MILITARY SPECIFICATION

# MICROCIRCUITS, DIGITAL, ADVANCED LOW POWER SCHOTTKY TTL, AND, OR, NAND, AND NOR GATES, MONOLITHIC SILICON

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

## 1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, ADVANCED, low-power Schottky TTL, positive AND, OR, NAND, AND NOR logic gating microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided and are reflected in the complete part number.

1.2 Part number. The part number shall be in accordance with MIL-M-38510, and as specified herein.

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

| Device type | Circuit |
|---|---|
| 01 | Quadruple 2-input NAND gate, buffer output |
| 02 | Quadruple 2-input NOR gate, buffer output |
| 03 | Quadruple 2-input NAND gate, open collector, buffer output |
| 04 | Quadruple 2-input AND gate, buffer output |
| 05 | Triple 3-input NAND gate, buffer output |
| 06 | Triple 3-input AND gate, buffer output |
| 07 | Dual 4-input NAND gate, buffer output |
| 08 | Quadruple 2-input OR gate, buffer output |
| 09 | Hex 1-input inverter gate, buffer output |
| 10 | Hex 1-input inverter gate, open collector, buffer output |
| 11 | Hex 1-input noninverting gate, buffer output |
| 12 | Hex 1-input noninverting gate, open collector, buffer output |

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

1.2.3 Case outline. The case outline shall be designated as follows:

| Outline letter | Case outline (see MIL-M-38510, appendix C) |
|---|---|
| A | F-1 (14-lead, 1/4" x 1/4", flat-pack) |
| B | F-3 (14-lead, 3/16" x 1/4", flat-pack) |
| C | D-1 (14-lead, 1/4" x 3/4", dual-in-line) |
| D | F-2 (14-lead, 1/4" x 3/8", flat-pack) |
| 2 | C-2 (20 terminal, .350" x .350", square chip carrier package) |

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 7.0 V dc |
| Storage temperature range | -65°C to +150°C |

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

| | |
|---|---|
| Maximum power dissipation ($P_D$) per device 1/ | |
| Device type 01, 03 | 35.2 mW dc |
| Device type 02, 04 | 44 mW dc |
| Device type 05, 06 | 33 mW dc |
| Device type 07 | 17.6 mW dc |
| Device type 08 | 55 mW dc |
| Device type 09, 10 | 66 mW dc |
| Device type 11, 12 | 77 mW dc |
| Lead temperature (soldering, 10 seconds) | +300°C |
| Thermal resistance, junction-to-case ($\theta_{JC}$): | |
| Cases A, B, D | 70°C/W |
| Case C | 50°C/W |
| Case 2 | 60°C/W |
| Junction temperature ($T_J$) | +175°C |

1.4 Recommended operating conditions.

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

2 APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications and standards, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATION

MILITARY

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

STANDARD

MILITARY

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

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

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 specification shall take precedence.

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510, and as specified herein.

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

3.2.1 Logic diagram and terminal connections. The logic diagram and terminal connections shall be as specified on figure 1.

3.2.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.

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

1/ Must withstand the added $P_D$ due to short circuit test (e.g., $I_O$).



d by method 1005 of ... (3) Test duration: 1,000 hours, except as permitt

TABLE I. Electrical performance characteristics.

| Test | Symbol | Conditions $-55°C \le T_C \le +125°C$ | Device type | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| High level output voltage | $V_{OH}$ | $V_{CC}$ = 4.5 V, $V_{IH}$ = 2.0 V, $I_{OH}$ = -1.0 mA, $V_{IL}$ = 0.8 V | 01,02,04 05,06,07 08,09,11 | 2.4 | -- | V dc |
| Low level output voltage | $V_{OL}$ | $V_{CC}$ = 4.5 V, $V_{IL}$ = 0.8 V, $I_{IN}$ = 12 mA, $V_{IH}$ = 2.0 V | ALL | -- | 0.4 | V dc |
| Input clamp voltage | $V_{IC}$ | $V_{CC}$ = 4.5 V, $T_C$ = +25°C, $I_{IN}$ = -18 mA | ALL | -- | -1.5 | V dc |
| Low level input current | $I_{IL}$ | $V_{CC}$ = 5.5 V, $V_{IN}$ = 0.4 V | ALL | 0 | -100 | µA |
| High level input current | $I_{IH1}$ | $V_{CC}$ = 5.5 V, $V_{IN}$ = 2.7 V | ALL | | 20 | µA |
| | $I_{IH2}$ | $V_{CC}$ = 5.5 V, $V_{IN}$ = 7.0 V | ALL | | 100 | µA |
| Output current 1/ | $I_O$ | $V_{CC}$ = 5.5 V, $V_O$ = 2.25 V | 01,02,04, 05,06,07, 08 | -15 | -112 | mA |
| | | | 09,11 | -30 | -112 | mA |
| Collector cut-off current | $I_{CEX}$ | $V_{CC}$ = 4.5 V, $V_{IN}$ = 5.0 V, $V_O$ = 5.5 V | 03,10, 12 | | 100 | µA |
| Supply current, outputs high | $I_{CCH}$ | $V_{CC}$ = 5.5 V | 01,03 | | 1.6 | mA |
| | | | 02 | | 2.8 | |
| | | | 04,09,10 | | 3 | |
| | | | 05 | | 1.2 | |
| | | | 06 | | 2.3 | |
| | | | 07 | | 0.8 | |
| | | | 11,12 | | 6 | |

See footnote at end of table.

TABLE I. Electrical performance characteristics - Continued.

| Test | Symbol | Conditions $-55°C \le T_C \le +125°C$ | | Device type | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|
| Supply current, outputs low | $I_{CCL}$ | $V_{CC}$ = 5.5 V | | 01,03 | | 7.8 | mA |
| | | | | 02 | | 9.0 | |
| | | | | 04, | | 9.3 | |
| | | | | 05 | | 6.0 | |
| | | | | 06 | | 7.0 | |
| | | | | 07 | | 3.9 | |
| | | | | 08 | | 10.6 | |
| | | | | 09,10 | | 12.0 | |
| | | | | 11,12 | | 14.0 | |
| Propagation delay time low-to high level | $t_{PLH}$ | $V_{CC}$ = 5.0 V<br>$C_L$ = 50 pF± 10% | $R_L$ = 500 Ω | 01,02,05 07,11 | 2 | 10 | ns |
| | | | | 04 | 2 | 11 | |
| | | | | 08 | 2 | 9 | |
| | | | | 06 | 2 | 12 | |
| | | | | 09 | 1 | 9 | |
| | | | $R_L$ = 680 Ω | 03 | 10 | 40 | |
| | | | | 10,12 | 5 | 35 | |
| Propagation delay time high-to-low level | $t_{PHL}$ | $V_{CC}$ = 5.0 V<br>$C_L$ = 50 pF± 10% | $R_L$ = 500 Ω | 01,02,05 07 | 2 | 7 | ns |
| | | | | 04,06 | 3 | 11 | |
| | | | | 08 | 3 | 12 | |
| | | | | 09 | 1 | 8 | |
| | | | | 11 | 1 | 10 | |
| | | | $R_L$ = 680 Ω | 03 | 2 | 12 | |
| | | | | 10 | 2 | 12 | |
| | | | | 12 | 2 | 14 | |

1/ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, $I_{OS}$.

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

3.3 Lead material and finish. The lead material and finish shall be in accordance with MIL-M-38510 (see 6.5).

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

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

3.6 Marking. Marking shall be in accordance with MIL-M-38510. At the option of the manufacturer, marking of the country of origin may be omitted from the body of the microcircuit, but shall be retained on the initial container.

3.7 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 9 (see MIL-M-38510, appendix E).

TABLE II. Electrical test requirements.

| MIL-STD-883 test requirements | Subgroups (see table III) | |
|---|---|---|
| | Class S devices | Class B devices |
| Interim electrical parameters (pre burn-in) (method 5004) | 1 | 1 |
| Final electrical test parameters (method 5004) | 1*,2,3 9,10,11 | 1*2,3, 9 |
| Group A test requirements (method 5005) | 1,2,3, 9,10,11 | 1,2,3, 9 |
| Group B test requirements (method 5005) subgroup 5 | 1,2,3, 9,10,11 | N/A |
| Group C end-point electrical parameters (method 5005) | N/A | 1,2,3 |
| Additional electrical subgroups for group C periodic inspections | N/A | 10,11 |
| Group D end-point electrical parameters (method 5005) | 1,2,3 | 1,2,3 |

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

4. QUALITY ASSURANCE PROVISIONS

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

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

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

a. Burn-in (method 1015 of MIL-STD-883).

(1) Test condition D or E, using the circuit shown on figure 3, or equivalent.

(2) $T_A$ = +125°C minimum.

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

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

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

a. Electrical test requirements shall be as specified in table II herein.

b. Subgroups 4, 5, 6, 7, and 8 of table I of method 5005 of MIL-STD-883 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883. Electrical test requirements shall be as specified in table II herein.

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

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

b. Steady-state life test (method 1005 of MIL-STD-883) conditions:

(1) Test condition D or E, using the circuit shown on figure 3, or equivalent.

(2) $T_A$ = +125°C minimum.

(3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510.

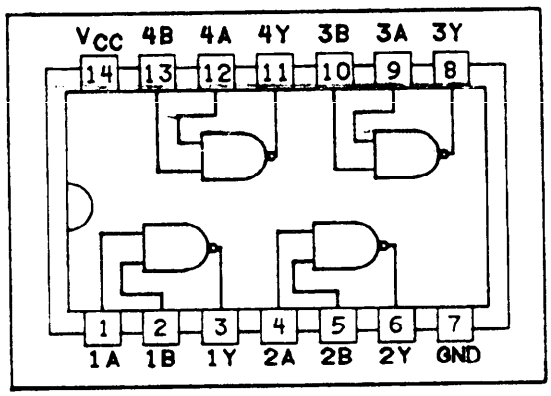
c. Subgroups 3 and 4 shall be added to group C inspection for class B devices and shall consist of the tests, conditions, and limits specified for subgroups 10 and 11 of group A.

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

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

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

Device type 01 and 03
Cases A, B, C, and D




Device type 01 and 03
Case 2

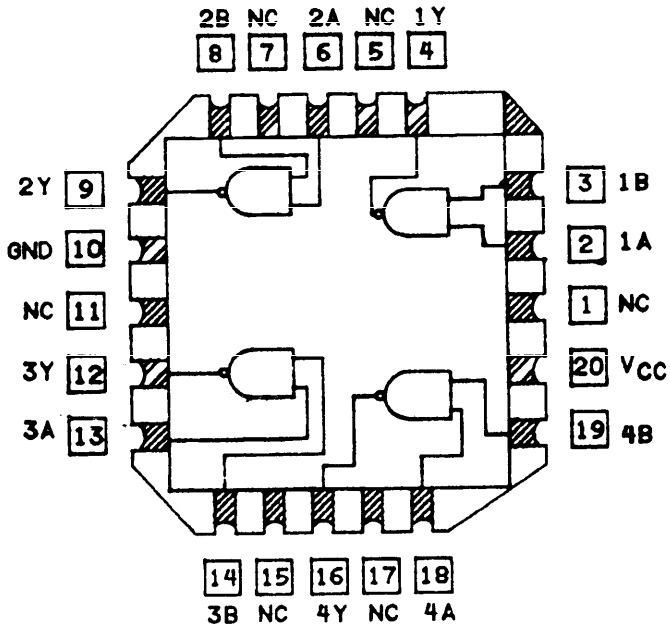
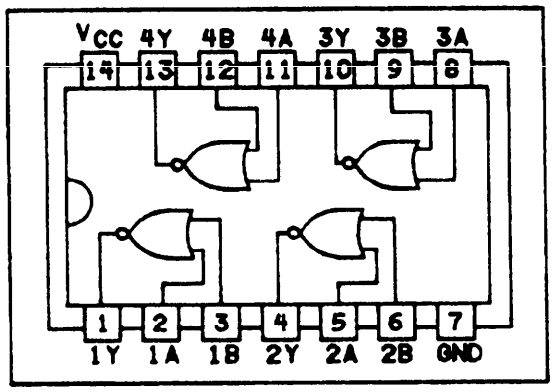



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 02
Cases A, B, C, and D




Device type 02
Case 2

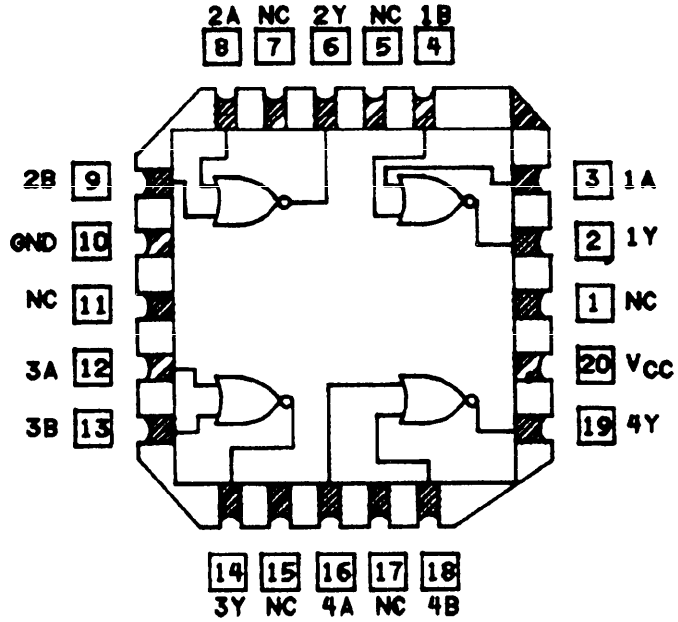
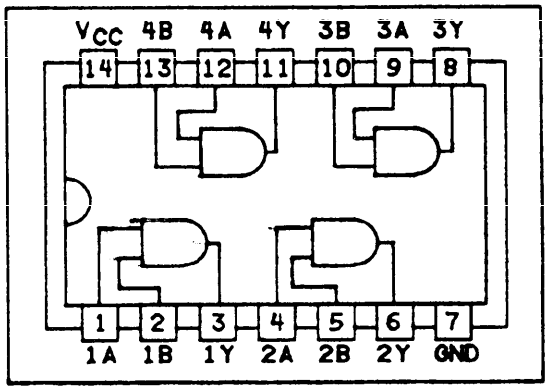



