|INCH-POUND|

MIL-M-38510/341E
28 April 1989
SUPERSEDING
MIL-M-38510/341D
16 June 1986

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, ADVANCED SCHOTTKY TTL, FLIP-FLOPS,
CASCADABLE, MONOLITHIC SILICON

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

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, Advanced Schottky TTL, flip flop microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided and are reflected in the complete part number.

1.2 Part or identifying number (PIN). The PIN shall be in accordance with MIL-M-38510, and as specified herein.

1.2.1 Device types. The device types shall be as follows:

Device type	Circuit
01	Dual D-type positive edge-triggered flip-flop
02	Dual JK positive edge-triggered flip-flop
03	Dual JK negative edge-triggered flip-flop
04	Quad D-type positive edge-triggered flip-flop
05	Octal D-type positive edge-triggered flip-flop with three-state outputs
06	Octal D-type positive edge-triggered flip-flop with three-state inverted outputs
07	Hex D-type positive edge-triggered flip-flop
08	Parallel D-type positive edge-triggered register (with enable)
09	Quad parallel positive edge-triggered register (with enable)
10	Octal D-type positive edge-triggered flip-flop with three-state outputs
11	Octal D-type positive edge-triggered flip-flop with three-state inverted outputs

1.2.2 Device class. The device class shall be the product assurance level as defined in MIL-M-38510.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Rome Air Development Center (RBE-2), Griffiss AFB, NY 13441-5700, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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

FSC 5962

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1.2.3 <u>Case outlines</u>. The case outlines shall be designated as follows:

Letter	Case outline (see MIL-M-38510, appendix C)
A	F-1 (14-lead, .280" x .260" x .085"), flat package
B	F-3 (14-lead, .280" x .200" x .070"), flat package
C	D-1 (14-lead, .785" x .310" x .200"), dual-in-line package
D	F-2 (14-lead, .390" x .260" x .085"), flat package
E	D-2 (16-lead, .840" x .310" x .200"), dual-in-line package
F	F-5 (16-lead, .440" x .285" x .085"), flat package
R	D-8 (20-lead, 1.060" x .310" x .200"), dual-in-line package
S	F-9 (20-lead, .540" x .300" x .100"), flat package
2	C-2 (20-terminal, .358" x .358" x .100"), square chip carrier package
X	C-2 (20-terminal, .358" x .358" x .075"), square chip carrier package

1.3 <u>Absolute maximum ratings.</u>

Supply voltage range- - - - - - - - - - - - - - -0.5 V dc to +7.0 V dc
Input voltage range - - - - - - - - - - - - - - -1.2 V dc at -18 mA to +7.0 V dc
Storage temperature range - - - - - - - - - -65°C to +150°C

Maximum power dissipation (P_D) 1/:
  Device type 01- - - - - - - - - - - - - - - - 88 mW
  Device type 02- - - - - - - - - - - - - - - - 93.5 mW
  Device type 03- - - - - - - - - - - - - - - - 105 mW
  Device type 04- - - - - - - - - - - - - - - - 187 mW
  Device types 05, 06, 10, 11 - - - - - - - - 473 mW
  Device type 07- - - - - - - - - - - - - - - - 247 mW
  Device type 08- - - - - - - - - - - - - - - - 247 mW
  Device type 09- - - - - - - - - - - - - - - - 220 mW
Lead temperature (soldering, 10 seconds)- - +300°C
Thermal resistance, junction-to-case (θ_{JC})- See MIL-M-38510, appendix C
Junction temperature (T_J) 2/- - - - - - - - +175°C

1.4 <u>Recommended operating conditions.</u>

Supply voltage (V_{CC})- - - - - - - - - - - - 4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage (V_{IH})- - 2.0 V dc
Maximum low level input voltage (V_{IL}) - - 0.8 V dc
Case operating temperature range (T_C) - - -55°C to +125°C
Width of clock pulse high:
  Device type 01- - - - - - - - - - - - - - - - 4.0 ns minimum
  Device type 02- - - - - - - - - - - - - - - - 4.0 ns minimum
  Device type 03- - - - - - - - - - - - - - - - 5.0 ns minimum
  Device type 04- - - - - - - - - - - - - - - - 4.0 ns minimum
  Device type 05- - - - - - - - - - - - - - - - 8.0 ns minimum
  Device types 06, 07 - - - - - - - - - - - - 7.0 ns minimum
  Device type 08- - - - - - - - - - - - - - - - 4.0 ns minimum
  Device type 09- - - - - - - - - - - - - - - - 4.0 ns minimum
  Device types 10, 11 - - - - - - - - - - - - 5.0 ns minimum

1/ Must withstand the added P_D due to short circuit test; e.g., I_{OS}.
2/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions in accordance with method 5004 of MIL-STD-883.

Width of clock pulse low:
    Device type 01- - - - - - - - - - - - - -   6.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 04- - - - - - - - - - - - - -   6.0 ns minimum
    Device type 05- - - - - - - - - - - - - -   8.0 ns minimum
    Device type 06- - - - - - - - - - - - - -   6.0 ns minimum
    Device type 07- - - - - - - - - - - - - -   7.5 ns minimum
    Device type 08- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 09- - - - - - - - - - - - - -   5.0 ns minimum
    Device types 10, 11 - - - - - - - - - - -   5.0 ns minimum
Width of set pulse:
    Device type 01- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   5.0 ns minimum
Width of clear pulse:
    Device type 01- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   5.0 ns minimum
Width of master reset pulse:
    Device type 04- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 07- - - - - - - - - - - - - -   6.5 ns minimum
Setup time J, K, or D high to clock pulse:
    Device type 01- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 04- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 05- - - - - - - - - - - - - -   2.5 ns minimum
    Device type 06- - - - - - - - - - - - - -   2.0 ns minimum
    Device type 07- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 08- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 09- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 10- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 11- - - - - - - - - - - - - -   2.5 ns minimum
Setup time J, K, or D low to clock pulse:
    Device type 01- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   2.5 ns minimum
    Device type 04- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 05- - - - - - - - - - - - - -   2.0 ns minimum
    Device type 06- - - - - - - - - - - - - -   2.5 ns minimum
    Device type 07- - - - - - - - - - - - - -   5.0 ns minimum
    Device type 08- - - - - - - - - - - - - -   4.0 ns minimum
    Device type 09- - - - - - - - - - - - - -   3.0 ns minimum
    Device type 10- - - - - - - - - - - - - -   2.5 ns minimum
    Device type 11- - - - - - - - - - - - - -   3.0 ns minimum
Hold time J, K, or D high to clock pulse:
    Device type 01- - - - - - - - - - - - - -   2.0 ns minimum
    Device type 02- - - - - - - - - - - - - -   1.0 ns minimum
    Device type 03- - - - - - - - - - - - - -   2.5 ns minimum
    Device type 04- - - - - - - - - - - - - -   1.0 ns minimum
    Device types 05, 06, 07 - - - - - - - - -   2.0 ns minimum
    Device type 08- - - - - - - - - - - - - -   2.0 ns minimum
    Device type 09- - - - - - - - - - - - - -   1.0 ns minimum
    Device types 10, 11 - - - - - - - - - - -   2.0 ns minimum

