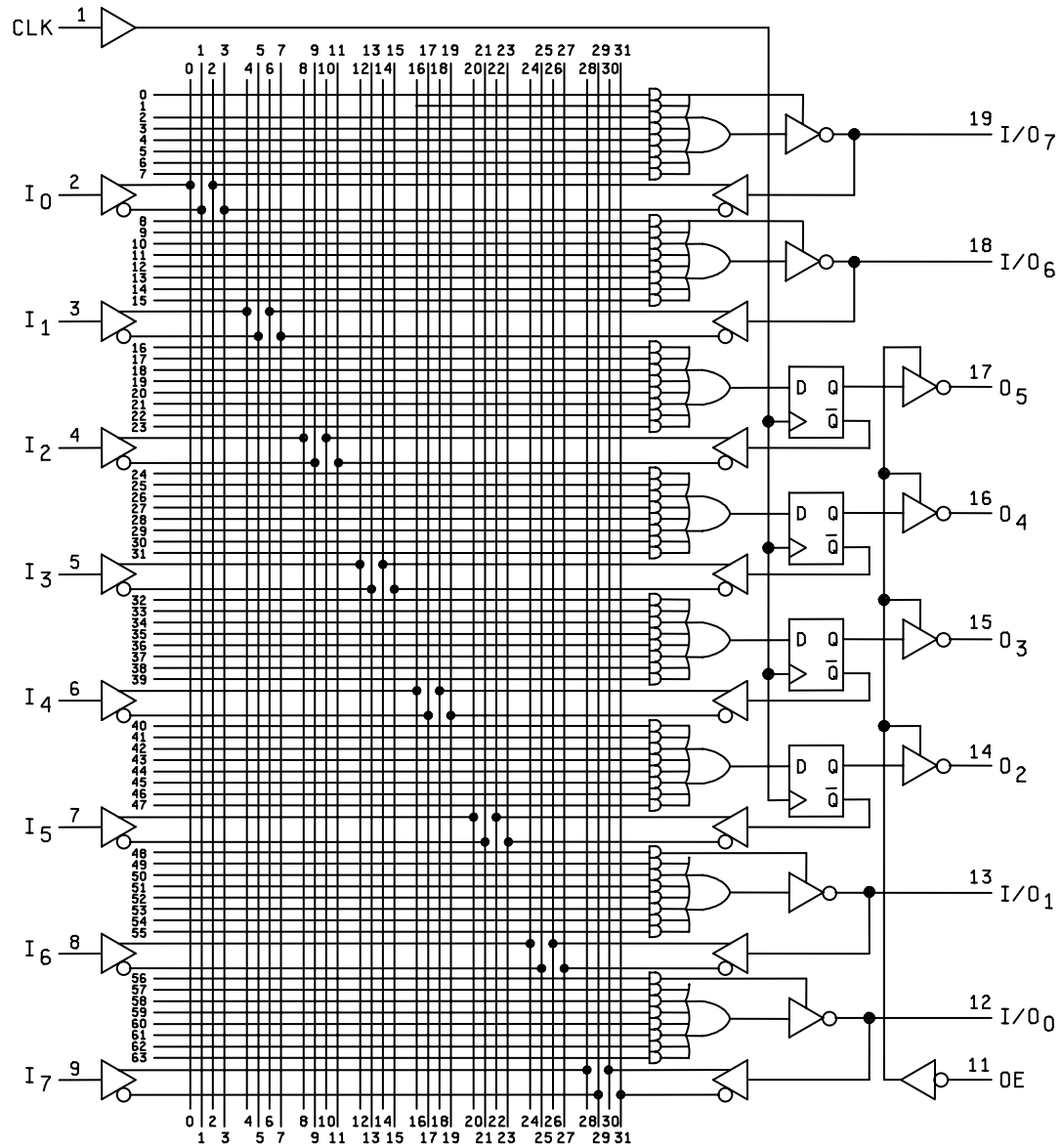
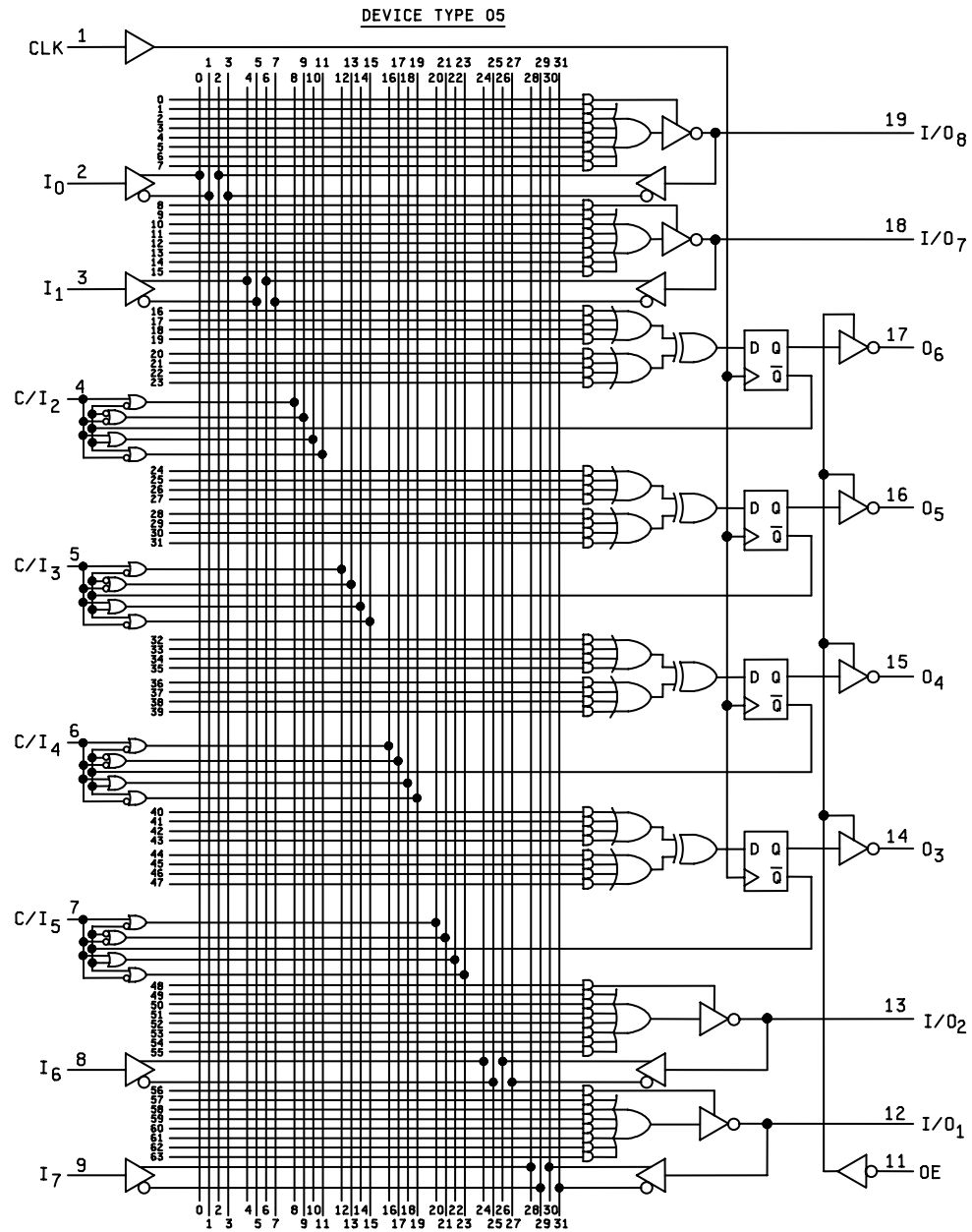


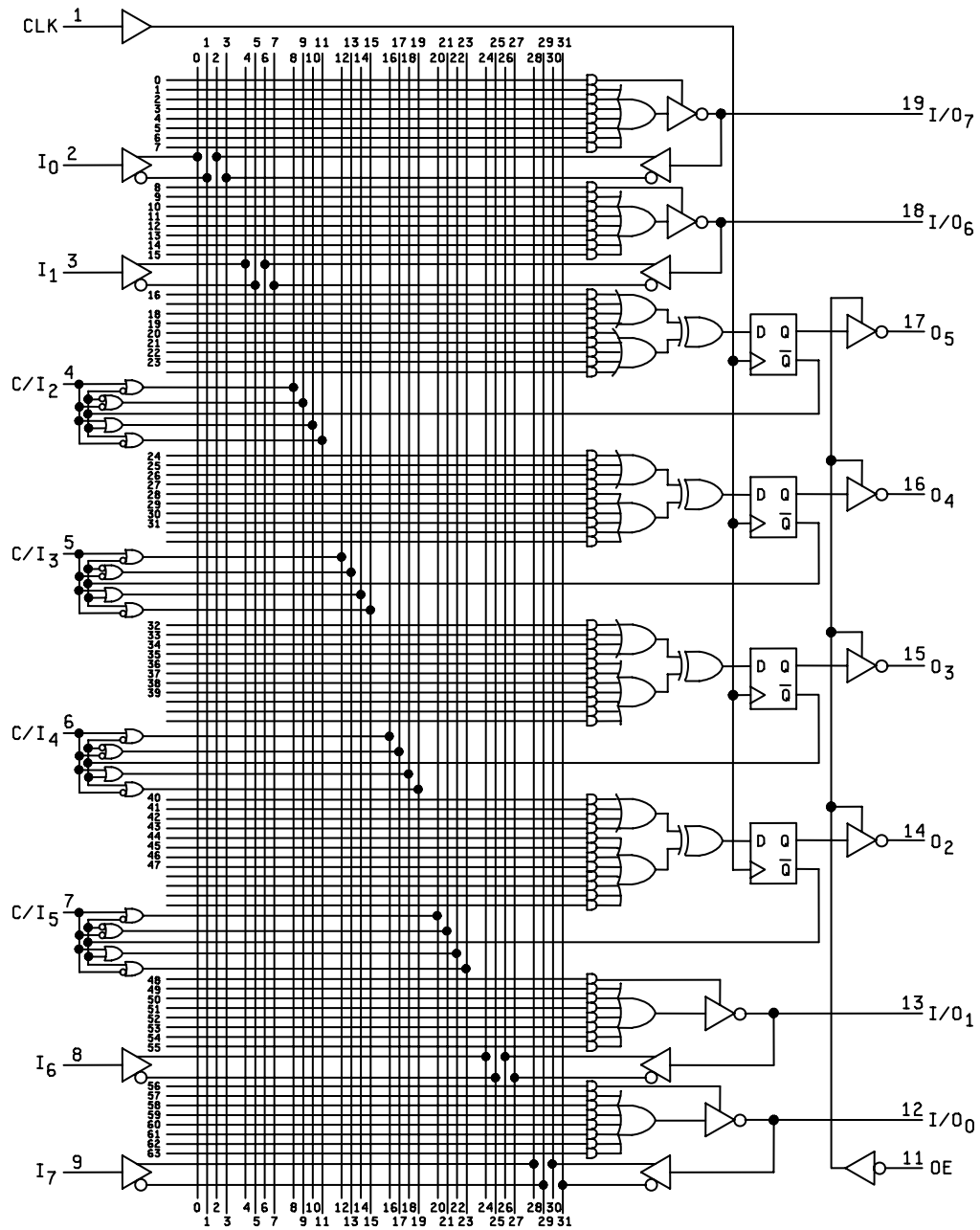
FIGURE 4. Unprogrammed logic diagram. - Continued