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 04
Cases A, B, C, and D




Device type 04
Case 2

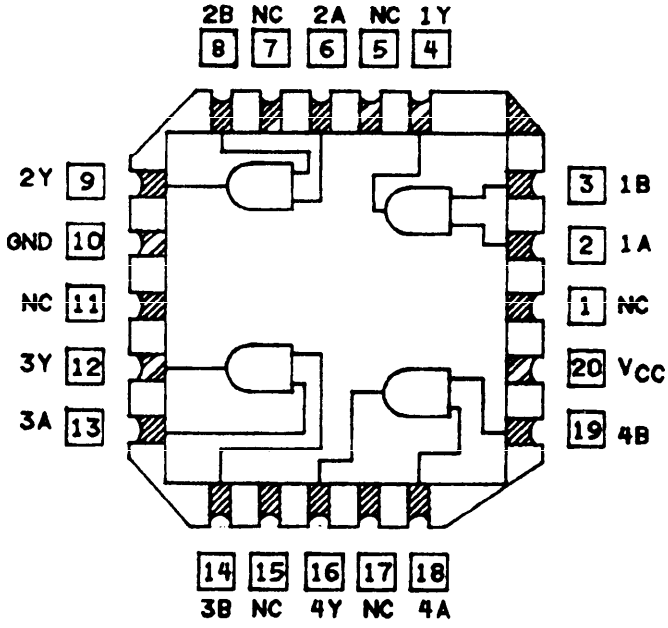
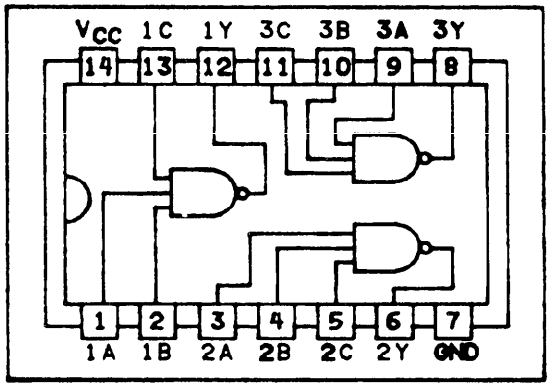



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 05
Cases A, B, C, and D




Device type 05
Case 2

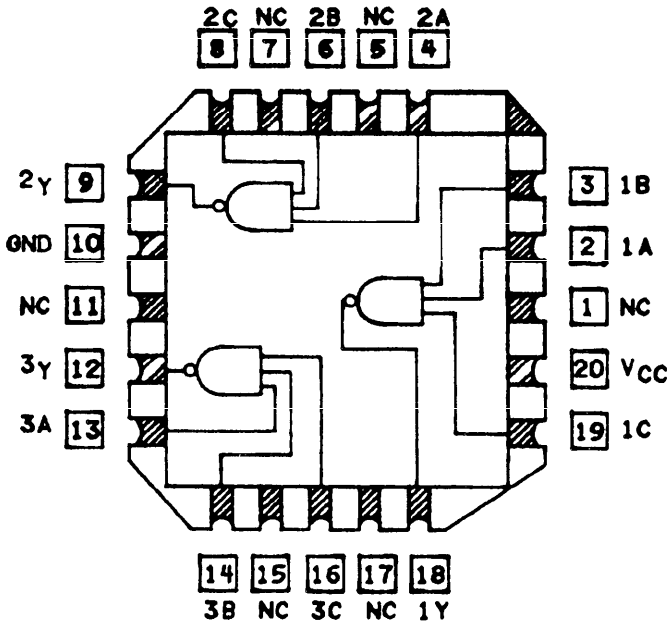
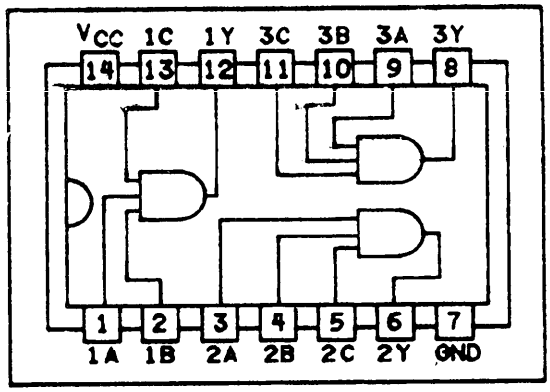



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 06
Cases A, B, C, and D




Device type 06
Case 2

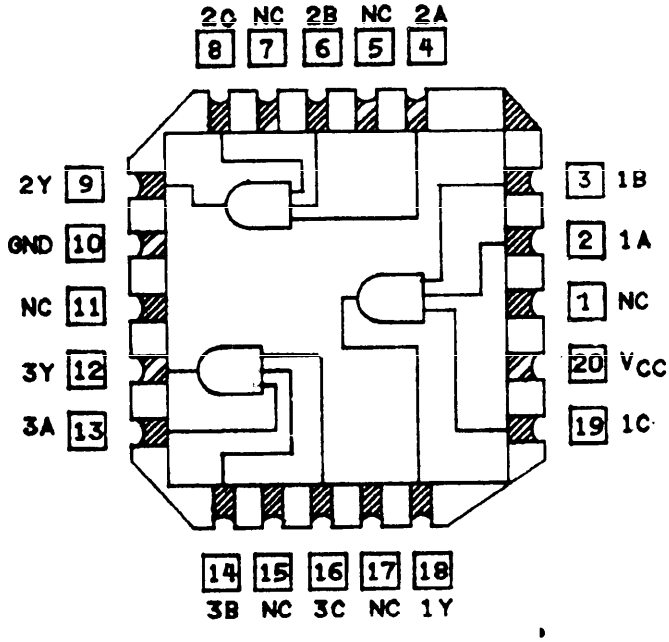
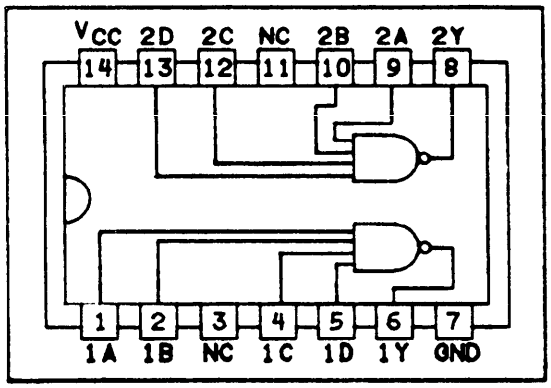



FIGURE 1. Logic diagram and terminal connections (top view)

Device type 07
Cases A, B, C, and D




Device type 07
Case 2

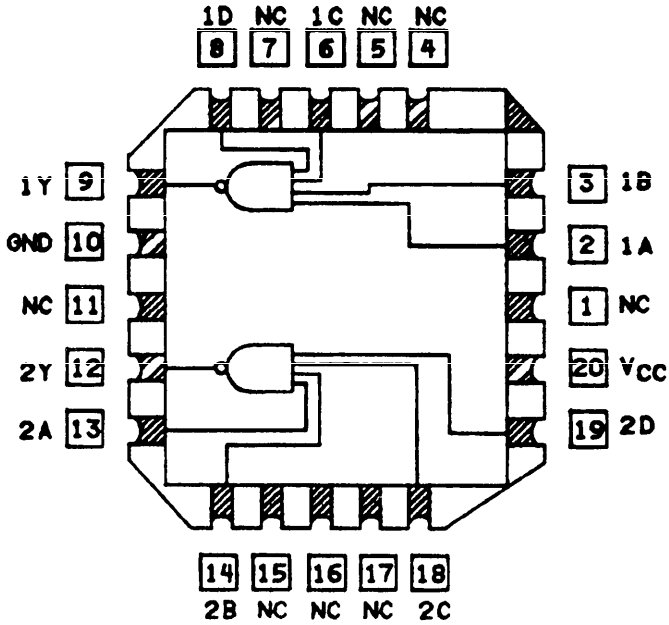
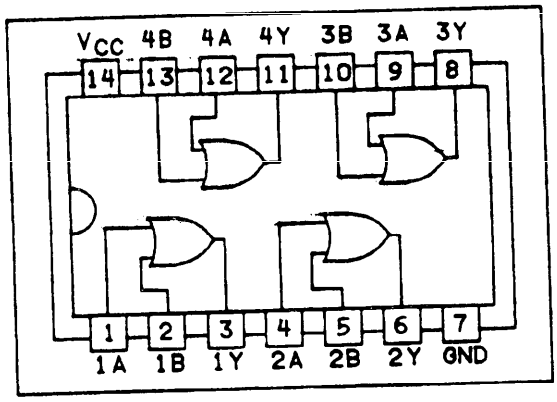



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 08
Cases A, B, C, and D




Device type 08
Case 2

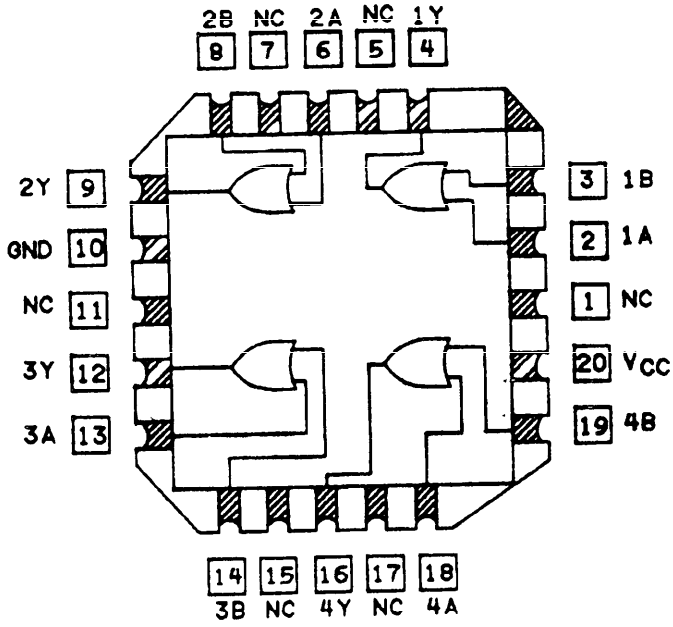
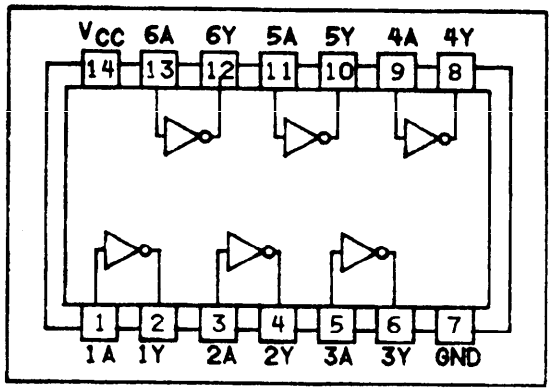



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 09 and 10
Cases A, B, C, and D




Device type 09 and 10
Case 2

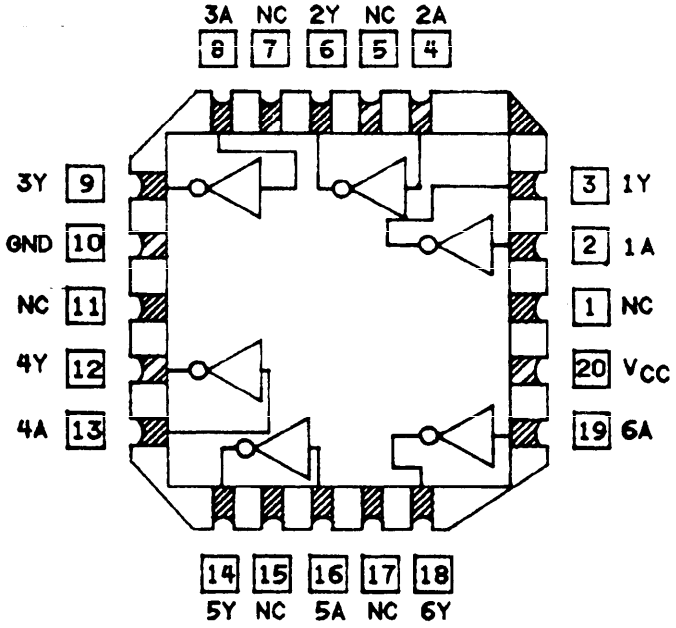
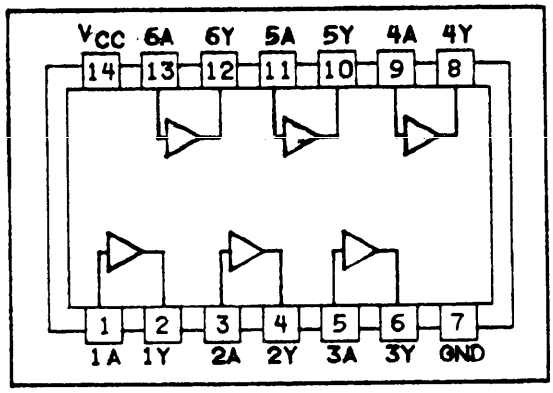



FIGURE 1. Logic diagram and terminal connections (top view).

Device type 11 and 12
Cases A, B, C, and D




Device type 11 and 12
Case 2

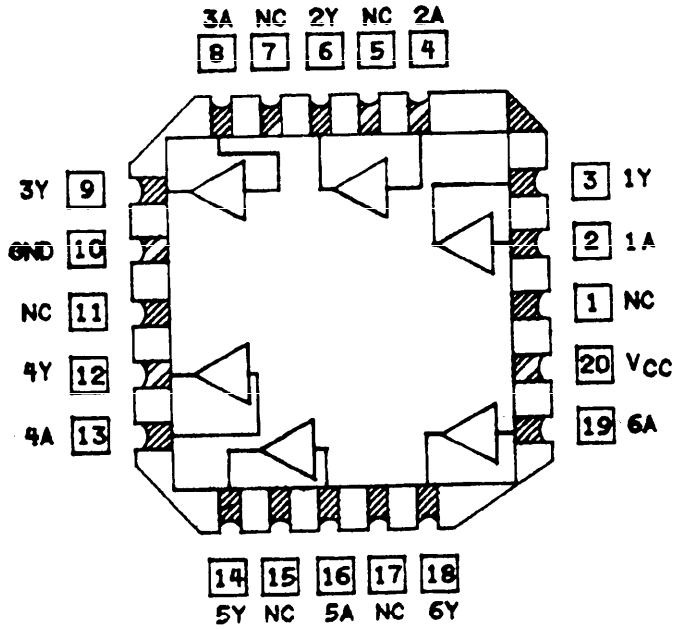



FIGURE 1. Logic diagram and terminal connections (top view).