Hold time J, K, or D low to clock pulse:
```
Device type 01- - - - - - - - - - - - - - - -   2.0 ns minimum
Device type 02- - - - - - - - - - - - - - - -   1.0 ns minimum
Device type 03- - - - - - - - - - - - - - - -   0.0 ns minimum
Device type 04- - - - - - - - - - - - - - - -   2.0 ns minimum
Device types 05, 06 - - - - - - - - - - - - -   2.5 ns minimum
Device types 07, 08 - - - - - - - - - - - - -   2.0 ns minimum
Device type 09- - - - - - - - - - - - - - - -   1.0 ns minimum
Device types 10, 11 - - - - - - - - - - - - -   2.0 ns minimum
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Recovery time $\overline{SD}$, $\overline{CD}$, or $\overline{MR}$ to CP:
```
Device type 01- - - - - - - - - - - - - - - -   3.0 ns minimum
Device type 02- - - - - - - - - - - - - - - -   2.0 ns minimum
Device type 03- - - - - - - - - - - - - - - -   5.0 ns minimum
Device type 04- - - - - - - - - - - - - - - -   6.0 ns minimum
Device type 07- - - - - - - - - - - - - - - -   6.0 ns minimum
```
Input clock frequency:
```
Device type 01- - - - - - - - - - - - - - - -   0-80 MHz
Device types 02, 07 - - - - - - - - - - - - -   0-70 MHz
Device type 03- - - - - - - - - - - - - - - -   0-90 MHz
Device type 04- - - - - - - - - - - - - - - -   0-80 MHz
Device types 05, 06 - - - - - - - - - - - - -   0-60 MHz
Device type 08- - - - - - - - - - - - - - - -   0-90 MHz
Device type 09- - - - - - - - - - - - - - - -   0-90 MHz
Device types 10, 11 - - - - - - - - - - - - -   0-60 MHz
```

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

MILITARY

MIL-M-38510   -   Microcircuits, General Specification for.

STANDARD

MILITARY

MIL-STD-883   -   Test Methods and Procedures for Microelectronics.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), 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 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510, and as specified herein.

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3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Terminal connections and logic diagrams. The terminal connections and logic diagrams shall be as specified on figures 1 and 2, respectively.

3.2.2 Truth tables. The truth tables shall be as specified on figure 3.

3.2.3 Schematic circuits. The schematic circuits shall be submitted to the preparing activity prior to inclusion of a manufacturer's device in this specification and shall be submitted to the qualifying activity and agent activity (DESC-ECS) as a prerequisite for qualification. All qualified manufacturers' schematics shall be maintained by the agent activity and will be available upon request.

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

3.3 Lead material and finish. The lead material and finish shall be in accordance with MIL-M-38510 (see 6.4).

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

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

3.6 Marking. Marking shall be in accordance with MIL-M-38510.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 10 (see MIL-M-38510, appendix E).

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-M-38510 and methods 5005 and 5007 of MIL-STD-883, as applicable, except as modified herein.

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

    a. Burn-in test, method 1015 of MIL-STD-883.

        (1) Test condition D, E, or F using the circuit shown on figure 4, or equivalent.

        (2) T_A = +125°C minimum.

    b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.

    c. The percent defective allowable (PDA) shall be as specified in MIL-M-38510.

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TABLE I. __Electrical performance characteristics.__

Test	Symbol	Conditions $-55°C \leq T_C \leq +125°C$	Device type	Limits		Unit
				Min	Max	
High level output voltage	V_{OH}	$V_{CC} = 4.5$ V, $I_{OH} = -1.0$ mA, $V_{IL} = 0.8$ V, $V_{IH} = 2.0$ V	All	2.5		V
Low level output voltage	V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 20$ mA, $V_{IL} = 0.8$ V, $V_{IH} = 2.0$ V	All		0.5	V
Input clamp voltage	V_{IC}	$V_{CC} = 4.5$ V, $I_{IN} = -18$ mA $T_C = +25°C$	All		-1.2	V
High level input current	I_{IH1}	$V_{CC} = 5.5$ V, $V_{IN} = 2.7$ V	All		20	µA
	I_{IH2}	$V_{CC} = 5.5$ V, $V_{IN} = 7.0$ V	All		100	µA
Low level input current	I_{IL1}	$V_{CC} = 5.5$ V, $V_{IL} = 0.5$ V	All	-0.3	-0.6	mA
	I_{IL2}		01,02, 03	-0.9	-3.0	mA
	I_{IL3}		03	-.12	-3.0	mA
	I_{IL4}		07	-.05	-1.2	mA
Supply current	I_{CC}	$V_{CC} = 5.5$ V, $V_{IL} = 0.0$ V	01		16	mA
			02		17	mA
			03		19	mA
			04		34	mA
			07,08, 09		45	mA
Supply current	I_{CCL}	$V_{CC} = 5.5$ V, $V_{IL} = 0.0$ V	10,11		86	mA
	I_{CCZ}	$V_{CC} = 5.5$ V, $V_{IL} = 0.0$ V	05,06		86	mA
			10,11		90	
Off-state output leakage current	I_{OZH}	$V_{CC} = 5.5$ V, $V_{ZH} = 2.7$ V	05,06, 10,11		50	µA
	I_{OZL}	$V_{CC} = 5.5$ V, $V_{ZL} = 0.5$ V	05,06 10,11		-50	µA
Short circuit output current	I_{OS}	$V_{CC} = 5.5$ V, $V_{OUT} = 0.0$ V 1/	All	-60	-150	mA

See footnote at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \leq T_C \leq +125°C$	Device type	Limits		Unit
				Min	Max	
Output drive	I_{OD}	V_{CC} = 4.5 V, V_{IN} = 5.5 V, V_{OUT} = 2.5 V	01,02, 03,04, 07,08, 09	60		mA
			05,06	35		mA
Maximum toggle frequency	f_{MAX}		01	80		MHz
			02,07	70		MHz
			03	90		MHz
			04	80		MHz
			05,06	60		MHz
			08	60		MHz
			09	70		MHz
			10,11	60		MHz
Propagation delay time, low to high level		V_{CC} = 5.0 V, C_L = 50 pF ±10% See figure 5				
CP to Q output	t_{PLH1}		01	3.8	8.5	ns
			02	3.8	9.0	ns
			03	2.5	9.5	ns
			04	3.5	8.5	ns
			05	3.0	10.5	ns
			07	1.0	11.0	ns
			08	2.0	9.5	ns
			09	2.0	8.5	ns
			10	2.5	9.5	ns
CP to $\overline{Q}$ output	t_{PLH2}		01	3.8	8.5	ns
			02	3.8	9.0	ns
			03,11	2.5	9.5	ns
			04	3.5	8.5	ns
			06	4.0	10.5	ns
$\overline{SD}$, $\overline{CD}$, to Q, $\overline{Q}$ output (CP high)	t_{PLH3}		01	3.2	8.0	ns
			02	3.2	9.0	ns
			03	2.0	9.0	ns
$\overline{SD}$, $\overline{CD}$, to Q, $\overline{Q}$ output (CP low)	t_{PLH4}		01	3.2	8.0	ns
			02	3.2	9.0	ns
			03	2.0	9.0	ns
$\overline{MR}$ to $\overline{Q}$ output (CP high)	t_{PLH5}		04	4.0	10.0	ns

See footnote at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits		Unit
				Min	Max	
$\overline{MR}$ to $\overline{Q}$ output (CP low)	t_{PLH6}	V_{CC} = 5.0 V, C_L = 50 pF ±10% See figure 5	04	4.0	10.0	ns
Propagation delay time, high to low level						
CP to Q output	t_{PHL1}		01	3.8	10.5	ns
			02	3.8	10.5	ns
			03	2.5	9.5	ns
			04	3.5	10.5	ns
			05	3.0	11.5	ns
			07	1.0	13.0	ns
			08	2.5	10.5	ns
			09	2.5	10.5	ns
			10	2.5	9.5	ns
CP to $\overline{Q}$ output	t_{PHL2}		01	3.8	10.5	ns
			02	3.8	10.5	ns
			03,11	2.5	9.5	ns
			04	3.5	10.5	ns
			06	4.0	11.0	ns
$\overline{SD}$, $\overline{CD}$, to Q, $\overline{Q}$ output (CP high)	t_{PHL3}		01	3.2	11.5	ns
			02	3.2	11.5	ns
			03	2.0	9.5	ns
$\overline{SD}$, $\overline{CD}$, to Q, $\overline{Q}$ output (CP low)	t_{PHL4}		01	3.5	11.5	ns
			02	3.5	11.5	ns
			03	2.5	9.5	ns
$\overline{MR}$ to Q output (CP high)	t_{PHL5}		04	4.5	15.0	ns
			07	1.0	17.0	ns
$\overline{MR}$ to Q output (CP low)	t_{PHL6}		04	4.5	15.0	ns
			07	1.0	17.0	ns
Propagation delay time, low level to off-state						
$\overline{OE}$ to Q output	t_{PLZ1}		05	1.5	7.5	ns
			10	1.0	7.0	ns

See footnote at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits		Unit
				Min	Max	
$\overline{OE}$ to $\overline{Q}$ output	t_{PLZ2}	V_{CC} = 5.0 V, C_L = pF ±10% See figure 5	06	1.5	7.5	ns
			11	1.5	7.0	ns
Propagation delay time, high level to off-state						
$\overline{OE}$ to Q output	t_{PHZ1}		05	1.5	8.0	ns
			10	1.0	7.0	ns
$\overline{OE}$ to $\overline{Q}$ output	t_{PHZ2}		06	1.5	8.0	ns
			11	1.5	7.0	ns
Propagation delay time, off-state to low level						
$\overline{OE}$ to Q output	t_{PZL1}		05	2.0	10.0	ns
			10	2.5	10.5	ns
$\overline{OE}$ to $\overline{Q}$ output	t_{PZL2}		06	2.0	10.0	ns
			11	2.5	10.5	ns
Propagation delay time, off-state to high level						
$\overline{OE}$ to Q output	t_{PZH1}		05	2.0	14.0	ns
			10	2.0	10.5	ns
$\overline{OE}$ to $\overline{Q}$ output	t_{PZH2}		05,06	2.0	14.0	ns
			11	2.5	10.5	ns

1/ Not more than one output should be shorted at a time.

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TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters (method 5004)	1	1
Final electrical test parameters (method 5004)	1*,2,3,7, 9,10,11	1*,2,3,7,9
Group A test requirements (method 5005)	1,2,3,7,8, 9,10,11	1,2,3,7, 8,9,10,11
Group B test requirements (method 5005) subgroup 5	1,2,3, 9,10,11	N/A
Group C end-point electrical parameters (method 5005)	N/A	1,2,3
Group D end-point electrical parameters (method 5005)	1,2,3	1,2,3

*PDA applies to subgroup 1 (see 4.2c).

4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table I of method 5005 of MIL-STD-883 and as follows:

a.   Tests shall be as specified in table II herein.

b.   Subgroups 4, 5, and 6 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883. 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 III of method 5005 of MIL-STD-883 and as follows:

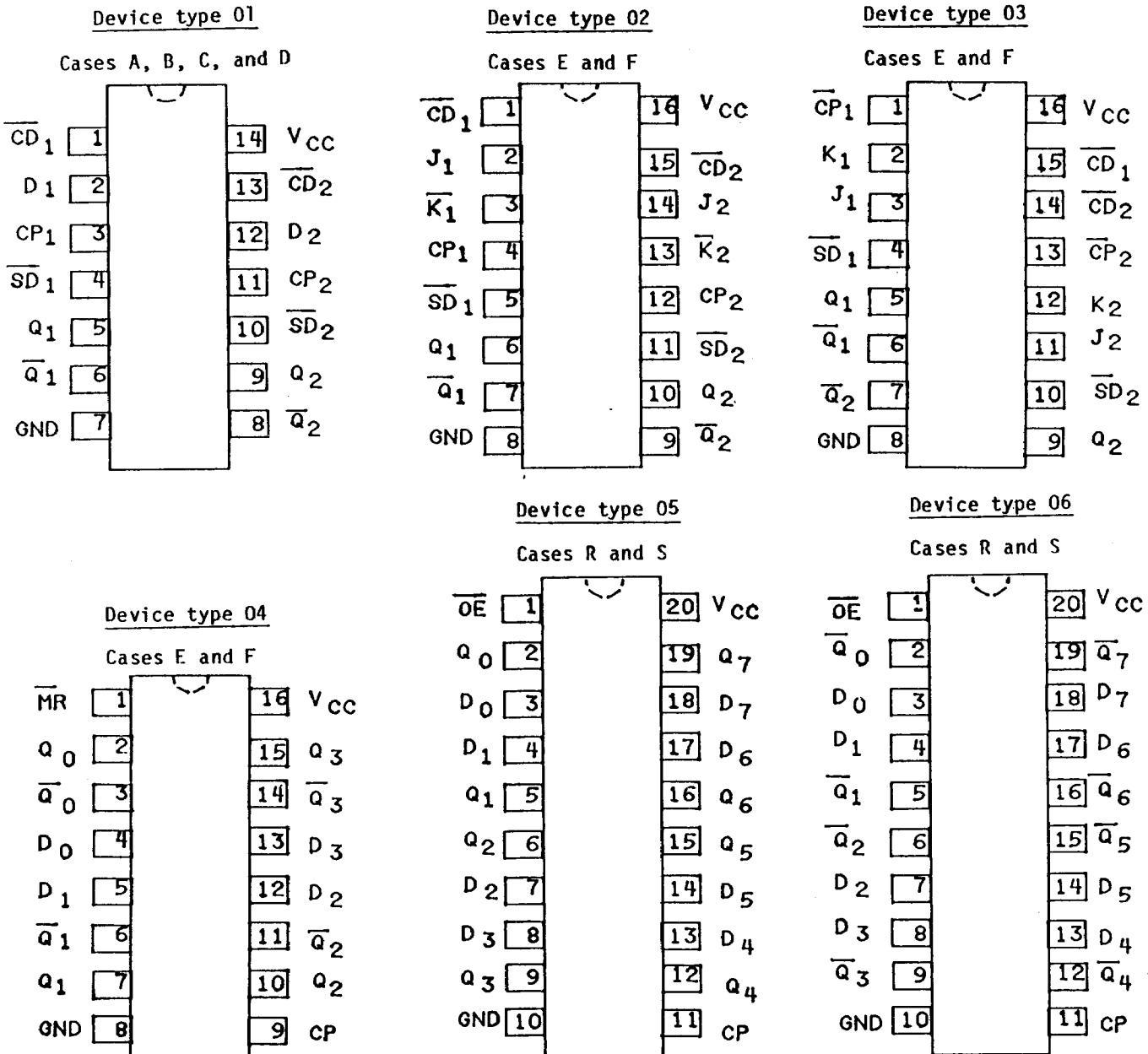a.   End-point electrical parameters shall be as specified in table II herein.

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Device type 01

Cases A, B, C, and D

Pin	Signal	Pin	Signal
1	$\overline{CD}_1$	14	V_{CC}
2	D_1	13	$\overline{CD}_2$
3	CP_1	12	D_2
4	$\overline{SD}_1$	11	CP_2
5	Q_1	10	$\overline{SD}_2$
6	$\overline{Q}_1$	9	Q_2
7	GND	8	$\overline{Q}_2$

Device type 02

Cases E and F

Pin	Signal	Pin	Signal
1	$\overline{CD}_1$	16	V_{CC}
2	J_1	15	$\overline{CD}_2$
3	$\overline{K}_1$	14	J_2
4	CP_1	13	$\overline{K}_2$
5	$\overline{SD}_1$	12	CP_2
6	Q_1	11	$\overline{SD}_2$
7	$\overline{Q}_1$	10	Q_2
8	GND	9	$\overline{Q}_2$

Device type 03

Cases E and F

Pin	Signal	Pin	Signal
1	$\overline{CP}_1$	16	V_{CC}
2	K_1	15	$\overline{CD}_1$
3	J_1	14	$\overline{CD}_2$
4	$\overline{SD}_1$	13	$\overline{CP}_2$
5	Q_1	12	K_2
6	$\overline{Q}_1$	11	J_2
7	$\overline{Q}_2$	10	$\overline{SD}_2$
8	GND	9	Q_2

Device type 04

Cases E and F

Pin	Signal	Pin	Signal
1	$\overline{MR}$	16	V_{CC}
2	Q_0	15	Q_3
3	$\overline{Q}_0$	14	$\overline{Q}_3$
4	D_0	13	D_3
5	D_1	12	D_2
6	$\overline{Q}_1$	11	$\overline{Q}_2$
7	Q_1	10	Q_2
8	GND	9	CP

Device type 05

Cases R and S

Pin	Signal	Pin	Signal
1	$\overline{OE}$	20	V_{CC}
2	Q_0	19	Q_7
3	D_0	18	D_7
4	D_1	17	D_6
5	Q_1	16	Q_6
6	Q_2	15	Q_5
7	D_2	14	D_5
8	D_3	13	D_4
9	Q_3	12	Q_4
10	GND	11	CP

Device type 06

Cases R and S

Pin	Signal	Pin	Signal
1	$\overline{OE}$	20	V_{CC}
2	$\overline{Q}_0$	19	$\overline{Q}_7$
3	D_0	18	D_7
4	D_1	17	D_6
5	$\overline{Q}_1$	16	$\overline{Q}_6$
6	$\overline{Q}_2$	15	$\overline{Q}_5$
7	D_2	14	D_5
8	D_3	13	D_4
9	$\overline{Q}_3$	12	$\overline{Q}_4$
10	GND	11	CP

FIGURE 1. **Terminal connections (top view)**

11

Device type 07

Cases E and F

$\overline{MR}$	1	16 V_{CC}
Q_0	2	15 Q_5
D_0	3	14 D_5
D_1	4	13 D_4
Q_1	5	12 Q_4
D_2	6	11 D_3
Q_2	7	10 Q_3
GND	8	9 CP

Device type 08

Cases E and F

$\overline{E}$	1	16 V_{CC}
Q_0	2	15 Q_5
D_0	3	14 D_5
D_1	4	13 D_4
Q_1	5	12 Q_4
D_2	6	11 D_3
Q_2	7	10 Q_3
GND	8	9 CP

Device type 09

Cases E and F

$\overline{E}$	1	16 V_{CC}
Q_0	2	15 Q_3
$\overline{Q_0}$	3	14 $\overline{Q_3}$
D_0	4	13 D_3
D_1	5	12 D_2
$\overline{Q_1}$	6	11 $\overline{Q_2}$
Q_1	7	10 Q_2
GND	8	9 CP

Device type 10

Cases R and S

$\overline{OE}$	1	20 V_{CC}
D_0	2	19 Q_0
D_1	3	18 Q_1
D_2	4	17 Q_2
D_3	5	16 Q_3
D_4	6	15 Q_4
D_5	7	14 Q_5
D_6	8	13 Q_6
D_7	9	12 Q_7
GND	10	11 CP

Device type 11

Cases R and S

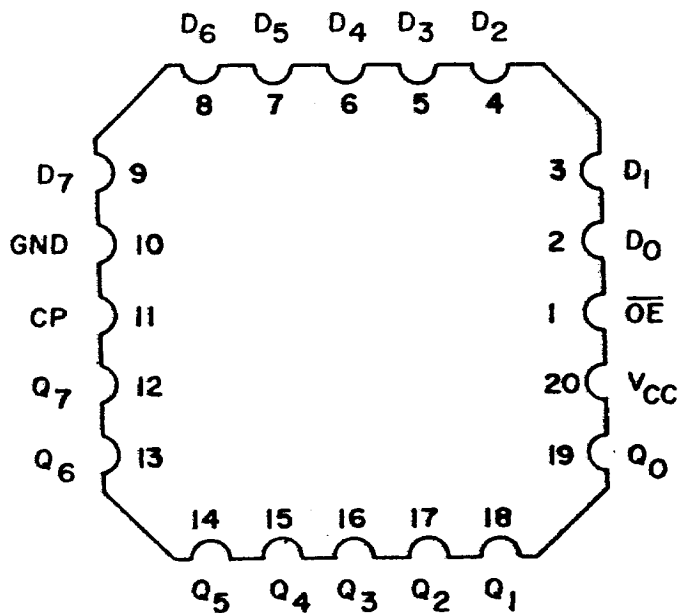|		
$\overline{OE}$	1	20 V_{CC}
D_0	2	19 $\overline{Q_0}$
D_1	3	18 $\overline{Q_1}$
D_2	4	17 $\overline{Q_2}$
D_3	5	16 $\overline{Q_3}$
D_4	6	15 $\overline{Q_4}$
D_5	7	14 $\overline{Q_5}$
D_6	8	13 $\overline{Q_6}$
D_7	9	12 $\overline{Q_7}$
GND	10	11 CP

FIGURE 1. Terminal connections (top view) - Continued.

12

Device type 01

Cases 2 and X

FIGURE 1. **Terminal connections (top view)** - Continued.

13

Device type 02
Cases 2 and X

Q_1 $\overline{SD}_1$ N/C CP_1 $\overline{K}_1$
8   7   6   5   4

$\overline{Q}_1$ 9   3 J_1

GND 10   2 $\overline{CD}_1$

N/C 11   1 N/C

$\overline{Q}_2$ 12   20 V_{CC}

Q_2 13   19 $\overline{CD}_2$

14   15   16   17   18

$\overline{SD}_2$ CP_2 N/C $\overline{K}_2$ J_2

Device type 03
Cases 2 and X

$\overline{Q}_1$ Q_1 N/C $\overline{SD}_1$ J_1
8   7   6   5   4

$\overline{Q}_2$ 9   3 K_1

GND 10   2 $\overline{CP}_1$

N/C 11   1 N/C

Q_2 12   20 V_{CC}

$\overline{SD}_2$ 13   19 $\overline{CD}_1$

14   15   16   17   18

J_2 K_2 N/C $\overline{CP}_2$ $\overline{CD}_2$

FIGURE 1.   Terminal connections (top view) - Continued.

14

Device type 04
Cases 2 and X

$\overline{Q}_1$ D_1 N/C D_0 $\overline{Q}_0$

| 8 | 7 | 6 | 5 | 4 |

Q_1 9

GND 10

N/C 11

CP 12

Q_2 13

3 Q_0

2 $\overline{MR}$

1 N/C

20 V_{CC}

19 Q_3

| 14 | 15 | 16 | 17 | 18 |

$\overline{Q}_2$ D_2 N/C D_3 $\overline{Q}_3$

Device type 05
Cases 2 and X

D_3 D_2 Q_2 Q_1 D_1

| 8 | 7 | 6 | 5 | 4 |

Q_3 9

GND 10

CP 11

Q_4 12

D_4 13

3 D_0

2 Q_0

1 $\overline{OE}$

20 V_{CC}

19 Q_7

| 14 | 15 | 16 | 17 | 18 |

D_5 Q_5 Q_6 D_6 D_7

FIGURE 1. Terminal connections (top view) - Continued.

15

Device type 06
Cases 2 and X

D_3 D_2 $\overline{Q}_2$ $\overline{Q}_1$ D_1

[8] [7] [6] [5] [4]

$\overline{Q}_3$ [9]

GND [10]

CP [11]

$\overline{Q}_4$ [12]

D_4 [13]

[3] D_0

[2] $\overline{Q}_0$

[1] $\overline{OE}$

[20] V_{CC}

[19] $\overline{Q}_7$

[14] [15] [16] [17] [18]

D_5 $\overline{Q}_5$ $\overline{Q}_6$ D_6 D_7

Device type 07
Cases 2 and X

D_2 Q_1 N/C D_1 D_0

[8] [7] [6] [5] [4]

Q_2 [9]

GND [10]

N/C [11]

CP [12]

Q_3 [13]

[3] Q_0

[2] $\overline{MR}$

[1] N/C

[20] V_{CC}

[19] Q_6

[14] [15] [16] [17] [18]

D_3 Q_4 N/C D_4 D_5

FIGURE 1. Terminal connections (top view) - Continued.

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Device type 08
Cases 2 and X

Device type 09
Cases 2 and X

FIGURE 1. Terminal connections (top view) - Continued.

17

Device type 10
Cases 2 and X

D_6 D_5 D_4 D_3 D_2

	8	7	6	5	4	

D_7 9   3 D_1

GND 10   2 D_0

CP 11   1 $\overline{OE}$

Q_7 12   20 V_{CC}

Q_6 13   19 Q_0

14 15 16 17 18

Q_5 Q_4 Q_3 Q_2 Q_1

Device type 11
Cases 2 and X

D_6 D_5 D_4 D_3 D_2

8 7 6 5 4

D_7 9   3 D_1

GND 10   2 D_0

CP 11   1 $\overline{OE}$

$\overline{Q_7}$ 12   20 V_{CC}

$\overline{Q_6}$ 13   19 $\overline{Q_0}$

14 15 16 17 18

$\overline{Q_5}$ $\overline{Q_4}$ $\overline{Q_3}$ $\overline{Q_2}$ $\overline{Q_1}$

FIGURE 1. Terminal connections (top view) - Continued.

18

Device type 01 (1/2 shown)

Device type 02 (1/2 shown)
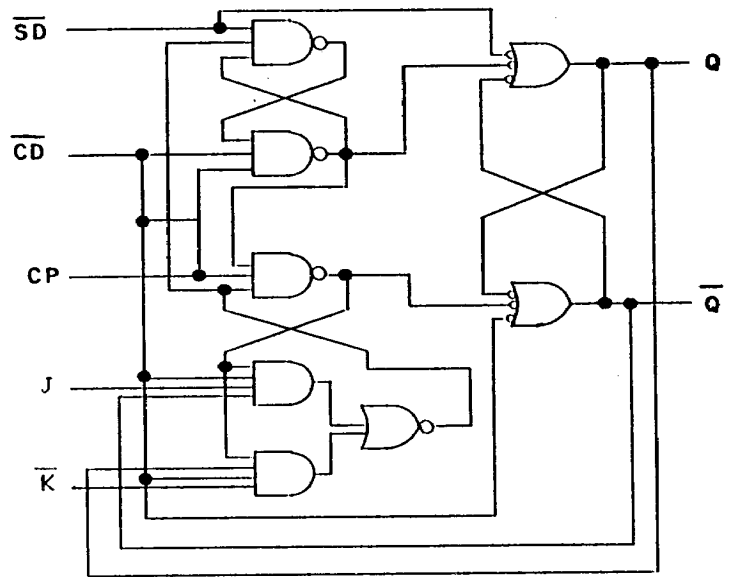
Device type 03 (1/2 shown)

FIGURE 2. Logic diagrams.

19
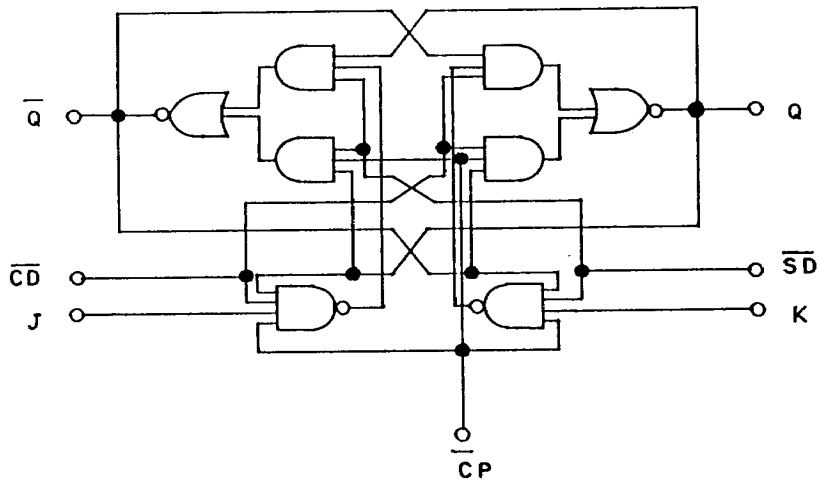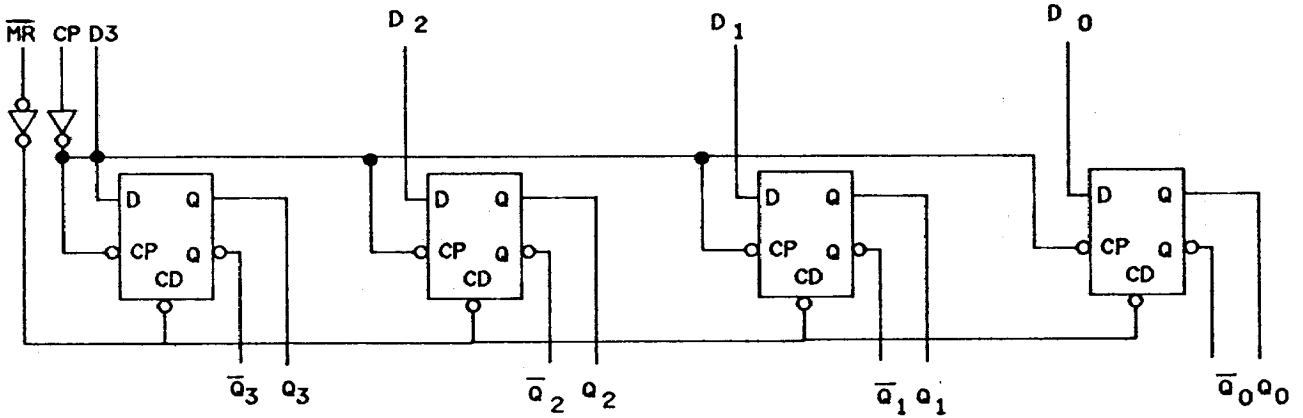
Device type 04

Device type 05
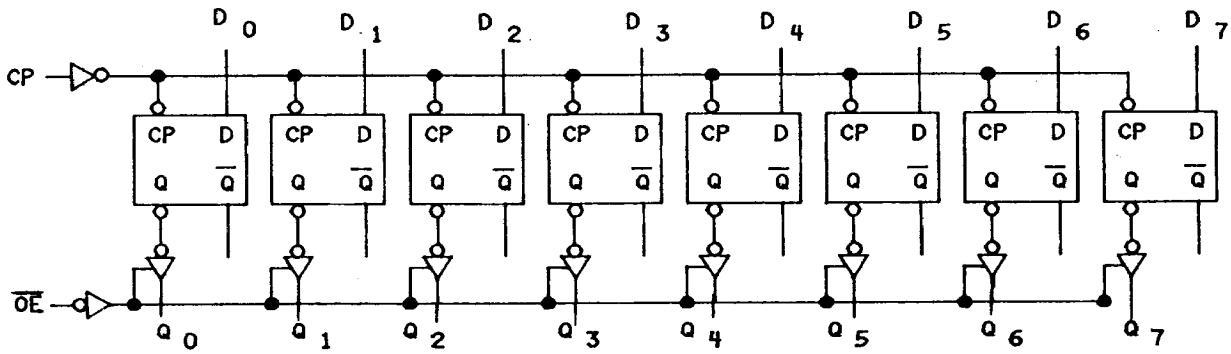
Device type 06

FIGURE 2. Logic diagrams - Continued.

20

Device type 07

FIGURE 2. Logic diagrams - Continued.

21
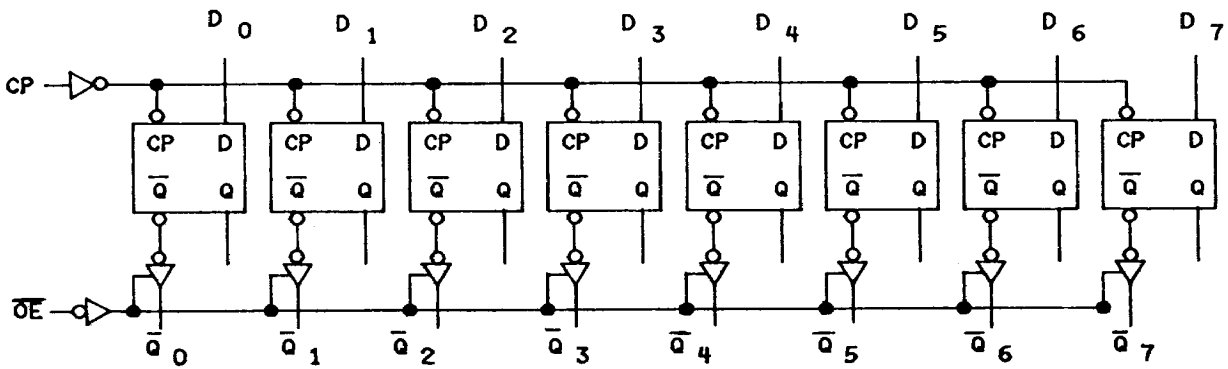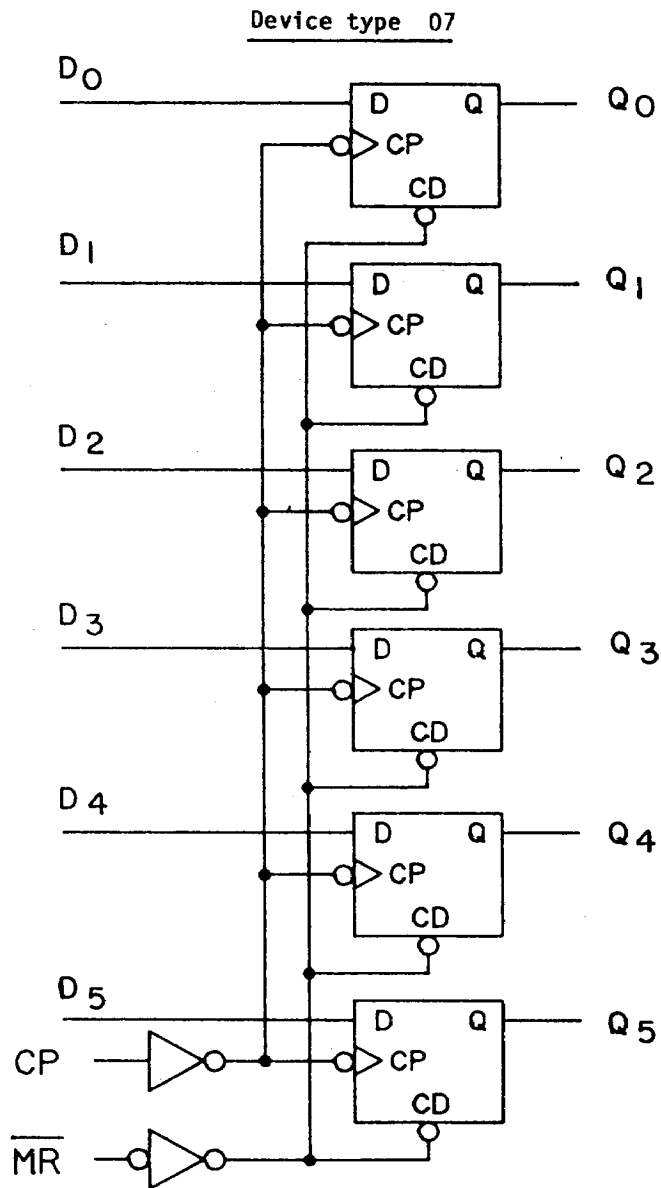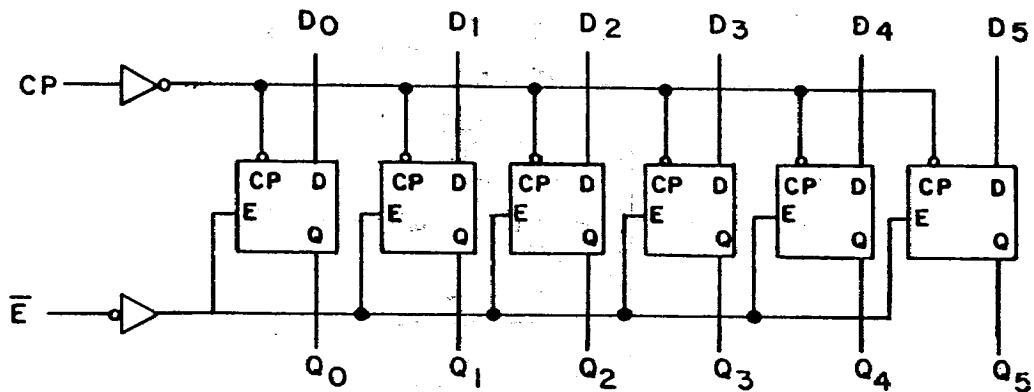
Device type 08

Device type 09

FIGURE 2. Logic diagrams - Continued.

22
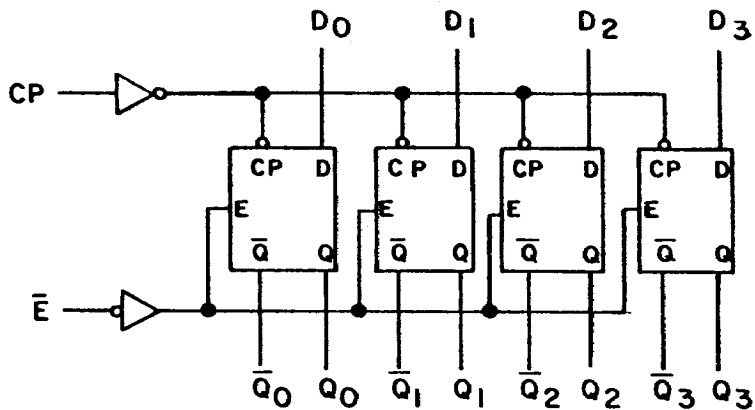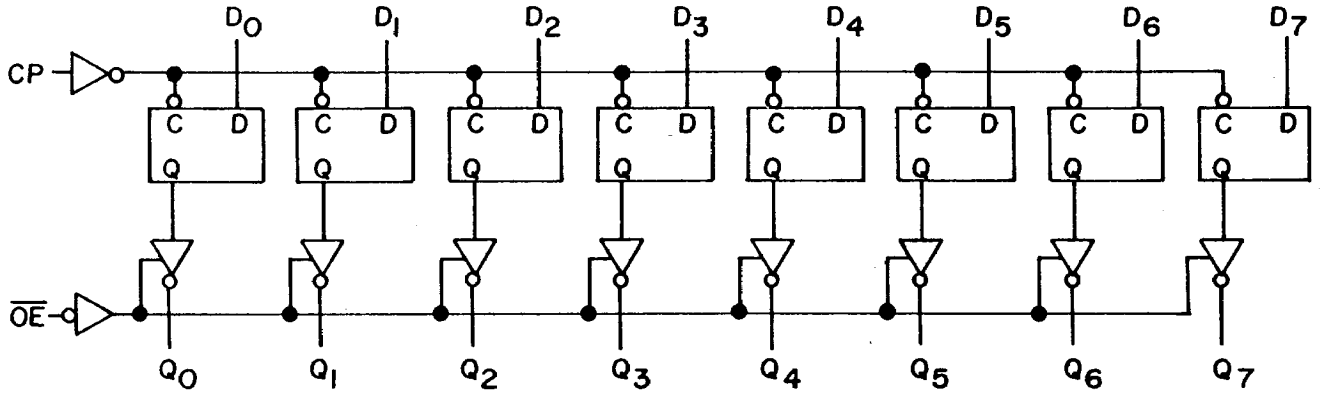
Device type 10

Device type 11

FIGURE 2. Logic diagrams - Continued.

23
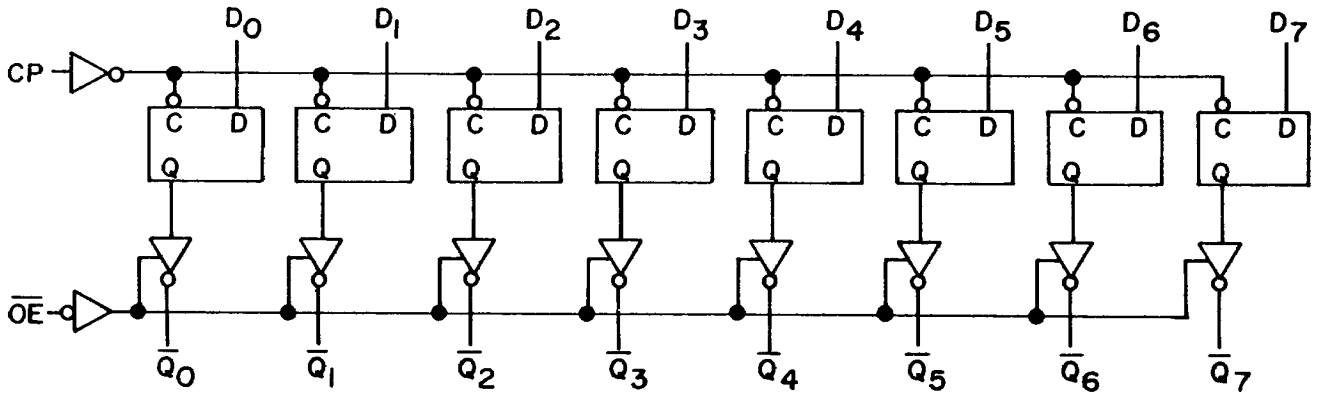
Device type 01

Input	Outputs	
@ t_n	@ t_n +1	
D	Q	$\overline{Q}$
L	L	H
H	H	L

Device type 02

Input		Outputs	
@ t_n		@ t_n +1	
J	$\overline{K}$	Q	$\overline{Q}$
