

INCH-POUND

MIL-M-38510/315D
w/AMENDMENT 1
October 11, 2013
SUPERSEDING
MIL-M-38510/315D
27 October 2003

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, LOW-POWER SCHOTTKY TTL, COUNTERS, MONOLITHIC SILICON

Inactive for new design after 18 April 1997.

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

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

1. SCOPE

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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

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

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

<u>Device type</u>	<u>Circuit</u>
01	Decade counter
02	4-bit binary counter
03	Synchronous 4-bit decade counter (asynchronous clear)
04	Synchronous 4-bit binary counter (asynchronous clear)
05	Synchronous 4-bit up/down decade counter
06	Synchronous 4-bit up/down binary counter
07	Synchronous 4-bit up/down decade counter (with clear)
08	Synchronous 4-bit up/down binary counter (with clear)
09	Synchronous 4-bit up/down binary counter (with mode control)
10	Divide-by-twelve counter
11	Synchronous 4-bit decade counter (with synchronous clear)
12	Synchronous 4-bit binary counter (with synchronous clear)
13	Synchronous 4-bit decade counter (with mode control)

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

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

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

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

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V dc to 7.0 V dc
Input voltage range	-1.2 V dc at -18 mA to 5.5 V dc
Storage temperature range	-65° to +150°C
Maximum power dissipation, (P _D) <u>1</u> / :	
Device type 05, 06, 07, 08.....	187 mW
Device type 01, 02, 10.....	83 mW
Device type 03, 04, 11, 12.....	176 mW
Device type 09, 13.....	193 mW
Lead temperature (soldering, 10 seconds)	300°C
Thermal resistance, junction to case (θ _{JC}):	
Cases A, B, C, D, E, F, and 2	(See MIL-STD-1835)
Junction temperature (T _J) <u>3</u> /	175°C

1.4 Recommended operating conditions. 2/

Maximum low level output current (I _{OL})	4.0 mA
Supply voltage (V _{CC})	4.5 V dc minimum to 5.5 V dc maximum
Minimum high-level input voltage (V _{IH})	2.0 V dc
Maximum low-level input voltage (V _{IL})	0.7 V dc
Normalized fanout (each output)	
Types 01, 02, 05, 06, 07, 08, 10.....	10 maximum
Types 03, 04, 09, 11, 12, 13.....	
Low-level	10 maximum
High-level.....	20 maximum
Width of input count pulse, t _p (IN)	
Types 01, 02, 10	
Input A, reset	15 ns minimum
Input B	30 ns minimum
Types 07, 08.....	20 ns minimum
Width of reset pulse, t _p (reset)	
Types 01, 02, 10.....	25 ns minimum
Count enable time	
Type 09, enable	40 ns minimum

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

2/ A change of states on the U/ $\overline{D}$ input for device types 09 and 13 is not recommended when the clock input is low. This may result in an erroneous count.

3/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions in accordance with MIL-PRF-38535.

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Input clock frequency, f_{clock}	
Types 01, 02, 10	
Input A	0 to 29 MHz
Types 03, 04, 11, 12.....	0 to 22 MHz
Types 09, 13.....	0 to 18 MHz
Types 07, 08.....	0 to 20 MHz
Types 05, 06.....	0 to 25 MHz
Width of clock pulse, $t_w(\text{clock})$	
Types 03, 06, 09, 11, 12, 13.....	25 ns minimum
Types 04.....	30 ns minimum
Types 05.....	20 ns minimum
Width of clear pulse, $t_w(\text{clear})$	
Types 03, 04, 05, 06, 07, 08, 11, 12.....	20 ns minimum
Setup time, t_{setup}	
Types 03, 11, 12	
Enable P	25 ns minimum
Load.....	25 ns minimum
Clear (types 11 and 12 only).....	20 ns minimum
Type 04	
Enable P	35 ns minimum
Load.....	35 ns minimum
Data inputs	
Types 03, 09, 11, 12, 13.....	20 ns minimum
Type 04	25 ns minimum
Types 07, 08	30 ns minimum
Type 05	
Data, L inputs	15 ns minimum
$\overline{U/D}$ input	30 ns minimum
EP, ET inputs.....	15 ns minimum
Type 06	
Data, L inputs	25 ns minimum
$\overline{U/D}$ input	30 ns minimum
EP, ET, inputs.....	25 ns minimum
Hold time at any input, t_{hold}	
Types 09, 13.....	0 ns minimum
Types 07, 08.....	10 ns minimum
Types 05, 06	
Data, EP, ET inputs	5 ns minimum
L, $\overline{U/D}$ inputs.....	0 ns minimum
Types 03, 04, 11, 12.....	10 ns minimum
Types 03, 04, 11, 12 $t_w(\text{clear})$	0 ns minimum
Case operating temperature range (T_c)	-55°C to +125°C

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

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

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

3. REQUIREMENTS

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

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

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

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

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

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

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

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

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

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

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

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 12 (see MIL-PRF-38535, appendix A).

4. VERIFICATION

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

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

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

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device types	Limits		Unit
				Min	Max	
Low-level output voltage	V _{OL}	V _{CC} = 4.5 V, V _{IH} = 2.0 V V _{IL} = 0.7 V, I _{OL} = 4 mA <u>1</u> /	All	-	0.4	V
High-level output voltage	V _{OH}	V _{CC} = 4.5 V, V _{IH} = 2.0 V V _{IL} = 0.7 V, I _{OH} = -400m μA	All	2.5	-	V
Input clamp voltage	V _{IC}	T _C = 25°C, V _{CC} = 4.5 V I _{IN} = -18 mA	All	-	-1.5	V
Low-level input current at reset inputs	I _{IL1}	V _{CC} = 5.5 V, V _{IN} = 0.4 V	01, 02, 10	-30	-400	μA
Low-level input current at input A	I _{IL2}		01, 02, 10	-0.5	-2.4	mA
Low-level input current at input B	I _{IL3}		01, 10	-0.4	-3.2	mA
			02	-0.4	-1.6	mA
Low-level input current at data, clear, EnP	I _{IL4}		03, 04	-30	-400	μA
Low-level input current at data, EnP	I _{IL4}		01, 12	-30	-400	μA
Low-level input current at clear	I _{IL4}		01, 12	-30	-760	μA
Low-level input current at load	I _{IL5}		03, 04, 11, 12	-30	-800	μA
Low-level input current at EnT	I _{IL5}		03, 04, 11, 12	-30	-860	μA
Low-level input current at clock	I _{IL6}		03, 04, 11, 12	0	-.630	mA
			09 13	-.15 -.36	-1.08 -1.08	mA
Low-level input current at data, clock, down/up	I _{IL8}		09, 13	-120	-400	μA
Low-level input current at load	I _{IL8}		09, 13	-100	-400	μA
Low-level input current at data	I _{IL9}		07, 08	-100	-400	μA
Low-level input current at load	I _{IL10}		07, 08	-100	-400	μA
Low-level input current at clear, count up, count down	I _{IL11}	07, 08	-120	-400	μA	
Low-level input current at data	I _{IL12}	05, 06	-3.0	-400	μA	
Low-level input current at clock, down/up	I _{IL13}	05, 06	-135	-370	μA	
Low-level input current at EP	I _{IL14}	05, 06	-150	-385	μA	
Low-level input current at ET	I _{IL15}	05, 06	-280	-760	μA	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device types	Limits		Unit
				Min	Max	
High-level input current at reset inputs	I _{IH1}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	01, 02 10	-	20	μA
High-level input current at reset inputs	I _{IH2}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	01, 02 10	-	100	μA
High-level input current at input A	I _{IH3}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	01, 02 10	-	80	μA
High-level input current at input A	I _{IH4}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	01, 02, 10	-	400	μA
High-level input current at input B	I _{IH5}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	01	-	160	μA
			02, 10	-	80	
High-level input current at input B	I _{IH6}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	01	-	800	μA
			02, 10	-	400	
High-level input current at load, clock, EnT	I _{IH9}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	03, 04, 11, 12	-	40	μA
High-level input current at load, clock, EnT	I _{IH10}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	03, 04, 11, 12	-	200	μA
High-level input current at data, EnP	I _{IH11}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	03, 04, 11, 12	-	20	μA
High-level input current at data, EnP	I _{IH12}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	03, 04, 11, 12	-	100	μA
High-level input current at clear	I _{IH13}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	03, 04, 11, 12	-	20	μA
			11, 12	-	40	
High-level input current at clear	I _{IH14}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	03, 04	-	100	μA
			11, 12	-	200	
High-level input current at EnG	I _{IH15}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	09, 13	-	60	μA
High-level input current at EnG	I _{IH16}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	09, 13	-	300	μA
High-level input current at data, load, clear, count up, count down, clock, down/up	I _{IH17}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	05, 06 07, 08 09, 13	-	20	μA
High-level input current at data, load, clear, count up, count down, clock, down/up	I _{IH18}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	05, 06 07, 08 09, 13	-	100	μA
High-level input current at ET	I _{IH19}	V _{CC} = 5.5 V, V _{IN} = 2.7 V	05, 06	-	40	μA

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device types	Limits		Unit
				Min	Max	
High-level input current at ET	I _{IH20}	V _{CC} = 5.5 V, V _{IN} = 5.5 V	05, 06	-	200	μA
Short circuit output current	I _{OS}	V _{CC} = 5.5 V <u>2/</u>	All	-15	-130	mA
Supply current	I _{CC}	V _{CC} = 5.5 V	01,02,10		15	mA
			05,06,07,08		34	
			09, 13		35	
High-level supply current	I _{CCH}	V _{CC} = 5.5 V, <u>3/</u>	03, 04, 11, 12	-	31	mA
High-level supply current	I _{CCH}	V _{CC} = 5.5 V, <u>3/</u>	03, 04 11, 12	-	31	mA
Low-level supply current	I _{CCL}	V _{CC} = 5.5 V, <u>4/</u>	03, 04 11, 12	-	32	mA
Maximum input A, clock, or count up frequency	F _{MAX}	V _{CC} = 5.0 V, C _L = 50 pF, ±10% R _L = 2 kΩ	05, 06 01, 02, 10	25 29	-	MHz
			03, 04, 07, 08, 11, 12	22		
			09, 13	18	-	
Propagation delay time, high to low, A to Q _C	t _{PHL1}		01,02,10	3	81	ns
Propagation delay time, low to high, A to Q _C	t _{PLH1}		01, 10	3	74	ns
			02	3	74	
Propagation delay time, high to low, B to Q _D	t _{PHL2}		01, 10	3	56	ns
			02	3	78	
Propagation delay time, low to high, B to Q _D	t _{PLH2}		01, 10	3	52	ns
			02	3	78	
Propagation delay time, low to high, clock to carry	t _{PLH4}		03, 04, 11, 12	3	56	ns
Propagation delay time, high to low, clock to carry	t _{PHL4}		03, 04, 11, 12	3	56	ns

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device types	Limits		Unit
				Min	Max	
Propagation delay time, low to high, clock to Q	t _{PLH5}	V _{CC} = 5.0 V, C _L = 50 pF, ±10% R _L = 2 kΩ	03, 04, 11, 12	3	41	ns
Propagation delay time, high to high, clock to Q	t _{PHL5}		03, 04, 11, 12	3	45	ns
Propagation delay time, low to high, clock to Q	t _{PLH5}		05, 06	3	26	ns
Propagation delay time, high to low, clock to Q	t _{PHL5}		05	3	26	ns
			06	3	36	
Propagation delay time, low to high, clock (data) to Q	t _{PLH6}		03, 04, 11, 12	3	42	ns
Propagation delay time, high to low, clock (data) to Q	t _{PHL6}		03, 04, 11, 12	3	48	ns
Propagation delay time, low to high, EnT to carry	t _{PLH7}		03, 04, 11, 12	3	28	ns
Propagation delay time, high to low, EnT to carry	t _{PHL7}		03, 04, 11, 12	3	28	ns
Propagation delay time, low to high, ET to RC	t _{PLH7}		05	3	18	ns
			06	3	28	
Propagation delay time, high to low, ET to RC	t _{PHL7}		05	3	28	ns
			06	3	32	
Propagation delay time, high to low, clear to Q	t _{PHL8}		03, 04, 11, 12	3	46	ns
Propagation delay time, low to high, load to Q	t _{PLH8}		07, 08	3	63	ns
Propagation delay time, high to low, load to Q	t _{PHL10}		07, 08	3	63	ns
Propagation delay time, low to high, counts up and down to Q, U/ $\overline{D}$ to RC	t _{PLH9}		07, 08	3	60	ns
			05	3	26	
			06	3	32	

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _C ≤ +125°C unless otherwise specified	Device types	Limits		Unit
				Min	Max	
Propagation delay time, high to low, counts up and down to Q, U/ $\overline{D}$ to RC	t _{PHL11}	V _{CC} = 5.0 V, C _L = 50 pF, ±10% R _L = 2 kΩ	07, 08	3	73	ns
			05	3	33	
			06	3	37	
Propagation delay time, high to low, clear to Q	t _{PHL12}		07, 08	3	56	ns
Propagation delay time, low to high, load to Q	t _{PLH10}		09, 13	3	53	ns
Propagation delay time, high to low, load to Q	t _{PHL13}		09, 13	3	77	ns
Propagation delay time, low to high, clock to Q	t _{PLH11}		09, 13	3	41	ns
Propagation delay time, high to low, clock to Q	t _{PHL14}		09, 13	3	57	ns
Propagation delay time, low to high, clock to <u>Max</u> Min	t _{PLH12}		09, 13	3	66	ns
Propagation delay time, low to high, clock to ripple carry	t _{PLH12}		05	3	35	ns
			06	3	38	
Propagation delay time, high to low, clock to <u>Max</u> Min	t _{PHL15}		09, 13	3	80	ns
Propagation delay time, high to low, clock to ripple carry	t _{PHL15}		05	3	37	ns
			06	3	40	

1/ Use $I_{OL} + I_{IL3(\text{Max})}$ for V_{OL} test on Q_A .

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

3/ I_{CCH} is measured : (a) With the load input high; and (b) Then again with the load input low with all other inputs high and all outputs open.

4/ I_{CCL} is measured: (a) With the clock input high; and (b) Then again with the clock input low with all other inputs low and all outputs open.

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TABLE II. Electrical test requirements.

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

*PDA applies to subgroup 1.

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

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

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

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

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

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

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

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

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

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

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Pin number	Device type 01		Device type 02		Device type 03		Device type 04	
	CASES							
	A, B, C, and D	2	A, B, C, and D	2	E,F	2	E,F	2
1	BD INPUT	N/C	INPUT B	N/C	CLEAR	N/C	CLEAR	N/C
2	R _O ⁽¹⁾	BD INPUT	R _{O(1)}	INPUT B	CLOCK	CLEAR	CLOCK	CLEAR
3	R _O ⁽²⁾	R _O ⁽¹⁾	R _{O(2)}	R _O ⁽¹⁾	INPUT A	CLOCK	INPUT A	CLOCK
4	NC	R _O ⁽²⁾	NC	R _O ⁽²⁾	INPUT B	INPUT A	INPUT B	INPUT A
5	V _{CC}	N/C	V _{CC}	N/C	INPUT C	INPUT B	INPUT C	INPUT B
6	R ₉₍₁₎	N/C	NC	N/C	INPUT D	N/C	INPUT D	N/C
7	R ₉₍₂₎	N/C	NC	N/C	ENABLE P	INPUT C	ENABLE P	INPUT C
8	OUTPUT C	V _{CC}	OUTPUT C	V _{CC}	GND	INPUT D	GND	INPUT D
9	OUTPUT B	R ₉ ⁽¹⁾	OUTPUT B	N/C	LOAD	ENABLE P	LOAD	ENABLE P
10	GND	R ₉ ⁽²⁾	GND	N/C	ENABLE T	GND	ENABLE T	GND
11	OUTPUT D	N/C	OUTPUT D	N/C	Q _D	N/C	Q _D	N/C
12	OUTPUT A	OUTPUT C	OUTPUT A	OUTPUT C	Q _C	LOAD	Q _C	LOAD
13	NC	OUTPUT B	NC	OUTPUT B	Q _B	T	Q _B	T
14	INPUT A	GND	INPUT A	GND	Q _A	Q _D	Q _A	Q _D
15		N/C		N/C	CARRY OUTPUT	Q _C	CARRY OUTPUT	Q _C
16		OUTPUT D		OUTPUT D	V _{CC}	N/C	V _{CC}	N/C
17		N/C		N/C		Q _B		Q _B
18		OUTPUT A		OUTPUT A		Q _A		Q _A
19		N/C		N/C		CARRY OUTPUT		CARRY OUTPUT
20		INPUT A		INPUT A		V _{CC}		V _{CC}

FIGURE 1. Terminal connections.

MIL-M-38510/315D
w/AMENDMENT 1

Pin number	Device type 05		Device type 06		Device type 07		Device type 08	
	CASES							
	E, F	2	E, F	2	E, F	2	E, F	2
1	U/ $\overline{D}$	N/C	U/ $\overline{D}$	N/C	DATA B INPUT	N/C	DATA B INPUT	N/C
2	CK	U/ $\overline{D}$	CK	U/ $\overline{D}$	Q _B	DATA B INPUT	Q _B	DATA B INPUT
3	INPUT A	CK	INPUT A	CK	Q _A	Q _B	Q _A	Q _B
4	INPUT B	INPUT A	INPUT B	INPUT A	COUNT DOWN	Q _A	COUNT DOWN	Q _A
5	INPUT C	INPUT B	INPUT C	INPUT B	COUNT UP	COUNT DOWN	COUNT UP	COUNT DOWN
6	INPUT D	N/C	INPUT D	N/C	Q _C	N/C	Q _C	N/C
7	ENABLE P	INPUT C	ENABLE P	INPUT C	Q _D	COUNT UP	Q _D	COUNT UP
8	GND	INPUT D	GND	INPUT D	GND	Q _C	GND	Q _C
9	LOAD	ENABLE P	LOAD	ENABLE P	DATA D	Q _D	DATA D	Q _D
10	ENABLE T	GND	ENABLE T	GND	DATA C	GND	DATA C	GND
11	Q _D	N/C	Q _D	N/C	LOAD	N/C	LOAD	N/C
12	Q _C	LOAD	Q _C	LOAD	CARRY	DATA D	CARRY	DATA D
13	Q _B	ENABLE T	Q _B	ENABLE T	BORROW	DATA C	BORROW	DATA C
14	Q _A	Q _D	Q _A	Q _D	CLEAR	LOAD	CLEAR	LOAD
15	RIPPLE CARRY OUTPUT	Q _C	RIPPLE CARRY OUTPUT	Q _C	DATA A	CARRY	DATA A	CARRY
16	V _{CC}	N/C	V _{CC}	N/C	V _{CC}	N/C	V _{CC}	N/C
17		Q _B		Q _B		BORROW		BORROW
18		Q _A		Q _A		CLEAR		CLEAR
19		RC OUTPUT		RC OUTPUT		DATA A		DATA A
20		V _{CC}		V _{CC}		V _{CC}		V _{CC}

FIGURE 1. Terminal connections - Continued.