End-point electrical parameter limits - Continued

Device Types 01, 03

| TRUTH TABLE (EACH GATE) | | |
|---|---|---|
| INPUTS | | OUTPUT |
| A | B | Y |
| L | L | H |
| H | L | H |
| L | H | H |
| H | H | L |

$Y = \overline{AB}$

Device Type 02

| TRUTH TABLE (EACH GATE) | | |
|---|---|---|
| INPUTS | | OUTPUT |
| A | B | Y |
| L | L | H |
| H | L | L |
| L | H | L |
| H | H | L |

$Y = \overline{A + B}$

Device Type 04

| TRUTH TABLE (EACH GATE) | | |
|---|---|---|
| INPUTS | | OUTPUT |
| A | B | Y |
| L | L | L |
| H | L | L |
| L | H | L |
| H | H | H |

$Y = AB$

Device Type 05

| TRUTH TABLE (EACH GATE) | | | |
|---|---|---|---|
| INPUTS | | | OUTPUT |
| A | B | C | Y |
| L | L | L | H |
| H | L | L | H |
| L | H | L | H |
| L | L | H | H |
| H | H | L | H |
| H | L | H | H |
| L | H | H | H |
| H | H | H | L |

$Y = \overline{ABC}$

Device Type 06

| TRUTH TABLE (EACH GATE) | | | |
|---|---|---|---|
| INPUTS | | | OUTPUT |
| A | B | C | Y |
| L | L | L | L |
| H | L | L | L |
| L | H | L | L |
| L | L | H | L |
| H | H | L | L |
| H | L | H | L |
| L | H | H | L |
| H | H | H | H |

$Y = ABC$

Device Type 07

| TRUTH TABLE (EACH GATE) | | | | |
|---|---|---|---|---|
| INPUTS | | | | OUTPUT |
| A | B | C | D | Y |
| L | L | L | L | H |
| H | L | L | L | H |
| L | H | L | L | H |
| L | L | H | L | H |
| L | L | L | H | H |
| H | H | L | L | H |
| H | L | H | L | H |
| H | L | L | H | H |
| L | H | H | L | H |
| L | H | L | H | H |
| L | L | H | H | H |
| H | H | H | L | H |
| H | H | L | H | H |
| H | L | H | H | H |
| L | H | H | H | H |
| H | H | H | H | L |

$Y = \overline{ABCD}$

Device Type 08

| TRUTH TABLE (EACH GATE) | | |
|---|---|---|
| INPUTS | | OUTPUT |
| A | B | Y |
| L | L | L |
| H | L | H |
| L | H | H |
| H | H | H |

$Y = A + B$

Device types 09 and 10

| TRUTH TABLE EACH GATE | |
|---|---|
| INPUT | OUTPUT |
| A | Y |
| L | H |
| H | L |

$Y = \overline{A}$

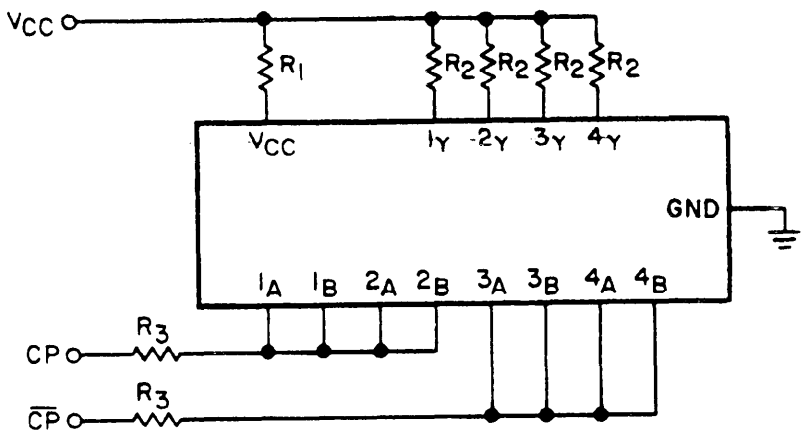
Device types 11 and 12

| TRUTH TABLE EACH GATE | |
|---|---|
| INPUT | OUTPUT |
| A | Y |
| H | H |
| L | L |

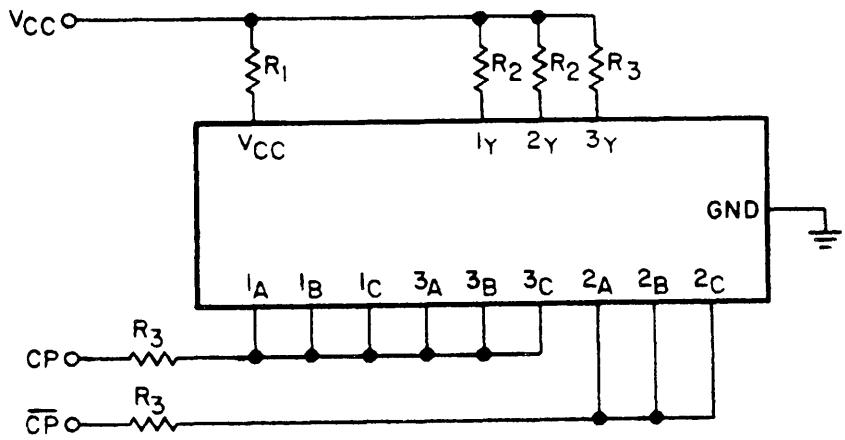
$Y = A$

FIGURE 2. Truth tables and logic equations.

Device Types 01, 02, 03, 04, and 08



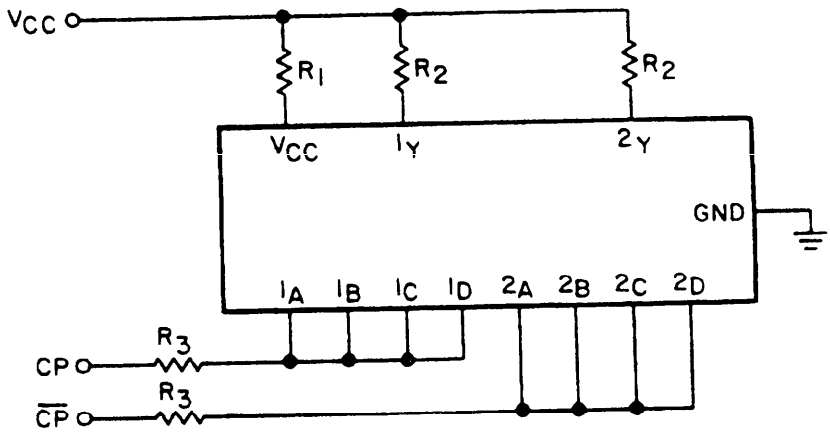

Device types 05 and 06



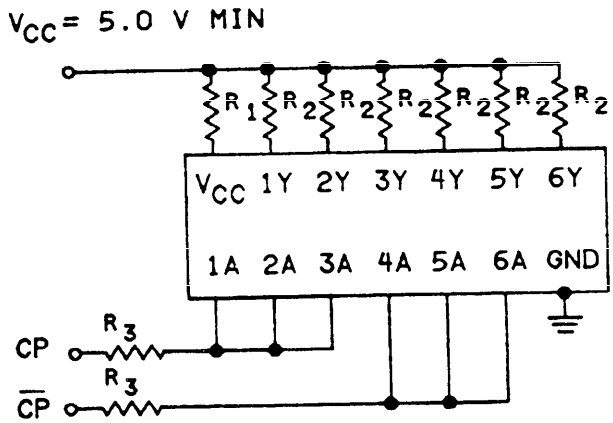

NOTES:
1. CP or $\overline{CP}$ = 100 kHz ±50% square wave; duty cycle = 50 ±15%; $V_{IL}$ = -0.5 V minimum to 0.8 V maximum; $V_{IH}$ = 2.0 V minimum to 5.5 V maximum.
2. $R_2$ = 470Ω ±5%; $R_3$ = 27Ω maximum.
3. $R_1$ and $V_{CC}$ shall be chosen to insure 5.0 V minimum is present at device $V_{CC}$ terminal.

FIGURE 3. Burn-in and life test circuits.

Device Type 07



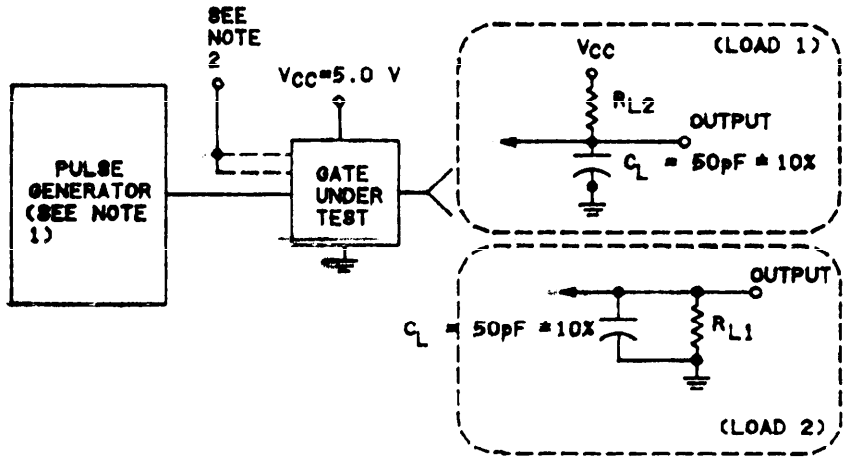

Device types 09, 10, 11, and 12



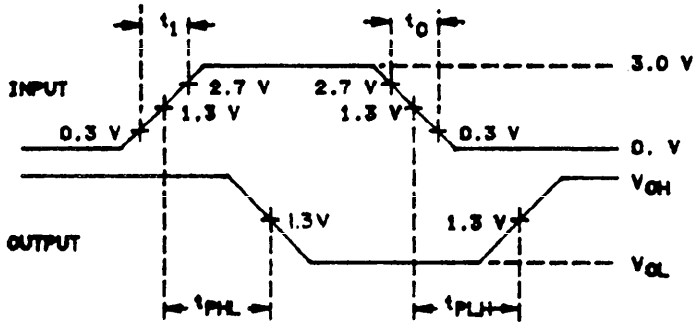

NOTES:
1. CP or $\overline{CP}$ = 100 kHz ±50% square wave; duty cycle = 50 ±15%; $V_{IL}$ = -0.5 V minimum to 0.8 V maximum; $V_{IH}$ = 2.0 V minimum to 5.5 V maximum.
2. $R_2$ = 470Ω ±5%; $R_3$ = 27Ω maximum.
3. $R_1$ and $V_{CC}$ shall be chosen to insure 5.0 V minimum is present at device $V_{CC}$ terminal.

FIGURE 3. Burn-in and life test circuits - Continued.

Device types 01, 02, 03, 05, 07, 09, and 10




TEST CIRCUIT

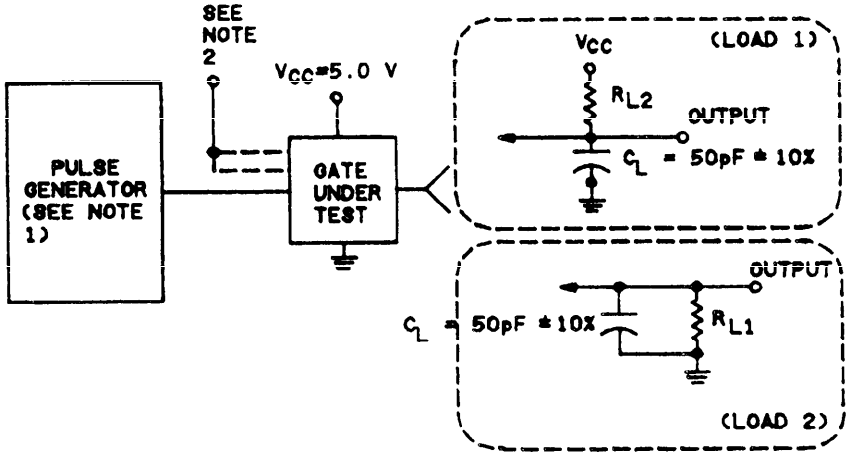



VOLTAGE WAVEFORMS

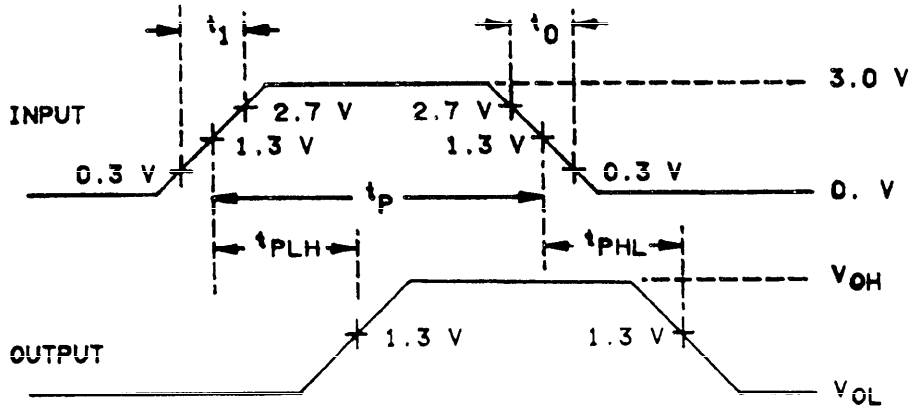
NOTES:
1. Input pulse characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns; PRR $\leq$ 1 MHz; duty cycle = 50%.
2. Inputs not under test, for device types 01, 03, 05, and 07 are 2.7 V; for device type 02 is ground.
3. $C_L$ = 50 pF ±10%, includes jig and probe capacitance.
4. $R_{L1}$ = 499Ω ±1% for device types 01, 02, 05, 07 and 09; $R_{L2}$ = 680Ω ±5% for device types 03 and 10.
5. Voltage measurements are made with respect to ground terminal.

FIGURE 4. Switching time test circuit and waveforms for device types 01, 02, 03, 05, 07, 09 and 10.

Device types 04, 06, 08, 11, and 12




TEST CIRCUIT




VOLTAGE WAVEFORMS

NOTES:
1. Input pulse characteristics: $t_1 = t_0 = 6 \pm 1.5$ ns; PRR $\leq$ 1 MHz; duty cycle = 50%.
2. Inputs not under test, for device types 04, and 06 are 2.7 V; for device type 08 is ground.
3. $C_L$ = 50 pF ±10%, includes jig and probe capacitance.
4. $R_{L1}$ = 499Ω ±1% for device types 04, 06, 08, and 11; $R_{L2}$ = 680Ω ±5% for device types 12.
5. Voltage measurements are made with respect to ground terminal.

FIGURE 4. Switching time test circuit and waveforms for device types 04, 06, 08, 11, and 12.

TABLE III. Group A inspection for device type 01.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | Test no. | 1A | 1B | 1Y | 2A | 2B | 2Y | GND | 3Y | 3A | 3B | 4Y | 4A | 4B | $V_{CC}$ | | | | |
| 1<br>$T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 0.8 V | 2.0 V | -1.0 mA | | | | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | 2.0 V | 0.8 V | -1.0 mA | | | | " | | | | | | | " | 1Y | " | | " |
| | | " | 3 | | | | 0.8 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 4 | | | | 2.0 V | 0.8 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 5 | | | | | | | " | -1.0 mA | 0.8 V | 2.0 V | | | | " | 3Y | " | | " |
| | | " | 6 | | | | | | | " | -1.0 mA | 2.0 V | 0.8 V | | | | " | 3Y | " | | " |
| | | " | 7 | | | | | | | " | | | | -1.0 mA | 0.8 V | 2.0 V | " | 4Y | " | | " |
| | | " | 8 | | | | | | | " | | | | -1.0 mA | 2.0 V | 0.8 V | " | 4Y | " | | " |
| | $V_{OL}$ | 3007 | 9 | 2.0 V | 2.0 V | 12 mA | | | | " | | | | | | | " | 1Y | | 0.4 | " |
| | | " | 10 | | | | 2.0 V | 2.0 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 11 | | | | | | | " | 12 mA | 2.0 V | 2.0 V | | | | " | 3Y | | " | " |
| | | " | 12 | | | | | | | " | | | | 12 mA | 2.0 V | 2.0 V | " | 4Y | | " | " |
| | $V_{IC}$ | | 13 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 15 | | | | -18 mA | | | " | | | | | | | " | 2A | | " | " |
| | | | 16 | | | | | -18 mA | | " | | | | | | | " | 2B | | " | " |
| | | | 17 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 18 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 19 | | | | | | | " | | | | | -18 mA | | " | 4A | | " | " |
| | | | 20 | | | | | | | " | | | | | | -18 mA | " | 4B | | " | " |
| | $I_{IL}$ | 3009 | 21 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | μA |
| | | " | 22 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 23 | | | | 0.4 V | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 24 | | | | | 0.4 V | | " | | | | | | | " | 2B | " | " | " |
| | | " | 25 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 26 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 27 | | | | | | | " | | | | 0.4 V | | | " | 4A | " | " | " |
| | | " | 28 | | | | | | | " | | | | | 0.4 V | | " | 4B | " | " | " |
| | $I_{IH1}$ | 3010 | 29 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 30 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 31 | | | | 2.7 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 32 | | | | | 2.7 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 33 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 34 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 35 | | | | | | | " | | | | 2.7 V | | | " | 4A | | " | " |
| | | " | 36 | | | | | | | " | | | | | 2.7 V | | " | 4B | | " | " |
| | $I_{IH2}$ | " | 37 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 38 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 39 | | | | 7.0 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 40 | | | | | 7.0 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 41 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 42 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 43 | | | | | | | " | | | | 7.0 V | | | " | 4A | | " | " |
| | | " | 44 | | | | | | | " | | | | | 7.0 V | | " | 4B | | " | " |
| | $I_O$ | 3011 3/ 4/ | 45 | GND | | | | | | " | | | | | | | " | 1Y | -30 | -112 | mA |
| | | " | 46 | | GND | | | | | " | | | | | | | " | 2Y | " | " | " |
| | | " | 47 | | | | GND | | | " | | | | | | | " | 3Y | " | " | " |
| | | " | 48 | | | | | GND | | " | | | | | | | " | 4Y | " | " | " |

See footnotes at end of table.

