

INCH-POUND

MIL-M-38510/301F

4 March 2004

SUPERSEDING

MIL-M-38510/301E

14 February 2003

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR LOW-POWER SCHOTTKY TTL, FLIP-FLOPS, CASCADABLE, MONOLITHIC SILICON

Inactive for new design after 18 April 1997.

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

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

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, low-power Schottky TTL, flip-flops, bistable logic gate microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

1.2 Part number. The part number is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as follows:

| <u>Device type</u> | <u>Circuit</u> |
|--------------------|--|
| 01 | Dual J-K flip-flop with clear |
| 02 | Dual D type flip-flop with clear and preset |
| 03 | Dual J-K flip-flop with clear and preset |
| 04 | Dual J-K flip-flop with preset |
| 05 | Dual J-K flip-flop with preset and common clear and common clock |
| 06 | Hex D type flip-flop with common clear and common clock |
| 07 | Quad D type flip-flop with common clear and common clock |
| 08 | Dual, J-K flip-flop with clear |
| 09 | Dual, J-K flip-flop with clear and preset |
| 10 | Dual, J-K flip-flop with clear and preset |

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

1.2.3 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

| <u>Outline letter</u> | <u>Descriptive designator</u> | <u>Terminals</u> | <u>Package style</u> |
|-----------------------|-------------------------------|------------------|------------------------------|
| A | GDFP5-F14 or CDFP6-F14 | 14 | Flat pack |
| B | GDFP4-14 | 14 | Flat pack |
| C | GDIP1-T14 or CDIP2-T14 | 14 | Dual-in-line |
| D | GDFP1-F14 or CDFP2-F14 | 14 | Flat pack |
| E | GDIP1-T16 or CDIP2-T16 | 16 | Dual-in-line |
| F | GDFP2-F16 or CDFP3-F16 | 16 | Flat pack |
| X | CQCC2-N20 | 20 | Square leadless chip carrier |
| 2 | CQCC1-N20 | 20 | Square leadless chip carrier |

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, 3990 East Broad St., Columbus, OH 43216-5000, or emailed to bipolar@dscclia.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

1.3 Absolute maximum ratings.

| | |
|--|---------------------------------|
| Supply voltage range | -0.5 V dc to 7.0 V dc |
| Input voltage range | -1.5 V dc at -18 mA to 5.5 V dc |
| Storage temperature range | -65° to +150°C |
| Maximum power dissipation per flip-flop, (P _D) ^{1/} | 25 mW |
| Lead temperature (soldering, 10 seconds) | 300°C |
| Thermal resistance, junction to case (θ _{JC}): | |
| Cases A, B, C, D, E, F, X, and 2 | (See MIL-STD-1835) |
| Junction temperature (T _J) ^{2/} | 175°C |

1.4 Recommended operating conditions.

| | |
|---|--------------------------------------|
| 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}) | 0.7 V dc |
| Case operating temperature range (T _C) | -55° to +125°C |
| Input set up time: | |
| Device types: | |
| 01, 03, 04, 05, 08, 09, and 10 | 25 ns minimum |
| 02, 06, and 07 | 20 ns minimum |
| Input hold time: | |
| Device types: | |
| 01, 03, 04, 05, 08, and 10 | 0 ns minimum |
| 02, 06, 07, and 09 | 5 ns minimum |

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 Specifications and Standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

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

^{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 MIL-PRF-38535.

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).

3.2 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.

3.3.1 Terminal connections. The terminal connections shall be as specified on figure 1.

3.3.2 Logic diagrams. The logic diagrams shall be as specified on figure 2.

3.3.3 Truth tables. The truth tables and logic equations shall be as specified on figure 3.

3.3.4 Schematic circuits. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity upon request.

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

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

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

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

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

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 10 (see MIL-PRF-38535, appendix A).

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein.

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

- a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
- b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.
- c. Additional screening for space level product shall be as specified in MIL-PRF-38535, appendix B.

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

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

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

- a. Tests shall be as specified in table II herein.
- b. Subgroups 4, 5, and 6 shall be omitted.

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

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

- a. End-point electrical parameters shall be as specified in table II herein.
- b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

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

4.5 Methods of inspection. Methods of inspection shall be specified and 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.

TABLE I. Electrical performance characteristics.

| Test | Symbol | Conditions <u>1/</u> -55°C ≤ T _C ≤ +125°C unless otherwise specified | Device types | Limits | | Unit | |
|---------------------------|-------------------|---|--------------|--------------------------------------|------------------|------------------|----|
| | | | | Min | Max | | |
| High level output voltage | V _{OH} | V _{CC} = 4.5 V, I _{OH} = -400 μA | All | 2.5 | | V | |
| Low level output voltage | V _{OL} | V _{CC} = 4.5 V, I _{OL} = 4 mA | All | | 0.4 | V | |
| Input clamp voltage | V _{IC} | V _{CC} = 4.5 V, I _{IN} = -18 mA, T _C = +25°C | All | | -1.5 | V | |
| Low level input current | I _{IL1} | V _{CC} = 5.5 V, V _{IN} = 0.4 V | <u>2/</u> | 01, 03, 04 | -0.030 -0.010 | -0.360 -0.360 | mA |
| | | | | 05, 08, 10 | | | |
| | | | <u>2/</u> | 06, 07 | -0.075 | -0.400 | |
| | I _{IL2} | | <u>3/</u> | 02, 09 | -0.030 | -0.400 | |
| | | | <u>3/</u> | 06 | -0.075 | -0.420 | |
| | I _{IL3} | | <u>3/</u> | 07 | -0.075 | -0.420 | |
| | | | <u>4/</u> | 01, 08 | -0.060 | -0.720 | |
| | I _{IL4} | | <u>4/</u> | 03, 04, 10 | -0.060 | -0.760 | |
| | | | <u>5/</u> | 01, 02, 03, 04, 05, 08, 09, 10 | -0.060 | -0.800 | |
| | I _{IL5} | | <u>6/</u> | 02 | -0.060 | -1.20 | |
| | I _{IL6} | | <u>4/</u> | 05 | -0.12 | -1.52 | |
| | I _{IL7} | | <u>6/</u> | 05 | -0.120 | -1.60 | |
| | | | <u>6/</u> | 09 | -0.060 | -1.60 | |
| High level input current | I _{IH1} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>7/</u> | All | | 20 | μA |
| | I _{IH2} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>7/</u> | All | | 100 | |
| | I _{IH3} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>8/</u> | 02, 09 | | 40 | |
| | I _{IH4} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>8/</u> | 02, 09 | | 200 | |
| | I _{IH5} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>9/</u> | 01, 02, 03, 04, 05, 08, 10 | | 60 | |
| | I _{IH6} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>9/</u> | 01, 02, 03, 04, 05, 08, 10 | | 300 | |
| | I _{IH7} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>10/</u> | 01, 03, 04, 08, 09, 10 | | 80 | |
| | I _{IH8} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>10/</u> | 01, 03, 04, 08, 09, 10 | | 400 | |
| | I _{IH9} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>6/</u> | 05 | | 120 | |
| | I _{IH10} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>6/</u> | 05 | | 600 | |
| | I _{IH11} | V _{CC} = 5.5 V, V _{IN} = 2.7 V | <u>4/</u> | 05 | | 160 | |
| | I _{IH12} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | <u>4/</u> | 05 | | 800 | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

| Test | Symbol | Conditions ^{1/} -55°C ≤ T _C ≤ +125°C unless otherwise specified | Device types | Limits | | Unit |
|---|-------------------|---|--------------------------------------|--------|------|------|
| | | | | Min | Max | |
| Short circuit output current | I _{OS} | V _{CC} = 5.5 V ^{11/} V _{IN} = 0 V | 01, 02, 03, 05, 06, 07, 08, 09 | -15 | -100 | mA |
| | | | 04, 10 | -15 | -130 | |
| Supply current | I _{CC} | V _{CC} = 5.5 V, V _{IN} = 5.5 V | 01, 02, 03, 04, 05, 08 09, 10 | | 8 | mA |
| | | | 06 | | 26 | |
| | | | 07 | | 18 | |
| Maximum clock frequency | f _{MAX} | V _{CC} = 5.0 V C _L = 50 pF ± 10% R _L = 2kΩ ± 5% | 01, 03, 04 05, 06, 07 08, 10 | 25 | | MHz |
| | | | 02, 09 | 20 | | |
| Propagation delay to high logic level (clear or preset to output) | t _{PLH1} | | 01, 03, 04, 05, 08, 10 | 5 | 32 | ns |
| | | | 02, 09 | 5 | 39 | |
| | | | 07 | 5 | 51 | |
| Propagation delay to low logic level (clear or preset to output) | t _{PHL1} | | 01, 03, 04, 05, 08, 10 | 5 | 40 | ns |
| | | | 02, 09 | 5 | 59 | |
| | | | 06 | 5 | 52 | |
| | | | 07 | 5 | 55 | |
| Propagation delay to high logic level (clock to output) | t _{PLH2} | | 01, 03, 04, 05, 08, 10 | 5 | 32 | ns |
| | | | 02, 09 | 5 | 39 | |
| | | | 06 | 5 | 47 | |
| | | | 07 | 5 | 46 | |
| Propagation delay to low logic level (clock to output) | t _{PHL2} | | 01, 03, 04, 05, 08, 10 | 5 | 42 | ns |
| | | | 02, 09 | 5 | 59 | |
| | | | 06 | 5 | 52 | |
| | | | 07 | 5 | 55 | |

^{1/} See table III for complete terminal conditions.

^{2/} Input condition - J or K (device types 01, 03, 04, 05, 08, and 10); and D (device types 06 and 07).

^{3/} Input condition - D (device type 02); clock or clear (device types 06 and 07); and J or \bar{K} (device type 09).

^{4/} Input condition - Clock.

^{5/} Input condition - Clear or preset (device types 03 and 10); clear (device types 01 and 08); preset or clock (device types 02 and 09); and preset (device types 04 and 05).

^{6/} Input condition - Clear.

^{7/} Input condition - J or K (device types 01, 03, 04, 05, 08, and 10); D (device type 02); J or \bar{K} (device type 09); and D, clear, clock (device types 06 and 07).

^{8/} Input condition - Preset or clock.

^{9/} Input condition - Clear or preset (device types 03 and 10); clear (device types 01, 02, and 08); and preset (device types 04 and 05).

^{10/} Input condition - Clock (device type 01, 03, 04, 08, and 10); and clear (device type 09).

^{11/} Not more than one output should be shorted at a time.

TABLE II. Electrical test requirements.

| MIL-PRF-38535 test requirements | Subgroups (see table III) | |
|---|-----------------------------|-----------------------------|
| | Class S devices | Class B devices |
| Interim electrical parameters | 1 | 1 |
| Final electrical test parameters | 1*, 2, 3, 7, 9, 10, 11 | 1*, 2, 3, 9 |
| Group A test requirements | 1, 2, 3, 7, 8, 9, 10, 11 | 1, 2, 3, 7, 8, 9, 10, 11 |
| Group C end-point electrical parameters | 1, 2, 3, 9, 10, 11 | 1, 2, 3 |
| Group D end-point electrical parameters | 1, 2, 3 | 1, 2, 3 |

*PDA applies to subgroup 1.

5. PACKAGING

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

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| Pin number | Pin symbols device type 01 | | Pin symbols device type 02 | | Pin symbols device type 03 | | Pin symbols device type 04 | | Pin symbols device type 05 | |
|------------|----------------------------|----------------------|----------------------------|----------------------|----------------------------|-----------------|----------------------------|----------------------|----------------------------|----------------------|
| | Cases 2, X | Cases A, B, C, and D | Cases 2, X | Cases A, B, C, and D | Cases 2, X | Cases E, F | Cases 2, X | Cases A, B, C, and D | Cases 2, X | Cases A, B, C, and D |
| 1 | NC | CLK1 | NC | CLR1 | NC | CLK1 | NC | CLK1 | NC | CLR1 |
| 2 | CLK1 | CLR1 | CLR1 | 1D | CLK1 | 1K | CLK1 | 1K | CLR | 1K |
| 3 | CLR1 | 1K | 1D | CLK1 | 1K | 1J | 1K | 1J | 1K | 1J |
| 4 | 1K | V _{CC} | CLK1 | PS1 | 1J | PS1 | 1J | PS1 | 1J | PS1 |
| 5 | NC | CLK2 | NC | 1Q | PS1 | 1Q | NC | 1Q | NC | 1Q |
| 6 | V _{CC} | CLR2 | PS1 | 1 \bar{Q} | NC | 1 \bar{Q} | PS1 | 1 \bar{Q} | PS1 | 1 \bar{Q} |
| 7 | NC | 2J | NC | GND | 1Q | 2 \bar{Q} | NC | GND | NC | GND |
| 8 | CLK2 | 2 \bar{Q} | 1Q | 2 \bar{Q} | 1 \bar{Q} | GND | 1Q | 2 \bar{Q} | 1Q | 2 \bar{Q} |
| 9 | CLR2 | 2Q | 1 \bar{Q} | 2Q | 2 \bar{Q} | 2Q | 1 \bar{Q} | 2Q | 1 \bar{Q} | 2Q |
| 10 | 2J | 2K | GND | PS2 | GND | PS2 | GND | PS2 | GND | PS2 |
| 11 | NC | GND | NC | CLK2 | NC | 2J | NC | 2J | NC | 2J |
| 12 | 2 \bar{Q} | 1Q | 2 \bar{Q} | 2D | 2Q | 2K | 2 \bar{Q} | 2K | 2 \bar{Q} | 2K |
| 13 | 2Q | 1 \bar{Q} | 2Q | CLR2 | PS2 | CLK2 | 2Q | CLK2 | 2Q | CLK |
| 14 | 2K | 1J | PS2 | V _{CC} | 2J | CLR2 | PS2 | V _{CC} | PS2 | V _{CC} |
| 15 | NC | | NC | | 2K | CLR1 | NC | | NC | |
| 16 | GND | | CLK2 | | NC | V _{CC} | 2J | | | |
| 17 | NC | | NC | | CLK2 | | NC | | | |
| 18 | 1Q | | 2D | | CLR2 | | 2K | | | |
| 19 | 1 \bar{Q} | | CLR2 | | CLR1 | | CLK2 | | CLK | |
| 20 | 1J | | V _{CC} | | V _{CC} | | V _{CC} | | V _{CC} | |

FIGURE 1. Terminal connections.

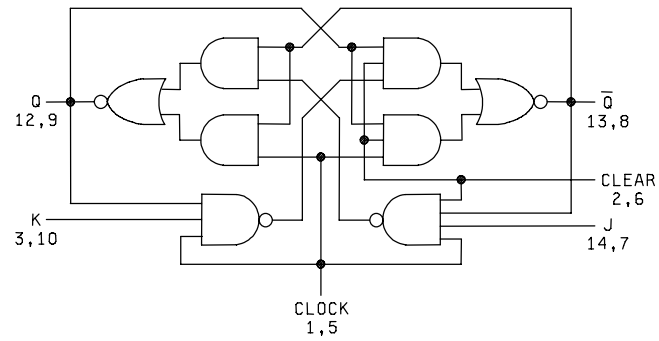
| Pin number | Pin symbols device type 06 | | Pin symbols device type 07 | | Pin symbols device type 08 | | Pin symbols device type 09 | | Pin symbols device type 10 | |
|------------|----------------------------|-----------------|----------------------------|-----------------|----------------------------|----------------------|----------------------------|-----------------|----------------------------|-----------------|
| | Cases 2, X | Cases E, F | Cases 2, X | Cases E, F | Cases 2, X | Cases A, B, C, and D | Cases 2, X | Cases E, F | Cases 2, X | Cases E, F |
| 1 | NC | CLR | NC | CLR | NC | 1J | NC | 1CLR | NC | 1CLK |
| 2 | CLR | 1Q | CLR | 1Q | 1J | 1 \bar{Q} | 1CLR | 1J | 1CLK | 1PS |
| 3 | 1Q | 1D | 1Q | 1 \bar{Q} | 1 \bar{Q} | 1Q | 1J | 1 \bar{K} | 1PS | 1CLR |
| 4 | 1D | 2D | 1 \bar{Q} | 1D | 1Q | 1K | 1 \bar{K} | 1CLK | 1CLR | 1J |
| 5 | 2D | 2Q | 1D | 2D | NC | 2Q | 1CLK | 1PS | 1J | V _{CC} |
| 6 | NC | 3D | NC | 2 \bar{Q} | 1K | 2 \bar{Q} | NC | 1Q | NC | 2CLK |
| 7 | 2Q | 3Q | 2D | 2Q | NC | GND | 1PS | 1 \bar{Q} | V _{CC} | 2PS |
| 8 | 3D | GND | 2 \bar{Q} | GND | 2Q | 2J | 1Q | GND | 2CLK | 2CLR |
| 9 | 3Q | CLK | 2Q | CLK | 2 \bar{Q} | 2CLK | 1 \bar{Q} | 2 \bar{Q} | 2PS | 2J |
| 10 | GND | 4Q | GND | 3Q | GND | 2CLR | GND | 2Q | 2CLR | 2 \bar{Q} |
| 11 | NC | 4D | NC | 3 \bar{Q} | NC | 2K | NC | 2PS | NC | 2Q |
| 12 | CLK | 5Q | CLK | 3D | 2J | 1CLK | 2 \bar{Q} | 2CLK | 2J | 2K |
| 13 | 4Q | 5D | 3Q | 4D | 2CLK | 1CLR | 2Q | 2 \bar{K} | 2 \bar{Q} | GND |
| 14 | 4D | 6D | 3 \bar{Q} | 4 \bar{Q} | 2CLR | V _{CC} | 2PS | 2J | 2Q | 1 \bar{Q} |
| 15 | 5Q | 6Q | 3D | 4Q | NC | | 2CLK | 2CLR | 2K | 1Q |
| 16 | NC | V _{CC} | NC | V _{CC} | 2K | | NC | V _{CC} | NC | 1K |
| 17 | 5D | | 4D | | NC | | 2 \bar{K} | | GND | |
| 18 | 6D | | 4 \bar{Q} | | 1CLK | | 2J | | 1 \bar{Q} | |
| 19 | 6Q | | 4Q | | 1CLR | | 2CLR | | 1Q | |
| 20 | V _{CC} | | V _{CC} | | V _{CC} | | V _{CC} | | V _{CC} | |

FIGURE 1. Terminal connections - Continued.

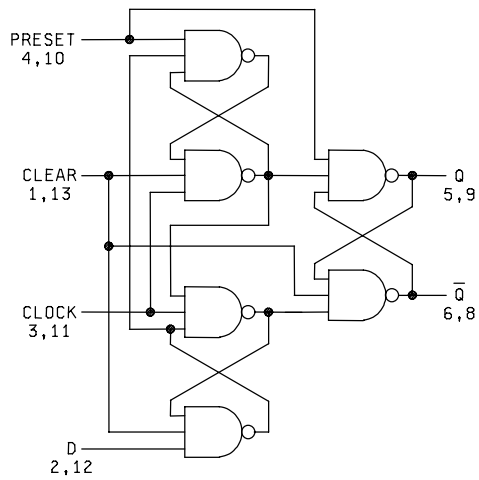
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(Pin numbers shown apply to the DIP and flat packs only)

DEVICE TYPE 01



DEVICE TYPE 02



DEVICE TYPE 03

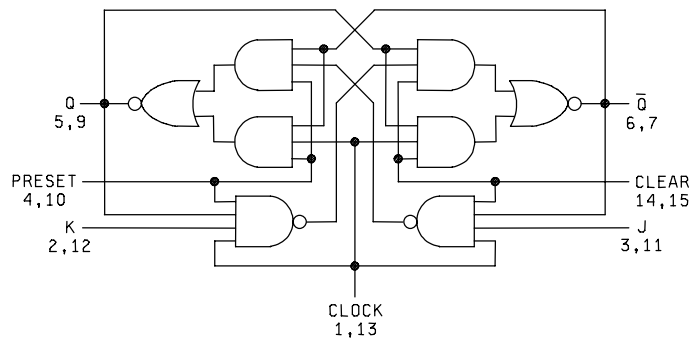
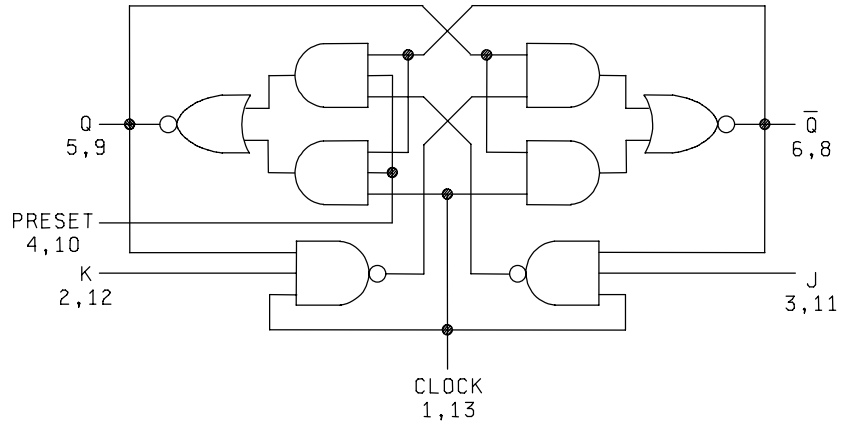


FIGURE 2. Logic Diagrams.

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(Pin numbers shown apply to the DIP and flat packs only)

DEVICE TYPE 04



DEVICE TYPE 05

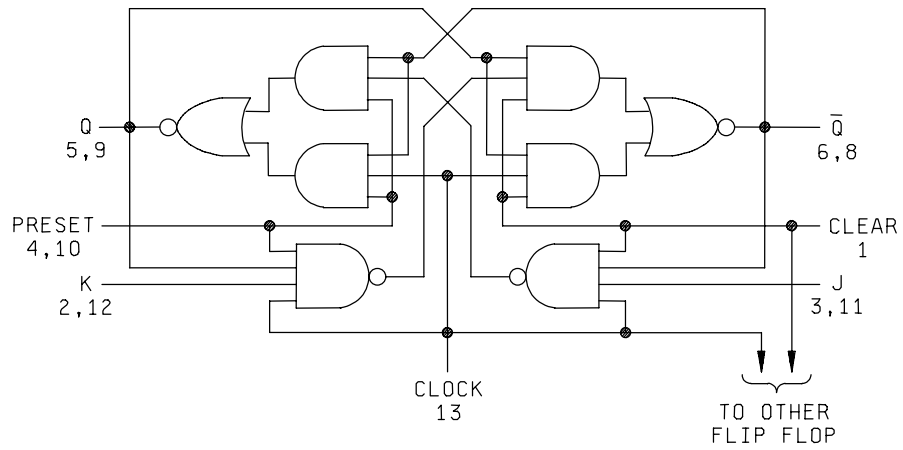


FIGURE 2. Logic Diagrams - Continued.

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(Pin numbers shown apply to the DIP and flat packs only)

DEVICE TYPE 06

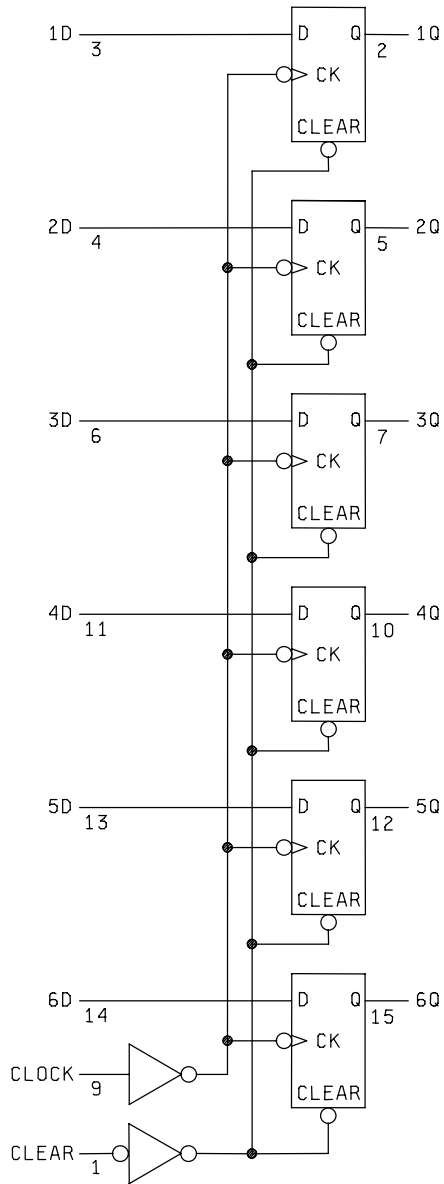
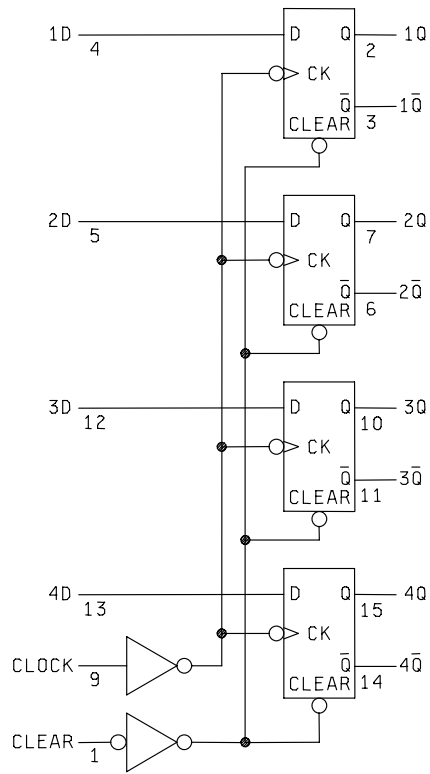


FIGURE 2. Logic Diagrams - Continued.

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(Pin numbers shown apply to the DIP and flat packs only)

DEVICE TYPE 07



DEVICE TYPE 08

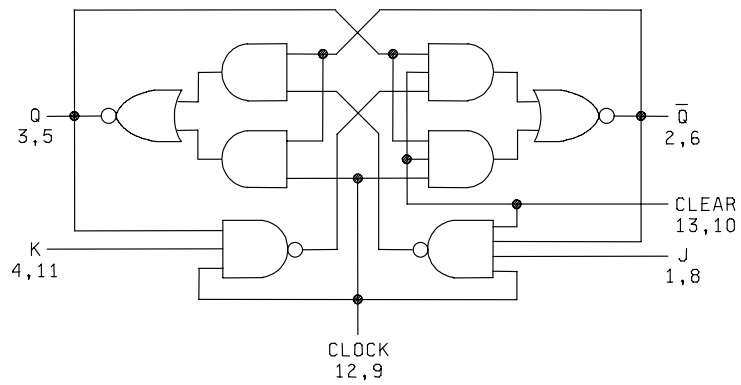
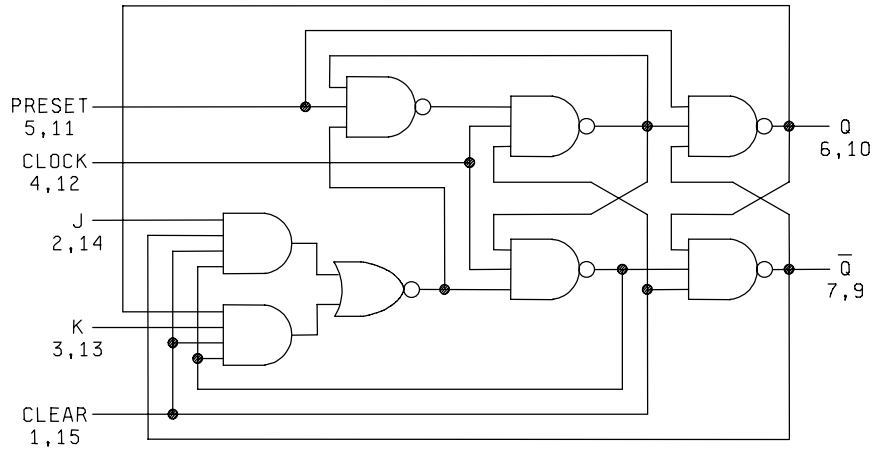


FIGURE 2. Logic Diagrams - Continued.

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(Pin numbers shown apply to the DIP and flat packs only)

DEVICE TYPE 09



DEVICE TYPE 10

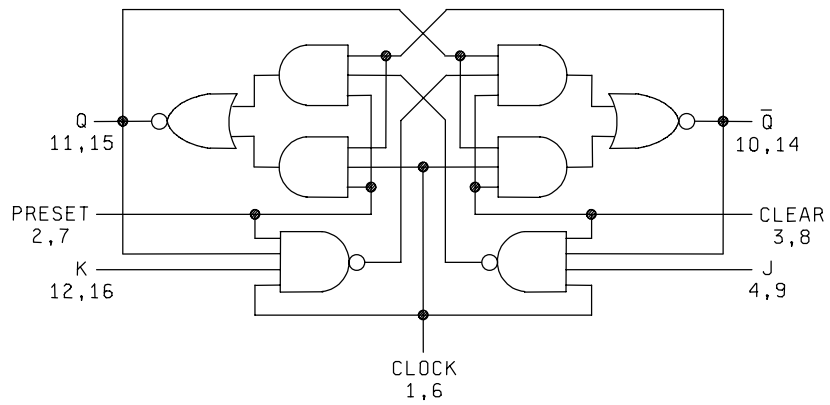


FIGURE 2. Logic Diagrams - Continued.