MIL-M-38510/315D
w/AMENDMENT 1

Pin number	Device type 09		Device type 10		Device type 11		Device type 12	
	CASES							
	E, F	2	A,B C, and D	2	E, F	2	E, F	2
1	DATA B	N/C	INPUT BC	N/C	CLEAR	N/C	CLEAR	N/C
2	Q _B	DATA B	NC	INPUT BC	CLOCK	CLEAR	CLOCK	CLEAR
3	Q _A	Q _B	NC	N/C	INPUT A	CLOCK	INPUT A	CLOCK
4	ENABLE G	Q _A	NC	N/C	INPUT B	INPUT A	INPUT B	INPUT A
5	DOWN UP	ENABLE G	V _{CC}	N/C	INPUT C	INPUT B	INPUT C	INPUT B
6	Q _C	N/C	R _{O(1)}	N/C	INPUT D	N/C	INPUT D	N/C
7	Q _D	DOWN UP	R _{O(2)}	N/C	ENABLE P	INPUT C	ENABLE P	INPUT C
8	GND	Q _C	OUTPUT D	V _{CC}	GND	INPUT D	GND	INPUT D
9	DATA D	Q _D	OUTPUT C	R _O ⁽¹⁾	LOAD	ENABLE P	LOAD	ENABLE P
10	DATA C	GND	GND	R _O ⁽²⁾	ENABLE T	GND	ENABLE T	GND
11	LOAD	N/C	OUTPUT B	N/C	Q _D	N/C	Q _D	N/C
12	MAX/ MIN	DATA D	OUTPUT A	OUTPUT D	Q _C	LOAD	Q _C	LOAD
13	RIPPLE CLOCK	DATA C	NC	OUTPUT C	Q _B	T	Q _B	T
14	CLOCK	LOAD	INPUT A	GND	Q _A	Q _D	Q _A	Q _D
15	DATA A	MAX/ MIN		N/C	CARRY OUTPUT	Q _C	CARRY OUTPUT	Q _C
16	V _{CC}	N/C		OUTPUT B	V _{CC}	N/C	V _{CC}	N/C
17		R _C		N/C		Q _B		Q _B
18		CLOCK		OUTPUT A		Q _A		Q _A
19		DATA A		N/C		CARRY OUTPUT		CARRY OUTPUT
20		V _{CC}		INPUT A		V _{CC}		V _{CC}

FIGURE 1. Terminal connections - Continued.

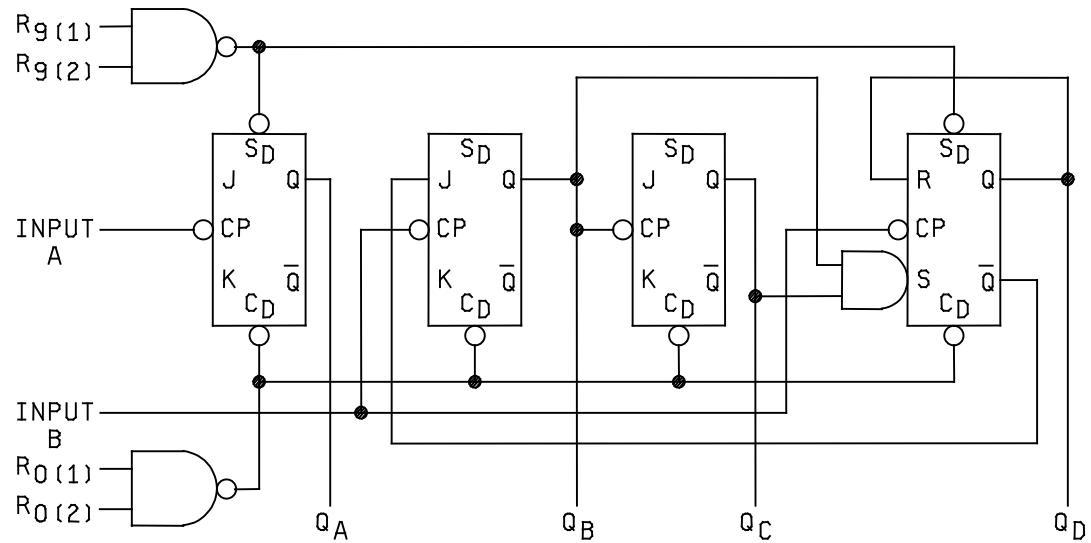
MIL-M-38510/315D
w/AMENDMENT 1

Pin number	Device type 13	
	CASES	
	E, F	2
1	DATA B	N/C
2	Q _B	DATA B
3	Q _A	Q _B
4	ENABLE G	Q _A
5	DOWN UP	ENABLE G
6	Q _C	N/C
7	Q _D	DOWN UP
8	GND	Q _C
9	DATA D	Q _D
10	DATA C	GND
11	LOAD	N/C
12	MAX/ MIN	DATA D
13	RIPPLE CLOCK	DATA C
14	CLOCK	LOAD
15	DATA A	MAX/ MIN
16	V _{CC}	N/C
17		R _C
18		CLOCK
19		DATA A
20		V _{CC}

FIGURE 1. Terminal connections - Continued



FIGURE 2. Logic diagrams



DEVICE TYPE 01
CIRCUITS E AND F

FIGURE 2. Logic diagrams – Continued.

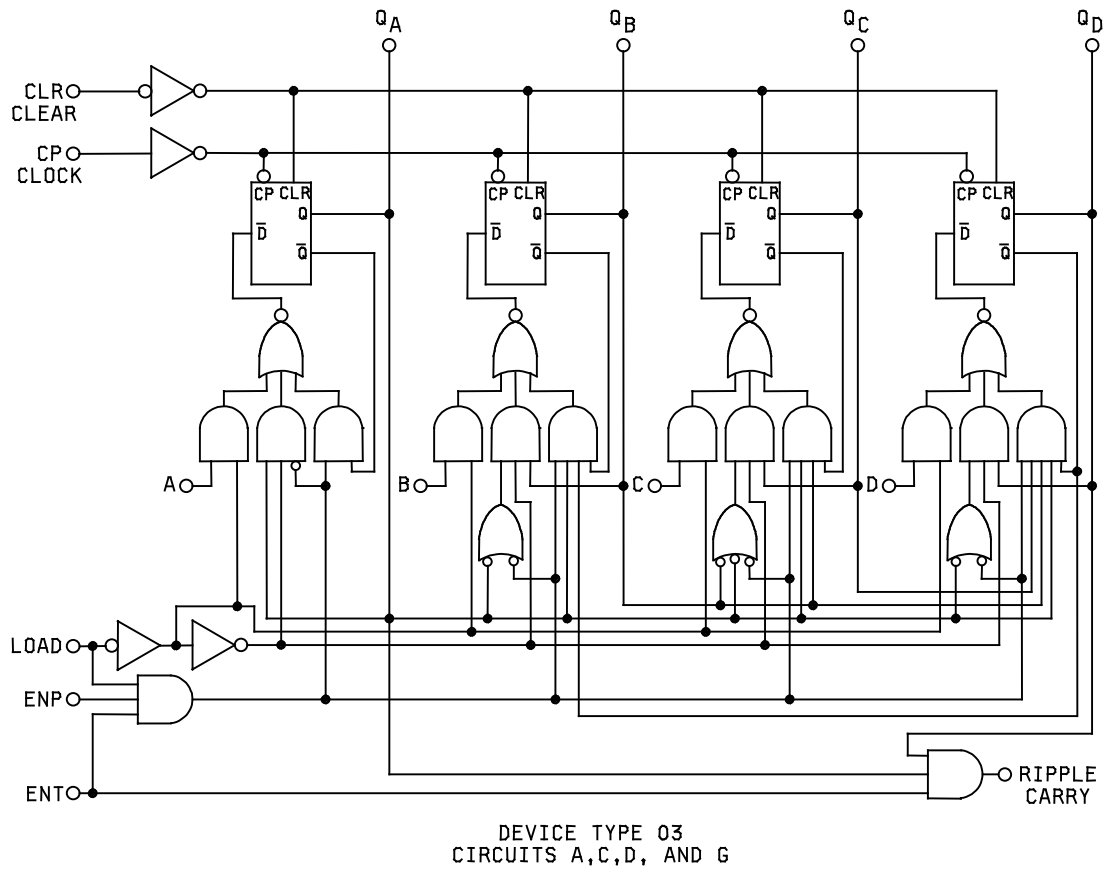
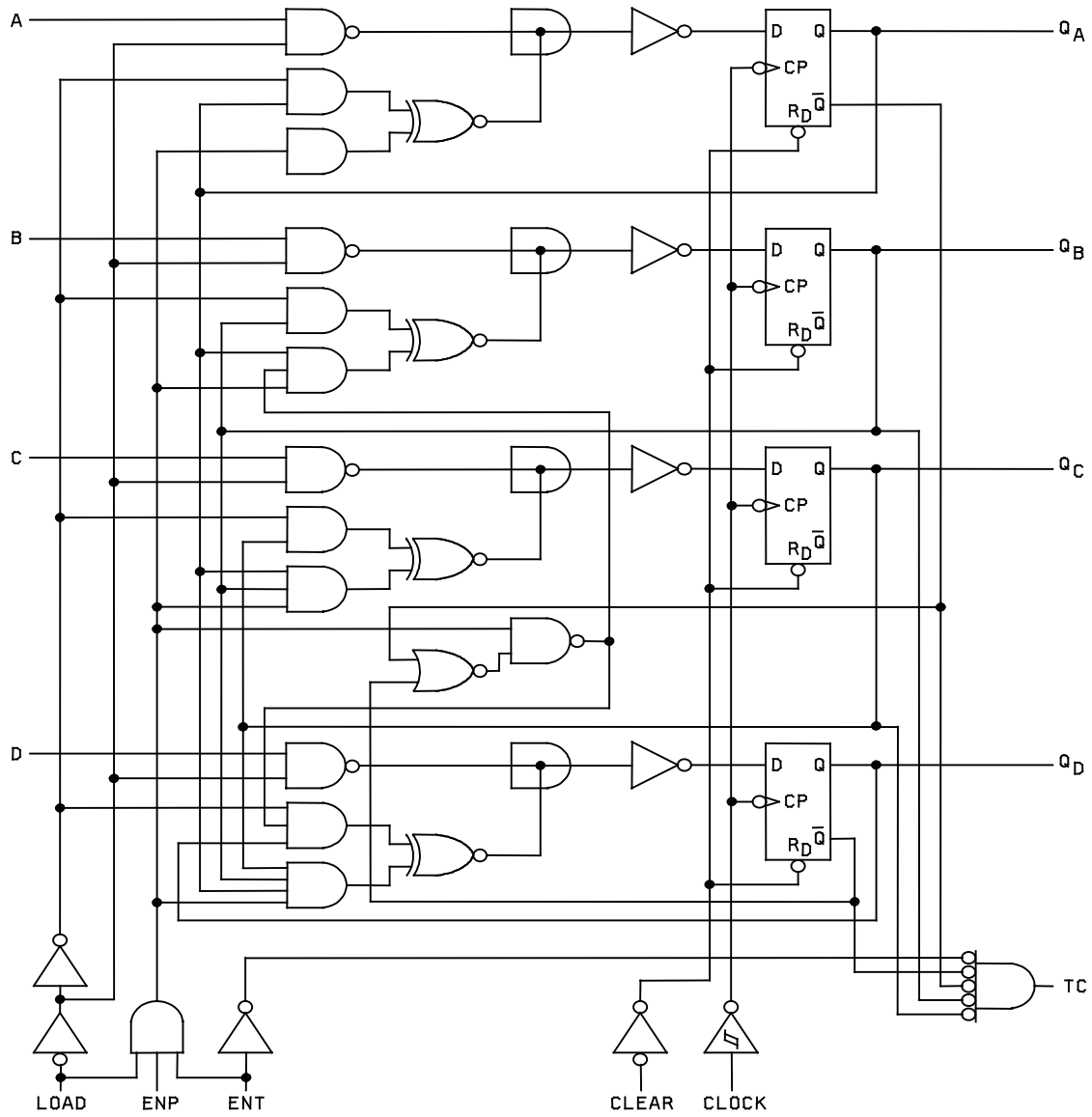


FIGURE 2. Logic diagrams – Continued.



DEVICE TYPE 03
CIRCUIT B

FIGURE 2. Logic diagrams – Continued.

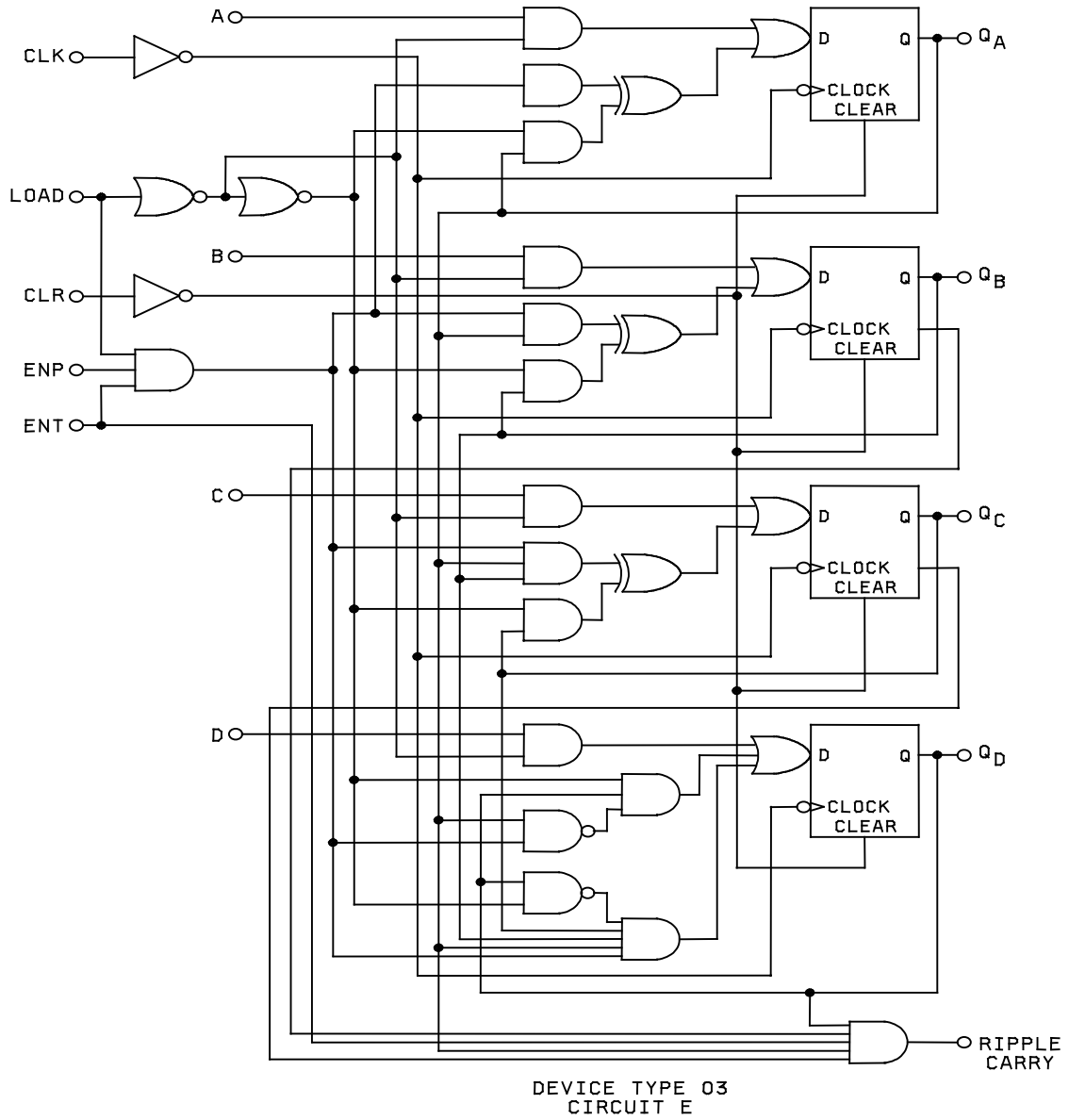


FIGURE 2. Logic diagrams – Continued.

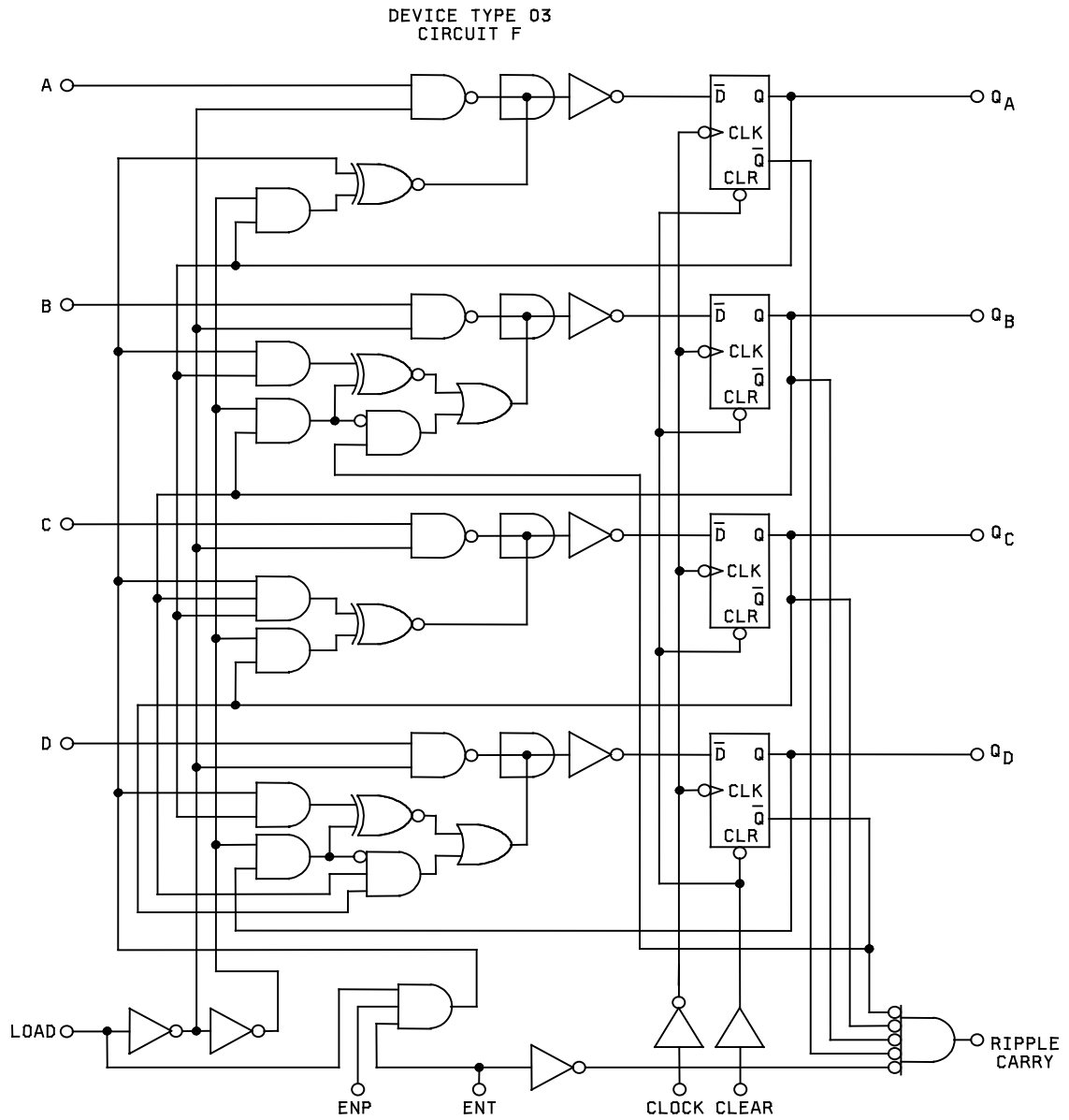


FIGURE 2. Logic diagrams – Continued.