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

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | | 1A | 1B | 1Y | 2A | 2B | 2Y | GND | 3Y | 3A | 3B | 4Y | 4A | 4B | $V_{CC}$ | | | | |
| 1<br>$T_C$ = +25°C | $I_{CCH}$ | 3005 | 49 | GND | GND | | GND | GND | | GND | | GND | GND | | GND | GND | 5.5 V | $V_{CC}$ | | 1.6 | mA |
| | $I_{CCL}$ | 3005 | 50 | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | GND | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | 5.5 V | $V_{CC}$ | | 7.8 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9<br>$T_C$ = +25°C | $t_{PLH}$ | 3003 Fig 4 | 51 | IN | 2.7 V | OUT | | | | GND | | | | | | | 5.0 V | 1A to 1Y | 2 | 8 | ns |
| | | " | 52 | 2.7 V | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 53 | | | | IN | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 54 | | | | 2.7 V | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 55 | | | | | | | " | OUT | IN | 2.7 V | | | | " | 3A to 3Y | " | " | " |
| | | " | 56 | | | | | | | " | OUT | 2.7 V | IN | | | | " | 3B to 3Y | " | " | " |
| | | " | 57 | | | | | | | " | | | | OUT | IN | 2.7 V | " | 4A to 4Y | " | " | " |
| | | " | 58 | | | | | | | " | | | | OUT | 2.7 V | IN | " | 4B to 4Y | " | " | " |
| | $t_{PHL}$ | " | 59 | IN | 2.7 V | OUT | | | | " | | | | | | | " | 1A to 1Y | 3 | 8 | " |
| | | " | 60 | 2.7 V | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 61 | | | | IN | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 62 | | | | 2.7 V | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 63 | | | | | | | " | OUT | IN | 2.7 V | | | | " | 3A to 3Y | " | " | " |
| | | " | 64 | | | | | | | " | OUT | 2.7 V | IN | | | | " | 3B to 3Y | " | " | " |
| | | " | 65 | | | | | | | " | | | | OUT | IN | 2.7 V | " | 4A to 4Y | " | " | " |
| | | " | 66 | | | | | | | " | | | | OUT | 2.7 V | IN | " | 4B to 4Y | " | " | " |
| 10<br>$T_C$ = +125°C | $t_{PLH}$<br>$t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2<br>3 | 10<br>10 | "<br>" |
| 11<br>$T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 02.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | | 1Y | 1A | 1B | 2Y | 2A | 2B | GND | 3A | 3B | 3Y | 4A | 4B | 4Y | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | -1.0 mA | 0.8 V | 0.8 V | -1.0 mA | 0.8 V | 0.8 V | GND | 0.8 V | 0.8 V | -1.0 mA | 0.8 V | 0.8 V | -1.0 mA | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | | | | | | | " | | | | | | | " | 2Y | " | | " |
| | | " | 3 | | | | | | | " | | | | | | | " | 3Y | " | | " |
| | | " | 4 | | | | | | | " | | | | | | | " | 4Y | " | | " |
| | $V_{OL}$ | 3007 | 5 | 12 mA | 2.0 V | 0.8 V | | | | | | | | | | | | 1Y | | 0.4 | |
| | | " | 6 | 12 mA | 0.8 V | 2.0 V | | | | | | | | | | | | 1Y | | " | |
| | | " | 7 | | | | 12 mA | 2.0 V | 0.8 V | | | | | | | | | 2Y | | " | |
| | | " | 8 | | | | 12 mA | 0.8 V | 2.0 V | | | | | | | | | 2Y | | " | |
| | | " | 9 | | | | | | | | 2.0 V | 0.8 V | 12 mA | | | | | 3Y | | " | |
| | | " | 10 | | | | | | | | 0.8 V | 2.0 V | 12 mA | | | | | 3Y | | " | |
| | | " | 11 | | | | | | | | | | | 2.0 V | 0.8 V | 12 mA | | 4Y | | " | |
| | | " | 12 | | | | | | | | | | | 0.8 V | 2.0 V | 12 mA | | 4Y | | " | |
| | $V_{IC}$ | | 13 | | -18 mA | -18 mA | | -18 mA | -18 mA | | -18 mA | -18 mA | | -18 mA | -18 mA | | | 1A | | -1.5 | |
| | | | 14 | | | | | | | | | | | | | | | 1B | | " | |
| | | | 15 | | | | | | | | | | | | | | | 2A | | " | |
| | | | 16 | | | | | | | | | | | | | | | 2B | | " | |
| | | | 17 | | | | | | | | | | | | | | | 3A | | " | |
| | | | 18 | | | | | | | | | | | | | | | 3B | | " | |
| | | | 19 | | | | | | | | | | | | | | | 4A | | " | |
| | | | 20 | | | | | | | | | | | | | | | 4B | | " | |
| | $I_{IL}$ | 3009 | 21 | | 0.4 V | 0.4 V | | 0.4 V | 0.4 V | | 0.4 V | 0.4 V | | 0.4 V | 0.4 V | | 5.5 V | 1A | 2/ | 2/ | uA |
| | | " | 22 | | | | | | | | | | | | | | " | 1B | " | " | " |
| | | " | 23 | | | | | | | | | | | | | | " | 2A | " | " | " |
| | | " | 24 | | | | | | | | | | | | | | " | 2B | " | " | " |
| | | " | 25 | | | | | | | | | | | | | | " | 3A | " | " | " |
| | | " | 26 | | | | | | | | | | | | | | " | 3B | " | " | " |
| | | " | 27 | | | | | | | | | | | | | | " | 4A | " | " | " |
| | | " | 28 | | | | | | | | | | | | | | " | 4B | " | " | " |
| | $I_{IH1}$ | 3010 | 29 | | 2.7 V | 2.7 V | | 2.7 V | 2.7 V | | 2.7 V | 2.7 V | | 2.7 V | 2.7 V | | | 1A | | 20 | |
| | | " | 30 | | | | | | | | | | | | | | " | 1B | | " | |
| | | " | 31 | | | | | | | | | | | | | | " | 2A | | " | |
| | | " | 32 | | | | | | | | | | | | | | " | 2B | | " | |
| | | " | 33 | | | | | | | | | | | | | | " | 3A | | " | |
| | | " | 34 | | | | | | | | | | | | | | " | 3B | | " | |
| | | " | 35 | | | | | | | | | | | | | | " | 4A | | " | |
| | | " | 36 | | | | | | | | | | | | | | " | 4B | | " | |
| | $I_{IH2}$ | " | 37 | | 7.0 V | 7.0 V | | 7.0 V | 7.0 V | | 7.0 V | 7.0 V | | 7.0 V | 7.0 V | | | 1A | | 100 | |
| | | " | 38 | | | | | | | | | | | | | | " | 1B | | " | |
| | | " | 39 | | | | | | | | | | | | | | " | 2A | | " | |
| | | " | 40 | | | | | | | | | | | | | | " | 2B | | " | |
| | | " | 41 | | | | | | | | | | | | | | " | 3A | | " | |
| | | " | 42 | | | | | | | | | | | | | | " | 3B | | " | |
| | | " | 43 | | | | | | | | | | | | | | " | 4A | | " | |
| | | " | 44 | | | | | | | | | | | | | | " | 4B | | " | |
| | $I_O$ | 3011 3/ 4/ | 45 | 2.25 V | GND | GND | 2.25 V | GND | GND | | GND | GND | 2.25 V | GND | GND | 2.25 V | " | 1Y | -30 | -112 | mA |
| | | " | 46 | | | | | | | | | | | | | | " | 2Y | " | " | " |
| | | " | 47 | | | | | | | | | | | | | | " | 3Y | " | " | " |
| | | " | 48 | | | | | | | | | | | | | | " | 4Y | " | " | " |

See footnotes at end of table.

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

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D / Case 1/ 2 / Test no. | 1 / 2 / 1Y | 2 / 3 / 1A | 3 / 4 / 1B | 4 / 6 / 2Y | 5 / 8 / 2A | 6 / 9 / 2B | 7 / 10 / GND | 8 / 12 / 3A | 9 / 13 / 3B | 10 / 14 / 3Y | 11 / 16 / 4A | 12 / 18 / 4B | 13 / 19 / 4Y | 14 / 20 / $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1<br>$T_C$ = +25°C | $I_{CCH}$ | 3005 | 49 | | GND | GND | | GND | GND | GND | GND | GND | | GND | GND | | 5.5 V | $V_{CC}$ | | 2.8 | mA |
| | $I_{CCL}$ | 3005 | 50 | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | GND | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | 5.5 V | $V_{CC}$ | | 9.0 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9<br>$T_C$ = +25°C | $t_{PLH}$ | 3003<br>Fig 4 | 51<br>52<br>53<br>54<br>55<br>56<br>57<br>58 | OUT<br>OUT | IN<br>GND | GND<br>IN | OUT<br>OUT | IN<br>GND | GND<br>IN | GND<br>" | IN<br>GND | GND<br>IN | OUT<br>OUT | IN<br>GND | GND<br>IN | OUT<br>OUT | 5.0 V<br>" | 1A to 1Y<br>1B to 1Y<br>2A to 2Y<br>2B to 2Y<br>3A to 3Y<br>3B to 3Y<br>4A to 4Y<br>4B to 4Y | 2<br>" | 8<br>" | ns<br>" |
| | $t_{PHL}$ | " | 59<br>60<br>61<br>62<br>63<br>64<br>65<br>66 | OUT<br>OUT | IN<br>GND | GND<br>IN | OUT<br>OUT | IN<br>GND | GND<br>IN | " | IN<br>GND | GND<br>IN | OUT<br>OUT | IN<br>GND | GND<br>IN | OUT<br>OUT | " | 1A to 1Y<br>1B to 1Y<br>2A to 2Y<br>2B to 2Y<br>3A to 3Y<br>3B to 3Y<br>4A to 4Y<br>4B to 4Y | 3<br>" | 8<br>" | "<br>" |
| 10<br>$T_C$ = +125°C | $t_{PLH}$<br>$t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2<br>3 | 10<br>10 | "<br>" |
| 11 | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 03.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Case 1/ 2 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | Min | Max | |
| | | | Test no. | 1A | 1B | 1Y | 2A | 2B | 2Y | GND | 3Y | 3A | 3B | 4Y | 4A | 4B | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $V_{OL}$ | 3006 | 1 | 2.0 V | 2.0 V | 12 mA | | | | GND | | | | | | | 4.5 V | 1Y | | 0.4 | V dc |
| | | " | 2 | | | | 2.0 V | 2.0 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 3 | | | | | | | " | 12 mA | 2.0 V | 2.0 V | | | | " | 3Y | | " | " |
| | | " | 4 | | | | | | | " | | | | 12 mA | 2.0 V | 2.0 V | " | 4Y | | " | " |
| | $V_{IC}$ | | 5 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 6 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 7 | | | | -18 mA | | | " | | | | | | | " | 2A | | " | " |
| | | | 8 | | | | | -18 mA | | " | | | | | | | " | 2B | | " | " |
| | | | 9 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 10 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 11 | | | | | | | " | | | | | -18 mA | | " | 4A | | " | " |
| | | | 12 | | | | | | | " | | | | | | -18 mA | " | 4B | | " | " |
| | $I_{IL}$ | 3009 | 13 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | uA |
| | | " | 14 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 15 | | | | 0.4 V | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 16 | | | | | 0.4 V | | " | | | | | | | " | 2B | " | " | " |
| | | " | 17 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 18 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 19 | | | | | | | " | | | | | 0.4 V | | " | 4A | " | " | " |
| | | " | 20 | | | | | | | " | | | | | | 0.4 V | " | 4B | " | " | " |
| | $I_{IH1}$ | 3010 | 21 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 22 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 23 | | | | 2.7 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 24 | | | | | 2.7 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 25 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 26 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 27 | | | | | | | " | | | | | 2.7 V | | " | 4A | | " | " |
| | | " | 28 | | | | | | | " | | | | | | 2.7 V | " | 4B | | " | " |
| | $I_{IH2}$ | " | 29 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 30 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 31 | | | | 7.0 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 32 | | | | | 7.0 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 33 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 34 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 35 | | | | | | | " | | | | | 7.0 V | | " | 4A | | " | " |
| | | " | 36 | | | | | | | " | | | | | | 7.0 V | " | 4B | | " | " |
| | $I_{CCX}$ | " | 37 | 0.8 V | 5.0 V | 5.5 V | | | | " | | | | | | | 4.5 V | 1Y | | 100 | " |
| | | " | 38 | 5.0 V | 0.8 V | 5.5 V | | | | " | | | | | | | " | 1Y | | " | " |
| | | " | 39 | | | | 0.8 V | 5.0 V | 5.5 V | " | | | | | | | " | 2Y | | " | " |
| | | " | 40 | | | | 5.0 V | 0.8 V | 5.5 V | " | | | | | | | " | 2Y | | " | " |
| | | " | 41 | | | | | | | " | 5.5 V | 0.8 V | 5.0 V | | | | " | 3Y | | " | " |
| | | " | 42 | | | | | | | " | 5.5 V | 5.0 V | 0.8 V | | | | " | 3Y | | " | " |
| | | " | 43 | | | | | | | " | | | | 5.5 V | 0.8 V | 5.0 V | " | 4Y | | " | " |
| | | " | 44 | | | | | | | " | | | | 5.5 V | 5.0 V | 0.8 V | " | 4Y | | " | " |
| | $I_{CCH}$ | 3005 | 45 | GND | GND | | GND | GND | | " | | GND | GND | | GND | GND | 5.5 V | $V_{CC}$ | | 1.6 | mA |
| | $I_{CCL}$ | 3005 | 46 | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | " | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | 5.5 V | $V_{CC}$ | | 7.8 | mA |

See footnotes at end of table.