DEVICE TYPES 04 AND 10

FIGURE 4. Unprogrammed logic diagram. - Continued

FIGURE 4. Unprogrammed logic diagram. - Continued

DEVICE TYPE 06

FIGURE 4. Unprogrammed logic diagram. - Continued

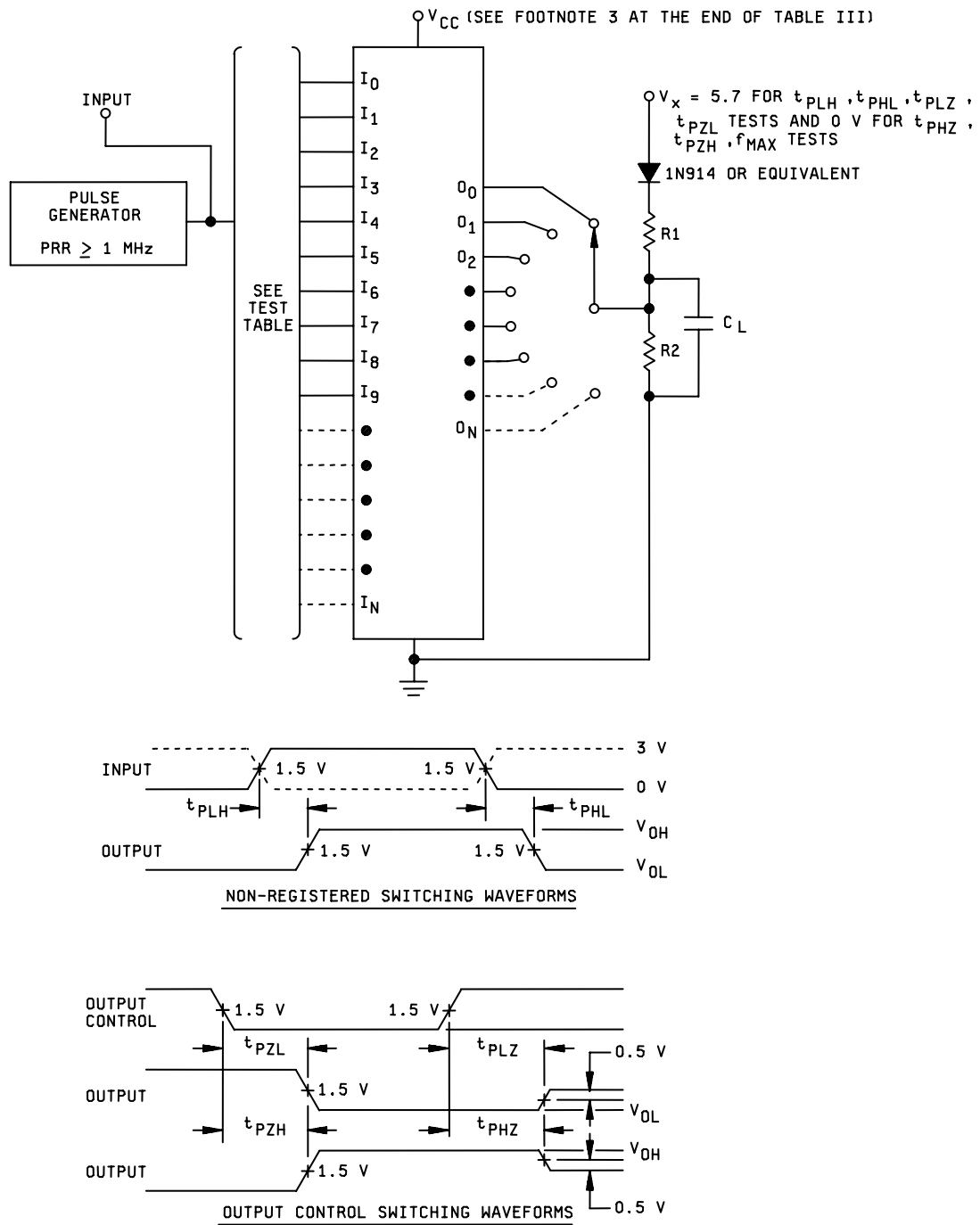
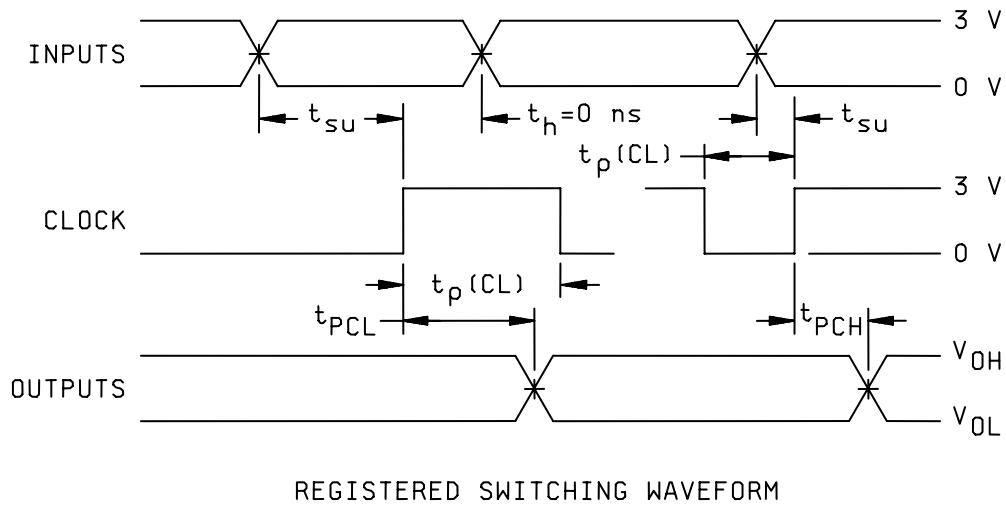


FIGURE 5. Switching time test circuit and waveforms.



NOTES:

1. Test table for devices programmed in accordance with an altered item drawing may be replaced by the equivalent test which apply to the specific program configuration for the resulting PAL.
2. $C_L = 50 \text{ pF}$ minimum, including jig and probe capacitance; $R_1 = 365 \Omega \pm 2 \%$; $R_2 = 715 \Omega \pm 2 \%$.
3. Outputs may be under load simultaneously.
4. Verification of limit conditions $t_p(C_L)$, t_{SU} , and $t_h = 0 \text{ ns}$ may be conducted by simultaneously setting the condition to the specified limit values of table III and observing for proper output state change.

FIGURE 5. Switching time test circuit and waveforms - Continued.

TABLE III. Group A inspection for device type 01.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			I0	I1	I2	I3	I4	I5	I6	I7	I8	GND	I9	O0	I/O1	I/O2	I/O3	I/O4	I/O5	I/O6	O7	VCC		Subgroup 1 Tc=25°C		Subgroup 2 Tc=125°C		Subgroup 3 Tc= -55°C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Vic		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	I0															V																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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See footnotes at end of table.

[illegible]

See footnotes at end of table.

TABLE III. Group A inspection for device type 02.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	O0	O1	O2	O3	O4	O5	O6	O7	Vcc		Subgroup 1 Tc=25°C		Subgroup 2 Tc=125°C		Subgroup 3 Tc=-55°C			
																									Min	Max	Min	Max	Min		Max
V _{IC}		1 2 3 4 5 6 7 8 9 10	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5		-1.5		-1.5	V	
V _{OL}	3007	11 12 13 14 15 16 17 18	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/		1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA		O0 O1 O2 O3 O4 O5 O6 O7		0.5		0.5		0.5	
V _{OH}	3006	19 20 21 22 23 24 25 26												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA		O0 O1 O2 O3 O4 O5 O6 O7	2.4		2.4		2.4		
I _{IL}	3009	27 28 29 30 31 32 33 34 35 36	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25		-0.25		-0.25	mA	
I _{IH}	3010	37 38 39 40 41 42 43 44 45 46	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25		25		25	μA	
I _I		47 48 49 50 51 52 53 54 55 56	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												CLOCK		1.0		1.0		1.0	mA	

See footnotes at end of table.