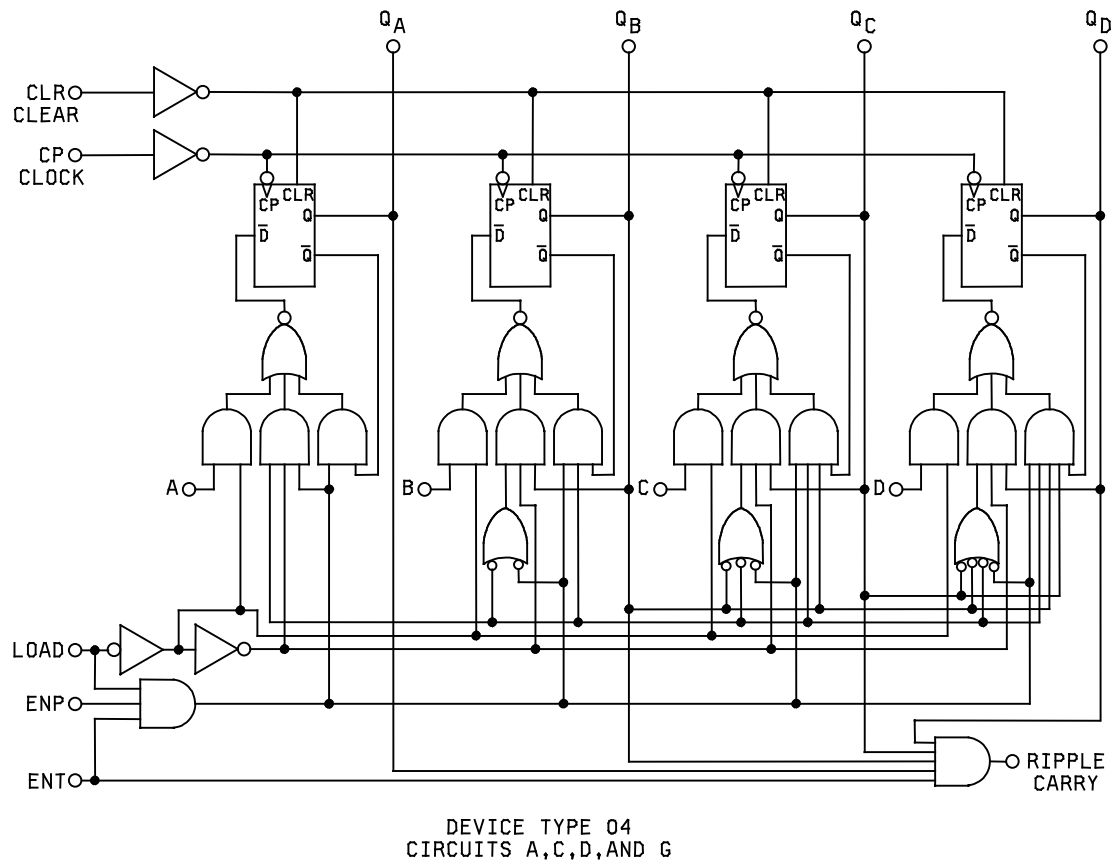


FIGURE 2. Logic diagrams – Continued.

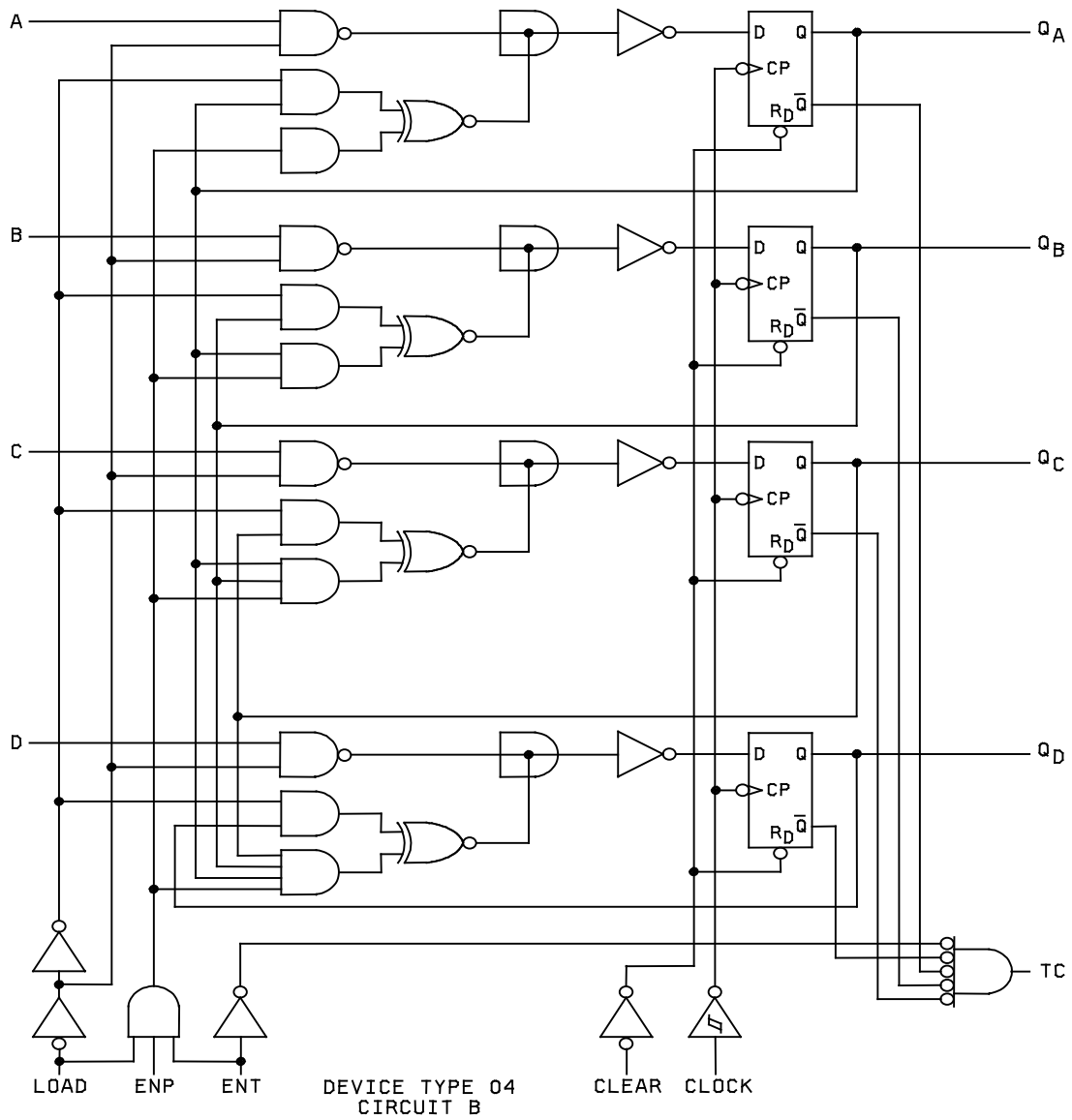


FIGURE 2. Logic diagrams – Continued.

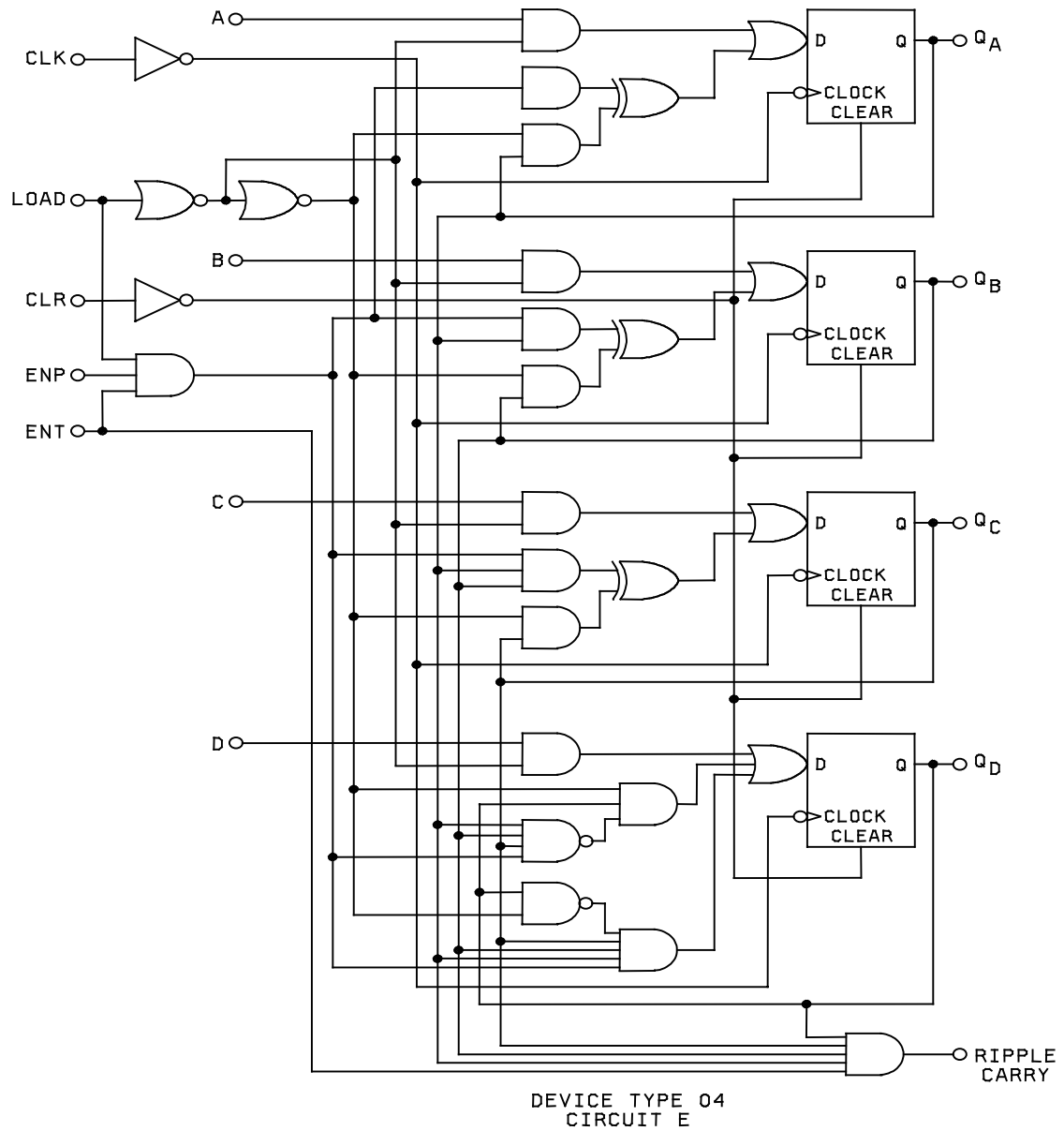


FIGURE 2. Logic diagrams – Continued.

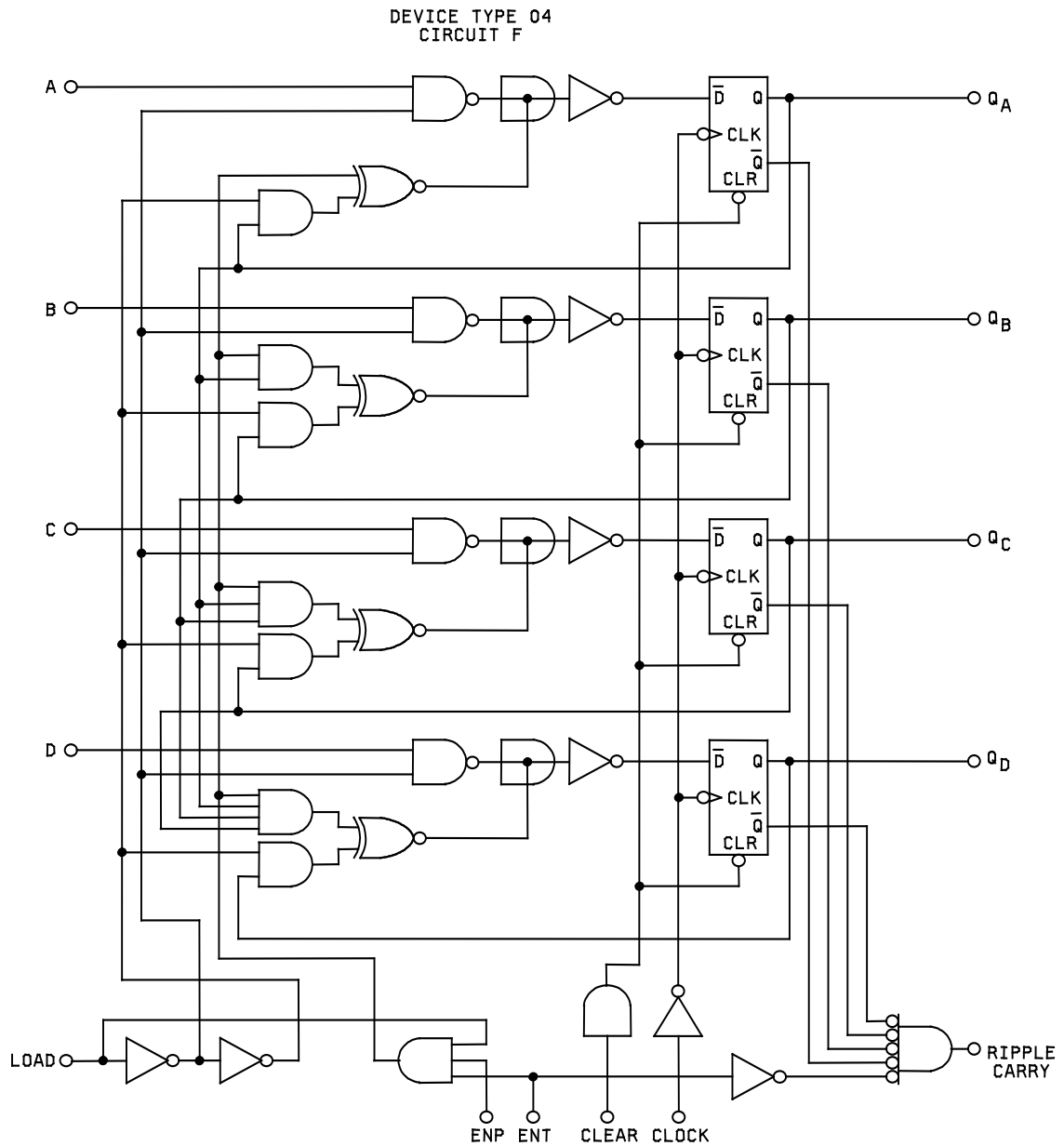


FIGURE 2. Logic diagrams – Continued.

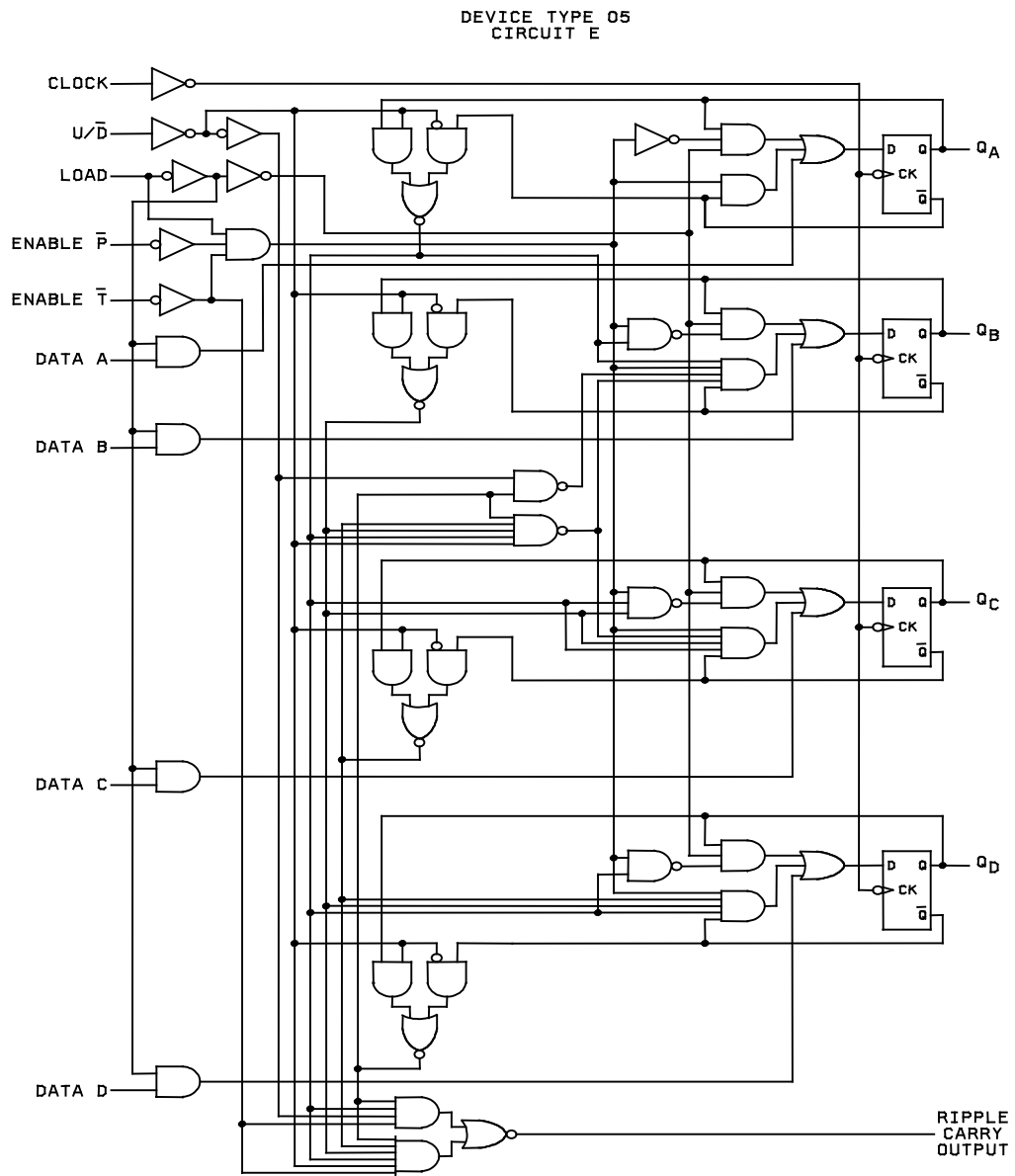


FIGURE 2. Logic diagrams – Continued.