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

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 1A | 2 1B | 3 1Y | 4 2A | 5 2B | 6 2Y | 7 GND | 8 3Y | 9 3A | 10 3B | 11 4Y | 12 4A | 13 4B | 14 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 47 | IN 2.7 V | 2.7 V IN | OUT OUT | | | | GND | | | | | | | 5.0 V | 1A to 1Y | 10 | 33 | ns |
| | | " | 48 | | | | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 49 | | | | IN 2.7 V | 2.7 V IN | OUT OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 50 | | | | | | | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 51 | | | | | | | " | OUT OUT | IN 2.7 V | 2.7 V IN | | | | " | 3A to 3Y | " | " | " |
| | | " | 52 | | | | | | | " | | | | | | | " | 3B to 3Y | " | " | " |
| | | " | 53 | | | | | | | " | | | | OUT OUT | IN 2.7 V | 2.7 V IN | " | 4A to 4Y | " | " | " |
| | | " | 54 | | | | | | | " | | | | | | | " | 4B to 4Y | " | " | " |
| | $t_{PHL}$ | " | 55 | IN 2.7 V | 2.7 V IN | OUT OUT | | | | " | | | | | | | " | 1A to 1Y | 7 | 18 | " |
| | | " | 56 | | | | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 57 | | | | IN 2.7 V | 2.7 V IN | OUT OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 58 | | | | | | | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 59 | | | | | | | " | OUT OUT | IN 2.7 V | 2.7 V IN | | | | " | 3A to 3Y | " | " | " |
| | | " | 60 | | | | | | | " | | | | | | | " | 3B to 3Y | " | " | " |
| | | " | 61 | | | | | | | " | | | | OUT OUT | IN 2.7 V | 2.7 V IN | " | 4A to 4Y | " | " | " |
| | | " | 62 | | | | | | | " | | | | | | | " | 4B to 4Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 10 7 | 40 21 | " " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

TABLE III. Group A inspection for device type 04.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D case 1/ 2 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Case 2 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | Test no. | 1A | 1B | 1Y | 2A | 2B | 2Y | GND | 3Y | 3A | 3B | 4Y | 4A | 4B | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 2.0 V | 2.0 V | -1.0 mA | | | | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | | | | 2.0 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 3 | | | | | | | " | -1.0 mA | 2.0 V | 2.0 V | | | | " | 3Y | " | | " |
| | | " | 4 | | | | | | | " | | | | -1.0 mA | 2.0 V | 2.0 V | " | 4Y | " | | " |
| | $V_{OL}$ | 3007 | 5 | 0.8 V | 5.5 V | 12 mA | | | | " | | | | | | | " | 1Y | | 0.4 | " |
| | | " | 6 | 5.5 V | 0.8 V | 12 mA | | | | " | | | | | | | " | 1Y | | " | " |
| | | " | 7 | | | | 0.8 V | 5.5 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 8 | | | | 5.5 V | 0.8 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 9 | | | | | | | " | 12 mA | 0.8 V | 5.5 V | | | | " | 3Y | | " | " |
| | | " | 10 | | | | | | | " | 12 mA | 5.5 V | 0.8 V | | | | " | 3Y | | " | " |
| | | " | 11 | | | | | | | " | | | | 12 mA | 0.8 V | 5.5 V | " | 4Y | | " | " |
| | | " | 12 | | | | | | | " | | | | 12 mA | 5.5 V | 0.8 V | " | 4Y | | " | " |
| | $V_{IC}$ | | 13 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 15 | | | | -18 mA | | | " | | | | | | | " | 2A | | " | " |
| | | | 16 | | | | | -18 mA | | " | | | | | | | " | 2B | | " | " |
| | | | 17 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 18 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 19 | | | | | | | " | | | | | -18 mA | | " | 4A | | " | " |
| | | | 20 | | | | | | | " | | | | | | -18 mA | " | 4B | | " | " |
| | $I_{IL}$ | 3009 | 21 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | μA |
| | | " | 22 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 23 | | | | 0.4 V | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 24 | | | | | 0.4 V | | " | | | | | | | " | 2B | " | " | " |
| | | " | 25 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 26 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 27 | | | | | | | " | | | | | 0.4 V | | " | 4A | " | " | " |
| | | " | 28 | | | | | | | " | | | | | | 0.4 V | " | 4B | " | " | " |
| | $I_{IH1}$ | 3010 | 29 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 30 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 31 | | | | 2.7 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 32 | | | | | 2.7 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 33 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 34 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 35 | | | | | | | " | | | | | 2.7 V | | " | 4A | | " | " |
| | | " | 36 | | | | | | | " | | | | | | 2.7 V | " | 4B | | " | " |
| | $I_{IH2}$ | " | 37 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 38 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 39 | | | | 7.0 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 40 | | | | | 7.0 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 41 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 42 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 43 | | | | | | | " | | | | | 7.0 V | | " | 4A | | " | " |
| | | " | 44 | | | | | | | " | | | | | | 7.0 V | " | 4B | | " | " |
| | $I_O$ | 3011 | 45 | 5.5 V | 5.5 V | 2.25 V | | | | " | | | | | | | " | 1Y | -30 | -112 | mA |
| | | 3/ 4/ | 46 | | | | 5.5 V | 5.5 V | 2.25 V | " | | | | | | | " | 2Y | " | " | " |
| | | " | 47 | | | | | | | " | 2.25 V | 5.5 V | 5.5 V | | | | " | 3Y | " | " | " |
| | | " | 48 | | | | | | | " | | | | 2.25 V | 5.5 V | 5.5 V | " | 4Y | " | " | " |

See footnotes at end of table.

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

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 2 1A | 2 3 1B | 3 4 1Y | 4 6 2A | 5 8 2B | 6 9 2Y | 7 10 GND | 8 12 3Y | 9 13 3A | 10 14 3B | 11 16 4Y | 12 18 4A | 13 19 4B | 14 20 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 $T_C$ = +25°C | $I_{CCH}$ | 3005 | 49 | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | GND | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | 5.5 V | $V_{CC}$ | | 3.0 | mA |
| | $I_{CCL}$ | 3005 | 50 | GND | GND | | GND | GND | | GND | | GND | GND | | GND | GND | 5.5 V | $V_{CC}$ | | 9.3 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig 4 | 51 | IN | 2.7 V | OUT | | | | GND | | | | | | | 5.0 V | 1A to 1Y | 2 | 9 | ns |
| | | " | 52 | 2.7 V | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 53 | | | | IN | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 54 | | | | 2.7 V | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 55 | | | | | | | " | OUT | IN | 2.7 V | | | | " | 3A to 3Y | " | " | " |
| | | " | 56 | | | | | | | " | OUT | 2.7 V | IN | | | | " | 3B to 3Y | " | " | " |
| | | " | 57 | | | | | | | " | | | | OUT | IN | 2.7 V | " | 4A to 4Y | " | " | " |
| | | " | 58 | | | | | | | " | | | | OUT | 2.7 V | IN | " | 4B to 4Y | " | " | " |
| | $t_{PHL}$ | " | 59 | IN | 2.7 V | OUT | | | | " | | | | | | | " | 1A to 1Y | 3 | 9 | " |
| | | " | 60 | 2.7 V | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 61 | | | | IN | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 62 | | | | 2.7 V | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 63 | | | | | | | " | OUT | IN | 2.7 V | | | | " | 3A to 3Y | " | " | " |
| | | " | 64 | | | | | | | " | OUT | 2.7 V | IN | | | | " | 3B to 3Y | " | " | " |
| | | " | 65 | | | | | | | " | | | | OUT | IN | 2.7 V | " | 4A to 4Y | " | " | " |
| | | " | 66 | | | | | | | " | | | | OUT | 2.7 V | IN | " | 4B to 4Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2 3 | 11 11 | " " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 05.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 2 1A | 2 3 1B | 3 4 2A | 4 6 2B | 5 8 2C | 6 9 2Y | 7 10 GND | 8 12 3Y | 9 13 3A | 10 14 3B | 11 16 3C | 12 18 1Y | 13 19 1C | 14 20 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1<br>$T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 0.8 V | 2.0 V | | | | | GND | | | | | -1.0 mA | 2.0 V | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | 2.0 V | 0.8 V | | | | | " | | | | | -1.0 mA | 2.0 V | " | 1Y | " | | " |
| | | " | 3 | | | | | | | " | | | | | -1.0 mA | 0.8 V | " | 1Y | " | | " |
| | | " | 4 | | | 0.8 V | 2.0 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 5 | | | 2.0 V | 0.8 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 6 | | | 2.0 V | 2.0 V | 0.8 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 7 | | | | | | | " | -1.0 mA | 0.8 V | 2.0 V | 2.0 V | | | " | 3Y | " | | " |
| | | " | 8 | | | | | | | " | -1.0 mA | 2.0 V | 0.8 V | 2.0 V | | | " | 3Y | " | | " |
| | | " | 9 | | | | | | | " | -1.0 mA | 2.0 V | 2.0 V | 0.8 V | | | " | 3Y | " | | " |
| | $V_{OL}$ | 3007 | 10 | 2.0 V | 2.0 V | | | | | " | | | | | 12 mA | 2.0 V | " | 1Y | | 0.4 | " |
| | | " | 11 | | | 2.0 V | 2.0 V | 2.0 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 12 | | | | | | | " | 12 mA | 2.0 V | 2.0 V | 2.0 V | | | " | 3Y | | " | " |
| | $V_{IC}$ | | 13 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 15 | | | | | | | " | | | | | | -18 mA | " | 1C | | " | " |
| | | | 16 | | | -18 mA | | | | " | | | | | | | " | 2A | | " | " |
| | | | 17 | | | | -18 mA | | | " | | | | | | | " | 2B | | " | " |
| | | | 18 | | | | | -18 mA | | " | | | | | | | " | 2C | | " | " |
| | | | 19 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 20 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 21 | | | | | | | " | | | | -18 mA | | | " | 3C | | " | " |
| | $I_{IL}$ | 3009 | 22 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | μA |
| | | " | 23 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 24 | | | | | | | " | | | | | | 0.4 V | " | 1C | " | " | " |
| | | " | 25 | | | 0.4 V | | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 26 | | | | 0.4 V | | | " | | | | | | | " | 2B | " | " | " |
| | | " | 27 | | | | | 0.4 V | | " | | | | | | | " | 2C | " | " | " |
| | | " | 28 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 29 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 30 | | | | | | | " | | | | 0.4 V | | | " | 3C | " | " | " |
| | $I_{IH1}$ | 3010 | 31 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 32 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 33 | | | | | | | " | | | | | | 2.7 V | " | 1C | | " | " |
| | | " | 34 | | | 2.7 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 35 | | | | 2.7 V | | | " | | | | | | | " | 2B | | " | " |
| | | " | 36 | | | | | 2.7 V | | " | | | | | | | " | 2C | | " | " |
| | | " | 37 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 38 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 39 | | | | | | | " | | | | 2.7 V | | | " | 3C | | " | " |
| | $I_{IH2}$ | " | 40 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 41 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 42 | | | | | | | " | | | | | | 7.0 V | " | 1C | | " | " |
| | | " | 43 | | | 7.0 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 44 | | | | 7.0 V | | | " | | | | | | | " | 2B | | " | " |
| | | " | 45 | | | | | 7.0 V | | " | | | | | | | " | 2C | | " | " |
| | | " | 46 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 47 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 48 | | | | | | | " | | | | 7.0 V | | | " | 3C | | " | " |

See footnotes at end of table.

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

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases A,B,C,D Case 2 Test no. | 1 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | Measured terminal | Min | Max | Unit |
| | | | Cases A,B,C,D Case 2 Test no. | 1A | 1B | 2A | 2B | 2C | 2Y | GND | 3Y | 3A | 3B | 3C | 1Y | 1C | $V_{CC}$ | Measured terminal | Min | Max | Unit |
| 1 $T_C$ = +25°C | $I_O$ | 3011 3/ 4/ | 49 | 4.5 V | 4.5 V | 4.5 V | 4.5 V | 4.5 V | 2.25 V | GND | 2.25 V | 4.5 V | 4.5 V | 4.5 V | 2.25 V | 4.5 V | 5.5 V | 1Y | -30 | -112 | mA |
| | | | 50 | | | | | | | " | | | | | | | " | 2Y | " | " | " |
| | | | 51 | | | | | | | " | | | | | | | " | 3Y | " | " | " |
| | $I_{CCH}$ | 3005 | 52 | 4.5 V | 4.5 V | 4.5 V | 4.5 V | 4.5 V | | " | | 4.5 V | 4.5 V | 4.5 V | | 4.5 V | " | $V_{CC}$ | | 1.2 | " |
| | $I_{CCL}$ | 3005 | 53 | GND | GND | GND | GND | GND | | " | | GND | GND | GND | | GND | " | $V_{CC}$ | | 6.0 | " |
| 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. | | | | | | | | | | | | | | | | | | | | |
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 54 | IN | 2.7 V | | | | | GND | | | | | OUT | 2.7 V | 5.0 V | 1A to 1Y | 2 | 8 | ns |
| | | | 55 | 2.7 V | IN | | | | | " | | | | | OUT | 2.7 V | " | 1B to 1Y | " | " | " |
| | | | 56 | 2.7 V | 2.7 V | | | | | " | | | | | OUT | IN | " | 1C to 1Y | " | " | " |
| | | | 57 | | | IN | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 58 | | | 2.7 V | IN | 2.7 V | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | | 59 | | | 2.7 V | 2.7 V | IN | OUT | " | | | | | | | " | 2C to 2Y | " | " | " |
| | | | 60 | | | | | | | " | OUT | IN | 2.7 V | 2.7 V | | | " | 3A to 3Y | " | " | " |
| | | | 61 | | | | | | | " | OUT | 2.7 V | IN | 2.7 V | | | " | 3B to 3Y | " | " | " |
| | | | 62 | | | | | | | " | OUT | 2.7 V | 2.7 V | IN | | | " | 3C to 3Y | " | " | " |
| | $t_{PHL}$ | " | 63 | IN | 2.7 V | | | | | " | | | | | OUT | 2.7 V | " | 1A to 1Y | 3 | 8 | " |
| | | | 64 | 2.7 V | IN | | | | | " | | | | | OUT | 2.7 V | " | 1B to 1Y | " | " | " |
| | | | 65 | 2.7 V | 2.7 V | | | | | " | | | | | OUT | IN | " | 1C to 1Y | " | " | " |
| | | | 66 | | | IN | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 67 | | | 2.7 V | IN | 2.7 V | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | | 68 | | | 2.7 V | 2.7 V | IN | OUT | " | | | | | | | " | 2C to 2Y | " | " | " |
| | | | 69 | | | | | | | " | OUT | IN | 2.7 V | 2.7 V | | | " | 3A to 3Y | " | " | " |
| | | | 70 | | | | | | | " | OUT | 2.7 V | IN | 2.7 V | | | " | 3B to 3Y | " | " | " |
| | | | 71 | | | | | | | " | OUT | 2.7 V | 2.7 V | IN | | | " | 3C to 3Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2 3 | 10 10 | " " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 06.