TABLE III. Group A inspection for device type 02 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I1	I3	I4	I5	I6	I7	GND	OE	O0	O1	O2	O3	O4	O5	O6	O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
																								Min	Max	Min	Max	Min	Max	
I _{OS} 11/	3011	57 58 59 60 61 62 63 64	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	1/ " " " " " " "	GND " " " " " " "	1/ " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	GND " " " " " " "	5.0V " " " " " " "	O0 O1 O2 O3 O4 O5 O6 O7	-30 " " " " " " "	-250 " " " " " " "	-30 " " " " " " "	-250 " " " " " " "	-30 " " " " " " "	-250 " " " " " " "	mA
I _{OZH}		65 66 67 68 69 70 71 72	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	7/ "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	2.4 V " " " " " " "	5.5 V " " " " " " "	O0 O1 O2 O3 O4 O5 O6 O7	" " " " " " " "	100 " " " " " " "	" " " " " " " "	100 " " " " " " "	" " " " " " " "	100 " " " " " " "	μA
I _{OZL}		73 74 75 76 77 78 79 80	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	" " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	0.4 V " " " " " " "	" " " " " " " "	O0 O1 O2 O3 O4 O5 O6 O7	" " " " " " " "	-100 " " " " " " "	" " " " " " " "	-100 " " " " " " "	" " " " " " " "	-100 " " " " " " "	"
I _{CC}	3005	81										"										"	VCC		180		180		180	mA
																							Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C			
																							Min	Max	Min	Max	Min	Max		
Functional tests	3014	82	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	GND "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	4.5 V "	All outputs		2/ "		2/ "		2/ "	
																							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 _{SU}	3003 Fig. 5	83	3/ "	3/ "	3/ "	3/ "	3/ "	3/ "	3/ "	3/ "	3/ "	GND "	6/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	4/ 8/ "	All outputs	10/ "	30	10/ "	30	10/ "	30	ns
t _{P(CL)}	"	84	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	10/ "	20	10/ "	20	10/ "	20	"
t _{PCH}	"	85	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PCL}	"	86	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PZH}	"	87	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	25	"	25	"	25	"
t _{PZL}	"	88	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PLZ}	"	89	"	"	"	"	"	"	"	"	"	"	"	7/ "	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PHZ}	"	90	"	"	"	"	"	"	"	"	"	"	"	7/ "	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
f _{MAX}	"	91	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	"	5/ 6/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	5/ "	4.5 V "	All registered outputs	20		20		20		MHz

See footnotes at end of table.

TABLE III. Group A inspection for device type 03.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	O1	O2	O3	O4	O5	O6	I/O7	VCC		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		Min	Max	Min	Max			
V _{IC}		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5		-1.5		-1.5	V
		2																					I0							
		3																					I1							
		4																					I2							
		5																					I3							
		6																					I4							
		7																					I5							
		8																					I6							
		9																					I7							
		10																					OE							
		11												-18 mA									I/O0							
		12													-18 mA								I/O7							
V _{OL}	3007	13	1/	1/	1/	1/	1/	1/	1/	1/	1/		1/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA			I/O0		0.5		0.5		0.5	
		14																					O1							
		15																					O2							
		16																					O3							
		17																					O4							
		18																					O5							
		19																					O6							
		20																					I/O7							
V _{OH}	3006	21												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA			I/O0	2.4		2.4		2.4		
		22																					O1							
		23																					O2							
		24																					O3							
		25																					O4							
		26																					O5							
		27																					O6							
		28																					I/O7							
I _{IL}	3009	29	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25		-0.25		-0.25	mA
		30																					I0							
		31																					I1							
		32																					I2							
		33																					I3							
		34																					I4							
		35																					I5							
		36																					I6							
		37																					I7							
		38																					OE							
		39												0.4 V	0.4 V								I/O0							
		40													0.4 V								I/O7							
I _{IH}	3010	41	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25		25		25	μA
		42																					I0							
		43																					I1							
		44																					I2							
		45																					I3							
		46																					I4							
		47																					I5							
		48																					I6							
		49																					I7							
		50												2.4 V										OE						

See footnotes at end of table.

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			CLK	I/O	I/I	I/I	I/I	I/I	I/I	I/I	I/I	I/I	I/O	O/I	O/I	O/I	O/I	O/I	O/I	I/O	V _{CC}	Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C					
																						Min		Max	Min	Max	Min	Max			
I _I		51	5.5 V									GND										5.5 V	CLOCK		1.0		1.0		1.0	mA	
		52		5.5 V																			I/O								
		53			5.5 V																		I/I								
		54				5.5 V																	I/I								
		55					5.5 V																I/I								
		56						5.5 V															I/I								
		57							5.5 V														I/I								
		58								5.5 V													I/I								
		59									5.5 V												I/I								
		60										5.5 V											I/O								
		61											5.5 V										I/O								
		62												5.5 V								5.5 V	I/O								
	I _{OS} 11/	3011	63	1/	1/	1/	1/	1/	1/	1/	1/	1/		1/	GND	GND							5.0 V	I/O	-30	-250	-30	-250	-30	-250	
			64																					O/I							
		65																					O/I								
		66																					O/I								
		67																					O/I								
		68																					O/I								
		69																					O/I								
		70																					O/I								
I _{OZH}			71											2/	2.4 V	2.4 V							5.5 V	I/O		100		100		100	μA
			72																					O/I							
		73																					O/I								
		74																					O/I								
		75																					O/I								
		76																					O/I								
		77																					O/I								
		78																					O/I								
I _{OZL}		79													0.4 V								O/I		-100		-100		-100		
		80																					O/I								
		81														0.4 V							O/I								
		82																					O/I								
		83																					O/I								
		84																					O/I								
I _{CC}	3005	85																				V _{CC}			180		180		180	mA	
																								Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C			
																								Min	Max	Min	Max	Min	Max		
Functional tests	3014	86	2/	2/	2/	2/	2/	2/	2/	2/	2/	GND	2/	2/	2/	2/	2/	2/	2/	2/	2/	4.5 V	All outputs		2/		2/		2/		

See footnotes at end of table.

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	O1	O2	O3	O4	O5	O6	I/O7	V _{CC}		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 _{SO}	3003 Fig. 5	87	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/		4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/		3/	All outputs	10/	30	10/	30	10/	30	ns
t _{P(CL)}	"	88	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	10/	20	10/	20	10/	20	"
t _{PCL}	"	89	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PCH}	"	90	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PHL}	"	91	"	"	"	"	"	"	"	"	"	"	"	4/ 9/							4/ 9/	"	All I/Os		30		30		30	"
t _{PLH}	"	92	"	"	"	"	"	"	"	"	"	"	"	4/ 9/							4/ 9/	"	All I/Os		30		30		30	"
t _{PZH}	"	93	"	"	"	"	"	"	"	"	"	"	6/		4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/		"	All outputs		25		25		25	"
t _{PZL}	"	94	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PHZ}	"	95	"	"	"	"	"	"	"	"	"	"	7/		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PLZ}	"	96	"	"	"	"	"	"	"	"	"	"	7/		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t _{PZH}	"	97	"	"	"	"	"	"	"	"	"	"	"	4/ 9/							4/ 9/	"	All I/Os		30		30		30	"
t _{PZL}	"	98	"	"	"	"	"	"	"	"	"	"	"								"	"	"	"	"	"	"	"	"	"
t _{PHZ}	"	99	"	"	"	"	"	"	"	"	"	"	"								"	"	"	"	"	"	"	"	"	"
t _{PLZ}	"	100	"	"	"	"	"	"	"	"	"	"	"								"	"	"	"	"	"	"	"	"	"
f _{MAX}	"	101	5/	5/	5/	5/	5/	5/	5/	5/	5/	"	5/ 6/		5/	5/	5/	5/	5/	5/		4.5 V	All registered output	20		20		20		MHz

See footnotes at end of table.

TABLE III. Group A inspection for device type 04.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C			
																								Min	Max	Min	Max	Min	Max		
V _{IC}		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5		-1.5		-1.5	V	
		2																					I0								
		3																					I1								
		4																					I2								
		5																					I3								
		6																					I4								
		7																					I5								
		8																					I6								
		9																					I7								
		10												-18 mA	-18 mA								OE								
		11													-18 mA	-18 mA							I/O0								
		12														-18 mA							I/O1								
		13																					I/O6								
		14																			-18 mA	-18 mA	I/O7								
V _{OL}	3007	15	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA				I/O0		0.5		0.5		0.5		
		16																					I/O1								
		17																					O2								
		18																					O3								
		19																					O4								
		20																					O5								
		21																					I/O6								
		22																					I/O7								
	V _{OH}	3006	23												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA				I/O0	2.4		2.4		2.4		
			24																					I/O1							
			25																					O2							
		26																					O3								
		27																					O4								
		28																					O5								
		29																					I/O6								
	30																					I/O7									
I _{IL}	3009	31	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25		-0.25		-0.25	mA	
		32																					I0								
		33																					I1								
		34																					I2								
		35																					I3								
		36																					I4								
		37																					I5								
		38																					I6								
		39																					I7								
		40												0.4 V	0.4 V								OE								
		41													0.4 V	0.4 V							I/O0								
		42														0.4 V	0.4 V						I/O1								
		43																					I/O6								
		44																			0.4 V	0.4 V	I/O7								
I _{IH}	3010	45	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25		25		25	μA	
		46																					I0								
		47																					I1								
		48																					I2								
		49																					I3								
		50																					I4								
		51																					I5								
		52																					I6								
		53																					I7								
		54												2.4 V	2.4 V								OE								

See footnotes at end of table.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit																			
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C																					
																								Min	Max	Min	Max	Min	Max																				
I _I		55	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	GND									5.5 V	5.5 V	CLOCK I0 I1 I2 I3 I4 I5 I6 I7 OE I/O0 I/O1 I/O6 I/O7		1.0		1.0		1.0	mA																			
	56																																																
	57																																																
	58																																																
	59																																																
	60																																																
	61																																																
	62																																																
	63																																																
	64																																																
	65																																																
	66																																																
	67																																																
	68																																																
I _{OS}	3011	69	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	GND	GND	GND	GND	GND	GND	GND	GND	5.0 V	I/O0	-30	-250	-30	-250	-30	-250	mA																			
		70																					I/O1																										
		71																					O2																										
		72																					O3																										
		73																					O4																										
		74																					O5																										
		75																					I/O6																										
		76																						I/O7																									
	I _{OZH}	77												7/	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	5.5 V	I/O0		100		100		100	μA																		
		78																						I/O1																									
		79																						O2																									
80																							O3																										
81																							O4																										
82																							O5																										
83																							I/O6																										
84																							I/O7																										
I _{OZL}	85															0.4 V	0.4 V	0.4 V	0.4 V	0.4 V		O2		-100		-100		-100																					
	86																					O3																											
	87																					O4																											
	88																						O5																										
I _{CC}	3005	89																				V _{CC}		180		180		180		180	mA																		
																								Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C																					
																									Min	Max	Min	Max	Min	Max																			
Functional tests	3014	90	2/	2/	2/	2/	2/	2/	2/	2/	2/	GND	2/	2/	2/	2/	2/	2/	2/	2/	2/	4.5 V	All outputs		2/		2/		2/																				