L	H	No change	
L	L	L	H
H	H	H	L
H	L	Toggles	

Device type 03

Input		Outputs
@ t_n		@ t_n +1
J	K	Q
L	L	Qn
L	H	L
H	L	H
H	H	$\overline{Q}_n$

Device type 04

Inputs		Outputs	
@ t_n1 $\overline{MR}$ = H		@ t_n +1	
Dn		Qn	$\overline{Q}_n$
L		L	H
H		H	L

t_n = Bit time before clock pulse

t_n +1 = Bit time after clock pulse

H = High voltage level

L = Low voltage level

Device type 05

Inputs		Outputs	
Dn	CP	$\overline{OE}$	Qn
H	⟋	L	H
L	⟋	L	L
X	X	H	Z

Device type 06

Inputs		Outputs	
Dn	CP	$\overline{\overline{OE}}$	$\overline{Qn}$
H	⟋	L	L
L	⟋	L	H
X	X	H	Z

Device type 07

Inputs			Outputs
$\overline{MR}$	CP	D	Q
L	X	X	L
H	↑	H	H
H	↑	L	L
H	L	X	Q_0

Device type 08

Inputs			Outputs
$\overline{E}$	CP	Dn	Qn
H	⟍⟋	X	No change
L	⟍⟋	H	H
L	⟍⟋	L	L

H = High voltage level
L = Low voltage level
X = Immaterial

H = High voltage level
L = Low voltage level
X = Immaterial
Z = High impedance
↑ = Transition from low to high level
Q_0 = The level of Q before the indicated steady-state input conditions were established.

Device type 09

Inputs			Outputs	
$\overline{E}$	CP	Dn	Qn	$\overline{Q}_n$
H	⟍⟋	X	NC	NC
L	⟍⟋	H	H	L
L	⟍⟋	L	L	H

H = High voltage level   X = Immaterial
L = Low voltage level   NC = No change

FIGURE 3.   Truth tables.

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Device type 10

Inputs			Outputs	Function
OE	CP	D	Q	
H	H	L	Z	Hold
H	H	H	Z	Hold
H	↑	L	Z	Load
H	↑	H	Z	Load
L	↑	L	L	Data available
L	↑	H	H	Data available
L	H	L	NC	No change in data
L	H	H	NC	No change in data

Device type 11

Inputs			Outputs	Function
OE	CP	D	Q̄	
H	H	L	Z	Hold
H	H	H	Z	Hold
H	↑	L	Z	Load
H	↑	H	Z	Load
L	↑	L	H	Data available
L	↑	H	L	Data available
L	H	L	NC	No change in data
L	H	H	NC	No change in data

H = High voltage level
L = Low voltage level
Z = High impedance
↑ = Transition from low to high level
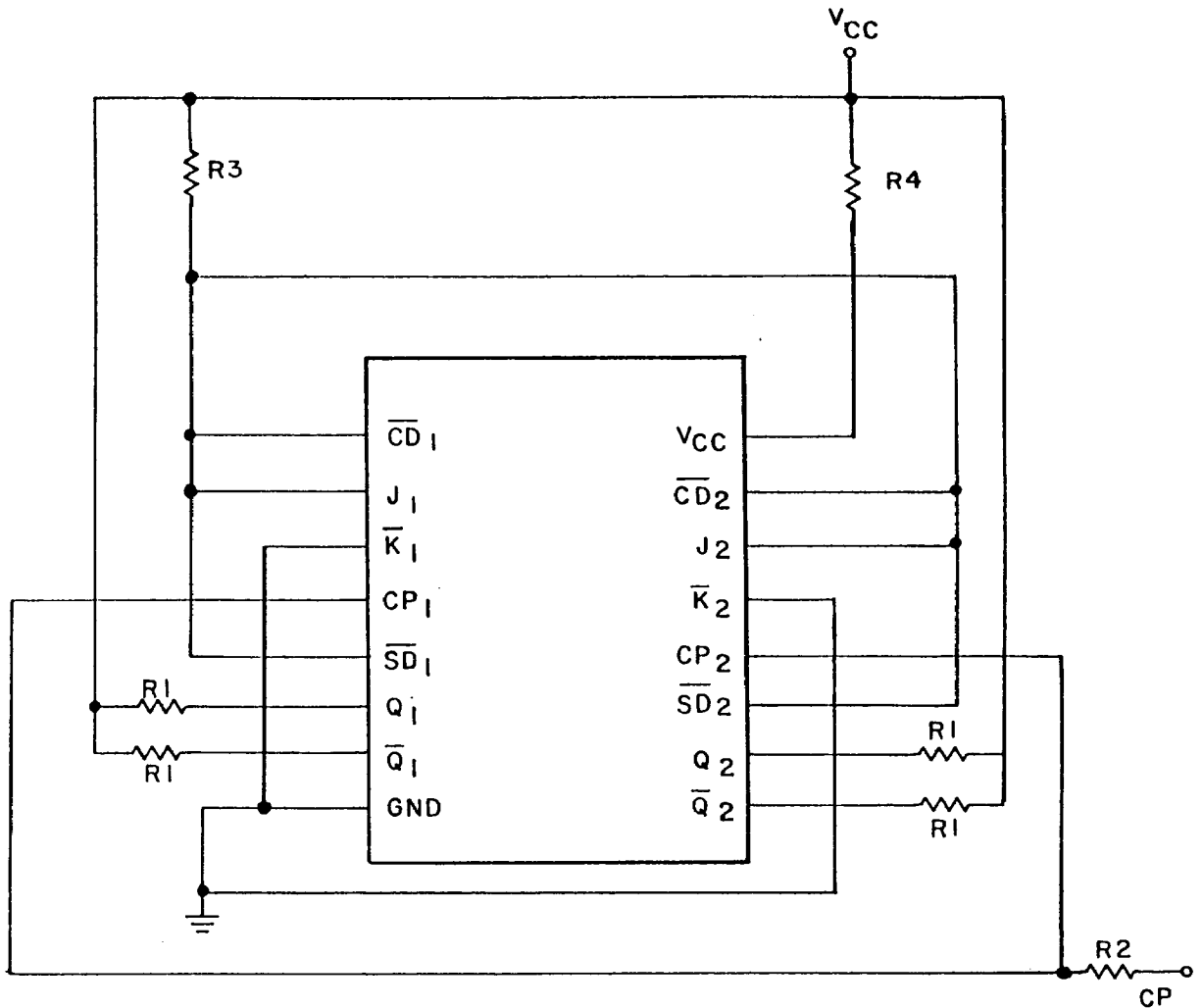NC = No change

FIGURE 3. Truth tables - Continued.

Device type 01
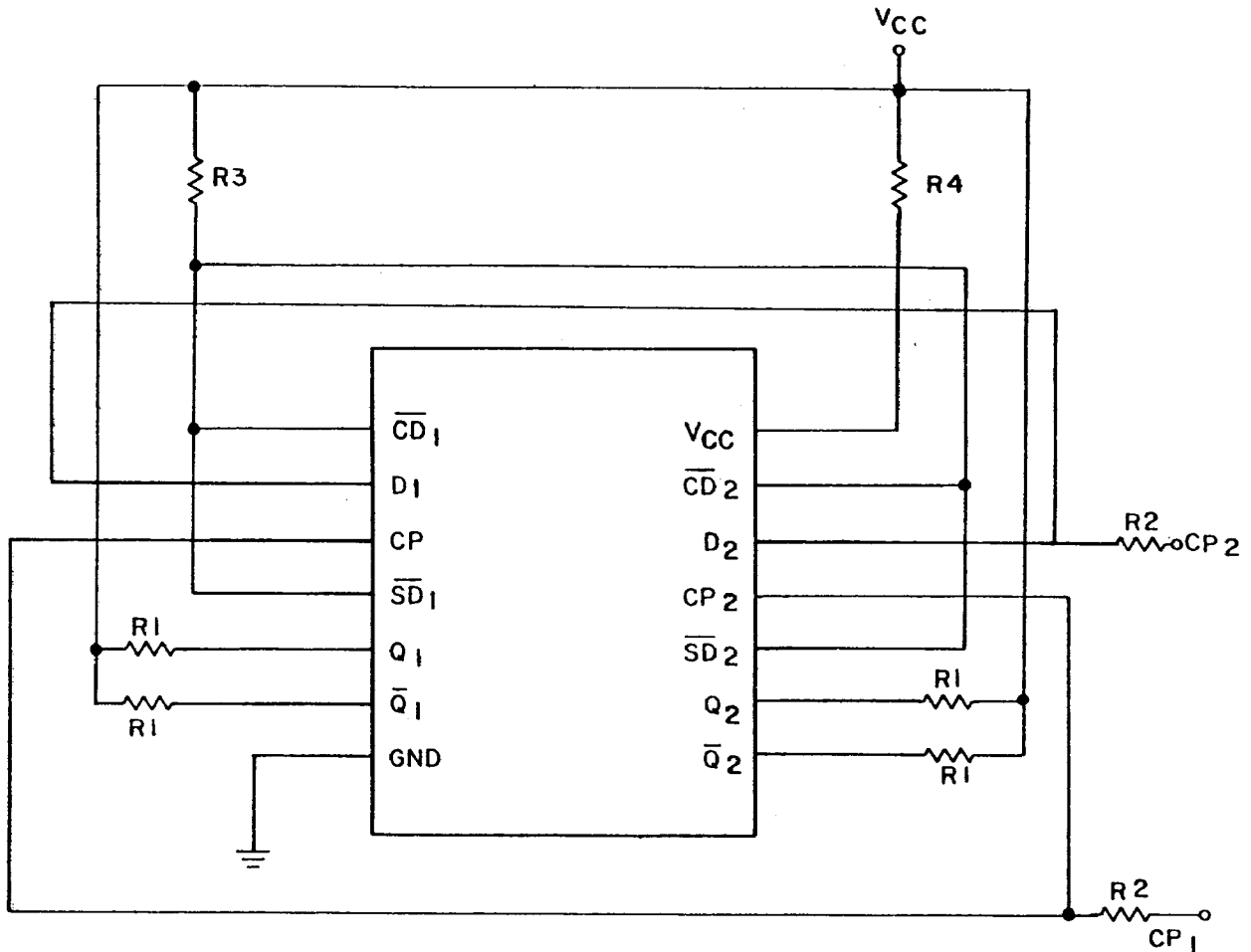
NOTES:
1. CP = 100 kHz ±50% square wave; duty cycle = 50 ±15% (CP_2 = 1/2 CP_1);
    V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 51Ω ±5%; R3 = 1 kΩ maximum.
3. V_{CC} and R4 shall be chosen to insure 5.5 V minimum is present at device V_{CC}
    terminal.

FIGURE 4. Burn-in and life test circuit.

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Device type 02

FIGURE 4. Burn-in and life test circuit - Continued.

NOTES:
1. CP = 100 kHz ±50% square wave; duty cycle = 50 ±15%;
   V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 51Ω ±5%; R3 = 1 kΩ maximum.
3. V_{CC} and R4 shall be chosen to insure 5.5 V minimum is present at device V_{CC}
   terminal.

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Device type 03

NOTES:
1. CP_1 = 100 kHz ±50% square wave; duty cycle = 50 ±15%; (CP_2 = 1/2 CP_1);
    V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 51Ω ±5%; R3 = 1 kΩ maximum.
3. V_{CC} and R4 shall be chosen to insure 5.5 V minimum is present at device V_{CC}
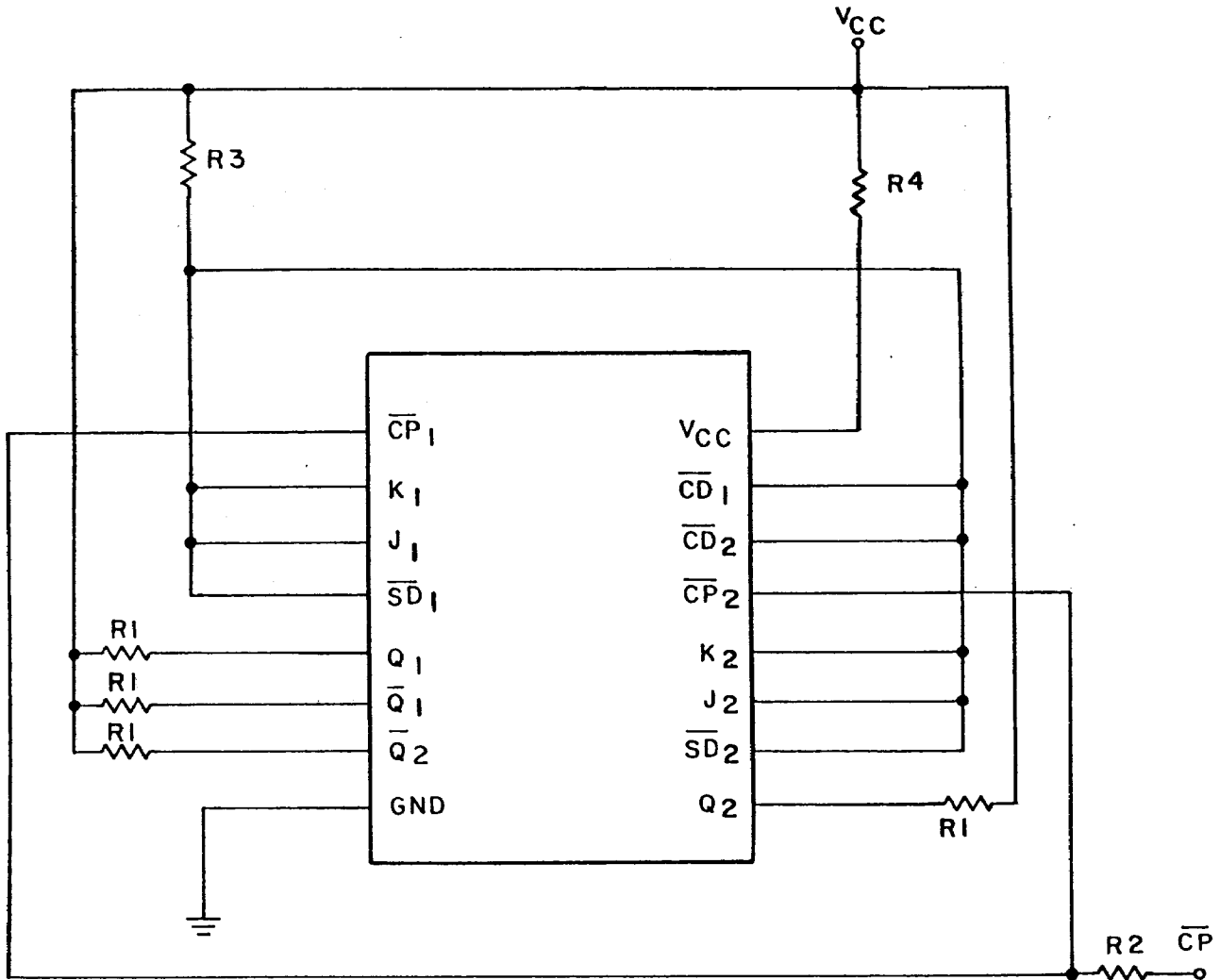   terminal.

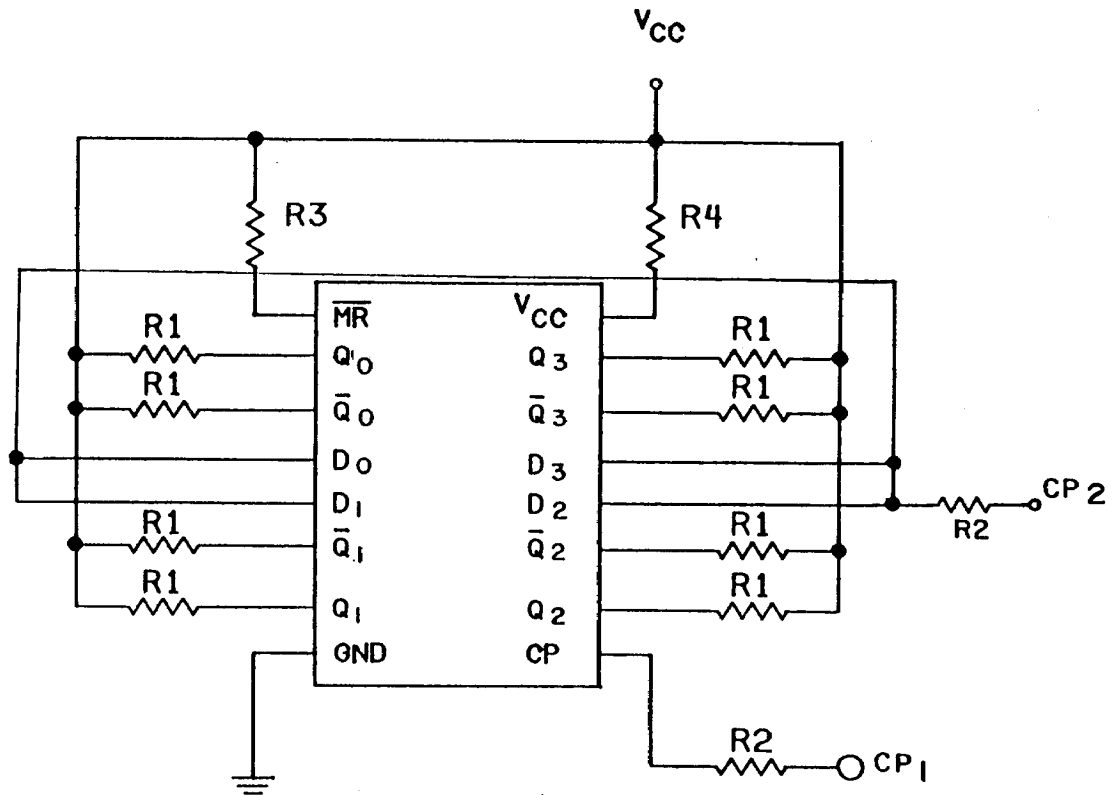FIGURE 4. Burn-in and life test circuit - Continued.

28

Device types 04 and 09 (see note 4)

NOTES:
1. CP_1 = 100 kHz ±50% square wave; duty cycle = 50 ±15% (CP_2 = 1/2 CP_1);
   V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 51Ω ±5%; R3 = 1 kΩ maximum.
3. V_{CC} and R4 shall be chosen to insure 5.5 V minimum is present at device V_{CC} terminal.
4. For device type 09, pin 1 $\overline{MR}$ = $\overline{E}$ = ground.

FIGURE 4. Burn-in and life test circuit - Continued.

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Device types 05, 06, 10, and 11

NOTES:
1. CP_1 = 100 kHz ±50% square wave; duty cycle = 50 ±15%; (CP_2 = 1/2 CP_1); V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 51Ω ±5%.
3. V_{CC} and R3 shall be chosen to insure 5.5 V minimum is present at device V_{CC} terminal.
4. For device types 6 and 11, outputs Q_0 through Q_7 are inverted (i.e., $\overline{Q}_0$ - $\overline{Q}_7$).

FIGURE 4. Burn-in and life test circuit - Continued.

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Device types 05 and 06
temperature-accelerated test

NOTES:
1. V_{CC} = 5.5 V.
2. R1 = 2 kΩ.
3. +175°C $\leq$ T_C $\leq$ +250°C.

FIGURE 4. Burn-in and life test circuit - Continued.

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Device types 07 and 08 (see note 4)
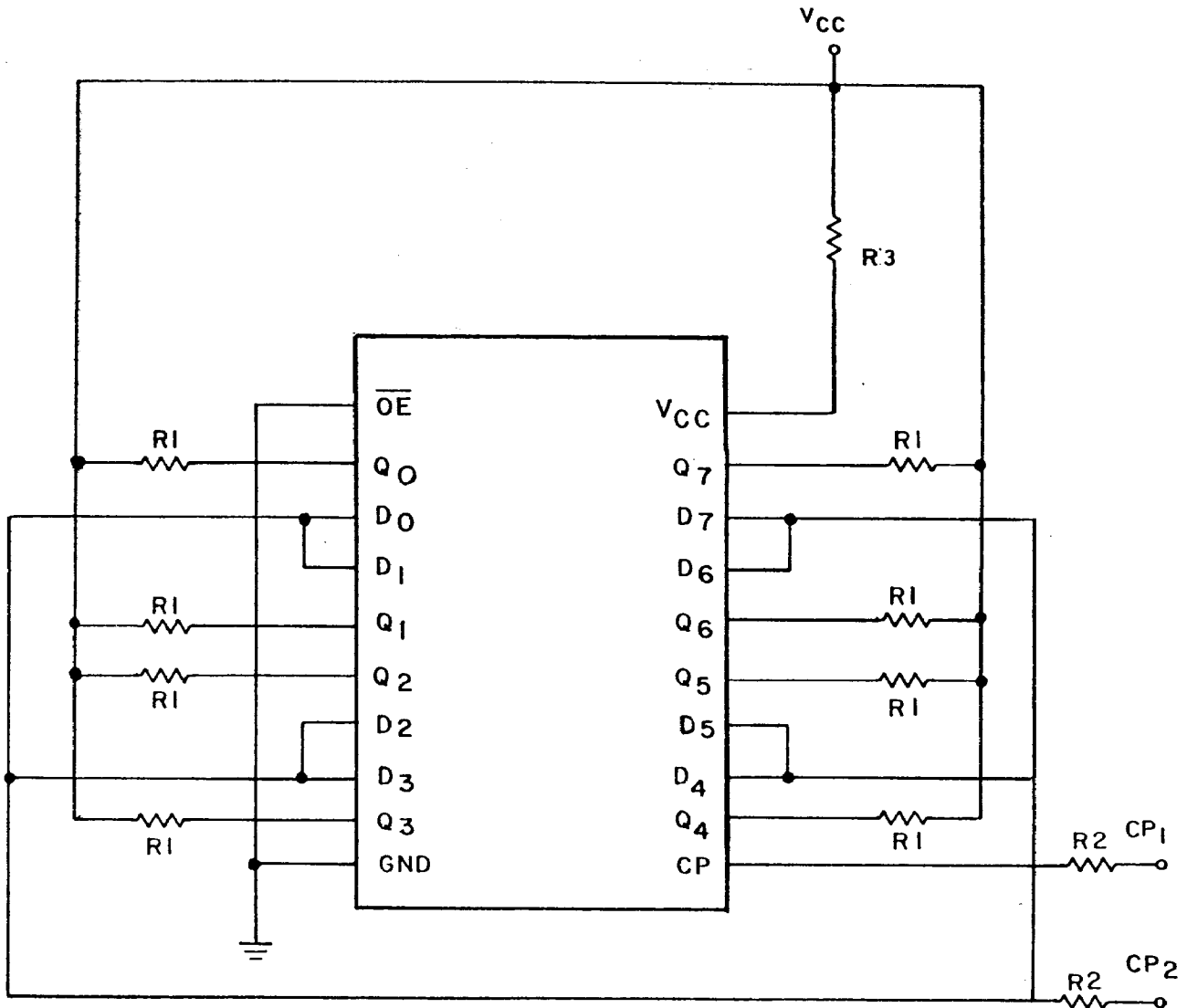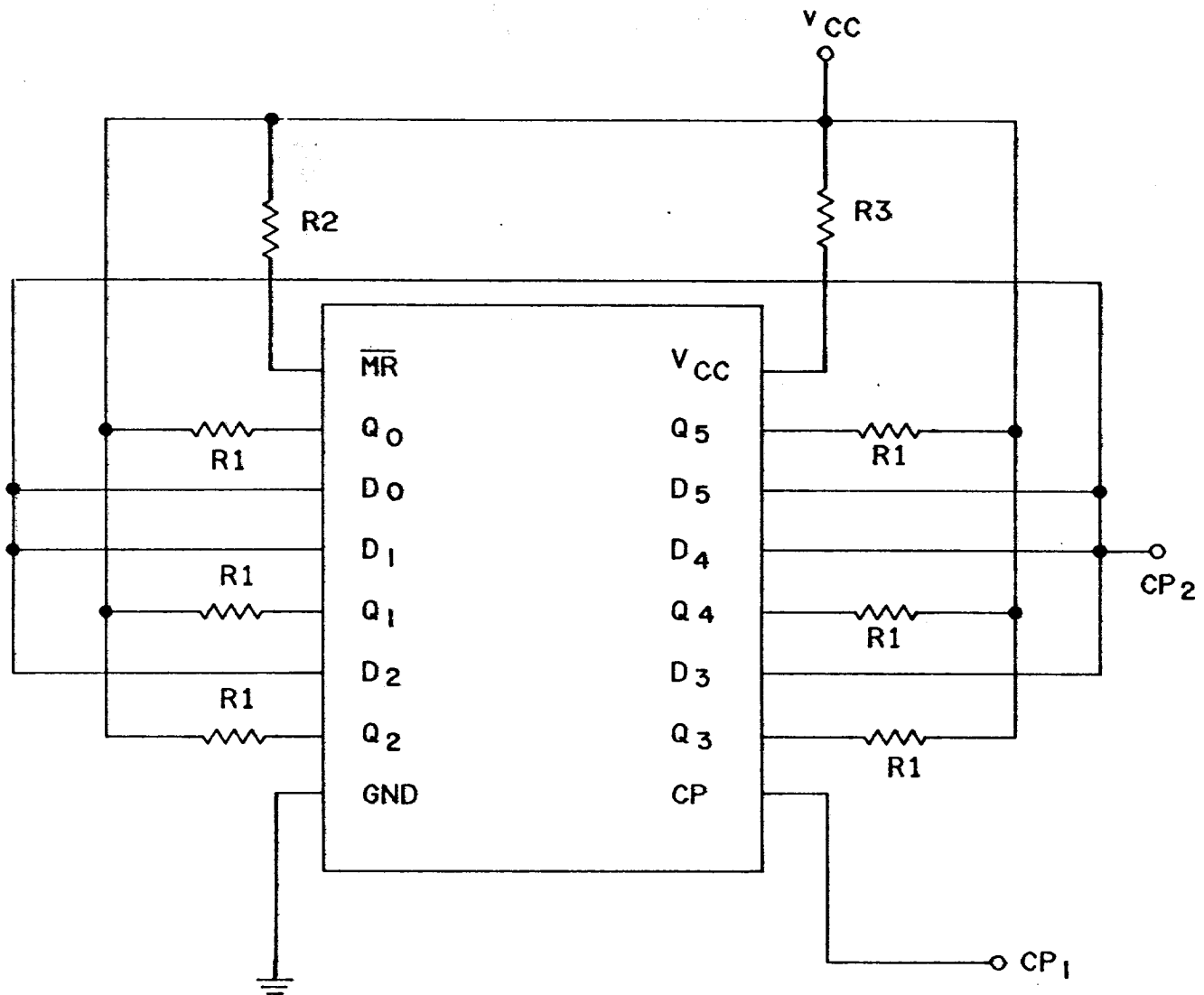

NOTES:
1. CP_1 100 kHz ±50% square wave; duty cycle = 50 ±15%; (CP_2 = 1/2 CP_1);
   V_{IL} = -0.5 V minimum to 0.8 V maximum; V_{IH} = 2.0 V minimum to 5.5 V maximum.
2. R1 = 240Ω maximum; R2 = 1 kΩ maximum.
3. V_{CC} and R3 shall be chosen to insure 5.5 V minimum is present at device
   V_{CC} terminal.
4. For device type 08, pin 1 $\overline{MR}$ = $\overline{E}$ = ground.

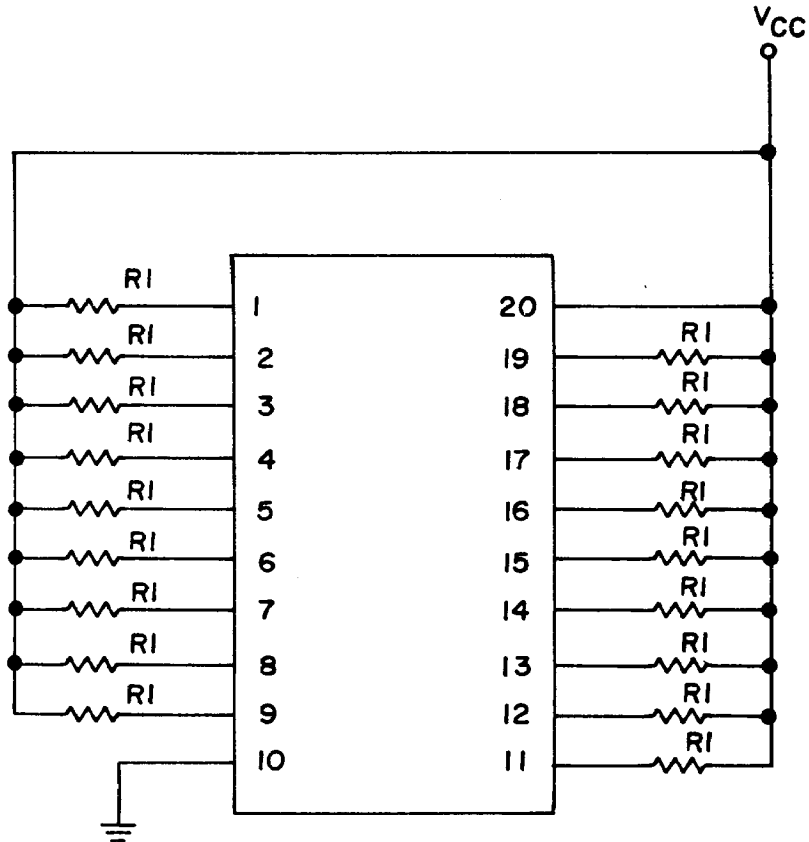FIGURE 4. Burn-in and life test circuit - Continued.

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All device types
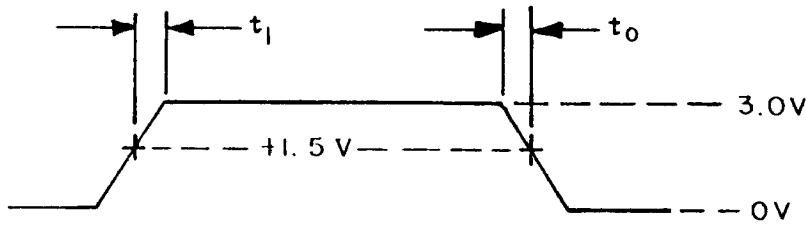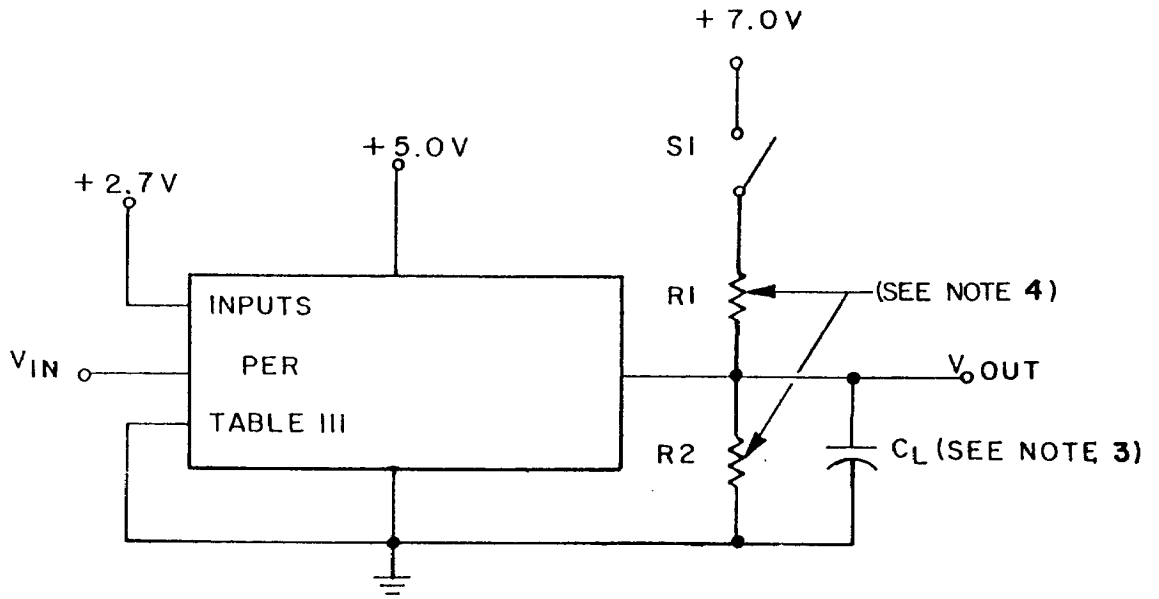
Test type	S1
t_{PLH}	Open
t_{PHL}	Open
t_{PHZ}	Open
t_{PZH}	Open
t_{PLZ}	Closed
t_{PZL}	Closed

NOTES:
1. V_{IN} = input pulse and has the following characteristics:
   PRR $\leq$ 1 MHz, $t_1 = t_0 \leq$ 2.5 ns.
2. Inputs not under test are at ground.
3. C_L = 50 pF ±10%, including scope probe, wiring, and stray capacitance without package in test fixture.
4. R1 = R2 = 499Ω ±1%.
5. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 5. Switching time waveforms.

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Device types 01, 02, and 03
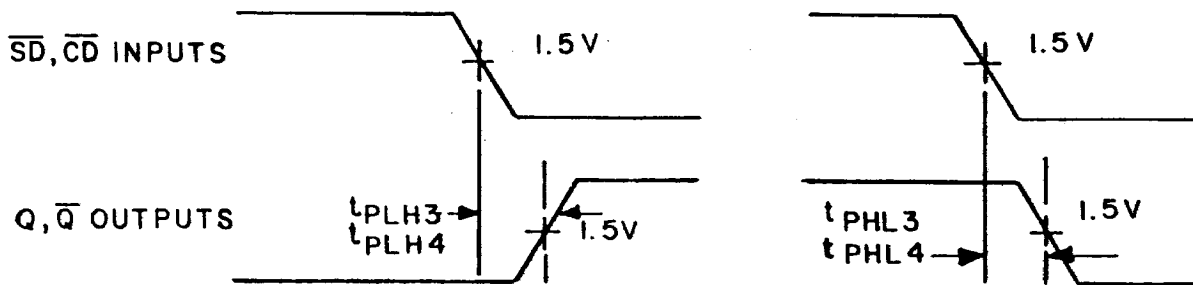
Device types 04 and 07
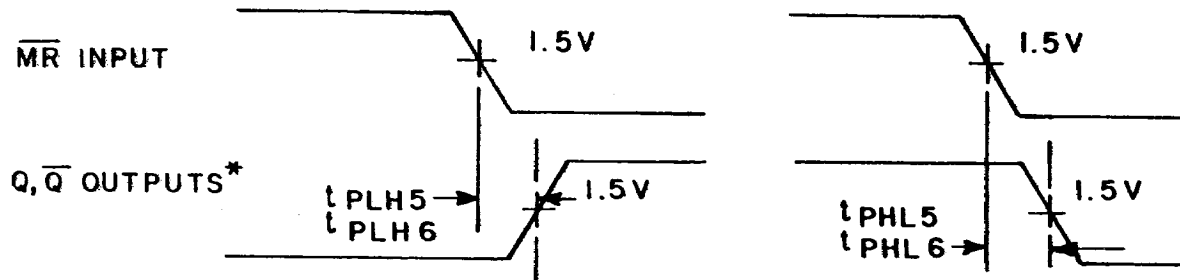
NOTE: *Q output for device type 07.

FIGURE 5. Switching time waveforms - Continued.

34

Device types 01, 02, 04, 05, 06, 07, 10, and 11

$\overline{E}$ OR CP INPUTS — 1.5 V   1.5 V

t_{PLH1}
t_{PLH2} — 1.5 V t_{PHL1}
t_{PHL2} — 1.5 V

Q,$\overline{Q}$ OUTPUTS*   NOTE: *Q output for device types 05 and 07.

Device type 03

CP INPUTS — 1.5 V   1.5 V

t_{PLH1}
t_{PLH2} — 1.5 V t_{PHL1}
t_{PHL2} — 1.5 V

Q,$\overline{Q}$ OUTPUTS

Device types 05, 06, 10, and 11

$\overline{OE}$ — 1.5 V   1.5 V

Q,$\overline{Q}$ OUTPUTS t_{PLZ1}
t_{PLZ2} — $V_{OL}+.3$ t_{PZL1}
t_{PZL2} — 1.5 V

Q,$\overline{Q}$ OUTPUTS t_{PHZ1}
t_{PHZ2} — $V_{OH}-.3$ t_{PZH1}
t_{PZH2} — 1.5 V

FIGURE 5.   Switching time waveforms - Continued.

35
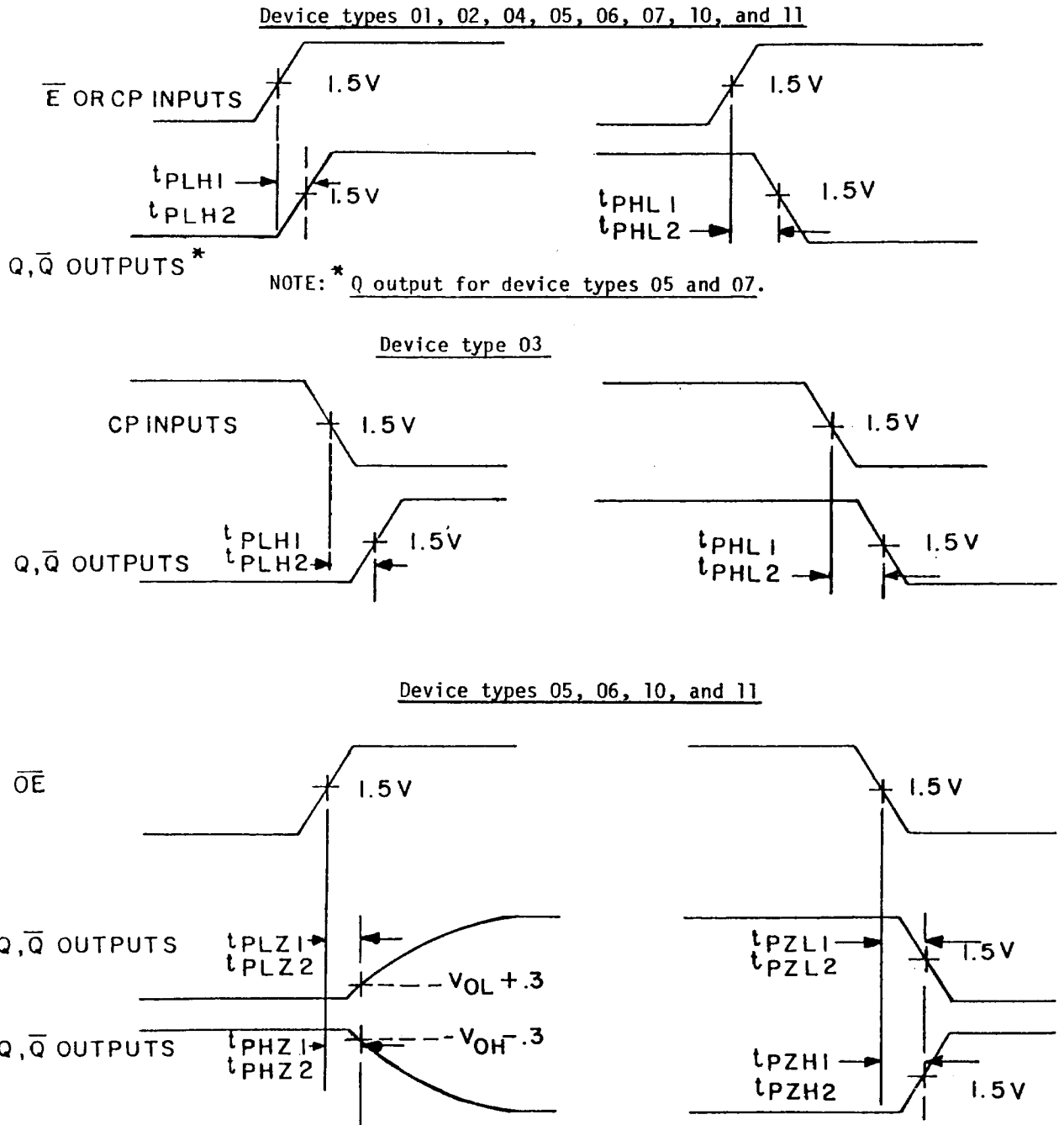
Device types 01, 04, 05, and 06
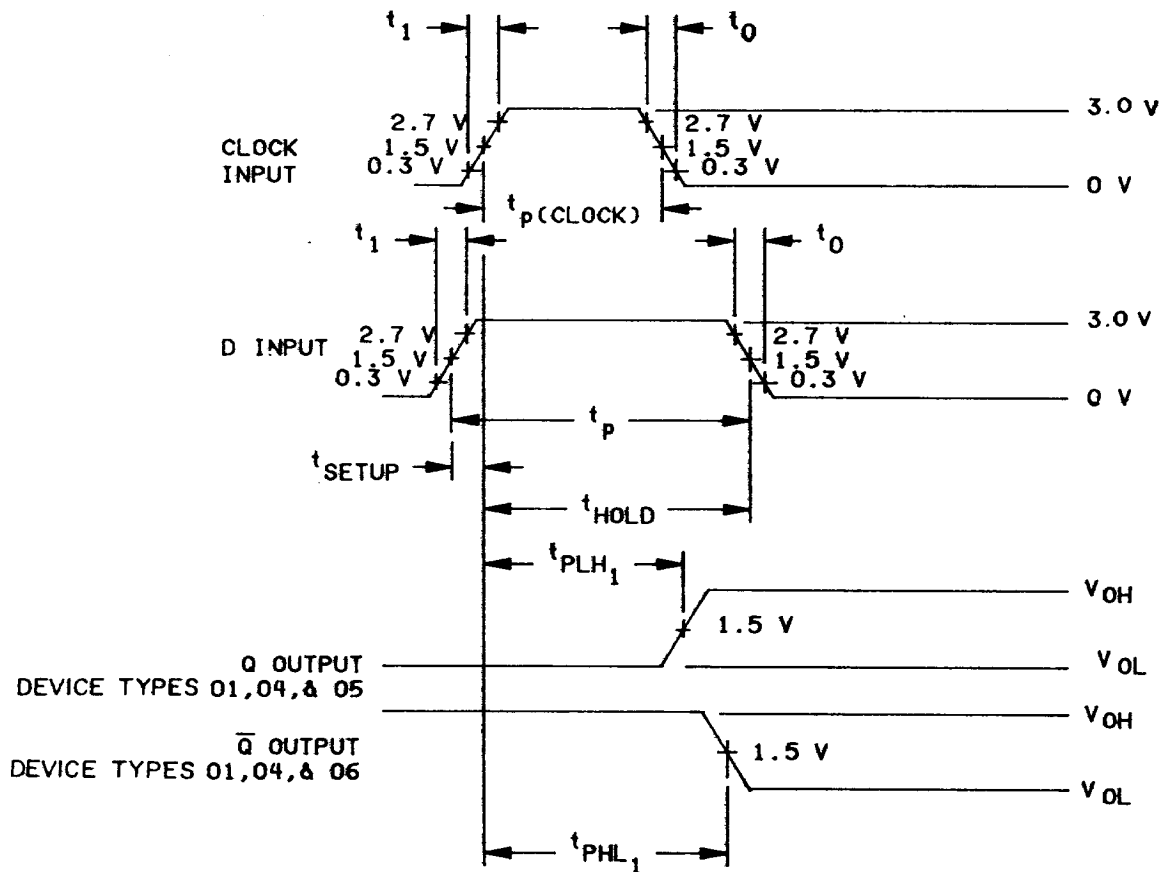
NOTES:
1. $t_1 = t_0 \leq 2.5$ ns.
2. PRR as in table I and III, duty cycle 50 ±15%.
3. When testing f_{MAX}, the output frequency shall be 1/2 the input frequency.

FIGURE 5. Switching time waveforms - Continued.

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Device type 02

NOTES:
1. $t_1 = t_0 \leq 2.5$ ns.
2. PRR as in table I and III, duty cycle 50 ±15%.
3. When testing f_{MAX}, the output frequency shall be 1/2 the input frequency.

FIGURE 5. Switching time waveforms - Continued.

37
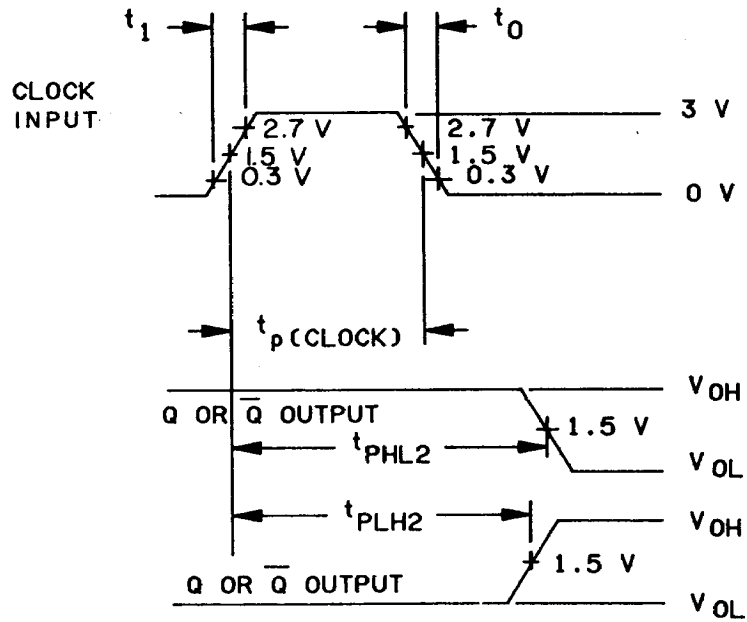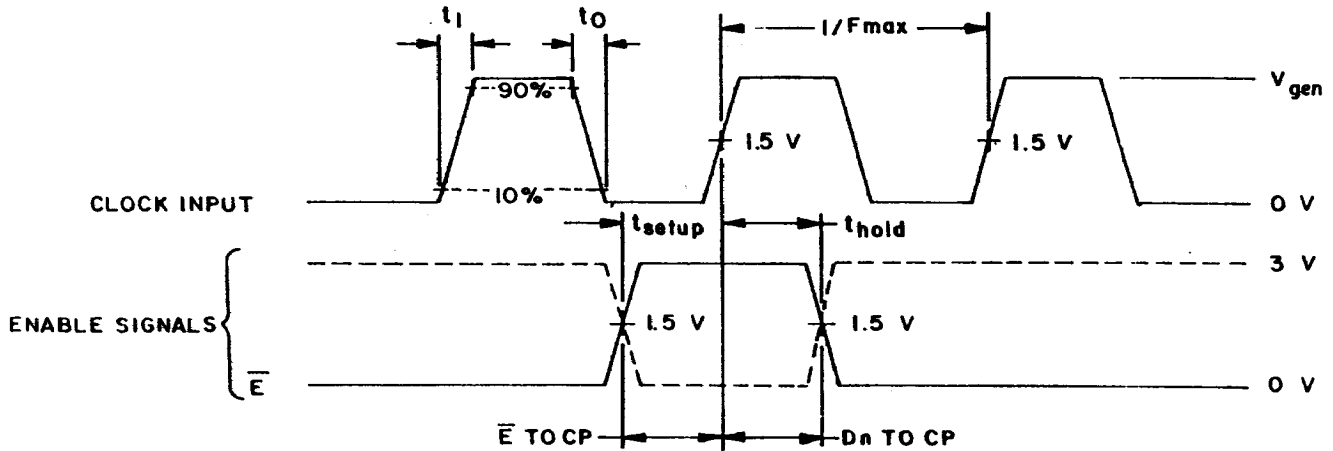
Device type 08

NOTES:
1. Clock input pulse has the following characteristics:
   V_{gen} = 3 ±0.2 V, t_1 = t_0 ≤ 2.5 ns and PRR ≤ 1 MHz.
2. Enable characteristics are:
   t_{setup} = $\bar{E}$ to CP = 6 ns ($\bar{E}$ > CP)
   t_{hold} = Dn to CP = 2 ns ($\bar{E}$ > CP)

FIGURE 5. Switching time waveforms - Continued.
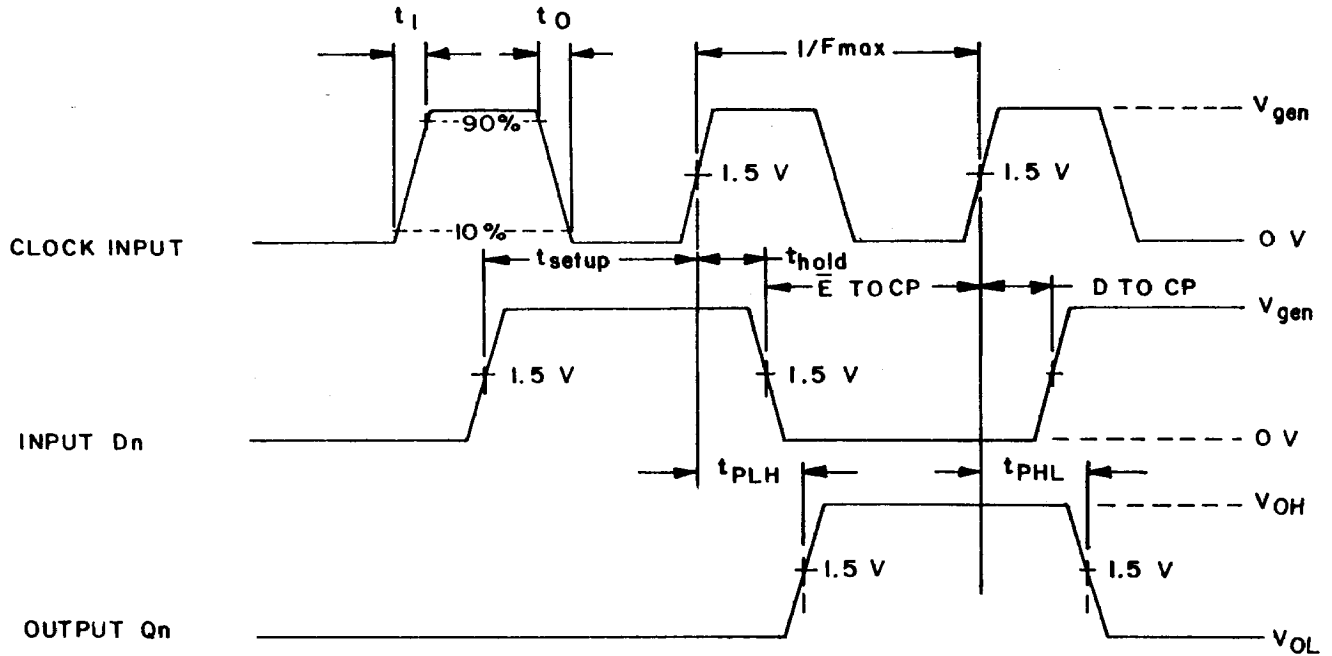
38

Device type 08

NOTES:
1. Clock input pulse has the following characteristics:
   V_{gen} = 3 ±0.2 V, t_1 = $t_0 \leq$ 2.5 ns and PRR $\leq$ 1 MHz.
2. D input has the following characteristics:
   V_{gen} = 3 ±0.2 V, $\overline{E}$ to CP = t_{setup} = 3 ns minimum (Dn > CLK);
   Dn to CP = t_{hold} = 1 ns minimum (Dn > CLK).
3. For f_{MAX} testing, see table III.

FIGURE 5. Switching time waveforms - Continued.

Device type 09
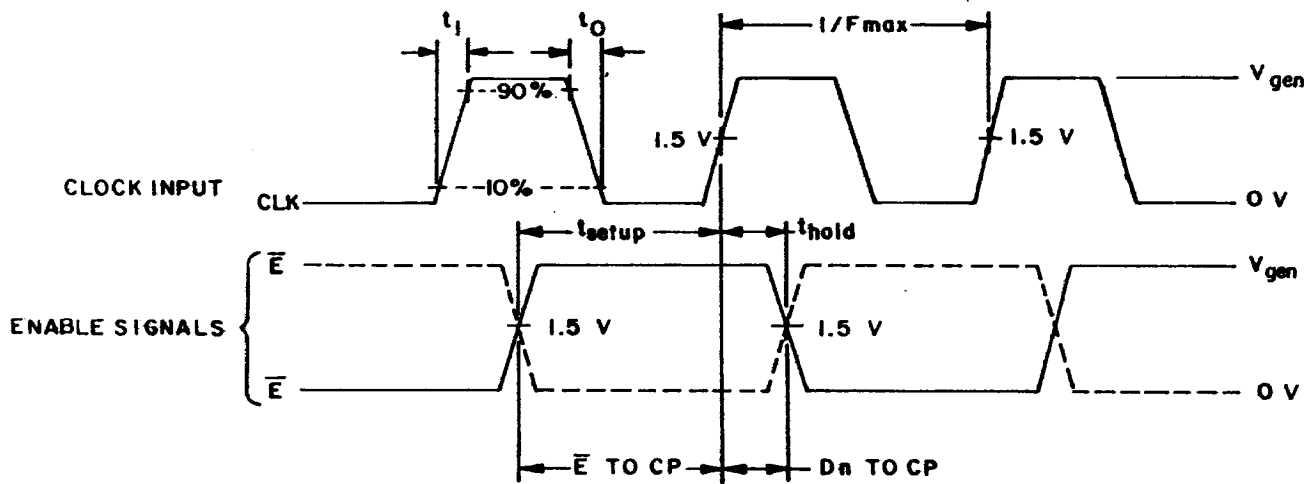
NOTES:
1. Clock input pulse has the following characteristics:
   V_{gen} = 3 ±0.2 V, t_1 = $t_0 \leq$ 2.5 ns and PRR $\leq$ 1 MHz.
2. Enable characteristics are:
   $\overline{E}$ > CP; t_{setup} = $\overline{E}$ to CP = 6 ns;
   t_{hold} = Dn to CP = 2 ns
3. For f_{MAX} testing, see table III.

FIGURE 5. Switching time waveforms - Continued.

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Device type 09
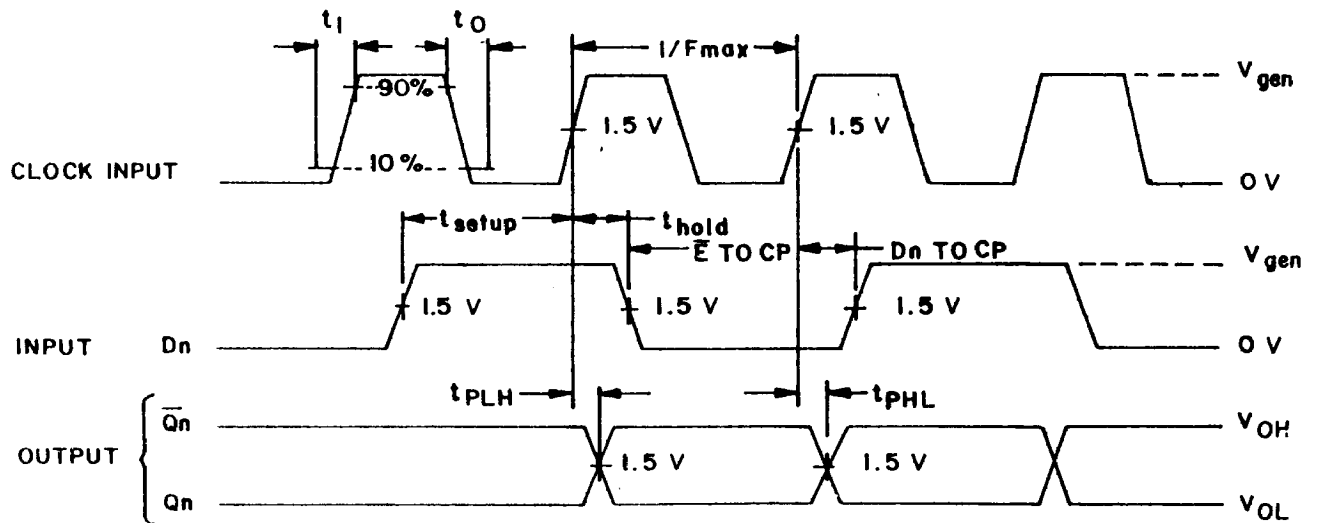
NOTES:
1. Clock input pulse has the following characteristics:
   $V_{gen} = 3 \pm 0.2$ V, $t_1 \leq 2.5$ ns and PRR ≤ 1 MHz.
2. D input has the following characteristics:
   $V_{gen} = 3 \pm 0.2$ V, $t_{setup} = 3$ ns minimum, $t_{hold} = 1$ ns minimum,
   $\bar{E}$ to CP $= t_{setup}$ (Dn > CLK); D_n to CP $= t_{hold}$ (Dn > CLK).
3. For f_{MAX} testing, see table III.
4. t_{PLH} and t_{PHL} are shown for Qn only, (CLK > Qn, $\bar{Q}n$). The Qn output will have these reversed and are omitted for clarity.

FIGURE 5. **Switching time waveforms** - Continued.

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TABLE III. Group A inspection for device type 01.

Terminal conditions (pins not designated may be high $\geq$ 2.0 V, low $\leq$ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D / Cases 2 and X 1/ Test no.	$\overline{CD}_1$	D_1	CP_1	$\overline{SD}_1$	Q_1	$\overline{Q}_1$	GND	$\overline{Q}_2$	Q_2	$\overline{SD}_2$	CP_2	D_2	$\overline{CD}_2$	V_{CC}	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	V_{OL}	3007	1	4.5 V	.8 V	2/	2/	20 mA	20 mA	GND	20 mA	20 mA	.8 V			2.0 V	4.5 V	$\overline{Q}_1$		.5	V
			2	.8 V			2.0 V	20 mA			20 mA		2.0 V			.8 V		Q_1			
			3	2.0 V			.8 V						2/		.8 V	4.5 V		$\overline{Q}_2$			
			4															Q_2			
			5															$\overline{SD}_2$			
			6															SD_2			
	V_{OH}	3006	7	2.0 V	2.0 V	3/	.8 V	-1 mA	-1 mA		-1 mA	-1 mA	2.0 V			.8 V		$\overline{Q}_1$	2.5		
			8	3/			4.5 V	-1 mA			-1 mA		.8 V		.8 V	2.0 V		Q_1			
			9	.8 V			2.0 V						4.5 V		2.0 V	3/		$\overline{Q}_2$			
			10															Q_2			
			11															$\overline{SD}_2$			
			12															SD_2			
	V_{IC}		13	-18 mA	-18 mA	-18 mA	-18 mA				-18 mA		-18 mA	-18 mA	-18 mA	-18 mA		D_1		-1.2	V
			14															$\overline{CD}_1$			
			15															CP_1			
			16															$\overline{SD}_1$			
			17															D_2			
			18															$\overline{CD}_2$			
			19															CP_2			
			20															$\overline{SD}_2$			
	I_{IH1}	3010	21	2.7 V	0 V	0 V	4.5 V				2.7 V		2.7 V	4/	4.5 V	4.5 V		D_1		20	μA
			22	2.7 V	0 V	4/					0 V		0 V	2.7 V		4.5 V		$\overline{CD}_1$			
			23	0 V	4.5 V	4.5 V	0 V				4.5 V			2.7 V	2.7 V	0 V		CP_1			
			24	4.5 V	2.7 V	2.7 V	4.5 V							4.5 V	2.0 V	0 V		$\overline{SD}_1$			
			25	0 V	4.5 V	2.7 V	2.7 V							0 V	0 V	2.7 V		D_2			
			26	4.5 V		4/								4/		2.7 V		$\overline{CD}_2$			
			27															CP_2			
			28															$\overline{SD}_2$			
			29																		
			30																		
			31																		
			32																		
	I_{IH2}	3010	33	7.0 V	0 V	0 V	4.5 V				7.0 V		7.0 V	4/	4.5 V	4.5 V				100	μA
			34	7.0 V	0 V	4/					0 V		0 V	7.0 V		4.5 V					
			35	0 V	7.0 V	4.5 V	0 V				4.5 V			7.0 V	7.0 V	0 V					
			36	4.5 V	4.5 V	7.0 V	4.5 V							4.5 V	0 V	0 V					
			37	0 V		7.0 V	7.0 V							0 V		7.0 V					
			38	4.5 V		4/								4/		7.0 V					
			39																		
			40																		
			41																		
			42																		
			43																		
			44																		
	I_{IL1}	3009	45	4.5 V	.5 V	4.5 V	0 V				0 V		0 V	.5 V	0 V	4.5 V		D_1	5/	5/	mA
			46	4.5 V	0 V	.5 V	0 V				0 V		0 V	4.5 V	.5 V	4.5 V		CP_2			
			47																D_2			
			48																		
	I_{IL2}	3009	49	.5 V	4.5 V	4.5 V	0 V				.5 V		0 V	0 V	0 V	0 V					
			50	0 V	0 V	0 V	.5 V				0 V		.5 V	4.5 V	4.5 V	.5 V					
			51																		
			52																		

See footnotes at end of device type 01.

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

Subgroup	Symbol	MIL-STD-883 method	Test no.	CD1 (1/2)	D1 (2/3)	CP1 (3/4)	SD1 (4/6)	Q1 (5/8)	Q̄1 (6/9)	GND (7/10)	Q̄2 (8/12)	Q2 (9/13)	SD2 (10/14)	CP2 (11/16)	D2 (12/18)	CD2 (13/19)	VCC (14/20)	Measured terminal	Min	Max	Unit
1 TC = +25°C	IOS	3011	53	0 V			0 V	0 V	0 V	GND	0 V	0 V	0 V				5.5 V	Q1	-60	-150	mA
			54							"							"	Q̄1	"	"	"
			55							"							"	Q2	"	"	"
			56							"							"	Q̄2	"	"	"
	IOD		57	0 V			5.5 V	2.5 V	2.5 V	"	2.5 V		0 V			5.5 V	4.5 V	Q1	60		mA
			58	5.5 V			0 V			"			5.5 V			0 V	"	Q̄1	"		"
			59							"		2.5 V					"	Q2	"		"
			60							"							"	Q̄2	"		"
	ICC	3005	61	5.5 V	0 V	0 V	0 V			"			0 V	0 V	0 V	5.5 V	5.5 V	VCC		16	mA
	ICC	3005	62	0 V	0 V	0 V	5.5 V			"			5.5 V	0 V	0 V	0 V	5.5 V	VCC		16	mA
2				Same tests, terminal conditions, and limits as for subgroup 1, except TC = +125°C and VIC tests are omitted.																	
3				Same tests, terminal conditions, and limits as for subgroup 1, except TC = -55°C and VIC tests are omitted.																	
7 TC = +25°C	Functional tests 6/	3014	63 – 77	A/B	IN	IN	B/A	H/L	L/H	GND	L/H	H/L	B/A	IN	IN	A/B	7/	All outputs			
8				Same tests, terminal conditions, and limits as for subgroup 7, except TC = +125°C and TC = -55°C.																	
9 TC = +25°C	fMAX 8/	3003	78 79 80 81	2.7 V 2.7 V	IN IN	IN IN	2.7 V 2.7 V	OUT	OUT	GND "	OUT	OUT	2.7 V 2.7 V	IN IN	IN IN	2.7 V 2.7 V	5.0 V "	Q1 Q̄1 Q2 Q̄2	100 " " "		MHz " " "
	tPLH1	3003 Fig. 5	82	2.7 V	IN	IN	2.7 V	OUT	OUT	GND	OUT	OUT	2.7 V	IN	IN	2.7 V	*	CP1 to Q1	3.8	6.8	ns
	tPHL1		83	"	"	"	"	OUT	OUT	"	OUT	OUT	"	"	"	"	"	CP1 to Q̄1	4.4	8.0	"
	tPLH2		84	"	"	"	"		OUT	"			"	"	"	"	"	CP1 to Q̄1	3.8	6.8	"
	tPHL2		85	"	"	"	"		OUT	"			"	"	"	"	"	CP1 to Q̄1	4.4	8.0	"

See footnotes at end of device type 01.

*TABLE III. Group A inspection for device type 01 - 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 A,B,C,D / Cases 2 1/ and X — Test no.	1 (2) $\overline{CD}_1$	2 (3) D_1	3 (4) CP_1	4 (6) $\overline{SD}_1$	5 (8) Q_1	6 (9) $\overline{Q}_1$	7 (10) GND	8 (12) $\overline{Q}_2$	9 (13) Q_2	10 (14) $\overline{SD}_2$	11 (16) CP_2	12 (18) D_2	13 (19) $\overline{CD}_2$	14 (20) V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
9 $T_C = +25°C$	t_{PLH1}	3003 Fig. 5	86							GND		OUT	2.7 V	IN	IN	2.7 V	5.0 V	CP_2 to Q_2	3.8	6.8	ns
	t_{PHL1}		87							"		OUT	"	"	"	"	"	CP_2 to Q_2	4.4	8.0	"
	t_{PLH2}		88							"	OUT		"	"	"	"	"	CP_2 to $\overline{Q}_2$	3.8	6.8	"
	t_{PHL2}		89							"	OUT		"	"	"	"	"	CP_2 to $\overline{Q}_2$	4.4	8.0	"
	t_{PLH3}		90	IN	2.7 V	2.7 V	2.7 V	OUT		"							"	$\overline{CD}_1$ to Q_1	3.5	9.0	"
	t_{PHL4}		91	"		0 V		OUT		"							"	$\overline{CD}_1$ to Q_1	3.5	9.0	"
	t_{PLH3}		92	"		2.7 V			OUT	"							"	$\overline{CD}_1$ to $\overline{Q}_1$	3.2	6.1	"
	t_{PHL4}		93	"		0 V			OUT	"							"	$\overline{CD}_1$ to $\overline{Q}_1$		6.1	"
	t_{PLH3}		94	2.7 V	2.7 V	2.7 V	IN	OUT		"							"	$\overline{SD}_1$ to Q_1		6.1	"
	t_{PHL4}		95	"		0 V	"	OUT		"							"	$\overline{SD}_1$ to Q_1		6.1	"
	t_{PLH3}		96	"		2.7 V	"		OUT	"							"	$\overline{SD}_1$ to $\overline{Q}_1$		9.0	"
	t_{PHL4}		97	"		0 V	"		OUT	"							"	$\overline{SD}_1$ to $\overline{Q}_1$		9.0	"
	t_{PLH3}		98							"		OUT	IN	2.7 V	2.7 V	IN	"	$\overline{CD}_2$ to Q_2		9.0	"
	t_{PHL4}		99							"		OUT		0 V			"	$\overline{CD}_2$ to Q_2		9.0	"
	t_{PLH3}		100							"	OUT			2.7 V			"	$\overline{CD}_2$ to $\overline{Q}_2$		6.1	"
	t_{PHL4}		101							"	OUT			0 V			"	$\overline{CD}_2$ to $\overline{Q}_2$		6.1	"