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Case 1/ 2 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | Test no. | 1A | 1B | 2A | 2B | 2C | 2Y | GND | 3Y | 3A | 3B | 3C | 1Y | 1C | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 2.0 V | 2.0 V | | | | | GND | | | | | -1.0 mA | 2.0 V | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | | | 2.0 V | 2.0 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 3 | | | | | | | " | -1.0 mA | 2.0 V | 2.0 V | 2.0 V | | | " | 3Y | " | | " |
| | $V_{OL}$ | " | 4 | 0.8 V | 2.0 V | | | | | " | | | | | 12 mA | 2.0 V | " | 1Y | | 0.4 | " |
| | | " | 5 | 2.0 V | 0.8 V | | | | | " | | | | | 12 mA | 2.0 V | " | 1Y | | " | " |
| | | " | 6 | 2.0 V | 2.0 V | | | | | " | | | | | 12 mA | 0.8 V | " | 1Y | | " | " |
| | | " | 7 | | | 0.8 V | 2.0 V | 2.0 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 8 | | | 2.0 V | 0.8 V | 2.0 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 9 | | | 2.0 V | 2.0 V | 0.8 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 10 | | | | | | | " | 12 mA | 0.8 V | 2.0 V | 2.0 V | | | " | 3Y | | " | " |
| | | " | 11 | | | | | | | " | 12 mA | 2.0 V | 0.8 V | 2.0 V | | | " | 3Y | | " | " |
| | | " | 12 | | | | | | | " | 12 mA | 2.0 V | 2.0 V | 0.8 V | | | " | 3Y | | " | " |
| | $V_{IC}$ | | 13 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 15 | | | | | | | " | | | | | | -18 mA | " | 1C | | " | " |
| | | | 16 | | | -18 mA | | | | " | | | | | | | " | 2A | | " | " |
| | | | 17 | | | | -18 mA | | | " | | | | | | | " | 2B | | " | " |
| | | | 18 | | | | | -18 mA | | " | | | | | | | " | 2C | | " | " |
| | | | 19 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 20 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 21 | | | | | | | " | | | | -18 mA | | | " | 3C | | " | " |
| | $I_{IL}$ | 3009 | 22 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | µA |
| | | " | 23 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 24 | | | | | | | " | | | | | | 0.4 V | " | 1C | " | " | " |
| | | " | 25 | | | 0.4 V | | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 26 | | | | 0.4 V | | | " | | | | | | | " | 2B | " | " | " |
| | | " | 27 | | | | | 0.4 V | | " | | | | | | | " | 2C | " | " | " |
| | | " | 28 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 29 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 30 | | | | | | | " | | | | 0.4 V | | | " | 3C | " | " | " |
| | $I_{IH1}$ | 3010 | 31 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 32 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 33 | | | | | | | " | | | | | | 2.7 V | " | 1C | | " | " |
| | | " | 34 | | | 2.7 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 35 | | | | 2.7 V | | | " | | | | | | | " | 2B | | " | " |
| | | " | 36 | | | | | 2.7 V | | " | | | | | | | " | 2C | | " | " |
| | | " | 37 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 38 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 39 | | | | | | | " | | | | 2.7 V | | | " | 3C | | " | " |
| | $I_{IH2}$ | " | 40 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 41 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 42 | | | | | | | " | | | | | | 7.0 V | " | 1C | | " | " |
| | | " | 43 | | | 7.0 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 44 | | | | 7.0 V | | | " | | | | | | | " | 2B | | " | " |
| | | " | 45 | | | | | 7.0 V | | " | | | | | | | " | 2C | | " | " |
| | | " | 46 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 47 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 48 | | | | | | | " | | | | 7.0 V | | | " | 3C | | " | " |

See footnotes at end of table.

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

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | 1 1A | 2 1B | 3 2A | 4 2B | 5 2C | 6 2Y | 7 GND | 8 3Y | 9 3A | 10 3B | 11 3C | 12 1Y | 13 1C | 14 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 $T_C$ = +25°C | $I_O$ | 3011 3/ 4/ | 49 | 4.5 V | 4.5 V | | | | | GND | | | | | 2.25 V | 4.5 V | 5.5 V | 1Y | -30 | -112 | mA |
| | | " | 50 | | | 4.5 V | 4.5 V | 4.5 V | 2.25 V | " | | | | | | | " | 2Y | " | " | " |
| | | " | 51 | | | | | | | " | 2.25 V | 4.5 V | 4.5 V | 4.5 V | | | " | 3Y | " | " | " |
| | $I_{CCH}$ | 3005 | 52 | 4.5 V | 4.5 V | 4.5 V | 4.5 V | 4.5 V | | " | | 4.5 V | 4.5 V | 4.5 V | | 4.5 V | " | $V_{CC}$ | | 2.3 | " |
| | $I_{CCL}$ | 3005 | 52 | GND | GND | GND | GND | GND | | " | | GND | GND | GND | | GND | " | $V_{CC}$ | | 7.0 | " |
| 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. | | | | | | | | | | | | | | | | | | | | |
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 54 | IN | 2.7 V | | | | | GND | | | | | OUT | 2.7 V | 5.0 V | 1A to 1Y | 2 | 10 | ns |
| | | " | 55 | 2.7 V | IN | | | | | " | | | | | OUT | 2.7 V | " | 1B to 1Y | " | " | " |
| | | " | 56 | 2.7 V | 2.7 V | | | | | " | | | | | OUT | IN | " | 1C to 1Y | " | " | " |
| | | " | 57 | | | IN | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 58 | | | 2.7 V | IN | 2.7 V | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 59 | | | 2.7 V | 2.7 V | IN | OUT | " | | | | | | | " | 2C to 2Y | " | " | " |
| | | " | 60 | | | | | | | " | OUT | IN | 2.7 V | 2.7 V | | | " | 3A to 3Y | " | " | " |
| | | " | 61 | | | | | | | " | OUT | 2.7 V | IN | 2.7 V | | | " | 3B to 3Y | " | " | " |
| | | " | 62 | | | | | | | " | OUT | 2.7 V | 2.7 V | IN | | | " | 3C to 3Y | " | " | " |
| | $t_{PHL}$ | " | 63 | IN | 2.7 V | | | | | " | | | | | OUT | 2.7 V | " | 1A to 1Y | 3 | 9 | " |
| | | " | 64 | 2.7 V | IN | | | | | " | | | | | OUT | 2.7 V | " | 1B to 1Y | " | " | " |
| | | " | 65 | 2.7 V | 2.7 V | | | | | " | | | | | OUT | IN | " | 1C to 1Y | " | " | " |
| | | " | 66 | | | IN | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 67 | | | 2.7 V | IN | 2.7 V | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | " | 68 | | | 2.7 V | 2.7 V | IN | OUT | " | | | | | | | " | 2C to 2Y | " | " | " |
| | | " | 69 | | | | | | | " | OUT | IN | 2.7 V | 2.7 V | | | " | 3A to 3Y | " | " | " |
| | | " | 70 | | | | | | | " | OUT | 2.7 V | IN | 2.7 V | | | " | 3B to 3Y | " | " | " |
| | | " | 71 | | | | | | | " | OUT | 2.7 V | 2.7 V | IN | | | " | 3C to 3Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests, and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2 3 | 12 11 | " " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 07.

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1/ | 2 | 3 | 1/ | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 1/ | 18 | 19 | 20 | | | | |
| | | | | 1A | 1B | NC | 1C | 1D | 1Y | GND | 2Y | 2A | 2B | NC | 2C | 2D | $V_{CC}$ | | | | |
| 1<br>$T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 0.8 V | 2.0 V | | 2.0 V | 2.0 V | -1.0 mA | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | " | " | 2 | 2.0 V | 0.8 V | | 2.0 V | 2.0 V | -1.0 mA | " | | | | | | | " | 1Y | " | | " |
| | " | " | 3 | 2.0 V | 2.0 V | | 0.8 V | 2.0 V | -1.0 mA | " | | | | | | | " | 1Y | " | | " |
| | " | " | 4 | 2.0 V | 2.0 V | | 2.0 V | 0.8 V | -1.0 mA | " | | | | | | | " | 1Y | " | | " |
| | " | " | 5 | | | | | | | " | -1.0 mA | 0.8 V | 2.0 V | | 2.0 V | 2.0 V | " | 2Y | " | | " |
| | " | " | 6 | | | | | | | " | -1.0 mA | 2.0 V | 0.8 V | | 2.0 V | 2.0 V | " | 2Y | " | | " |
| | " | " | 7 | | | | | | | " | -1.0 mA | 2.0 V | 2.0 V | | 0.8 V | 2.0 V | " | 2Y | " | | " |
| | " | " | 8 | | | | | | | " | -1.0 mA | 2.0 V | 2.0 V | | 2.0 V | 0.8 V | " | 2Y | " | | " |
| | $V_{OL}$ | 3007 | 9 | 2.0 V | 2.0 V | | 2.0 V | 2.0 V | 12 mA | " | | | | | | | " | 1Y | | 0.4 | " |
| | | 3007 | 10 | | | | | | | " | 12 mA | 2.0 V | 2.0 V | | 2.0 V | 2.0 V | " | 2Y | | 0.4 | " |
| | $V_{IC}$ | | 11 | -18 mA | | | | | | " | | | | | | | " | 1A | | 1.5 | " |
| | | | 12 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 13 | | | | -18 mA | | | " | | | | | | | " | 1C | | " | " |
| | | | 14 | | | | | -18 mA | | " | | | | | | | " | 1D | | " | " |
| | | | 15 | | | | | | | " | | -18 mA | | | | | " | 2A | | " | " |
| | | | 16 | | | | | | | " | | | -18 mA | | | | " | 2B | | " | " |
| | | | 17 | | | | | | | " | | | | | -18 mA | | " | 2C | | " | " |
| | | | 18 | | | | | | | " | | | | | | -18 mA | " | 2D | | " | " |
| | $I_{IL}$ | 3009 | 19 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | μA |
| | " | " | 20 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | " | " | 21 | | | | 0.4 V | | | " | | | | | | | " | 1C | " | " | " |
| | " | " | 22 | | | | | 0.4 V | | " | | | | | | | " | 1D | " | " | " |
| | " | " | 23 | | | | | | | " | | 0.4 V | | | | | " | 2A | " | " | " |
| | " | " | 24 | | | | | | | " | | | 0.4 V | | | | " | 2B | " | " | " |
| | " | " | 25 | | | | | | | " | | | | | 0.4 V | | " | 2C | " | " | " |
| | " | " | 26 | | | | | | | " | | | | | | 0.4 V | " | 2D | " | " | " |
| | $I_{IH1}$ | 3010 | 27 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | " | " | 28 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | " | " | 29 | | | | 2.7 V | | | " | | | | | | | " | 1C | | " | " |
| | " | " | 30 | | | | | 2.7 V | | " | | | | | | | " | 1D | | " | " |
| | " | " | 31 | | | | | | | " | | 2.7 V | | | | | " | 2A | | " | " |
| | " | " | 32 | | | | | | | " | | | 2.7 V | | | | " | 2B | | " | " |
| | " | " | 33 | | | | | | | " | | | | | 2.7 V | | " | 2C | | " | " |
| | " | " | 34 | | | | | | | " | | | | | | 2.7 V | " | 2D | | " | " |
| | $I_{IH2}$ | " | 35 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | " | " | 36 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | " | " | 37 | | | | 7.0 V | | | " | | | | | | | " | 1C | | " | " |
| | " | " | 38 | | | | | 7.0 V | | " | | | | | | | " | 1D | | " | " |
| | " | " | 39 | | | | | | | " | | 7.0 V | | | | | " | 2A | | " | " |
| | " | " | 40 | | | | | | | " | | | 7.0 V | | | | " | 2B | | " | " |
| | " | " | 41 | | | | | | | " | | | | | 7.0 V | | " | 2C | | " | " |
| | " | " | 42 | | | | | | | " | | | | | | 7.0 V | " | 2D | | " | " |
| | $I_O$ | 3011 3/ 4/ | 43 | GND | GND | | GND | GND | 2.25 V | " | | | | | | | " | 1Y | -30 | -112 | mA |
| | | | 44 | | | | | | | " | 2.25 V | GND | GND | | GND | GND | " | 2Y | -30 | -112 | " |
| | $I_{CCH}$ | 3005 | 45 | GND | GND | | GND | GND | | " | | GND | GND | | GND | GND | " | $V_{CC}$ | | 0.8 | " |

See footnotes at end of table.

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

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 | 3 | 1/ | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 1/ | 18 | 19 | 20 | | | | |
| | | | | 1A | 1B | NC | 1C | 1D | 1Y | GND | 2Y | 2A | 2B | NC | 2C | 2D | $V_{CC}$ | | | | |
| 1<br>$T_C$ = +25°C | $I_{CCL}$ | 3005 | 46 | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | GND | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | 5.5 V | $V_{CC}$ | | 3.9 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9<br>$T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 47 | IN | 2.7 V | | 2.7 V | 2.7 V | OUT | GND | | | | | | | 5.0 V | 1A to 1Y | 2 | 8 | ns |
| | | " | 48 | 2.7 V | IN | | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 49 | 2.7 V | 2.7 V | | IN | 2.7 V | OUT | " | | | | | | | " | 1C to 1Y | " | " | " |
| | | " | 50 | 2.7 V | 2.7 V | | 2.7 V | IN | OUT | " | | | | | | | " | 1D to 1Y | " | " | " |
| | | " | 51 | | | | | | | " | OUT | IN | 2.7 V | | 2.7 V | 2.7 V | " | 2A to 2Y | " | " | " |
| | | " | 52 | | | | | | | " | OUT | 2.7 V | IN | | 2.7 V | 2.7 V | " | 2B to 2Y | " | " | " |
| | | " | 53 | | | | | | | " | OUT | 2.7 V | 2.7 V | | IN | 2.7 V | " | 2C to 2Y | " | " | " |
| | | " | 54 | | | | | | | " | OUT | 2.7 V | 2.7 V | | 2.7 V | IN | " | 2D to 2Y | " | " | " |
| | $t_{PHL}$ | " | 55 | IN | 2.7 V | | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 1A to 1Y | 3 | " | " |
| | | " | 56 | 2.7 V | IN | | 2.7 V | 2.7 V | OUT | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | " | 57 | 2.7 V | 2.7 V | | IN | 2.7 V | OUT | " | | | | | | | " | 1C to 1Y | " | " | " |
| | | " | 58 | 2.7 V | 2.7 V | | 2.7 V | IN | OUT | " | | | | | | | " | 1D to 1Y | " | " | " |
| | | " | 59 | | | | | | | " | OUT | IN | 2.7 V | | 2.7 V | 2.7 V | " | 2A to 2Y | " | " | " |
| | | " | 60 | | | | | | | " | OUT | 2.7 V | IN | | 2.7 V | 2.7 V | " | 2B to 2Y | " | " | " |
| | | " | 61 | | | | | | | " | OUT | 2.7 V | 2.7 V | | IN | 2.7 V | " | 2C to 2Y | " | " | " |
| | | " | 62 | | | | | | | " | OUT | 2.7 V | 2.7 V | | 2.7 V | IN | " | 2D to 2Y | " | " | " |
| 10<br>$T_C$ = +125°C | $t_{PLH}$<br>$t_{PHL}$ | Same tests and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2<br>3 | 10<br>10 | "<br>" |
| 11<br>$T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 08.