See footnotes at end of table.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 9 T _C =25°C		Subgroup 10 T _C =125°C		Subgroup 11 T _C = -55°C		
																									Min	Max	Min	Max	Min	
t _{SU}	3003 Fig. 5	91	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			3/	All outputs	10/	30	10/	30	10/	30	ns
t _{P(CL)}	"	92	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	10/	20	10/	20	10/	20	"
t _{PCH}	"	93	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PCL}	"	94	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PHL}	"	95	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	30		30		30		"
t _{PLH}	"	96	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	30		30		30		"
t _{PZH}	"	97	"	"	"	"	"	"	"	"	"	"	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			"	All outputs	25		25		25		"
t _{PZL}	"	98	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PHZ}	"	99	"	"	"	"	"	"	"	"	"	"	7/			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PLZ}	"	100	"	"	"	"	"	"	"	"	"	"	7/			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PZH}	"	101	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	30		30		30		"
t _{PZL}	"	102	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	"	"	"	"	"	"	"	"
t _{PLZ}	"	103	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"
t _{PHZ}	"	104	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"
f _{MAX}	"	105	5/	5/	5/	5/	5/	5/	5/	5/	5/	"	5/ 6/			5/	5/	5/	5/			4.5 V	All registered outputs	20		20		20		MHz

See footnotes at end of table.

TABLE III. Group A inspection for device type 05.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,2,Y Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits		Unit
				CLOCK	I0	I1	C/I2	C/I3	C/I4	C/I5	C/I6	I7	GND	OE	I/O1	I/O2	O3	O4	O5	O6	I/O7	I/O8	V _{CC}		Min	Max	
1 T _C =25°C	V _{IC}		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5	V
			2																					I0			
			3																					I1			
			4																					I2			
			5																					C/I3			
			6																					C/I4			
			7																					C/I5			
			8																					C/I6			
			9																					I7			
			10																					OE			
			11																					I/O1			
			12																					I/O2			
			13																					I/O7			
			14																					I/O8			
	V _{OL}	3007	15	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA		I/O1		0.5	
			16																					I/O2			
			17																					O3			
			18																					O4			
			19																					O5			
			20																					O6			
			21																					I/O7			
			22																					I/O8			
	V _{OH}	3006	23												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA		I/O1	2.4		
			24																					I/O2			
			25																					O3			
			26																					O4			
			27																					O5			
			28																					O6			
			29																					I/O7			
			30																					I/O8			
	I _{IL}	3009	31	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25	mA
			32																					I0			
			33																					I1			
			34																					C/I2			
			35																					C/I3			
			36																					C/I4			
			37																					C/I5			
			38																					C/I6			
	I _{IH}	3010	39																					I7			
			40																					OE			
			41																					I/O1			
			42																					I/O2			
			43																					I/O7			
			44																					I/O8			
			45	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25	μA
			46																					I0			
			47																					I1			
			48																					C/I2			
			49																					C/I3			
			50																					C/I4			
			51																					C/I5			
			52																					C/I6			
			53																					I7			
			54																					OE			

See footnotes at end of table.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,2,Y	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits		Unit				
			Test no.	CLOCK	I0	I1	C/I2	C/I3	C/I4	C/I5	C/I6	I7	GND	OE	I/O1	I/O2	O3	O4	O5	O6	I/O7	I/O8	V _{CC}		Min	Max					
1 T _C =25°C	I _I		55 56 57 58 59 60 61 62 63 64 65 66 67 68	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	GND										5.5 V	CLOCK		1.0	mA				
			56 57 58 59 60 61 62 63 64 65 66 67 68																						I0						
			57 58 59 60 61 62 63 64 65 66 67 68																								I1				
			58 59 60 61 62 63 64 65 66 67 68																									C/I2			
			59 60 61 62 63 64 65 66 67 68																									C/I3			
			60 61 62 63 64 65 66 67 68																									C/I4			
			61 62 63 64 65 66 67 68																									C/I5			
			62 63 64 65 66 67 68																									C/I6			
	I _{OS}	3011	69 70 71 72 73 74 75 76	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/		8/ 8/ 8/ 8/ 8/ 8/ 8/ 8/	GND		GND		GND		GND		GND		5.0 V	I/O1	-30	-250	mA		
			70 71 72 73 74 75 76																									I/O2			
			71 72 73 74 75 76																									O3			
			72 73 74 75 76																									O4			
			73 74 75 76																									O5			
			74 75 76																									O6			
			75 76																									I/O7			
			76																									I/O8			
	I _{OZH}		77 78 79 80 81 82 83 84												2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2.4 V		2.4 V		2.4 V		2.4 V		2.4 V		5.5 V	I/O1		100	μA	
			78 79 80 81 82 83 84																									I/O2			
			79 80 81 82 83 84																									O3			
			80 81 82 83 84																									O4			
			81 82 83 84																									O5			
			82 83 84																									O6			
			83 84																									I/O7			
			84																									I/O8			
	I _{OZL}		85 86 87 88															0.4 V		0.4 V		0.4 V					O3		-100		
			86 87 88																									O4			
			87 88																									O5			
			88																									O6			
	I _{CC}	3005	89																						V _{CC}			225	mA		
	2	Same tests, terminal conditions, and limits as for subgroup 1, except T _C = 125°C.																													
	3	Same tests, terminal conditions, and limits as for subgroup 1, except T _C = -55°C.																													
	7 T _C =25°C	Functional tests	3014	90	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	GND	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	2/ 2/ 2/ 2/ 2/ 2/ 2/ 2/	4.5 V	All outputs		2/				
	8	Same tests, terminal conditions, and limits as for subgroup 7, except T _C = 125°C and -55°C.																													

See footnotes at end of table.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,2,Y Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits		Unit	
				CLOCK	I0	I1	C/I2	C/I3	C/I4	C/I5	C/I6	I7	GND	OE	I/O1	I/O2	O3	O4	O5	O6	I/O7	I/O8	V _{CC}		Min	Max		
9 T _C =25°C	t _{SU}	3003 Fig. 5	91	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			3/	All outputs	10/	55	ns	
	t _{PI(CL)}		92	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	10/	25	"	
	t _{PCL}		93	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			"	
	t _{PCH}		94	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"			"	
	t _{PHL}		95	"	"	"	"	"	"	"	"	"	"	"		4/ 9/	4/ 9/				4/ 9/	4/ 9/	"	All I/OS		45	"	
	t _{PLH}		96	"	"	"	"	"	"	"	"	"	"	"		4/ 9/	4/ 9/				4/ 9/	4/ 9/	"	All I/OS		45	"	
	t _{PZH}		97	"	"	"	"	"	"	"	"	"	"	IN			4/ 8/	4/ 8/	4/ 8/	4/ 8/			"	All outputs		25	"	
	t _{PZL}		98	"	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"	"	"	"			"	
	t _{PHZ}		99	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"			"
	t _{PLZ}		100	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"			"
	t _{PZH}		101	"	"	"	"	"	"	"	"	"	"	"		4/ 9/	4/ 9/				4/ 9/	4/ 9/	"	All I/OS		45	"	
	t _{PZL}		102	"	"	"	"	"	"	"	"	"	"	"	"		"					"	"	"			"	
	t _{PHZ}		103	"	"	"	"	"	"	"	"	"	"	"	"	"	"					"	"	"	"			"
	t _{PLZ}		104	"	"	"	"	"	"	"	"	"	"	"	"	"	"					"	"	"	"			"
	f _{MAX}		105	5/	5/	5/	5/	5/	5/	5/	5/	5/		6/	5/	5/	5/	5/	5/	5/	5/	5/	4.5 V	All	12		MHz	
10	Same tests, terminal conditions, and limits as for subgroup 9, except T _C = 125°C.																											
11	Same tests, terminal conditions, and limits as for subgroup 9, except T _C = -55°C.																											

See footnotes at end of table.

TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R.2.Y Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits		Unit
				CLOCK	I/O	I/I	C/I/2	C/I/3	C/I/4	C/I/5	I/6	I/7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Min	Max	
1 T _C =25°C	V _{IC}		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5	V
			2																					I/O			
			3																					I/I			
			4																					C/I/2			
			5																					C/I/3			
			6																					C/I/4			
			7																					C/I/5			
			8																					I/6			
			9																					I/7			
			10																					OE			
			11												-18 mA									I/O0			
			12												-18 mA									I/O1			
			13													-18 mA								I/O6			
			14																			-18 mA		I/O7			
	V _{OL}	3007	15	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA		I/O0		0.5	
			16																					I/O1			
			17																					O2			
			18																					O3			
			19																					O4			
			20																					O5			
			21																					I/O6			
			22																					I/O7			
	V _{OH}	3006	23												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA		I/O0	2.4		
			24																					I/O1			
			25																					O2			
			26																					O3			
			27																					O4			
			28																					O5			
			29																					I/O6			
			30																					I/O7			
	I _{IL}	3009	31	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25	mA
			32																					I/O			
			33																					I/I			
			34																					C/I/2			
			35																					C/I/3			
			36																					C/I/4			
			37																					C/I/5			
			38																					I/6			
			39																					I/7			
	I _{IH}	3010	40																					OE			
			41																					I/O0			
			42																					I/O1			
			43																					I/O6			
			44																					I/O7			
			45	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25	μA
			46																					I/O			
			47																					I/I			
			48																					C/I/2			
			49																					C/I/3			
			50																					C/I/4			
			51																					C/I/5			
			52																					I/6			
			53																					I/7			
			54																					OE			

See footnotes at end of table.

Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

See footnotes at end of table.