DEVICE TYPE 01

| INPUTS | | | | OUTPUTS | |
|--------|-------|---|---|----------------|-------------|
| CLEAR | CLOCK | J | K | Q | \bar{Q} |
| L | X | X | X | L | H |
| H | ↓ | L | L | Q ₀ | \bar{Q}_0 |
| H | ↓ | H | L | H | L |
| H | ↓ | L | H | L | H |
| H | ↓ | H | H | TOGGLE | |
| H | H | X | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↓ = transition from high to low level

Q₀ = the level of Q before the indicated input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each ↓ clock transition.

DEVICE TYPE 02

| INPUTS | | | | OUTPUTS | |
|--------|-------|-------|---|----------------|-------------|
| PRESET | CLEAR | CLOCK | D | Q | \bar{Q} |
| L | H | X | X | H | L |
| H | L | X | X | L | H |
| L | L | X | X | H* | H* |
| H | H | ↑ | H | H | L |
| H | H | ↑ | L | L | H |
| H | H | L | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

Q₀ = the level of Q before the indicated steady state input conditions were established.

* This configuration is nonstable; that is, it will not persist when preset and clear inputs return to their inactive (high) level.

FIGURE 3. Truth tables.

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DEVICE TYPES 03 AND 10

| INPUTS | | | | | OUTPUTS | |
|--------|-------|-------|---|---|----------------|-------------|
| PRESET | CLEAR | CLOCK | J | K | Q | \bar{Q} |
| L | H | X | X | X | H | L |
| H | L | X | X | X | L | H |
| L | L | X | X | X | H* | H* |
| H | H | ↓ | L | L | Q ₀ | \bar{Q}_0 |
| H | H | ↓ | H | L | H | L |
| H | H | ↓ | L | H | L | H |
| H | H | ↓ | H | H | TOGGLE | |
| H | H | H | X | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↓ = transition from high to low level

Q₀ = the level of Q before the indicated steady state input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each ↓ clock transition.

* This configuration is nonstable; that is, it will not persist when preset and clear inputs return to their inactive (high) level.

DEVICE TYPE 04

| INPUTS | | | | OUTPUTS | |
|--------|-------|---|---|----------------|-------------|
| PRESET | CLOCK | J | K | Q | \bar{Q} |
| L | H | X | X | H | L |
| H | ↓ | L | L | Q ₀ | \bar{Q}_0 |
| H | ↓ | H | L | H | L |
| H | ↓ | L | H | L | H |
| H | ↓ | H | H | TOGGLE | |
| H | H | X | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↓ = transition from high to low level

Q₀ = the level of Q before the indicated input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each ↓ clock transition.

FIGURE 3. Truth tables - Continued.

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DEVICE TYPES 05

| INPUTS | | | | | OUTPUTS | |
|--------|-------|-------|---|---|----------------|-------------|
| PRESET | CLEAR | CLOCK | J | K | Q | \bar{Q} |
| L | H | X | X | X | H | L |
| H | L | X | X | X | L | H |
| L | L | X | X | X | H* | H* |
| H | H | ↓ | L | L | Q ₀ | \bar{Q}_0 |
| H | H | ↓ | H | L | H | L |
| H | H | ↓ | L | H | L | H |
| H | H | ↓ | H | H | TOGGLE | |
| H | H | H | X | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↓ = transition from high to low level

Q₀ = the level of Q before the indicated steady state input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each ↓ clock transition.

* This configuration is nonstable; that is, it will not persist when preset and clear inputs return to their inactive (high) level.

DEVICE TYPE 06

| INPUTS | | | OUTPUT |
|--------|-------|---|----------------|
| CLEAR | CLOCK | D | Q |
| L | X | X | L |
| H | ↑ | H | H |
| H | ↑ | L | L |
| H | L | X | Q ₀ |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

Q₀ = the level of Q before the indicated steady state input conditions were established.

FIGURE 3. Truth tables - Continued.

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DEVICE TYPE 07

| INPUTS | | | OUTPUT | |
|--------|-------|---|----------------|-------------|
| CLEAR | CLOCK | D | Q | \bar{Q} |
| L | X | X | L | H |
| H | ↑ | H | H | L |
| H | ↑ | L | L | L |
| H | L | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

Q₀ = the level of Q before the indicated steady state input conditions were established.

DEVICE TYPE 08

| INPUTS | | | | OUTPUTS | |
|--------|-------|---|---|----------------|-------------|
| CLEAR | CLOCK | J | K | Q | \bar{Q} |
| L | X | X | X | L | H |
| H | ↑ | L | L | Q ₀ | \bar{Q}_0 |
| H | ↑ | H | L | H | L |
| H | ↑ | L | H | L | H |
| H | ↑ | H | H | TOGGLE | |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

Q₀ = the level of Q before the indicated input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each clock transition.

FIGURE 3. Truth tables - Continued.

DEVICE TYPE 09

| INPUTS | | | | | OUTPUTS | |
|--------|-------|-------|---|-----------|----------------|-------------|
| PRESET | CLEAR | CLOCK | J | \bar{K} | Q | \bar{Q} |
| L | H | X | X | X | H | L |
| H | L | X | X | X | L | H |
| L | L | X | X | X | H* | H* |
| H | H | ↑ | L | L | L | H |
| H | H | ↑ | H | L | TOGGLE | |
| H | H | ↑ | L | H | Q ₀ | \bar{Q}_0 |
| H | H | ↑ | H | H | H | L |
| H | H | L | X | X | Q ₀ | \bar{Q}_0 |

H = high level (steady state)

L = low level (steady state)

X = irrelevant

↑ = transition from low to high level

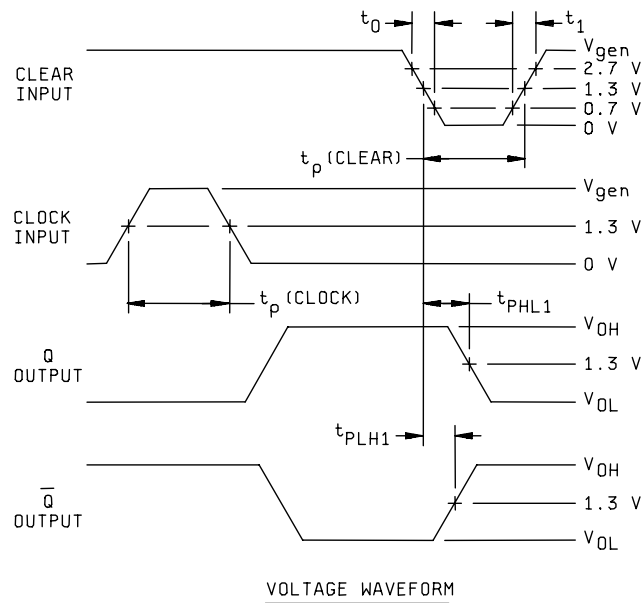
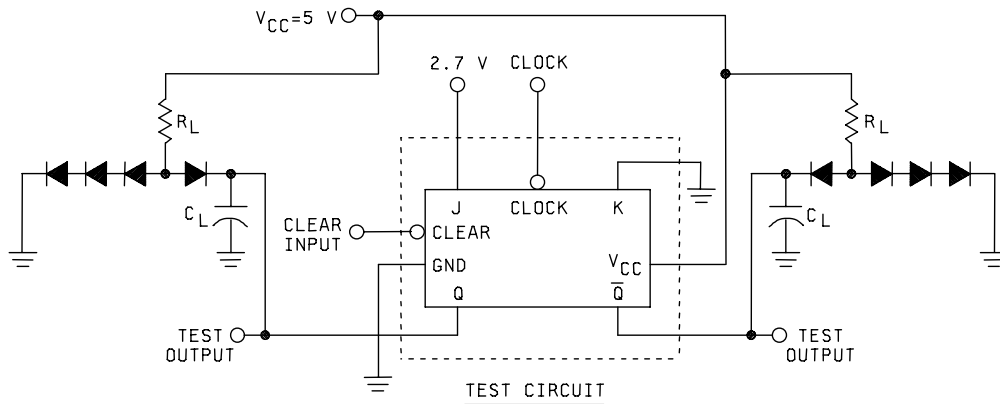
Q₀ = the level of Q before the indicated steady state input conditions were established.

TOGGLE: Each output changes to the complement of its previous level on each ↑ clock transition.

* This configuration is nonstable; that is, it will not persist when preset and clear inputs return to their inactive (high) level.

FIGURE 3. Truth tables - Continued.

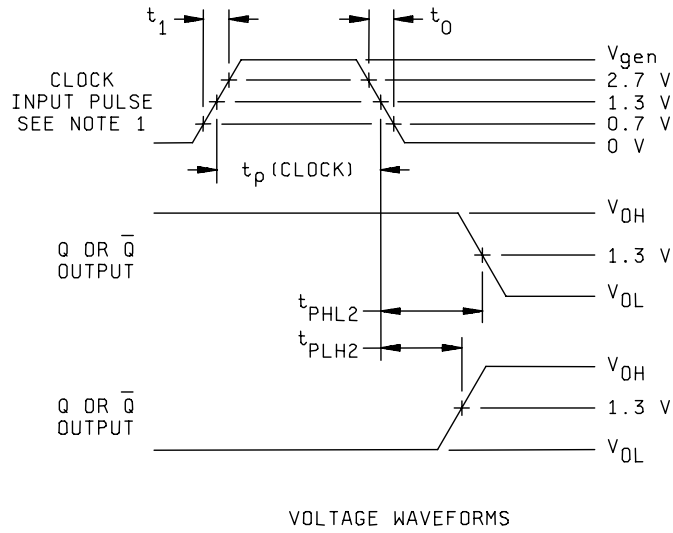
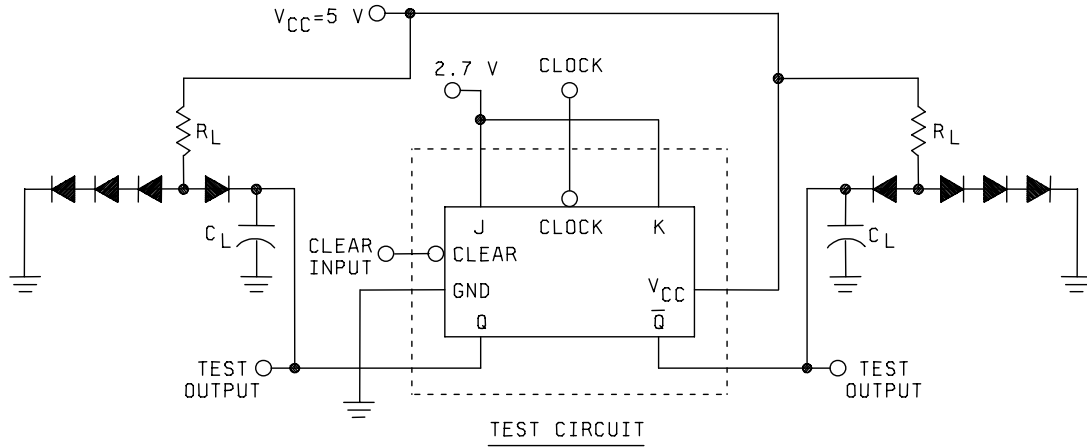
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NOTES:

1. Clear inputs dominate regardless of the state of clock or J-K inputs.
2. Clear input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clear}) = 30\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$.
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. Clock input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_p(\text{clock}) = 25\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$.

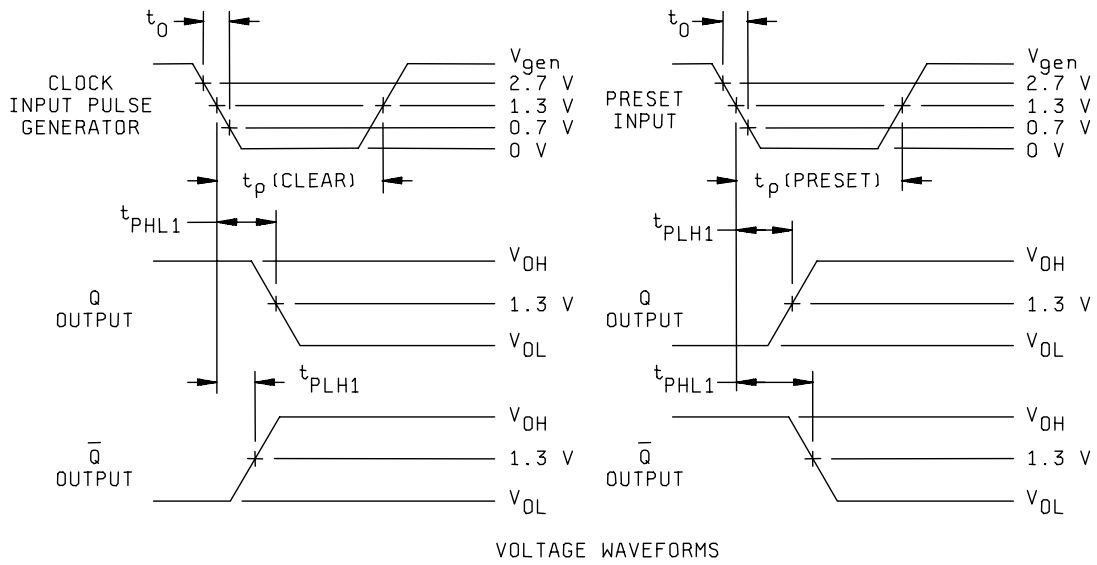
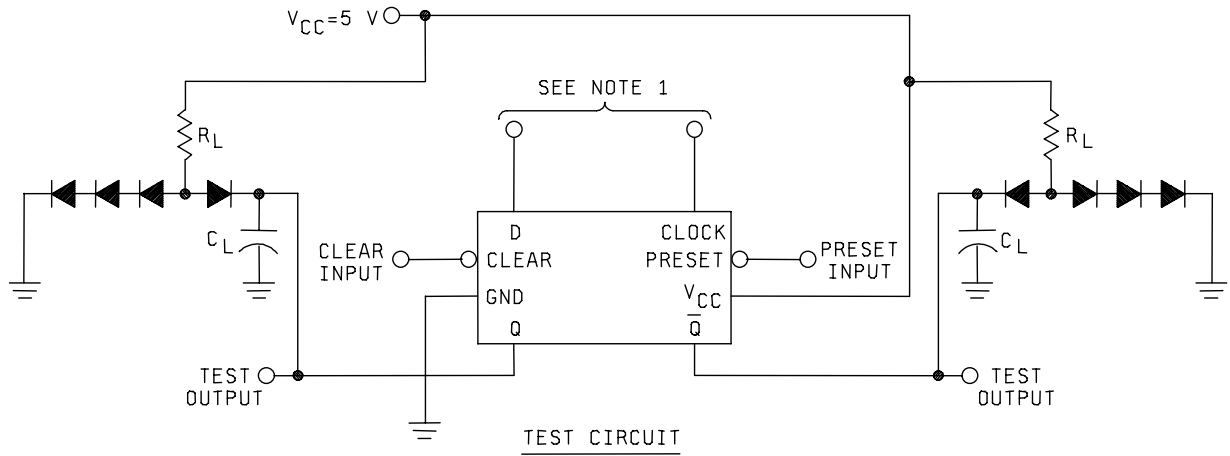
FIGURE 4. Clear switching time test circuit and waveforms for device types 01 and 08.



NOTES:

1. Clock input characteristics for t_{PLH} , t_{PHL} (clock to output), $V_{gen} = 3 \text{ V}$, $t_1 \leq 15 \text{ ns}$, $t_0 \leq 6 \text{ ns}$, t_p (clock) = 25 ns, $PRR \leq 1 \text{ MHz}$. When testing f_{MAX} the clock input characteristics are $V_{gen} = 3 \text{ V}$, $t_1 = t_0 \leq 6 \text{ ns}$, t_p (clock) $\leq 25 \text{ ns}$, and $PRR = \text{see table III}$.
2. All diodes are 1N3064, or equivalent.
3. $C_L = 50 \text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2 \text{ k}\Omega \pm 5\%$.

FIGURE 5. Synchronous switching test circuit for device types 01 and 08.

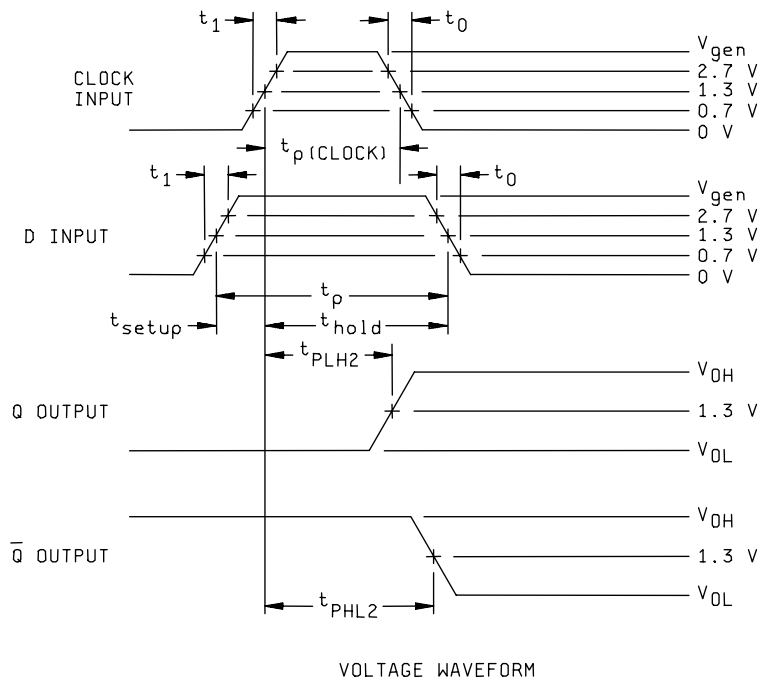
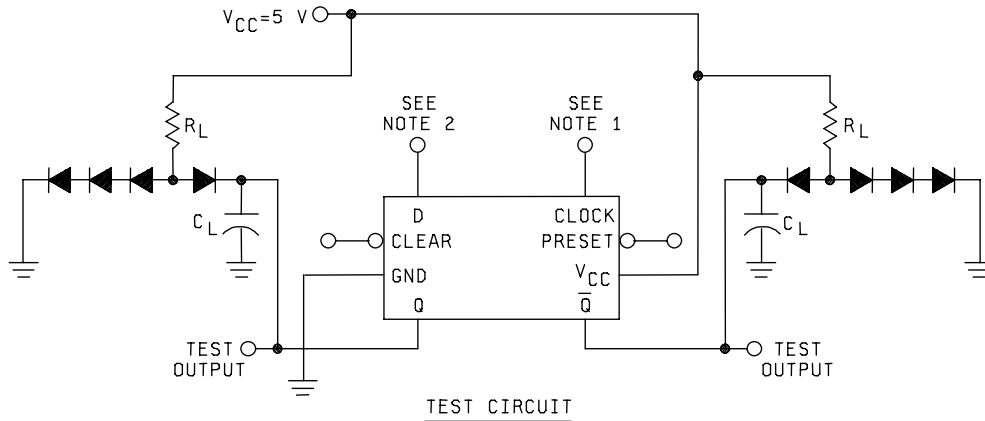


NOTES:

1. Clear and preset inputs dominate regardless of the state of clock or D inputs.
2. All diodes are 1N3064, or equivalent.
3. Clear or preset input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clear}) = t_p(\text{preset}) = 35\text{ ns}$, $PRR \leq 1\text{ MHz}$.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. When testing clear to output switching, preset input shall have a logical "1" voltage applied. When testing preset to output switching, clear input shall have a logical "1" voltage applied (see table III).

FIGURE 6. Clear and preset switching test circuit and waveforms for device type 02.

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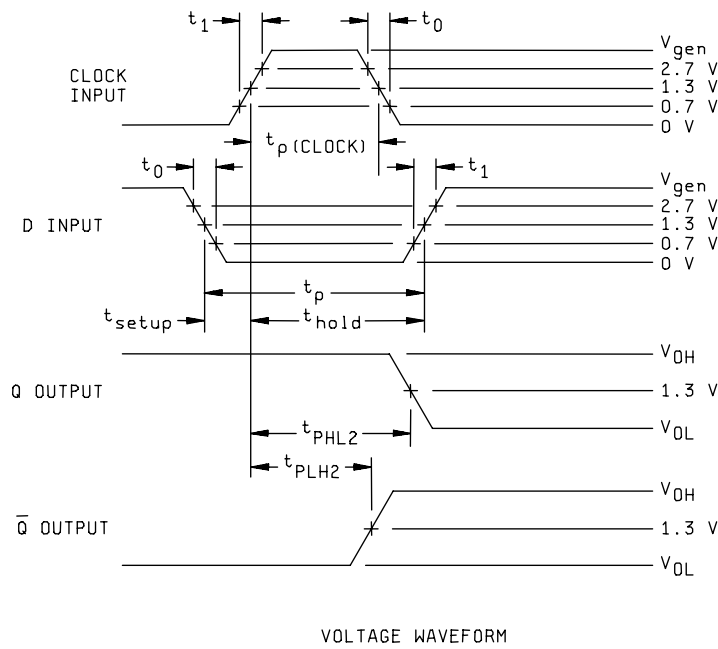
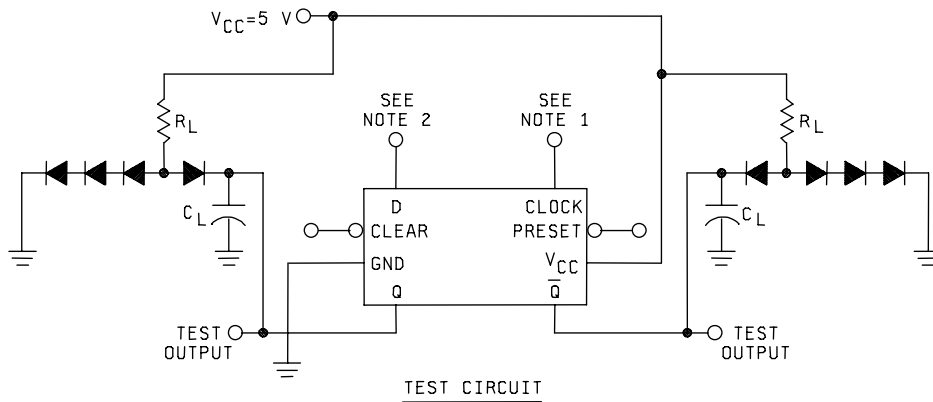


NOTES:

1. Clock input pulse has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clock}) = 30\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$. When testing f_{MAX} , $\text{PRR} = \text{see table III}$, $t_p(\text{clock}) \leq 30\text{ ns}$, and $t_0 = t_1 \leq 6\text{ ns}$.
2. D input has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_{setup} = 20\text{ ns}$, $t_{hold} = 5\text{ ns}$, $t_p = 25\text{ ns}$, and PRR is 50% of the clock PRR . For f_{MAX} , $t_0 = t_1 \leq 6\text{ ns}$.
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.

FIGURE 7. Synchronous switching test circuit (high-level data) for device type 02.

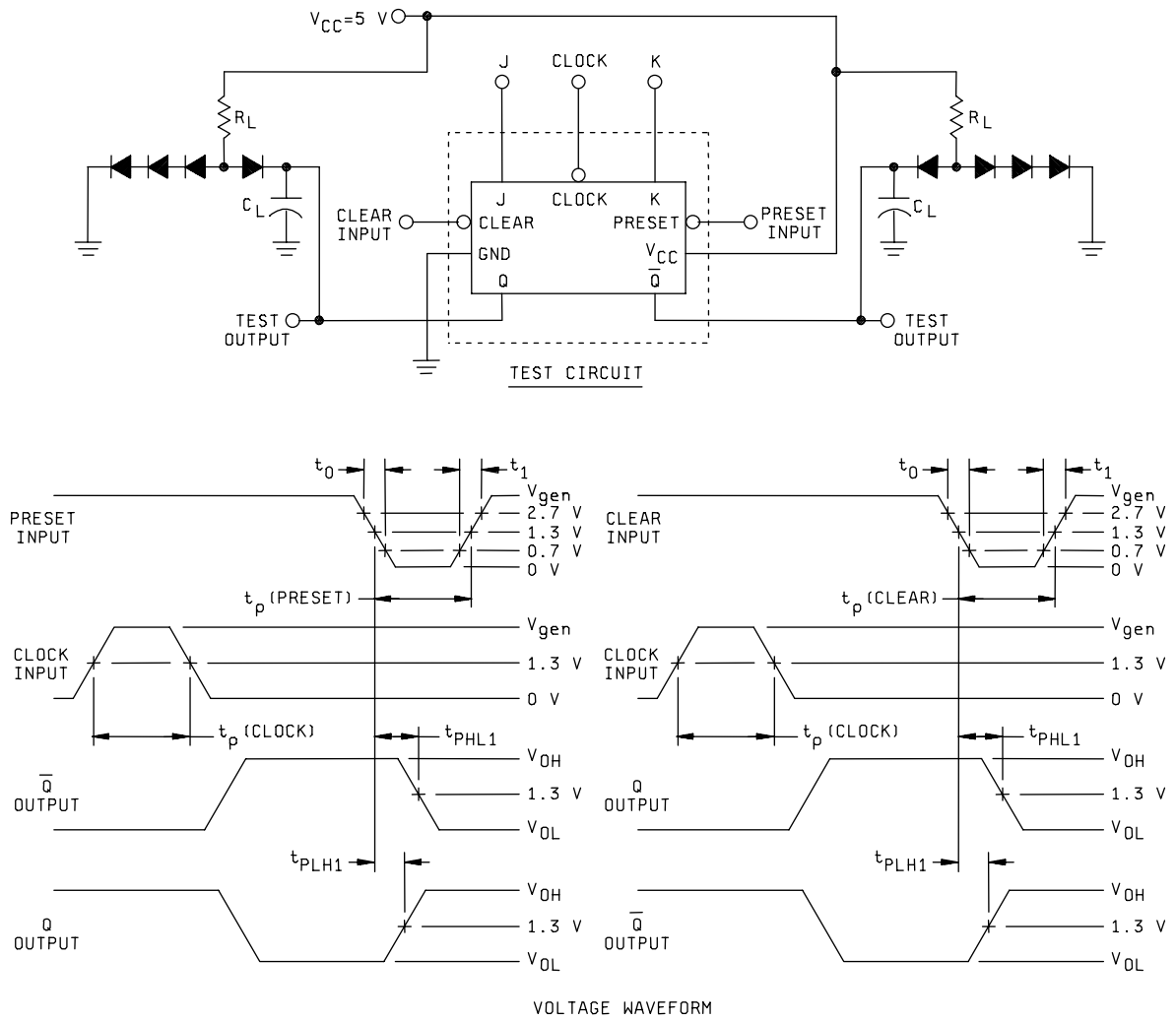
MIL-M-38510/301F



NOTES:

1. Clock input pulse has the following characteristics: $V_{gen} = 3 \text{ V}$, $t_1 \leq 15 \text{ ns}$, $t_0 \leq 6 \text{ ns}$, $t_p(\text{clock}) = 30 \text{ ns}$, $\text{PRR} \leq 1 \text{ MHz}$.
2. D input has the following characteristics: $V_{gen} = 3 \text{ V}$, $t_1 \leq 15 \text{ ns}$, $t_0 \leq 6 \text{ ns}$, $t_{setup} = 20 \text{ ns}$, $t_{hold} = 5 \text{ ns}$, $t_p = 25 \text{ ns}$, and PRR is 50% of the clock PRR .
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50 \text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2 \text{ k}\Omega \pm 5\%$.

FIGURE 8. Synchronous switching test circuit (low-level data) for device type 02.