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ ? Test no. | 1 1A | 2 2 1B | 3 4 1Y | 4 6 2A | 5 8 2B | 6 9 2Y | 7 10 GND | 8 12 3Y | 9 13 3A | 10 14 3B | 11 16 4Y | 12 18 4A | 13 19 4B | 14 20 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 $T_C$ = +25°C | $V_{OH}$ | 3006 | 1 | 2.0 V | 0.8 V | -1.0 mA | | | | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | 0.8 V | 2.0 V | -1.0 mA | | | | " | | | | | | | " | 1Y | " | | " |
| | | " | 3 | | | | 2.0 V | 0.8 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 4 | | | | 0.8 V | 2.0 V | -1.0 mA | " | | | | | | | " | 2Y | " | | " |
| | | " | 5 | | | | | | | " | -1.0 mA | 2.0 V | 0.8 V | | | | " | 3Y | " | | " |
| | | " | 6 | | | | | | | " | -1.0 mA | 0.8 V | 2.0 V | | | | " | 3Y | " | | " |
| | | " | 7 | | | | | | | " | | | | -1.0 mA | 2.0 V | 0.8 V | " | 4Y | " | | " |
| | | " | 8 | | | | | | | " | | | | -1.0 mA | 0.8 V | 2.0 V | " | 4Y | " | | " |
| | $V_{OL}$ | 3007 | 9 | 0.8 V | 0.8 V | 12 mA | | | | " | | | | | | | " | 1Y | | 0.4 | " |
| | | " | 10 | | | | 0.8 V | 0.8 V | 12 mA | " | | | | | | | " | 2Y | | " | " |
| | | " | 11 | | | | | | | " | 12 mA | 0.8 V | 0.8 V | | | | " | 3Y | | " | " |
| | | " | 12 | | | | | | | " | | | | 12 mA | 0.8 V | 0.8 V | " | 4Y | | " | " |
| | $V_{IC}$ | | 13 | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | | -18 mA | | | | | " | | | | | | | " | 1B | | " | " |
| | | | 15 | | | | -18 mA | | | " | | | | | | | " | 2A | | " | " |
| | | | 16 | | | | | -18 mA | | " | | | | | | | " | 2B | | " | " |
| | | | 17 | | | | | | | " | | -18 mA | | | | | " | 3A | | " | " |
| | | | 18 | | | | | | | " | | | -18 mA | | | | " | 3B | | " | " |
| | | | 19 | | | | | | | " | | | | | -18 mA | | " | 4A | | " | " |
| | | | 20 | | | | | | | " | | | | | | -18 mA | " | 4B | | " | " |
| | $I_{IL}$ | 3009 | 21 | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 2/ | 2/ | uA |
| | | " | 22 | | 0.4 V | | | | | " | | | | | | | " | 1B | " | " | " |
| | | " | 23 | | | | 0.4 V | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 24 | | | | | 0.4 V | | " | | | | | | | " | 2B | " | " | " |
| | | " | 25 | | | | | | | " | | 0.4 V | | | | | " | 3A | " | " | " |
| | | " | 26 | | | | | | | " | | | 0.4 V | | | | " | 3B | " | " | " |
| | | " | 27 | | | | | | | " | | | | | 0.4 V | | " | 4A | " | " | " |
| | | " | 28 | | | | | | | " | | | | | | 0.4 V | " | 4B | " | " | " |
| | $I_{IH1}$ | 3010 | 29 | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 30 | | 2.7 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 31 | | | | 2.7 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 32 | | | | | 2.7 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 33 | | | | | | | " | | 2.7 V | | | | | " | 3A | | " | " |
| | | " | 34 | | | | | | | " | | | 2.7 V | | | | " | 3B | | " | " |
| | | " | 35 | | | | | | | " | | | | | 2.7 V | | " | 4A | | " | " |
| | | " | 36 | | | | | | | " | | | | | | 2.7 V | " | 4B | | " | " |
| | $I_{IH2}$ | " | 37 | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 38 | | 7.0 V | | | | | " | | | | | | | " | 1B | | " | " |
| | | " | 39 | | | | 7.0 V | | | " | | | | | | | " | 2A | | " | " |
| | | " | 40 | | | | | 7.0 V | | " | | | | | | | " | 2B | | " | " |
| | | " | 41 | | | | | | | " | | 7.0 V | | | | | " | 3A | | " | " |
| | | " | 42 | | | | | | | " | | | 7.0 V | | | | " | 3B | | " | " |
| | | " | 43 | | | | | | | " | | | | | 7.0 V | | " | 4A | | " | " |
| | | " | 44 | | | | | | | " | | | | | | 7.0 V | " | 4B | | " | " |
| | $I_O$ | 3011 3/ 4/ | 45 | 4.5 V | 4.5 V | 2.25 V | | | | " | | | | | | | " | 1Y | -30 | -112 | mA |
| | | " | 46 | | | | 4.5 V | 4.5 V | 2.25 V | " | | | | | | | " | 2Y | " | " | " |
| | | " | 47 | | | | | | | " | 2.25 V | 4.5 V | 4.5 V | | | | " | 3Y | " | " | " |
| | | " | 48 | | | | | | | " | | | | 2.25 V | 4.5 V | 4.5 V | " | 4Y | " | " | " |

See footnotes at end of table.

TABLE III. Group A inspection for device type 08 - Continued.

Terminal conditions (pins not designated may be high > 2.0 V or low < 0.8 V or open).

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits | | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Case 1/ 2 | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | Min | Max | |
| | | | Test no. | 1A | 1B | 1Y | 2A | 2B | 2Y | GND | 3Y | 3A | 3B | 4Y | 4A | 4B | $V_{CC}$ | | | | |
| 1<br>$T_C$ = +25°C | $I_{CCH}$ | 3005 | 49 | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | | GND | | 4.5 V | 4.5 V | | 4.5 V | 4.5 V | 5.5 V | $V_{CC}$ | | 5.0 | mA |
| | $I_{CCL}$ | 3005 | 50 | GND | GND | | GND | GND | | GND | | GND | GND | | GND | GND | 5.5 V | $V_{CC}$ | | 10.6 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9<br>$T_C$ = +25°C | $t_{PLH}$ | 3003<br>Fig. 4 | 51 | IN | GND | OUT | | | | GND | | | | | | | 5.0 V | 1A to 1Y | 2 | 10 | ns |
| | | | 52 | GND | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | | 53 | | | | IN | GND | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 54 | | | | GND | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | | 55 | | | | | | | " | OUT | IN | GND | | | | " | 3A to 3Y | " | " | " |
| | | | 56 | | | | | | | " | OUT | GND | IN | | | | " | 3B to 3Y | " | " | " |
| | | | 57 | | | | | | | " | | | | OUT | IN | GND | " | 4A to 4Y | " | " | " |
| | | | 58 | | | | | | | " | | | | OUT | GND | IN | " | 4B to 4Y | " | " | " |
| | $t_{PHL}$ | " | 59 | IN | GND | OUT | | | | " | | | | | | | " | 1A to 1Y | " | 13 | " |
| | | | 60 | GND | IN | OUT | | | | " | | | | | | | " | 1B to 1Y | " | " | " |
| | | | 61 | | | | IN | GND | OUT | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 62 | | | | GND | IN | OUT | " | | | | | | | " | 2B to 2Y | " | " | " |
| | | | 63 | | | | | | | " | OUT | IN | GND | | | | " | 3A to 3Y | " | " | " |
| | | | 64 | | | | | | | " | OUT | GND | IN | | | | " | 3B to 3Y | " | " | " |
| | | | 65 | | | | | | | " | | | | OUT | IN | GND | " | 4A to 4Y | " | " | " |
| | | | 66 | | | | | | | " | | | | OUT | GND | IN | " | 4B to 4Y | " | " | " |
| 10<br>$T_C$ = +125°C | $t_{PLH}$<br>$t_{PHL}$ | Same tests and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | 2<br>2 | 12<br>15 | "<br>" |
| 11<br>$T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.

2/ $I_{IL}$ limits in µA as follows:

| Test | Circuit | | |
|---|---|---|---|
| | A | B | C |
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

3/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.

4/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.

TABLE III. Group A inspection for device type 09, 10.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | Cases A,B,C,D Case 2 Type 09 | Cases A,B,C,D Case 2 Type 10 | 1 2 1A | 2 3 1Y | 3 4 2A | 4 6 2Y | 5 8 3A | 6 9 3Y | 7 10 GND | 8 12 4Y | 9 13 4A | 10 14 5Y | 11 16 5A | 12 18 6Y | 13 19 6A | 14 20 $V_{CC}$ | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 $T_C$ = +25°C | $V_{OH}$ 2/ | 3007 | 1 | 1 | | 0.8 V | -1 mA | | | | | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | | " | 2 | 2 | | | | 0.8 V | -1 mA | | | " | | | | | | | " | 2Y | " | | " |
| | | " | 3 | 3 | | | | | | 0.8 V | -1 mA | " | | | | | | | " | 3Y | " | | " |
| | | " | 4 | 4 | | | | | | | | " | -1 mA | 0.8 V | | | | | " | 4Y | " | | " |
| | | " | 5 | 5 | | | | | | | | " | | | -1 mA | 0.8 V | | | " | 5Y | " | | " |
| | | " | 6 | 6 | | | | | | | | " | | | | | -1 mA | 0.8 V | " | 6Y | " | | " |
| | $V_{OL}$ | 3006 | 7 | 1 | | 2.0 V | 12 mA | | | | | " | | | | | | | " | 1Y | | 0.4 | V dc |
| | | " | 8 | 2 | | | | 2.0 V | 12 mA | | | " | | | | | | | " | 2Y | | " | " |
| | | " | 9 | 3 | | | | | | 2.0 V | 12 mA | " | | | | | | | " | 3Y | | " | " |
| | | " | 10 | 4 | | | | | | | | " | 12 mA | 2.0 V | | | | | " | 4Y | | " | " |
| | | " | 11 | 5 | | | | | | | | " | | | 12 mA | 2.0 V | | | " | 5Y | | " | " |
| | | " | 12 | 6 | | | | | | | | " | | | | | 12 mA | 2.0 V | " | 6Y | | " | " |
| | $V_{IC}$ | | 13 | 7 | | -18 mA | | | | | | " | | | | | | | " | 1A | | -1.5 | " |
| | | | 14 | 8 | | | | -18 mA | | | | " | | | | | | | " | 2A | | " | " |
| | | | 15 | 9 | | | | | | -18 mA | | " | | | | | | | " | 3A | | " | " |
| | | | 16 | 10 | | | | | | | | " | | -18 mA | | | | | " | 4A | | " | " |
| | | | 17 | 11 | | | | | | | | " | | | | -18 mA | | | " | 5A | | " | " |
| | | | 18 | 12 | | | | | | | | " | | | | | -18 mA | | " | 6A | | " | " |
| | $I_{IL}$ | 3009 | 19 | 13 | | 0.4 V | | | | | | " | | | | | | | 5.5 V | 1A | 3/ | 3/ | µA |
| | | " | 20 | 14 | | | | 0.4 V | | | | " | | | | | | | " | 2A | " | " | " |
| | | " | 21 | 15 | | | | | | 0.4 V | | " | | | | | | | " | 3A | " | " | " |
| | | " | 22 | 16 | | | | | | | | " | | 0.4 V | | | | | " | 4A | " | " | " |
| | | " | 23 | 17 | | | | | | | | " | | | | 0.4 V | | | " | 5A | " | " | " |
| | | " | 24 | 18 | | | | | | | | " | | | | | 0.4 V | | " | 6A | " | " | " |
| | $I_{IH1}$ | 3010 | 25 | 19 | | 2.7 V | | | | | | " | | | | | | | " | 1A | | 20 | " |
| | | " | 26 | 20 | | | | 2.7 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 27 | 21 | | | | | | 2.7 V | | " | | | | | | | " | 3A | | " | " |
| | | " | 28 | 22 | | | | | | | | " | | 2.7 V | | | | | " | 4A | | " | " |
| | | " | 29 | 23 | | | | | | | | " | | | | 2.7 V | | | " | 5A | | " | " |
| | | " | 30 | 24 | | | | | | | | " | | | | | 2.7 V | | " | 6A | | " | " |
| | $I_{IH2}$ | " | 31 | 25 | | 7.0 V | | | | | | " | | | | | | | " | 1A | | 100 | " |
| | | " | 32 | 26 | | | | 7.0 V | | | | " | | | | | | | " | 2A | | " | " |
| | | " | 33 | 27 | | | | | | 7.0 V | | " | | | | | | | " | 3A | | " | " |
| | | " | 34 | 28 | | | | | | | | " | | 7.0 V | | | | | " | 4A | | " | " |
| | | " | 35 | 29 | | | | | | | | " | | | | 7.0 V | | | " | 5A | | " | " |
| | | " | 36 | 30 | | | | | | | | " | | | | | 7.0 V | | " | 6A | | " | " |
| | $I_O$ 2/ 4/ 5/ | 3011 | 37 | | | GND | 2.25 V | | | | | " | | | | | | | " | 1Y | -30 | -112 | mA |
| | | " | 38 | | | | | GND | 2.25 V | | | " | | | | | | | " | 2Y | " | " | " |
| | | " | 39 | | | | | | | GND | 2.25 V | " | | | | | | | " | 3Y | " | " | " |
| | | " | 40 | | | | | | | | | " | 2.25 V | GND | | | | | " | 4Y | " | " | " |
| | | " | 41 | | | | | | | | | " | | | 2.25 V | GND | | | " | 5Y | " | " | " |
| | | " | 42 | | | | | | | | | " | | | | | 2.25 V | GND | " | 6Y | " | " | " |
| | $I_{CEX}$ 6/ | " | | 31 | | GND | 5.5 V | | | | | " | | | | | | | " | 1Y | | 100 | µA |
| | | " | | 32 | | | | GND | 5.5 V | | | " | | | | | | | " | 2Y | | " | " |
| | | " | | 33 | | | | | | GND | 5.5 V | " | | | | | | | " | 3Y | | " | " |
| | | " | | 34 | | | | | | | | " | 5.5 V | GND | | | | | " | 4Y | | " | " |
| | | " | | 35 | | | | | | | | " | | | 5.5 V | GND | | | " | 5Y | | " | " |
| | | " | | 36 | | | | | | | | " | | | | | 5.5 V | GND | " | 6Y | | " | " |

See footnotes at end of table.