TABLE III. Group A inspection for device type 06 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases R,2,Y Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits		Unit
				CLOCK	I0	I1	C/12	C/13	C/14	C/15	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Min	Max	
9 T _C =25°C	t _{SU}	3003 Fig. 5	91	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			3/	All outputs	10/	55	ns
	t _{P(CL)}	"	92	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	10/	25	"
	t _{PCL}	"	93	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
	t _{PCH}	"	94	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
	t _{PHL}	"	95	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/OS		45	"
	t _{PLH}	"	96	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/OS		45	"
	t _{PZH}	"	97	"	"	"	"	"	"	"	"	"	"	IN			4/ 8/	4/ 8/	4/ 8/	4/ 8/			"	All outputs		25	"
	t _{PZL}	"	98	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"
	t _{PHZ}	"	99	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"
	t _{PLZ}	"	100	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"
	t _{PZH}	"	101	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/OS		45	"
	t _{PZL}	"	102	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"
	t _{PHZ}	"	103	"	"	"	"	"	"	"	"	"	"	"	"	"					"	"	"	"	"	"	"
	t _{PLZ}	"	104	"	"	"	"	"	"	"	"	"	"	"	"	"					"	"	"	"	"	"	"
	f _{MAX}	"	105	5/	5/	5/	5/	5/	5/	5/	5/	5/	"	6/	5/	5/	5/	5/	5/	5/	5/	5/	4.5 V	All	12		MHz
10	Same tests, terminal conditions, and limits as for subgroup 9, except T _C = 125°C.																										
11	Same tests, terminal conditions, and limits as for subgroup 9, except T _C = -55°C.																										

See footnotes at end of table.

TABLE III. Group A inspection for device type 07.
 Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			I0	I1	I2	I3	I4	I5	I6	I7	I8	GND	I9	O0	I/O1	I/O2	I/O3	I/O4	I/O5	I/O6	O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
																								Min	Max	Min	Max	Min	Max	
V _{IC}		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	4.5 V	I0 I1 I2 I3 I4 I5 I6 I7 I8 I9 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6	-1.5	-1.5	-1.5	-1.5	-1.5	V
V _{OL}	3007	17 18 19 20 21 22 23 24	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	"	1/ "	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	"	O0 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6 O7	0.5	0.5	0.5	0.5	0.5	"
V _{OH}	3006	25 26 27 28 29 30 31 32	"	"	"	"	"	"	"	"	"	"	"	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	"	O0 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6 O7	2.4	2.4	2.4	2.4	2.4	"
I _{IL}	3009	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	"	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	5.5 V	I0 I1 I2 I3 I4 I5 I6 I7 I8 I9 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6	-0.25	-0.25	-0.25	-0.25	-0.25	mA	
I _{IH}	3010	49 50 51 52 53 54 55 56 57 58	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	"	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	"	I0 I1 I2 I3 I4 I5 I6 I7 I8 I9	25	25	25	25	25	μA	

See footnotes at end of table.

TABLE III. Group A inspection for device type 07 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit		
			I0	I1	I2	I3	I4	I5	I6	I7	I8	GND	I9	O0	I/O1	I/O2	I/O3	I/O4	I/O5	I/O6	O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C				
																								Min	Max	Min	Max	Min	Max			
I _I		59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74	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	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	5.5 V	5.5 V	5.5 V	I0 I1 I2 I3 I4 I5 I6 I7 I8 I9 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6		1.0		1.0		1.0	mA	
	I _{OS} 11/	75 76 77 78 79 80 81 82	1/	1/	1/	1/	1/	1/	1/	1/	1/		1/	GND	GND	GND	GND	GND	GND	GND	GND	GND	5.0V	O0 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6 O7	-30	-250	-30	-250	-30	-250		
		83 84 85 86 87 88 89 90												2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	5.5 V	O0 I/O1 I/O2 I/O3 I/O4 I/O5 I/O6 O7		100		100		100	μA	
		I _{OZL}	91 92												0.4 V								0.4 V		O0 O7		-100 -100		-100 -100		-100 -100	
			I _{CC}	3005 93																					V _{CC}		105		105		105	mA
																									All outputs	Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C		
																										Min	Max	Min	Max	Min	Max	
		Functional tests	3014	94	2/	2/	2/	2/	2/	2/	2/	2/	2/	GND	2/	2/	2/	2/	2/	2/	2/	2/	2/	4.5 V	All outputs		2/		2/		2/	

See footnotes at end of table

TABLE III. Group A inspection for device type 07 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			I0	I1	I2	I3	I4	I5	I6	I7	I8	GND	I9	O0	I/O1	I/O2	I/O3	I/O4	I/O5	I/O6	O7	V _{CC}		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 _{PHL}	3003	95	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	3/	4/ 9/	4/ 9/	4/ 9/	4/ 9/	4/ 9/	4/ 9/	4/ 9/	3/	3/	All outputs and I/Os		50		50		50	ns	
t _{PLH}	"	96	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				50		50		50	"	
t _{PZH}	"	97	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				45		45		45	"	
t _{PZL}	"	98	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"		"		"	"	
t _{PHZ}	"	99	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"		"		"	"	
t _{PLZ}	"	100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"					"		"		"	

See footnotes at end of table.

TABLE III. Group A inspection for device type 08.

Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	O0	O1	O2	O3	O4	O5	O6	O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
																								Min	Max	Min	Max	Min	Max	
V _{IC}		1	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5		-1.5		-1.5	V
		2																					I0							
		3																					I1							
		4																					I2							
		5																					I3							
		6																					I4							
		7																					I5							
		8																					I6							
		9																					I7							
		10											-18 mA										OE							
V _{OL}	3007	11	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA		O0		0.5		0.5		0.5	
		12																					O1							
		13																					O2							
		14																					O3							
		15																					O4							
		16																					O5							
		17																					O6							
		18																					O7							
		19																												
		20																												
V _{OH}	3006	19												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA		O0	2.4		2.4		2.4		
		20																					O1							
		21																					O2							
		22																					O3							
		23																					O4							
		24																					O5							
		25																					O6							
		26																					O7							
		27																												
		28																												
I _{IL}	3009	27	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25		-0.25		-0.25	mA
		28																					I0							
		29																					I1							
		30																					I2							
		31																					I3							
		32																					I4							
		33																					I5							
		34																					I6							
		35																					I7							
		36											0.4 V										OE							
I _{IH}	3010	37	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25		25		25	μA
		38																					I0							
		39																					I1							
		40																					I2							
		41																					I3							
		42																					I4							
		43																					I5							
		44																					I6							
		45																					I7							
		46											2.4 V										OE							
I _I		47	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												CLOCK		1.0		1.0		1.0	mA
		48																					I0							
		49																					I1							
		50																					I2							
		51																					I3							
		52																					I4							
		53																					I5							
		54																					I6							
		55																					I7							
		56											5.5 V										OE							

See footnotes at end of table.

TABLE III. Group A inspection for device type 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	O0	O1	O2	O3	O4	O5	O6	O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
																								Min	Max	Min	Max	Min	Max	
I _{OS} 11/	3011	57 58 59 60 61 62 63 64	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	GND GND GND GND GND GND GND GND	6/ 6/ 6/ 6/ 6/ 6/ 6/ 6/	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	GND GND GND GND GND GND GND GND	5.0V O0 O1 O2 O3 O4 O5 O6 O7	-30 -250 -30 -250 -30 -250 -30 -250	-30 -250 -30 -250 -30 -250 -30 -250	-30 -250 -30 -250 -30 -250 -30 -250	-30 -250 -30 -250 -30 -250 -30 -250	mA			
I _{OZH}		65 66 67 68 69 70 71 72	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	7/ 2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	5.5 V O0 O1 O2 O3 O4 O5 O6 O7	100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100	100 100 100 100 100 100 100 100	μA		
I _{OZL}		73 74 75 76 77 78 79 80	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	O0 O1 O2 O3 O4 O5 O6 O7	-100 -100 -100 -100 -100 -100 -100 -100	-100 -100 -100 -100 -100 -100 -100 -100	-100 -100 -100 -100 -100 -100 -100 -100	-100 -100 -100 -100 -100 -100 -100 -100	mA		
I _{CC}	3005	81																					V _{CC}	90	90	90	90	90	90	mA
																							Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C			
																							Min	Max	Min	Max	Min	Max		
Functional tests	3014	82	2/	2/	2/	2/	2/	2/	2/	2/	2/	GND	2/	2/	2/	2/	2/	2/	2/	2/	2/	4.5 V	All outputs	2/	2/	2/	2/	2/	2/	
																							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 _{SU}	3003 Fig. 5	83	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	3/	All outputs	10/	50	10/	50	10/	50	ns
t _{P(CL)}		84																						10/	25	10/	25	10/	25	ns
t _{PCH}		85																												
t _{PCL}		86																												
t _{PZH}		87																												
t _{PZL}		88																												
t _{PLZ}		89												7/																
t _{PHZ}		90											7/																	
f _{MAX}		91	5/	5/	5/	5/	5/	5/	5/	5/	5/		5/ 6/	5/	5/	5/	5/	5/	5/	5/	5/	4.5 V	All registered outputs	14		14		14		MHz

See footnotes at end of table.

TABLE III. Group A inspection for device type 09.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	O1	O2	O3	O4	O5	O6	I/O7	VCC		Subgroup 1 TC=25°C		Subgroup 2 TC=125°C		Subgroup 3 TC = -55°C			
																								Min	Max	Min	Max	Min	Max		
VIC		1 2 3 4 5 6 7 8 9 10 11 12	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK I0 I1 I2 I3 I4 I5 I6 I7 OE I/O0 I/O7		-1.5		-1.5		-1.5	V	
		13 14 15 16 17 18 19 20	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	6/ 6/ 6/ 6/ 6/ 6/ 6/ 6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	I/O0 O1 O2 O3 O4 O5 O6 I/O7		0.5		0.5		0.5		
		21 22 23 24 25 26 27 28												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	I/O0 O1 O2 O3 O4 O5 O6 I/O7	2.4		2.4		2.4			
	IIL	3009	29 30 31 32 33 34 35 36 37 38 39 40	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK I0 I1 I2 I3 I4 I5 I6 I7 OE I/O0 I/O7		-0.25		-0.25		-0.25	mA
			41 42 43 44 45 46 47 48 49 50	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK I0 I1 I2 I3 I4 I5 I6 I7 OE		25		25		25	mA

See footnotes at end of table.