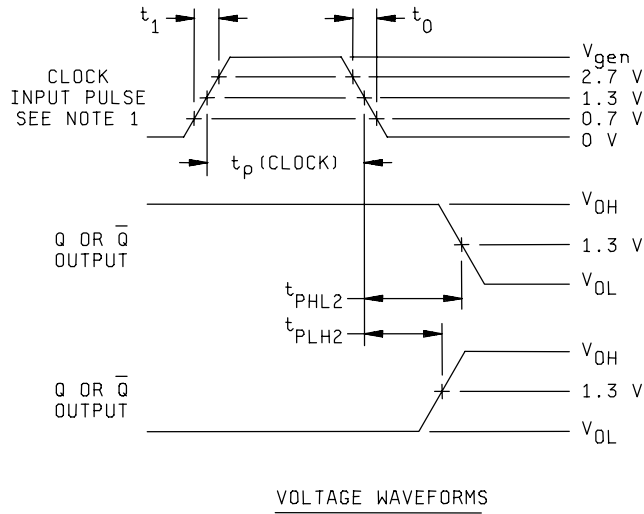
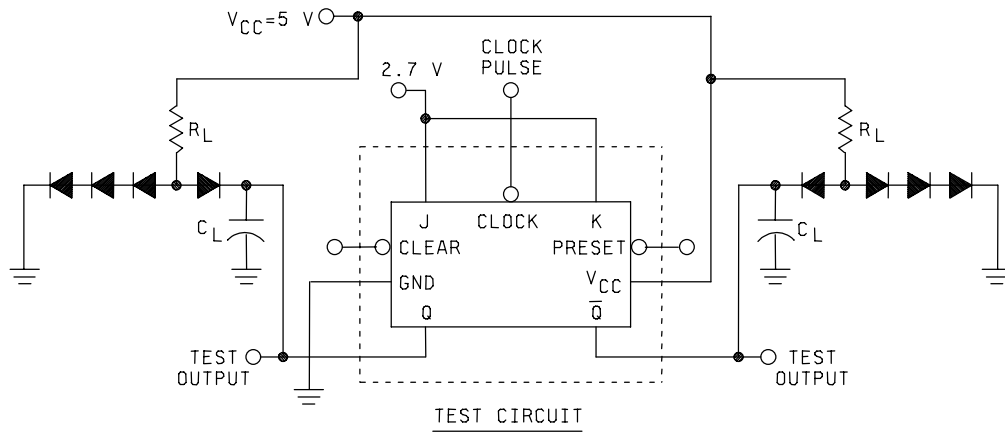


NOTES:

1. Clear or preset inputs dominate regardless of the state of clock or J-K inputs.
2. Clear or preset input has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clear}) = t_p(\text{preset}) = 30\text{ ns}$, $PRR \leq 1\text{ MHz}$, and $Z_{out} \approx 50\Omega$.
3. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2\text{ k}\Omega \pm 5\%$.
5. All diodes are 1N3064, or equivalent.
6. When testing clear to output switching, preset input shall have a logical "1" voltage applied. When testing preset to output switching, clear input shall have a logical "1" voltage applied. (see table III).
7. Clock input pulse characteristics: $t_p(\text{clock}) \geq 25\text{ ns}$, $V_{gen} = 3\text{ V}$, $PRR \leq 1\text{ MHz}$.

FIGURE 9. Clear and preset switching test circuit and waveforms for device types 03, 05, and 10.

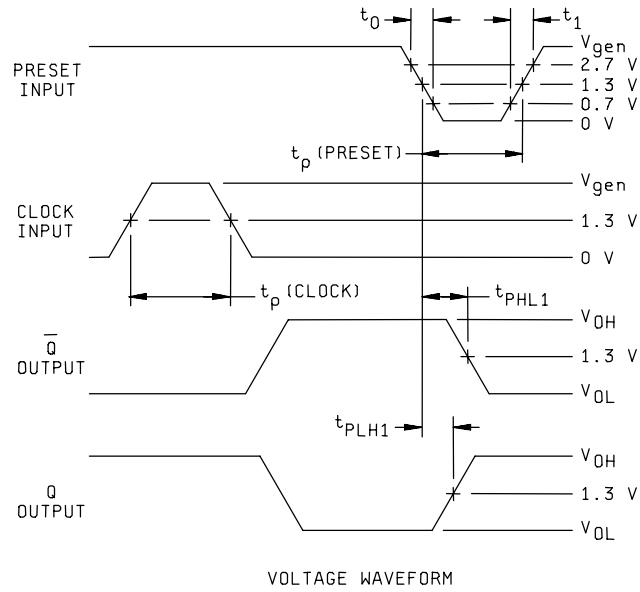
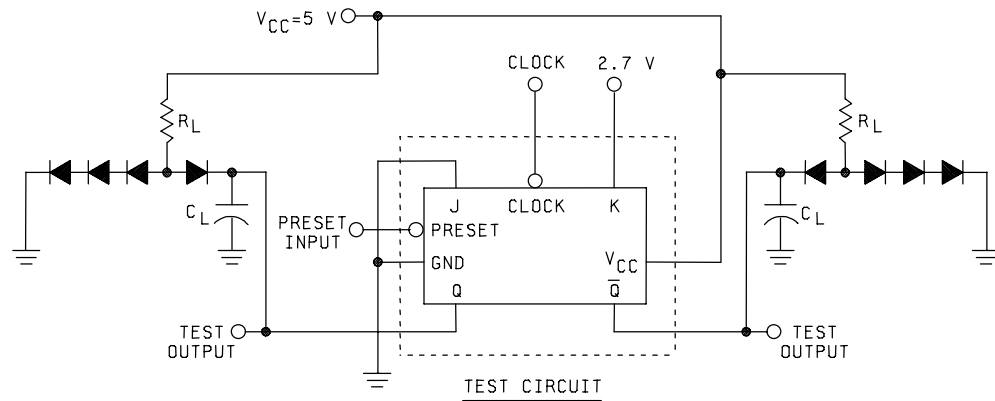
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NOTES:

1. Clock input characteristics for t_{PLH} , t_{PHL} (clock to output), $V_{gen} = 3\text{ V}$, $t_0 \leq 6\text{ ns}$, $t_1 \leq 15\text{ ns}$, $t_p(\text{clock}) = 25\text{ ns}$, $PRR \leq 1\text{ MHz}$. When testing f_{MAX} the clock input characteristics are $V_{gen} = 3\text{ V}$, $t_1 = t_0 \leq 6\text{ ns}$, $t_p(\text{clock}) \leq 25\text{ ns}$, and $PRR = \text{see table III}$.
2. All diodes are 1N3064, or equivalent.
3. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2\text{ k}\Omega \pm 5\%$.

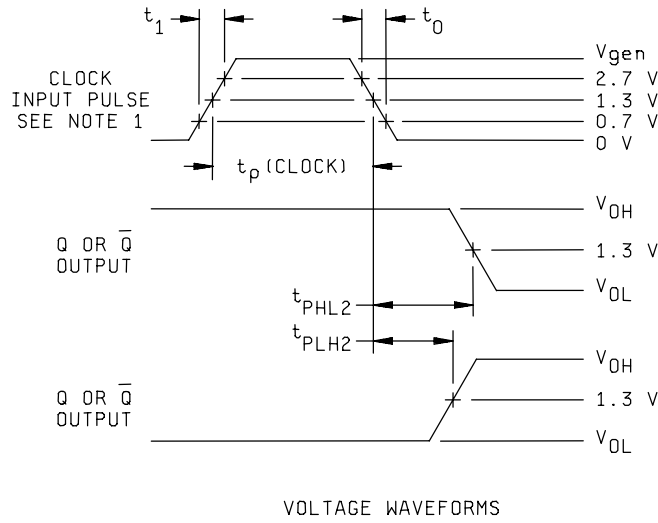
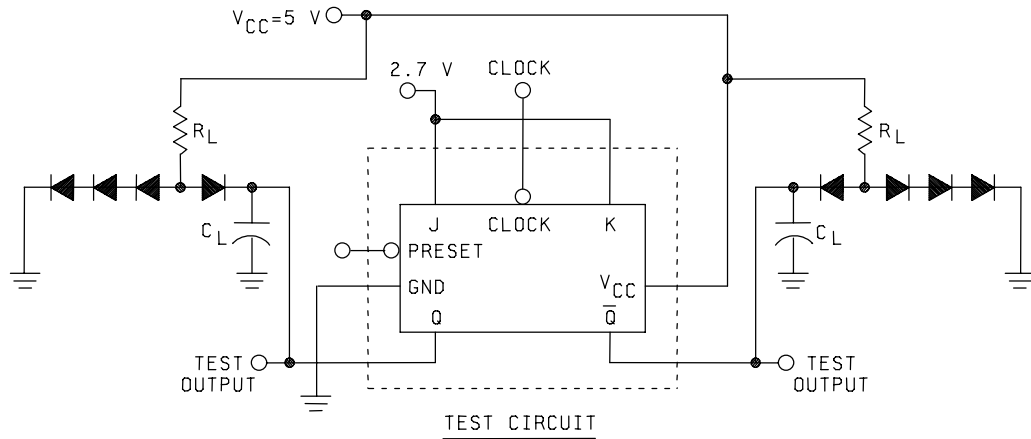
FIGURE 10. Synchronous switching test circuit for device types 03, 05, and 10.



NOTES:

1. Preset inputs dominate regardless of the state of clock or J-K inputs.
2. Preset input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_0 \leq 15\text{ ns}$, $t_1 \leq 6\text{ ns}$, $t_p(\text{preset}) = 30\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$.
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. Clock input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_p(\text{clock}) \geq 25\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$.

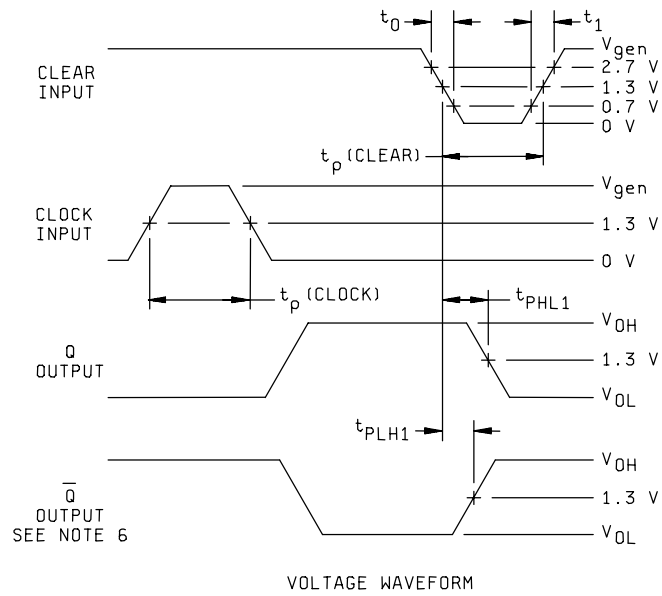
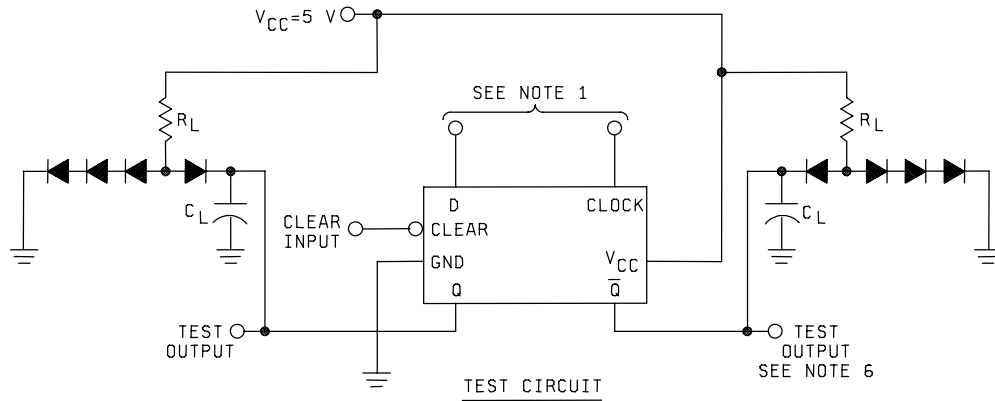
FIGURE 11. Preset switching test circuit and waveforms for device type 04.



NOTES:

1. Clock input characteristics for t_{PLH} , t_{PHL} (clock to output), $V_{gen} = 3 \text{ V}$, $t_0 \leq 6 \text{ ns}$, $t_1 \leq 15 \text{ ns}$, $t_p(\text{clock}) = 25 \text{ ns}$, $\text{PRR} \leq 1 \text{ MHz}$. When testing f_{MAX} the clock input characteristics are $V_{gen} = 3 \text{ V}$, $t_1 = t_0 \leq 6 \text{ ns}$, $t_p(\text{clock}) \leq 25 \text{ ns}$, and $\text{PRR} = \text{see table III}$.
2. All diodes are 1N3064, or equivalent.
3. $C_L = 50 \text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2 \text{ k}\Omega \pm 5\%$.

FIGURE 12. Synchronous switching test circuit for device type 04.

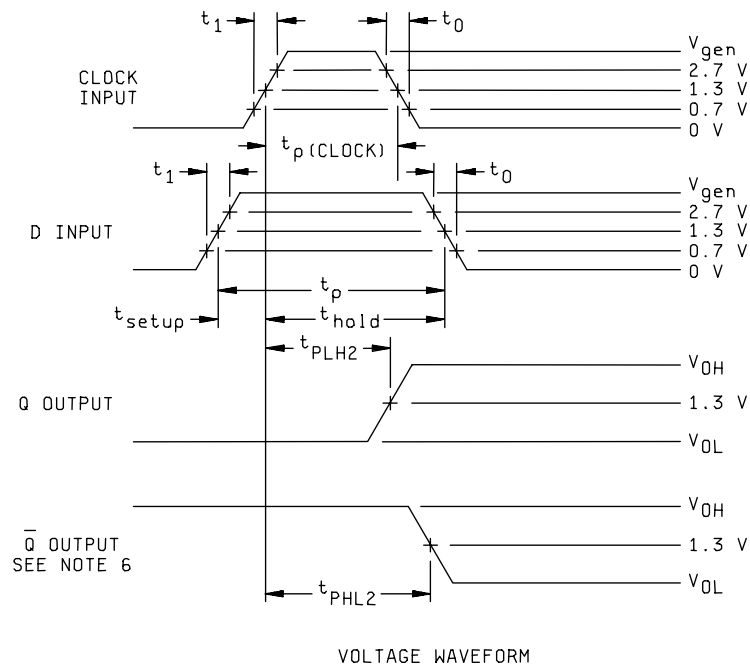
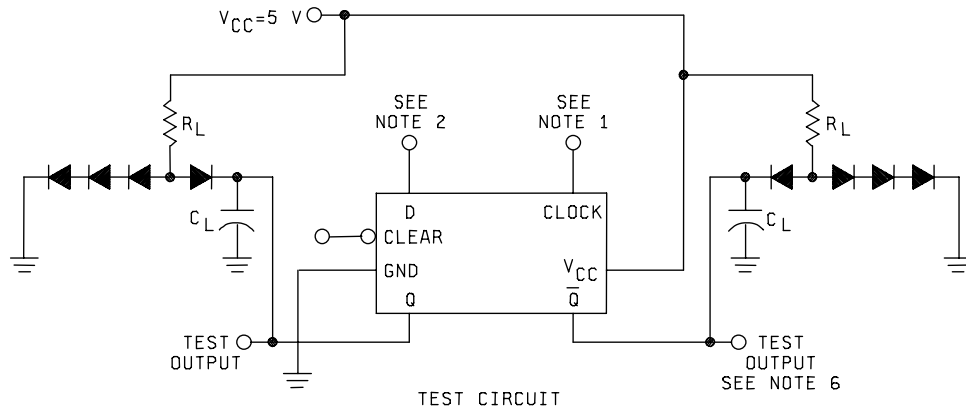


NOTES:

1. Clear input dominates regardless of the state of clock or D inputs.
2. All diodes are 1N3064, or equivalent.
3. Clear input pulse characteristics: $V_{gen} = 3\text{ V}$, $t_0 \leq 6\text{ ns}$, $t_1 \leq 15\text{ ns}$, $t_p(\text{clear}) = 35\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. \bar{Q} output applies to device type 07 only.
7. Clock input pulse characteristics: $t_p(\text{clock}) \geq 25\text{ ns}$, $V_{gen} = 3\text{ V}$, $\text{PRR} \leq 1\text{ MHz}$.

FIGURE 13. Asynchronous switching test circuit for device types 06 and 07.

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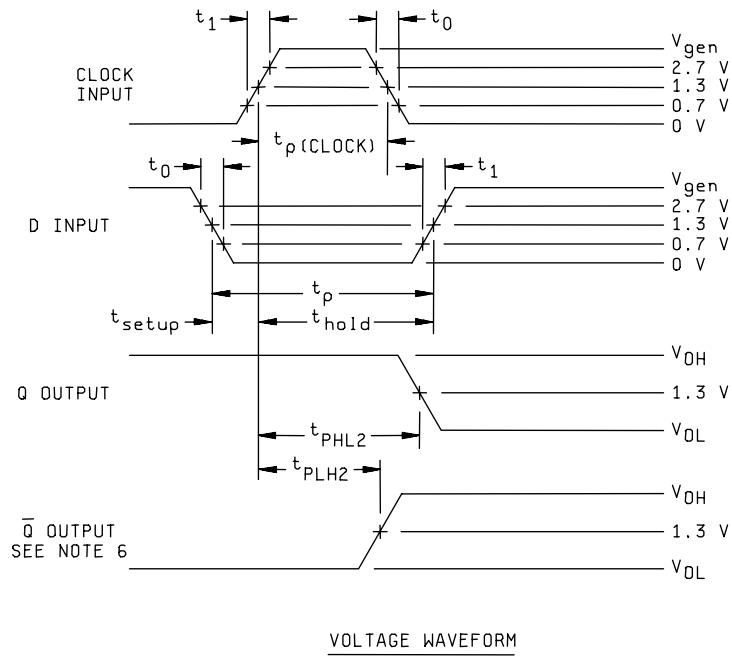
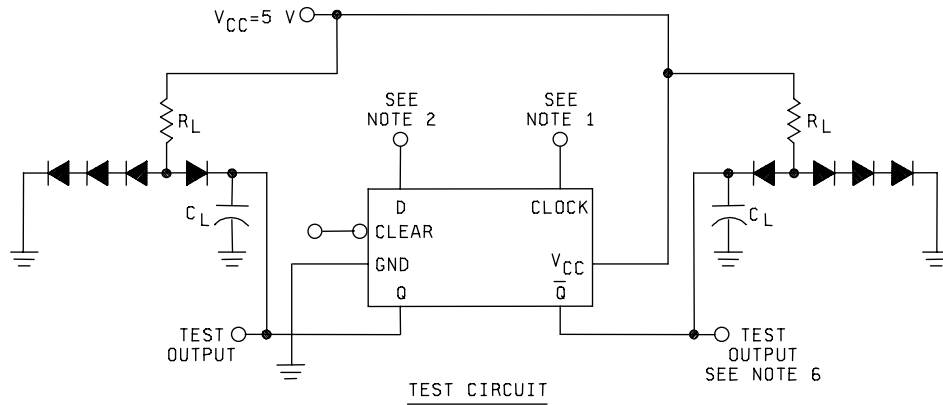


NOTES:

1. Clock input pulse has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clock}) = 30\text{ ns}$, and $\text{PRR} \leq 1\text{ MHz}$. When testing f_{MAX} , $\text{PRR} = \text{see table III}$, $t_p(\text{clock}) \leq 30\text{ ns}$, and $t_0 = t_1 \leq 6\text{ ns}$.
2. D input has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_{setup} = 20\text{ ns}$, $t_{hold} = 5\text{ ns}$, $t_p = 25\text{ ns}$, and PRR is 50% of the clock PRR . For f_{MAX} , $t_0 = t_1 \leq 6\text{ ns}$.
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. \bar{Q} output applies to device type 07 only.

FIGURE 14. Synchronous switching test circuit (high-level data) for device types 06 and 07.

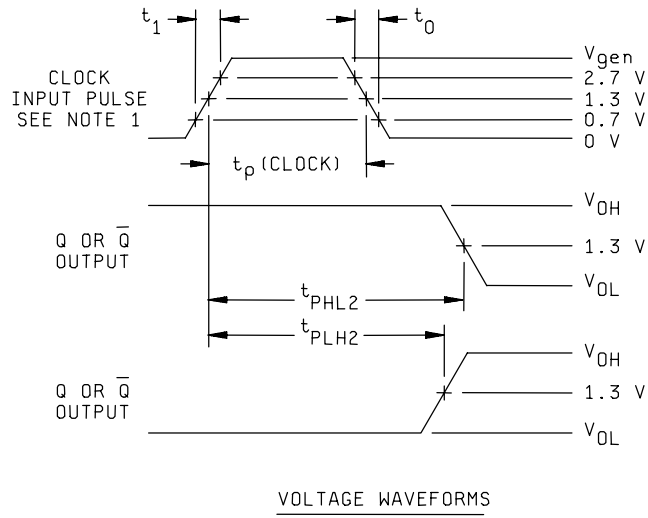
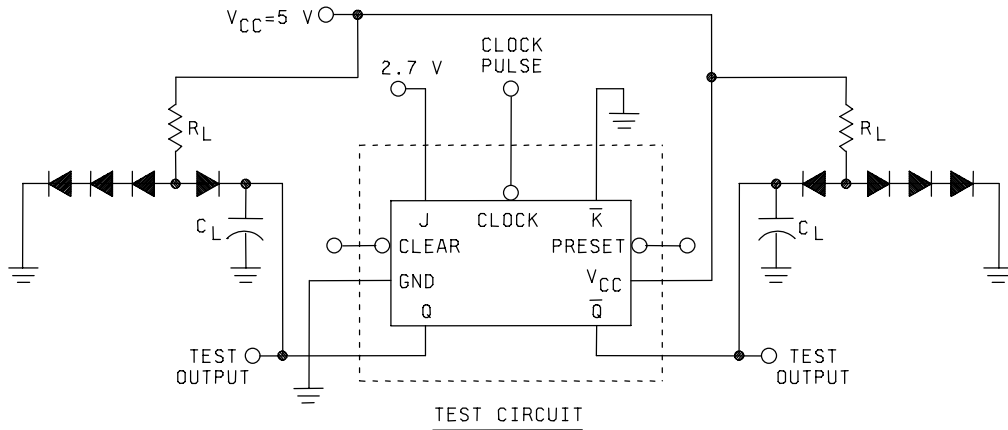
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NOTES:

1. Clock input pulse has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clock}) = 30\text{ ns}$, and $\text{PRR} \leq 1\text{ MHz}$.
2. D input has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_{setup} = 20\text{ ns}$, $t_{hold} = 5\text{ ns}$, $t_p = 25\text{ ns}$, and PRR is 50% of the clock PRR .
3. All diodes are 1N3064, or equivalent.
4. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
5. $R_L = 2\text{ k}\Omega \pm 5\%$.
6. \bar{Q} output applies to device type 07 only.

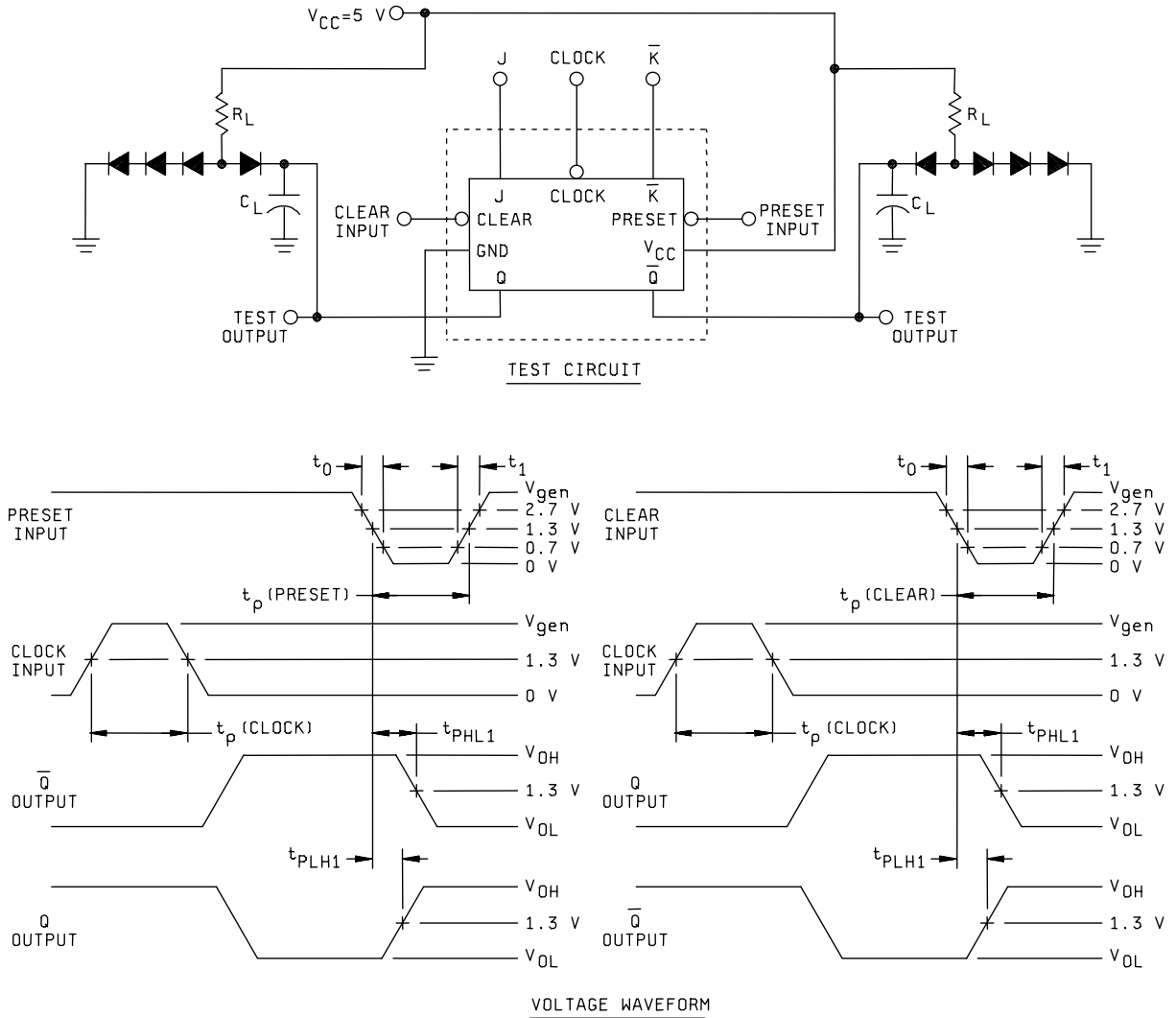
FIGURE 15. Synchronous switching test circuit (low-level data) for device types 06 and 07.



NOTES:

1. Clock input characteristics for t_{PLH} , t_{PHL} (clock to output), $V_{gen} = 3\text{ V}$, $t_0 \leq 6\text{ ns}$, $t_1 \leq 15\text{ ns}$, t_p (clock) = 25 ns, and PRR $\leq 1\text{ MHz}$. When testing f_{MAX} , the clock input characteristics are $V_{gen} = 3\text{ V}$, $t_0 = t_1 \leq 6\text{ ns}$, t_p (clock) $\leq 25\text{ ns}$, and PRR = see table III,.
2. All diodes are 1N3064, or equivalent.
3. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2\text{ k}\Omega \pm 5\%$.

FIGURE 16. Synchronous switching test circuit for device type 09.



NOTES:

1. Clear or preset inputs dominate regardless of the state of clock or J-K inputs.
2. Clear or preset input has the following characteristics: $V_{gen} = 3\text{ V}$, $t_1 \leq 15\text{ ns}$, $t_0 \leq 6\text{ ns}$, $t_p(\text{clear}) = t_p(\text{preset}) = 30\text{ ns}$, $\text{PRR} \leq 1\text{ MHz}$, and $Z_{out} \approx 50\Omega$.
3. $C_L = 50\text{ pF} \pm 10\%$ (including jig and probe capacitance).
4. $R_L = 2\text{ k}\Omega \pm 5\%$.
5. All diodes are 1N3064, or equivalent.
6. When testing clear to output switching, preset input shall have a logical "1" voltage applied. When testing preset to output switching, clear input shall have a logical "1" voltage applied. (see table III).
7. Clock input pulse characteristics: $t_p(\text{clock}) \geq 25\text{ ns}$, $V_{gen} = 3\text{ V}$, $\text{PRR} \leq 1\text{ MHz}$.

FIGURE 17, Clear and preset switching test circuit and waveforms for device type 09.