	t_{PLH3}		102							"		OUT		2.7 V	2.7 V	2.7 V	"	$\overline{SD}_2$ to Q_2		6.1	"
	t_{PHL4}		103							"		OUT		0 V			"	$\overline{SD}_2$ to Q_2		6.1	"
	t_{PHL3}		104							"	OUT			2.7 V			"	$\overline{SD}_2$ to $\overline{Q}_2$	3.5	9.0	"
	t_{PHL4}		105							"	OUT			0 V			"	$\overline{SD}_2$ to $\overline{Q}_2$	3.5	9.0	"
10			Same tests and terminal conditions as for subgroup 9, except $T_C = +125°C$ and use limits from table I.																		
11			Same tests and terminal conditions as for subgroup 9, except $T_C = -55°C$ and use limits from table I.																		

See footnotes at end of device type 01.

1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 4.5 V, 0 V, 4.5 V to $\overline{SDX}$, then apply 4.5 V, 0 V, 4.5 V to CPX, then make measurement. Alternate clock: Apply all voltages, then apply 4.5 V, 0 V, 4.5 V to $\overline{SDX}$, then apply 0 V, 4.5 V, 0 V to CPX, then make measurement.

3/ Apply all voltages, then apply 4.5 V, 0 V, 4.5 V to $\overline{CDX}$, then apply 4.5 V, 0 V, 4.5 V to CPX, then make measurement. Alternate clock: Apply all voltages, then apply 4.5 V, 0 V, 4.5 V to $\overline{CDX}$, then apply 0 V, 4.5 V, 0 V, to CPX, then make measurement.

4/ Apply all voltages, then apply 0, 4.5 V, 0, to CPX then make measurement.

5/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits			
	A	B	C	D
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60	-.03/-.60
I_{IL2}	-.75/-1.80	-.09/-1.80	-.09/-1.80	-.09/-1.80

6/ A = 2.5 V
B = 0.5 V
H $\geq$ 1.5 V
L $\leq$ 1.5 V

7/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

8/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F / Cases 2 1/ and X — Test no.	1 (2) $\overline{CD}_1$	2 (3) J_1	3 (4) K_1	4 (5) CP_1	5 (7) $\overline{SD}_1$	6 (8) Q_1	7 (9) $\overline{Q}_1$	8 (10) GND	9 (12) $\overline{Q}_2$	10 (13) Q_2	11 (14) $\overline{SD}_2$	12 (15) CP_2	13 (17) K_2	14 (18) J_2	15 (19) $\overline{CD}_2$	16 (20) V_{CC}	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	V_{OL}	3007	1	.8 V	0 V	.8 V	2/	2.0 V	20 mA		GND			.8 V	3/	4.5 V	2.0 V	2.0 V	4.5 V	Q_1		.5 1/	V
			2	4.5 V	.8 V	0 V	2/	2/	"	20 mA	"			4.5 V	3/	2.0 V	4.5 V	3/	"	$\overline{Q}_1$		"	
			3	4.5 V	2.0 V	4.5 V	3/	2/		"	"	20 mA		2.0 V	2/	.8 V	0 V	3/	"	$\overline{Q}_2$		"	
			4	2.0 V	4.5 V	2.0 V	3/	.8 V			"		20 mA	2/	2/	0 V	.8 V	.8 V	"	Q_2		"	
			5	2.0 V				4.5 V			"		"	2/				4.5 V	"			"	
			6	3/				4.5 V			"							4.5 V	"			"	
			7–12	3/							"								"			"	
	V_{OH}	3006	13	2.0 V				4/			GND			2.0 V				4/			2.5		V
			14	4/				2.0 V			"			4/				2.0 V			"		
			15						-1 mA	-1 mA	"		-1 mA										
			16						"	"	"	-1 mA	"										
	V_{IC}	3010	17	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA			GND			-18 mA	-18 mA	-18 mA	-18 mA	-18 mA		$\overline{CD}_1$		-1.2	V
			18–26								"									J_1 … $\overline{CD}_2$			
	I_{IH1}	3010	27	2.7 V	0 V	0 V	4/	0 V			GND			2.7 V	5/	2.7 V	4.5 V	0 V	5.5 V	$\overline{CD}_1$		20	µA
			28	0 V	2.7 V	2.7 V	2.7 V	2.7 V			"			0 V	2.7 V	0 V	2.7 V	2.7 V	"	J_1		"	
			29	"			2.7 V				"				2.7 V		0 V		"	K_1		"	
			30	"	4.5 V		5/				"								"	CP_1		"	
	I_{IH2}	3010	39	7.0 V	0 V	0 V	4/	0 V			GND			7.0 V	5/	7.0 V	4.5 V	0 V		$\overline{CD}_1$		100	µA
			40	0 V	7.0 V	7.0 V	7.0 V	7.0 V			"			0 V	7.0 V	0 V	7.0 V	7.0 V		J_1		"	
			41	"			7.0 V				"				7.0 V		0 V			K_1		"	
			42	"	4.5 V		5/				"				4/					CP_1		"	
	I_{IL1}	3009	51	4/	.5 V	.5 V	0 V	0 V			GND			0 V	.5 V	0 V	.5 V	4.5 V		J_1	6/	6/	mA
			52	4.5 V		0 V	0 V	0 V			"			0 V	0 V	.5 V		4.5 V		K_1	"	"	
			53	4.5 V			.5				"				0 V			4/		CP_1	"	"	
			54–56								"									$\overline{SD}_2$ … $\overline{CD}_2$	"	"	

See footnotes at end of device type 02.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Cases 2 1/ and X Test no.	1 2 $\overline{CD}_1$	2 3 J_1	3 4 K_1	4 5 CP_1	5 7 $\overline{SD}_1$	6 8 Q_1	7 9 $\overline{Q}_1$	8 10 GND	9 12 $\overline{Q}_2$	10 13 Q_2	11 14 $\overline{SD}_2$	12 15 CP_2	13 17 $\overline{K}_2$	14 18 J_2	15 19 $\overline{CD}_2$	16 20 VCC	Measured terminal	Limits Min	Limits Max	Unit
1 T_C = +25°C	I_{IL2}	3009	57 58 59 60	.5 V 0 V	4.5 V 0 V	4.5 V 0 V	4.5 V	0 V .5 V			GND			.5 V 0 V	4.5 V	0 V 4.5 V	0 V 4.5 V	0 V .5 V	5.5 V	$\overline{CD}_1$ $\overline{SD}_1$ $\overline{SD}_2$ $\overline{CD}_2$	6/ " "	6/ " "	mA " "
	I_{OS}	3011	61 62 63 64	0 V				0 V	0 V	0 V		0 V	0 V	0 V				0 V		Q_1 $\overline{Q}_1$ $\overline{Q}_2$ Q_2	-60 " "	-150 " "	" "
	I_{OD}		65 66 67 68	0 V 5.5 V				5.5 V 0 V	5.5 V	2.5 V		2.5 V	2.5 V	0 V 5.5 V	0 V			5.5 V 0 V	4.5 V	Q_1 $\overline{Q}_1$ $\overline{Q}_2$ Q_2	60 " "	" "	" "
	I_{CC}	3005	69	5.5 V	0 V	0 V	0 V	0 V						0 V	0 V	0 V		5.5 V	5.5 V	VCC		17	"
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.																					
3	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																					
7 T_C = +25°C	Functional tests 8/	3014	70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102								GND								7/	All outputs			
8	Same tests, terminal conditions, and limits as for subgroup 7, except T_C = +125°C and T_C = -55°C.																					

See footnotes at end of device type 02.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	CD_1	J_1	K_1	CP_1	SD_1	Q_1	$\overline{Q}_1$	GND	$\overline{Q}_2$	Q_2	SD_2	CP_2	K_2	J_2	CD_2	V_{CC}	Measured terminal	Min	Max	Unit
Cases E and F				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Cases 2 1/ and X				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
9 $T_C = +25°C$	f_{MAX} 9/	3303 Fig. 5	103 104 105 106	2.7 V 2.7 V	2.7 V 2.7 V	0 0	IN IN	2.7 V 2.7 V	OUT	OUT	GND	OUT	OUT	2.7 V 2.7 V	IN IN	0 0	2.7 V 2.7 V	2.7 V 2.7 V	5.0 V	Q_1 $\overline{Q}_1$ Q_2 $\overline{Q}_2$	90		MHz
	t_{PLH1} t_{PLH1}		107 108	2.7 V	2.7 V	0 V	IN	2.7 V	OUT				OUT	2.7 V	IN	0 V	2.7 V	2.7 V		CP_1 to Q_1 CP_2 to Q_2	3.8 3.8	7.0 7.0	ns
	t_{PHL1} t_{PHL1}		109 110	2.7 V	2.7 V	0 V	IN	2.7 V	OUT				OUT	2.7 V	IN	0 V	2.7 V	2.7 V		CP_1 to Q_1 CP_2 to Q_2	4.4 4.4	8.0 8.0	
	t_{PLH2} t_{PLH2}		111 112	2.7 V	2.7 V	0 V	IN	2.7 V		OUT		OUT		2.7 V	IN	0 V	2.7 V	2.7 V		CP_1 to $\overline{Q}_1$ CP_2 to $\overline{Q}_2$	3.8 3.8	7.0 7.0	
	t_{PHL2} t_{PHL2}		113 114	2.7 V	2.7 V	0 V	IN	2.7 V		OUT		OUT		2.7 V	IN	0 V	2.7 V	2.7 V		CP_1 to $\overline{Q}_1$ CP_2 to $\overline{Q}_2$	4.4 4.4	8.0 8.0	
	t_{PLH3}		115 116 117 118	IN 2.7 V	2.7 V 2.7 V	0 V 0 V	2.7 V 2.7 V	2.7 V IN	OUT	OUT			OUT	2.7 V IN	2.7 V 2.7 V	0 V 0 V	2.7 V 2.7 V	IN 2.7 V		CD_1 to Q_1 SD_1 to $\overline{Q}_1$ CD_2 to Q_2 SD_2 to $\overline{Q}_2$	3.2	7.0	
	t_{PHL3}		119 120 121 122	IN 2.7 V	2.7 V	0 V	2.7 V	2.7 V IN	OUT	OUT			OUT	2.7 V IN	2.7 V	0 V	2.7 V	2.7 V		CD_1 to Q_1 SD_1 to $\overline{Q}_1$ CD_2 to Q_2 SD_2 to $\overline{Q}_2$	3.5	9.0	
	t_{PLH4}		123 124 125 126	IN 2.7 V	2.7 V	0 V	0 V	2.7 V IN	OUT	OUT			OUT	2.7 V IN	0 V	0 V	2.7 V	2.7 V		CD_1 to Q_1 SD_1 to $\overline{Q}_1$ CD_2 to Q_2 SD_2 to $\overline{Q}_2$	3.2	7.0	
	t_{PHL4}		127 128 129 130	IN 2.7 V	2.7 V	0 V	0 V	2.7 V IN	OUT	OUT			OUT	2.7 V IN	0 V	0 V	2.7 V	2.7 V		CD_1 to Q_1 SD_1 to $\overline{Q}_1$ CD_2 to Q_2 SD_2 to $\overline{Q}_2$	3.5	9.0	
10								Same tests and terminal conditions as subgroup 9, except $T_C = +125°C$ and use limits from table I.															
11								Same tests and terminal conditions as subgroup 9, except $T_C = -55°C$ and use limits from table I.															

See footnotes at end of device type 02.

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1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 3 V, 0 V, 3 V to $\overline{SDX}$, then apply 3 V, 0 V, 3 V to CPX, then make measurement. For circuit C devices, apply all voltages then apply 4.5 V, 0 V, 4.5 V to $\overline{SDX}$, then apply 4.5 V, 0 V, 4.5 V to CPX, then make the measurement.

3/ Apply all voltages, then apply 3 V, 0 V, 3 V to $\overline{CDX}$, then apply 3 V, 0 V, 3 V to CPX, then make measurement. For circuit C devices, apply all voltages then apply 4.5 V, 0 V, 4.5 V to $\overline{CPX}$, then make the measurement.

4/ Apply all voltages, then apply 0 V, 4.5 V to CPX, CDX, or SDX, then make measurement.

5/ Apply all voltages, then apply 0 V, 4.5 V, 0 V to CP_1 test 32 and 44 and CP_2 test 33 and 45 then make measurement.

6/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits			
	A	B	C	D
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60	-.03/-.60
I_{IL2}	-.75/-1.80	-.09/-1.80	-.09/-1.80	-.09/-1.80

7/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

8/ A = 2.5 V
B = 0.5 V
H $\geq$ 1.5 V
L $\leq$ 1.5 V

9/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases E and F) / (Cases Z 1/ and X)	CP1 (1/2)	K1 (2/3)	J1 (3/4)	SD1 (4/5)	$\overline{Q}_1$ (5/7)	Q1 (6/8)	$\overline{Q}_2$ (7/9)	GND (8/10)	Q2 (9/12)	SD2 (10/13)	J2 (11/14)	K2 (12/15)	CP2 (13/17)	CD2 (14/18)	CD1 (15/19)	Vcc (16/20)	Measured terminal	Min	Max	Unit
T_C = +25°C	V_{OH}	3006	1	2/	.8 V	2.0 V	2.0 V	-1 mA			GND		2.0 V	2.0 V	.8 V	2/	2.0 V	2.0 V	4.5 V	Q1	2.5		V
			2	2/	2.0 V	.8 V	2.0 V		-1 mA				2.0 V	.8 V	2.0 V	2/	2.0 V	2.0 V		Q2			
			3	4.5 V	4.5 V	4.5 V	.8 V		-1 mA				.8 V	4.5 V	4.5 V	4.5 V	2.0 V	2.0 V		Q1			
			4	4.5 V	4.5 V	4.5 V	2.0 V	-1 mA					2.0 V	4.5 V	4.5 V	4.5 V	.8 V	.8 V		Q2			
	V_{OL}	3007	9	2/	.8 V	2.0 V	2.0 V	20 mA					2.0 V	2.0 V	.8 V	2/	2.0 V	2.0 V		Q1		.50	V
			10	2/	2.0 V	.8 V	2.0 V		20 mA				2.0 V	.8 V	2.0 V	2/	2.0 V	2.0 V		Q2			
			11	4.5 V	4.5 V	4.5 V	.8 V		20 mA				.8 V	4.5 V	4.5 V	4.5 V	2.0 V	2.0 V		Q1			
			12	4.5 V	4.5 V	4.5 V	2.0 V	20 mA				20 mA	2.0 V	4.5 V	4.5 V	4.5 V	.8 V	.8 V		Q2			
	V_{IC}		17–26	-18 mA	-18 mA	-18 mA	-18 mA						-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA		CP1, K1, J1, SD1, CD2, J2, K2, CD1, SD2, CP2		-1.2	V
	I_{IL1}	3009	27	4.5 V	.5 V	4.5 V	2/						2/	4.5 V	.5 V	4.5 V	4.5 V	4.5 V	5.5 V	K1, K2, J1, J2	3/	3/	mA
			28	4.5 V	4.5 V	.5 V	4.5 V						4.5 V	.5 V	4.5 V	4.5 V	2/	2/					
			29																				
			30																				
	I_{IL2}	3009	31	4.5 V	4.5 V	4.5 V	4.5 V						4.5 V	4.5 V	4.5 V	4.5 V	.5 V	.5 V		CP1, K2, J1, J2			mA
			32	4.5 V	4.5 V	4.5 V	.5 V						.5 V	4.5 V	4.5 V	4.5 V	4.5 V	4.5 V					
			33																				
			34																				
	I_{IL3}	3009	35	.5 V	4.5 V	4.5 V	4.5 V						4.5 V	4.5 V	4.5 V	.5 V	2/	2/		CP1, CP2			mA
			36																				
	I_{TH1}	3010	37	GND	2.7 V	4.5 V	GND						GND	4.5 V	2.7 V	GND	4.5 V	4.5 V		K1, K2, J1, J2, SD1, SD2, CD1, CD2, CP1, CP2		20	µA
			38	GND	4.5 V	2.7 V	4.5 V						4.5 V	2.7 V	4.5 V	GND	GND	GND					
			39	GND	4.5 V	GND	2/						2/	GND	4.5 V	GND	GND	2.7 V					
			40	GND	GND	4.5 V	2.7 V						2.7 V	GND	4.5 V	2.7 V	GND	GND					
			41	GND	GND	GND	GND						2/	GND	GND	GND	2/	2/					
			42	GND	GND	4.5 V	2.7 V						2.7 V	4.5 V	GND	.5 V	2.7 V	2/					
			43	GND	GND	GND	GND						GND	GND	GND	2.7 V	GND	GND					
			44	2.7 V	GND	GND	GND						GND	GND	GND								

See footnotes at end of device type 03.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no. (2)	Cases 2 1/ and X	CP_1 (1)(2)	K_1 (2)(3)	J_1 (3)(4)	SD_1 (4)(5)	Q_1 (5)(7)	$\overline{Q}_1$ (6)(8)	$\overline{Q}_2$ (7)(9)	GND (8)(10)	Q_2 (9)(12)	SD_2 (10)(13)	J_2 (11)(14)	K_2 (12)(15)	CP_2 (13)(17)	CD_2 (14)(18)	CD_1 (15)(19)	V_{CC} (16)(20)	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	I_{IH2}	3010	47		GND	7.0 V	4.5 V	GND				GND		GND	4.5 V	7.0 V	GND	4.5 V	4.5 V	5.5 V	K_1		100	µA
			48		GND	4.5 V	7.0 V	4.5 V				.		2/	7.0 V	4.5 V	GND	GND	GND	.	K_2		.	.
			49		GND	4.5 V	GND	2/				.		4.5 V	4.5 V	4.5 V	GND	7.0 V	7.0 V	.	J_1		.	.
			50		GND	GND	4.5 V	7.0 V				.		7.0 V	GND	4.5 V	GND	GND	2/	.	J_2		.	.
			51		GND	GND	4.5 V	GND				.		2/	4.5 V	GND	GND	2/	GND	.	CD_1		.	.
			52		7.0 V	GND						.		7.0 V	GND	GND	7.0 V	GND		.	CD_2		.	.
			53																		SD_1		.	.
			54																		SD_2		.	.
			55																		CP_1		.	.
			56																		CP_2		.	.
	I_{OS}	3011	57		4.5 V	4.5 V	4.5 V	GND	0 V					GND	4.5 V	4.5 V	GND	4.5 V	4.5 V	.	Q_1	-60	-150	mA
			58		4.5 V	4.5 V	4.5 V	4.5 V		0 V				4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	GND	.	$\overline{Q}_1$	.	.	.
			59								0 V										$\overline{Q}_2$	.	.	.
			60		4.5 V	4.5 V	4.5 V	4.5 V						4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	GND	.	Q_2	.	.	.
	I_{DD}	3011	61		5.5 V	5.5 V	5.5 V	5.5 V	2.5 V	2.5 V			5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	0 V	4.5 V	Q_1	60	.	mA
			62		.	.	.	0 V					5.5 V				0 V	5.5 V	.	$\overline{Q}_1$	.	.	.
			63		.	.	.	5.5 V					0 V						.	$\overline{Q}_2$	.	.	.
			64		.	.	.	5.5 V	2.5 V	2.5 V			5.5 V						.	Q_2	.	.	.
	I_{CC}	3005	65		4.5 V	4.5 V	4.5 V	GND					GND	GND	4.5 V	4.5 V	4.5 V	4.5 V	GND	5.5 V	V_{CC}		19	mA
	I_{CC}	3005	66		4.5 V	4.5 V	4.5 V	4.5 V					4.5 V	4.5 V	4.5 V	4.5 V	4.5 V	GND	5.5 V	V_{CC}		19	mA

2	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = +125°C$ and V_{IC} tests are omitted.

3	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = -55°C$ and V_{IC} tests are omitted.

Subgroup	Symbol	MIL-STD-883 method	Test no.	CP_1	K_1	J_1	SD_1	Q_1	$\overline{Q}_1$	$\overline{Q}_2$	GND	Q_2	SD_2	J_2	K_2	CP_2	CD_2	CD_1	V_{CC}	Measured terminal			4/
7 $T_C = +25°C$	Functional tests 5/	3014	67	B	B	A	A	L	H	H	GND	L	A	A	B	B	B	B	4/	All outputs			
			68	A	.	.	.	H	.	.	.	.	B	.	.	A	.	A	.	.			
			69	B	A	B	B	L	L	L	.	B	A	B	A	B	B	B	.	.			
			70	B	.	.	A	L	.	.	.	A	A	.	.	A	.	A	.	.			
			71	A	.	A	.	H	H	H	.	B	.	.	.	B	.	B	.	.			
			72	B	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.			
			73	.	.	B	B	.	L	L	.	B	.	.	.	A	.	A	.	.			
			74	A	.	.	.	H	.	.	.	.	B	A	.	B	.	B	.	.			
			75	.	.	A	A	.	H	H	.	.	A	.	.	.	.	.	.	.			
			76	B	.	.	.	L	L	L	.	B	.	.	.	.	.	.	.	.			
			77	.	A	.	.	.	.	.	.	A	A	.	.	A	.	A	.	.			
			78	A	.	.	B	H	H	H	.	B	.	.	A	B	.	B	.	.			
			79	.	.	.	.	L	.	.	.	.	.	.	.	.	.	.	.	.			
			80	A	.	B	A	.	L	L	.	B	.	.	.	A	.	A	.	.			
			81	B	.	.	.	.	.	.	.	A	B	.	.	B	.	B	.	.			
			82	B	.	.	.	H	H	H	.	A	A	.	.	A	.	A	.	.			
			83	B	.	.	B	.	.	.	.	.	.	.	.	B	.	B	.	.			
			84	A	A	.	A	.	L	L	.	A	A	.	.	A	.	A	.	.			
			85	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
			86	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
			87	A	.	.	A	.	H	H	.	.	A	A	.	A	.	A	.	.			
			88	B	.	.	.	.	.	.	.	.	.	.	.	B	.	B	.	.			
			89	B	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
			90	A	.	.	.	.	L	L	.	.	A	.	.	.	.	.	.	.			
			91	B	.	.	.	.	.	.	.	.	.	.	.	B	.	B	.	.			
			92	A	.	.	.	.	H	H	.	.	A	.	.	A	.	A	.	.			
			93	B	.	.	.	.	.	.	.	.	.	.	.	B	.	B	.	.			
			94	B	.	.	.	.	L	L	.	.	.	.	.	A	.	A	.	.			

8	Same tests, terminal conditions, and limits as for subgroup 7, except $T_C = +125°C$ and $-55°C$.

See footnotes at end of device type 03.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F / Cases Z 1/ and X	Test no.	1 (2) CP₁	2 (3) K₁	3 (4) J₁	4 (5) SD₁	5 (7) Q₁	6 (8) Q̄₁	7 (9) Q̄₂	8 (10) GND	9 (12) Q₂	10 (13) SD₂	11 (14) J₂	12 (15) K₂	13 (17) CP₂	14 (18) CD₂	15 (19) CD₁	16 (20) VCC	Measured terminal	Min	Max	Unit
9 Tc = +25°C	fMAX 6/	3003 Fig. 5		95	IN	2.7 V	2.7 V	2.7 V	OUT	OUT		GND		2.7 V	2.7 V	2.7 V	IN	2.7 V	2.7 V	5.0 V	Q₁	90		MHz
				96	IN	2.7 V	2.7 V	2.7 V				"		2.7 V	2.7 V	2.7 V	IN	2.7 V	2.7 V	"	Q̄₁	"		"
				97							OUT	"	OUT							"	Q₂	"		"
				98							OUT	"	OUT							"	Q̄₂	"		"
	tPLH1			99	IN	2.7 V	2.7 V	2.7 V	OUT			GND	OUT	IN	2.7 V	2.7 V	IN	IN	IN	5.0 V	CP₁ to Q₁	3.3	7.7	ns
				100	IN	2.7 V	2.7 V	2.7 V				"		IN	2.7 V	2.7 V	IN	IN	IN	"	CP₂ to Q₂	"	"	"
	tPLH2			101	IN	2.7 V	2.7 V	IN		OUT		"		IN	2.7 V	2.7 V	IN	IN	2.7 V		CP₁ to Q̄₁			"
				102	IN	2.7 V	2.7 V	IN			OUT	"		IN	2.7 V	2.7 V	IN	IN	2.7 V		CP₂ to Q̄₂			"
	tPHL1			103	IN	2.7 V	2.7 V	IN	OUT			"	OUT	IN	2.7 V	2.7 V	IN	IN	2.7 V		CP₁ to Q₁			"
				104	IN	2.7 V	2.7 V	IN				"		IN	2.7 V	2.7 V	IN	IN	2.7 V		CP₂ to Q₂			"