MIL-M-38510/315D
w/AMENDMENT 1

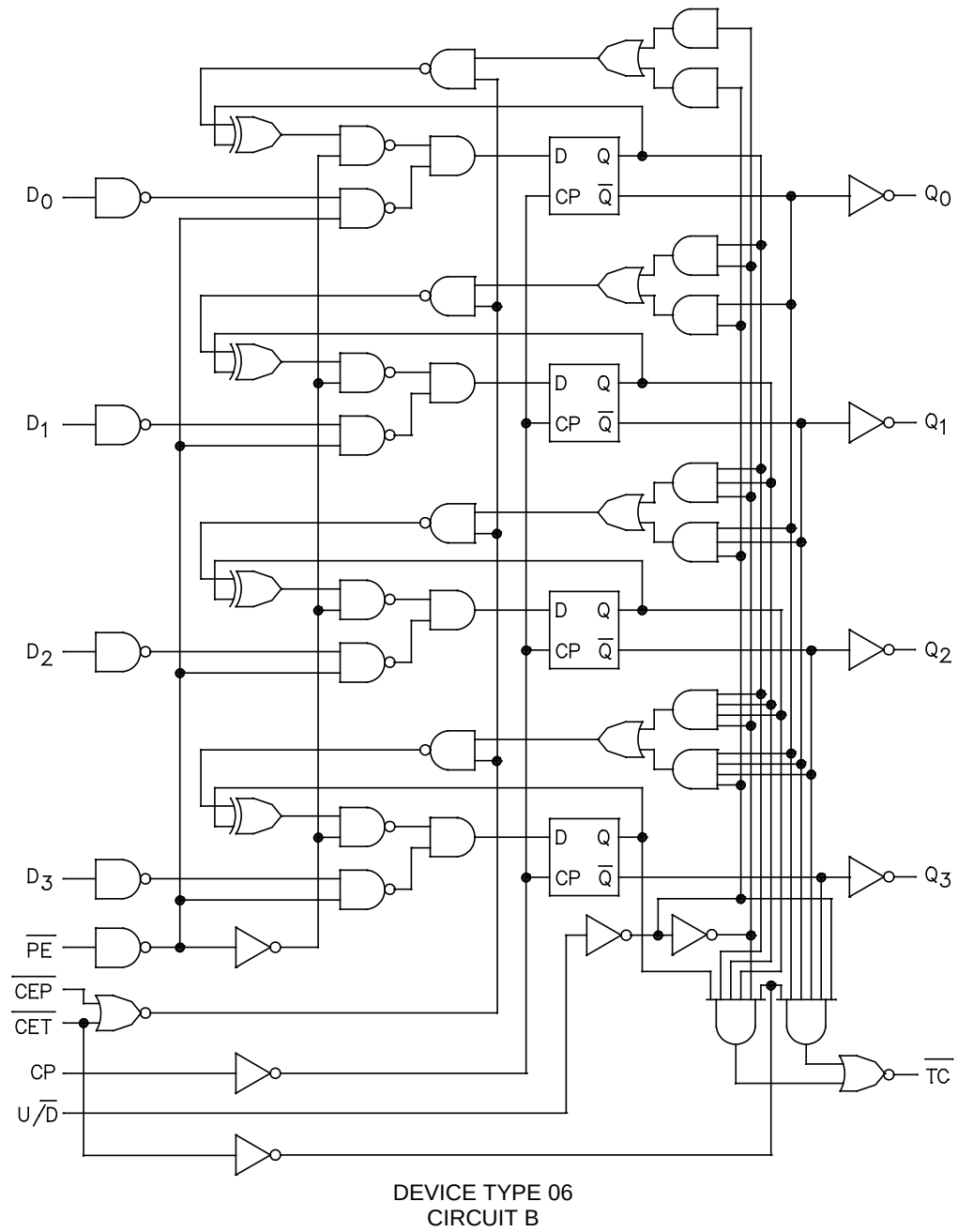
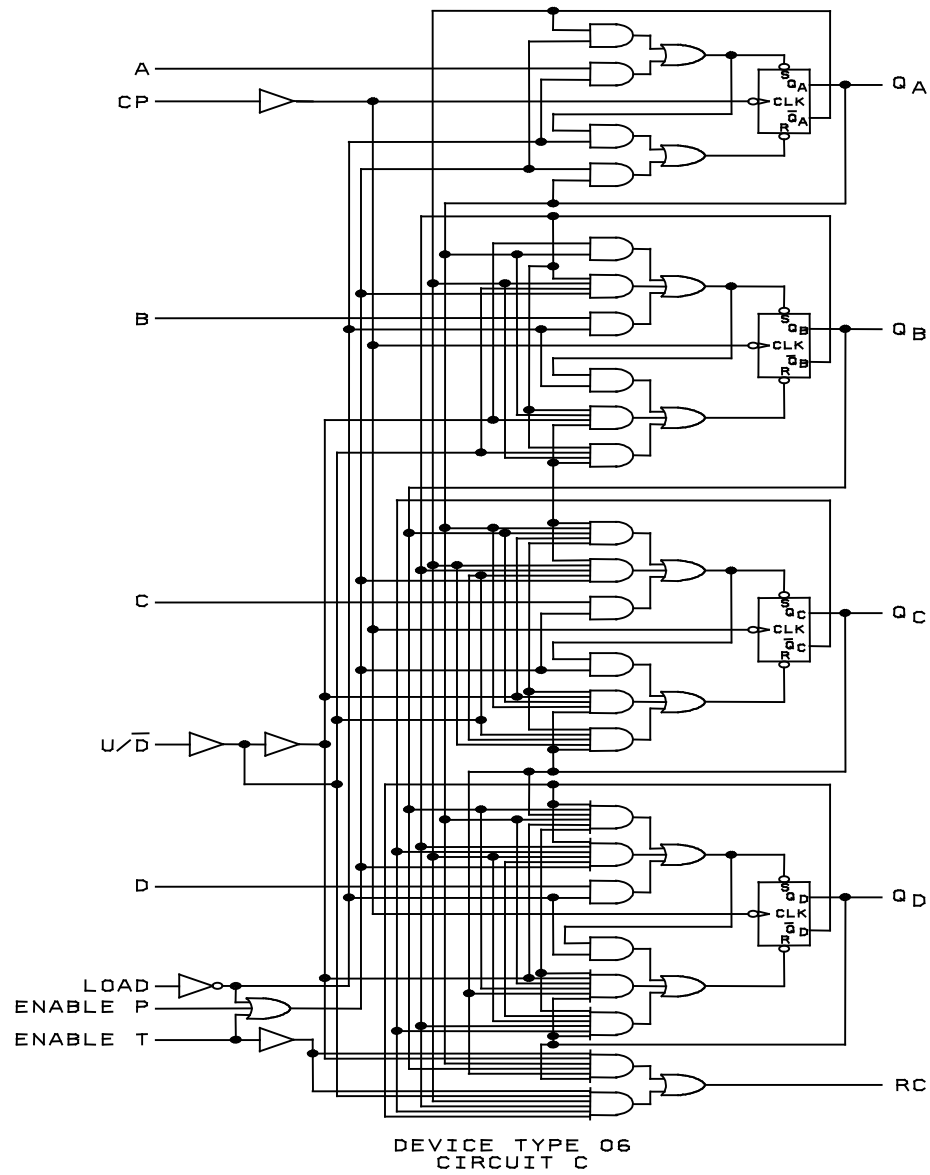


FIGURE 2. Logic diagrams – Continued.

MIL-M-38510/315D
w/AMENDMENT 1



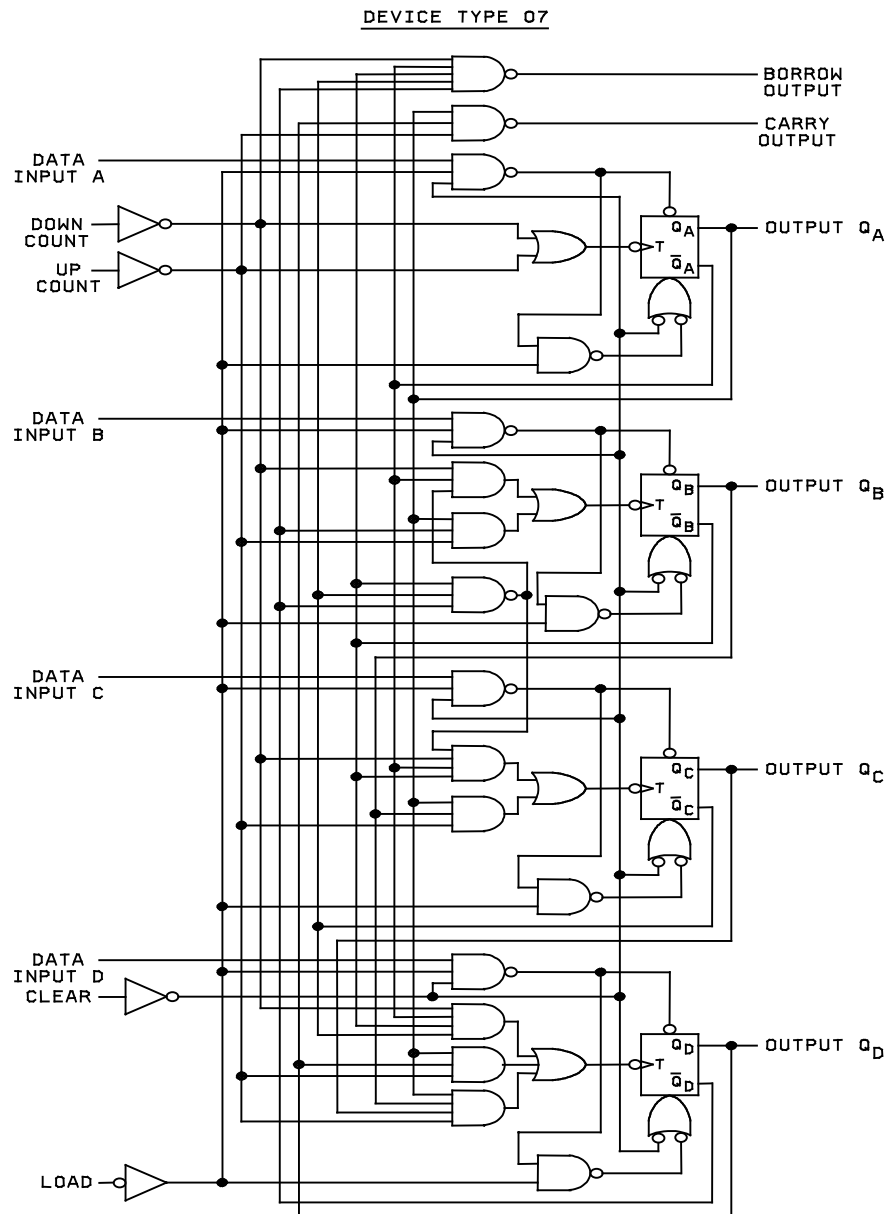


FIGURE 2. Logic diagrams – Continued.

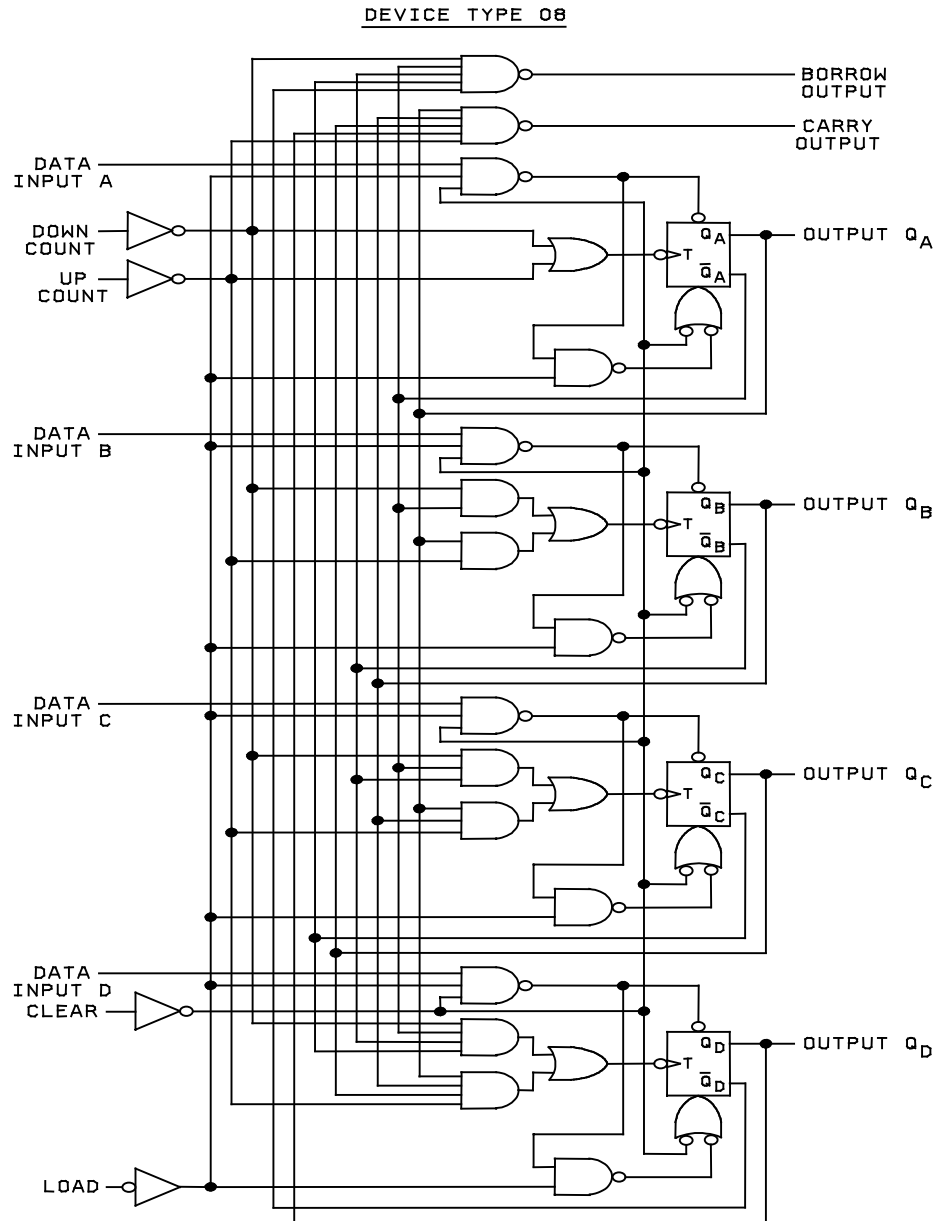


FIGURE 2. Logic diagrams – Continued.

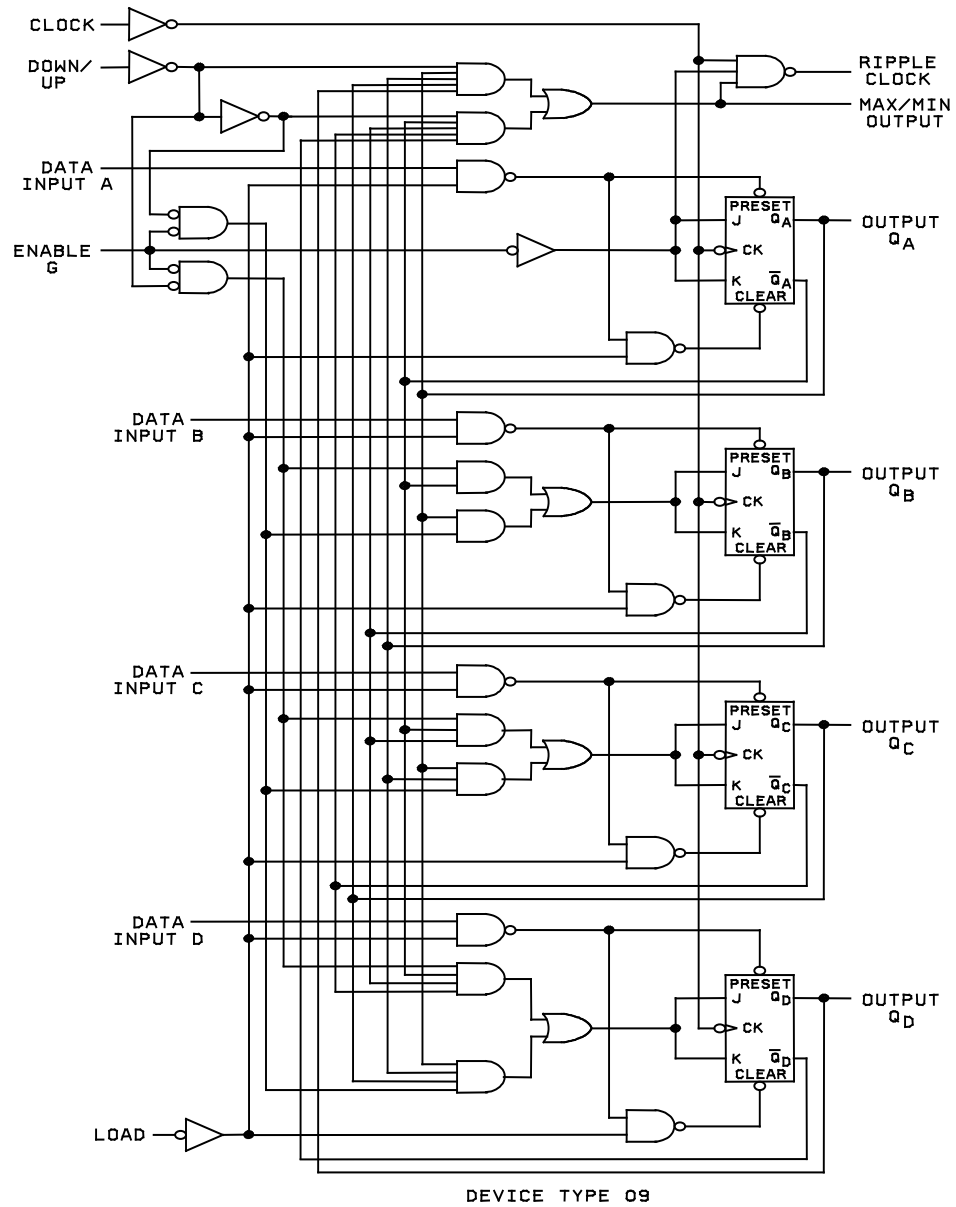


FIGURE 2. Logic diagrams – Continued.