TABLE III. Group A inspection for device type 01 and 08.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | * 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|------------------|--------------------|--------------|-----------------|--------|--------|-------|------------|-------|-------|-------|-------|------------|-------|------|-------|-------|-------------------|------------|-----|------|----|
| | | | ** 18 | 19 | 6 | 20 | 13 | 14 | 12 | 9 | 8 | 16 | 10 | 4 | 3 | 2 | Min | | Max | | | |
| | | | Case A,B,C,D | ** 12 | 13 | 4 | 14 | 9 | 10 | 8 | 6 | 5 | 11 | 7 | 3 | 2 | | | | 1 | | |
| Test no. | CLK1 | CLR1 | K1 | V _{CC} | CLK2 | CLR2 | J2 | $\bar{Q}2$ | Q2 | K2 | GND | Q1 | $\bar{Q}1$ | J1 | | | | | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 2.0 V | 0.7 V | 2.0 V | 4.5 V | | | | | | | | GND | | -4 mA | 2.0 V | $\bar{Q}1$ | 2.5 | | V |
| | | " | 2 | 2/ | 2.0 V | 2.0 V | " | | | | | | | | " | | -4 mA | 0.7 V | $\bar{Q}1$ | " | | " |
| | | " | 3 | 2/ | 2.0 V | 0.7 V | " | | | | | | | | " | -4 mA | | 2.0 V | Q1 | " | | " |
| | | " | 4 | | | | " | 2.0 V | 0.7 V | 2.0 V | -4 mA | | 2.0 V | " | | | | | $\bar{Q}2$ | " | | " |
| | | " | 5 | | | | " | 2/ | 2.0 V | 0.7 V | -4 mA | | 2.0 V | " | | | | | $\bar{Q}2$ | " | | " |
| | | " | 6 | | | | " | " | " | 2.0 V | | -4 mA | 0.7 V | " | | | | | Q2 | " | | " |
| | V _{OL} | 3007 | 7 | | | | " | " | " | 2.0 v | 4 mA | | -4 mA | 0.7 V | " | | | | $\bar{Q}2$ | | 0.4 | " |
| | | " | 8 | | | | " | " | " | 0.7 V | | 4 mA | 2.0 V | " | | | | | Q2 | " | " | " |
| | | " | 9 | | | | " | 2.0 V | 0.7 V | 2.0 V | | 4 mA | 2.0 V | " | | | | | Q2 | " | " | " |
| | | " | 10 | 2.0 V | 0.7 V | 2.0 V | " | | | | | | | 4 mA | | 2.0 V | | | Q1 | " | " | " |
| | | " | 11 | 2/ | 2.0 V | 2.0 V | " | | | | | | | | 4 mA | | 0.7 V | | Q1 | " | " | " |
| | | " | 12 | 2/ | 2.0 V | 0.7 V | " | | | | | | | | | 4 mA | 2.0 V | | $\bar{Q}1$ | " | " | " |
| | V _{IC} | | | 13 | -18 mA | | | " | | | | | | | " | | | | CLK1 | | -1.5 | " |
| | | | | 14 | | -18 mA | | " | | | | | | | " | | | | CLR1 | | " | " |
| | | | | 15 | | | -18mA | " | | | | | | | " | | | | K1 | | " | " |
| | | | | 16 | | | | " | -18mA | | | | | | " | | | | CLK2 | | " | " |
| | | | | 17 | | | | " | | -18mA | | | | | " | | | | CLR2 | | " | " |
| | | | | 18 | | | | " | | | -18mA | | | | " | | | | J2 | | " | " |
| | | | | 19 | | | | " | | | | | | -18mA | " | | | | K2 | | " | " |
| | | | | 20 | | | | " | | | | | | | " | | -18mA | | J1 | | " | " |
| | I _{IL1} | 3009 | 21 | 3/ | 4.5 V | 0.4 V | 5.5 V | | | | | | | | | | 4.5 V | | K1 | 4/ | 4/ | mA |
| | | " | 22 | 4.5 V | 3/ | 4.5 V | " | | | | | | | | | | 0.4 V | | J1 | " | " | " |
| | | " | 23 | | | | " | 4.5 V | 3/ | 0.4 V | | | | 4.5 V | " | | | | J2 | " | " | " |
| | | " | 24 | | | | " | 3/ | 4.5 V | 4.5 V | | | | 0.4 V | " | | | | K2 | " | " | " |
| | I _{IL3} | " | 25 | 0.4 V | 3/ | 4.5 V | " | | | | | | | | | 4.5 V | | | CLK1 | " | " | " |
| | | " | 26 | | | | " | 0.4 V | 3/ | 4.5 V | | | | 4.5 V | " | | | | CLK2 | " | " | " |
| | I _{IL4} | " | 27 | 4.5 V | 0.4 V | 4.5 V | " | | | | | | | | | 4.5 V | | | CLR1 | " | " | " |
| | | " | 28 | | | | " | 4.5 V | 0.4 V | 4.5 V | | | | 4.5 V | " | | | | CLR2 | " | " | " |
| | I _{IH1} | 3010 | 29 | GND | GND | 2.7 V | " | | | | | | | | | | 4.5 V | | K1 | | 20 | μA |
| | | " | 30 | GND | GND | 4.5 V | " | | | | | | | | | | 2.7 V | | J1 | | " | " |
| | | " | 31 | | | | " | GND | GND | 2.7 V | | | | 4.5 V | " | | | | J2 | | " | " |
| | | " | 32 | | | | " | GND | GND | 4.5 V | | | | 2.7 V | " | | | | K2 | | " | " |
| | I _{IH2} | " | 33 | | | | " | GND | GND | 4.5 V | | | | 5.5 V | " | | | | K2 | | 100 | " |
| | | " | 34 | | | | " | GND | GND | 5.5 V | | | | 4.5 V | " | | | | J2 | | " | " |
| | | " | 35 | GND | GND | 5.5 V | " | | | | | | | | | 4.5 V | | | K1 | | " | " |
| | | " | 36 | GND | GND | 4.5 V | " | | | | | | | | | 5.5 V | | | J1 | | " | " |
| | I _{IH5} | " | 37 | GND | 2.7 V | 4.5 V | " | | | | | | | | | GND | | | CLR1 | | 60 | " |
| | | " | 38 | | | | " | GND | 2.7 V | GND | | | | 4.5 V | " | | | | CLR2 | | 60 | " |
| | I _{IH6} | " | 39 | | | | " | GND | 5.5 V | GND | | | | 4.5 V | " | | | | CLR2 | | 300 | " |
| | | " | 40 | GND | 5.5 V | 4.5 V | " | | | | | | | | | GND | | | CLR1 | | 300 | " |

See footnotes at end of device types 01 and 08.

TABLE III. Group A inspection for device type 01 and 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ | * 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|---|--------------------|--------------|-----------------|-------|-------|-----------|------------|-------|-------|-----|--------|------------|-------|--------|-------|-----------------|-------------------|---------------|-----------|------|---|
| | | | 2, X | ** 18 | 19 | 6 | 20 | 13 | 14 | 12 | 9 | 8 | 16 | 10 | 4 | 3 | 2 | | Min | Max | | |
| | | | Case A,B,C,D | * 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | | | |
| Test no. | CLK1 | CLR1 | K1 | V _{CC} | CLK2 | CLR2 | J2 | $\bar{Q}2$ | Q2 | K2 | GND | Q1 | $\bar{Q}1$ | J1 | | | | | | | | |
| 1 T _C = 25°C | I _{IH7} | 3010 | 41 | 2.7 V | GND | GND | 5.5 V | | | | | | | GND | | | GND | CLK1 | | 80 | μA | |
| | | " | 42 | | | | " | 2.7 V | GND | GND | | | | GND | " | | | CLK2 | | 80 | " | |
| | I _{IH8} | " | 43 | | | | " | 5.5 V | GND | GND | | | | GND | " | | | CLK2 | | 400 | " | |
| | | " | 44 | 5.5 V | GND | GND | " | " | | | | | | " | " | | | GND | CLK1 | | 400 | " |
| I _{OS} | 3011 | " | 45 | GND | GND | 4.5 V | " | | | | | | | " | | GND | GND | $\bar{Q}1$ | -15 | -100 | mA | |
| | | " | 46 | <u>2/</u> | 4.5 V | GND | " | | | | | | | " | 2.25 V | GND | 4.5 V | Q1 | <u>5/</u> | <u>5/</u> | " | |
| | | " | 47 | | | | " | GND | GND | GND | GND | | | 4.5 V | " | | | $\bar{Q}2$ | -15 | -100 | " | |
| | | " | 48 | | | | " | <u>2/</u> | 4.5 V | 4.5 V | GND | 2.25 V | GND | " | " | | | Q2 | <u>5/</u> | <u>5/</u> | " | |
| I _{CC} | 3005 | 49 | GND | GND | GND | " | GND | GND | GND | | | | GND | " | | GND | V _{CC} | | 8.0 | " | | |
| I _{CC} | 3005 | 50 | <u>2/</u> | 5.5 V | GND | " | <u>2/</u> | 5.5 V | 5.5 V | | | | GND | " | | 5.5 V | V _{CC} | | 8.0 | " | | |
| 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 <u>6/</u> , <u>7/</u> | Truth table tests | 3014 | 51 | B | B | B | 4.5 V | B | B | B | H | L | B | GND | L | H | A | All | See <u>8/</u> | | | |
| | | " | 52 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | outputs | | | |
| | | " | 53 | B | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | |
| | | " | 54 | B | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | |
| | | " | 55 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | |
| | | " | 56 | B | " | " | " | " | " | " | " | " | " | " | " | H | L | " | " | | | |
| | | " | 57 | B | " | A | " | " | " | " | " | " | " | " | " | " | " | " | B | | | |
| | | " | 58 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | |
| | | " | 59 | B | " | " | " | " | " | " | " | " | " | " | " | L | H | " | " | | | |
| | | " | 60 | " | B | B | " | " | " | " | " | " | " | " | " | " | " | " | " | | | |
| | | " | 61 | " | " | " | " | " | " | A | A | " | " | " | " | " | " | " | " | | | |
| | | " | 62 | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | " | 63 | " | " | " | " | " | " | B | " | " | L | H | " | " | " | " | " | | | |
| | | " | 64 | " | " | " | " | " | " | B | " | B | " | " | A | " | " | " | " | | | |
| | | " | 65 | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | " | 66 | " | " | " | " | " | " | B | " | " | H | L | " | " | " | " | " | | | |
| | | " | 67 | " | " | " | " | " | " | " | B | " | " | " | B | " | " | " | " | | | |
| | | " | 68 | " | A | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | " | 69 | A | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | " | 70 | B | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | | | |
| " | 71 | B | " | A | " | " | " | B | " | A | " | " | A | " | " | " | A | | | | | |
| " | 72 <u>9/</u> | A | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | | | |
| " | 73 | B | " | " | " | " | " | B | " | " | L | H | " | " | H | L | " | | | | | |
| " | 74 | B | " | " | B | " | " | B | " | B | " | " | B | " | " | " | B | | | | | |
| " | 75 | A | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | | | |
| " | 76 | B | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | | | | | |
| " | 77 | B | " | " | A | " | " | B | " | A | " | " | A | " | " | " | A | | | | | |
| " | 78 <u>9/</u> | A | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | | | |
| " | 79 | B | " | " | " | " | " | B | " | " | H | L | " | " | L | H | " | | | | | |
| 8 <u>6/</u> , <u>7/</u> | Repeat subgroup 7 at T _C = +125°C and T _C = -55° C. | | | | | | | | | | | | | | | | | | | | | |

See footnotes at end of device types 01 and 08.

TABLE III. Group A inspection for device type 01 and 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

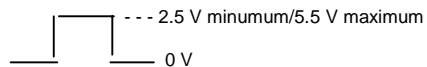
| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ | | | | | | | | | | | | | | Measured terminal | Limits | | Unit | | |
|-------------------------------|---|-------------------------|--------------|--|-------|-------|-----------------|------|-------|-------|-----|-----|-------|-------|-------|------------|-------------------|------------|-----|------|-----|---|
| | | | 2, X | * 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | | 20 | Min | | Max | |
| | | | ** 18 | ** 18 | 19 | 6 | 20 | 13 | 14 | 12 | 9 | 8 | 10 | 11 | 12 | 13 | | 14 | | | | |
| | | | Case A,B,C,D | * 1 | 2 | 3 | 4 | 14 | 9 | 10 | 8 | 6 | 5 | 11 | 7 | 3 | 2 | 1 | | | | |
| | | | Test no. | CLK1 | CLR1 | K1 | V _{CC} | CLK2 | CLR2 | J2 | Q2 | Q2 | K2 | GND | Q1 | Q1 | J1 | | | | | |
| 9 T _c = 25°C | f _{MAX} 10/ | Fig. 4 " " " | 80 | IN | 2.7 V | 2.7 V | 5.0 V | | | | | | | | GND | OUT | 2.7 V | Q1 | 25 | | MHz | |
| | | | 81 | IN | 2.7 V | 2.7 V | " | | | | | | | | " | | OUT | 2.7 V | Q1 | " | | " |
| | | | 82 | | | | " | IN | 2.7 V | 2.7 V | OUT | | | 2.7 V | " | | | | Q2 | " | | " |
| | | | 83 | | | | " | IN | 2.7 V | 2.7 V | | OUT | 2.7 V | " | | | | | Q2 | " | | " |
| | t _{PLH1} | 3003 Fig.4 | 84 | | | | " | IN | IN | 2.7 V | OUT | | GND | " | | | | CLR2 to Q2 | 5 | 21 | ns | |
| | | | 85 | IN | IN | GND | " | | | | | | | " | | OUT | 2.7 V | CLR1 to Q1 | " | 21 | " | |
| | t _{PHL1} | " | 86 | IN | IN | GND | " | | | | | | " | OUT | | 2.7 V | CLR1 to Q1 | " | 28 | " | | |
| | | | 87 | | | | " | IN | IN | 2.7 V | | OUT | GND | " | | | | CLR2 to Q2 | " | 28 | " | |
| | t _{PLH2} | 3003 Fig.5 " | 88 | | | | " | IN | 2.7 V | 2.7 V | | OUT | 2.7 V | " | | | | CLK2 to Q2 | " | 22 | " | |
| | | | 89 | | | | " | IN | 2.7 V | 2.7 V | OUT | | 2.7 V | " | | | | CLK2 to Q2 | " | " | " | |
| | | | 90 | IN | 2.7 V | 2.7 V | " | | | | | | | " | OUT | 2.7 V | CLK1 to Q1 | " | " | " | | |
| | t _{PHL2} | 3003 Fig.5 " " | 91 | " | " | " | " | | | | | | " | | OUT | 2.7 V | CLK1 to Q1 | " | " | " | | |
| | | | 92 | " | " | " | " | | | | | | " | | OUT | 2.7 V | CLK1 to Q1 | " | 30 | " | | |
| | | | 93 | " | " | " | " | | | | | | " | OUT | 2.7 V | CLK1 to Q1 | " | " | " | | | |
| | | | 94 | " | " | " | " | IN | 2.7 V | 2.7 V | OUT | | 2.7 V | " | | | | CLK2 to Q2 | " | " | " | |
| | | | 95 | " | " | " | " | IN | 2.7 V | 2.7 V | | OUT | 2.7 V | " | | | CLK2 to Q2 | " | " | " | | |
| 10 T _c = +125°C | f _{MAX} 10/ | Fig. 4 | 96 - 99 | Same tests and terminal conditions as for subgroup 9, except T _c = +125°C | | | | | | | | | | | | | | 25 | | MHz | | |
| | t _{PLH1} | 3003 Fig. 4 | 100 - 101 | | | | | | | | | | | | | | | 5 | 32 | ns | | |
| | t _{PHL1} | 3003 Fig. 4 | 102 - 103 | | | | | | | | | | | | | | | 5 | 40 | " | | |
| | t _{PLH2} | 3003 Fig. 5 | 104 - 107 | | | | | | | | | | | | | | | 5 | 32 | " | | |
| | t _{PHL2} | 3003 Fig. 5 | 108 - 111 | | | | | | | | | | | | | | | 5 | 42 | " | | |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except T _c = -55°C | | | | | | | | | | | | | | | | | | | | | |

* Terminal numbers for device type 01.

** Terminal numbers for device type 08.

1/ Case X and 2 pins not referenced are NC.

2/



3/

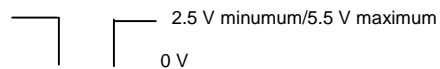


TABLE III. Group A inspection for device type 01 and 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

4/ I_{IL} limits in mA are as follows:

| I_{IL1} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -0.75/-0.250 | -0.03/-0.30 | -0.11/-0.25 | -0.12/-0.36 | -0.12/-0.36 |

| I_{IL3} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -0.15/-0.60 | -0.06/-0.60 | -0.15/-0.56 | -0.29/-0.72 | -0.24/-0.72 |

| I_{IL4} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -0.16/-0.70 | -0.06/-0.70 | -0.29/-0.65 | -0.20/-0.80 | -0.12/-0.72 |

5/ I_{OS} limits are as follows:

Test nos. 46 and 48: CKT's A, B, C - -7.5/-50
CKT D - -15/-100

6/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

7/ Tests shall be performed in sequence, attributes data only.

8/ Output voltages shall be H ≥ 1.5 V and L < 1.5 V.

9/ These tests may be performed as shown in table III or alternately as follows:

| Test no. | CLK1 | CLR1 | K1 | V_{CC} | CLK2 | CLR2 | J2 | $\bar{Q}2$ | Q2 | K2 | GND | Q1 | $\bar{Q}1$ | J1 |
|----------|------|------|----|----------|------|------|----|------------|----|----|-----|----|------------|----|
| 72A | A | A | A | 4.5 V | B | A | A | H | L | A | GND | L | H | A |
| 72B | B | " | " | " | B | " | " | H | L | " | " | H | L | " |
| 72C | B | " | " | " | A | " | " | H | L | " | " | H | L | " |
| 78A | A | " | " | " | B | " | " | L | H | " | " | H | L | " |
| 78B | B | " | " | " | B | " | " | L | H | " | " | L | H | " |
| 78C | B | " | " | " | A | " | " | L | H | " | " | L | H | " |

10/ 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 ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|------------------|--------------------|---------------|--------|--------|-----------|--------|-------|------------|-------|------------|-------|-------|-----------|-----------|--------|-----------------|-------------------|------------|-----------|-----------|----|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | |
| | | | Test no. | CLR1 | D1 | CLK1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | CLK2 | D2 | CLR2 | V _{CC} | | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 0.7 V | 2.0 V | GND | 2.0 V | | -4 mA | GND | | | | | | | 4.5 V | $\bar{Q}1$ | 2.5 | | V | |
| | | " | 2 | 2.0 V | " | GND | 0.7 V | -4 mA | | " | | | | | | | " | Q1 | " | | " | |
| | | " | 3 | " | " | <u>2/</u> | 2.0 V | -4 mA | | " | | | | | | | | " | Q1 | " | | " |
| | | " | 4 | " | 0.7 V | <u>2/</u> | 2.0 V | | | -4 mA | " | | | | | | | " | $\bar{Q}1$ | " | | " |
| | | " | 5 | | | | | | | " | | -4 mA | 0.7 V | GND | 2.0 V | 2.0 V | " | " | Q2 | " | | " |
| | | " | 6 | | | | | | | " | -4 mA | | 2.0 V | GND | 2.0 V | 0.7 V | " | " | $\bar{Q}2$ | " | | " |
| | | " | 7 | | | | | | | " | -4 mA | | " | <u>2/</u> | 0.7 V | 2.0 V | " | " | $\bar{Q}2$ | " | | " |
| | | " | 8 | | | | | | | " | | -4 mA | " | <u>2/</u> | 2.0 V | 2.0 V | " | " | Q2 | " | | " |
| | V _{OL} | 3007 | 9 | 2.0 V | 0.7 V | <u>2/</u> | 2.0 V | 4 mA | | " | | | -4 mA | " | <u>2/</u> | 2.0 V | 2.0 V | " | Q1 | | 0.4 | " |
| | | " | 10 | " | 2.0 V | <u>2/</u> | 2.0 V | | | 4 mA | " | | | | | | | " | $\bar{Q}1$ | " | | " |
| | | " | 11 | " | " | GND | 0.7 V | | | 4 mA | " | | | | | | | " | $\bar{Q}1$ | " | | " |
| | | " | 12 | 0.7 V | " | GND | 2.0 V | 4 mA | | | " | | | | | | | " | Q1 | " | | " |
| | | " | 13 | | | | | | | " | | 4 mA | 2.0 V | <u>2/</u> | 0.7 V | 2.0 V | " | " | Q2 | " | | " |
| | | " | 14 | | | | | | | " | 4 mA | | 2.0 V | <u>2/</u> | 2.0 V | " | " | " | $\bar{Q}2$ | " | | " |
| | | " | 15 | | | | | | | " | 4 mA | | 0.7 V | GND | " | " | " | " | $\bar{Q}2$ | " | | " |
| | | " | 16 | | | | | | | " | | 4 mA | 2.0 V | GND | " | 0.7 V | " | " | Q2 | " | | " |
| | V _{IC} | | 17 | -18 mA | | | | | | " | | | | | | | | " | CLR1 | | -1.5 | " |
| | | | 18 | | -18 mA | | | | | " | | | | | | | | " | D1 | | " | " |
| | | | 19 | | | -18 mA | | | | " | | | | | | | | " | CLK1 | | " | " |
| | | | 20 | | | | -18 mA | | | " | | | | | | | | " | PR1 | | " | " |
| | | | 21 | | | | | | | " | | | | -18 mA | | | | " | PR2 | | " | " |
| | | | 22 | | | | | | | " | | | | | -18 mA | | | " | CLK2 | | " | " |
| | | | 23 | | | | | | | " | | | | | | -18 mA | | " | D2 | | " | " |
| | | | 24 | | | | | | | " | | | | | | | -18 mA | " | CLR2 | | " | " |
| | I _{IL2} | 3009 | 25 | 4.5 V | 0.4 V | 4.5 V | GND | | | " | | | | | | | | 5.5 V | D1 | <u>3/</u> | <u>3/</u> | mA |
| | | " | 26 | | | | | | | " | | | | GND | 4.5 V | 0.4 V | 4.5 V | " | D2 | " | " | " |
| | I _{IL4} | " | 27 | 4.5 V | GND | 0.4 V | GND | | | " | | | | | | | | " | CLK1 | " | " | " |
| | | " | 28 | GND | GND | GND | 0.4 V | | | " | | | | | | | | " | PR1 | " | " | " |
| | | " | 29 | | | | | | | " | | | | 0.4 V | GND | GND | GND | " | PR2 | " | " | " |
| | | " | 30 | | | | | | | " | | | | GND | 0.4 V | GND | 4.5 V | " | CLK2 | " | " | " |

See footnotes at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | |
|-----------------------------------|--|--------------------|---------------|-------|-------|-------|-------|-------|------------|-----|------------|-----|-------|-------|-------|-------|-----------------|-------------------|-----------------|------------|------|------|----|---|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | | | |
| | | | Test no. | CLR1 | D1 | CLK1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | CLK2 | D2 | CLR2 | V _{CC} | | | | | | | |
| 1 T _c = 25°C | I _{IL5} | 3009 | 31 | 0.4 V | 4.5 V | 4.5 V | GND | | | GND | | | | | | | 5.5 V | CLR1 | 3/ | 3/ | mA | | | |
| | | | 32 | | | | | | | | | | GND | 4.5 V | 4.5 V | 0.4 V | | | CLR2 | 3/ | 3/ | mA | | |
| | I _{IH1} | 3010 | 33 | GND | 2.7 V | 4.5 V | 4.5 V | | | | | | | | | | | | D1 | | 20 | μA | | |
| | | | 34 | | | | | | | | | | 4.5 V | 4.5 V | 2.7 V | GND | | | D2 | | 20 | " | | |
| | I _{IH2} | " | 35 | | | | | | | | | | | 4.5 V | 4.5 V | 5.5 V | GND | | D2 | | 100 | " | | |
| | | | 36 | GND | 5.5 V | 4.5 V | 4.5 V | | | | | | | | | | | | D1 | | 100 | " | | |
| | I _{IH3} | " | " | 37 | GND | 4.5 V | 2.7 V | 4.5 V | | | | | | | | | | | | CLK1 | | 40 | " | |
| | | | | 38 | 4.5 V | 4.5 V | 4/ | 2.7 V | | | | | | | | | | | | PR1 | | " | " | |
| | | | | 39 | | | | | | | | | | | | 2.7 V | 4/ | 4.5 V | 4.5 V | | PR2 | | " | " |
| | | | | 40 | | | | | | | | | | | | 4.5 V | 2.7 V | 4.5 V | GND | | CLK2 | | " | " |
| | I _{IH4} | " | " | 41 | | | | | | | | | | | 4.5 V | 5.5 V | 4.5 V | GND | | CLK2 | | 200 | " | |
| | | | | 42 | | | | | | | | | | | 5.5 V | 4/ | 4.5 V | 4.5 V | | PR2 | | " | " | |
| | | | | 43 | 4.5 V | 4.5 V | 4/ | 5.5 V | | | | | | | | | | | | PR1 | | " | " | |
| | | | | 44 | GND | 4.5 V | 5.5 V | 4.5 V | | | | | | | | | | | | CLK1 | | " | " | |
| | I _{IH5} | " | " | 45 | 2.7 V | GND | 4/ | 4.5 V | | | | | | | | | | | | CLR1 | | 60 | " | |
| | | | | 46 | | | | | | | | | | | 4.5 V | 4/ | GND | 2.7 V | | CLR2 | | 60 | " | |
| | I _{IH6} | " | " | 47 | | | | | | | | | | 4.5 V | 4/ | GND | 5.5 V | | CLR2 | | 300 | " | | |
| | | | | 48 | 5.5 V | GND | 4/ | 4.5 V | | | | | | | | | | | | CLR1 | | 300 | " | |
| | I _{OS} | 3011 | " | 49 | GND | | | | | GND | | | | | | | | | | $\bar{Q}1$ | -15 | -100 | mA | |
| | | | | 50 | | | | GND | GND | | | | | | | | | | | Q1 | " | " | " | |
| 51 | | | | | | | | | | | | | GND | GND | | | | | Q2 | " | " | " | | |
| 52 | | | | | | | | | | | | GND | | | | | GND | | $\bar{Q}2$ | " | " | " | | |
| I _{CC} | 3005 3005 | " | 53 | 5.5 V | GND | GND | GND | | | | | | GND | GND | GND | 5.5 V | | V _{CC} | | 8.0 | " | | | |
| | | | 54 | GND | GND | GND | 5.5 V | | | | | | | 5.5 V | GND | GND | GND | | V _{CC} | | 8.0 | " | | |
| 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/, 6/ T _c = 25°C | Truth table tests | 3014 | 55 | B | B | B | B | H | H | GND | H | H | B | B | B | B | 4.5 V | All outputs | See 7/ | | | | | |
| | | | 56 | B | " | " | A | L | " | " | " | L | A | " | " | " | B | " | " | " | " | " | | |
| | | | 57 | A | " | " | A | L | " | " | " | L | A | " | " | " | A | " | " | " | " | " | | |
| | | | 58 | " | " | " | B | H | L | " | L | H | B | " | " | " | " | " | " | " | " | " | | |
| | | | 59 | " | " | " | A | " | " | " | L | " | L | " | " | A | " | " | " | " | " | " | | |
| | | | 60 | B | " | " | " | " | " | H | " | H | " | " | " | " | " | B | " | " | " | " | | |
| 61 | B | A | " | " | " | " | H | " | H | " | " | " | " | A | B | " | " | " | " | | | | | |

See footnotes at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

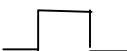
| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|-----------------------------------|---|----------------------------|---------------|-------|----|-------|-------|-----|------------|-----|------------|-------|-------|-------|-------|-------|--------------------|--------------------|-------------------|-----|------|---|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | |
| | | | Test no. | CLR1 | D1 | CLK1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | CLK2 | D2 | CLR2 | V _{CC} | | | | | |
| 7 5/, 6/ T _c = 25°C | Truth table tests | 3014 | 62 | B | A | A | A | L | H | GND | H | L | A | A | A | B | 4.5 V | All outputs | See 7/ | | | |
| | | | 63 | A | " | " | A | L | H | " | H | L | A | " | " | A | " | " | " | " | " | " |
| | | | 64 | " | " | " | B | H | L | " | L | H | B | " | " | " | " | " | " | " | " | " |
| | | | 65 | " | " | " | A | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " |
| | | | 66 | " | " | B | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " |
| | | | 67 | " | B | B | " | " | " | " | " | " | " | B | B | " | " | " | " | " | " | " |
| | | | 68 | " | " | A | " | L | H | " | H | L | " | A | " | " | " | " | " | " | " | " |
| | | | 69 | " | " | " | B | H | L | " | L | H | B | " | " | " | " | " | " | " | " | " |
| | | | 70 | B | A | " | " | " | H | " | H | " | " | " | A | B | " | " | " | " | " | " |
| | | | 71 | " | B | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " |
| | | | 72 | " | " | " | A | L | " | " | " | " | L | A | " | " | " | " | " | " | " | " |
| | | | 73 | A | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " |
| | | | 74 | " | A | B | " | " | " | " | " | " | " | " | B | A | " | " | " | " | " | " |
| | | | 75 | " | " | A | " | H | L | " | L | H | " | A | " | " | " | " | " | " | " | " |
| | | | 76 | " | " | " | B | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " |
| | | | 77 | " | " | " | A | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " |
| 78 | B | " | " | " | L | H | " | H | L | " | " | " | " | B | " | " | " | " | " | | | |
| 79 | A | " | " | " | L | H | " | H | L | " | " | " | " | A | " | " | " | " | " | | | |
| 80 | " | B | " | B | H | L | " | L | H | B | " | B | " | " | " | " | " | " | " | | | |
| 81 | " | B | " | A | H | L | " | L | H | A | " | " | B | " | " | " | " | " | " | | | |
| 8 4/, 5/ | Repeat subgroup 7 at T _c = +125°C and T _c = -55°C | | | | | | | | | | | | | | | | | | | | | |
| 9 T _c = 25°C | f _{MAX} | Fig. 8 8/ | 82 | 2.7 V | IN | IN | 2.7 V | OUT | GND | | | | | | | | 5.0 V | Q1 | 20 | | MHz | |
| | | | 83 | 2.7 V | IN | IN | 2.7 V | | OUT | " | | | | | | | | " | $\bar{Q}1$ | " | | " |
| | | | 84 | | | | | | | " | OUT | | 2.7 V | IN | IN | 2.7 V | " | " | $\bar{Q}2$ | " | | " |
| | | | 85 | | | | | | | " | OUT | 2.7 V | IN | IN | 2.7 V | " | " | " | Q2 | " | | " |
| | t _{PLH1} | 3003 Fig. 6 | 86 | | | | | | | " | OUT | IN | | | IN | " | | PR2 to Q2 | 5 | 30 | ns | |
| | | | 87 | | | | | | | " | OUT | IN | | | IN | " | | CLR2 to $\bar{Q}2$ | " | " | " | |
| | t _{PH1} | " | 88 | IN | | | IN | OUT | " | | | | | | | | | CLR1 to $\bar{Q}1$ | " | " | " | |
| | | | 89 | IN | | | IN | OUT | " | | | | | | | | | PR1 TO Q1 | " | " | " | |
| | t _{PLH2} | 3003 Fig. 7 3003 Fig. 8 | 90 | IN | | | IN | OUT | " | | | | | | | | | " | CLR1 to Q1 | " | 46 | " |
| | | | 91 | IN | | | IN | OUT | " | | | | | | | | | " | PR1 to $\bar{Q}1$ | " | " | " |
| | t _{PH2} | " | 92 | | | | | | | " | OUT | IN | | | | IN | " | " | PR2 to $\bar{Q}2$ | " | " | " |
| | | | 93 | | | | | | | " | OUT | IN | | | IN | " | " | " | CLR2 to Q2 | " | " | " |
| | t _{PLH2} | 3003 Fig. 7 3003 Fig. 8 | 94 | | | | | | | " | OUT | 2.7 V | IN | IN | 2.7 V | " | " | CLK2 to Q2 | " | 30 | " | |
| | | | 95 | | | | | | | " | OUT | 2.7 V | IN | IN | 2.7 V | " | " | CLK2 to $\bar{Q}2$ | " | " | " | |
| t _{PH2} | 3003 Fig. 7 3003 Fig. 8 | 96 | 2.7 V | IN | IN | 2.7 V | OUT | " | | | | | | | " | " | CLK1 to Q1 | " | " | " | | |
| | | 97 | 2.7 V | IN | IN | 2.7 V | OUT | " | | | | | | | " | " | CLK1 to $\bar{Q}1$ | " | " | " | | |
| t _{PH2} | 3003 Fig. 7 3003 Fig. 8 | 98 | 2.7 V | IN | IN | 2.7 V | OUT | " | | | | | | | " | " | CLK1 to $\bar{Q}1$ | " | 46 | " | | |
| | | 99 | 2.7 V | IN | IN | 2.7 V | OUT | " | | | | | | | " | " | CLK1 to Q1 | " | " | " | | |
| t _{PH2} | 3003 Fig. 7 3003 Fig. 8 | 100 | | | | | | | " | OUT | 2.7 V | IN | IN | 2.7 V | " | " | CLK2 to $\bar{Q}2$ | " | " | " | | |
| | | 101 | | | | | | | " | OUT | 2.7 V | IN | IN | 2.7 V | " | " | CLK2 to Q2 | " | " | " | | |

See footnotes at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|-------------|---|--------------------|--------------|--|------|----|------|-----|----|------------|-----|------------|----|-----|------|----|------|-------------------|-----------------|-----|------|--|--|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | | |
| | | | | Test no. | CLR1 | D1 | CLK1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | CLK2 | D2 | CLR2 | | V _{CC} | | | | |
| 10 | f _{MAX} 8/ | Fig. 8 | 102-105 | Same tests and terminal conditions as for subgroup 9, except T _C = +125°C | | | | | | | | | | | | | | 20 | | MHz | | | |
| | t _{PLH1} | 3003 Fig.6 | 106-109 | | | | | | | | | | | | | | | 5 | 39 | ns | | | |
| | t _{PHL1} | 3003 Fig. 6 | 110-113 | | | | | | | | | | | | | | | " | 59 | " | | | |
| | t _{PLH2} | 3003 Fig. 7 | 114 | | | | | | | | | | | | | | | " | 39 | " | | | |
| | | 3003 Fig. 8 | 115 | | | | | | | | | | | | | | | " | " | " | | | |
| | | 3003 Fig. 7 | 116 | | | | | | | | | | | | | | | " | " | " | | | |
| | | 3003 Fig. 8 | 117 | | | | | | | | | | | | | | | " | " | " | | | |
| | t _{PHL2} | 3003 Fig. 7 | 118 | | | | | | | | | | | | | | | " | 59 | " | | | |
| | | 3003 Fig. 8 | 119 | | | | | | | | | | | | | | | " | " | " | | | |
| | | 3003 Fig. 7 | 120 | | | | | | | | | | | | | | | " | " | " | | | |
| 3003 Fig. 8 | | 121 | | | | | | | | | | | | | | | " | " | " | | | | |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C | | | | | | | | | | | | | | | | | | | | | | |

1/ Case X and 2 pins not referenced are NC.