	tPHL2			105	IN	2.7 V	2.7 V	2.7 V	OUT			"		2.7 V	2.7 V	2.7 V	IN	IN	IN		CP₁ to Q̄₁			"
				106	IN	2.7 V	2.7 V	2.7 V			OUT	"	OUT	2.7 V	2.7 V	2.7 V	IN	IN	IN		CP₂ to Q̄₂			"
	tPLH3			107	2.7 V	2.7 V	2.7 V	IN	OUT			"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₁ to Q₁	2.0	7.0	ns
				108	2.7 V	2.7 V	2.7 V	IN		OUT		"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₁ to Q̄₁	"	"	"
				109	2.7 V	2.7 V	2.7 V	IN				"	OUT	IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₂ to Q₂	"	"	"
				110	2.7 V	2.7 V	2.7 V	IN			OUT	"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₂ to Q̄₂	"	"	"
	tPHL3			111	2.7 V	2.7 V	2.7 V	IN	OUT			"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₁ to Q₁	2.5	7.7	ns
				112	2.7 V	2.7 V	2.7 V	IN		OUT		"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₁ to Q̄₁	"	"	"
				113	2.7 V	2.7 V	2.7 V	IN				"	OUT	IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₂ to Q₂	"	"	"
				114	2.7 V	2.7 V	2.7 V	IN			OUT	"		IN	2.7 V	2.7 V	2.7 V	IN	IN		SD₂ to Q̄₂	"	"	"
	tPLH4			115	0 V	2.7 V	2.7 V	IN	OUT			"		IN	2.7 V	2.7 V	0 V	IN	IN	"	CD₁ to Q₁	2.0	7.0	ns
				116	0 V	2.7 V	2.7 V	IN		OUT		"		IN	2.7 V	2.7 V	0 V	IN	IN	"	CD₁ to Q̄₁	"	"	"
				117	0 V	2.7 V	2.7 V	IN				"	OUT	IN	2.7 V	2.7 V	0 V	IN	IN	"	CD₂ to Q₂	"	"	"
				118	0 V	2.7 V	2.7 V	IN			OUT	"		IN	2.7 V	2.7 V	0 V	IN	IN	"	CD₂ to Q̄₂	"	"	"
	tPHL4			119	0 V	2.7 V	2.7 V	IN	OUT			"		IN	2.7 V	2.7 V	0 V	IN	IN		CD₁ to Q₁	2.5	7.7	ns
				120	0 V	2.7 V	2.7 V	IN		OUT		"		IN	2.7 V	2.7 V	0 V	IN	IN		CD₁ to Q̄₁	"	"	"
				121	0 V	2.7 V	2.7 V	IN				"	OUT	IN	2.7 V	2.7 V	0 V	IN	IN		CD₂ to Q₂	"	"	"
				122	0 V	2.7 V	2.7 V	IN			OUT	"		IN	2.7 V	2.7 V	0 V	IN	IN		CD₂ to Q̄₂	"	"	"
10				Same tests and terminal conditions as subgroup 9, except Tc = +125°C and use limits from table I.																				
11				Same tests and terminal conditions as subgroup 9, except Tc = -55°C and use limits from table I.																				

See footnotes at end of device type 03.

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1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 3 V, 0 V, 3 V to CPX, $\overline{CDX}$, or $\overline{SDX}$ (as required) then make measurement.

3/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits			
	A	B	C	D
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60	0.0 mA/-0.6 mA
I_{IL2}	-.75/-3.0	-.09/-3.0	-.12/-3.0	0.0 mA/-3.0 mA
I_{IL3}	-1.25/-3.0	-.12/-2.40	-.12/-3.0	0.0 mA/-2.4 mA

4/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

5/ A = 2.5 V
   B = 0.5 V
   H $\geq$ 1.5 V, L $\leq$ 1.5 V.

6/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	NR (2)	Q0 (3)	Q0 (4)	D0 (5)	D0 (6)	D1 (7)	D1 (8)	Q1 (9)	GND (10)	CP (12)	Q2 (13)	Q2 (14)	D2 (15)	D3 (17)	D3 (18)	Q3 (19)	VCC (16/20)	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	V_{OL}	3007	1–8	.8 V 2/	20 mA	20 mA	2.0 V	2.0 V	2.0 V	20 mA	20 mA	GND	2/	20 mA			2.0 V		20 mA	4.5 V	Q0, Q0, Q1, Q2, Q2, Q3		.5	V
	V_{OH}	3006	9–16		−1 mA	2.0 V .8 V	2.0 V .8 V	.8 V 2.0 V	.8 V 2.0 V	−1 mA	−1 mA				−1 mA	2.0 V	.8 V 2.0 V		−1 mA		Q0, Q0, Q1, Q2, Q2, Q3	2.5		V
	V_{IC}		17–22	−18 mA		−18 mA	−18 mA	−18 mA					18 mA			−18 mA	−18 mA				NR, D0, CP, Q2, D3		−1.2	V
	I_{IH1}	3010	23–28	2.7 V		2.7 V	2.7 V	2.7 V					2.7 V			2.7 V	2.7 V			5.5 V	NR, D0, CP, Q2, D3		20	µA
	I_{IH2}	3010	29–34	7.0 V		7.0 V	7.0 V	7.0 V					7.0 V			7.0 V	7.0 V				NR, D0, CP, Q2, D3		100	
	I_{ILL1}	3009	35–40	.5 V		.5 V	.5 V	.5 V					.5 V			.5 V	.5 V				NR, D0, CP, Q2, D3	3/	3/	mA
	I_{OS}	3011	41–48	2/ 0 V	0 V	0 V	4.5 V	4.5 V	0 V	0 V			2/ 4.5 V	0 V	0 V	4.5 V	4.5 V		0 V		Q0, Q0, Q1, Q2, Q2, Q3	−60	−150	mA
	I_{OD}		49–56	0 V 5.5 V	2.5 V	2.5 V	4.5 V 5.5 V	5.5 V	2.5 V	2.5 V		4/		2.5 V	2.5 V	5.5 V	5.5 V	2.5 V	2.5 V	4.5 V	Q0, Q0, Q1, Q2, Q2, Q3	60		
	I_{CC}	3005	57	4.5 V		4.5 V	4.5 V	4.5 V								4.5 V	4.5 V			5.5 V	V_{CC}		34	

Cases E and F: 2/; Cases 2 1/ and X

See footnotes at end of device type 04.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F / Cases 2 1/ and X																			Measured terminal	Limits Min	Limits Max	Unit
			Test no.	$\overline{WR}$	Q_0	$\overline{Q}_0$	D_0	D_1	$\overline{Q}_1$	Q_1	GND	CP	Q_2	$\overline{Q}_2$	D_2	D_3	$\overline{Q}_3$	Q_3	V_{CC}					
				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				

Subgroup 2: Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.

Subgroup 3: Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.

Subgroup 7, T_C = +25°C: Functional tests 6/ — MIL-STD-883 method 3014 — Test nos. 58 through 84 — Measured terminal: All outputs — V_{CC} = 5/

Subgroup 8: Same tests, terminal conditions, and limits as for subgroup 7, except T_C = +125°C and -55°C.

Subgroup 9, T_C = +25°C	Symbol	Method	Test no.																	Measured terminal	Min	Max	Unit
	f_{MAX} 7/	3003 Fig. 5	85, 86, 87, 88, 89, 90, 91, 92	2.7 V	OUT	OUT	IN, IN	IN, IN	OUT	OUT	GND	IN	OUT	OUT	IN, IN	IN, IN	OUT	OUT	5.0 V	CP	100		MHz
	t_{PLH1}		93, 94, 95, 96		OUT	OUT	IN	IN	OUT	OUT		IN	OUT	OUT	IN	IN	OUT	OUT		CP to Q_0, CP to Q_1, CP to Q_2, CP to Q_3	4.0	6.5	ns
	t_{PLH2}		97, 98, 99, 100		OUT	OUT	IN	IN	OUT	OUT			OUT	OUT	IN	IN	OUT	OUT		CP to Q_0, CP to Q_1, CP to Q_2, CP to Q_3			ns
	t_{PHL1}		101, 102, 103, 104		OUT	OUT	IN	IN	OUT	OUT			OUT	OUT	IN	IN	OUT	OUT		CP to Q_0, CP to Q_1, CP to Q_2, CP to Q_3		8.5	ns
	t_{PHL2}		105, 106, 107, 108		OUT	OUT	IN	IN	OUT	OUT			OUT	OUT	IN	IN	OUT	OUT		CP to Q_0, CP to Q_1, CP to Q_2, CP to Q_3			ns

See footnotes at end of device type 04.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	Cases 2 1/ and X	Test no.	MR (1/2)	Q0 (2/3)	Q̄0 (3/4)	D0 (4/5)	D1 (5/7)	Q̄1 (6/8)	Q1 (7/9)	GND (8/10)	CP (9/12)	Q2 (10/13)	Q̄2 (11/14)	D2 (12/15)	D3 (13/17)	Q̄3 (14/18)	Q3 (15/19)	VCC (16/20)	Measured terminal	Min	Max	Unit
9 TC = +25°C	tPHL5	30003 (Fig. 4)			109	IN	OUT		2.7 V	2.7 V		OUT	GND	2.7 V	OUT						5.0 V	MR to Q0	4.5	11.5	ns
					110																	MR to Q1	4.5	11.5	"
					111																	MR to Q2	4.5	11.5	"
					112																	MR to Q3	4.5	11.5	"
	tPLH5				113			OUT	2.7 V	2.7 V	OUT				OUT		2.7 V	2.7 V	OUT	OUT		MR to Q̄0	4.0	8.0	"
					114																	MR to Q̄1	4.0	8.0	"
					115																	MR to Q̄2	4.0	8.0	"
					116																	MR to Q̄3	4.0	8.0	"
	tPHL6				117		OUT		2.7 V	2.7 V		OUT		0.0 V	OUT	OUT	2.7 V	2.7 V		OUT		MR to Q0	4.5	11.5	"
					118																	MR to Q1	4.5	11.5	"
					119																	MR to Q2	4.5	11.5	"
					120																	MR to Q3	4.5	11.5	"
	tPLH6				121			OUT	2.7 V	2.7 V	OUT					OUT	2.7 V	2.7 V	OUT			MR to Q̄0	4.0	8.0	"
					122																	MR to Q̄1	4.0	8.0	"
					123																	MR to Q̄2	4.0	8.0	"
					124																	MR to Q̄3	4.0	8.0	"
10	Same tests and terminal conditions as subgroup 9, except TC = +125°C and use limits from table I.																								
11	Same tests and terminal conditions as subgroup 9, except TC = -55°C and use limits from table I.																								

1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages then apply 3 V, 0 V, 3 V to MR, then apply 3 V, 0 V, 3 V to CP, then make measurement.

3/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits			
	A	B	C	D
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60	0/-.30

4/ Apply all voltages, then apply 3 V, 0 V, 3 V to CP, then make measurement.

5/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

6/ A = 2.5 V
   B = 0.5 V
   H ≥ 1.5 V
   L ≤ 1.5 V

7/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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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	Test no.	Cases 2,R,S, and X									
				1 ŌĒ	2 Q0	3 D0	4 D1	5 Q1	6 Q2	7 D2	8 D3	9 Q3	10 GND
1 Tc = +25°C	V_{OH}	3006	1 2 3 4 5 6 7 8	.8 V	-1 mA	2.0 V	2.0 V	-1 mA	-1 mA	2.0 V	2.0 V	-1 mA	GND
	V_{OL}	3007	9 10 11 12 13 14 15 16		20 mA	.8 V	.8 V	20 mA	20 mA	.8 V	.8 V	20 mA	GND
	V_{IC}		17 18 19 20 21 22 23 24 25 26	-18 mA		-18 mA	-18 mA			-18 mA	-18 mA		GND
	I_{IH1}	3010	27 28 29 30 31 32 33 34 35 36	2.7 V		2.7 V	2.7 V			2.7 V	2.7 V		GND
	I_{IH2}	3010	37 38 39 40 41 42 43 44 45 46	7.0 V		7.0 V	7.0 V			7.0 V	7.0 V		GND
	I_{IL1}	3009	47 48 49 50 51 52 53 54 55 56	.5 V		.5 V	.5 V			.5 V	.5 V		GND

See footnotes at end of device type 05.

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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	Test no.	CP (11)	Q4 (12)	D4 (13)	D5 (14)	Q5 (15)	Q6 (16)	D6 (17)	D7 (18)	Q7 (19)	VCC (20)	Measured	Min	Max	Unit
1 Tc = +25°C	V_{OH}	3006	1–8	1/									4.5 V	Q0,Q1,Q2,Q3,Q4,Q5,Q6,Q7	2.5		V
	V_{OL}	3007	9–16		-1 mA	2.0 V	2.0 V	-1 mA	-1 mA	2.0 V	2.0 V	-1 mA		Q0,Q1,Q2,Q3,Q4,Q5,Q6,Q7		.5	
	V_{IC}		17–26	-18 mA	20 mA	.8 V	.8 V	20 mA	20 mA	.8 V	.8 V	20 mA		OE,D0,D1,D2,D3,D4,D5,D6,D7,CP		-1.2	
	I_{IH1}	3010	27–36	-18 mA		-18 mA	-18 mA			-18 mA	-18 mA		5.5 V	OE,D0,D1,D2,D3,D4,D5,D6,D7,CP		20	µA
	I_{IH2}	3010	37–46	2.7 V		2.7 V	2.7 V			2.7 V	2.7 V			OE,D0,D1,D2,D3,D4,D5,D6,D7,CP		100	
	I_{IL1}	3009	47–56	.5 V		.5 V	.5 V			.5 V	.5 V			OE,D0,D1,D2,D3,D4,D5,D6,D7,CP	2/	2/	mA

See footnotes at end of device type 05.

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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 2,R,S, and X Test no.	1 OE	2 Q0	3 D0	4 D1	5 Q1	6 Q2	7 D2	8 D3	9 Q3	10 GND
1 $T_C = +25°C$	IOS	3011	57	0 V	0 V	4.5 V	4.5 V	0 V	0 V	4.5 V	4.5 V	0 V	GND
			58	"									"
			59	"									"
			60	"									"
			61	"									"
			62	"									"
			63	"									"
			64	"									"
	IOD		65	"	2.5 V	0 V	0 V	2.5 V	2.5 V	0 V	0 V	2.5 V	"
			66	"									"
			67	"									"
			68	"									"
			69	"									"
			70	"									"
			71	"									"
			72	"									"
	IOZH	3011	73	2.0 V	2.7 V	0 V	0 V	2.7 V	2.7 V	0 V	0 V	2.7 V	"
			74	"									"
			75	"									"
			76	"									"
			77	"									"
			78	"									"
			79	"									"
			80	"									"
	IOZL	3011	81	"	.5 V	4.5 V	4.5 V	.5 V	.5 V	4.5 V	4.5 V	.5 V	"
			82	"									"
			83	"									"
			84	"									"
			85	"									"
			86	"									"
			87	"									"
			88	"									"
	ICCZ	3011	89	4.5 V		4.5 V	4.5 V			4.5 V	4.5 V		"
2	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = +125°C$ and V_{IC} tests are omitted.												
3	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = -55°C$ and V_{IC} tests are omitted.												
7 $T_C = +25°C$	Func-tional tests 3/	3014	90	B	X	B	B	X	X	B	B	X	"
			91	"	L	B	B	L	L	B	B	L	"
			92	"	"	A	A	"	"	A	A	"	"
			93	"	"	"	"	"	"	"	"	"	"
			94	"	H	"	B	H	H	B	"	H	"
			95	"	"	B	"	"	"	"	B	"	"
			96	"	"	"	"	"	"	"	"	"	"
			97	"	L	A	A	L	L	A	A	L	"
			98	"	"	B	B	"	"	B	B	"	"
			99	"	"	A	A	"	"	A	A	"	"
			100	"	L	A	A	L	L	A	A	L	"
			101	"	H	B	B	H	H	B	B	H	"
			102	"	"	A	A	"	"	A	A	"	"
			103	"	"	A	A	"	"	A	A	"	"
8	Same tests, terminal conditions, and limits as for subgroup 7, except $T_C = +125°C$ and $T_C = -55°C$.												

See footnotes at end of device type 05.

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	Test no.	11 CP	12 Q_4	13 D_4	14 D_5	15 Q_5	16 Q_6	17 D_6	18 D_7	19 Q_7	20 V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
1 T_C = +25°C	I_{OS}	3011	57 58 59 60 61 62 63 64	1/	0 V	4.5 V	4.5 V	0 V	0 V	4.5 V	4.5 V	0 V	5.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	-60	-150	mA
	I_{OD}		65 66 67 68 69 70 71 72		2.5 V		0 V	2.5 V	0 V	0 V	0 V	2.5 V	4.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	35		
	I_{OZH}	3011	73 74 75 76 77 78 79 80		2.7 V			2.7 V	2.7 V	0 V	0 V	2.7 V	5.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7		+50	µA
	I_{OZL}	3011	81 82 83 84 85 86 87 88		.5 V	4.5 V	4.5 V	.5 V	.5 V	4.5 V	4.5 V	.5 V		Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7		-50	
	I_{CCZ}	3011	89	4.5 V	.5 V	4.5 V	4.5 V	.5 V	.5 V	4.5 V	4.5 V	.5 V		V_{CC}		86	mA
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.																
3	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																
7 T_C = +25°C	Functional tests 3/	3014	90 91 92 93 94 95 96 97 98 99 100 101 102 103	B A A B A B A : : B A: : :	X L : : H : : L : : : H: :	B B A: : B: : A B A A B A	B B A: : B: : A B A A B A	X L : : H: : L: : : H: :	X L : : H: : L: : : H: :	B B A: : B: : A B A b A	B B A: : B: : A B A B A	X L : : H: : L: : : H: :	4/	All outputs			
8	Same tests, terminal conditions, and limits as for subgroup 7, except T_C = +125°C and -55°C.																

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device type 05 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.6 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 $\overline{OE}$	2 Q0	3 D0	4 D1	5 Q1	6 Q2	7 D2	8 D3	9 Q3	10 GND
9 Tc = +25°C	fmax 2/	3003 Fig. 5	104 105 106 107 108 109 110 111	0 V · · · · · · ·	OUT	IN	IN	OUT	OUT	IN	IN	OUT	GND · · · · · · ·
	tpLH1		112 113 114 115 116 117 118 119	· · · · · · · ·	OUT	IN	IN	OUT	OUT	IN	IN	OUT	· · · · · · · ·
	tpHL1		120 121 122 123 124 125 126 127	· · · · · · · ·	OUT	IN	IN	OUT	OUT	IN	IN	OUT	· · · · · · · ·
	tpLZ1		128 129 130 131 132 133 134 135	IN · · · · · · ·	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	· · · · · · · ·
	tpHZ1		136 137 138 139 140 141 142 143	· · · · · · · ·	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	· · · · · · · ·
	tpZL1		144 145 146 147 148 149 150 151	· · · · · · · ·	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	· · · · · · · ·
	tpZH1		152 153 154 155 156 157 158 159	· · · · · · · ·	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	· · · · · · · ·
10				Same tests, terminal conditions, and limits as subgroup 9, except Tc = +125°C and use limits from table I.									
11				Same tests, terminal conditions, and limits as subgroup 9, except Tc = -55°C and use limits from table I.									

See footnotes at end of device type 05.

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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 Z,R,S, and X Test no.	11 CP	12 Q4	13 D4	14 D5	15 Q5	16 Q6	17 D6	18 D7	19 Q7	20 VCC	Measured terminal	Min	Max	Unit
9 TC = +25°C	fMAX 5/	3003 Fig. 5	104 105 106 107 108 109 110 111	IN " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	5.0 V " " " " "	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	80	8.5	MHz " " " " " " "
	tPLH1		112 113 114 115 116 117 118 119	IN " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	" " " " " " "	CP to Q0 CP to Q1 CP to Q2 CP to Q3 CP to Q4 CP to Q5 CP to Q6 CP to Q7	3.0	8.5	ns " " " " " " "
	tPHL1		120 121 122 123 124 125 126 127	IN " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	" " " " " " " "	CP to Q0 CP to Q1 CP to Q2 CP to Q3 CP to Q4 CP to Q5 CP to Q6 CP to Q7			" " " " " " " "
	tPLZ1		128 129 130 131 132 133 134 135	1/ " " " " " " "	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	" " " " " " " "	OE to Q0 OE to Q1 OE to Q2 OE to Q3 OE to Q4 OE to Q5 OE to Q6 CP to Q7	1.5	6.5	" " " " " " " "
	tPHZ1		136 137 138 139 140 141 142 143	" " " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	" " " " " " "	OE to Q0 OE to Q1 OE to Q2 OE to Q3 OE to Q4 OE to Q5 OE to Q6 OE to Q7		7.5	" " " " " " " "
	tPZL1		144 145 146 147 148 149 150 151	" " " " " " " "	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	" " " " " " "	OE to Q0 OE to Q1 OE to Q2 OE to Q3 OE to Q4 OE to Q5 OE to Q6 OE to Q7	2.0		" " " " " " " "
	tPZH1		152 153 154 155 156 157 158 159	" " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	" " " " " " "	OE to Q0 OE to Q1 OE to Q2 OE to Q3 OE to Q4 OE to Q5 OE to Q6 OE to Q7		11.5	" " " " " " " "
10				Same tests, terminal conditions, and limits as subgroup 9, except TC = +125°C and use limits from table I.														
11				Same tests, terminal conditions, and limits as subgroup 9, except TC = -55°C and use limits from table I.														