TABLE III. Group A inspection for device type 09 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	O1	O2	O3	O4	O5	O6	I/O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C			
																								Min	Max	Min	Max	Min	Max		
I _I		51 52 53 54 55 56 57 58 59 60 61 62	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	GND										5.5 V	CLOCK		1.0		1.0		1.0	mA	
I _{OS}	3011	63 64 65 66 67 68 69 70	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	1/ "	"	6/ "	GND	GND							5.5 V	5.0V	I/O0	-30	-250	-30	-250	-30	-250	"
I _{OZH}		71 72 73 74 75 76 77 78	"	"	"	"	"	"	"	"	"	"	7/ "	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	5.5 V	I/O0		100		100		100	μA	
I _{OZL}		79 80 81 82 83 84	"	"	"	"	"	"	"	"	"	"	"		0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	"	O1		-100		-100		-100	"		
I _{CC}	3005	85									"										"	V _{CC}		90		90		90	mA		
																							Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C				
																									Min	Max	Min	Max	Min	Max	
Functional tests	3014	86	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	GND	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	2/ "	4.5 V	All outputs		2/ "		2/ "		2/ "		

See footnotes at end of table.

TABLE III. Group A inspection for device type 09 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit	
			C_{LK}	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	O1	O2	O3	O4	O5	O6	I/O7	V_{CC}		Subgroup 9 $T_C=25^{\circ}\text{C}$		Subgroup 10 $T_C=125^{\circ}\text{C}$		Subgroup 11 $T_C = -55^{\circ}\text{C}$			
																								Min	Max	Min	Max	Min	Max		
t_{SU}	3003 Fig. 5	87	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/		4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/		3/	All outputs	10/	50	10/	50	10/	50	ns
$t_{P(CL)}$		88	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	10/	25	10/	25	10/	25	"
t_{PCL}		89	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t_{PCH}		90	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t_{PHL}		91	"	"	"	"	"	"	"	"	"	"	"	4/ 9/								4/ 9/	"	All I/Os	50		50		50		"
t_{PLH}		92	"	"	"	"	"	"	"	"	"	"	"	4/ 9/								4/ 9/	"	All I/Os	50		50		50		"
t_{PZH}		93	"	"	"	"	"	"	"	"	"	"	6/		4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	4/ 8/	"	All outputs		25		25		25	"	
t_{PZL}		94	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t_{PHZ}		95	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t_{PLZ}		96	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
t_{PZH}		97	"	"	"	"	"	"	"	"	"	"	"	4/ 9/								4/ 9/	"	All I/Os	45		45		45		"
t_{PZL}		98	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"	"
t_{PHZ}		99	"	"	"	"	"	"	"	"	"	"	"		"							"	"	"	"	"	"	"	"	"	"
t_{PLZ}		100	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"	"
f_{MAX}		101	5/	5/	5/	5/	5/	5/	5/	5/	5/	"	5/ 6/		5/	5/	5/	5/	5/	5/		4.5 V	All registered outputs	14		14		14		MHz	

See footnotes at end of table.

TABLE III. Group A inspection for device type 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C		
																								Min	Max	Min	Max	Min	Max	
V _{IC}		1 2 3 4 5 6 7 8 9 10 11 12 13 14	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	GND										4.5 V	CLOCK		-1.5		-1.5		-1.5	V
																							I0							
																							I1							
																							I2							
																							I3							
																							I4							
																							I5							
																							I6							
																							I7							
													-18 mA										OE							
														-18 mA	-18 mA	-18 mA							I/O0							
																				-18 mA			I/O1							
																					-18 mA			I/O6						
																						-18 mA			I/O7					
V _{OL}	3007	15 16 17 18 19 20 21 22	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/	1/ 1/ 1/ 1/ 1/ 1/ 1/ 1/		6/ 6/ 6/ 6/ 6/ 6/ 6/ 6/	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA	12 mA		I/O0 I/O1 O2 O3 O4 O5 I/O6 I/O7		0.5		0.5		0.5	
V _{OH}	3006	23 24 25 26 27 28 29 30												-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA	-2 mA		I/O0 I/O1 I2 I3 I4 I5 I/O6 I/O7	2.4		2.4		2.4		
I _{IL}	3009	31 32 33 34 35 36 37 38 39 40 41 42 43 44	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V											5.5 V	CLOCK		-0.25		-0.25		-0.25	mA
																							I0							
																							I1							
																							I2							
																							I3							
																							I4							
																							I5							
																							I6							
																							I7							
													0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V		OE							
														0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V		I/O0							
															0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V	0.4 V		I/O1							
																			0.4 V	0.4 V		I/O6								
																						I/O7								
I _{IH}	3010	45 46 47 48 49 50 51 52 53 54	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V												CLOCK		25		25		25	μA
																							I0							
																							I1							
																							I2							
																							I3							
																							I4							
																							I5							
																							I6							
																							I7							
													2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V		OE							

See footnotes at end of table.

TABLE III. Group A inspection for device type 10 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R.Y.2 Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit																
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 1 T _C =25°C		Subgroup 2 T _C =125°C		Subgroup 3 T _C = -55°C																		
																								Min	Max	Min	Max	Min	Max																	
I _I		55	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	GND										5.5 V	CLOCK		1.0		1.0		1.0	mA																
	56																																													
	57																																													
	58																																													
	59																																													
	60																																													
	61																																													
	62																																													
	63																																													
	64																					5.5 V																								
	65																						5.5 V																							
	66																							5.5 V																						
	67																												5.5 V																	
	68																													5.5 V		I/O7														
I _{OS}	3011	69	1/	1/	1/	1/	1/	1/	1/	1/	1/		6/	GND	GND	GND	GND	GND	GND	GND	GND	5.0 V	I/O0	-30	-250	-30	-250	-30	-250	mA																
		70																											I/O1																	
		71																											O2																	
		72																											O3																	
		73																						O4																						
		74																						O5																						
		75																						I/O6																						
		76																						I/O7																						
	I _{OZH}		77											7/	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	5.5 V	I/O0		100		100		100	μA															
			78																											I/O1																
			79																											O2																
		80																											O3																	
		81																						O4																						
		82																						O5																						
		83																						I/O6																						
I _{OZL}		84																			2.4 V																									
		85														0.4 V								O2		-100		-100		-100																
		86															0.4 V							O3																						
		87																0.4 V						O4																						
	88																	0.4 V						O5																						
I _{CC}	3005	89																				V _{CC}			90		90		90	mA																
																								Subgroup 7 T _C =25°C		Subgroup 8 T _C =125°C		Subgroup 8 T _C = -55°C																		
																									Min	Max	Min	Max	Min		Max															
Functional tests	3014	90	2/	2/	2/	2/	2/	2/	2/	2/	2/	GND	2/	2/	2/	2/	2/	2/	2/	2/	2/	4.5 V	All outputs		2/		2/		2/																	

See footnotes at end of table.

TABLE III. Group A inspection for device type 10 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open).

Symbol	MIL-STD-883 method	Case R,Y,Z Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Measured terminal	Test limits						Unit
			CLK	I0	I1	I2	I3	I4	I5	I6	I7	GND	OE	I/O0	I/O1	O2	O3	O4	O5	I/O6	I/O7	V _{CC}		Subgroup 9 T _C =25°C		Subgroup 10 T _C =125°C		Subgroup 11 T _C = -55°C		
																									Min	Max	Min	Max	Min	
t _{SU}	3003 Fig. 5	91	3/	3/	3/	3/	3/	3/	3/	3/	3/	GND	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			3/	All outputs	10/	50	10/	50	10/	50	ns
t _{PI(CL)}	"	92	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	10/	25	10/	25	10/	25	"
t _{PCH}	"	93	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PCL}	"	94	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PHL}	"	95	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	50		50		50		"
t _{PLH}	"	96	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	50		50		50		"
t _{PZH}	"	97	"	"	"	"	"	"	"	"	"	"	6/			4/ 8/	4/ 8/	4/ 8/	4/ 8/			"	All outputs	25		25		25		"
t _{PZL}	"	98	"	"	"	"	"	"	"	"	"	"	"			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PHZ}	"	99	"	"	"	"	"	"	"	"	"	"	7/			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PLZ}	"	100	"	"	"	"	"	"	"	"	"	"	7/			"	"	"	"			"	"	"	"	"	"	"	"	"
t _{PZH}	"	101	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	All I/Os	45		45		45		"
t _{PZL}	"	102	"	"	"	"	"	"	"	"	"	"	"	4/ 9/	4/ 9/					4/ 9/	4/ 9/	"	"	"	"	"	"	"	"	"
t _{PLZ}	"	103	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"
t _{PHZ}	"	104	"	"	"	"	"	"	"	"	"	"	"									"	"	"	"	"	"	"	"	"
f _{MAX}	"	105	5/	5/	5/	5/	5/	5/	5/	5/	5/	"	5/ 6/			3/	5/	5/	5/			4.5 V	All registered outputs	14		14		14		MHz

- 1/ For programmed devices select an appropriate set of inputs to acquire the desired output states.

For unprogrammed devices circuit A, for V_{OL} , V_{OH} , and I_{OS} use conditions defined for the programming procedure as follows:

V_{OL} :

- 11.5 V on pins 1-9; 0 V on pins 12-15; and a clock pulse on pin 11. Outputs are on pin 16-19.
- 11.5 V on pins 2-9 and pin 11; 0 V on pins 16-19 and a clock pulse on pin 1. Outputs are on pin 12-15.

V_{OH} :

- 11.5 V on pin 1; 0 V on pins 2-9; a clock pulse on pin 11. Pins 12-15 are high impedance. Outputs are on pins 16-19.
- 11.5 V on pin 11; 0 V on pins 2-9; a clock pulse on pin 1. Pins 16-19 are high impedance. Outputs are on pins 12-15.

I_{OS} :

Applying the proper output test, generate the output condition as specified for V_{OH} . Short only one output at a time. Duration of the short should not exceed 1 second.

For unprogrammed devices circuit B, for V_{OL} , V_{OH} , I_{OS} , use conditions defined for the programming procedures as follows:

V_{OL} :

- 11.5 V on pins 1-9; 5 V on pins 12-15; and a clock pulse on pin 11. Outputs are on pin 16-19.
- 11.5 V on pins 2-9 and pin 11; 5 V on pins 16-19 and a clock pulse on pin 1. Outputs are on pin 12-15.