2/  --- 2.5 V minimum/5.5 V maximum
0 V

3/ I_{IL} limits in mA are as follows:

| I _{IL2} | Min/Max limits for CKT | | | | | |
|------------------|------------------------|---------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E | F |
| | -0.075/-0.250 | -0.030/-0.300 | -0.095/-0.210 | -0.097/-0.207 | -0.135/-0.370 | -0.160/-0.400 |

| I _{IL4} | Min/Max limits for CKT | | | | | |
|------------------|--|---------------|--|--|--|---------------------|
| | A | B | C | D | E | F |
| | -0.150/-0.500 for tests 27, 30 -0.200/-0.800 for tests 28, 29 | -0.060/-0.700 | -0.160/-0.400 for tests 27, 30 -0.350/-0.760 for tests 28, 29 | -0.160/-0.400 for tests 27, 30 -0.355/-0.759 for tests 28, 29 | -0.120/-0.360 for tests 27, 30 -0.280/-0.760 for tests 28, 29 | -0.320/-0.800 (All) |

| I _{IL5} | Min/Max limits for CKT | | | | | |
|------------------|------------------------|---------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E | F |
| | -0.200/-0.800 | -0.060/-0.700 | -0.350/-0.760 | -0.480/-1.200 | -0.280/-0.760 | -0.480/-1.200 |

4/  --- 2.5 V minimum/5.5 V maximum
0 V

5/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volt maximum.

6/ Tests shall be performed in sequence, attributes data only.

7/ Output voltages shall be H ≥ 1.5 V and L < 1.5 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 04.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ 2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|------------------|--------------------|------------------|--------|--------|--------|--------|-------|------------|-----|------------|-------|--------|-------|--------|--------|-----------------|-------------------|------------|-----|------|----|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | |
| | | | Test no. | CLK1 | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK2 | V _{CC} | | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 2.0 V | 2.0 V | 2.0 V | 0.7 V | -4 mA | | GND | | | | | | | 4.5 V | Q1 | 2.5 | | V | |
| | | " | 2 | 2/ | 2.0 V | 0.7 V | 2.0 V | | -4 mA | " | | | | | | | | " | $\bar{Q}1$ | " | | " |
| | | " | 3 | 2/ | 0.7 V | 2.0 V | 2.0 V | -4 mA | | " | | | | | | | | " | Q1 | " | | " |
| | | " | 4 | | | | | | | " | -4 mA | | 2.0 V | 0.7 V | 2.0 V | 2/ | " | " | $\bar{Q}2$ | " | | " |
| | | " | 5 | | | | | | | " | | -4 mA | 2.0 V | 2.0 V | 0.7 V | 2/ | " | " | Q2 | " | | " |
| | | " | 6 | | | | | | | " | | | -4 mA | 0.7 V | " | 2.0 V | 2.0 V | " | Q2 | " | | " |
| | V _{OL} | 3007 | 7 | | | | | | | " | 4 mA | | 0.7 V | " | 2.0 V | 2.0 V | " | " | $\bar{Q}2$ | | 0.4 | " |
| | | " | 8 | | | | | | | " | 4 mA | | 2.0 V | " | 0.7 V | 2/ | " | " | $\bar{Q}2$ | " | | " |
| | | " | 9 | | | | | | | " | | 4 mA | 2.0 V | 0.7 V | 2.0 V | 2/ | " | " | Q2 | " | | " |
| | | " | 10 | 2.0 V | 2.0 V | 2.0 V | 0.7 V | | 4 mA | " | | | | | | | " | " | $\bar{Q}1$ | " | | " |
| | | " | 11 | 2/ | 0.7 V | 2.0 V | 2.0 V | | 4 mA | " | | | | | | | " | " | $\bar{Q}1$ | " | | " |
| | | " | 12 | 2/ | 2.0 V | 0.7 V | 2.0 V | 4 mA | | " | | | | | | | " | " | Q1 | " | | " |
| | V _{IC} | | 13 | -18 mA | | | | | | " | | | | | | | " | " | CLK1 | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | " | K1 | | | " |
| | | | 15 | | | -18 mA | | | | " | | | | | | | " | " | J1 | | | " |
| | | | 16 | | | | -18 mA | | | " | | | | | | | " | " | PR1 | | | " |
| | | | 17 | | | | | | | " | | | -18 mA | | | | " | " | PR2 | | | " |
| | | | 18 | | | | | | | " | | | | | -18 mA | | " | " | J2 | | | " |
| | | | 19 | | | | | | | " | | | | | | -18 mA | | " | K2 | | | " |
| | | | 20 | | | | | | | " | | | | | | | -18 mA | " | CLK2 | | | " |
| | I _{IL1} | 3009 | 21 | 4.5 V | 0.4 V | GND | 3/ | | | " | | | | | | | | 5.5 V | K1 | 4/ | 4/ | mA |
| | | " | 22 | 3/ | 4.5 V | 0.4 V | 4.5 V | | | " | | | | | | | | " | J2 | " | | " |
| | | " | 23 | | | | | | | " | | | | 3/ | GND | 0.4 V | 4.5 V | " | K2 | " | | " |
| | | " | 24 | | | | | | | " | | | | 4.5 V | 0.4 V | 4.5 V | 3/ | " | J2 | " | | " |
| | I _{IL3} | " | 25 | | | | | | | " | | | | 3/ | 4.5 V | 4.5 V | 0.4 V | " | CLK2 | " | | " |
| | | " | 26 | 0.4 V | 4.5 V | 4.5 V | 3/ | | | " | | | | | | | | " | CLK1 | " | | " |
| | I _{IL4} | " | 27 | 4.5 V | 4.5 V | 4.5 V | 0.4 V | | | " | | | | | | | | " | PR1 | " | | " |
| | | " | 28 | | | | | | | " | | | | 0.4 V | 4.5 V | 4.5 V | 4.5 V | " | PR2 | " | | " |
| | I _{IH1} | 3010 | 29 | GND | 2.7 V | GND | GND | | | " | | | | | | | | " | K1 | | 20 | μA |
| | | " | 30 | 2/ | GND | 2.7 V | 4.5 V | | | " | | | | | | | | " | J1 | " | | " |
| | | " | 31 | | | | | | | " | | | | 4.5 V | 2.7 V | GND | 2/ | " | J2 | " | | " |
| | | " | 32 | | | | | | | " | | | | GND | GND | 2.7 V | GND | " | K2 | " | | " |
| | I _{IH2} | " | 33 | | | | | | | " | | | | GND | GND | 5.5 V | GND | " | K2 | | 100 | " |
| | | " | 34 | | | | | | | " | | | | 4.5 V | 5.5 V | GND | 2/ | " | J2 | " | | " |
| | | " | 35 | 2/ | GND | 5.5 V | 4.5 V | | | " | | | | | | | " | " | J1 | " | | " |
| | | " | 36 | GND | 5.5 V | GND | GND | | | " | | | | | | | " | " | K1 | " | | " |

See footnotes at end of device type 04.

TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ 2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|----------------------------|---|--------------------|------------------|-------|-------|-------|-------|-----|------------|-----|------------|-----|-------|-------|-------|-------|-----------------|-------------------|-----------------|-----------------|------|-----|---|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | | |
| | | | Test no. | CLK1 | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK2 | V _{CC} | | | | | | |
| 1 T _C = 25°C | I _{IH5} | 3010 | 37 | GND | GND | 4.5 V | 2.7 V | 5/ | | GND | | | | | | | 5.5 V | PR1 | | 60 | μA | | |
| | | | 38 | | | | | | | | | | 5/ | 2.7 V | 4.5 V | GND | GND | | PR2 | | 60 | " | |
| | I _{IH6} | " | 39 | | | | | | | | | | 5/ | 5.5 V | 4.5 V | GND | GND | | PR2 | | 300 | " | |
| | | | 40 | GND | GND | 4.5 V | 5.5 V | 5/ | | | | | | | | | | | PR1 | | 300 | " | |
| | I _{IH7} | " | 41 | 2.7 V | GND | GND | GND | | | | | | | | | | | | CLK1 | | 80 | " | |
| | | | 42 | | | | | | | | | | | | GND | GND | GND | 2.7 V | | CLK2 | | 80 | " |
| | I _{IH8} | " | 43 | | | | | | | | | | | | GND | GND | GND | 5.5 V | | CLK2 | | 400 | " |
| | | | 44 | 5.5 V | GND | GND | GND | | | | | | | | | | | | | CLK1 | | 400 | " |
| | I _{OS} | 3011 | 45 | | | | GND | GND | | | | | | | | | | | Q1 | -15 | -100 | mA | |
| | | | 46 | 2/ | 4.5 V | GND | 4.5 V | GND | GND 6/ | | | | | | | | | | | $\bar{Q}1$ | 6/ | 6/ | " |
| 47 | | | | | | | | | | | | | | | | | | | Q2 | -15 | -100 | " | |
| I _{CC} | 3005 3005 | 48 | | | | | | | | | GND 6/ | GND | 4.5 V | GND | 4.5 V | 2/ | | | $\bar{Q}2$ | 6/ | 6/ | " | |
| | | 49 | 2/ | 5.5 V | GND | 5.5 V | | | | | | | 5.5 V | GND | 5.5 V | 2/ | | | V _{CC} | | 8.0 | " | |
| | | 50 | 5.5 V | 5.5 V | 5.5 V | GND | | | | | | | | GND | 5.5 V | 5.5 V | 5.5 V | | | V _{CC} | | 8.0 | " |
| 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 7/ 8/ | Truth table tests | 3014 | 51 | B | A | B | B | H | L | GND | L | H | B | B | B | B | 4.5 V | All | See 9/ | | | | |
| | | | 52 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | outputs | | | | |
| | | | 53 | B | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 54 | B | " | " | A | " | " | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 55 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 56 | B | " | " | " | " | L | H | " | " | " | " | " | " | " | " | " | | | | |
| | | | 57 | B | B | A | " | " | " | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 58 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 59 | B | " | " | " | H | L | " | " | " | " | " | " | " | " | " | " | | | | |
| | | | 60 | " | " | B | B | " | " | " | " | " | " | " | " | " | A | " | " | | | | |
| | | | 61 | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | | | | |
| | | | 62 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | |
| | | | 63 | " | " | " | " | " | " | " | " | " | H | L | " | " | " | B | " | | | | |
| | | | 64 | " | " | " | " | " | " | " | " | " | " | " | " | A | B | B | " | | | | |
| | | | 65 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | |
| | | | 66 | " | " | " | " | " | " | " | " | " | L | H | " | " | " | B | " | | | | |
| | | | 67 | " | " | " | " | " | " | " | " | " | " | " | " | B | B | " | " | | | | |
| | | | 68 | " | " | " | " | A | " | " | " | " | " | " | " | A | " | " | " | | | | |
| | | | 69 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | |
| 70 | B | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | | | | | | | |
| 71 | B | A | A | " | " | " | " | " | " | " | " | " | A | A | B | " | | | | | | | |
| 72 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | | | | |
| 73 | B | " | " | " | " | L | H | " | H | L | " | " | " | " | B | " | | | | | | | |
| 74 | B | B | B | " | " | " | " | " | " | " | " | " | B | B | B | " | | | | | | | |
| 75 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | | | | |
| 76 | B | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | | | | | | | |
| 77 | B | A | A | " | " | " | " | " | " | " | " | " | A | A | B | " | | | | | | | |
| 78 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | | | | |
| 79 | B | " | " | " | " | H | L | " | L | H | " | " | " | " | B | " | | | | | | | |
| 8 5, 7/ | Repeat subgroup 7 at T _C = +125°C and T _C = -55°C. | | | | | | | | | | | | | | | | | | | | | | |

See footnotes at end of device type 04.

TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|--|--------------------|---------------|---|-------|-------|-------|-----|------------|-----|------------|-----|-----|-------|-------|-------|-----------------|-------------------|--------------------|-----|------|----|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | |
| | | | Test no. | CLK1 | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK2 | V _{CC} | | | | | |
| 9 T _C = 25°C | f _{MAX} 8/ | Fig. 11 | 80 | IN | 2.7 V | 2.7 V | 2.7 V | OUT | | GND | | | | | | | 5.0 V | Q1 | 25 | | MHz | |
| | | " | 81 | IN | 2.7 V | 2.7 V | 2.7 V | | OUT | " | | | | | | | " | $\bar{Q}1$ | " | | " | |
| | | " | 82 | | | | | | | | " | OUT | | 2.7 V | 2.7 V | 2.7 V | IN | " | $\bar{Q}2$ | " | | " |
| | | " | 83 | | | | | | | | " | | OUT | 2.7 V | 2.7 V | 2.7 V | IN | " | Q2 | " | | " |
| | t _{PLH1} | 3003 Fig. 11 | 84 | | | | | | | | " | | OUT | IN | GND | 2.7 V | IN | " | PR2 to Q2 | 5 | 21 | ns |
| | | | 85 | IN | 2.7 V | GND | IN | OUT | | | " | | | | | | " | " | PR1 to Q1 | " | 21 | " |
| | t _{PHL1} | " | 86 | IN | 2.7 V | GND | IN | | | OUT | " | | | | | | " | " | PR1 to $\bar{Q}1$ | " | 28 | " |
| | | | 87 | | | | | | | | " | OUT | | IN | GND | 2.7 V | IN | " | PR2 to Q2 | " | " | " |
| | t _{PLH2} | 3003 Fig. 12 | 88 | | | | | | | | " | | OUT | 2.7 V | 2.7 V | 2.7 V | IN | " | CLK2 to Q2 | " | 22 | " |
| | | | 89 | | | | | | | | " | OUT | | 2.7 V | 2.7 V | 2.7 V | IN | " | CLK2 to $\bar{Q}2$ | " | " | " |
| | | | 90 | IN | 2.7 V | 2.7 V | 2.7 V | | | OUT | " | | | | | | " | " | CLK1 to $\bar{Q}1$ | " | " | " |
| | | | 91 | " | " | " | " | | OUT | | " | | | | | | " | " | CLK1 to Q1 | " | " | " |
| | t _{PHL2} | " | 92 | " | " | " | " | | OUT | | " | | | | | " | " | " | CLK1 to Q1 | " | 30 | " |
| | | | 93 | " | " | " | " | | | OUT | " | | | | | " | " | " | CLK1 to $\bar{Q}1$ | " | " | " |
| | | | 94 | | | | | | | | " | OUT | | 2.7 V | 2.7 V | 2.7 V | IN | " | CLK2 to $\bar{Q}2$ | " | " | " |
| | | | 95 | | | | | | | | " | | OUT | 2.7 V | 2.7 V | 2.7 V | IN | " | CLK2 to Q2 | " | " | " |
| | f _{MAX} 10/ | Fig. 11 | 96-99 | Same tests and terminal conditions, and limits as for subgroup 9, except T _C = +125°C. | | | | | | | | | | | | | | | 25 | | MHz | |
| | t _{PLH1} | 3003 Fig. 11 | 100-101 | | | | | | | | | | | | | | | | 5 | 32 | ns | |
| | t _{PHL1} | 3003 Fig. 11 | 102-103 | | | | | | | | | | | | | | | | " | 40 | " | |
| | t _{PLH2} | 3003 Fig. 12 | 104-107 | | | | | | | | | | | | | | | | " | 32 | " | |
| t _{PHL2} | 3003 Fig. 12 | 108-111 | | | | | | | | | | | | | | | | " | 42 | " | | |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C. | | | | | | | | | | | | | | | | | | | | | |

1/ Case X and 2 pins not referenced are NC.

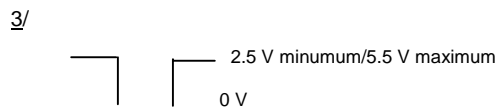
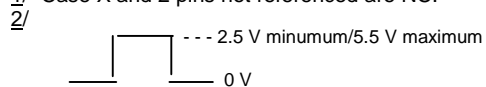


TABLE III. Group A inspection for device type 04 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

4/ I_{IL} limits in mA are as follows:

| Min/Max limits for CRT | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Symbol | A | B | C | D | F | E |
| I_{IL1} | -.075/-.250 | -.03/-.300 | -.110/-.250 | -.120/-.360 | -.010/-.360 | -.120/-.360 |
| I_{IL2} | -.175/-.550 | -.060/-.600 | -.150/-.560 | -.240/-.720 | -.240/-.720 | -.280/-.760 |
| I_{IL3} | -.200/-.800 | -.060/-.700 | -.290/-.650 | -.120/-.720 | -.120/-.720 | -.320/-.800 |

5/ Momentary GND, then open.

6/ I_{OS} limits in mA are as follows:

| Test no. | A | B | C | D and E | F |
|------------------|----------|----------|----------|----------|----------|
| 46, 48 | -7.5/-50 | -7.5/-50 | -30/-130 | -15/-130 | -7.5/-50 |
| 46, 48 Q1, Q2 | 2.25 V | 2.25 V | --- | --- | 2.25 V |

7/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

8/ Tests shall be performed in sequence, attributes data only.

9/ Output voltages shall be H ≥ 1.5 V and L < 1.5 V.

10/ 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 05.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit |
|----------------------------|------------------|--------------------|---------------|--------|--------|--------|--------|-------|------------|-----|------------|-------|--------|--------|--------|--------|-----------------|-------------------|--------|------|---------|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | |
| | | | Test no. | CLR | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK | V _{CC} | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 2.0 V | 0.7 V | 2.0 V | 0.7 V | -4 mA | | GND | | | | | | 2.0 V | 4.5 V | Q1 | 2.5 | | V |
| | | " | 2 | 0.7 V | " | " | 2.0 V | | -4 mA | " | | | | | | 2.0 V | " | $\bar{Q}1$ | " | | " |
| | | " | 3 | 2.0 V | " | " | " | -4 mA | | " | | | | | | 2/ | " | Q1 | " | | " |
| | | " | 4 | " | 2.0 V | 0.7 V | " | | -4 mA | " | | | | | | " | " | $\bar{Q}1$ | " | | " |
| | | " | 5 | " | | | | | | " | -4 mA | | 2.0 V | 0.7 V | 2.0 V | " | " | $\bar{Q}2$ | " | | " |
| | | " | 6 | " | | | | | | " | | -4 mA | " | 2.0 V | 0.7 V | " | " | Q2 | " | | " |
| | | " | 7 | 0.7 V | | | | | | " | -4 mA | | | " | " | 2.0 V | " | $\bar{Q}2$ | " | | " |
| | | " | 8 | 2.0 V | | | | | | " | | -4 mA | 0.7 V | " | " | " | " | Q2 | " | | " |
| | V _{OL} | 3007 | 9 | 2.0 V | | | | | | " | 4 mA | | 4 mA | 2.0 V | " | " | " | $\bar{Q}2$ | " | 0.4 | " |
| | | " | 10 | 0.7 V | | | | | | " | | 4 mA | 2.0 V | " | " | " | " | Q2 | " | | " |
| | | " | 11 | 2.0 V | | | | | | " | 4 mA | | " | " | " | 2/ | " | $\bar{Q}2$ | " | | " |
| | | " | 12 | " | | | | | | " | | 4 mA | " | 0.7 V | 2.0 V | " | " | Q2 | " | | " |
| | | " | 13 | " | 0.7 V | 2.0 V | 2.0 V | | 4 mA | " | | | | | | " | " | $\bar{Q}1$ | " | | " |
| | | " | 14 | " | 2.0 V | 0.7 V | 2.0 V | 4 mA | | " | | | | | | " | " | Q1 | " | | " |
| | | " | 15 | " | " | " | 0.7 V | 4 mA | | " | | | | | 2.0 V | " | " | $\bar{Q}1$ | " | | " |
| | | " | 16 | 0.7 V | " | " | 2.0 V | 4 mA | | " | | | | | 2.0 V | " | " | Q1 | " | | " |
| | V _{IC} | | 17 | -18 mA | | | | | | " | | | | | | " | " | CLR | | -1.5 | " |
| | | | 18 | | -18 mA | | | | | " | | | | | | " | " | K1 | | | " |
| | | | 19 | | | -18 mA | | | | " | | | | | | " | " | J1 | | | " |
| | | | 20 | | | | -18 mA | | | " | | | | | | " | " | PR1 | | | " |
| | | | 21 | | | | | | | " | | | -18 mA | | | " | " | PR2 | | | " |
| | | | 22 | | | | | | | " | | | | -18 mA | | " | " | J2 | | | " |
| | | | 23 | | | | | | | " | | | | | -18 mA | " | " | K2 | | | " |
| | | | 24 | | | | | | | " | | | | | | -18 mA | " | CLK | | | " |
| | I _{IL1} | 3009 | 25 | 4.5 V | 0.4 V | GND | 3/ | | | " | | | | | | 4.5 V | 5.5 V | K1 | 4/ | 4/ | mA |
| | | " | 26 | 3/ | GND | 0.4 V | 4.5 V | | | " | | | | | | " | " | J1 | " | | " |
| | | " | 27 | 3/ | | | | | | " | | | 4.5 V | 0.4 V | 4.5 V | " | " | J2 | " | | " |
| | | " | 28 | 4.5 V | | | | | | " | | | 3/ | 4.5 V | 0.4 V | " | " | K2 | " | | " |
| | I _{IL4} | " | 29 | | | | | | | " | | | 0.4 V | 4.5 V | 4.5 V | " | " | PR2 | " | | " |
| | | " | 30 | | 4.5 V | 4.5 V | 0.4 V | | | " | | | | | " | " | PR1 | " | | " | |
| | I _{IL6} | " | 31 | 3/ | " | " | 4.5 V | | | " | | | 4.5 V | 4.5 V | 4.5 V | 0.4 V | " | CLK | " | | " |
| | | " | 32 | 4.5 V | " | " | 3/ | | | " | | | 3/ | 4.5 V | 4.5 V | 0.4 V | " | CLK | " | | " |
| | I _{IL7} | " | 33 | 0.4 V | 4.5 V | 4.5 V | 4.5 V | | " | | | 4.5 V | 4.5 V | 4.5 V | 4.5 V | " | " | CLR | " | | " |
| | I _{IH1} | 3010 | 34 | GND | 2.7 V | GND | GND | | | " | | | | | | GND | " | K1 | | 20 | μ A |
| | | " | 35 | " | GND | 2.7 V | GND | | | " | | | | | | " | " | J1 | | | " |
| | | " | 36 | " | | | | | | " | | | GND | 2.7 V | GND | " | " | J2 | | | " |
| | | " | 37 | " | | | | | | " | | | " | GND | 2.7 V | " | " | K2 | | | " |

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 ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|-----------------------------------|--|--------------------|---------------|-------|-------|-------|-------|-------|------------|-----|------------|-----|-------|-------|-------|-----|-----------------|-------------------|------------|-----|------|----|--|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | | |
| | | | Test no. | CLR | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK | V _{CC} | | | | | | |
| 1 T _c = 25°C | I _{IH2} | 3010 | 38 | GND | | | | | | GND | | | GND | GND | 5.5 V | GND | 5.5 V | K2 | | 100 | μA | | |
| | | | 39 | " | | | | | | | " | | | GND | 5.5 V | GND | " | " | J2 | | " | " | |
| | | | 40 | " | GND | 5.5 V | GND | | | | " | | | | | | " | " | J1 | | " | " | |
| | I _{IH5} | " | 41 | " | 5.5 V | GND | GND | | | | | | | | | " | " | K1 | | " | " | | |
| | | | 42 | " | GND | GND | 2.7 V | | | | | | | | | " | " | PR1 | | 60 | " | | |
| | I _{IH6} | " | 43 | " | | | | | | | | | | 2.7 V | GND | GND | " | " | PR2 | | 60 | " | |
| | | | 44 | " | | | | | | | | | | 5.5 V | GND | GND | " | " | PR2 | | 300 | " | |
| | I _{IH9} | " | 45 | " | GND | GND | 5.5 V | | | | | | | | | " | " | PR1 | | 300 | " | | |
| | | | 46 | 2.7 V | " | " | GND | | | | | | | GND | GND | GND | " | " | CLR | | 120 | " | |
| | I _{IH10} | " | 47 | 5.5 V | " | " | " | | | | | | | | " | " | " | " | CLR | | 600 | " | |
| | | | 48 | GND | " | " | " | | | | | | | | " | " | 2.7 V | " | CLK | | 160 | " | |
| | I _{IH11} | " | 49 | " | " | " | " | | | | | | | | " | " | 5.5 V | " | CLK | | 800 | " | |
| | | | 50 | " | | | | 4.5 V | | GND | " | | | | | | " | " | $\bar{Q}1$ | -15 | -100 | mA | |
| | I _{OS} | 3011 | 51 | " | | | | | | | " | GND | | 4.5 V | | | | " | $\bar{Q}2$ | | " | " | |
| | | | 52 | 4.5 V | | | | | | | " | | GND | GND | | | | " | Q2 | | " | " | |
| I _{CC} | 3005 | 53 | 4.5 V | | | | GND | GND | | | | | | | | | " | Q1 | | " | " | | |
| | | 54 | GND | 5.5 V | 5.5 V | 5.5 V | 5.5 V | | | | | | 5.5 V | 5.5 V | 5.5 V | GND | " | V _{CC} | | 8.0 | " | | |
| | | 55 | 5.5 V | 5.5 V | 5.5 V | GND | | | | | | | GND | 5.5 V | 5.5 V | GND | " | V _{CC} | | 8.0 | " | | |
| 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/, 6/ T _c = 25°C | Truth table tests | 3014 | 56 | B | B | A | A | L | H | GND | H | L | A | A | B | A | 4.5 V | All | See 7/ | | | | |
| | | | 57 | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | outputs | | | | |
| | | | 58 | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | | | | |
| | | | 59 | A | " | " | " | " | " | " | " | " | L | H | B | B | A | " | " | " | | | |
| | | | 60 | " | " | " | " | " | H | L | " | " | " | " | " | " | B | " | " | " | | | |
| | | | 61 | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 62 | " | " | " | B | " | " | " | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 63 | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | | | |
| | | | 64 | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 65 | " | A | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 66 | " | " | " | " | " | L | H | " | " | " | " | " | " | B | " | " | " | | | |
| | | | 67 | " | " | " | " | " | L | H | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 68 | " | " | " | " | B | H | L | " | " | " | " | " | " | A | " | " | " | | | |
| | | | 69 | " | " | " | " | B | H | L | " | " | " | " | " | " | B | " | " | " | | | |
| | | | 70 | B | B | " | A | L | H | " | H | L | A | A | " | " | A | " | " | " | | | |
| | | | 71 | A | " | " | B | H | L | " | H | L | " | " | " | " | A | " | " | " | | | |
| | | | 72 | " | " | " | " | " | " | " | " | " | L | H | " | " | B | " | " | " | | | |
| 73 | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | | | | | | |
| 74 | " | " | " | " | " | " | " | " | " | " | " | " | B | " | A | " | " | | | | | | |
| 75 | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | | | | | | |

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 ≤ 0.7 V, or open).