See footnotes at end of device type 05.

1/ Apply all voltages, then apply 3 V, 0 V, 3 V to CP, then make measurement.

2/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits			
	A	B	C	D
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60	0/-.30

3/ A = 2.5 V
   B = 0.5 V
   H $\geq$ 1.5 V
   L $\leq$ 1.5 V

4/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

5/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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	Test no.	1 OE	2 Q̄0	3 D0	4 D1	5 Q̄1	6 Q̄2	7 D2	8 D3	9 Q̄3	10 GND
1 TC = +25°C	VOH	3006	1 2 3 5 6 7 8	.8 V	-1 mA	.8 V	.8 V	-1 mA	-1 mA	.8 V	.8 V	-1 mA	GND
	VOL	3007	9 10 11 12 13 14 15 16	.8 V	20 mA	2.0 V	2.0 V	20 mA	20 mA	2.0 V	2.0 V	20 mA	
	VIC		17 18 19 20 21 22 23 24 25 26	-18 mA		-18 mA	-18 mA			-18 mA	-18 mA		
	I_IH1	3010	27 28 29 30 31 32 33 34 35 36	2.7 V		2.7 V	2.7 V			2.7 V	2.7 V		
	I_IH2	3010	37 38 39 40 41 42 43 44 45 46	7.0 V		7.0 V	7.0 V			7.0 V	7.0 V		
	I_IL1	3009	47 48 49 50 51 52 53 54 55 56	.5 V		.5 V	.5 V			.5 V	.5 V		

See footnotes at end of device type 06.

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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 Z,R,S, and X Test no.	11 CP	12 $\overline{Q}_4$	13 D_4	14 D_5	15 $\overline{Q}_5$	16 $\overline{Q}_6$	17 D_6	18 D_7	19 $\overline{Q}_7$	20 V_{CC}	Measured terminal	Min	Max	Unit
1 TC = +25°C	V_{OH}	3006	1 2 3 4 5 6 7 8	1/	-1 mA	.8 V	.8 V	-1 mA	-1 mA	.8 V	.8 V	-1 mA	4.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	2.5		V
	V_{OL}	3007	9 10 11 12 13 14 15 16		20 mA	2.0 V	2.0 V	20 mA	20 mA	2.0 V	2.0 V	20 mA		Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7		.5	V
	V_{IC}		17 18 19 20 21 22 23 24 25 26	-18 mA		-18 mA	-18 mA			-18 mA	-18 mA			OE D0 D1 D2 D3 D4 D5 D6 D7 CP		-1.2	V
	I_{IH1}	3010	27 28 29 30 31 32 33 34 35 36	2.7 V		2.7 V	2.7 V			2.7 V	2.7 V		5.5 V	OE D0 D1 D2 D3 D4 D5 D6 D7 CP		20	µA
	I_{IH2}	3010	37 38 39 40 41 42 43 44 45 46	7.0 V		7.0 V	7.0 V			7.0 V	7.0 V			OE D0 D1 D2 D3 D4 D5 D6 D7 CP		100	µA
	I_{IL1}	3009	47 48 49 50 51 52 53 54 55 56	.5 V		.5 V	.5 V			.5 V	.5 V			OE D0 D1 D2 D3 D4 D5 D6 D7 CP	2/	2/	mA

See footnotes at end of device type 06.

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TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.6 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases 2,R,S, and X)	$\overline{OE}$ (1)	$\overline{Q}_0$ (2)	D_0 (3)	D_1 (4)	$\overline{Q}_1$ (5)	$\overline{Q}_2$ (6)	D_2 (7)	D_3 (8)	$\overline{Q}_3$ (9)	GND (10)
1 $T_C = +25°C$	I_{OS}	3011	57	0 V	0 V	0 V	0 V	0 V	0 V	0 V	0 V	0 V	GND
			58–64	=	=	=	=	=	=	=	=	=	=
	I_{OC}		65	0 V	2.5 V	5.5 V	5.5 V	2.5 V	2.5 V	5.5 V	5.5 V	2.5 V	=
			66–72	=									=
	I_{OZH}	3011	73	2.0 V	2.7 V	4.5 V	4.5 V	2.7 V	2.7 V	4.5 V	4.5 V	2.7 V	=
			74–80	=									=
	I_{OZL}	3011	81	=	.5 V	0 V	0 V	.5 V	.5 V	0 V	0 V	.5 V	=
			82–88										=
	I_{CCZ}	3011	89	4.5 V		4.5 V	4.5 V			4.5 V	4.5 V		=
2	Same tests, terminal conditions, and limits as subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.
3	Same tests, terminal conditions, and limits as subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.
7 $T_C = +25°C$	Functional 3/	3014	90	B	X	B	B	X	X	B	B	X	GND
			91	=	H	B	B	H	H	B	B	H	=
			92	=	=	A	A	=	=	A	A	=	=
			93	A	=	=	=	=	=	=	=	=	=
			94	=	L	=	=	L	L	=	=	L	=
			95	=	=	B	B	=	=	B	B	=	=
			96	=	=	=	=	=	=	=	=	=	=
			97	=	H	A	A	H	H	A	A	H	=
			98	=	=	B	B	=	=	B	B	=	=
			99	=	=	A	A	=	=	A	A	=	=
			100	=	=	B	B	=	=	B	B	=	=
			101	=	L	A	A	L	L	A	A	L	=
			102	=	L	B	B	L	L	B	B	L	=
8	Same tests, terminal conditions, and limits as subgroup 7, except T_C = +125°C and -55°C.

See footnotes at end of device type 06.

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 Z,K,S, and X Test no.	CP (11)	$\overline{Q}_4$ (12)	D4 (13)	D5 (14)	$\overline{Q}_5$ (15)	$\overline{Q}_6$ (16)	D6 (17)	D7 (18)	$\overline{Q}_7$ (19)	VCC (20)	Measured terminal	Min	Max	Unit
1 Tc = +25°C	IOS	3011	57 58 59 60 61 62 63 64	1/									5.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	-60	-150	mA
	I00		65 66 67 68 69 70 71 72		0 V	0 V	0 V	0 V	0 V	0 V	0 V	0 V	4.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7	35		
	IOZH	3011	73 74 75 76 77 78 79 80		2.5 V	5.5 V	5.5 V	2.5 V	2.5 V	5.5 V	5.5 V	2.5 V	5.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7		+50	µA
	IOZL	3011	81 82 83 84 85 86 87 88		2.7 V	4.5 V	4.5 V	2.7 V	2.7 V	4.5 V	4.5 V	2.7 V	5.5 V	Q0 Q1 Q2 Q3 Q4 Q5 Q6 Q7		-50	
	ICCZ	3011	89	4.5 V	.5 V	0 V	0 V	.5 V	.5 V	0 V	0 V	.5 V	-	VCC		86	mA
2			Same tests, terminal conditions, and limits as subgroup 1, except Tc = +125°C and VIC tests are omitted.
3			Same tests, terminal conditions, and limits as subgroup 1, except Tc = +125°C and VIC tests are omitted.
7 Tc = +25°C	Functional 3/	3014	90 91 92 93 94 95 96 97 98 99 100 101 102	B A A B A A B A A B A A A	X H L H L L H L	B B A B A A B	X H L H L L H L	X H L H L L H L	X H L H L L H L	B B A B A A B	B B A B A A B	X H L H L L H L	4/	All outputs			
8			Same tests, terminal conditions, and limits as subgroup 7, except Tc = +125°C and -55°C.

See footnotes at end of device type 06.

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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 2,R,S, 1 and X Test no.	1 $\overline{OE}$	2 $\overline{Q}_0$	3 D_0	4 D_1	5 $\overline{Q}_1$	6 $\overline{Q}_2$	7 D_2	8 D_3	9 $\overline{Q}_3$	10 GND
9 $T_C = +25°C$	f_{max} 5/	3003 Fig. 5	103 104 105 106 107 108 109 110	0 V " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	GND " " " " " " "
	t_{PLH2}		111 112 113 114 115 116 117 118	" " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	" " " " " " " "
	t_{PHL2}		119 120 121 122 123 124 125 126	" " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	" " " " " " " "
	t_{PLZ2}		127 128 129 130 131 132 133 134	IN " " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	" " " " " " " "
	t_{PHZ2}		135 136 137 138 139 140 141 142	" " " " " " " "	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	" " " " " " " "
	t_{PZL2}		143 144 145 146 147 148 149 150	" " " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	" " " " " " " "
	t_{PZH2}		151 152 153 154 155 156 157 158	" " " " " " " "	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	" " " " " " " "

See footnotes at end of device type 06.

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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	Test no.	CP (11)	Q̄4 (12)	D4 (13)	D5 (14)	Q̄5 (15)	Q̄6 (16)	D6 (17)	D7 (18)	Q̄7 (19)	VCC (20)	Measured terminal	Min	Max	Unit
9 TC = +25°C	fMAX 5/	3003 Fig. 5	103 104 105 106 107 108 109 110	IN " " " " " " "									5.0 V " " " " " " "	Q̄0 Q̄1 Q̄2 Q̄3 Q̄4 Q̄5 Q̄6 Q̄7	60	8.5	MHz
	tpLH2		111 112 113 114 115 116 117 118	" " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	"	CP to Q̄0 CP to Q̄1 CP to Q̄2 CP to Q̄3 CP to Q̄4 CP to Q̄5 CP to Q̄6 CP to Q̄7	4.0		ns
	tpHL2		119 120 121 122 123 124 125 126	" " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	"	CP to Q̄0 CP to Q̄1 CP to Q̄2 CP to Q̄3 CP to Q̄4 CP to Q̄5 CP to Q̄6 CP to Q̄7			ns
	tpLZ2		127 128 129 130 131 132 133 134	1/ " " " " " " "	OUT	IN	IN	OUT	OUT	IN	IN	OUT	"	CP to Q̄0 CP to Q̄1 CP to Q̄2 CP to Q̄3 CP to Q̄4 CP to Q̄5 CP to Q̄6 CP to Q̄7	1.5	5.5	ns
	tpHZ2		135 136 137 138 139 140 141 142	" " " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	"	OE to Q̄0 OE to Q̄1 OE to Q̄2 OE to Q̄3 OE to Q̄4 OE to Q̄5 OE to Q̄6 OE to Q̄7		7.0	ns
	tpZL2		143 144 145 146 147 148 149 150	" " " " " " " "	OUT	2.7 V	2.7 V	OUT	OUT	2.7 V	2.7 V	OUT	"	OE to Q̄0 OE to Q̄1 OE to Q̄2 OE to Q̄3 OE to Q̄4 OE to Q̄5 OE to Q̄6 OE to Q̄7	2.0	7.5	ns
	tpZH2		151 152 153 154 155 156 157 158	" " " " " " " "	OUT	0 V	0 V	OUT	OUT	0 V	0 V	OUT	"	OE to Q̄0 OE to Q̄1 OE to Q̄2 OE to Q̄3 OE to Q̄4 OE to Q̄5 OE to Q̄6 OE to Q̄7		11.5	ns

See footnotes at end of device type 06.

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TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be high $\geq$ 2.0 V, low $\leq$ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X	1	2	3	4	5	6	7	8	9	10
			Test no.	$\overline{OE}$	$\overline{Q}_0$	D_0	D_1	$\overline{Q}_1$	$\overline{Q}_2$	D_2	D_3	$\overline{Q}_3$	GND
10	Same tests, terminal conditions, and limits as subgroup 9, except Tc = +125°C and use limits from table I.												
11	Same tests, terminal conditions, and limits as subgroup 9, except Tc = -55°C and use limits from table I.												

See footnotes at end of device type 06.

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

Terminal conditions (pins not designated may be high $\geq$ 2.0 V, low $\leq$ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X Test no.	11 CP	12 $\overline{Q}_4$	13 D_4	14 D_5	15 $\overline{Q}_5$	16 $\overline{Q}_6$	17 D_6	18 D_7	19 $\overline{Q}_7$	20 V_{CC}	Measured terminal	Limits Min	Max	Unit
10	Same tests, terminal conditions, and limits as subgroup 9, except T_C = +125°C and use limits from table I.																
11	Same tests, terminal conditions, and limits as subgroup 9, except T_C = -55°C and use limits from table I.																

1/ Apply all voltages, then apply 3 V, 0 V, 3 V to CP, then make measurement.

2/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits A	B	C
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60

3/ Output voltage shall be either:

A = 2.5 V
B = 0.5 V
H $\geq$ 1.5 V
L $\leq$ 1.5 V
X = Don't care

4/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

5/ f_{max} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	$\overline{MR}$	Q_0	D_0	D_1	Q_1	D_2	Q_2	GND	CP	Q_3	D_3	Q_4	D_4	D_5	Q_5	V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
$T_C = +25°C$	V_{OH}	3006	1–14	0.0 V / 5.5 V / 2.0 V	−1 mA	2.0 V / 5.5 V	2.0 V / 5.5 V	−1 mA	2.0 V / 5.5 V	−1 mA	GND	0.0 V / 0.0 V	−1 mA	2.0 V / 5.5 V	−1 mA	2.0 V / 5.5 V	2.0 V / 5.5 V	−1 mA	4.5 V	Setup / $Q_0 Q_1 Q_2 Q_3 Q_4 Q_5$	2.5	0.5	V
	V_{OL}	3007	15–28	5.5 V / 0.8 V	20 mA	5.5 V	5.5 V	20 mA	5.5 V	20 mA		0.0 V	20 mA	5.5 V	20 mA	0.8 V / 5.5 V	0.8 V / 5.5 V	20 mA		Setup / $Q_0 Q_1 Q_2 Q_3 Q_4 Q_5$	2.5	0.5	V
	V_{IC}	3009	29–36	−18 mA		−18 mA	−18 mA		−18 mA			−18 mA	−18 mA		−18 mA	−18 mA			$\overline{MR}$ $Q_0 CP D_2 D_3 D_4 D_5$		−1.2	V
	I_{I1L1}	3009	37–42			0.5 V	0.5 V		0.5 V			0.5 V	0.5 V		0.5 V	0.5 V			5.5 V	$Q_0 D_1 D_2 D_3 D_4 D_5$	3/	3/	mA
	I_{I1L4}	3009	43–44	0.5 V								0.5 V								$\overline{MR}$ CP			
	I_{IH1}	3010	45–52	2.7 V		2.7 V	2.7 V		2.7 V			2.7 V	2.7 V		2.7 V	2.7 V				$Q_0 D_1 D_2 D_3 D_4 D_5$		20	µA
	I_{I1H2}	3010	53–60	7.0 V	7.0 V	7.0 V	7.0 V		7.0 V			7.0 V	7.0 V		7.0 V	7.0 V				$D_0 D_1 D_2 CP D_3 D_4 D_5 \overline{MR}$		100	µA

Cases E and F; Cases 12 and X 1/

See footnotes at end of device type 07.

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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F / Cases 2 and XI 1/ Test no.	1 2 WR	2 3 Q0	3 4 D0	4 5 D1	5 6 Q1	6 7 D2	7 8 Q2	8 10 GND	9 12 CP	10 13 Q3	11 14 D3	12 15 Q4	13 17 D4	14 18 D5	15 19 Q5	16 20 VCC	Measured terminal	Min	Max	Unit
1 T_C = +25°C	I_{OS}	3011	61 62 63 64 65 66	4.5 V	GND	4.5 V	4.5 V	GND	4.5 V	GND	GND	4/	GND	4.5 V	GND	4.5 V	4.5 V	GND	5.5 V	Q0 Q1 Q2 Q3 Q4 Q5	-60	-150	mA
	I_{DD}		67 68 69 70 71 72	0.0 V	2.5 V			2.5 V		2.5 V			2.5 V		2.5 V			2.5 V	4.5 V	Q0 Q1 Q2 Q3 Q4 Q5	60		
	I_{CC}	3005	73	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	5.5 V		5.5 V	VCC		45	
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.																						
3	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																						
7 5/ T_C = +25°C	Truth table tests	3014	74 75 76 77 78 79 80 81 82 83 84 85 86	B A B	L L H H L L L H L L L H L	A A A A B A A A	A A A B A A A	L L H H L L L H L L L H L	A A A B A A A	L L H H L L L H L L L H L	GND	A B A A A B A A A B A A B	L L H H L L L H L L L H L	A A A B A A A	L L H H L L L H L L L H L	A A A B A A A	A A A B A A A	L L H H L L L H L L L H L	6/	All outputs			
8	Repeat subgroup 7 at T_C = +125°C and T_C = -55°C.																						
9 T_C = +25°C	f_{MAX} 1/		87 88 89 90 91 92	2.7 V	OUT	IN	IN	OUT	IN	OUT	GND	IN	OUT	IN	OUT	IN	IN	OUT	5.0 V	Q1 Q2 Q3 Q4 Q5 Q6	90		MHz
	t_{PLH1}	3003	93 94 95 96 97 98		OUT	IN	IN	OUT	IN	OUT		IN	OUT	IN	OUT	IN	IN	OUT		CP to Q5 CP to Q5 CP to Q2 CP to Q3 CP to Q4 CP to Q5	1.5	9.0	ns
	t_{PHL1}		99 100 101 102 103 104		OUT	IN	IN	OUT	IN	OUT		IN	OUT	IN	OUT	IN	IN	OUT		CP to Q5 CP to Q5 CP to Q3 CP to Q2 CP to Q1 CP to Q5		11.0	
	t_{PHL5}		105 106 107 108 109 110	IN	OUT	IN	IN	OUT	IN	OUT		2.7 V	OUT	2.7 V	OUT	2.7 V	2.7 V	OUT		MR to Q5 MR to Q5 MR to Q3 MR to Q2 MR to Q1 MR to Q5		115.0	

See footnotes at end of device type 07.

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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F / Cases 12 and X 1/ — Test no.	1 / 2 — RR	2 / 3 — Q0	3 / 4 — D0	4 / 5 — D1	5 / 7 — Q1	6 / 8 — D2	7 / 9 — Q2	8 / 10 — GND	9 / 12 — CP	10 / 13 — Q3	11 / 14 — D3	12 / 15 — Q4	13 / 17 — D4	14 / 18 — D5	15 / 19 — Q5	16 / 20 — Vcc	Measured terminal	Min	Max	Unit
9 T_C = +25°C	t_{PHL6}	3003	111	IN	OUT	2.7 V	2.7 V	OUT	2.7 V	OUT	GND	0.0 V	OUT	2.7 V	OUT	2.7 V	2.7 V	OUT	5.0 V	RR to Q5	1.0	15.0	ns
			112	"							"	"							"	RR to Q4	"	"	"
			113	"							"	"							"	RR to Q3	"	"	"
			114	"							"	"							"	RR to Q2	"	"	"
			115	"							"	"							"	RR to Q1	"	"	"
			116	"							"	"							"	RR to Q0	"	"	"
10	f_{MAX} 7/									Same tests and terminal conditions as for subgroup 9, except T_C = +125°C, and limits as shown.											70		MHz
	t_{PLH1}																				1.0	11.0	ns
	t_{PHL1}																				"	13.0	"
	t_{PLH5}																				"	17.0	"
	t_{PHL6}																				"	17.0	"
11			Same tests, terminal conditions, and limits as for subgroup 10, except T_C = -55°C.																				

1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 0 V, 3 V, 0 V to CP, then make measurement.

3/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits A	B	C
I_{IL1}	-.25/-.60	-.03/-.60	-.03/-.60
I_{IL4}	-.25/-.60	-.06/-1.2	-.06/-1.2

4/ Apply all voltages, then apply 3 V, 0 V, 3 V to CP, then make measurement.

5/ A = 2.5 V
   B = 0.5 V
   H ≥ 1.5 V
   L ≤ 1.5 V

6/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

7/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases E and F / Cases 2 and X 1/)	E	Q_0	D_0	D_1	Q_1	D_2	Q_2	GND	CP	Q_3	D_3	Q_4	D_4	D_5	Q_5	V_{CC}	Measured terminal	Min	Max	Unit
$T_C = +25°C$	V_{OL}	3007	1–6	.8 V	20 mA	.8 V	.8 V	20 mA	.8 V	20 mA	GND	2/	20 mA	.8 V	20 mA	.8 V	.8 V	20 mA	4.5 V	Q_0,Q_1,Q_2,Q_3,Q_4,Q_5		.5	V
	V_{OH}	3006	7–12	.8 V	-1 mA	2.0 V	2.0 V	-1 mA	2.0 V	-1 mA			-1 mA	2.0 V	-1 mA	2.0 V	2.0 V	-1 mA		Q_0,Q_1,Q_2,Q_3,Q_4,Q_5	2.5 V		V
	V_{IC}	3010	13–20	-18 mA		-18 mA	-18 mA		-18 mA			-18 mA		-18 mA		-18 mA	-18 mA			$E,D_0,D_1,D_2,D_3,D_4,D_5$		-1.2	V
	I_{IH1}	3010	21–28	2.7 V		2.7 V	2.7 V		2.7 V			2.7 V		2.7 V		2.7 V	2.7 V		5.5 V	$E,D_0,D_1,D_2,D_3,D_4,D_5$		20	µA
	I_{IH2}	3010	29–36	7.0 V		7.0 V	7.0 V		7.0 V			7.0 V		7.0 V		7.0 V	7.0 V			$E,D_0,D_1,D_2,D_3,D_4,D_5$		100	µA
	I_{IL1}	3009	37–44	.5 V		.5 V	.5 V		.5 V			.5 V		.5 V		.5 V	.5 V			$E,D_0,D_1,D_2,D_3,D_4,D_5$	3/	3/	mA
	I_{OS}	3011	45–50	GND	GND	4.5 V	4.5 V	GND	4.5 V	GND		2/	GND	4.5 V	GND	4.5 V	4.5 V	GND		Q_0,Q_1,Q_2,Q_3,Q_4,Q_5	-60	-150	mA

See footnotes at end of device type 08.

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)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Cases 2 and X 1/ Test no.	1 2 E	2 3 Q0	3 4 D0	4 5 D1	5 7 Q1	6 8 D2	7 9 Q2	8 10 GND	9 12 CP	10 13 Q3	11 14 D3	12 15 Q4	13 17 D4	14 18 D5	15 19 Q5	16 20 VCC	Measured terminal	Limits Min	Limits Max	Unit