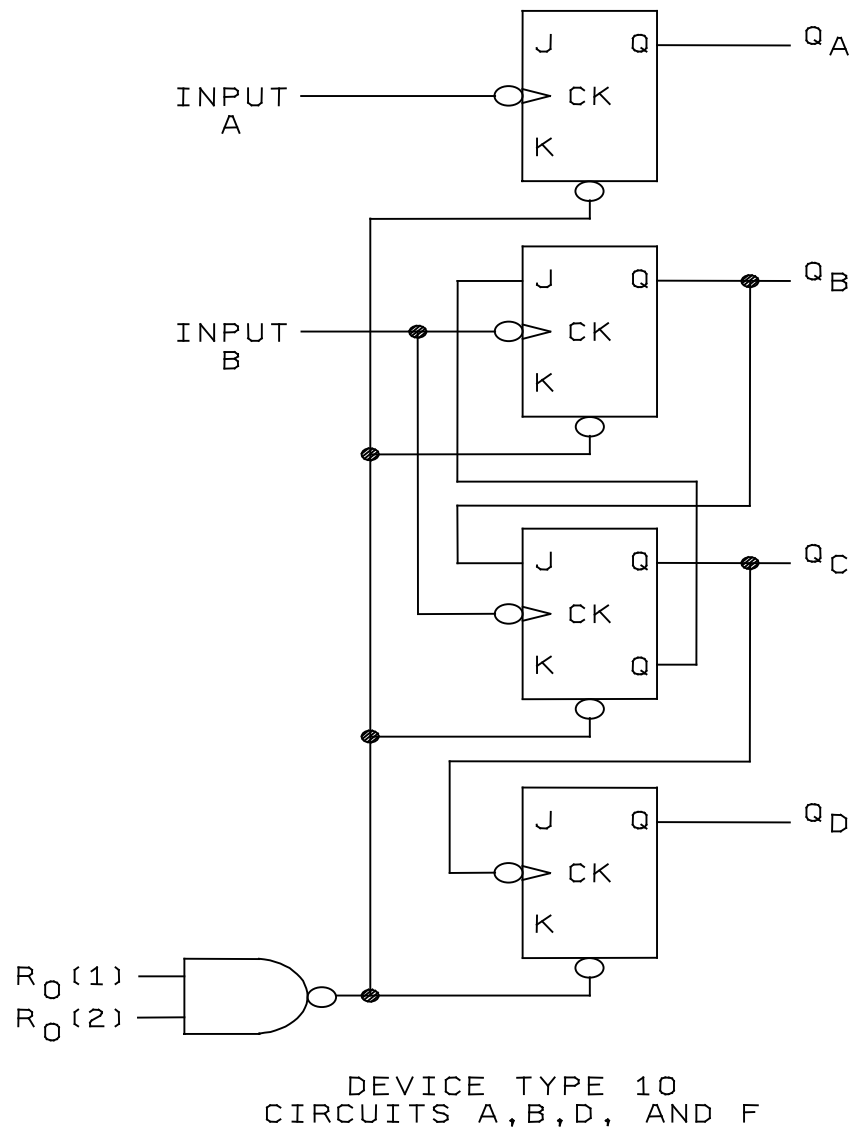
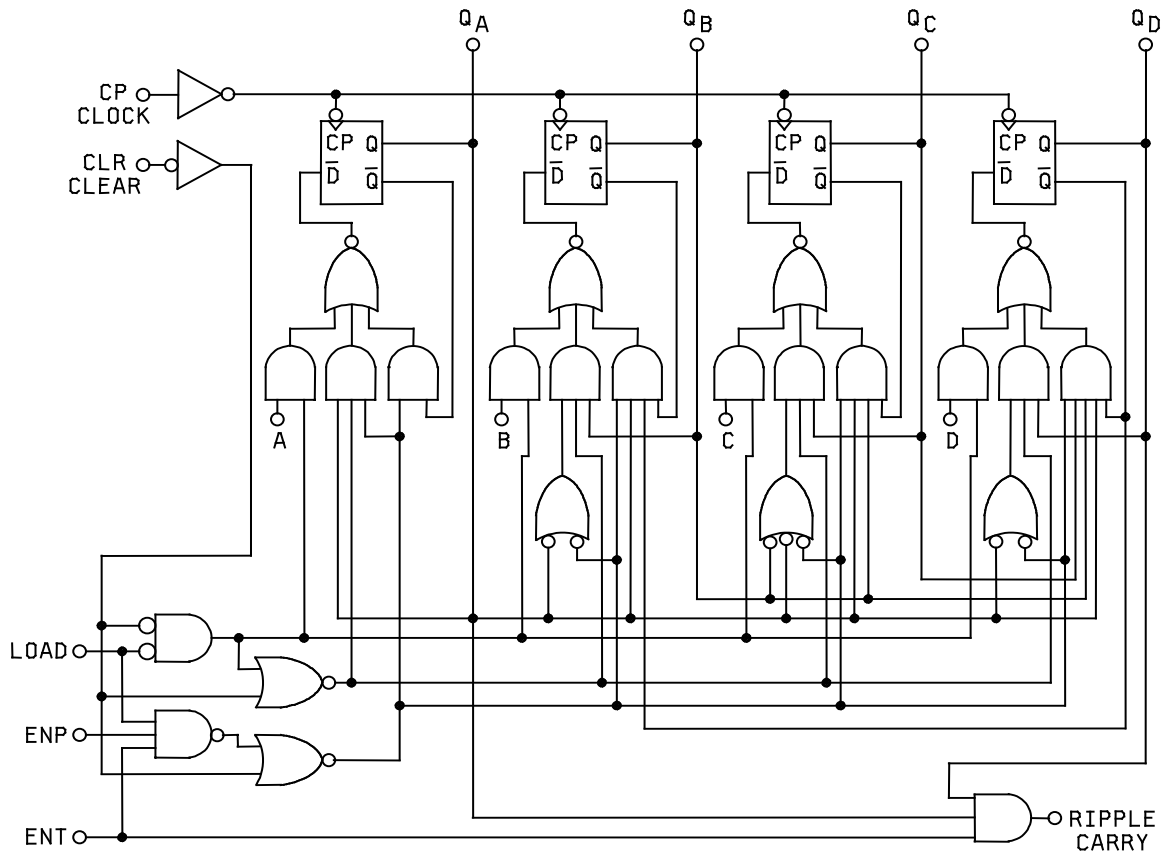


FIGURE 2. Logic diagrams – Continued.



DEVICE TYPE 11
CIRCUITS A,C,D, AND G

FIGURE 2. Logic diagrams – Continued.

MIL-M-38510/315D
w/AMENDMENT 1

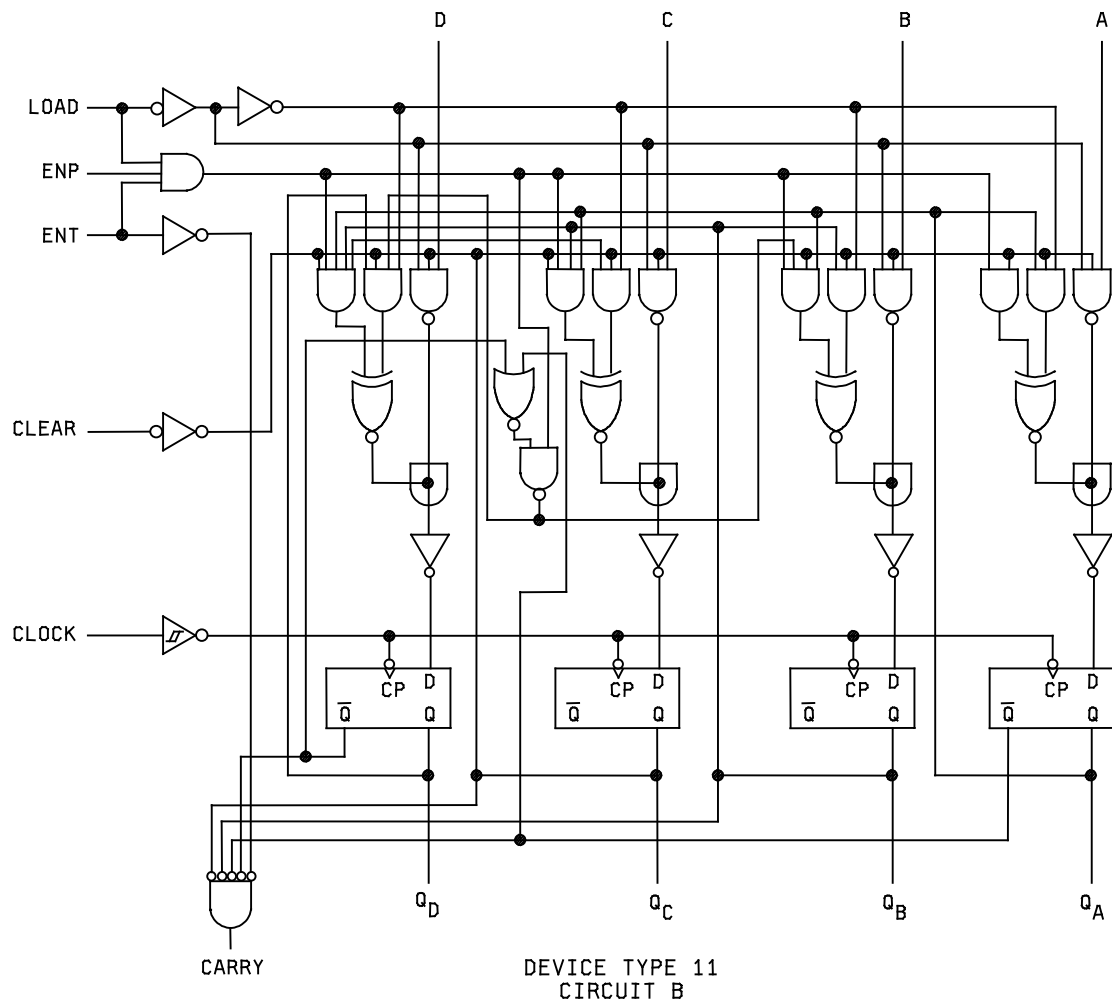


FIGURE 2. Logic diagrams – Continued.

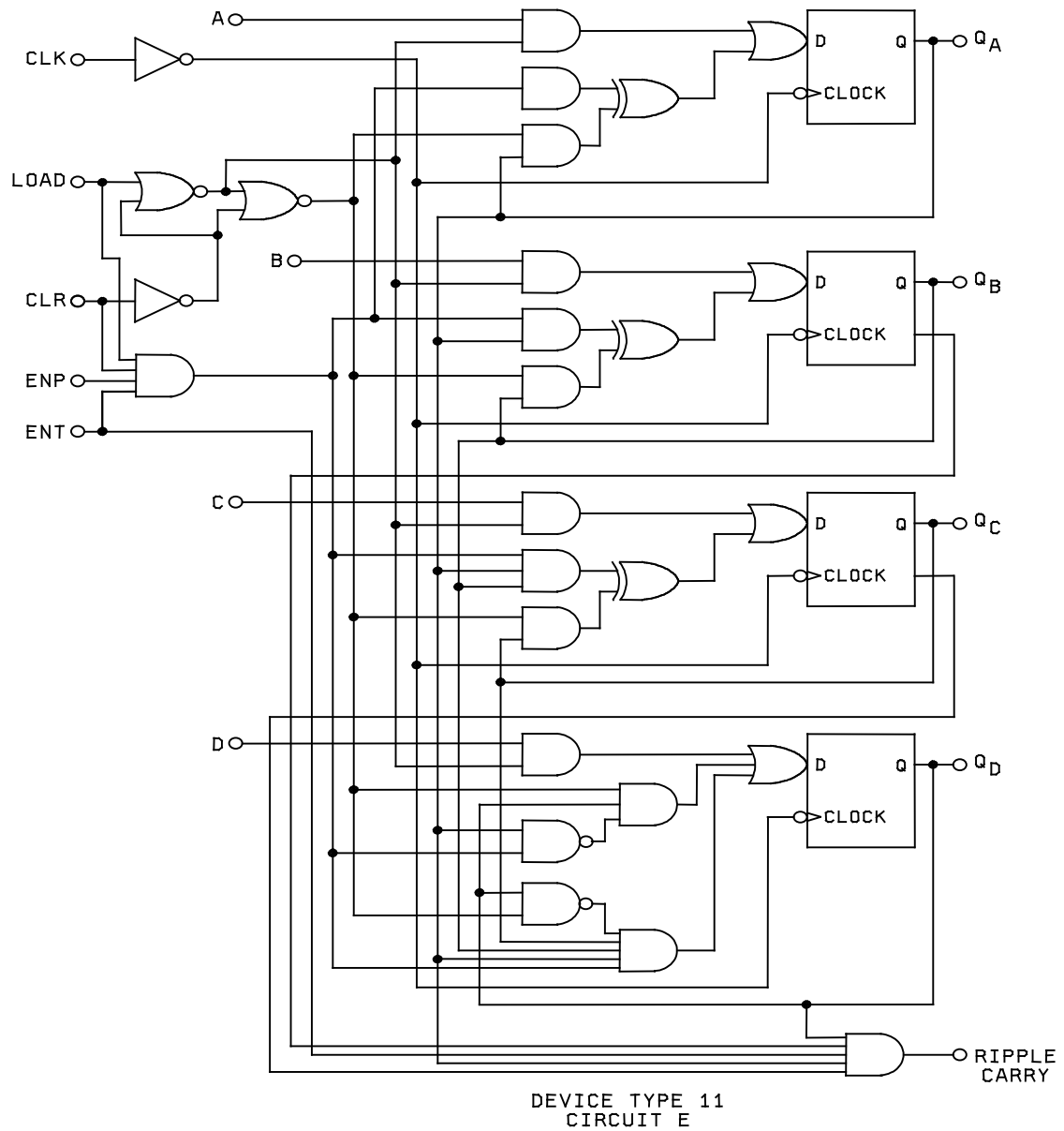


FIGURE 2. Logic diagrams – Continued.

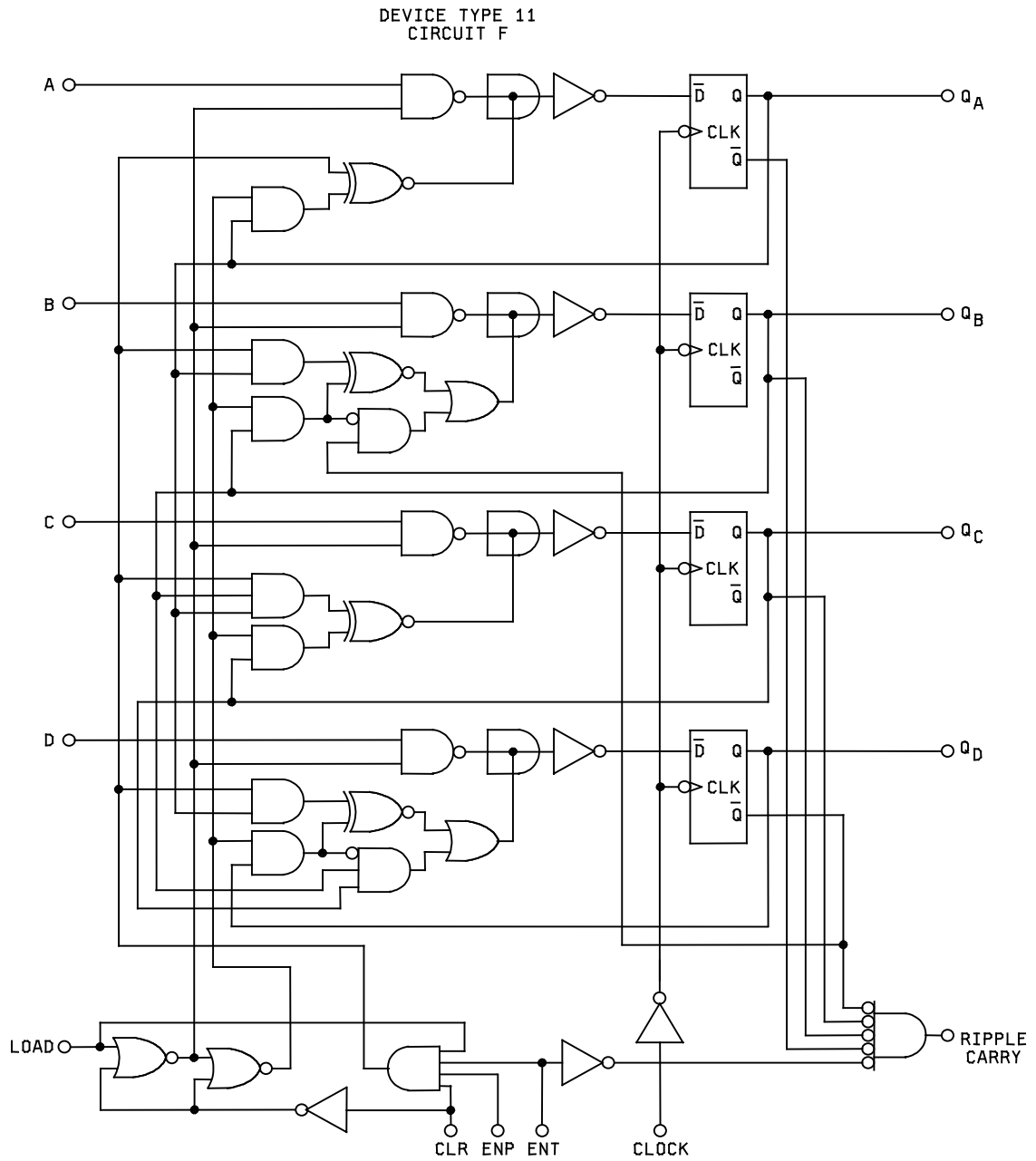
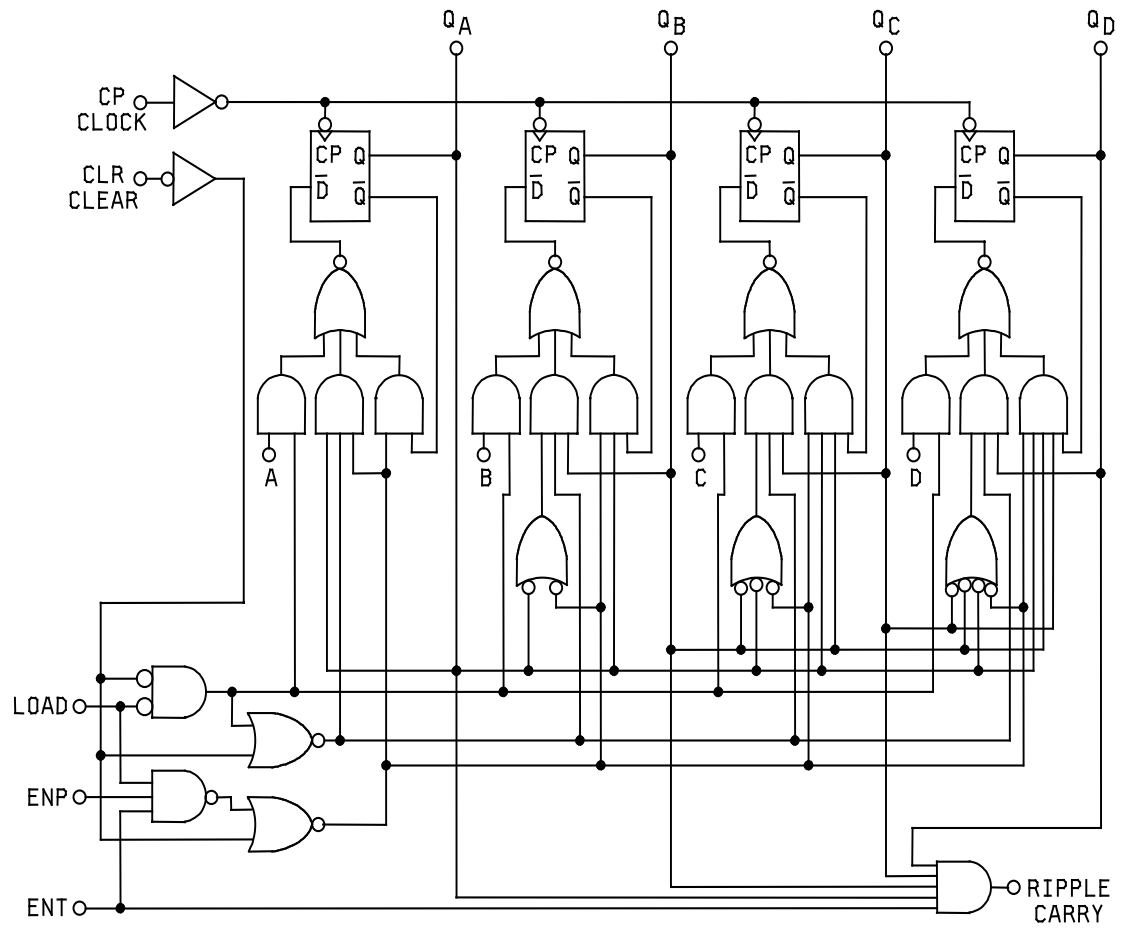


FIGURE 2. Logic diagrams – Continued.