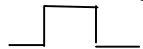
| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|--|--|--------------------|---------------|-------|-------|-------|-------|-------|------------|-----|------------|-------|-------|-------|-------|-----------|-----------------|-------------------|-------------------|-----------|------|----|---|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | | | |
| | | | Test no. | CLR | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK | V _{CC} | | | | | | |
| 7 5/, 6/ T _c = 25°C | Truth table tests | 3014 | 76 | A | B | B | B | H | L | GND | L | H | A | B | B | A | 4.5 V | All outputs | See 7/ | | | | |
| | | | 77 | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | |
| | | | 78 | " | " | " | " | " | " | " | " | " | H | L | " | " | " | B | " | " | " | " | |
| | | | 79 | " | " | " | " | " | " | " | " | " | H | L | " | " | " | A | " | " | " | " | |
| | | | 80 | " | " | " | " | " | " | " | " | " | L | H | B | " | " | A | " | " | " | " | |
| | | | 81 | " | " | " | " | " | " | " | " | " | L | " | " | " | " | B | " | " | " | " | |
| | | | 82 | B | A | A | " | " | H | " | H | " | " | " | A | " | " | A | " | " | " | " | |
| | | | 83 | B | B | B | A | L | " | " | " | " | L | A | B | B | " | " | " | " | " | " | |
| | | | 84 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | |
| | | | 85 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | |
| | | | 86 | " | A | A | " | " | " | " | " | " | " | " | " | A | A | B | " | " | " | " | |
| | | | 87 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | |
| | | | 88 | " | " | " | " | " | H | L | " | L | H | " | " | " | " | B | " | " | " | " | |
| | | | 89 | " | B | B | " | " | " | " | " | " | " | " | " | B | B | B | " | " | " | " | |
| | | | 90 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | |
| 91 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | | | | |
| 92 | " | A | A | " | " | " | " | " | " | " | " | " | A | A | B | " | " | " | " | | | | |
| 93 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | | | | |
| 94 | " | " | " | " | " | L | H | " | H | L | " | " | " | " | B | " | " | " | " | | | | |
| 8 4/, 5/ 9 T _c = 25°C | Repeat subgroup 7 at T _c = 125°C and T _c = -55°C | | | | | | | | | | | | | | | | | | | | | | |
| f _{MAX} Z/ t _{PLH1} t _{PH1} t _{PLH2} t _{PH2} | Fig. 9 | " | 95 | 5.0 V | 2.7 V | 2.7 V | 2.7 V | OUT | " | GND | " | " | " | " | " | IN | 5.0 V | Q1 | 25 | " | MHz | | |
| | | | 96 | " | 2.7 V | 2.7 V | 2.7 V | " | OUT | " | " | " | " | " | " | " | " | $\bar{Q}1$ | " | " | " | | |
| | | | 97 | " | " | " | " | " | " | " | OUT | " | 2.7 V | 2.7 V | 2.7 V | " | " | " | $\bar{Q}2$ | " | " | " | |
| | | | 98 | " | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | 2.7 V | " | " | " | Q2 | " | " | " | |
| | 3003 Fig. 9 | " | " | 99 | IN | GND | 2.7 V | 2.7 V | " | OUT | " | " | " | " | " | " | " | " | CLR to $\bar{Q}1$ | 5 | 21 | ns | |
| | | | | 100 | IN | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | GND | " | " | " | CLR to $\bar{Q}2$ | " | " | " | |
| | | | | 101 | 2.7 V | " | " | " | " | " | " | " | " | OUT | IN | GND | 2.7 V | " | " | PR2 to Q2 | " | " | " |
| | | | | 102 | " | 2.7 V | GND | IN | OUT | " | " | " | " | " | " | " | " | " | " | PR1 to Q1 | " | " | " |
| | " | " | " | 103 | " | 2.7 V | GND | IN | " | OUT | " | " | " | " | " | " | " | " | PR1 to $\bar{Q}1$ | " | 28 | " | |
| | | | | 104 | " | " | " | " | " | " | " | OUT | " | IN | GND | 2.7 V | " | " | PR2 to $\bar{Q}2$ | " | " | " | |
| | | | | 105 | IN | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | GND | " | " | CLR to Q2 | " | " | " | |
| | | | | 106 | IN | GND | 2.7 V | 2.7 V | OUT | " | " | " | " | " | " | " | " | " | CLR to Q1 | " | " | " | |
| | 3003 Fig. 10 | " | " | 107 | 2.7 V | 2.7 V | 2.7 V | 2.7 V | OUT | " | " | " | " | " | " | " | " | " | CLK to Q1 | " | 22 | " | |
| | | | | 108 | " | 2.7 V | 2.7 V | 2.7 V | " | OUT | " | " | " | " | " | " | " | " | CLK to $\bar{Q}1$ | " | " | " | |
| 109 | | | | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | 2.7 V | " | " | " | CLK to $\bar{Q}2$ | " | " | " | | |
| " | " | " | 110 | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | 2.7 V | " | " | " | CLK to Q2 | " | " | " | | |
| | | | 111 | " | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | 2.7 V | " | " | CLK to Q2 | " | 30 | " | | |
| | | | 112 | " | " | " | " | " | " | " | OUT | 2.7 V | 2.7 V | 2.7 V | " | " | " | CLK to $\bar{Q}2$ | " | " | " | | |
| | | | 113 | " | 2.7 V | 2.7 V | 2.7 V | " | OUT | " | " | " | " | " | " | " | " | CLK to $\bar{Q}1$ | " | " | " | | |
| " | " | " | 2.7 V | 2.7 V | 2.7 V | OUT | " | " | " | " | " | " | " | " | " | CLK to Q1 | " | " | " | | | | |

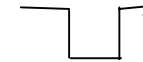
See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Limits | | Unit |
|----------|--|--------------------|---------------|---|----|----|-----|----|------------|-----|------------|----|-----|----|----|-----|----------|-------------------|--------|-----|------|
| | | | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | Min | Max | |
| | | | Test no. | CLR | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | GND | $\bar{Q}2$ | Q2 | PR2 | J2 | K2 | CLK | V_{CC} | | | | |
| 10 | f_{MAX} 8/ | Fig. 9 | 115-118 | Same tests and terminal conditions as for subgroup 9, except $T_C = +125^\circ C$. | | | | | | | | | | | | | | | 25 | | MHz |
| | t_{PLH1} | 3003 Fig. 9 | 119-122 | | | | | | | | | | | | | | | | 5 | 32 | ns |
| | t_{PHL1} | 3003 Fig. 9 | 123-126 | | | | | | | | | | | | | | | | " | 40 | " |
| | t_{PLH2} | 3003 Fig. 10 | 127-130 | | | | | | | | | | | | | | | | " | 32 | " |
| | t_{PHL2} | 3003 Fig. 10 | 131-134 | | | | | | | | | | | | | | | | " | 42 | " |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except $T_C = -55^\circ C$. | | | | | | | | | | | | | | | | | | | | |

1/ Case X and 2 pins not referenced are NC.

2/  --- 2.5 V minimum/5.5 V maximum
0 V

3/  --- 2.5 V minimum/5.5 V maximum
0 V

4/ I_{IL} limits in mA are as follows:

| I_{IL1} | Min/Max limits for CKT | | | | |
|-----------|------------------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E |
| | -0.075/-0.250 | -0.030/-0.300 | -0.110/-0.250 | -0.120/-0.360 | -0.120/-0.360 |

| I_{IL4} | Min/Max limits for CKT | | | | |
|-----------|------------------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E |
| | -0.200/-0.800 | -0.060/-0.700 | -0.290/-0.650 | -0.120/-0.720 | -0.320/-0.800 |

| I_{IL6} | Min/Max limits for CKT | | | | |
|-----------|------------------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E |
| | -0.300/-1.000 | -0.120/-1.000 | -0.300/-1.120 | -0.240/-1.440 | -0.560/-1.520 |

| I_{IL7} | Min/Max limits for CKT | | | | |
|-----------|------------------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E |
| | -0.450/-1.300 | -0.120/-1.000 | -0.580/-1.300 | -0.120/-1.500 | -0.640/-1.600 |

5/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volt maximum.

6/ Tests shall be performed in sequence, attributes data only.

7/ Output voltages shall be H ≥ 1.5 V and L < 1.5 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 03 and 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open). 1/

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|----------------------------|-----------------|--------------------|------------|-------|--------|--------|--------|--------|-------|-------|------|--------|------|-------|-------|-------|--------|--------|-----------------|-------------------|--------|------|------|----|---|
| | | | * 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Min | | Max | | | | |
| | | | ** 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | |
| | | | Cases E, F | ** 1 | 16 | 4 | 2 | 15 | 14 | 10 | 13 | 11 | 7 | 9 | 12 | 6 | 8 | 3 | 5 | | | | | | |
| | | | Test no. | CLK1 | K1 | J1 | PR1 | Q1 | Q1 | Q2 | GND | Q2 | PR2 | J2 | K2 | CLK2 | CLR2 | CLR1 | V _{CC} | | | | | | |
| 1 T _C = 25°C | V _{OH} | 3006 | 1 | 2.0 V | 2.0 V | 2.0 V | 2.0 V | | -4 mA | | GND | | | | | | | 0.7 V | 4.5 V | Q1 | 2.5 | | V | | |
| | | | 2 | 2.0 V | " | 2.0 V | 0.7 V | -4 mA | | | | | | | | | | | 2.0 V | " | Q1 | " | | " | |
| | | | 3 | 3/ | " | 0.7 V | 2.0 V | | | -4 mA | | | | | | | | | | " | " | Q1 | " | | " |
| | | | 4 | 3/ | 0.7 V | 2.0 V | 2.0 V | -4 mA | | | | | | | | | | | | " | " | Q1 | " | | " |
| | | | 5 | | | | | | | | | | | | | | | | | | | Q2 | " | | " |
| | | | 6 | | | | | | | | | -4 mA | " | | 0.7 V | 2.0 V | 2.0 V | 2.0 V | 0.7 V | | | Q2 | " | | " |
| | | | 7 | | | | | | | | | | | -4 mA | " | | 0.7 V | 3/ | 2.0 V | | | Q2 | " | | " |
| | | | 8 | | | | | | | | | -4 mA | " | | | 0.7 V | 2.0 V | " | " | | | Q2 | " | | " |
| | | V _{OL} | 3007 | 9 | | | | | | | 4 mA | | 4 mA | | 0.7 V | 2.0 V | " | " | | | Q2 | | 0.4 | " | |
| | 10 | | | | | | | | | | | | | | 2.0 V | 0.7 V | " | " | | | Q2 | | | " | |
| | 11 | | | | | | | | | | | | 4 mA | | 2.0 V | 2.0 V | 2.0 V | 0.7 V | | | Q2 | | | " | |
| | 12 | | | | | | | | | | | 4 mA | | | 0.7 V | 2.0 V | 2.0 V | 2.0 V | 2.0 V | | | Q2 | | | " |
| | 13 | | | 2.0 V | 2.0 V | 2.0 V | 2.0 V | 4 mA | | | | | | | | | | | | 0.7 V | " | Q1 | | | " |
| | 14 | | | 2.0 V | " | 2.0 V | 0.7 V | | 4 mA | | | | | | | | | | | 2.0 V | " | Q1 | | | " |
| | 15 | | | 3/ | " | 0.7 V | 2.0 V | 4 mA | | | | | | | | | | | | " | " | Q1 | | | " |
| | 16 | | | 3/ | 0.7 V | 2.0 V | 2.0 V | | 4 mA | | | | | | | | | | | " | " | Q1 | | | " |
| | | V _{IC} | | 17 | -18 mA | | | | | | | | | | | | | | | | CLK1 | | -1.5 | " | |
| | 18 | | | | -18 mA | | | | | | | | | | | | | | | | | K1 | | | " |
| | 19 | | | | | -18 mA | | | | | | | | | | | | | | | | J1 | | | " |
| | 20 | | | | | | -18 mA | | | | | | | | | | | | | | | PR1 | | | " |
| | 21 | | | | | | | -18 mA | | | | | | | | | | | | | | PR2 | | | " |
| | 22 | | | | | | | | | | | -18 mA | | | | | | | | | | J2 | | | " |
| | 23 | | | | | | | | | | | | | | | | -18 mA | | | | | K2 | | | " |
| | 24 | | | | | | | | | | | | | | | | | -18 mA | | | | CLK2 | | | " |
| | 25 | | | | | | | | | | | | | | | | | | -18 mA | | | CLR2 | | | " |
| | 26 | | | | | | | | | | | | | | | | | | | -18 mA | | CLR1 | | | " |
| | | I _{IL1} | 3009 | 27 | 4.5 V | 0.4 V | 4.5 V | 4/ | | | | | | | | | | | -18 mA | | K1 | 5/ | 5/ | mA | |
| | 28 | | | 4.5 V | 4.5 V | 0.4 V | 4.5 V | | | | | | | | | | | | | 4.5 V | 5.5 V | J1 | " | " | " |
| | 29 | | | | | | | | | | | | | | 4.5 V | 0.4 V | 4.5 V | 4.5 V | 4/ | | | J2 | " | " | " |
| | 30 | | | | | | | | | | | | | | 4/ | 4.5 V | 0.4 V | 4.5 V | 4.5 V | | | K2 | " | " | " |
| | 31 | | | | | | | | | | | | | | 4.5 V | 4.5 V | 4.5 V | 0.4 V | 4.5 V | | | CLK2 | " | " | " |
| | 32 | | | | | | | | | | | | | | 4.5 V | 4.5 V | 4.5 V | 0.4 V | 4/ | | | CLK1 | " | " | " |
| | | I _{IL3} | | 33 | 0.4 V | 4.5 V | 4.5 V | 4.5 V | | | | | | | | | | | 4/ | | CLK1 | " | " | " | |
| | 34 | | | 0.4 V | 4.5 V | 4.5 V | 4/ | | | | | | | | | | | | | 4.5 V | | CLK1 | " | " | " |
| | 35 | | | 4.5 V | 4.5 V | 4.5 V | 0.4 V | | | | | | | | | | | | | 4.5 V | | PR1 | " | " | " |
| | 36 | | | 4.5 V | 4.5 V | 4.5 V | 4.5 V | | | | | | | | | | | | | 0.4 V | | CLR1 | " | " | " |
| | 37 | | | | | | | | | | | | | | 4.5 V | 4.5 V | 4.5 V | 4.5 V | 0.4 V | | | CLR2 | " | " | " |
| | 38 | | | | | | | | | | | | | | 0.4 V | 4.5 V | 4.5 V | 4.5 V | 4.5 V | | | PR2 | " | " | " |
| | | I _{IH1} | 3010 | 39 | | | | | | | | | | GND | 4.5 V | 2.7 V | GND | 4.5 V | | | K2 | | 20 | μA | |
| | 40 | | | | | | | | | | | | | | 4.5 V | 2.7 V | 4.5 V | GND | GND | | J2 | | | " | |
| | 41 | | | GND | 4.5 V | 2.7 V | 4.5 V | | | | | | | | | | | | | GND | | J1 | | | " |
| | 42 | | | GND | 2.7 V | 4.5 V | GND | | | | | | | | | | | | | 4.5 V | | K1 | | | " |

See footnotes at end of device types 03 and 10.

TABLE III. Group A inspection for device type 03 and 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open). 1/

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ | * 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | | |
|-----------------------------------|-------------------|--|------------|------|-------|-------|-------|-------|-----|-----|-----|----|------|------|-------|-----------------|-------|-------|-------|-------------------|--------|-----------------|-----------------|------|-----|---|--|
| | | | 2, X | ** 2 | 20 | 5 | 3 | 19 | 18 | 13 | 17 | 14 | 9 | 12 | 15 | 8 | 10 | 4 | 7 | | | | | | | | |
| | | | Cases E, F | * 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | | |
| Test no. | CLK1 | K1 | J1 | PR1 | Q1 | Q1 | Q2 | GND | Q2 | PR2 | J2 | K2 | CLK2 | CLR2 | CLR1 | V _{CC} | Min | Max | | | | | | | | | |
| 1 T _C = 25°C | I _{H2} | 3010 | 43 | GND | 5.5 V | 4.5 V | GND | | | | GND | | | | | | | 4.5 V | 5.5 V | K1 | | 100 | μA | | | | |
| | | | 44 | GND | 4.5 V | 5.5 V | 4.5 V | | | | | | | | | | | GND | | | J1 | | | | | | |
| | | | 45 | | | | | | | | | | | | 4.5 V | 5.5 V | 4.5 V | GND | GND | | | J2 | | | | | |
| | | | 46 | | | | | | | | | | | | GND | 4.5 V | 5.5 V | " | 4.5 V | | | K2 | | | | | |
| | I _{H5} | " | " | 47 | | | | | | | | | | | 4/ | GND | 4.5 V | " | 2.7 V | | | CLR2 | | 60 | " | | |
| | | | | 48 | | | | | | | | | | | | 2.7 V | 4.5 V | GND | " | 4/ | | PR2 | | | | | |
| | | | | 49 | GND | 4.5 V | GND | 4/ | | | | | | | | | | | | 2.7 V | | | CLR1 | | | | |
| | | | | 50 | GND | GND | 4.5 V | 2.7 V | | | | | | | | | | | | 4/ | | | PR1 | | | | |
| | I _{H6} | " | " | 51 | GND | GND | 4.5 V | 5.5 V | | | | | | | | | | | 4/ | | | PR1 | | 300 | " | | |
| | | | | 52 | GND | 4.5 V | GND | 4/ | | | | | | | | | | | 5.5 V | | | CLR1 | | | | | |
| | | | | 53 | | | | | | | | | | | | 5.5 V | 4.5 V | GND | GND | 4/ | | | PR2 | | | | |
| | | | | 54 | | | | | | | | | | | | 4/ | GND | 4.5 V | GND | 5.5 V | | | CLR2 | | | | |
| | I _{H7} | " | " | 55 | | | | | | | | | | GND | GND | GND | 2.7 V | GND | | | CLR2 | | 80 | " | | | |
| | | | | 56 | 2.7 V | GND | GND | GND | | | | | | | | | | | | GND | | | CLK1 | | 80 | " | |
| | I _{H8} | " | " | 57 | 5.5 V | GND | GND | GND | | | | | | | | | | | GND | | | CLK1 | | 400 | " | | |
| | | | | 58 | | | | | | | | | | | GND | GND | GND | 5.5 V | GND | | | | CLK2 | | 400 | " | |
| | I _{OS} | 3011 | " | 59 | GND | GND | GND | GND | GND | | | | | | | | | | 4.5 V | | | Q1 | -15 | -100 | mA | | |
| | | | | 60 | GND | GND | GND | 4.5 V | | GND | | | | | | | | | GND | | | | Q1 | | | | |
| | | | | 61 | | | | | | | | | | GND | GND | GND | GND | 4.5 V | | | | | | Q2 | | | |
| | | | | 62 | | | | | | | | | GND | | | 4.5 V | " | " | " | GND | | | | Q2 | | | |
| | I _{CC} | 3005 3005 | " | 63 | GND | GND | GND | GND | | | | | | GND | " | " | " | 5.5 V | 5.5 V | " | | V _{CC} | | 8.0 | " | | |
| | | | | 64 | GND | GND | GND | 5.5 V | | | | | | | | 5.5 V | " | " | " | GND | GND | " | V _{CC} | | 8.0 | " | |
| | 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 Q/, Z/ T _C = 25°C | Truth table tests | 3014 | 65 | B | B | A | A | L | H | H | GND | L | A | A | B | B | B | B | 4.5 V | All | See 8/ | | | | | | |
| | | | 66 | A | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | outputs | | | | | |
| | | | 67 | B | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | | |
| | | | 68 | B | A | B | B | H | L | L | " | H | B | B | A | B | A | A | " | " | " | " | | | | | |
| | | | 69 | A | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | | | | | |
| | | | 70 | B | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | | | | | |
| | | | 71 | " | B | " | A | L | H | H | " | L | A | " | B | " | B | B | " | " | " | " | | | | | |
| | | | 72 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | A | A | " | " | | | | | |
| | | | 73 | A | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | | | | | |
| | | | 74 | B | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | | |
| | | | 75 | " | " | " | B | H | L | L | " | H | B | " | " | " | " | " | " | " | " | " | | | | | |
| | | | 76 | " | " | " | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | | | | | |
| | | | 77 | A | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | | | | | |
| | | | 78 | B | " | " | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | | |
| | | | 79 | " | " | A | " | L | H | H | " | L | " | A | " | " | B | B | " | " | " | " | | | | | |
| | | | 80 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | A | " | " | " | | | | | |

See footnotes at end of device types 03 and 10.

TABLE III. Group A inspection for device type 03 and 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open). 1/

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ | * 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | |
|--|--|--|------------|--|-------|------------|------------|-----|-----|-----|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|-------------------|-------------|------------|------------|----|----|---|
| | | | 2, X | ** 2 | 20 | 5 | 3 | 19 | 18 | 13 | 17 | 14 | 9 | 12 | 15 | 8 | 10 | 4 | 7 | | All outputs | See 8/ | | | | |
| | | | Cases E, F | * 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | | | | | | |
| Test no. | CLK1 | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | $\bar{Q}2$ | GND | Q2 | PR2 | J2 | K2 | CLK2 | CLR2 | CLR1 | V _{CC} | Min | Max | | | | | | | | |
| 7 g/, Z/ T _C = 25°C | Truth table tests | 3014 | 81 | A | B | A | A | L | H | H | GND | L | A | A | B | A | A | A | 4.5 V | | | | | | | |
| | | | 82 | B | " | " | " | " | H | L | L | " | H | " | " | " | B | " | " | " | " | " | " | | | |
| | | | 83 | " | A | B | B | " | " | " | " | " | " | B | B | A | " | " | " | " | " | " | " | | | |
| | | | 84 | " | " | " | A | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | | 85 | A | " | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | | | |
| | | | 86 | B | " | " | " | " | L | H | H | " | L | " | " | " | B | " | " | " | " | " | " | | | |
| | | | 87 | A | " | A | B | H | " | " | " | H | B | A | " | A | B | B | B | " | " | " | " | | | |
| | | | 88 | B | " | " | A | L | " | " | " | L | A | " | " | B | B | B | " | " | " | " | " | | | |
| | | | 89 | B | " | " | " | " | " | " | " | " | " | " | " | B | A | A | " | " | " | " | " | | | |
| | | | 90 | A | " | " | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | " | | | |
| | | | 91 | B | " | " | " | " | H | L | L | " | H | " | " | " | B | " | " | " | " | " | " | | | |
| | | | 92 | A | " | " | " | " | H | L | L | " | H | " | " | " | A | " | " | " | " | " | " | | | |
| | | | 93 | B | " | " | " | " | L | H | H | " | L | " | " | " | B | " | " | " | " | " | " | | | |
| 8 g/, Z/ 9 T _C = 25°C | Repeat subgroup 7 at T _C = +125°C and T _C = -55°C. | | | | | | | | | | | | | | | | | | | | | | | | | |
| f _{MAX} g/ t _{PLH1} t _{PHL1} t _{PLH2} t _{PHL2} | Fig. 9 " " " " " " " " " " " " | 94 95 96 97 98 10/ 99 100 101 102 10/ 103 104 105 106 107 108 109 110 111 112 113 | IN | 2.7 V | 2.7 V | 2.7 V | OUT | | GND | | | | | | | | | 2.7 V | 5.0 V | Q1 | 25 | | MHz | | | |
| | | | IN | 2.7 V | 2.7 V | 2.7 V | | | | OUT | " | | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | Q1 | " | | " | | |
| | | | | | | | | | | OUT | " | | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | | Q2 | " | | " | |
| | | | | | | | | | | | OUT | " | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | | | Q2 | " | | " |
| | | | IN | GND | 2.7 V | 2.7 V | | OUT | | | " | | | | | | IN | | | | | CLR1 to Q1 | 5 | 21 | ns | |
| | | | IN | 2.7 V | GND | IN | OUT | | | | OUT | " | | 2.7 V | 2.7 V | GND | IN | IN | | | | 2.7 V | | | | |
| | | | | | | | | | | | | OUT | " | 2.7 V | 2.7 V | GND | IN | 2.7 V | | | | | CLR2 to Q2 | " | | |
| | | | | | | | | | | OUT | " | | OUT | 2.7 V | 2.7 V | GND | IN | IN | | | | | CLR2 to Q2 | " | 28 | " |
| | | | IN | GND | 2.7 V | 2.7 V | OUT | | | | " | | | | | | | | | | | 2.7 V | | | | |
| | | | IN | 2.7 V | GND | IN | | OUT | | | | | | | | | | | | | | | 2.7 V | | | |
| | | | IN | 2.7 V | 2.7 V | 2.7 V | | OUT | | | | | | | | | | | | | | | 2.7 V | | | |
| | | | | | | | | | | | | OUT | " | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | | 2.7 V | | | |
| | | | | | | | | | | | | OUT | " | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | | 2.7 V | | | |
| | | | | | | | | | | | 2.7 V | 2.7 V | 2.7 V | IN | 2.7 V | | | | | 2.7 V | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 2.7 V | | | | | | |
| | | | | | | | | | | | | | | | | | | | | 2.7 V | | | | | | |
| 10 | f _{MAX} | Fig. 9 | 114-117 | Same tests and terminal conditions as for subgroup 9, except T _C = +125°C | | | | | | | | | | | | | | | | | 25 | | MHz | | | |
| | t _{PLH1} | 3003 Fig. 9 | 118-121 | | | | | | | | | | | | | | | | | | 5 | 32 | ns | | | |
| | t _{PHL1} | 3003 Fig. 9 | 122-125 | | | | | | | | | | | | | | | | | | " | 40 | " | | | |
| | t _{PLH2} | 3003 Fig. 10 | 126-129 | | | | | | | | | | | | | | | | | | " | 32 | " | | | |
| | t _{PHL2} | 3003 Fig. 10 | 130-133 | | | | | | | | | | | | | | | | | | " | 42 | " | | | |
| 11 | Same tests and terminal conditions as for subgroup 10, except T _C = -55°C | | | | | | | | | | | | | | | | | | | | | | | | | |

See footnotes at end of device types 03 and 10.

TABLE III. Group A inspection for device type 03 and 10.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open). 1/

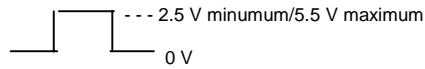
* Terminal numbers for device type 03.

** Terminal numbers for device type 10.

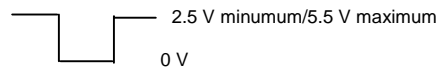
1/ See 6.4 for special applications note.

2/ Case X and 2 pins not referenced are NC.

3/



4/



5/ I_{IL} limits in mA are as follows:

| I_{IL1} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -.075/-.250 | -.030/-.300 | -.150/-.560 | -.120/-.360 | -.120/-.360 |

| I_{IL3} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -.150/-.500 | -.060/-.600 | -.250/-.560 | -.240/-.720 | -.280/-.760 |

| I_{IL4} | Min/Max limits for CKT | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E |
| | -.200/-.800 | -.060/-.700 | -.290/-.650 | -.120/-.720 | -.320/-.800 |

6/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

7/ Tests shall be performed in sequence, attributes data only.

8/ Output voltages shall be $H \geq 1.5$ V and $L < 1.5$ 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.