T_C = +25°C	I_{OD}		51 52 53 54 55 56	GND " " " "	2.5 V	GND " " " "	GND " " " "	2.5 V	GND " " " "	2.5 V	GND " " " "	2/ " " " "	2.5 V	GND " " " "	2.5 V	GND " " " "	GND " " " "	2.5 V	4.5 V " " " "	Q0 Q1 Q2 Q3 Q4 Q5	60 " " " " "		mA " " " " "
	I_{CC}	3005	57	"		"	"		"		"	"		"		"	"		5.5 V	VCC		45	"
2			Same tests, terminal conditions and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.																				
3			Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																				
7 T_C = +25°C	Truth table tests 4/	3014	58 ... 88	(truth table test patterns)							GND								5/	All outputs			
8			Same test and terminal conditions as for subgroup 7, except T_C = +125°C and -55°C.																				
9 T_C = +25°C	f_{MAX} 6/	3003	89 90 91 92 93 94	GND " " " "	OUT	IN	OUT	IN	OUT	IN	GND " " " "	IN	OUT	IN	OUT	IN	IN	OUT	5.0 V	Q0 Q1 Q2 Q3 Q5	80 " " " "		MHz " " " "

See footnotes at end of device type 08.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	E (1/2)	Q0 (2/3)	D0 (3/4)	D1 (4/5)	Q1 (5/7)	D2 (6/8)	Q2 (7/9)	GND (8/10)	CP (9/12)	Q3 (10/13)	D3 (11/14)	Q4 (12/15)	D4 (13/17)	D5 (14/18)	Q5 (15/19)	VCC (16/20)	Measured terminal	Min	Max	Unit
9 Tc = +25°C	tPHL1	3003	95	GND	OUT	IN	IN	OUT	IN	OUT	GND	IN	OUT	IN	OUT	IN	IN	OUT	5.0 V	Q0	3.0	8.5	ns
			96	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Q1	"	"	"
			97	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Q2	"	"	"
			98	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Q3	"	"	"
			99	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Q4	"	"	"
			100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	Q5	"	"	"
	tPLH1	3003	101		OUT	IN	IN	OUT	IN	OUT			OUT	IN	OUT	IN	IN	OUT	5.0 V	Q0	2.5	7.5	"
			102		"	"	"	"	"	"			"	"	"	"	"	"	"	Q1	"	"	"
			103		"	"	"	"	"	"			"	"	"	"	"	"	"	Q2	"	"	"
			104		"	"	"	"	"	"			"	"	"	"	"	"	"	Q3	"	"	"
			105		"	"	"	"	"	"			"	"	"	"	"	"	"	Q4	"	"	"
			106		"	"	"	"	"	"			"	"	"	"	"	"	"	Q5	"	"	"
10	fMAX 6/			Same tests and terminal conditions as for subgroup 9, except Tc = +125°C.																	60		MHz
	tPHL1																			2.5	10.5	ns
	tPLH1																			2.0	9.5	ns
11				Same tests and terminal conditions as for subgroup 10, except Tc = -55°C.																			

1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 0 V, 3 V, 0 V to clock pulse, then make measurement.

3/ I_IL limits (mA) min/max values for circuits shown:

Parameter	Circuits A	B	C
I_IL1	-.25/-.60	-.03/-.60	

4/ Inputs A = 2.5 V
           B = 0.5 V
   Outputs H = ≥ 1.5 V
           L = ≤ 1.5 V

5/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

6/ fMAX minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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)

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases E and F / Cases 12 and X1) [1]	E	Q_0	$\overline{Q}_0$	D_0	D_1	$\overline{Q}_1$	Q_1	GND	CP	Q_2	$\overline{Q}_2$	D_2	D_3	$\overline{Q}_3$	Q_3	V_{CC}	Measured terminal	Min	Max	Unit
Pins (Cases E and F)				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Pins (Cases 12 and X1)				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
1, $T_C = +25°C$	V_{OL}	3007	1–8	.8 V	20 mA	20 mA	.8 V / 2.0 V	.8 V / 2.0 V	20 mA	20 mA	GND	2/	20 mA	20 mA	.8 V / 2.0 V	.8 V / 2.0 V	20 mA	20 mA	4.5 V	$Q_0, \overline{Q}_0, Q_1, \overline{Q}_1, Q_2, \overline{Q}_2, Q_3, \overline{Q}_3$		.5	V
	V_{OH}	3006	9–16	.8 V	-1 mA	-1 mA	2.0 V / .8 V	2.0 V / .8 V	-1 mA	-1 mA		3/	-1 mA	-1 mA	2.0 V / .8 V	2.0 V / .8 V	-1 mA	-1 mA		$Q_0, \overline{Q}_0, Q_1, \overline{Q}_1, Q_2, \overline{Q}_2, Q_3, \overline{Q}_3$	2.5		V
	V_{IC}		17–22	-18 mA			-18 mA	-18 mA				-18 mA			-18 mA	-18 mA				$E, D_0, D_1, CP, D_2, D_3$		-1.2	V
	I_{IH1}	3010	23–28	2.7 V			2.7 V	2.7 V				2.7 V			2.7 V	2.7 V				$E, D_0, D_1, CP, D_2, D_3$		20	µA
	I_{IH2}	3010	29–34	7.0 V			7.0 V	7.0 V				7.0 V			7.0 V	7.0 V				$E, D_0, D_1, CP, D_2, D_3$		100	
	I_{IL1}	3009	35–40	.5 V			.5 V	.5 V				.5 V			.5 V	.5 V				$E, D_0, D_1, CP, D_2, D_3$	4/	4/	mA
	I_{OS}	3011	41–48	GND	GND	GND	4.5 V / GND	4.5 V / GND	GND	GND		5/	GND	GND	4.5 V / GND	4.5 V / GND	GND	GND		$Q_0, \overline{Q}_0, Q_1, \overline{Q}_1, Q_2, \overline{Q}_2, Q_3, \overline{Q}_3$	-60	-150	

See footnotes at end of device type 09.

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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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	E	Q_0	$\bar{Q}_0$	D_0	D_1	$\bar{Q}_1$	Q_1	GND	CP	Q_2	$\bar{Q}_2$	D_2	D_3	$\bar{Q}_3$	Q_3	V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
1 $T_C = +25°C$	I_{DD}		49	GND	2.5 V		GND	GND		2.5 V	GND	2/			GND	GND			4.5 V	Q_0	80.	40	mA
			50																	Q_1			
			51		2.5 V		4.5 V	4.5 V					2.5 V		4.5 V	4.5 V		2.5 V		$\bar{Q}_2$			
			52																	$\bar{Q}_1$			
			53						2.5 V											$\bar{Q}_0$			
			54																	$\bar{Q}_3$			
			55																	Q_2			
			56																	Q_3			
	I_{CC}	3005	57				GND	GND				5/			GND	GND			5.5 V	V_{CC}		40	

| **2** | Same tests, terminal conditions and limits as for subgroup 1, except $T_C = +125°C$ and V_{IC} tests are omitted. |
| **3** | Same tests, terminal conditions and limits as for subgroup 1, except $T_C = -55°C$ and V_{IC} tests are omitted. |

| **7** $T_C = +25°C$ | Truth table tests 6/ | 3014 | 58–96 | | | | | | | | GND | | | | | | | | 7/ | All outputs | | | |

| **8** | Same test and terminal conditions as for subgroup 7, except $T_C = +125°C$ and $-55°C$. |

See footnotes at end of device type 09.

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)

Subgroup	Symbol	MIL-STD-883 method	Test no.	E (1/2)	Q0 (2/3)	T0 (3/4)	D0 (4/5)	D1 (5/7)	T1 (6/8)	Q1 (7/9)	GND (8/10)	CP (9/12)	Q2 (10/13)	T2 (11/14)	D2 (12/15)	D3 (13/17)	T3 (14/18)	Q3 (15/19)	VCC (16/20)	Measured terminal	Min	Max	Unit
9 $T_C = +25°C$	f_{MAX} [8/]	3003	97	GND	OUT		IN	IN	OUT	OUT	GND	IN	OUT	OUT	IN	IN	OUT	OUT	5.0 V	Q0 Q1 Q2 Q3 T0 T1 T2 T3	90		MHz
			98–104	=		OUT	IN	IN	OUT	OUT	=	=	OUT	OUT	IN	IN	OUT	OUT	=				
	t_{PHL1}	3003	105	=	OUT		IN	IN	OUT	OUT	GND	IN	OUT	OUT	IN	IN	OUT	OUT		Q0 Q1 Q2 Q3 T0 T1 T2 T3	3.0	9.0	ns
			106–112	=		OUT	IN	IN	OUT	OUT	=	=	OUT	OUT	IN	IN	OUT	OUT					
	t_{PLH1}	3003	113	=	OUT		IN	IN	OUT	OUT		IN	OUT	OUT	IN	IN	OUT	OUT		Q0 Q1 Q2 Q3 T0 T1 T2 T3	2.5	6.5	ns
			114–120	=		OUT	IN	IN	OUT	OUT		=	OUT	OUT	IN	IN	OUT	OUT					
10	f_{MAX}			Same tests and terminal conditions as subgroup 9, except $T_C = +125°C$.																		70		MHz
	t_{PHL1}																				2.5	10.5	ns
	t_{PLH1}																				2.0	8.5	ns
11				Same tests, terminal conditions, and limits, as subgroup 10, except $T_C = -55°C$.																				

1/ Cases 2 and X pins not referenced are N/C.

2/ Apply all voltages, then apply 0 V, 3 V, 0 V to clock pulse, then make measurement.

3/ Apply all voltages, then apply 3 V, 0 V, 3 V to clock pulse, then make measurement.

4/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Circuits		
	A	B	C
I_{IL1}	-.25/-.60	-.03/-.60	

5/ Apply all voltages, then apply 0 V, 3 V to clock pulse, then make measurement.

6/ Inputs A = 2.5 V
           B = 0.5 V
   Outputs H = ≥ 1.5 V
           L = ≤ 1.5 V

7/ Perform function sequence at $V_{CC} = 4.5$ V and repeat at $V_{CC} = 5.5$ V.

8/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X Test no.	1 $\overline{OE}$	2 D_0	3 D_1	4 D_2	5 D_3	6 D_4	7 D_5	8 D_6	9 D_7	10 GND	11 CP	12 Q_7
1 $T_C = +25°C$	V_{OH}	3006	1 2 3 4 5 6 7 8	0.8 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	GND	1/	-1.0 mA
	V_{OL}	3007	9 10 11 12 13 14 15 16		0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V			20 mA
	V_{IC}	3010	17 18 19 20 21 22 23 24 25 26	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA		-18 mA	
	I_{IH1}	3010	27 28 29 30 31 32 33 34 35 36	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V		2.7 V	
	I_{IH2}	3010	37 38 39 40 41 42 43 44 45 46	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V		7.0 V	
	I_{IL}	3009	47 48 49 50 51 52 53 54 55 56	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V		0.5 V	

See footnotes at end of device type 10.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X / Test no.	13 Q_6	14 Q_5	15 Q_4	16 Q_3	17 Q_2	18 Q_1	19 Q_0	20 V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
T_C = +25°C	V_{OH}	3006	1	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	4.5 V	Q_0	2.5		V
			2									Q_1			
			3									Q_2			
			4									Q_3			
			5									Q_4			
			6									Q_5			
			7									Q_6			
			8									Q_7			
	V_{OL}	3007	9	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA		Q_0		0.5	
			10									Q_1			
			11									Q_2			
			12									Q_3			
			13									Q_4			
			14									Q_5			
			15									Q_6			
			16									Q_7			
	V_{IC}		17									OE		-1.2	
			18									D_0			
			19									D_1			
			20									D_2			
			21									D_3			
			22									D_4			
			23									D_5			
			24									D_6			
			25									D_7			
			26									CP			
	I_{IH1}	3010	27								5.5 V	OE		20	µA
			28									D_0			
			29									D_1			
			30									D_2			
			31									D_3			
			32									D_4			
			33									D_5			
			34									D_6			
			35									D_7			
			36									CP			
	I_{IH2}	3010	37									OE		100	
			38									D_0			
			39									D_1			
			40									D_2			
			41									D_3			
			42									D_4			
			43									D_5			
			44									D_6			
			45									D_7			
			46									CP			
	I_{IL}	3009	47									OE	2/	2/	mA
			48									D_0			
			49									D_1			
			50									D_2			
			51									D_3			
			52									D_4			
			53									D_5			
			54									D_6			
			55									D_7			
			56									CP			

See footnotes at end of device 10.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X Test no.	1 OE	2 D0	3 D1	4 D2	5 D3	6 D4	7 D5	8 D6	9 D7	10 GND	11 CP	12 Q7
1 Tc = +25°C	I_{OS}	3011	57 58 59 60 61 62 63 64	0.0 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 " " " " " " "	1/ " " " " " " "	0.0 V
	I_{OZH}	3011	65 66 67 68 69 70 71 72	2.0 V " " " " " " "	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	" " " " " " " "	" " " " " " " "	2.7 V
	I_{OZL}	3011	73 74 75 76 77 78 79 80	" " " " " " " "	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	" " " " " " " "	" " " " " " " "	0.5 V
	I_{CCZ}	3011	81	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	"	"	
	I_{CCL}	3011	82	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	"	"	
2	Same tests, terminal conditions, and limits as for subgroup 1, except Tc = +125°C and V_{IC} tests are omitted.														
3	Same tests, terminal conditions, and limits as for subgroup 1, except Tc = -55°C and V_{IC} tests are omitted.														
7 Tc = +25°C	Func-tional 3/	3014	83 84 85 86 87 88 89 90 91 92	B " " " " " " " " "	A B B A B A A B A A	B A A B A B B A B B	A B B A B A A B A A	B A A B A B B A B A	A B B A B A A B A B	B A B A B A B B A B	A B B A B A A B A B	B A A B A B B A B A	GND " " " " " " " " "	1/K B B B 1/K B B B	L L L L H H H H
8	Same tests, terminal conditions, and limits as for subgroup 7, except Tc = +125°C and -55°C.														

See footnotes at end of device type 10.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X Test no.	13 Q_6	14 Q_5	15 Q_4	16 Q_3	17 Q_2	18 Q_1	19 Q_0	20 V_{CC}	Measured terminal	Limits Min	Max	Unit
1 T_C = +25°C	I_{OS}	3011	57							0.0 V	5.5 V	Q_0	-60	-150	mA
			58						0.0 V	"	"	Q_1	"	"	"
			59					0.0 V	"	"	"	Q_2	"	"	"
			60				0.0 V	"	"	"	"	Q_3	"	"	"
			61			0.0 V	"	"	"	"	"	Q_4	"	"	"
			62		0.0 V	"	"	"	"	"	"	Q_5	"	"	"
			63	0.0 V	"	"	"	"	"	"	"	Q_6	"	"	"
			64	"	"	"	"	"	"	"	"	Q_7	"	"	"
	I_{OZH}	3011	65							2.7 V	"	Q_0		50	µA
			66						2.7 V	"	"	Q_1		"	"
			67					2.7 V	"	"	"	Q_2		"	"
			68				2.7 V	"	"	"	"	Q_3		"	"
			69			2.7 V	"	"	"	"	"	Q_4		"	"
			70		2.7 V	"	"	"	"	"	"	Q_5		"	"
			71	2.7 V	"	"	"	"	"	"	"	Q_6		"	"
			72	"	"	"	"	"	"	"	"	Q_7		"	"
	I_{OZL}	3011	73							0.5 V	"	Q_0		-50	"
			74						0.5 V	"	"	Q_1		"	"
			75					0.5 V	"	"	"	Q_2		"	"
			76				0.5 V	"	"	"	"	Q_3		"	"
			77			0.5 V	"	"	"	"	"	Q_4		"	"
			78		0.5 V	"	"	"	"	"	"	Q_5		"	"
			79	0.5 V	"	"	"	"	"	"	"	Q_6		"	"
			80	"	"	"	"	"	"	"	"	Q_7		"	"
	I_{CCZ}	3011	81								"	V_{CC}		90	mA
	I_{CCL}	3011	82								"	V_{CC}		86	mA
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.														
3	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.														
7 T_C = +25°C	Functional 3/	3014	83	H	H	L	H	H	H	H	4/	All outputs			
			84	H	H	L	H	H	L	H	"	"			
			85	H	H	L	H	H	L	H	"	"			
			86	H	H	L	H	H	L	H	"	"			
			87	L	L	H	L	L	H	L	"	"			
			88	L	L	H	L	L	H	L	"	"			
			89	L	L	H	L	L	H	L	"	"			
			90	L	L	H	L	L	H	L	"	"			
			91	L	L	H	L	L	H	L	"	"			
			92	L	L	H	L	L	H	L	"	"			
8	Same tests, terminal conditions, and limits as for subgroup 7, except T_C = +125°C and -55°C.														

See footnotes at end of device type 10.

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

Subgroup	Symbol	MIL-STD-1883 method	Test no. Cases 2,R,S, and X	1 OE	2 D0	3 D1	4 D2	5 D3	6 D4	7 D5	8 D6	9 D7	10 GND	11 CP	12 Q7
9 $T_C = +25°C$	f_{MAX} 5/	3003 Fig. 5	93 94 95 96 97 98 99 100	0.0 V " " " " " " "	IN	IN	IN	IN	IN	IN	IN	IN	GND " " " " " " "	IN " " " " " " "	OUT
	t_{PLH1}	3003	101 102 103 104 105 106 107 108	" " " " " " " "	IN	IN	IN	IN	IN	IN	IN	IN	" " " " " " " "	" " " " " " " "	OUT
	t_{PHL1}	3003	109 110 111 112 113 114 115 116	" " " " " " " "	IN	IN	IN	IN	IN	IN	IN	IN	" " " " " " " "	" " " " " " " "	OUT
	t_{PHZ1}	3003	117 118 119 120 121 122 123 124	IN " " " " " " "	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	" " " " " " " "	" " " " " " " "	OUT
	t_{PLZ1}	3003	125 126 127 128 129 130 131 132	" " " " " " " "	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	" " " " " " " "	" " " " " " " "	OUT
	t_{PZH1}	3003	133 134 135 136 137 138 139 140	" " " " " " " "	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	" " " " " " " "	" " " " " " " "	OUT

See footnotes at end of device type 10.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X (Test no.)	13 Q6	14 Q5	15 Q4	16 Q3	17 Q2	18 Q1	19 Q0	20 VCC	Measured terminal	Limits Min	Limits Max	Unit
9 TC = +25°C	fMAX 2/	3003 Fig. 5	93 94 95 96 97 98 99 100	OUT	OUT	OUT	OUT	OUT	OUT	OUT	5.0 V	CP to Q0, CP to Q1, CP to Q2, CP to Q3, CP to Q4, CP to Q5, CP to Q6, CP to Q7	100		MHz
	tPLH1	3003 Fig. 5	101 102 103 104 105 106 107 108	OUT	OUT	OUT	OUT	OUT	OUT	OUT		CP to Q0, CP to Q1, CP to Q2, CP to Q3, CP to Q4, CP to Q5, CP to Q6, CP to Q7	2.5	8.5	ns
	tPHL1	3003 Fig. 5	109 110 111 112 113 114 115 116	OUT	OUT	OUT	OUT	OUT	OUT	OUT		CP to Q0, CP to Q1, CP to Q2, CP to Q3, CP to Q4, CP to Q5, CP to Q6, CP to Q7			
	tPHZ1	3003 Fig. 5	117 118 119 120 121 122 123 124	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OE to Q0, OE to Q1, OE to Q2, OE to Q3, OE to Q4, OE to Q5, OE to Q6, OE to Q7	1.0	6.0	
	tPLZ1	3003 Fig. 5	125 126 127 128 129 130 131 132	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OE to Q0, OE to Q1, OE to Q2, OE to Q3, OE to Q4, OE to Q5, OE to Q6, OE to Q7		5.5	
	tPZH1	3003 Fig. 5	133 134 135 136 137 138 139 140	OUT	OUT	OUT	OUT	OUT	OUT	OUT		OE to Q0, OE to Q1, OE to Q2, OE to Q3, OE to Q4, OE to Q5, OE to Q6, OE to Q7	2.5	9.0	

See footnotes at end of device type 10.

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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X	1	2	3	4	5	6	7	8	9	10	11	12
				OE	D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	GND	CP	Q_7
			Test no.												
9 T_C = +25°C	t_{PZL1}	3003	141 142 143 144 145 146 147 148	IN " " " " " " "	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	GND " " " " " " "	IN " " " " " " "	OUT