DEVICE TYPE 12
CIRCUITS A,C,D, AND G

FIGURE 2. Logic diagrams – Continued.

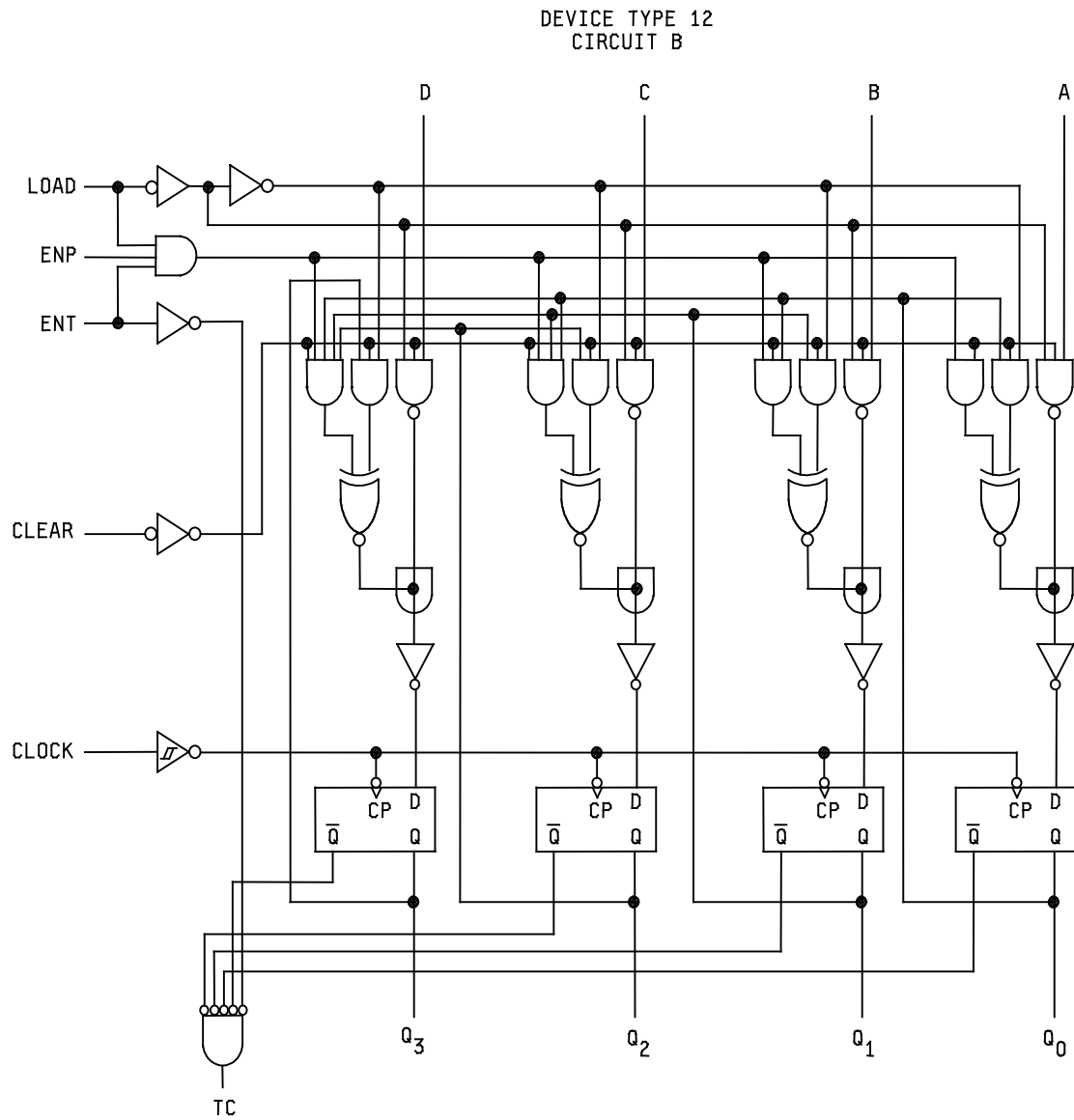


FIGURE 2. Logic diagrams – Continued.

MIL-M-38510/315D
w/AMENDMENT 1

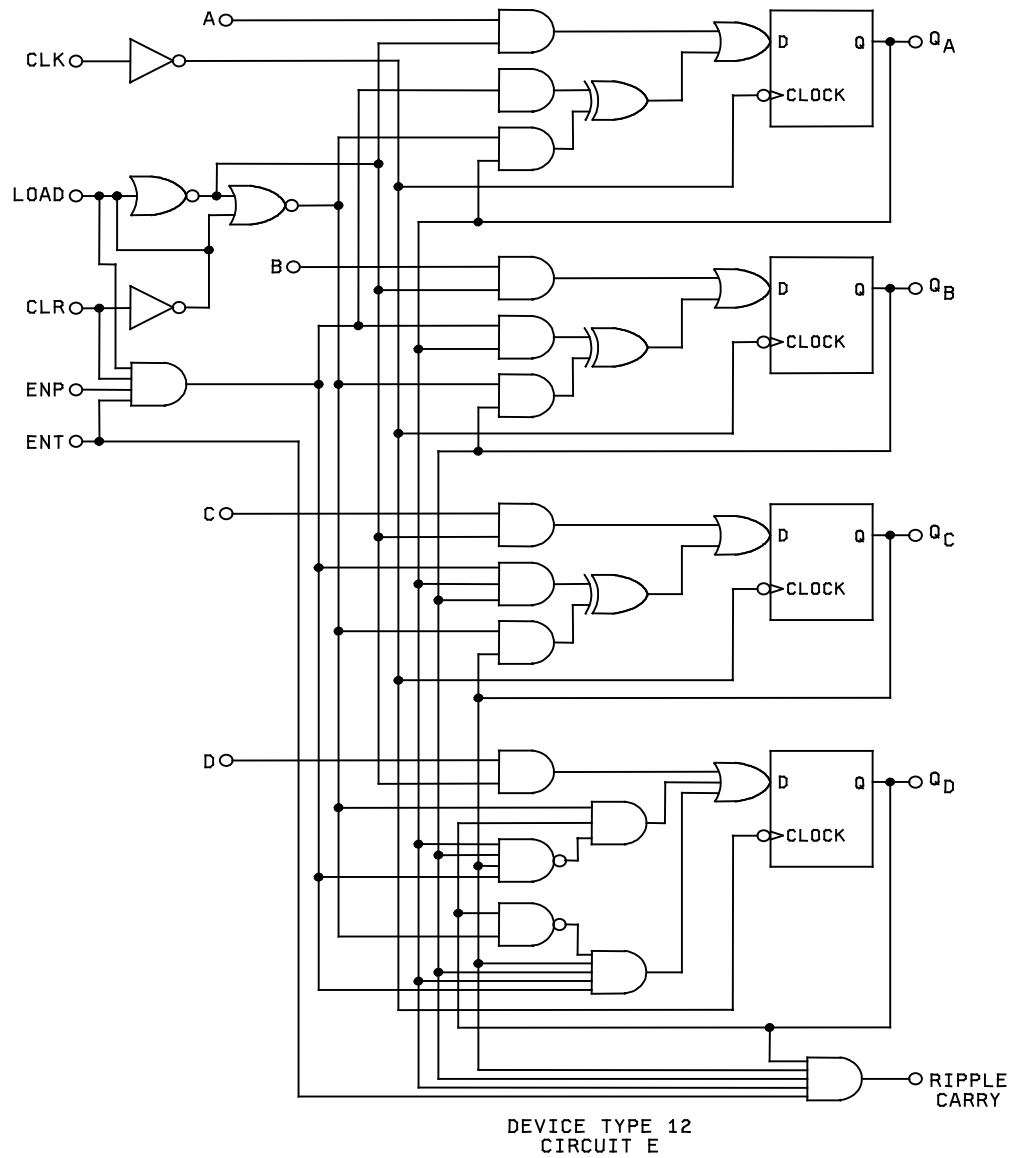


FIGURE 2. Logic diagrams – Continued.

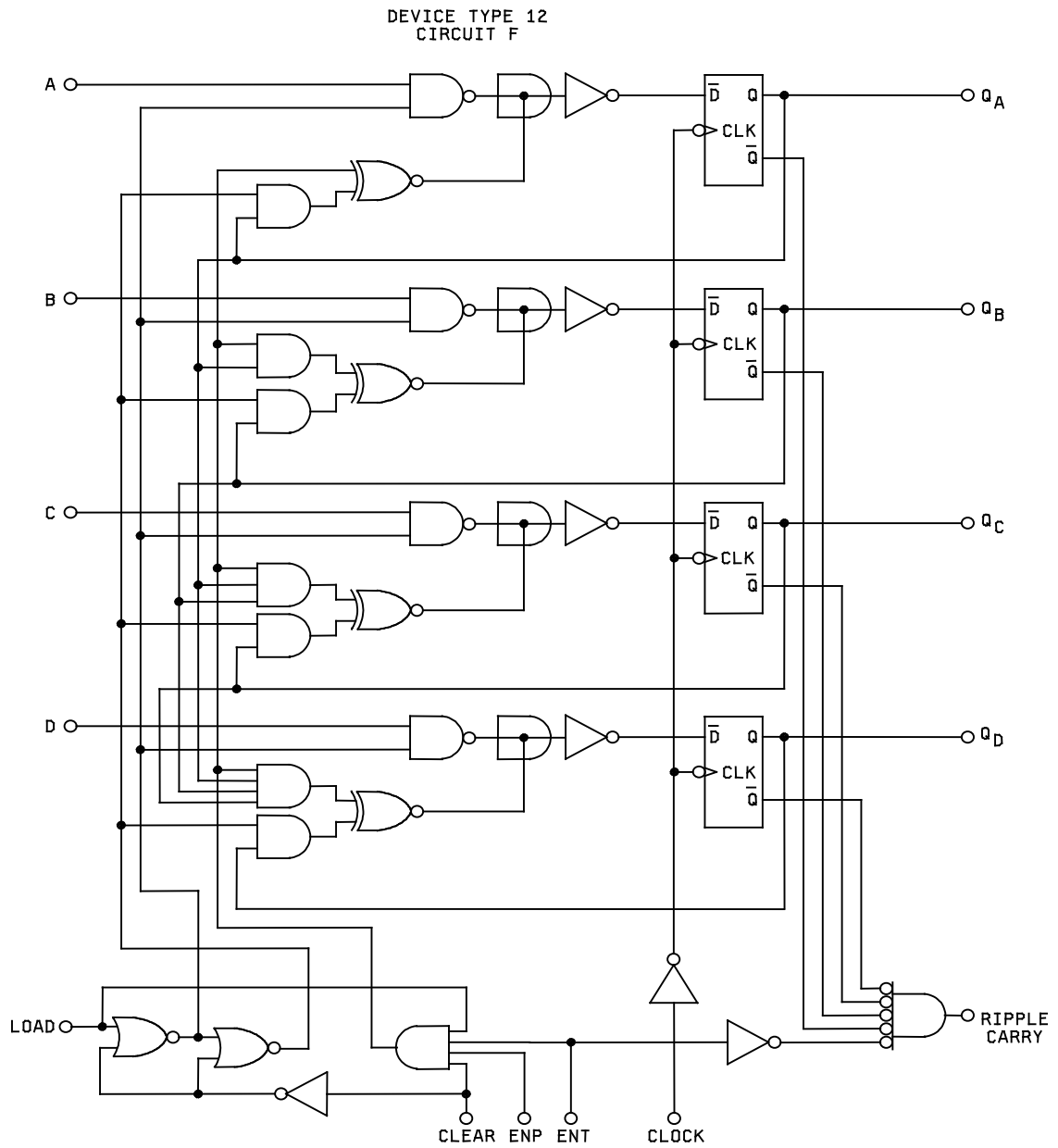


FIGURE 2. Logic diagrams – Continued.

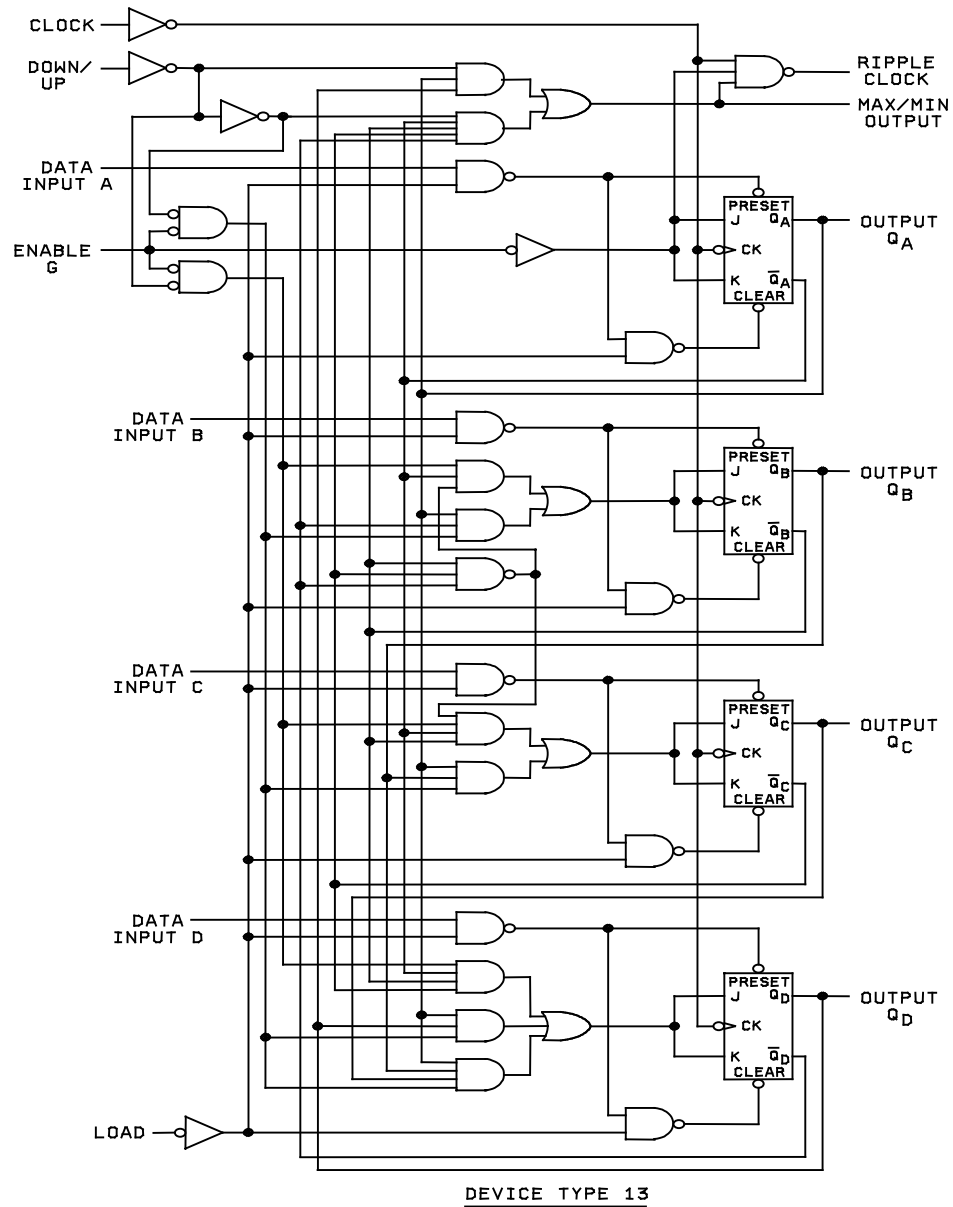


FIGURE 2. Logic diagrams – Continued.

BCD COUNT SEQUENCE
(See Note A)

COUNT	OUTPUT			
	Q _D	Q _C	Q _B	Q _A
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	L	H	L	H
6	L	H	H	L
7	L	H	H	H
8	H	L	L	L
9	H	L	L	H

BI-QUINARY (5-2)
(See Note B)

COUNT	OUTPUT			
	Q _A	Q _D	Q _C	Q _B
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	H	L	L	L
6	H	L	L	H
7	H	L	H	L
8	H	L	H	H
9	H	H	L	L

RESET/COUNT FUNCTION TABLE

RESET INPUTS				OUTPUT			
R ₀₍₁₎	R ₀₍₂₎	R ₉₍₁₎	R ₉₍₂₎	Q _D	Q _C	Q _B	Q _A
H	H	L	X	L	L	L	L
H	H	X	L	L	L	L	L
X	X	H	H	H	L	L	H
X	L	X	L	COUNT			
L	X	L	X	COUNT			
L	X	X	L	COUNT			
X	L	L	X	COUNT			

NOTES: A. Output Q_A is connected to input B for BCD count.
B. Output Q_D is connected to input A for bi-quinary count.

FIGURE 3. Truth tables.

DEVICE TYE 02

COUNT SEQUENCE
(See Note)

COUNT	OUTPUT			
	Q _D	Q _C	Q _B	Q _A
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	L	H	L	H
6	L	H	H	L
7	L	H	H	H
8	H	L	L	L
9	H	L	L	H
10	H	L	H	L
11	H	L	H	H
12	H	H	L	L
13	H	H	L	H
14	H	H	H	L
15	H	H	H	H

DEVICE TYPE 10

COUNT SEQUENCE
(See Note)

COUNT	OUTPUT			
	Q _D	Q _C	Q _B	Q _A
0	L	L	L	L
1	L	L	L	H
2	L	L	H	L
3	L	L	H	H
4	L	H	L	L
5	L	H	L	H
6	H	L	L	L
7	H	L	L	H
8	H	L	H	L
9	H	L	H	H
10	H	H	L	L
11	H	H	L	H

RESET/COUNT FUNCTION TABLE

RESET INPUTS		OUTPUT			
R ₀₍₁₎	R ₀₍₂₎	Q _D	Q _C	Q _B	Q _A
H	H	L	L	L	L
L	X	COUNT			
X	L	COUNT			

NOTE: Output Q_A is connected to input B.