10/ These tests may be performed as shown in table III or alternately as follows:

| Test no. | CLK1 | K1 | J1 | PR1 | Q1 | $\bar{Q}1$ | $\bar{Q}2$ | GND | Q2 | PR2 | J2 | K2 | CLK2 | CLR2 | CLR1 | V_{CC} |
|----------|-------|-------|-------|-----|-----|------------|------------|-----|-----|-----|-------|-------|-------|------|------|----------|
| 98A | 2.7 V | 2.7 V | 2.7 V | 2/ | | OUT | | GND | | | | | | | IN | 5.0 V |
| 99A | 2.7 V | 2.7 V | 2.7 V | IN | OUT | | | " | | | | | | | 2/ | " |
| 100A | | | | | | | OUT | " | | 2/ | 2.7 V | 2.7 V | 2.7 V | IN | | " |
| 101A | | | | | | | | " | OUT | IN | 2.7 V | 2.7 V | 2.7 V | 2/ | | " |
| 102A | | | | | | | | " | OUT | 2/ | 2.7 V | 2.7 V | 2.7 V | IN | | " |
| 103A | | | | | | | OUT | " | | IN | 2.7 V | 2.7 V | 2.7 V | 2/ | | " |
| 104A | 2.7 V | 2.7 V | 2.7 V | 2/ | OUT | | | " | | | | | | | IN | " |
| 105A | 2.7 V | 2.7 V | 2.7 V | IN | | OUT | | " | | | | | | | 2/ | " |

TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | | |
|----------------------------|------------------|--------------------|--------------|--------|-------|--------|--------|-------|------|--------|-------|--------|-------|-------|--------|--------|-------|--------|-----------------|-------------------|--------|-----|------|------|----|----|----|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | | | |
| | | | Test no. | CLR | Q1 | D1 | D2 | Q2 | D3 | Q3 | GND | CLK | Q4 | D4 | Q5 | D5 | D6 | Q6 | V _{CC} | | Q1 | Q2 | | Q3 | Q4 | Q5 | Q6 |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 2.0 V | -4 mA | 2.0 V | | | | | | | | | | | | | | 4.5 V | | 2.5 | | V | | | |
| | | " | 2 | " | | | 2.0 V | -4 mA | | | | | | | | | | | | | | | | | | | |
| | | " | 3 | " | | | | | | 2.0 V | -4 mA | | | | | | | | | | | | | | | | |
| | | " | 4 | " | | | | | | | | | | -4 mA | 2.0 V | | | | | | | | | | | | |
| | | " | 5 | " | | | | | | | | | | | | -4 mA | 2.0 V | | | | | | | | | | |
| | | " | 6 | " | | | | | | | | | | | | | | 2.0 V | -4 mA | | | | | | | | |
| | V _{OL} | 3007 | 7 | " | | | | | | | | | | | | | | 0.7 V | 4 mA | | | | | 0.4 | | | |
| | | " | 8 | " | | | | | | | | | | | | 4 mA | 0.7 V | | | | | | | | | | |
| | | " | 9 | " | | | | | | | | | | 4 mA | 0.7 V | | | | | | | | | | | | |
| | | " | 10 | " | | | | | | 0.7 V | 4 mA | | | | | | | | | | | | | | | | |
| | | " | 11 | " | | | | 0.7 V | 4 mA | | | | | | | | | | | | | | | | | | |
| | | " | 12 | " | 4 mA | 0.7 V | | | | | | | | | | | | | | | | | | | | | |
| | | " | 13 | 0.7 V | 4 mA | | | | | | | | | | | | | | | | | | | | | | |
| | | " | 14 | " | | | | | 4 mA | | | | | | | | | | | | | | | | | | |
| | | " | 15 | " | | | | | | | 4 mA | | | | | | | | | | | | | | | | |
| | | " | 16 | " | | | | | | | | | 4 mA | | | | | | | | | | | | | | |
| | | " | 17 | " | | | | | | | | | | | 4 mA | | | | | | | | | | | | |
| | | " | 18 | " | | | | | | | | | | | | | | | | 4 mA | | | | | | | |
| | V _{IC} | | 19 | -18 mA | | | | | | | | | | | | | | | | | | | | -1.5 | | | |
| | | | 20 | | | -18 mA | | | | | | | | | | | | | | | | | | | | | |
| | | | 21 | | | | -18 mA | | | | | | | | | | | | | | | | | | | | |
| | | | 22 | | | | | | | -18 mA | | | | | | | | | | | | | | | | | |
| | | | 23 | | | | | | | | | -18 mA | | | | | | | | | | | | | | | |
| | | | 24 | | | | | | | | | | | | -18 mA | | | | | | | | | | | | |
| | | | 25 | | | | | | | | | | | | | -18 mA | | | | | | | | | | | |
| | | | 26 | | | | | | | | | | | | | | | -18 mA | | | | | | | | | |
| | I _{IL1} | 3009 | 27 | | | | | | | | | | | | | | | 0.4 V | | | 5.5 V | | 3/ | 3/ | mA | | |
| | | " | 28 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | " | 29 | | | | | | | | | | | | 0.4 V | | | | | | | | | | | | |
| | | " | 30 | | | | | | | 0.4 V | | | | | | | | | | | | | | | | | |
| | | " | 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | " | 32 | | | | 0.4 V | | | | | | | | | | | | | | | | | | | | |
| | I _{IL2} | " | 33 | 0.4 V | | | | | | | | | | | | | | | | | | | | | | | |
| | | " | 34 | | | | | | | | | 0.4 V | | | | | | | | | | | | | | | |
| | I _{IH1} | 3010 | 35 | 2.7 V | | | | | | | | | | | | | | | | | | | | 20 | μA | | |
| | | " | 36 | | | 2.7 V | | | | | | | | | | | | | | | | | | | | | |
| | | " | 37 | | | | 2.7 V | | | | | | | | | | | | | | | | | | | | |
| | | " | 38 | | | | | | | 2.7 V | | | | | | | | | | | | | | | | | |
| | | " | 39 | | | | | | | | | | 2.7 V | | | | | | | | | | | | | | |
| | | " | 40 | | | | | | | | | | | | 2.7 V | | | | | | | | | | | | |
| | | " | 41 | | | | | | | | | | | | | | 2.7 V | | | | | | | | | | |
| | | " | 42 | | | | | | | | | | | | | | | 2.7 V | | | | | | | | | |
| | I _{IH2} | " | 43 | | | | | | | | | | | | | | | 2.7 V | | | | | | | | | |
| | | " | 44 | | | | | | | | | | | | | | | 5.5 V | | | | | | | | | |
| | | " | 45 | | | | | | | | | | | | 5.5 V | | | | | | | | | | | | |
| | | " | 46 | | | | | | | | | | 5.5 V | | | | | | | | | | | | | | |
| | | " | 47 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | " | 48 | | | | | 5.5 V | | | | | | | | | | | | | | | | | | | |
| | | " | 49 | | | | 5.5 V | | | | | | | | | | | | | | | | | | | | |
| | | " | 50 | 5.5 V | | | | | | | | | | | | | | | | | | | | | | | |

See footnotes at end of device types 06.

TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|-----------------------------------|--|--------------------|--------------|-------|-----|-------|-------|-----|-------|----|-------|-----|-----|-------|-----|-------|-------|-------|-----------------|-------------------|-----------|-----------|------|----|---|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | |
| | | | Test no. | CLR | Q1 | D1 | D2 | Q2 | D3 | Q3 | GND | CLK | Q4 | D4 | Q5 | D5 | D6 | Q6 | V _{CC} | | | | | | |
| 1 | I _{OS} | 3011 | 51 | 4.5 V | GND | 4.5 V | | | | | | GND | 4/ | | | | | | | 5.5 V | Q1 | -15 | -100 | μA | |
| | | | 52 | " | | | 4.5 V | GND | | | | | | | | | | | | | " | Q2 | " | " | " |
| | | | 53 | " | | | | | | | 4.5 V | GND | " | " | | | | | | | " | Q3 | " | " | " |
| | | | 54 | " | | | | | | | | | | | GND | 4.5 V | | | | | " | Q4 | " | " | " |
| | | | 55 | " | | | | | | | | | | | | | GND | 4.5 V | | | " | Q5 | " | " | " |
| | | | 56 | " | | | | | | | | | | | | | | | 4.5 V | GND | " | Q6 | " | " | " |
| | I _{CC} | 3005 | 57 | 5.5 V | | 5.5 V | 5.5 V | | 5.5 V | | | | | 5.5 V | | 5.5 V | 5.5 V | | " | V _{CC} | | 26 | " | | |
| 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/, 6/ T _C = 25°C | Truth table tests | 3014 | 58 | B | L | A | A | L | A | L | GND | A | L | A | L | A | A | L | 4.5 V | All | See 7/ | | | | |
| | | | 59 | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | outputs | | | |
| | | | 60 | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | | 61 | A | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | | | |
| | | | 62 | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | | | |
| | | | 63 | " | H | " | " | " | H | " | H | " | A | H | " | H | " | " | H | " | " | " | | | |
| | | | 64 | " | " | B | B | " | B | " | B | " | A | " | B | " | B | B | " | " | " | " | | | |
| | | | 65 | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | | | |
| | | | 66 | " | L | " | " | " | L | " | L | " | A | L | " | L | " | " | L | " | " | " | | | |
| | | | 67 | " | L | A | A | L | A | L | A | L | B | L | A | L | A | A | L | " | " | " | | | |
| | | | 68 | " | H | " | " | " | H | " | H | " | A | H | " | H | " | " | H | " | " | " | | | |
| 69 | " | H | " | " | " | H | " | H | " | B | H | " | H | " | " | H | " | " | " | | | | | | |
| 70 | " | B | L | " | " | " | " | L | " | L | " | " | " | " | " | " | " | " | " | | | | | | |
| 8 | Repeat subgroup 7 at T _C = +125°C and T _C = -55°C. | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 T _C = 25°C | f _{MAX} | Fig. 13 | 71 | 2.7 V | OUT | IN | | | | | GND | IN | | | | | | | 5.0 V | Q1 | 25 | | MHz | | |
| | | | 72 | " | | | IN | OUT | | | | " | " | | | | | | | " | Q2 | " | | | |
| | | | 73 | " | | | | | | IN | OUT | " | " | | | | | | | " | Q3 | " | | | |
| | | | 74 | " | | | | | | | | " | " | OUT | IN | | | | | " | Q4 | " | | | |
| | | | 75 | " | | | | | | | | " | " | | | OUT | IN | | | " | Q5 | " | | | |
| | | | 76 | " | | | | | | | | " | " | | | | | IN | OUT | " | Q6 | " | | | |
| | t _{PHL1} | 3003 Fig. 13 | 77 | IN | | | | | | | | " | " | | | | | 2.7 V | OUT | " | CLR to Q6 | 5 | 42 | ns | |
| | | | 78 | " | | | | | | | | " | " | | | | | | OUT | 2.7 V | " | CLR to Q5 | " | " | " |
| | | | 79 | " | | | | | | | | " | " | | | | | | | | " | CLR to Q4 | " | " | " |
| | | | 80 | " | | | | | | | 2.7 V | OUT | " | " | OUT | 2.7 V | | | | " | " | CLR to Q3 | " | " | " |
| | | | 81 | " | | | | | | | | " | " | | | | | | | " | " | CLR to Q2 | " | " | " |
| | | | 82 | " | OUT | 2.7 V | | | | | | " | " | | | | | | | " | " | CLR to Q1 | " | " | " |
| | t _{PLH2} | 3003 Fig. 14 | 83 | 2.7 V | OUT | IN | | | | | | " | " | | | | | | " | " | CLK to Q1 | " | 37 | " | |
| | | | 84 | " | | | IN | OUT | | | | " | " | | | | | | " | " | CLK to Q2 | " | " | " | |
| | | | 85 | " | | | | | | IN | OUT | " | " | | | | | | " | " | CLK to Q3 | " | " | " | |
| 86 | | | " | | | | | | | | " | " | OUT | IN | | | | " | " | CLK to Q4 | " | " | " | | |
| 87 | | | " | | | | | | | | " | " | | | OUT | IN | | | " | CLK to Q5 | " | " | " | | |
| 88 | | | " | | | | | | | | " | " | | | | | IN | OUT | " | CLK to Q6 | " | " | " | | |
| t _{PHL2} | 3003 Fig. 15 | 89 | " | | | | | | | " | " | | | | | | IN | OUT | " | CLK to Q6 | " | 40 | " | | |
| | | 90 | " | | | | | | | " | " | | | | OUT | IN | | | " | CLK to Q5 | " | " | " | | |
| | | 91 | " | | | | | | | | " | " | OUT | IN | | | | | " | CLK to Q4 | " | " | " | | |
| | | 92 | " | | | | | | | IN | OUT | " | " | | | | | | " | CLK to Q3 | " | " | " | | |
| | | 93 | " | | | | IN | OUT | | | " | " | | | | | | | " | CLK to Q2 | " | " | " | | |
| | | 94 | " | OUT | IN | | | | | | " | " | | | | | | | " | CLK to Q1 | " | " | " | | |

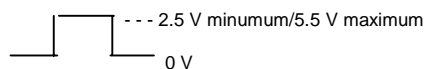
See footnotes at end of device types 06.

TABLE III. Group A inspection for device type 06 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|----------|--|--------------------|--------------|-----|----|----|----|----|----|----|-----|-----|----|----|----|----|----|----|----------|---|--------|-----|------|----|---|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | |
| 10 | f_{MAX} 8/ | Fig. 13 | 95-100 | CLR | Q1 | D1 | D2 | Q2 | D3 | Q3 | GND | CLK | Q4 | D4 | Q5 | D5 | D6 | Q6 | V_{CC} | Same tests and terminal conditions as for subgroup 9, except T_C . $T_C = +125^\circ C$ | 25 | | MHz | | |
| | t_{PHL1} | 3003 Fig. 13 | 101-106 | | | | | | | | | | | | | | | | | | | 5 | 52 | ns | |
| | t_{PLH2} | 3003 Fig. 14 | 107-112 | | | | | | | | | | | | | | | | | | | | " | 47 | " |
| | t_{PHL2} | 3003 Fig. 15 | 113-118 | | | | | | | | | | | | | | | | | | | | " | 52 | " |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except $T_C = -55^\circ C$. | | | | | | | | | | | | | | | | | | | | | | | | |

1/ Case X and 2 pins not referenced are NC.

2/

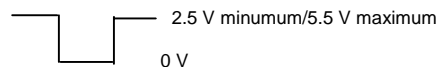


3/ I_{IL} limits in mA are as follows:

| I_{IL1} | Min/Max limits for CKT | | | | | | |
|-----------|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E | F | G |
| | -0.085/-0.270 | -0.100/-0.340 | -0.075/-0.250 | -0.075/-0.250 | -0.120/-0.360 | -0.160/-0.400 | -0.075/-0.250 |

| I_{IL2} | Min/Max limits for CKT | | | | | | |
|-----------|------------------------|---------------|--|---------------|---------------|--|--|
| | A | B | C | D | E | F | G |
| | -0.115/-0.350 | -0.150/-0.420 | -0.125/-0.275 for test 33 -0.160/-0.400 for test 34 | -0.120/-0.360 | -0.120/-0.360 | -0.150/-0.380 for test 33 -0.160/-0.400 for test 34 | -0.075/-0.250 for test 33 -0.120/-0.360 for test 34 |

4/



5/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

6/ Tests shall be performed in sequence, attributes data only.

7/ Output voltages shall be $H \geq 1.5$ V and $L < 1.5$ 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 07.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|----------------------------|------------------|--------------------|--------------|--------|-------|------------|-------|--------|------------|--------|-------|------|-------|------------|-------|--------|------------|-------|-----------------|-------------------|------------|------------|--------|----|---|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | |
| | | | Test no. | CLR | Q1 | $\bar{Q}1$ | D1 | D2 | $\bar{Q}2$ | Q2 | GND | CLK | Q3 | $\bar{Q}3$ | D3 | D4 | $\bar{Q}4$ | Q4 | V _{CC} | | | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 0.7 V | | -4 mA | | | | | GND | | | | | | | | 4.5 V | $\bar{Q}1$ | 2.5 | | V | | |
| | | " | 2 | " | | | | | | -4 mA | | " | | | | | | | " | $\bar{Q}2$ | " | | " | | |
| | | " | 3 | " | | | | | | | | " | | | -4 mA | | | | " | $\bar{Q}3$ | " | | " | | |
| | | " | 4 | " | | | | | | | | " | | | | -4 mA | | | " | $\bar{Q}4$ | " | | " | | |
| | | " | 5 | 2.0 V | | | | | | | | " | 2/ | | | | 2.0 V | | -4 mA | " | Q4 | " | | " | |
| | | " | 6 | " | | | | | | | | " | " | -4 mA | | 2.0 V | | | | " | Q3 | " | | " | |
| | | " | 7 | " | | | | | 2.0 V | | -4 mA | " | " | | | | | | | " | Q2 | " | | " | |
| | | " | 8 | " | -4 mA | | | 2.0 V | | | | " | " | | | | | | | " | Q1 | " | | " | |
| | | " | 9 | " | | | -4 mA | 0.7 V | | | | " | " | | | | | | | " | $\bar{Q}1$ | " | | " | |
| | | " | 10 | " | | | | | 0.7 V | -4 mA | | " | " | | | | | | | " | $\bar{Q}2$ | " | | " | |
| | | " | 11 | " | | | | | | | | " | " | | -4 mA | 0.7 V | | | | " | $\bar{Q}3$ | " | | " | |
| | | " | 12 | " | | | | | | | | " | " | | | | 0.7 V | -4 mA | | " | $\bar{Q}4$ | " | | " | |
| | V _{OL} | 3007 | 13 | 0.7 V | 4 mA | | | | | | | " | | | | | | | | " | Q1 | | 0.4 V | " | |
| | | | " | 14 | " | | | | | | 4 mA | | " | | | | | | | | " | Q2 | | " | " |
| | | | " | 15 | " | | | | | | | | " | | 4 mA | | | | | | " | Q3 | | " | " |
| | | | " | 16 | " | | | | | | | | " | 2/ | | | | | | 4 mA | " | Q4 | | " | " |
| | | | " | 17 | 2.0 V | | | | | | | | " | " | | | | 2.0 V | 4 mA | | " | Q4 | | " | " |
| | | | " | 18 | " | | | | | | | | " | " | | 4 mA | 2.0 V | | | | " | $\bar{Q}3$ | | " | " |
| | | | " | 19 | " | | | | 2.0 V | 4 mA | | | " | " | | | | | | | " | $\bar{Q}2$ | | " | " |
| | | | " | 20 | " | | 4 mA | 2.0 V | | | | | " | " | | | | | | | " | $\bar{Q}1$ | | " | " |
| | | | " | 21 | " | 4 mA | | 0.7 V | | | | | " | " | | | | | | | " | Q1 | | " | " |
| | | | " | 22 | " | | | | 0.7 V | | | 4 mA | | " | | | | | | | " | Q2 | | " | " |
| | | | " | 23 | " | | | | | | | | " | " | 4 mA | | 0.7 V | | | | " | Q3 | | " | " |
| | | | " | 24 | " | | | | | | | | " | " | | | | 0.7 V | | 4 mA | " | Q4 | | " | " |
| | V _{IC} | 3009 | 25 | -18 mA | | | | | | | | | | | | | | | | " | CLR | | -1.5 V | " | |
| | | | " | 26 | | | | -18 mA | | | | | | | | | | | | " | D1 | | " | " | |
| | | | " | 27 | | | | | -18 mA | | | | | | | | | | | " | D2 | | " | " | |
| | | | " | 28 | | | | | | -18 mA | | | | | | | | | | " | CLK | | " | " | |
| | | | " | 29 | | | | | | | | | | -18 mA | | | | | | " | D3 | | " | " | |
| | | | " | 30 | | | | | | | | | | | | -18 mA | | | | " | D4 | | " | " | |
| | I _{IL1} | 3009 | 31 | | | | | | | | | | | | | | | | | 5.5 V | D4 | 3/ | 3/ | mA | |
| | | | " | 32 | | | | | | | | | | | | 0.4 V | | | | " | D3 | " | " | " | |
| | | | " | 33 | | | | | 0.4 V | | 0.4 V | | | | | | | | | " | D2 | " | " | " | |
| | | | " | 34 | | | | 0.4 V | | | | | | | | | | | | " | D1 | " | " | " | |
| | I _{IL2} | 3010 | 35 | 0.4 V | | | | | | | | | | | | | | | | " | CLR | " | " | " | |
| | | | " | 36 | | | | | | | | | 0.4 V | | | | | | | " | CLK | " | " | " | |
| | I _{IH1} | 3010 | 37 | 2.7 V | | | | | | | | | | | | | | | | " | CLR | | 20 | μA | |
| | | | " | 38 | | | | 2.7 V | | | | | | | | | | | | " | D1 | | " | " | |
| | | | " | 39 | | | | | 2.7 V | | | | | | | | | | | " | D2 | | " | " | |
| | | | " | 40 | | | | | | | | | 2.7 V | | | | | | | " | CLK | | " | " | |
| | | | " | 41 | | | | | | | | | | | | | 2.7 V | | | " | D3 | | " | " | |
| | | | " | 42 | | | | | | | | | | | | | | 2.7 V | | | " | D4 | | " | " |

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 ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|--|--|--------------------|--------------|-------|-----|------------|-------|-------|------------|-------|-----|-----|-------|------------|-------|-------|------------|-----|-----------------|-------------------|-------------------|-----|------|----|---|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | |
| | | | Test no. | CLR | Q1 | $\bar{Q}1$ | D1 | D2 | $\bar{Q}2$ | Q2 | GND | CLK | Q3 | $\bar{Q}3$ | D3 | D4 | $\bar{Q}4$ | Q4 | V _{CC} | | | | | | |
| 1 T _C = 25°C | I _{H2} | 3010 | 43 | | | | | | | | GND | | | | | 5.5 V | | | 5.5 V | D4 | | 100 | μA | | |
| | | | 44 | | | | | | | | | | | | | 5.5 V | | | | | D3 | | | | |
| | | | 45 | | | | | | | | | | 5.5 V | | | | | | | | | CLK | | | |
| | | | 46 | | | | | | 5.5 V | | | | | | | | | | | | | D2 | | | |
| | | | 47 | | | | | 5.5 V | | | | | | | | | | | | | | D1 | | | |
| | | | 48 | 5.5 V | | | | | | | | | | | | | | | | | | CLR | | | |
| | I _{OS} | 3011 | 49 | GND | | GND | | | | | | | | | | | | | | | $\bar{Q}1$ | -15 | -100 | mA | |
| | | | 50 | | | | | | | GND | | | | | | | | | | | $\bar{Q}2$ | | | | |
| | | | 51 | | | | | | | | | | | | GND | | | | | | $\bar{Q}3$ | | | | |
| | | | 52 | | | | | | | | | | | | | | | GND | | | $\bar{Q}4$ | | | | |
| | | | 53 | 4.5 V | | | | | | | | | 4/ | | | | 4.5 V | | 4.5 V | | GND | Q4 | | | |
| | | | 54 | | | | | | | | | | | GND | | | 4.5 V | | | | | Q3 | | | |
| | | | 55 | | | | | | | 4.5 V | | GND | | | | | | | | | | Q2 | | | |
| 56 | | | GND | | | 4.5 V | | | | | | | | | | | | | Q1 | | | | | | |
| I _{CC} | 3005 | 57 | 5.5 V | | | 5.5 V | 5.5 V | | | | | | | 5.5 V | 5.5 V | | | | V _{CC} | | 18 | | | | |
| 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 \bar{Q} , \bar{Q} / T _C = 25°C | Truth table tests | 3014 | 58 | B | L | H | A | A | H | L | GND | B | L | H | A | A | H | L | 4.5 V | All | See 7/ | | | | |
| | | | 59 | " | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | " | " | " | " | " | |
| | | | 60 | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | " | " |
| | | | 61 | A | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | " | " |
| | | | 62 | " | H | L | " | " | " | L | H | " | A | H | L | " | " | L | H | " | " | " | " | " | " |
| | | | 63 | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | " | " |
| | | | 64 | " | " | " | " | " | B | B | " | " | " | " | " | " | B | B | " | " | " | " | " | " | " |
| | | | 65 | " | L | H | " | " | " | H | L | " | A | L | H | " | " | " | H | L | " | " | " | " | " |
| | | | 66 | " | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | " | " | " | " | " |
| | | | 67 | " | " | " | " | A | A | " | " | " | " | B | " | " | A | A | " | " | " | " | " | " | " |
| | | | 68 | " | H | L | " | " | " | L | H | " | A | H | L | " | " | " | L | H | " | " | " | " | " |
| 69 | " | H | L | " | " | " | L | H | " | B | H | L | " | " | " | L | H | " | " | " | " | " | | | |
| 70 | B | L | H | " | " | " | H | L | " | B | L | H | " | " | " | H | L | " | " | " | " | " | | | |
| 8 \bar{Q} , \bar{Q} / T _C = 25°C | Repeat subgroup 7 at T _C = +125°C and T _C = -55°C. | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 T _C = 25°C | f _{MAX} g/ | Fig. 13 | 71 | 2.7 V | OUT | | IN | | | | GND | IN | | | | | | | 5.0 V | Q1 | 25 | | MHz | | |
| | | | 72 | " | | OUT | IN | | | | | " | " | | | | | | | " | $\bar{Q}1$ | " | | " | |
| | | | 73 | " | | | | IN | OUT | | | " | " | | | | | | | " | $\bar{Q}2$ | " | | " | |
| | | | 74 | " | | | | IN | | OUT | | " | " | | | | | | | " | Q2 | " | | " | |
| | | | 75 | " | | | | | | | OUT | " | " | OUT | IN | | | | | " | Q3 | " | | " | |
| | | | 76 | " | | | | | | | | " | " | | OUT | IN | | | | " | $\bar{Q}3$ | " | | " | |
| | | | 77 | " | | | | | | | | " | " | | | IN | OUT | | | " | $\bar{Q}4$ | " | | " | |
| | | | 78 | " | | | | | | | | " | " | | | IN | | OUT | OUT | " | Q4 | " | | " | |
| | t _{PLH1} | 3003 Fig. 13 | 79 | IN | | | | | | | | | | | | 2.7 V | OUT | | | " | CLR to $\bar{Q}4$ | 5 | 32 | ns | |
| | | | 80 | " | | | | | | | | | | OUT | 2.7 V | | | | | " | CLR to $\bar{Q}3$ | " | | " | |
| 81 | | | " | | | | 2.7 V | OUT | | | | | | | | | | | " | CLR to $\bar{Q}2$ | " | | " | | |
| 82 | | | " | | OUT | 2.7 V | | | | | | | | | | | | | " | CLR to $\bar{Q}1$ | " | | " | | |

See footnotes at end of device type 07.

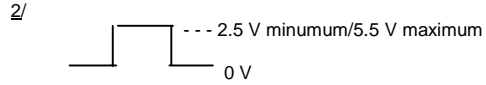
TABLE III. Group A inspection for device type 07 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | |
|----------------------------|--|--------------------|--------------|--|-----|------------|-------|-------|------------|-----|-----|-----|-----|------------|-------|-------|------------|-----|-----------------|-------------------|-------------------|-----|------|----|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | |
| | | | Test no. | CLR | Q1 | $\bar{Q}1$ | D1 | D2 | $\bar{Q}2$ | Q2 | GND | CLK | Q3 | $\bar{Q}3$ | D3 | D4 | $\bar{Q}4$ | Q4 | V _{cc} | | | | | |
| 9 T _c = 25°C | t _{PHL1} | 3003 Fig. 13 | 83 | IN | OUT | | 2.7 V | | | | GND | IN | | | | | | | | 5.0 V | CLR to Q1 | 5 | 45 | ns |
| | | " | 84 | " | | | | 2.7 V | | OUT | " | " | | | | | | | | " | CLR to Q2 | " | " | " |
| | | " | 85 | " | | | | | | | " | " | OUT | | 2.7 V | | | | | " | CLR to Q3 | " | " | " |
| | | " | 86 | " | | | | | | | " | " | | | | 2.7 V | | OUT | " | CLR to Q4 | " | " | " | |
| | t _{PLH2} | 3003 Fig. 14 | 87 | 2.7 V | | | | | | | " | " | | | | | IN | | OUT | " | CLK to Q4 | " | 35 | " |
| | | " | 88 | " | | | | | | | " | " | OUT | | IN | | | | | " | CLK to Q3 | " | " | " |
| | | " | 89 | " | | | | | IN | | OUT | " | " | | | | | | | " | CLK to Q2 | " | " | " |
| | | " | 90 | " | OUT | | | IN | | | " | " | | | | | | | | " | CLK to Q1 | " | " | " |
| | 3003 Fig. 15 | | 91 | " | | OUT | IN | | | | " | " | | | | | | | | " | CLK to $\bar{Q}1$ | " | " | " |
| | | " | 92 | " | | | | IN | OUT | | " | " | | | | | | | | " | CLK to $\bar{Q}2$ | " | " | " |
| | | " | 93 | " | | | | | | | " | " | | OUT | IN | | | | | " | CLK to $\bar{Q}3$ | " | " | " |
| | | " | 94 | " | | | | | | | " | " | | | | IN | OUT | | | " | CLK to $\bar{Q}4$ | " | " | " |
| | t _{PHL2} | 3003 Fig. 14 | 95 | " | | | | | | | " | " | | | | | IN | OUT | | " | CLK to $\bar{Q}4$ | " | 40 | " |
| | | " | 96 | " | | | | | | | " | " | | OUT | IN | | | | | " | CLK to $\bar{Q}3$ | " | " | " |
| | | " | 97 | " | | | | | IN | OUT | | " | " | | | | | | | " | CLK to $\bar{Q}2$ | " | " | " |
| | | " | 98 | " | | | OUT | IN | | | " | " | | | | | | | | " | CLK to $\bar{Q}1$ | " | " | " |
| | | 3003 Fig. 15 | 99 | " | OUT | | IN | | | | " | " | | | | | | | | " | CLK to Q1 | " | " | " |
| | | " | 100 | " | | | | | IN | OUT | | " | " | | | | | | | " | CLK to Q2 | " | " | " |
| " | 101 | " | | | | | | | | " | " | OUT | | IN | | | | " | CLK to Q3 | " | " | " | | |
| " | 102 | " | | | | | | | | " | " | | | | IN | | OUT | " | CLK to Q4 | " | " | " | | |
| 10 | f _{MAX} 8/ | Fig. 13 | 103-110 | Same tests and terminal conditions as for subgroup 9, except T _c = +125°C | | | | | | | | | | | | | | | | | 25 | | ns | |
| | t _{PLH1} | 3003 Fig. 13 | 111-114 | | | | | | | | | | | | | | | | | | 5 | 51 | " | |
| | t _{PHL1} | 3003 Fig. 13 | 115-118 | | | | | | | | | | | | | | | | | | " | 55 | " | |
| | t _{PLH2} | 3003 Fig. 14 | 119-122 | | | | | | | | | | | | | | | | | | " | 46 | " | |
| | t _{PLH2} | 3003 Fig. 15 | 123-126 | | | | | | | | | | | | | | | | | | " | 46 | " | |
| | t _{PHL2} | 3003 Fig. 14 | 127-130 | | | | | | | | | | | | | | | | | | " | 55 | " | |
| | t _{PHL2} | 3003 Fig. 15 | 131-134 | | | | | | | | | | | | | | | | | | " | 55 | " | |
| 11 | Same tests, terminal conditions, and limits as for subgroup 10, except T _c = -55°C. | | | | | | | | | | | | | | | | | | | | | | | |

See footnotes at end of device type 07.