10	Same tests as subgroup 9 except T_C = +125°C, use limits from table I.														
11	Same tests as subgroup 10 except T_C = -55°C, use limits from table I.														

See footnotes at end of device type 10.

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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)

Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X Test no.	13 Q_6	14 Q_5	15 Q_4	16 Q_3	17 Q_2	18 Q_1	19 Q_0	20 V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
9 $T_C = +25°C$	t_{PZL1}	3003	141						OUT	OUT	5.0 V	OE to Q_0	3.0	9.0	ns
			142					OUT			"	OE to Q_1	"	"	"
			143				OUT				"	OE to Q_2	"	"	"
			144			OUT					"	OE to Q_3	"	"	"
			145		OUT						"	OE to Q_4	"	"	"
			146	OUT							"	OE to Q_5	"	"	"
			147	OUT							"	OE to Q_6	"	"	"
			148								"	OE to Q_7	"	"	"
10	Same tests as subgroup 9 except T_C = +125°C, use limits from table I.														
11	Same tests as subgroup 10 except T_C = -55°C, use limits from table I.														

1/ Apply all voltages then apply 3 V, 0, 3 V to CP then make measurement.

2/ I_{IL} limits (mA) min/max values for circuits shown.

Parameter	Circuit A
I_{IL1}	-.25/-.60

3/ A = 3.0 V minimum; B = 0.0 V or GND, H ≥ 2.5 V, L ≤ 0.5 V.

4/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

5/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

TABLE III. Group A inspection for device type 11.
Terminal conditions (pins not designated may be high $\geq$ 2.0 V, low $\leq$ 0.8 V, or open)

				1	2	3	4	5	6	7	8	9	10	11	12
Subgroup	Symbol	MIL-STD-883 method	Cases 2,R,S, and X / Test no.	$\overline{OE}$	D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	GND	CP	U_7
1 T_C = +25°C	V_{OH}	3006	1 2 3 4 5 6 7 8	0.8 V ••••••	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	0.8 V	GND ••••••	1/ ↓ ••••••	-1.0 mA
	V_{OL}	3007	9 10 11 12 13 14 15 16	••••••••	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	••••••••	••••••••	20 mA
	V_{IC}		17 18 19 20 21 22 23 24 25 26	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	-18 mA	••••••••••••	-18 mA	
	I_{IH1}	3010	27 28 29 30 31 32 33 34 35 36	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	••••••••••••	2.7 V	
	I_{IH2}	3010	37 38 39 40 41 42 43 44 45 46	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	7.0 V	••••••••••••	7.0 V	
	I_{IL}	3009	47 48 49 50 51 52 53 54 55 56	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	0.5 V	••••••••••••	0.5 V	

See footnotes at end of device type 11

TABLE III. Group A inspection for device type 11 - 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 2,R,S, and X / Test no.	13 $\bar{I}_6$	14 $\bar{I}_5$	15 $\bar{I}_4$	16 $\bar{I}_3$	17 $\bar{I}_2$	18 $\bar{I}_1$	19 $\bar{I}_0$	20 V_{CC}	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	V_{OH}	3006	1	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	-1.0 mA	4.5 V	$\bar{O}_0$	2.5		V
			2								"	$\bar{O}_1$	"		"
			3								"	$\bar{O}_2$	"		"
			4								"	$\bar{O}_3$	"		"
			5								"	$\bar{O}_4$	"		"
			6								"	$\bar{O}_5$	"		"
			7								"	$\bar{O}_6$	"		"
			8								"	$\bar{O}_7$	"		"
	V_{OL}	3007	9	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA	20 mA	"	$\bar{O}_0$		0.5	V
			10								"	$\bar{O}_1$		"	"
			11								"	$\bar{O}_2$		"	"
			12								"	$\bar{O}_3$		"	"
			13								"	$\bar{O}_4$		"	"
			14								"	$\bar{O}_5$		"	"
			15								"	$\bar{O}_6$		"	"
			16								"	$\bar{O}_7$		"	"
	V_{IC}		17								"	$\overline{OE}$		-1.2	V
			18								"	D_0		"	"
			19								"	D_1		"	"
			20								"	D_2		"	"
			21								"	D_3		"	"
			22								"	D_4		"	"
			23								"	D_5		"	"
			24								"	D_6		"	"
			25								"	D_7		"	"
			26								"	CP		"	"
	I_{IH1}	3010	27								5.5 V	$\overline{OE}$		20	µA
			28								"	D_0		"	"
			29								"	D_1		"	"
			30								"	D_2		"	"
			31								"	D_3		"	"
			32								"	D_4		"	"
			33								"	D_5		"	"
			34								"	D_6		"	"
			35								"	D_7		"	"
			36								"	CP		"	"
	I_{IH2}	3010	37								"	$\overline{OE}$		100	"
			38								"	D_0		"	"
			39								"	D_1		"	"
			40								"	D_2		"	"
			41								"	D_3		"	"
			42								"	D_4		"	"
			43								"	D_5		"	"
			44								"	D_6		"	"
			45								"	D_7		"	"
			46								"	CP		"	"
	I_{IL}	3009	47								"	$\overline{OE}$	2/	2/	mA
			48								"	D_0	"	"	"
			49								"	D_1	"	"	"
			50								"	D_2	"	"	"
			51								"	D_3	"	"	"
			52								"	D_4	"	"	"
			53								"	D_5	"	"	"
			54								"	D_6	"	"	"
			55								"	D_7	"	"	"
			56								"	CP	"	"	"

See footnotes at end of device 11.

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TABLE III. Group A inspection for device type 11 - 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 2,R,S, and X — Test no.	1 OE	2 D_0	3 D_1	4 D_2	5 D_3	6 D_4	7 D_5	8 D_6	9 D_7	10 GND	11 CP	12 L_2 L_7
1 T_C = +25°C	I_{OS}	3011	57	0.0 V	0.0 V	0.0 V	0.0 V						"	1/ *	
			58	"									"	"	
			59	"								0.0 V	"	"	0.0 V
			60	"									"	"	
			61	"							0.0 V		"	"	
			62	"					0.0 V				"	"	
			63	"									"	"	
			64	"									"	"	
	I_{OZH}	3011	65	2.0 V	0.0 V	0.0 V	0.0 V						"	"	
			66	"									"	"	
			67	"								0.0 V	"	"	2.7 V
			68	"									"	"	
			69	"							0.0 V		"	"	
			70	"					0.0 V				"	"	
			71	"									"	"	
			72	"									"	"	
	I_{OZL}	3011	73	"	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	"	
			74	"									"	"	
			75	"									"	"	0.5 V
			76	"									"	"	
			77	"									"	"	
			78	"									"	"	
			79	"									"	"	
			80	"									"	"	
	I_{CCZ}	3011	81	5.5 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	"	"	
	I_{CCL}	3011	82	0.0 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	"	"	
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.														
3	Same tests, terminal conditions, and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.														
7 T_C = +25°C	Func-tional 3/	3014	83	B	B	A	A	A	B	A	B	A	GND	1/ K	L
			84	B	A	B	B	B	A	B	A	B	"	B	L
			85	B	A	A	B	A	A	A	A	B	"	B	L
			86	B	B	A	A	B	B	A	B	A	"	B	L
			87	B	A	B	B	A	A	B	A	B	"	1/ K	L
			88	B	A	A	B	B	B	A	B	A	"	B	H
			89	B	B	A	B	A	A	B	A	A	"	B	H
			90	B	A	B	A	A	A	A	B	A	"	B	H
			91	B	B	A	A	B	B	A	A	B	"		H
			92	B	B	A	B	A	B	B	B	A	"		H
8	Same tests, terminal conditions, and limits as for subgroup 7, except T_C = +125°C and -55°C.														

See footnotes at end of device type 11.

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TABLE III. Group A inspection for device type 11 - 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 2,R,S, and X — Test no.	13 $\bar{U}_6$	14 $\bar{U}_5$	15 $\bar{U}_4$	16 $\bar{U}_3$	17 $\bar{U}_2$	18 $\bar{U}_1$	19 $\bar{U}_0$	20 V_{CC}	Measured terminal	Min	Max	Unit
1 $T_C = +25°C$	I_{OS}	3011	57							0.0 V	5.5 V	U_0	-60	-150	mA
			58						0.0 V			U_1			
			59					0.0 V				U_2			
			60				0.0 V					U_3			
			61			0.0 V						U_4			
			62		0.0 V							U_5			
			63	0.0 V								U_6			
			64									U_7			
	I_{OZH}	3011	65							2.7 V		U_0		50	µA
			66						2.7 V			U_1			
			67					2.7 V				U_2			
			68				2.7 V					U_3			
			69			2.7 V						U_4			
			70		2.7 V							U_5			
			71	2.7 V								U_6			
			72									U_7			
	I_{OZL}	3011	73							0.5 V		U_0		-50	
			74						0.5 V			U_1			
			75					0.5 V				U_2			
			76				0.5 V					U_3			
			77			0.5 V						U_4			
			78		0.5 V							U_5			
			79	0.5 V								U_6			
			80									U_7			
	I_{CCZ}	3011	81								"	V_{CC}		86	mA
	I_{CCL}	3011	82								"	V_{CC}		86	mA
2	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = +125°C$ and V_{IC} tests are omitted.														
3	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = -55°C$ and V_{IC} tests are omitted.														
7 $T_C = +25°C$	Functional 3/	3014	83	H	L	H	L	H	L	H	4/	All outputs			
			84	H	L	H	L	H	L	H					
			85	H	L	H	L	H	L	H					
			86	H	H	H	L	H	L	L					
			87	L	H	L	H	L	H	L					
			88	L	H	L	H	L	H	L					
			89	L	H	L	H	L	H	L					
			90	L	H	L	H	L	H	L					
			91	L	H	L	H	L	H	L					
			92	L	H	L	H	L	H	L					
8	Same tests, terminal conditions, and limits as for subgroup 7, except $T_C = +125°C$ and $-55°C$.														

See footnotes at end of device type 11.

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TABLE III. Group A inspection for device type 11 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases 2,R,S, and X)	1 ŌE	2 D0	3 D1	4 D2	5 D3	6 D4	7 D5	8 D6	9 D7	10 GND	11 CP	12 U7
9 T_C = +25°C	f_{MAX} 5/	3003 Fig. 5	93, 94, 95, 96, 97, 98, 99, 100	0.0 V	IN								GND	IN	OUT
	t_{PLH2}	3003	101, 102, 103, 104, 105, 106, 107, 108	"	IN	IN	IN	IN	IN	IN	IN	IN	"	"	OUT
	t_{PHL2}	3003	109, 110, 111, 112, 113, 114, 115, 116	"	IN	IN	IN	IN	IN	IN	IN	IN	"	"	OUT
	t_{PHZ2}	3003	117, 118, 119, 120, 121, 122, 123, 124	IN	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	"	"	OUT
	t_{PLZ2}	3003	125, 126, 127, 128, 129, 130, 131, 132	"	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	2.7 V	"	"	OUT
	t_{PZH2}	3003	133, 134, 135, 136, 137, 138, 139, 140	"	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	0.0 V	"	"	OUT

See footnotes at end of device type 11.

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TABLE III. Group A inspection for device type 11 - 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 2,R,S, and X — Test no.	13 $\overline{T}_6$	14 $\overline{T}_5$	15 $\overline{T}_4$	16 $\overline{T}_3$	17 $\overline{T}_2$	18 $\overline{T}_1$	19 $\overline{T}_0$	20 V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
$T_C = +25°C$ (9)	f_{MAX} 5/	3003 Fig. 5	93 94 95 96 97 98 99 100	OUT	OUT	OUT	OUT	OUT	OUT	OUT	5.0 V	T0 to … T7	100		MHz
	t_{PLH2}	3003 Fig. 5	101 102 103 104 105 106 107 108	OUT	OUT	OUT	OUT	OUT	OUT	OUT	"	CP to …	2.5	8.5	ns
	t_{PHL2}	3003 Fig. 5	109 110 111 112 113 114 115 116	OUT	OUT	OUT	OUT	OUT	OUT	OUT	"	CP to …			"
	t_{PHZ2}	3003 Fig. 5	117 118 119 120 121 122 123 124	OUT	OUT	OUT	OUT	OUT	OUT	OUT	"	OE to …	1.5	5.5	"
	t_{PLZ2}	3003 Fig. 5	125 126 127 128 129 130 131 132	OUT	OUT	OUT	OUT	OUT	OUT	OUT	"	OE to …			"
	t_{PZH2}	3003 Fig. 5	133 134 135 136 137 138 139 140	OUT	OUT	OUT	OUT	OUT	OUT	OUT	"	OE to …	3.0	9.0	"

See footnotes at end of device type 11.

TABLE III. Group A inspection for device type 11 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-1883 method	Cases 2,R,S, and X Test no.	1 ŌE	2 D_0	3 D_1	4 D_2	5 D_3	6 D_4	7 D_5	8 D_6	9 D_7	10 GND	11 CP	12 Q_7
9 T_C = +25°C	t_{PZL2}	3003	141	IN	2.7 V								GND	IN	
			142	"		2.7 V							"	"	
			143	"			2.7 V						"	"	
			144	"				2.7 V					"	"	
			145	"					2.7 V				"	"	
			146	"						2.7 V			"	"	
			147	"							2.7 V		"	"	
			148	"								2.7 V	"	"	OUT
10	Same tests as subgroup 9 except T_C = +125°C, use limits from table I.														
11	Same tests as subgroup 10 except T_C = -55°C, use limits from table I.														

See footnotes at end of device type 11.

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TABLE III. Group A inspection for device type 11 - 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 2,R,S, and X Test no.	13 Q_6	14 Q_5	15 Q_4	16 Q_3	17 Q_2	18 Q_1	19 Q_0	20 V_{CC}	Measured terminal	Limits Min	Limits Max	Unit
9 T_C = +25°C	t_{PZL2}	3003	141	OUT						OUT	5.0 V	$\overline{OE}$ to Q_0	3.0	9.0	ns
			142		OUT				OUT		"	$\overline{OE}$ to Q_1	"	"	"
			143			OUT		OUT			"	$\overline{OE}$ to Q_2	"	"	"
			144				OUT				"	$\overline{OE}$ to Q_3	"	"	"
			145			OUT					"	$\overline{OE}$ to Q_4	"	"	"
			146		OUT						"	$\overline{OE}$ to Q_5	"	"	"
			147	OUT							"	$\overline{OE}$ to Q_6	"	"	"
			148								"	$\overline{OE}$ to Q_7	"	"	"
10			Same tests as subgroup 9 except T_C = +125°C, use limits from table I.												
11			Same tests as subgroup 10 except T_C = -55°C, use limits from table I.												

1/ Apply all voltages then apply 3 V, 0, 3 V to CP then make measurement.

2/ I_{IL} limits (mA) min/max values for circuits shown.

Parameter	Circuit A
I_{IL1}	-.25/-.60

3/ A = 3.0 V minimum; B = 0.0 V or GND, H ≥ 2.5 V, L ≤ 0.5 V.

4/ Perform function sequence at V_{CC} = 4.5 V and repeat at V_{CC} = 5.5 V.

5/ f_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

b. Steady-state life test conditions, method 1005 of MIL-STD-883, or equivalent.

    (1) Test condition D, E, or F using the circuit shown on figure 4, or equivalent.

    (2) T_A = +125°C minimum.

    (3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table IV of method 5005 of MIL-STD-883. End-point electrical parameters shall be as specified in table II herein.

4.5 Methods of inspection. Methods of inspection shall be specified as follows:

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

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

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

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

6.2 Ordering data. The acquisition document should specify the following:

a. Complete part number (see 1.2).

b. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

c. Requirements for certificate of compliance, if applicable.

d. Requirements for notification of change of product or process to the contracting activity in addition to notification to the qualifying activity, if applicable.

e. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.

f. Requirements for product assurance options.

g. Requirements for special lead lengths, or lead forming, if applicable. These requirements shall not affect the part number. Unless otherwise specified, these requirements shall not apply to direct purchase by or direct shipment to the Government.

h. Requirements for "JAN" marking.

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6.3 **Abbreviations, symbols, and definitions.** The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510, MIL-STD-1331, and as follows:

GND - - - - - - - - - - - - -   Ground zero voltage potential
I_{IN} - - - - - - - - - - - - -   Current flowing into an input terminal
V_{IN} - - - - - - - - - - - - -   Voltage level at an input terminal

6.4 **Logistic support.** Lead materials and finishes (see 3.3) 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 C (see 3.3). Longer length leads and lead forming shall not affect the part number.

6.5 **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-35810 device types and may have slight physical variations in relation to case size. The presence of this information shall not be deemed as permitting substitution of generic-industry types for MIL-M-35810 types or as a waiver of any of the provisions of MIL-M-38510.

Military device type	Generic-industry type
01	54F074
02	54F109
03	54F112
04	54F175
05	54F374
06	54F534
07	54F174
08	54F378
09	54F379
10	54F574
11	54F564

6.6 **Manufacturers' designation.** Manufacturers' circuits which form a part of this specification are designated with an "X" as shown in table IV herein.

TABLE IV. **Manufacturers' designation.**

Device type	Manufacturer			
	Circuit A	Circuit B	Circuit C	Circuit D
	National Semiconductor	Motorola	Signetics	Texas Instruments
01	X	X	X	X
02	X	X	X	X
03	X		X	X
04	X	X	X	X
05	X	X	X	X
06	X	X		
07	X	X		
08	X	X		
09	X	X		
10	X			
11	X			

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6.7 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
  Army - ER
  Navy - EC
  Air Force - 17

Review activities:
  Army - AR, MI
  Navy - SH, OS, TD
  Air Force - 11, 19, 85, 99
  DLA - ES

User activities:
  Army - SM
  Navy - AS, CG, MC

Preparing activity:
  Air Force - 17

Agent:
  DLA - ES

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