RESET/COUNT FUNCTION TABLE

RESET INPUTS		OUTPUT			
R ₀₍₁₎	R ₀₍₂₎	Q _D	Q _C	Q _B	Q _A
H	H	L	L	L	L
L	X	COUNT			
X	L	COUNT			

NOTE: Output Q_A is connected to input B.

FIGURE 3. Truth tables.

SYNCHRONOUS TRUTH TABLE, DEVICE TYPES 3 AND 11

Input at time t_n									Outputs at time t_{n+1}				
Clock	Enable P	Enable T	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry output
CP	L	X	H	X	X	X	X	H	NC	NC	NC	NC	NC
CP	X	L	H	X	X	X	X	H	NC	NC	NC	NC	L
CP	H	H	H	X	X	X	X	H	Previous count plus 1 (note 1)				H if count = 9 L if count < 9
CP	X	H	L	X	X	X	X	H	A	B	C	D	H if count = 9 L if count < 9
CP	X	L	L	X	X	X	X	H	A	B	C	D	L
CP	X	X	X	X	X	X	X	L	L	L	L	L	L

ASYNCHRONOUS TRUTH TABLE, DEVICE TYPE 3

Inputs at time t_n									Outputs at time t_{n+1}				
Clock	Enable P	Enable T	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry output
X	X	X	X	X	X	X	X	L	L	L	L	L	L

NOTES:

1. See up count sequence table.
2. L = V_{IL} for inputs, V_{OL} for outputs.
3. H = V_{IH} for inputs, V_{OH} for outputs.
4. X = V_{IH} or V_{IL} .
5. CP = Clock pulse.
6. NC = No change.

UP COUNT SEQUENCE TABLE

Q_A (LSB)	Q_B	Q_C	Q_D (MSB)
L	L	L	L
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	L
L	L	L	H
H	L	L	H

FIGURE 3. Truth tables – Continued.

MIL-M-38510/315D
w/AMENDMENT 1

SYNCHRONOUS TRUTH TABLE, DEVICE TYPES 4 AND 12

Input at time t_n									Outputs at time t_{n+1}				
Clock	Enable P	Enable T	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry output
CP	L	X	H	X	X	X	X	H	NC	NC	NC	NC	NC
CP	X	L	H	X	X	X	X	H	NC	NC	NC	NC	L
CP	H	H	H	X	X	X	X	H	Previous count plus 1 (note 1)				H if count = 15 L if count < 15
CP	X	H	L	X	X	X	X	H	A	B	C	D	H if count = 15 L if count < 15
CP	X	L	L	X	X	X	X	H	A	B	C	D	L
CP	X	X	X	X	X	X	X	L	L	L	L	L	L

ASYNCHRONOUS TRUTH TABLE, DEVICE TYPE 4

Inputs at time t_n									Outputs at time t_{n+1}				
Clock	Enable P	Enable T	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry output
X	X	X	X	X	X	X	X	L	L	L	L	L	L

NOTES:

1. See up count sequence table.
2. L = V_{IL} for inputs, V_{OL} for outputs.
3. H = V_{IH} for inputs, V_{OH} for outputs.
4. X = V_{IH} or V_{IL} .
5. CP = Clock pulse.
6. NC = No change.

UP COUNT SEQUENCE TABLE

Q_A (LSB)	Q_B	Q_C	Q_D (MSB)
L	L	L	L
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	L
L	L	L	H
H	L	L	H
L	H	L	H
H	H	L	H
L	L	H	H
H	L	H	H
L	H	H	H
H	H	H	H

FIGURE 3. Truth tables – Continued.

Device type 05

UP COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)
L	L	L	L
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	L
L	L	L	H
H	L	L	H

Device type 06

UP COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)
L	L	L	L
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	L
L	L	L	H
H	L	L	H
L	H	L	H
H	H	L	H
L	L	H	H
H	L	H	H
L	H	H	H
H	H	H	H

Device types 05 and 06

MODE SELECT TABLE

L	EP	ET	$\overline{U/D}$	Action on Rising Clock Edge
L	X	X	X	Load ($D_n \rightarrow Q_n$)
H	L	L	H	Count Up (increment)
H	L	L	L	Count Down (decrement)
H	H	X	X	No Change (Hold)
H	X	H	X	No Change (Hold)

H = High voltage level
L = Low voltage
X = Don't care

FIGURE 3. Truth tables – Continued.

DEVICE TYPE 7 TRUTH TABLE

Inputs at time t_n								Outputs at time t_{n+1}					
Count Up	Count Down	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry	Borrow
H	H	H	X	X	X	X	L	NC	NC	NC	NC	H	H
H	H	H	X	X	X	X	H	L	L	L	L	H	H
H	H	L	X	X	X	X	L	A	B	C	D	H	H
P	H	H	X	X	X	X	L	Previous count plus 1 (note 1)				H	H
H	P	H	X	X	X	X	L	Previous count minus 1 (note 2)				H	H
N	H	H	X	X	X	X	L	NC	NC	NC	NC	N if count = 9 H if count $\neq$ 9	H
H	N	H	X	X	X	X	L	NC	NC	NC	NC	H	N if count = 0 H if count $\neq$ 0

NOTES:

1. See up count sequence table.
2. See down count sequence table.
3. L = V_{IL} for inputs, V_{OL} for outputs.
4. H = V_{IH} for inputs, V_{OH} for outputs.
5. X = V_{IH} or V_{IL} .
6. NC = No change.
7. NA = Not applicable.
8. P = Positive going pulse.
9. N = Negative going pulse.

FIGURE 3. Truth tables – Continued.

DEVICE TYPE 07

UP COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)	Carry
L	L	L	L	H
H	L	L	L	H
L	H	L	L	H
H	H	L	L	H
L	L	H	L	H
H	L	H	L	H
L	H	H	L	H
H	H	H	L	H
L	L	L	H	H
H	L	L	H	L

DOWN COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)	Borrow
H	L	L	H	H
L	L	L	H	H
H	H	H	L	H
L	H	H	L	H
H	L	H	L	H
L	L	H	L	H
H	H	L	L	H
L	H	L	L	H
H	L	L	L	H
L	L	L	L	L

DEVICE TYPE 8 TRUTH TABLE

Input at time t _n								Outputs at time t _{n+1}					
Count up	Count down	Load	A	B	C	D	Clear	Q _A	Q _B	Q _C	Q _D	Carry	Borrow
H	H	H	X	X	X	X	L	NC	NC	NC	NC	H	H
H	H	H	X	X	X	X	H	L	L	L	L	H	H
H	H	L	X	X	X	X	L	A	B	C	D	H	H
P	H	H	X	X	X	X	L	Previous count plus 1 (note)				H	H
H	P	H	X	X	X	X	L	Previous count minus 1 (note 2)				H	H
N	H	H	X	X	X	X	L	NC	NC	NC	NC	N if count = 15 H if count ≠ 15	H
H	N	H	X	X	X	X	L	NC	NC	NC	NC	H	N if count = 0 H if count ≠ 0

NOTES:

1. See up count sequence table.
2. See down count sequence table.
3. L = V_{IL} for inputs, V_{OL} for outputs.
4. H = V_{IH} for inputs, V_{OH} for outputs.
5. X = V_{IH} or V_{IL}.
6. NC = No change.
7. NA = Not applicable.
8. P = Positive going pulse.
9. N = Negative going pulse.

FIGURE 3. Truth tables – Continued.

DEVICE TYPE 08

UP COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)	Carry
L	L	L	L	H
H	L	L	L	H
L	H	L	L	H
H	H	L	L	H
L	L	H	L	H
H	L	H	L	H
L	H	H	L	H
H	H	H	L	H
L	L	L	H	H
H	L	L	H	H
L	H	L	H	H
H	H	L	H	H
L	L	H	H	H
H	L	H	H	H
L	H	H	H	H
H	H	H	H	L

DOWN COUNT SEQUENCE TABLE

Q _A (LSB)	Q _B	Q _C	Q _D (MSB)	Borrow
H	H	H	H	H
L	H	H	H	H
H	L	H	H	H
L	L	H	H	H
H	H	L	H	H
L	H	L	H	H
H	L	L	H	H
L	L	L	H	H
H	H	H	L	H
L	H	H	L	H
H	L	H	L	H
L	L	H	L	H
H	H	L	L	H
L	H	L	L	H
H	L	L	L	H
L	L	L	L	L

DEVICE TYPES 09 AND 13

Mode select table

Inputs				Mode
Load	Enable G	U/D	CLK	
H	L	L		Count up
H	L	H		Count down
L	X	X	X	Preset (Asyn)
H	H	X	X	No change (Hold)

Ripple carry truth table

Inputs		Outputs	
Enable G	CLK	Max/Min	RC output
L		H	
H	X	X	H
X	X	L	H

L = Low voltage level
H = High voltage level
X = Don't care
 = Low-to-high clock transition
 = Negative going clock pulse

NOTE: The up count and down count sequence for device type 09 is identical as that for device type 08.

The up count and down count sequence for device type 13 is identical as that for device type 07.

FIGURE 3. Truth tables – Continued.

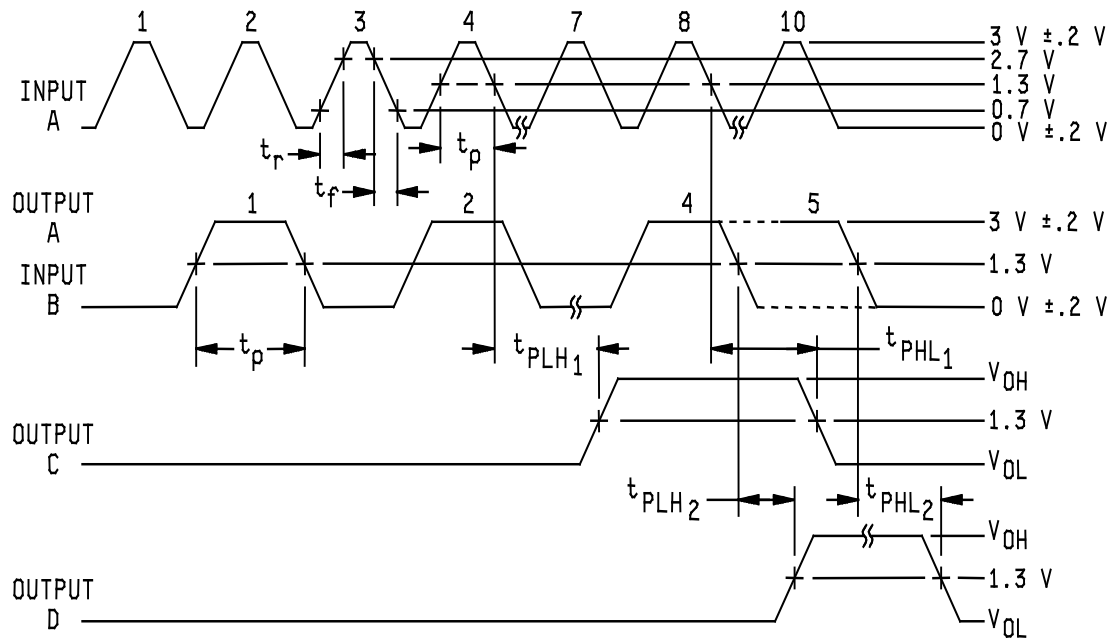
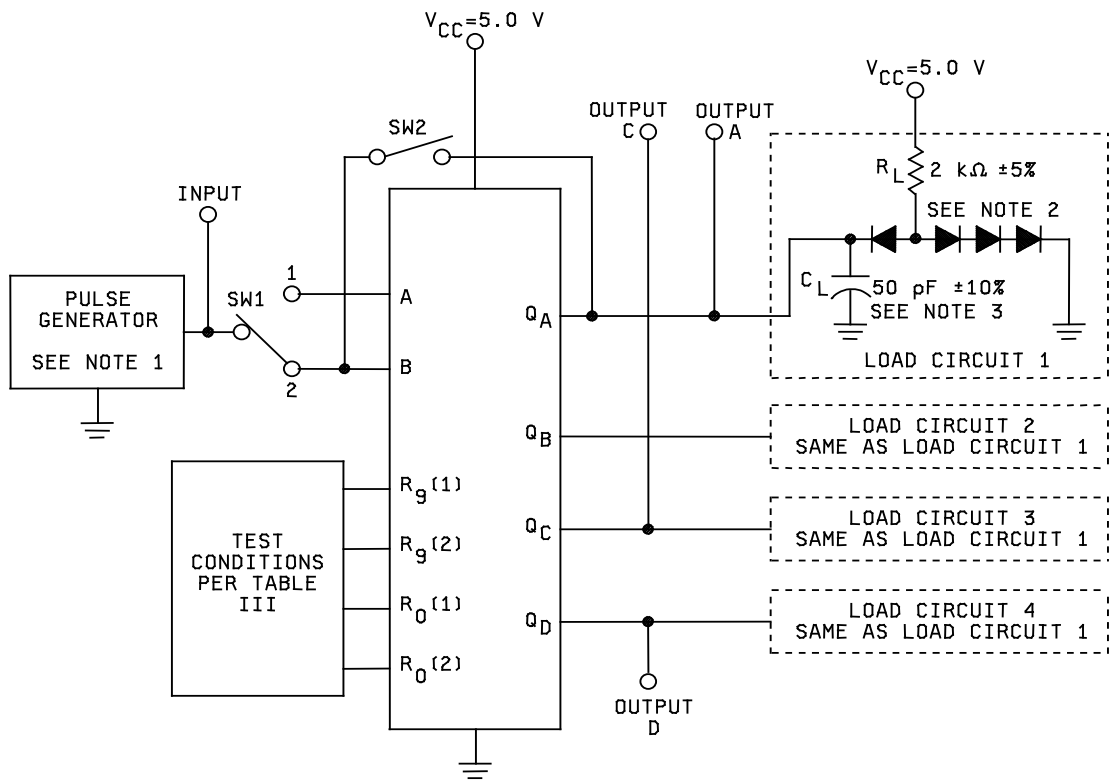


FIGURE 4. Switching time test circuit and waveforms for device type 01.



TEST	SWITCH POSITION	
	SW1	SW2
F MAX	1	CLOSED
A TO Q_C	1	CLOSED
B TO Q_D	2	OPEN

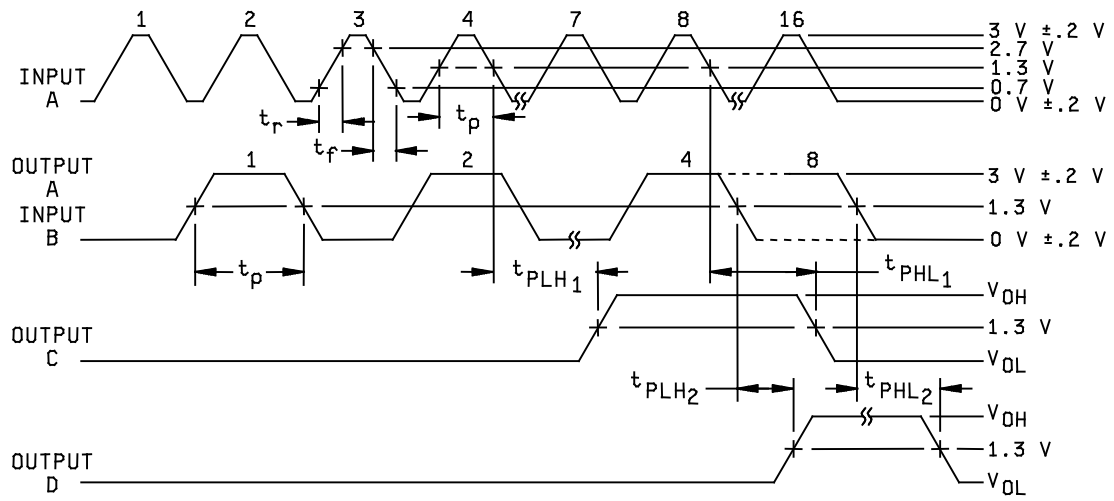
TEST CIRCUIT

NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.

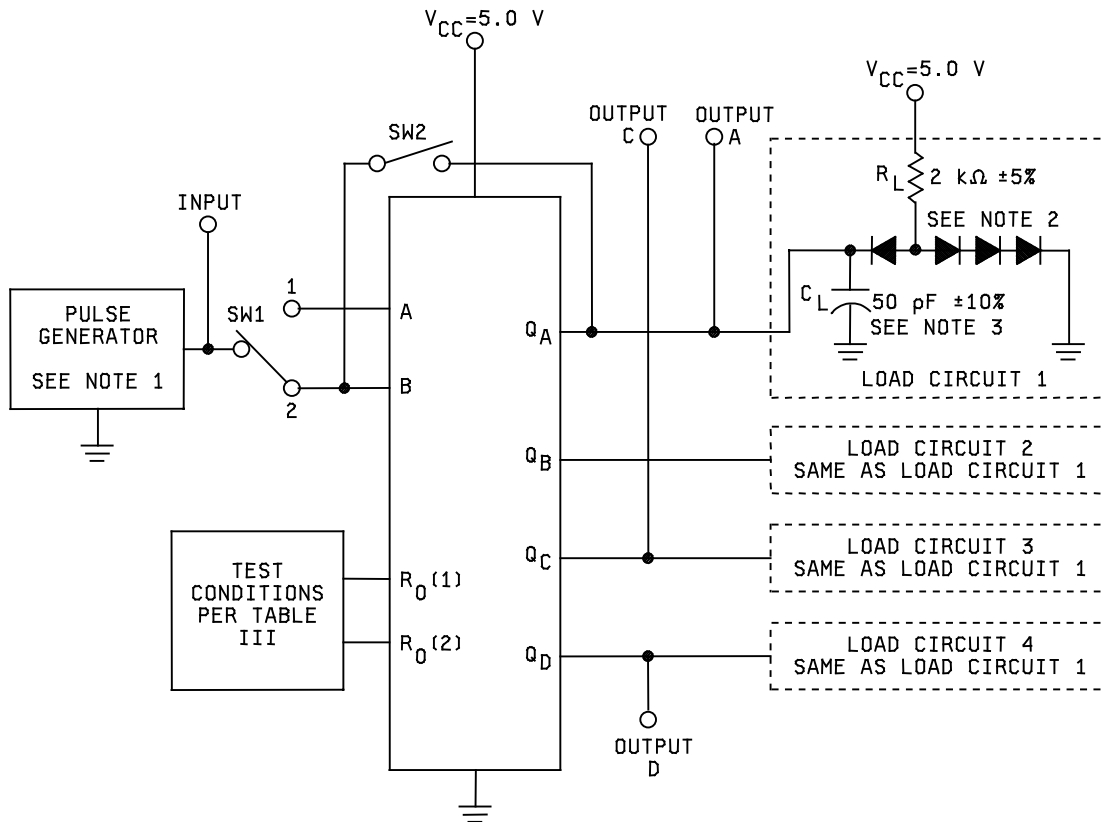
FIGURE 4. Switching time test circuit and waveforms for device type 01 – Continued.