TABLE III. Group A inspection for device type 07 - Continued.

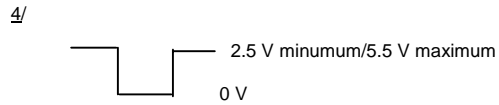
1/ Case X and 2 pins not referenced are NC.



3/ I_{IL} limits in mA are as follows:

| I_{IL1} | Min/Max limits for CKT | | | | | | |
|-----------|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | A | B | C | D | E | F | G |
| | -.075/-.250 | -.100/-.340 | -.075/-.250 | -.075/-.250 | -.120/-.360 | -.160/-.400 | -.075/-.250 |

| I_{IL2} | Min/Max limits for CKT | | | | | | |
|-----------|----------------------------|-------------|----------------------------|----------------------------|-------------|----------------------------|----------------------------|
| | A | B | C | D | E | F | G |
| | -.085/-.270 for test 35 | -.150/-.420 | -.125/-.275 for test 35 | -.120/-.400 for test 35 | -.120/-.400 | -.105/-.380 for test 35 | -.075/-.250 for test 35 |
| | -.135/-.400 for test 36 | | -.160/-.400 for test 36 | -.120/-.360 for test 36 | | -.160/-.400 for test 36 | -.120/-.360 for test 36 |



5/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

6/ Tests shall be performed in sequence, attributes data only.

7/ Output voltages shall be $H \geq 1.5$ V and $L < 1.5$ 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 09.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ 2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | | |
|----------------------------|------------------|--------------------|------------------|--------|--------|-------------|--------|--------|-------|-------------|-----|-------------|------|-------|--------|-------------|--------|--------|-----------------|-------------------|-------------|------|-------------|-------------|----|---|---|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | | | |
| | | | Test no. | CLR1 | J1 | $\bar{K} 1$ | CLK1 | PR1 | Q1 | $\bar{Q} 1$ | GND | $\bar{Q} 2$ | Q2 | PR2 | CLK2 | $\bar{K} 2$ | J2 | CLR2 | V _{cc} | | | | | | | | |
| 1 T _c = 25°C | V _{OH} | 3006 | 1 | 0.7 V | 0.7 V | 0.7 V | GND | 2.0 V | | -4 mA | GND | | | | | | | | | 4.5 V | $\bar{Q} 1$ | 2.5 | | V | | | |
| | | | 2 | 2.0 V | " | " | GND | 0.7 V | -4 mA | " | " | " | " | " | " | " | " | " | " | " | " | Q1 | " | " | " | | |
| | | | 3 | " | " | " | 2/ | 2.0 V | " | -4 mA | " | " | " | " | " | " | " | " | " | " | " | " | $\bar{Q} 1$ | " | " | " | |
| | | | 4 | " | 2.0 V | 2.0 V | 2/ | 2.0 V | -4 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | Q1 | " | " | " | |
| | | | 5 | " | " | " | " | " | " | " | " | -4 mA | " | " | " | " | " | " | " | " | " | " | Q2 | " | " | " | |
| | | | 6 | " | " | " | " | " | " | " | " | " | " | -4 mA | 0.7 V | GND | " | " | 2.0 V | " | " | " | Q2 | " | " | " | |
| | | | 7 | " | " | " | " | " | " | " | " | " | " | -4 mA | 2.0 V | 2/ | " | " | " | " | " | " | $\bar{Q} 2$ | " | " | " | |
| | | | 8 | " | " | " | " | " | " | " | " | " | " | " | -4 mA | " | 2/ | 2.0 V | 2.0 V | " | " | " | Q2 | " | " | " | |
| | V _{OL} | 3007 | 9 | " | " | " | " | " | " | " | " | " | " | 4 mA | 4 mA | GND | 0.7 V | 0.7 V | " | " | " | Q2 | " | 0.4 | " | | |
| | | | 10 | " | " | " | " | " | " | " | " | " | 4 mA | " | 0.7 V | GND | " | " | 2.0 V | " | " | Q2 | " | " | " | | |
| | | | 11 | " | " | " | " | " | " | " | " | " | " | 4 mA | 2.0 V | 2/ | " | " | " | " | " | " | Q2 | " | " | " | |
| | | | 12 | " | " | " | " | " | " | " | " | " | 4 mA | " | 2.0 V | 2/ | 2.0 V | 2.0 V | " | " | " | " | $\bar{Q} 2$ | " | " | " | |
| | | | 13 | 0.7 V | 0.7 V | 0.7 V | GND | 2.0 V | 4 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | Q1 | " | " | " | |
| | | | 14 | 2.0 V | " | " | GND | 0.7 V | " | 4 mA | " | " | " | " | " | " | " | " | " | " | " | " | $\bar{Q} 1$ | " | " | " | |
| | | | 15 | " | " | " | " | 2/ | 2.0 V | 4 mA | " | " | " | " | " | " | " | " | " | " | " | " | Q1 | " | " | " | |
| | | | 16 | " | 2.0 V | 2.0 V | 2/ | 2.0 V | " | 4 mA | " | " | " | " | " | " | " | " | " | " | " | " | Q1 | " | " | " | |
| | V _{IC} | | 17 | -18 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | CLR1 | " | -1.5 | " | | |
| | | | 18 | " | -18 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | J1 | " | " | " | |
| | | | 19 | " | " | -18 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | $\bar{K} 1$ | " | " | " | |
| | | | 20 | " | " | " | -18 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | CLK1 | " | " | " | |
| | | | 21 | " | " | " | " | -18 mA | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | PR1 | " | " | " |
| | | | 22 | " | " | " | " | " | " | " | " | " | " | " | -18 mA | " | " | " | " | " | " | " | " | PR2 | " | " | " |
| | | | 23 | " | " | " | " | " | " | " | " | " | " | " | " | -18 mA | " | " | " | " | " | " | " | CLK2 | " | " | " |
| | | | 24 | " | " | " | " | " | " | " | " | " | " | " | " | " | -18 mA | " | " | " | " | " | " | $\bar{K} 2$ | " | " | " |
| | | | 25 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | -18 mA | " | " | " | " | " | J2 | " | " | " |
| | | | 26 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | -18 mA | " | " | " | " | CLR2 | " | " | " |
| | I _{IL2} | 3009 | 27 | 3/ | 0.4 V | 4.5 V | GND | 4.5 V | " | " | " | " | " | " | " | " | " | " | " | " | " | J1 | 4/ | 4/ | mA | | |
| | | | 28 | 4.5 V | 4.5 V | 0.4 V | GND | 3/ | " | " | " | " | " | " | " | " | " | " | " | " | " | " | $\bar{K} 1$ | " | " | " | |
| | | | 29 | " | " | " | " | " | " | " | " | " | " | " | 3/ | GND | 0.4 V | 4.5 V | 4.5 V | " | " | " | $\bar{K} 2$ | " | " | " | |
| | | | 30 | " | " | " | " | " | " | " | " | " | " | " | 4.5 V | GND | 4.5 V | 0.4 V | 3/ | " | " | " | J2 | " | " | " | |
| | I _{IL4} | | 31 | " | " | " | " | " | " | " | " | " | " | 4.5 V | 0.4 V | " | 4.5 V | 3/ | " | " | " | CLK2 | " | " | " | | |
| | | | 32 | " | " | " | " | " | " | " | " | " | " | 3/ | 0.4 V | " | " | 4.5 V | " | " | " | CLK2 | " | " | " | | |
| | | | 33 | " | " | " | " | " | " | " | " | " | " | " | 0.4 V | 4.5 V | " | " | GND | " | " | " | PR2 | " | " | " | |
| | | | 34 | GND | 4.5 V | 4.5 V | 4.5 V | 0.4 V | " | " | " | " | " | " | " | " | " | " | " | " | " | " | PR1 | " | " | " | |
| | | | 35 | 4.5 V | " | " | 0.4 V | 3/ | " | " | " | " | " | " | " | " | " | " | " | " | " | " | CLK1 | " | " | " | |
| | | | 36 | 3/ | " | " | 0.4 V | 4.5 V | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | CLK1 | " | " | " |
| | I _{IL7} | | 37 | 0.4 V | " | " | 4.5 V | GND | " | " | " | " | " | " | " | " | " | " | " | " | " | CLR1 | " | " | " | | |
| | | | 38 | " | " | " | " | " | " | " | " | " | " | GND | 4.5 V | 4.5 V | 4.5 V | 0.4 V | " | " | " | CLR2 | " | " | " | | |

See footnotes at end of type 09.

TABLE III. Group A inspection for device type 09.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/ 2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | | | | |
|----------------------------------|--|--------------------|------------------|-------|-------|-------------|-------|-------|-------|-------------|-----|-------------|----|-----|------|-------------|-------|-------|-----------------|-------------------|--------|-------------|-----------------|-----------------|-------------|------|-----|----|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | | | | | | |
| | | | Test no. | CLR1 | J1 | $\bar{K} 1$ | CLK1 | PR1 | Q1 | $\bar{Q} 1$ | GND | $\bar{Q} 2$ | Q2 | PR2 | CLK2 | $\bar{K} 2$ | J2 | CLR2 | V _{CC} | | | | | | | | | |
| 1 T _C = 25°C | I _{H1} | 3010 | 39 | GND | 2.7 V | GND | 4.5 V | 4.5 V | | | | GND | | | | | | | | 5.5 V | J1 | | 20 | μA | | | | |
| | | | 40 | GND | GND | 2.7 V | 4.5 V | GND | | | | | | | | | | | | | | $\bar{K} 1$ | | | | | | |
| | | | 41 | | | | | | | | | | | | | | | | | | | | $\bar{K} 2$ | | | | | |
| | | | 42 | | | | | | | | | | | | | GND | 4.5 V | 2.7 V | GND | GND | | | $\bar{K} 2$ | | | | | |
| | I _{H2} | | | 43 | | | | | | | | | | | | | | | | | | | J2 | | 100 | | | |
| | | | | 44 | | | | | | | | | | | | | 4.5 V | | GND | 2.7 V | | | | | | | | |
| | | | | 45 | GND | GND | 5.5 V | 4.5 V | GND | | | | | | | | | | | | | | | | $\bar{K} 2$ | | | |
| | | | | 46 | GND | 5.5 V | GND | 4.5 V | 4.5 V | | | | | | | | | | | | | | | | $\bar{K} 1$ | | | |
| | I _{H3} | | | 47 | GND | 4.5 V | 4.5 V | 4.5 V | GND | 2.7 V | | | | | | | | | | | | | | CLK1 | | 40 | | |
| | | | | 48 | 4.5 V | 4.5 V | 4.5 V | GND | 2.7 V | | | | | | | | | | | | | | | | PR1 | | | |
| | | | | 49 | | | | | | | | | | | | | | | | | | | | | | PR2 | | |
| | | | | 50 | | | | | | | | | | | | | | 2.7 V | GND | 4.5 V | 4.5 V | 4.5 V | | | | CLK2 | | |
| | I _{H4} | | | 51 | | | | | | | | | | | | | | | | | | | | CLK2 | | 200 | | |
| | | | | 52 | | | | | | | | | | | | | | | | | | | | | PR2 | | | |
| | | | | 53 | 4.5 V | 4.5 V | 4.5 V | GND | 5.5 V | | | | | | | | | | | | | | | | | PR1 | | |
| | | | | 54 | GND | 4.5 V | 4.5 V | 5.5 V | GND | | | | | | | | | | | | | | | | | CLK1 | | |
| | I _{H7} | | | 55 | 2.7 V | 4.5 V | 4.5 V | GND | 4.5 V | | | | | | | | | | | | | | | CLR1 | | 80 | | |
| | | | | 56 | | | | | | | | | | | | | | | | | | | | | | CLR2 | | 80 |
| | I _{H8} | | | 57 | | | | | | | | | | | | | | | | | | | | CLR2 | | 400 | | |
| | | | | 58 | 5.5 V | 4.5 V | 4.5 V | GND | 4.5 V | | | | | | | | | | | | | | | | CLR1 | | 400 | |
| I _{OS} | 3011 | | 59 | GND | | | | 4.5 V | | | GND | | | | | | | | | | | | $\bar{Q} 1$ | -15 | -100 | mA | | |
| | | | 60 | 4.5 V | | | | | GND | GND | | | | | | | | | | | | | | Q1 | | | | |
| | | | 61 | | | | | | | | | | | | | | | | | | | | | | Q2 | | | |
| | | | 62 | | | | | | | | | | | GND | GND | GND | | | | | 4.5 V | | | | $\bar{Q} 2$ | | | |
| I _{CC} | 3005 3005 | | 63 | GND | | | GND | 5.5 V | | | | | | | | | | | | | | | V _{CC} | | 8.0 | | | |
| | | | 64 | 5.5 V | | | | GND | GND | | | | | | | | | | | | | | | V _{CC} | | 8.0 | | |
| 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/ 6/ T _C = 25°C | Truth table tests | 3014 | 65 | A | A | A | B | B | H | L | GND | L | H | B | B | A | A | A | 4.5 V | All | See 7/ | | | | | | | |
| | | | 66 | " | " | " | B | A | " | " | " | " | " | " | A | B | " | " | " | " | " | outputs | | | | | | |
| | | | 67 | " | " | " | A | " | " | " | " | " | " | " | " | A | " | " | " | " | " | " | | | | | | |
| | | | 68 | " | " | B | A | " | " | " | " | " | " | " | " | A | B | " | " | " | " | " | | | | | | |
| | | | 69 | " | " | " | B | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | | | | | | |
| | | | 70 | " | " | " | A | " | L | H | " | H | L | " | " | A | " | " | " | " | " | " | | | | | | |
| | | | 71 | " | " | " | B | " | " | " | " | " | " | " | " | B | " | " | " | " | " | " | | | | | | |
| | | | 72 | B | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | B | | | | | |
| | | | 73 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | | | | | |
| | | | 74 | " | " | " | A | " | H | L | " | L | H | " | " | A | " | " | " | " | " | " | | | | | | |
| | | | 75 | " | " | " | B | " | H | L | " | L | H | " | " | B | " | " | " | " | " | " | | | | | | |
| | | | 76 | " | " | " | A | " | L | H | " | H | L | " | " | A | " | " | " | " | " | " | | | | | | |
| | | | 77 | " | " | " | B | " | L | H | " | H | L | " | " | B | " | " | " | " | " | " | | | | | | |
| | | | 78 | " | " | " | B | B | H | L | " | L | H | " | " | B | B | " | " | " | " | " | | | | | | |
| | | | 79 | " | " | " | A | B | " | " | " | " | " | " | " | B | A | " | " | " | " | " | | | | | | |
| | | | 80 | " | " | " | A | A | " | " | " | " | " | " | " | A | A | " | " | " | " | " | | | | | | |
| | | | 81 | " | " | " | B | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | | | |
| | | | 82 | " | " | " | A | " | L | H | " | H | L | " | " | A | " | " | " | " | " | " | | | | | | |
| | | | 83 | " | " | " | B | " | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | | | |
| 84 | B | B | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | B | B | | | | | | | | | |
| 85 | A | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | A | " | | | | | | | | | |
| 86 | " | " | " | " | A | " | " | " | " | " | " | " | " | A | " | " | " | " | " | | | | | | | | | |

See footnotes at end of device type 09.

TABLE III. Group A inspection for device type 09.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit | | |
|----------------------------------|--|--------------------|--------------|-------|-------|-------------|-------|-------|-----|-------------|-------|-------------|-------|-------|-------|-------------|-------|-------|-----------------|---------------------|---------------------|-----|------|--------|--|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | V _{CC} | Min | | Max | |
| | | | Test no. | CLR1 | J1 | $\bar{K} 1$ | CLK1 | PR1 | Q1 | $\bar{Q} 1$ | GND | $\bar{Q} 2$ | Q2 | PR2 | CLK2 | $\bar{K} 2$ | J2 | CLR2 | V _{CC} | | | All | | See 7/ | |
| 7 5/ 8/ T _c = 25°C | Truth table tests | 3014 | 87 | A | A | B | A | A | L | H | GND | H | L | A | A | B | A | A | 4.5 V | All | See 7/ | | | | |
| | | | 88 | " | " | " | B | " | " | " | " | " | " | " | B | " | " | " | " | " | outputs | | | | |
| | | | 89 | " | " | " | " | B | H | L | " | L | H | B | " | " | " | " | " | " | " | | | | |
| | | | 90 | " | " | " | " | A | H | L | " | L | H | A | " | " | " | " | " | " | " | | | | |
| | | | 91 | " | " | " | A | " | L | H | " | H | L | " | A | " | " | " | " | " | " | | | | |
| | | | 92 | " | " | " | B | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | |
| | | | 93 | B | " | " | B | " | " | " | " | " | " | " | " | B | " | " | B | " | " | | | | |
| | | | 94 | B | " | " | A | " | " | " | " | " | " | " | " | A | " | " | B | " | " | | | | |
| | | | 95 | A | " | " | A | " | " | " | " | " | " | " | " | A | " | " | A | " | " | | | | |
| | | | 96 | " | " | " | B | " | " | " | " | " | " | " | " | B | " | " | " | " | " | | | | |
| | | | 97 | " | B | A | B | " | " | " | " | " | " | " | " | B | A | B | " | " | " | | | | |
| | | | 98 | " | B | " | A | " | " | " | " | " | " | " | " | A | " | B | " | " | " | | | | |
| | | | 99 | " | A | " | " | B | H | L | " | L | H | B | " | " | " | A | " | " | " | | | | |
| | | | 100 | " | " | " | " | A | H | L | " | L | H | A | " | " | " | " | " | " | " | | | | |
| 101 | B | " | " | " | A | L | H | " | H | L | A | " | " | " | " | B | " | " | | | | | | | |
| 102 | A | B | B | B | B | H | L | " | L | H | B | B | B | B | A | " | " | " | | | | | | | |
| 103 | A | " | " | " | A | H | L | " | L | H | A | " | " | " | A | " | " | " | | | | | | | |
| 104 | B | " | " | " | A | L | H | " | H | L | A | " | " | " | " | B | " | " | | | | | | | |
| 8 | Repeat subgroup 7 at T _c = +125°C and T _c = -55°C. | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 T _c = 25°C | f _{MAX} g/ | Fig. 16 | 105 | 2.7 V | 2.7 V | GND | IN | 2.7 V | OUT | GND | | | | | | | | | 5.0 V | Q1 | 20 | | MHz | | |
| | | | 106 | 2.7 V | 2.7 V | GND | IN | 2.7 V | | OUT | " | | | | | | | | | | $\bar{Q} 1$ | " | | " | |
| | | | 107 | | | | | | | | " | OUT | | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | $\bar{Q} 2$ | " | | " | |
| | | | 108 | | | | | | | | " | | OUT | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | Q2 | " | | " | |
| | t _{PLH1} | Fig. 17 | 109 | IN | 2.7 V | 2.7 V | IN | 2.7 V | | OUT | " | | | | | | | | | " | CLR1 to $\bar{Q} 1$ | 5 | 20 | ns | |
| | | | 110 | 2.7 V | GND | GND | IN | IN | OUT | | " | | | | | | | | | " | PR1 to Q1 | " | " | " | |
| | t _{PHL1} | | 111 | | | | | | | " | | OUT | IN | IN | GND | GND | 2.7 V | " | " | " | PR2 to Q2 | " | " | " | |
| | | | 112 | | | | | | | " | OUT | 2.7 V | IN | 2.7 V | 2.7 V | IN | " | " | " | " | CLR2 to $\bar{Q} 2$ | " | " | " | |
| | t _{PLH2} | Fig. 16 | 113 | | | | | | | " | | OUT | 2.7 V | IN | 2.7 V | 2.7 V | IN | " | " | " | CLR2 to Q2 | " | 32 | " | |
| | | | 114 | | | | | | | " | OUT | | IN | IN | GND | GND | 2.7 V | " | " | " | PR2 to $\bar{Q} 2$ | " | " | " | |
| | | | 115 | 2.7 V | GND | GND | IN | IN | | OUT | " | | | | | | | | | " | PR1 to $\bar{Q} 1$ | " | " | " | |
| | | | 116 | IN | 2.7 V | 2.7 V | IN | 2.7 V | OUT | | " | | | | | | | | | " | CLR1 to Q1 | " | " | " | |
| | t _{PHL2} | | 117 | 2.7 V | 2.7 V | GND | IN | 2.7 V | OUT | | " | | | | | | | | | " | CLK1 to Q1 | " | 24 | " | |
| | | | 118 | 2.7 V | 2.7 V | GND | IN | 2.7 V | | OUT | " | | | | | | | | | " | CLK1 to $\bar{Q} 1$ | " | " | " | |
| 119 | | | | | | | | | | " | OUT | | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | CLK2 to $\bar{Q} 2$ | " | " | " | | |
| 120 | | | | | | | | | | " | | OUT | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | CLK2 to Q2 | " | " | " | | |
| t _{PHL2} | | 121 | | | | | | | " | | OUT | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | " | CLK2 to Q2 | " | 35 | " | | |
| | | 122 | | | | | | | " | OUT | 2.7 V | IN | GND | 2.7 V | 2.7 V | " | " | " | " | CLK2 to $\bar{Q} 2$ | " | " | " | | |
| | | 123 | 2.7 V | 2.7 V | GND | IN | 2.7 V | | OUT | " | | | | | | | | | " | CLK1 to $\bar{Q} 1$ | " | " | " | | |
| | | 124 | 2.7 V | 2.7 V | GND | IN | 2.7 V | OUT | | " | | | | | | | | | " | CLK1 to Q1 | " | " | " | | |

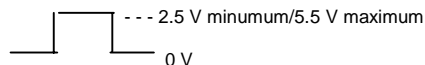
See footnotes at end of device type 09.

TABLE III. Group A inspection for device type 09.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.7 V, or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases 1/2, X | 2 | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 17 | 18 | 19 | 20 | Measured terminal | Limits | | Unit |
|----------|---|--------------------|--------------|---|----|-------------|------|-----|----|-------------|-----|-------------|----|-----|------|-------------|----|------|-----------------|-------------------|--------|-----|------|
| | | | Cases E, F | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | Min | Max | |
| | | | Test no. | CLR1 | J1 | \bar{K} 1 | CLK1 | PR1 | Q1 | \bar{Q} 1 | GND | \bar{Q} 2 | Q2 | PR2 | CLK2 | \bar{K} 2 | J2 | CLR2 | V _{CC} | | | | |
| 10 | f _{MAX} 8/ | Fig. 16 | 125-128 | Same tests and terminal conditions as for subgroup 9, except T _C = +125°C. | | | | | | | | | | | | | | | | | 20 | | MHz |
| | t _{PLH1} | 3003 Fig. 17 | 129-132 | | | | | | | | | | | | | | | | | | 5 | 39 | ns |
| | t _{PHL1} | 3003 Fig. 17 | 133-136 | | | | | | | | | | | | | | | | | | " | 59 | " |
| | t _{PLH2} | 3003 Fig. 16 | 137-140 | | | | | | | | | | | | | | | | | | " | 39 | " |
| | t _{PHL2} | 3003 Fig. 16 | 141-144 | | | | | | | | | | | | | | | | | | " | 59 | " |
| 11 | Same tests, terminal conditions, and limits as for subgroup 1, except T _C = -55°C and V _{IC} tests are omitted. | | | | | | | | | | | | | | | | | | | | | | |

1/ Case X and 2 pins not referenced are NC.

2/



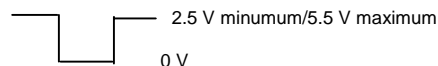
3/ I_L limits in mA are as follows:

| I _{IL2} | Min/Max limits for CKT | | | | | |
|------------------|------------------------|---------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E | F |
| | -0.75/-0.250 | -0.030/-0.300 | -0.095/-0.210 | -0.160/-0.400 | -0.135/-0.370 | -0.160/-0.400 |

| I _{IL4} | Min/Max limits for CKT | | | | | |
|------------------|--|---------------|--|---------------|--|---------------|
| | A | B | C | D | E | F |
| | -0.150/-0.500 for tests 31, 32, 35, 36 | -0.060/-0.700 | -0.160/-0.400 for tests 31, 32, 35, 36 | -0.320/-0.800 | -0.120/-0.360 for tests 31, 32, 35, 36 | -0.320/-0.800 |
| | -0.200/-0.800 for tests 33, 34 | | -0.350/-0.760 for tests 33, 34 | | -0.350/-0.760 for tests 33, 34 | |

| I _{IL7} | Min/Max limits for CKT | | | | | |
|------------------|------------------------|---------------|---------------|---------------|---------------|---------------|
| | A | B | C | D | E | F |
| | -0.200/-0.800 | -0.060/-0.700 | -0.350/-0.760 | -0.560/-1.600 | -0.280/-0.760 | -0.560/-1.600 |

4/



5/ Input voltages shown are A = 2.0 volts minimum and B = 0.7 volts maximum.

6/ Tests shall be performed in sequence, attributes data only.

7/ Output voltages shall be H ≥ 1.5 V and L < 1.5 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.

6. NOTES

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. PIN and compliance identifier, if applicable (see 1.2).
- c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- d. Requirements for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
- f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.
- g. Requirements for product assurance options.
- h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
- i. Requirements for "JAN" marking.
- j. Packaging requirements (see 5.1).

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

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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

| | |
|-----------------------|--|
| GND | Ground zero voltage potential |
| I _{IN} | Current flowing into an input terminal |
| V _{IC} | Input clamp voltage |
| V _{IN} | Voltage level at an input terminal |

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

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

| Military device type | Generic-industry type |
|----------------------|-----------------------|
| 01 | 54LS73 |
| 02 | 54LS74A |
| 03 | 54LS112 |
| 04 | 54LS113 |
| 05 | 54LS114 |
| 06 | 54LS174 |
| 07 | 54LS175 |
| 08 | 54LS107 |
| 09 | 54LS109 |
| 10 | 54LS76A |

6.8 Manufacturers' designation. Manufacturers' circuits, which form a part of this specification, are designated as shown in table IV herein.

TABLE IV. Manufacturers' designation.

| Manufacturers | | | | | | | |
|---------------|------------------------|-----------------------|-----------------------------|------------------|--------------|-------------------------|------------------------|
| Device type | Texas Instruments Inc. | Signetics Corporation | National Semiconductor Corp | Raytheon Company | Motorola Inc | Fairchild Semiconductor | Advanced Micro Devices |
| 01 | A | B | C | D | E | --- | --- |
| 02 | A | B | C | D | E | F | --- |
| 03 | A | B | C | C | D | E | --- |
| 04 | A | B | C | C | F | E | D |
| 05 | A | --- | C | C | D | E | --- |
| 06 | A | B | C | E | F | G | D |
| 07 | A | B | C | E | F | G | D |
| 08 | A | B | C | D | E | --- | --- |
| 09 | A | B | C | --- | E | F | --- |
| 10 | A | B | C | C | D | E | --- |

6.9 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

MIL-M-38510/301F

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

Preparing activity:
DLA - CC

(Project 5962-2038)

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

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