V_{OH} :

- 11.5 V on pins 1-9 and pins 13-15, 5 V on pin 12, and a clock pulse on pin 11. Outputs are on pins 16-19.
- 11.5 V on pins 2-9 and pin 11, and pins 16-18, 5 V on pins 19; a clock pulse on pin 1. Outputs are on pins 12-15.

I_{OS} :

Applying the proper output test, generate the output condition as specified for V_{OH} . Short only one output at a time. Duration of the short should not exceed 1 second.

For unprogrammed devices circuit C, for V_{OL} , V_{OH} , I_{OZH} , I_{OZL} , and I_{OS} , use conditions defined for the programming procedures as follows:

V_{OL} :

- 10.5 V on pins 2-9, GND on pins 10 and 11, and a clock pulse on pin 1. Outputs are on pins 13, 15, 17, 19.
- 10.5 V on pins 3-9, GND on pins 2, 10, and 11, and a clock pulse on pin 1. Outputs are on pins 12 and 14.
- 10.5 V on pins 3-9, GND on pins 1, 2, 10, and 11. Outputs are on pins 16 and 18.

V_{OH} :

- 10.5 V on pin 11, GND on pins 2-10, and a clock pulse on pin 1. Outputs are on pins 12-15.
- 10.5 V on pin 1, GND on pins 2-10, and a clock pulse on pin 11. Outputs are on pins 16-19.

I_{OZH} :

- GND on pins 1-11, outputs are on pins 12-19 for device types 01 and 07. Outputs are on pins 12, 19 for device types 03 and 09. Outputs are on pins 12, 13, 18, and 19 for device types 04 and 10.
- GND on pins 1-10, 2.0 V on pin 11, outputs are on pins 12-19 for device types 02 and 08, 13-18 for device types 03 and 09. Outputs are on pins 14-17 for device types 04 and 10.

I_{OL} :

- a. GND on pins 2-11, and a clock pulse on pin 1. Outputs are on pins 12 and 19 for device types 01 and 07.
- b. GND on pins 2-10, 2.0 V on pin 11, and a clock pulse on pin 1. Outputs are on pins 12-19 for device types 02 and 08. Outputs are on pins 13-18 for device types 03 and 09. Outputs are on pins 14-17 for device types 04 and 10.

I_{OS} :

Applying the proper output test, generate the output condition as specified for V_{OH} . Short only one output at a time. Duration of the short should not exceed 1 second.

2/ The functional tests shall verify that no fuses are blown for unprogrammed devices, or that the altered item drawing pattern exists for programmed devices, $V_{IH} = 3.0$ V, $V_{IL} = \text{GND}$.

3/ The test shall check all inputs, gates, and outputs that have been programmed. The test shall be performed $V_{CC} = 4.5$ V and 5.5 V.

4/ The outputs are loaded per figure 5.

5/ The maximum clock frequency (f_{MAX}) is considered met if the proper output state changes occur with the frequency set to the minimum limit given in table III, or $f_{MAX} = 1 / (t_{SU} + t_{P(CL)})$.

6/ External output enable set ($OE = \text{GND}$).

7/ External output enable reset ($OE = 3.0$ V).

8/ Synchronous registered output, with external output enable (pin 11).

9/ Asynchronous output, with internal output enable.

10/ t_{SU} and $t_{P(CL)}$ may be tested concurrently with t_{PCL} and t_{PCH} by using values within the maximum test values of table III.

11/ For circuit C, I_{OS} test may be replaced with an equivalent I_O test as follows: pins 12-19, delete "GND and substitute "2.25 V"; pin 20 V_{CC} , delete "5.0 V", substitute "5.5 V"; and in the limits columns, delete min/max of "-30/-250" and substitute "-15/-125".

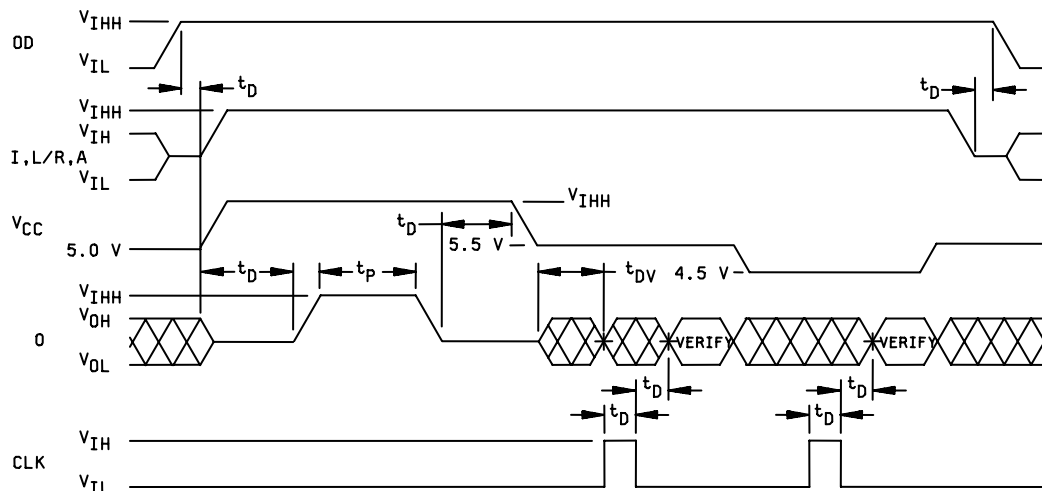


FIGURE 6a. Programming waveforms for circuit A.

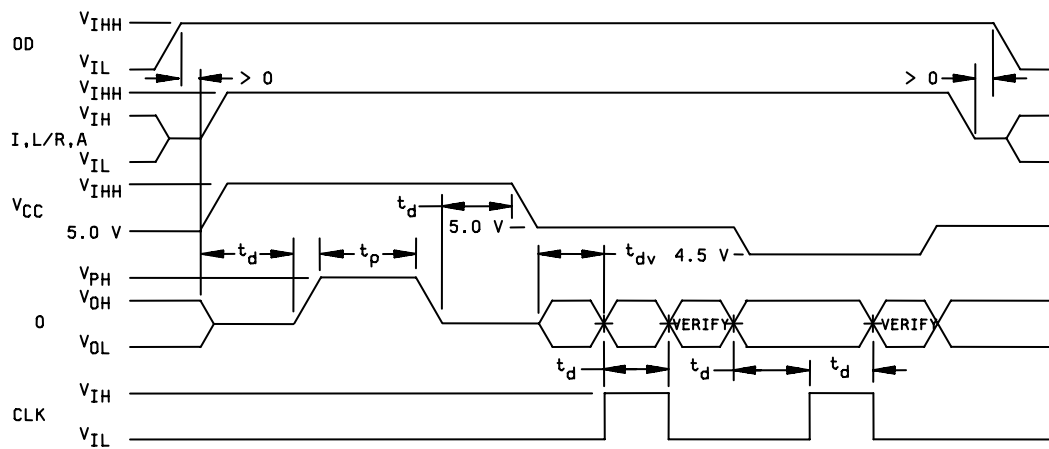
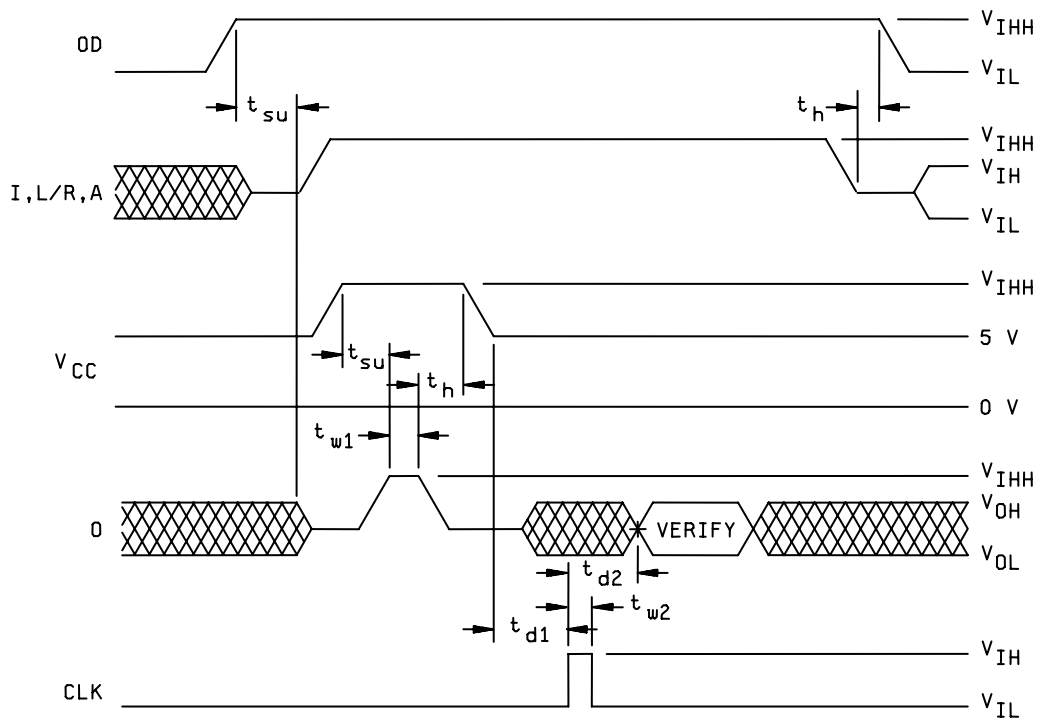


FIGURE 6b. Programming waveforms for circuit B.

FIGURE 6c. Programming waveforms for circuit C.

Pin number	Products 0 thru 31	Products 32 thru 63
1	OD	CLK
2	I ₀	I ₀
3	I ₁	I ₁
4	I ₂	I ₂
5	I ₃	I ₃
6	I ₄	I ₄
7	I ₅	I ₅
8	I ₆	I ₆
9	I ₇	I ₇
10	GND	GND
11	CLK	OD
12	L/R	O ₃
13	A ₂	O ₂
14	A ₁	O ₁
15	A ₀	O ₀
16	O ₃	A ₂
17	O ₂	A ₁
18	O ₁	A ₀
19	O ₀	L/R
20	V _{CC}	V _{CC}

FIGURE 7.
Programming pin identification for
circuit A, B, and C.