TABLE III. Group A inspection for device type 09, 10 - Continued.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 | 3 | 4 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | 16 | 18 | 19 | 20 | | | | |
| | | | | 1A | 1Y | 2A | 2Y | 3A | 3Y | GND | 4Y | 4A | 5Y | 5A | 6Y | 6A | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $I_{CCH}$ | 3005 | Type 09: 43, 10: 37 | GND | | GND | | GND | | GND | | GND | | GND | | GND | 5.5 V | $V_{CC}$ | | 3 | mA |
| | $I_{CCL}$ | 3005 | 44 / 38 | 4.5 V | | 4.5 V | | 4.5 V | | GND | | 4.5 V | | 4.5 V | | 4.5 V | 5.5 V | $V_{CC}$ | | 12 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | |
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 45 / 39 | IN | OUT | IN | OUT | IN | OUT | GND | OUT | IN | OUT | IN | OUT | IN | 5.0 V | 1A to 1Y | 7/ | 7/ | ns |
| | | " | 46 / 40 | | | | | | | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 47 / 41 | | | | | | | " | | | | | | | " | 3A to 3Y | " | " | " |
| | | " | 48 / 42 | | | | | | | " | | | | | | | " | 4A to 4Y | " | " | " |
| | | " | 49 / 43 | | | | | | | " | | | | | | | " | 5A to 5Y | " | " | " |
| | | " | 50 / 44 | | | | | | | " | | | | | | | " | 6A to 6Y | " | " | " |
| | $t_{PHL}$ | " | 51 / 45 | IN | OUT | IN | OUT | IN | OUT | " | OUT | IN | OUT | IN | OUT | IN | " | 1A to 1Y | 8/ | 8/ | " |
| | | " | 52 / 46 | | | | | | | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | " | 53 / 47 | | | | | | | " | | | | | | | " | 3A to 3Y | " | " | " |
| | | " | 54 / 48 | | | | | | | " | | | | | | | " | 4A to 4Y | " | " | " |
| | | " | 55 / 49 | | | | | | | " | | | | | | | " | 5A to 5Y | " | " | " |
| | | " | 56 / 50 | | | | | | | " | | | | | | | " | 6A to 6Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests and terminal conditions as subgroup 9 except $T_C$ = 125°C. | | | | | | | | | | | | | | | | | 9/ 10/ | 9/ 10/ | " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.
2/ 09 only.
3/ $I_{IL}$ limits in μA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

4/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.
5/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.
6/ 10 only.

| | | Min | Max | Unit |
|---|---|---|---|---|
| 7/ | for device type 09: | 1 | 7 | ns |
| | for device type 10: | 5 | 30 | ns |
| 8/ | for device type 09: | 1 | 6 | ns |
| | for device type 10: | 2 | 10 | ns |
| 9/ | for device type 09: | 1 | 9 | ns |
| | for device type 10: | 5 | 35 | ns |
| 10/ | for device type 09: | 1 | 8 | ns |
| | for device type 10: | 2 | 12 | ns |

TABLE III. Group A inspection for device type 11, 12.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 1/ 2 Test no. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Type 11 | Type 12 | 1A | 1Y | 2A | 2Y | 3A | 3Y | GND | 4Y | 4A | 5Y | 5A | 6Y | 6A | $V_{CC}$ | | | | |
| I $T_C$ = +25°C | $V_{OH}$ 2/ | 3007 | 1 | | 2.0 V | -1 mA | | | | | GND | | | | | | | 4.5 V | 1Y | 2.4 | | V dc |
| | | | 2 | | | | 2.0 V | -1 mA | | | | | | | | | | | 2Y | | | |
| | | | 3 | | | | | | 2.0 V | -1 mA | | | | | | | | | 3Y | | | |
| | | | 4 | | | | | | | | | -1 mA | 2.0 V | | | | | | 4Y | | | |
| | | | 5 | | | | | | | | | | | -1 mA | 2.0 V | | | | 5Y | | | |
| | | | 6 | | | | | | | | | | | | | -1 mA | 2.0 V | | 6Y | | | |
| | $V_{OL}$ | 3006 | 7 | 1 | 0.8 V | 12 mA | | | | | | | | | | | | | 1Y | | 0.4 | |
| | | | 8 | 2 | | | 0.8 V | 12 mA | | | | | | | | | | | 2Y | | | |
| | | | 9 | 3 | | | | | 0.8 V | 12 mA | | | | | | | | | 3Y | | | |
| | | | 10 | 4 | | | | | | | | 12 mA | 0.8 V | | | | | | 4Y | | | |
| | | | 11 | 5 | | | | | | | | | | 12 mA | 0.8 V | | | | 5Y | | | |
| | | | 12 | 6 | | | | | | | | | | | | 12 mA | 0.8 V | | 6Y | | | |
| | $V_{IC}$ | | 13 | 7 | -18 mA | | | | | | | | | | | | | | 1A | | -1.5 | |
| | | | 14 | 8 | | | -18 mA | | | | | | | | | | | | 2A | | | |
| | | | 15 | 9 | | | | | -18 mA | | | | | | | | | | 3A | | | |
| | | | 16 | 10 | | | | | | | | | -18 mA | | | | | | 4A | | | |
| | | | 17 | 11 | | | | | | | | | | | -18 mA | | | | 5A | | | |
| | | | 18 | 12 | | | | | | | | | | | | | -18 mA | | 6A | | | |
| | $I_{IL}$ | 3009 | 19 | 13 | 0.4 V | | | | | | | | | | | | | 5.5 V | 1A | 3/ | 3/ | μA |
| | | | 20 | 14 | | | 0.4 V | | | | | | | | | | | | 2A | | | |
| | | | 21 | 15 | | | | | 0.4 V | | | | | | | | | | 3A | | | |
| | | | 22 | 16 | | | | | | | | | 0.4 V | | | | | | 4A | | | |
| | | | 23 | 17 | | | | | | | | | | | 0.4 V | | | | 5A | | | |
| | | | 24 | 18 | | | | | | | | | | | | | 0.4 V | | 6A | | | |
| | $I_{IH1}$ | 3010 | 25 | 19 | 2.7 V | | | | | | | | | | | | | | 1A | | 20 | |
| | | | 26 | 20 | | | 2.7 V | | | | | | | | | | | | 2A | | | |
| | | | 27 | 21 | | | | | 2.7 V | | | | | | | | | | 3A | | | |
| | | | 28 | 22 | | | | | | | | | 2.7 V | | | | | | 4A | | | |
| | | | 29 | 23 | | | | | | | | | | | 2.7 V | | | | 5A | | | |
| | | | 30 | 24 | | | | | | | | | | | | | 2.7 V | | 6A | | | |
| | $I_{IH2}$ | | 31 | 25 | 7.0 V | | | | | | | | | | | | | | 1A | | 100 | |
| | | | 32 | 26 | | | 7.0 V | | | | | | | | | | | | 2A | | | |
| | | | 33 | 27 | | | | | 7.0 V | | | | | | | | | | 3A | | | |
| | | | 34 | 28 | | | | | | | | | 7.0 V | | | | | | 4A | | | |
| | | | 35 | 29 | | | | | | | | | | | 7.0 V | | | | 5A | | | |
| | | | 36 | 30 | | | | | | | | | | | | | 7.0 V | | 6A | | | |
| | $I_O$ 2/ 4/ 5/ | 3011 | 37 | | 5.5 V | 2.25 V | | | | | | | | | | | | | 1Y | -30 | -112 | mA |
| | | | 38 | | | | 5.5 V | 2.25 V | | | | | | | | | | | 2Y | | | |
| | | | 39 | | | | | | 5.5 V | 2.25 V | | | | | | | | | 3Y | | | |
| | | | 40 | | | | | | | | | 2.25 V | 5.5 V | | | | | | 4Y | | | |
| | | | 41 | | | | | | | | | | | 2.25 V | 5.5 V | | | | 5Y | | | |
| | | | 42 | | | | | | | | | | | | | 2.25 V | 5.5 V | | 6Y | | | |
| | $I_{OH}$ 6/ | | | 31 | 5.0 V | 5.5 V | | | | | | | | | | | | | 1Y | | 100 | μA |
| | | | | 32 | | | 5.0 V | 5.5 V | | | | | | | | | | | 2Y | | | |
| | | | | 33 | | | | | 5.0 V | 5.5 V | | | | | | | | | 3Y | | | |
| | | | | 34 | | | | | | | | 5.5 V | 5.0 V | | | | | | 4Y | | | |
| | | | | 35 | | | | | | | | | | 5.5 V | 5.0 V | | | | 5Y | | | |
| | | | | 36 | | | | | | | | | | | | 5.5 V | 5.0 V | | 6Y | | | |

See footnotes at end of table.

TABLE III. Group A inspection for device type 11, 12 - Continued.

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

| Subgroup | Symbol | MIL-STD-883 method | Cases A,B,C,D Case 2 Test no. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Measured terminal | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Type 11 | Type 12 | 1A | 1Y | 2A | 2Y | 3A | 3Y | GND | 4Y | 4A | 5Y | 5A | 6Y | 6A | $V_{CC}$ | | | | |
| 1 $T_C$ = +25°C | $I_{CCH}$ | 3005 | 43 | 37 | 4.5 V | | 4.5 V | | 4.5 V | | GND | | 4.5 V | | 4.5 V | | 4.5 V | 5.5 V | $V_{CC}$ | | 6 | mA |
| | $I_{CCL}$ | 3005 | 44 | 38 | GND | | GND | | GND | | GND | | GND | | GND | | GND | 5.5 V | $V_{CC}$ | | 14 | mA |
| 2 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = +125°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | | |
| 3 | Same tests, terminal conditions, and limits as for subgroup 1 except $T_C$ = -55°C and $V_{IC}$ tests are omitted. | | | | | | | | | | | | | | | | | | | | | |
| 9 $T_C$ = +25°C | $t_{PLH}$ | 3003 Fig. 4 | 45 | 39 | IN | OUT | IN | OUT | IN | OUT | GND | OUT | IN | OUT | IN | OUT | IN | 5.0 V | 1A to 1Y | 7/ | 7/ | ns |
| | | | 46 | 40 | | | | | | | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 47 | 41 | | | | | | | " | | | | | | | " | 3A to 3Y | " | " | " |
| | | | 48 | 42 | | | | | | | " | | | | | | | " | 4A to 4Y | " | " | " |
| | | | 49 | 43 | | | | | | | " | | | | | | | " | 5A to 5Y | " | " | " |
| | | | 50 | 44 | | | | | | | " | | | | | | | " | 6A to 6Y | " | " | " |
| | $t_{PHL}$ | " | 51 | 45 | IN | OUT | IN | OUT | IN | OUT | " | OUT | IN | OUT | IN | OUT | IN | " | 1A to 1Y | 8/ | 8/ | " |
| | | | 52 | 46 | | | | | | | " | | | | | | | " | 2A to 2Y | " | " | " |
| | | | 53 | 47 | | | | | | | " | | | | | | | " | 3A to 3Y | " | " | " |
| | | | 54 | 48 | | | | | | | " | | | | | | | " | 4A to 4Y | " | " | " |
| | | | 55 | 49 | | | | | | | " | | | | | | | " | 5A to 5Y | " | " | " |
| | | | 56 | 50 | | | | | | | " | | | | | | | " | 6A to 6Y | " | " | " |
| 10 $T_C$ = +125°C | $t_{PLH}$ $t_{PHL}$ | Same tests and terminal conditions as subgroup 9 except $T_C$ = +125°C. | | | | | | | | | | | | | | | | | | 9/ 10/ | 9/ 10/ | " " |
| 11 $T_C$ = -55°C | Same tests, terminal conditions, and limits as subgroup 10 except $T_C$ = -55°C. | | | | | | | | | | | | | | | | | | | | | |

1/ Pins not referenced are N/C.
2/ 11 only.
3/ $I_{IL}$ limits in µA as follows:

| Test | Circuit A | Circuit B | Circuit C |
|---|---|---|---|
| $I_{IL}$ | 0/-100 | 0/-100 | 0/-100 |

4/ Method 3011 shall be used, except the output voltage shall be as specified herein, and the output current shall be operating rather than short circuit current. The output conditions have been chosen to produce a current that closely approximates one half of the true short circuit output current $I_{OS}$.
5/ $I_O$ min/max limit for circuits B and C shall be: -30/-110 mA.
6/ 12 only.

| | | Min | Max | Unit |
|---|---|---|---|---|
| 7/ | for device type 11: | 1 | 8 | ns |
| | for device type 12: | 5 | 30 | ns |
| 8/ | for device type 11: | 1 | 8 | ns |
| | for device type 12: | 2 | 12 | ns |
| 9/ | for device type 11: | 1 | 10 | ns |
| | for device type 12: | 5 | 35 | ns |
| 10/ | for device type 11: | 1 | 10 | ns |
| | for device type 12: | 2 | 14 | ns |

5. PACKAGING

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

6. NOTES

6.1 Notes. The notes specified in MIL-M-38510 are applicable to this specification.

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

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

a. Complete part number (see 1.2).

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

c. Requirements for certificate of compliance, if applicable.

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

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

f. Requirements for product assurance options.

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

h. Requirements for "JAN" marking.

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

| | |
|---|---|
| GND | Ground zero voltage potential. |
| $V_{IN}$ | Voltage level at an input terminal. |
| $V_{IC}$ | Input clamp voltage. |
| $I_{IN}$ | Current flowing into an input terminal. |

6.5 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish C (see 3.3). Longer length leads and lead forming shall not affect the part number.

6.6 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-M-38510.

| Military device type | Generic-industry type |
|---|---|
| 01 | 54ALS1000/54ALS37 |
| 02 | 54ALS1002/54ALS28 |
| 03 | 54ALS1003/54ALS38 |
| 04 | 54ALS1008 |
| 05 | 54ALS1010 |
| 06 | 54ALS1011 |
| 07 | 54ALS1020/54ALS40 |
| 08 | 54ALS1032 |
| 09 | 54ALS1004 |
| 10 | 54ALS1005 |
| 11 | 54ALS1034 |
| 12 | 54ALS1035 |

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

TABLE IV. Manufacturers' designations.

| Device type | Circuit | | |
|---|---|---|---|
| | A | B | C |
| | Texas Instruments | Motorola | National |
| 01 | X | | |
| 02 | X | | |
| 03 | X | | |
| 04 | X | | |
| 05 | X | | |
| 06 | X | | |
| 07 | X | | |
| 08 | X | | |
| 09 | X | | |
| 10 | X | | |
| 11 | X | | |
| 12 | X | | |

Custodians:
Air Force - 17

Review activities:
Air Force - 11, 19, 85, 99
DLA - ES

Agent:
DLA - ES

Preparing activity:
Air Force - 17

(Project 5962-F636)

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# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

*(See Instructions – Reverse Side)*

| 1. DOCUMENT NUMBER | 2. DOCUMENT TITLE |
|---|---|
| M38510/384(USAF) | Microcircuits, Digital, Advanced Low Power Schottky TTL, AND, OR, NAND, AND NOR Gates Monolithic Silicon |

| 3a. NAME OF SUBMITTING ORGANIZATION | 4. TYPE OF ORGANIZATION *(Mark one)* |
|---|---|
| | ☐ VENDOR<br>☐ USER<br>☐ MANUFACTURER<br>☐ OTHER *(Specify)*: _____ |
| b. ADDRESS *(Street, City, State, ZIP Code)* | |

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

| 7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional | b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional |
|---|---|
| c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional | 8. DATE OF SUBMISSION *(YYMMDD)* |

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PREVIOUS EDITION IS OBSOLETE.