TABLE IV. Programming characteristics for circuit A.

Symbol	Parameters		Limits			Unit
			Min	Typ	Max	
V_{IHH}	Program level input voltage		11.5	11.75	12.0	V
I_{IHH}	Program level input current	Output program pulse	---	---	50	mA
		Output disable, OD	---	---	50	
		All other inputs	---	---	10	
I_{CCH}	Program supply current		---	---	900	mA
t_P	Program pulse width		10	20	50	μ S
t_d	Delay time		100	---	---	ns
----	Program pulse duty cycle		---	---	20	%
V_P	Program / verify protect input voltage		18	18.5	19	V
I_P	Program / verify protect input current		---	---	400	mA
t_{PP}	Security fuse programming pulse width		10	40	70	μ S
	Security fuse programming duty cycle		---	---	50	%
t_{RP}	Rise time of output programming and address pulses		1	1.5	10	V / μ S
t_{RP}	Rise time of security fuse programming pulses		1	1.5	10	V / μ S
V_{CCPP}	V_{CC} value during security fuse programming		5.75	6.0	6.25	V
	V_{CC} value for first verify		4.75	5.0	5.25	
	V_{CC} value for high V_{CC} verify		5.4	5.5	5.6	
	V_{CC} value for low V_{CC} verify		4.4	4.5	4.6	

TABLE V. Programming characteristics for circuit B.

Symbol	Parameters		Limits			Unit
			Min	Typ	Max	
V_{IHH}	Program level input voltage		11.0	11.5	12.0	V
I_{IHH}	Program level input current	Output program pulse			50	mA
		OD, L/R			25	
		All other inputs			5	
I_{CCH}	Program supply current				400	mA
t_P	Program pulse width		10		50	μ S
t_d	Delay time		100			ns
	Program pulse duty cycle				25	%
V_P	Program / verify protect input voltage			20		V
I_P	Program / verify protect input current				400	mA
t_{dv}	Delay time to verify		100			μ S
V_{PH}	Programming pulse		11.0	11.5	12.0	V

TABLE VI. Programming characteristics for circuit C.

Symbol	Parameters		Limits			Unit
			Min	Typ	Max	
V_{CC}	Verify - level input voltage		4.5	5.0	5.5	V
V_{IH}	High level input voltage		2		5.5	V
V_{IL}	Low level input voltage				0.8	V
V_{IHH}	Program pulse input voltage		10.25	10.5	10.75	V
I_{IHH}	Program pulse input current	Output PGM, pulse		20	50	mA
		OD, L/R		10	25	
		All other inputs		1.5	5	
		V_{CC}		250	400	
t_{w1}	Program pulse duration at PO pins		10		50	μ S
t_{w2}	Pulse duration at PGM verify		100			ns
	Program pulse duty cycle at PO pins				25	%
t_{su}	Setup time		100			ns
t_h	Hold time		100			ns
t_{d1}	Delay time from V_{CC} to 5 V to PGM verify $\uparrow$		100			μ S
t_{d2}	Delay time from PGM verify $\uparrow$ to valid output		200			ns
	Input voltage at pins 1 and 11 to open verify protect (security) fuse		20	21	22	V
	Input current to open verify protect (security) fuse				400	mA

TABLE VII. Input line select for circuits A, B, and C.

Input line number	Pin identification								
	I ₇	I ₆	I ₅	I ₄	I ₃	I ₂	I ₁	I ₀	L/R
0	HH	HH	HH	HH	HH	HH	HH	L	Z
1	HH	HH	HH	HH	HH	HH	HH	H	Z
2	HH	HH	HH	HH	HH	HH	HH	L	HH
3	HH	HH	HH	HH	HH	HH	HH	H	HH
4	HH	HH	HH	HH	HH	HH	L	HH	Z
5	HH	HH	HH	HH	HH	HH	H	HH	Z
6	HH	HH	HH	HH	HH	HH	L	HH	HH
7	HH	HH	HH	HH	HH	HH	H	HH	HH
8	HH	HH	HH	HH	HH	L	HH	HH	Z
9	HH	HH	HH	HH	HH	H	HH	HH	Z
10	HH	HH	HH	HH	HH	L	HH	HH	HH
11	HH	HH	HH	HH	HH	H	HH	HH	HH
12	HH	HH	HH	HH	L	HH	HH	HH	Z
13	HH	HH	HH	HH	H	HH	HH	HH	Z
14	HH	HH	HH	HH	L	HH	HH	HH	HH
15	HH	HH	HH	HH	H	HH	HH	HH	HH
16	HH	HH	HH	L	HH	HH	HH	HH	Z
17	HH	HH	HH	H	HH	HH	HH	HH	Z
18	HH	HH	HH	L	HH	HH	HH	HH	HH
19	HH	HH	HH	H	HH	HH	HH	HH	HH
20	HH	HH	L	HH	HH	HH	HH	HH	Z
21	HH	HH	H	HH	HH	HH	HH	HH	Z
22	HH	HH	L	HH	HH	HH	HH	HH	HH
23	HH	HH	H	HH	HH	HH	HH	HH	HH
24	HH	L	HH	HH	HH	HH	HH	HH	Z
25	HH	H	HH	HH	HH	HH	HH	HH	Z
26	HH	L	HH	HH	HH	HH	HH	HH	HH
27	HH	H	HH	HH	HH	HH	HH	HH	HH
28	L	HH	HH	HH	HH	HH	HH	HH	Z
29	H	HH	HH	HH	HH	HH	HH	HH	Z
30	L	HH	HH	HH	HH	HH	HH	HH	HH
31	H	HH	HH	HH	HH	HH	HH	HH	HH

L = V_{IL}, H = V_{IH}, HH = V_{IHH}, Z = high impedance
(e.g., 10 kΩ to 5 V).

TABLE VIII. Product line select for circuit A, B, and C.

Product line number	Pin identification						
	O ₃	O ₂	O ₁	O ₀	A ₂	A ₁	A ₀
0, 32	Z	Z	Z	HH	Z	Z	Z
1, 33	Z	Z	Z	HH	Z	Z	HH
2, 34	Z	Z	Z	HH	Z	HH	Z
3, 35	Z	Z	Z	HH	Z	HH	HH
4, 36	Z	Z	Z	HH	HH	Z	Z
5, 37	Z	Z	Z	HH	HH	Z	HH
6, 38	Z	Z	Z	HH	HH	HH	Z
7, 39	Z	Z	Z	HH	HH	HH	HH
8, 40	Z	Z	HH	Z	Z	Z	Z
9, 41	Z	Z	HH	Z	Z	Z	HH
10, 42	Z	Z	HH	Z	Z	HH	Z
11, 43	Z	Z	HH	Z	Z	HH	HH
12, 44	Z	Z	HH	Z	HH	Z	Z
13, 45	Z	Z	HH	Z	HH	Z	HH
14, 46	Z	Z	HH	Z	HH	HH	Z
15, 47	Z	Z	HH	Z	HH	HH	HH
16, 48	Z	HH	Z	Z	Z	Z	Z
17, 49	Z	HH	Z	Z	Z	Z	HH
18, 50	Z	HH	Z	Z	Z	HH	Z
19, 51	Z	HH	Z	Z	Z	HH	HH
20, 52	Z	HH	Z	Z	HH	Z	Z
21, 53	Z	HH	Z	Z	HH	Z	HH
22, 54	Z	HH	Z	Z	HH	HH	Z
23, 55	Z	HH	Z	Z	HH	HH	HH
24, 56	HH	Z	Z	Z	Z	Z	Z
25, 57	HH	Z	Z	Z	Z	Z	HH
26, 58	HH	Z	Z	Z	Z	HH	Z
27, 59	HH	Z	Z	Z	Z	HH	HH
28, 60	HH	Z	Z	Z	HH	Z	Z
29, 61	HH	Z	Z	Z	HH	Z	HH
30, 62	HH	Z	Z	Z	HH	HH	Z
31, 63	HH	Z	Z	Z	HH	HH	HH

L = V_{IL} , H = V_{IH} , HH = V_{IHH} , Z = high impedance
(e.g., 10 kΩ to 5 V).

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.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but it 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. Requirement for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to acquiring 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 should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
- i. Requirement for programming the device, including processing option.
- j. Requirement for "JAN" marking.
- k. 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-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 purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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 list.

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

GND	Electrical ground (common terminal)
I _{IN}	Current flowing into an input terminal.
L / R	Programming left / right identifier
V _{IC}	Input clamp voltage.
V _{IN}	Voltage level at an input terminal.

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) and lead material and finish A (see 3.4). Longer length leads and lead forming should not affect the part number. It is intended that spare devices for logistic support be acquired in the unprogrammed condition (see 3.8.1) and programmed by the maintenance activity, except where use quantities for devices with a specific program or pattern justify stocking of preprogrammed devices.

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.

<u>Device type</u>	<u>Commercial type</u>	<u>Fusible Link</u>
01	PAL16L8A	TiW
02	PAL16R8A	TiW
03	PAL16R6A	TiW
04	PAL16R4A	TiW
05	PAL16X4	TiW
06	PAL16A4	TiW
07	PAL16L8A-2	TiW
08	PAL16R8A-2	TiW
09	PAL16R6A-2	TiW
10	PAL16R4A-2	TiW

6.8 Manufacturers' designations. Manufacturers' circuits included in this specification are designated as shown in table IX.

Table IX. Manufacturers' designations			
Device Type	Monolithic Memories	National	Texas Instruments
	Circuits		
	A	B	C
01	X (CECD/50364) 1/	X (CCXP/27014) 1/	X (CGO/01295) 1/
02	X	X	X
03	X	X	X
04	X	X	X
05	X	X	
06	X	X	
07	X		X
08	X		X
09	X		X
10	X		X

1/ Symbol / CAGE number.

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue, due to the extent of the changes.

Custodians:
Army – CR
Navy - EC
Air Force – 11
DLA - CC

Preparing activity:
DLA - CC

Review activities:
Army – MI, SM
Navy – AS, CG, MC, SH, TD
Air Force – 03, 19, 99

(Project 5962-2005-034)

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