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w/AMENDMENT 1



VOLTAGE WAVEFORMS

FIGURE 5. Switching time test circuit and waveforms for device type 02.



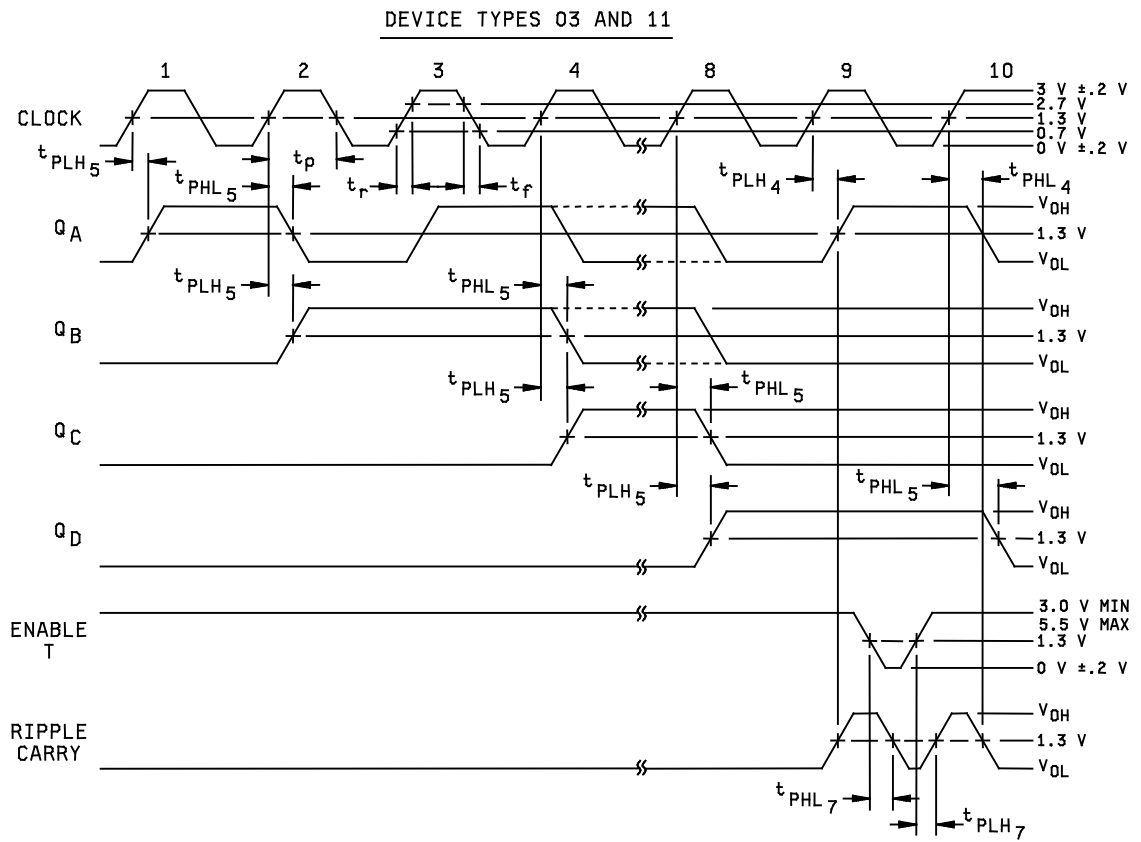
TEST	SWITCH POSITION	
	SW1	SW2
F MAX	1	CLOSED
A TO Q _C	1	CLOSED
B TO Q _D	2	OPEN

TEST CIRCUIT

NOTES:

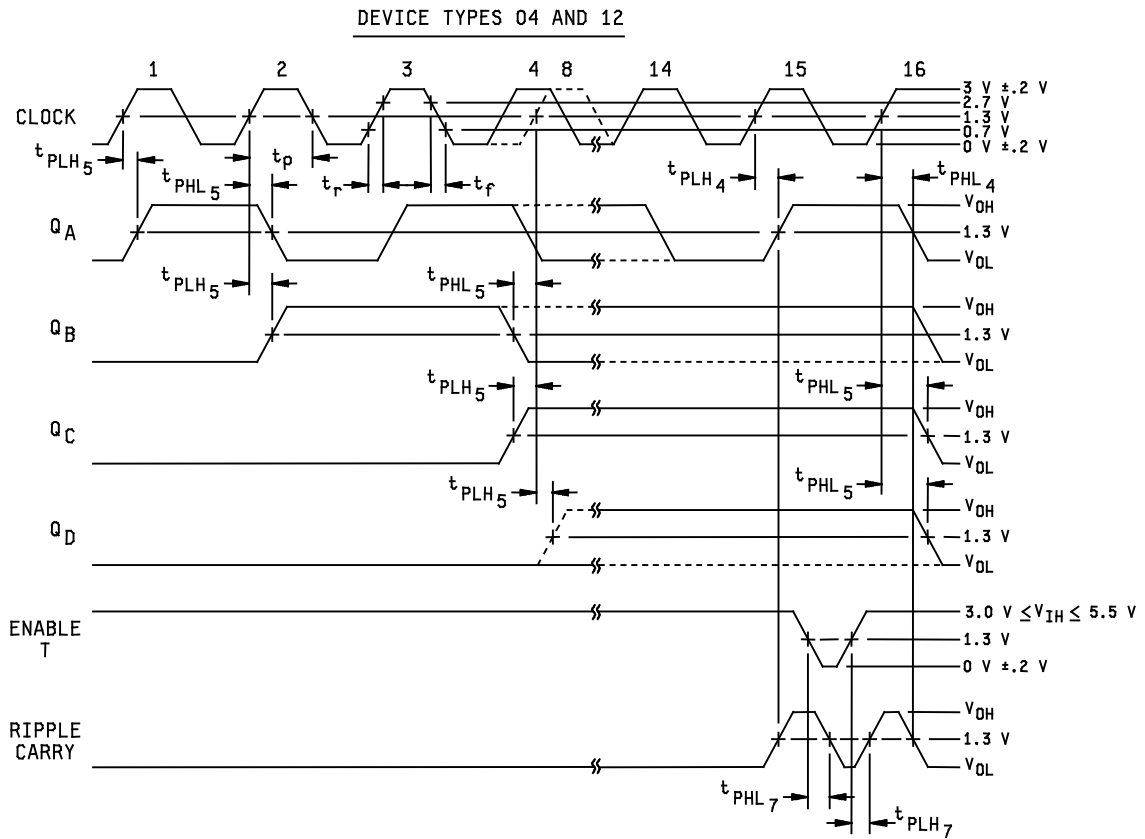
1. The pulse generator has the following characteristics: $V_{gen} = 3\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.

FIGURE 5. Switching time test circuit and waveforms for device type 02 – Continued.



VOLTAGE WAVEFORMS

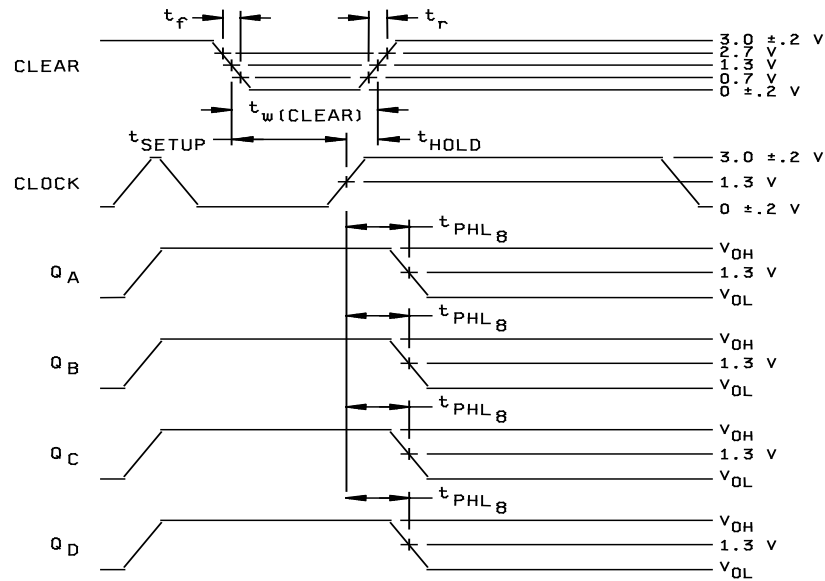
FIGURE 6. Switching time test circuit and waveforms for device types 03, 04, 11, and 12.



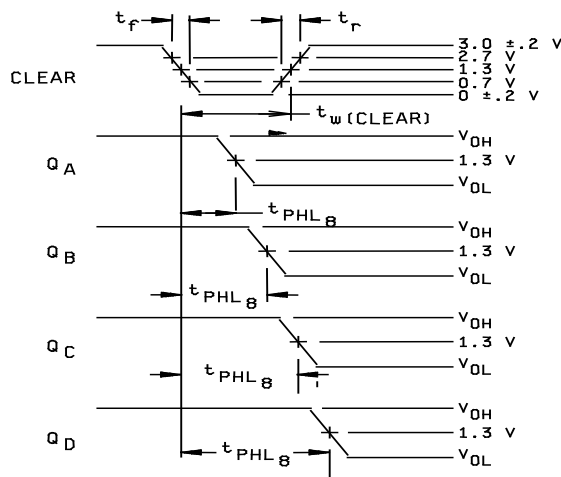
VOLTAGE WAVEFORMS

FIGURE 6. Switching time test circuit and waveforms for device types 03, 04, 11, and 12 – Continued.

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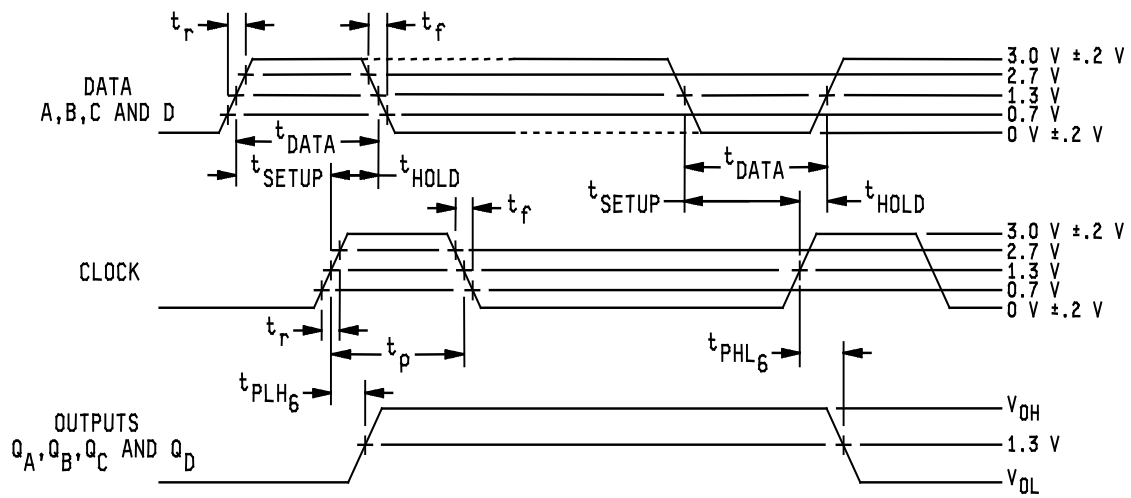
DEVICE TYPES 11 AND 12



DEVICE TYPES 03 AND 04

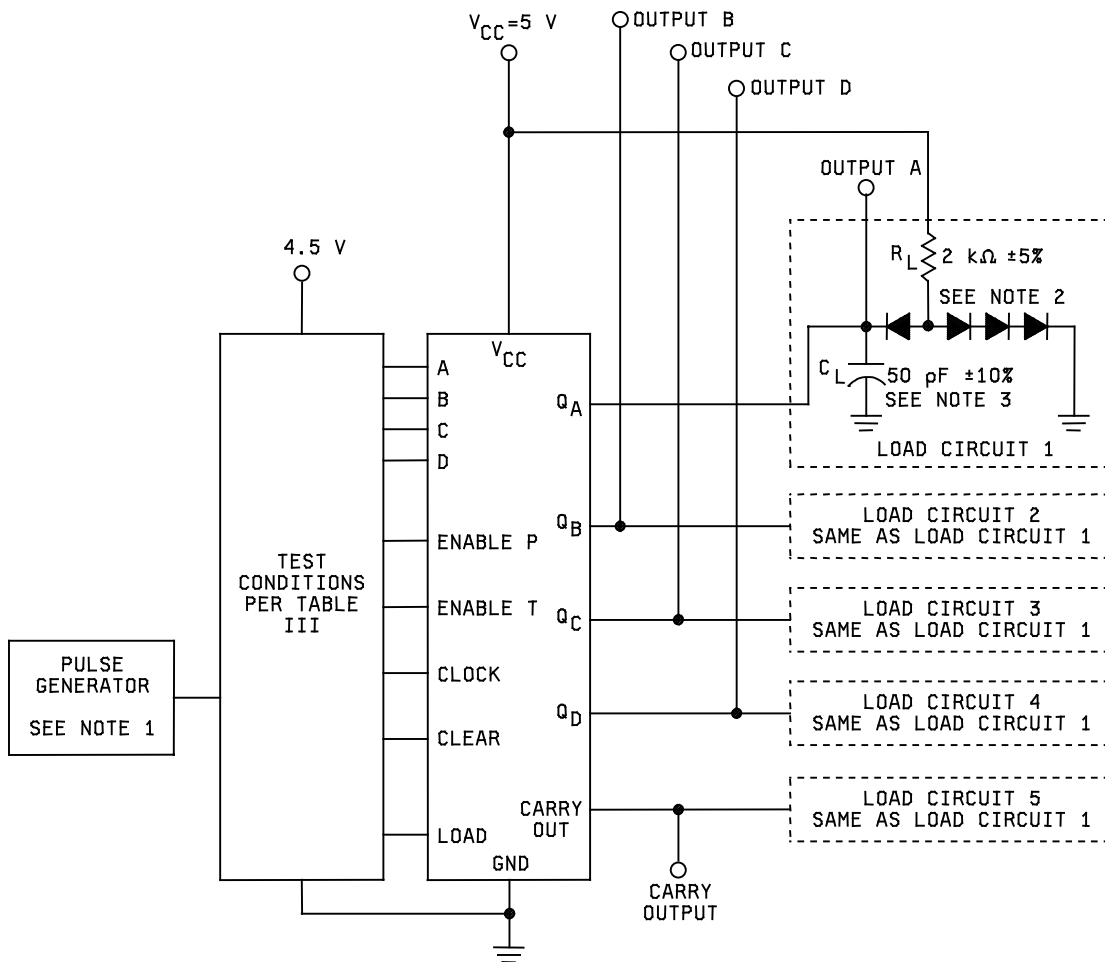
NOTE: The clear pulse generator has the following characteristics:
 $V_{gen} = 3.0$ V, $t_r \leq 15$ ns, $t_f \leq 6$ ns, 20 ns $\leq t_{w(clear)} \leq 25$ ns for types 11 and 12, 20 ns $\leq t_{setup} \leq 25$ ns, $t_{hold} = 0$ ns.

FIGURE 6. Switching time test circuit and waveforms for device types 03, 04, 11, and 12 – Continued.



NOTE: The data pulse generator has the following characteristics: $V_{\text{gern}} = 3.0 \text{ V}$,
 $t_r \leq 15 \text{ ns}$, $t_f \leq 6 \text{ ns}$, $t_{\text{DATA}} = 30 \text{ ns}$, $t_{\text{setup}} = 20 \text{ ns}$, $t_{\text{HOLD}} = 10 \text{ ns}$.

FIGURE 6. Switching time test circuit and waveforms for device types 03, 04, 11, and 12 – Continued.



NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.

FIGURE 6. Switching time test circuit and waveforms for device type 03, 04, 11, and 12 – Continued.

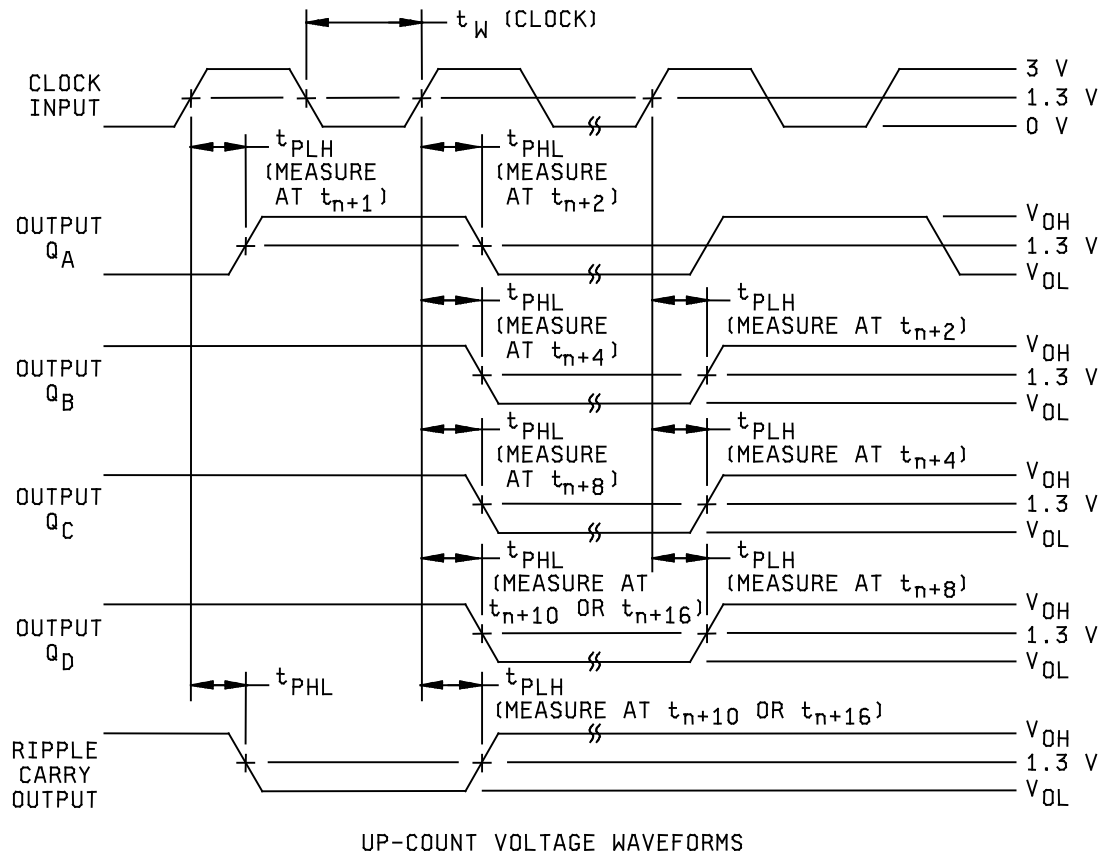


FIGURE 7. Switching time test circuit and waveforms for device types 05 and 06.

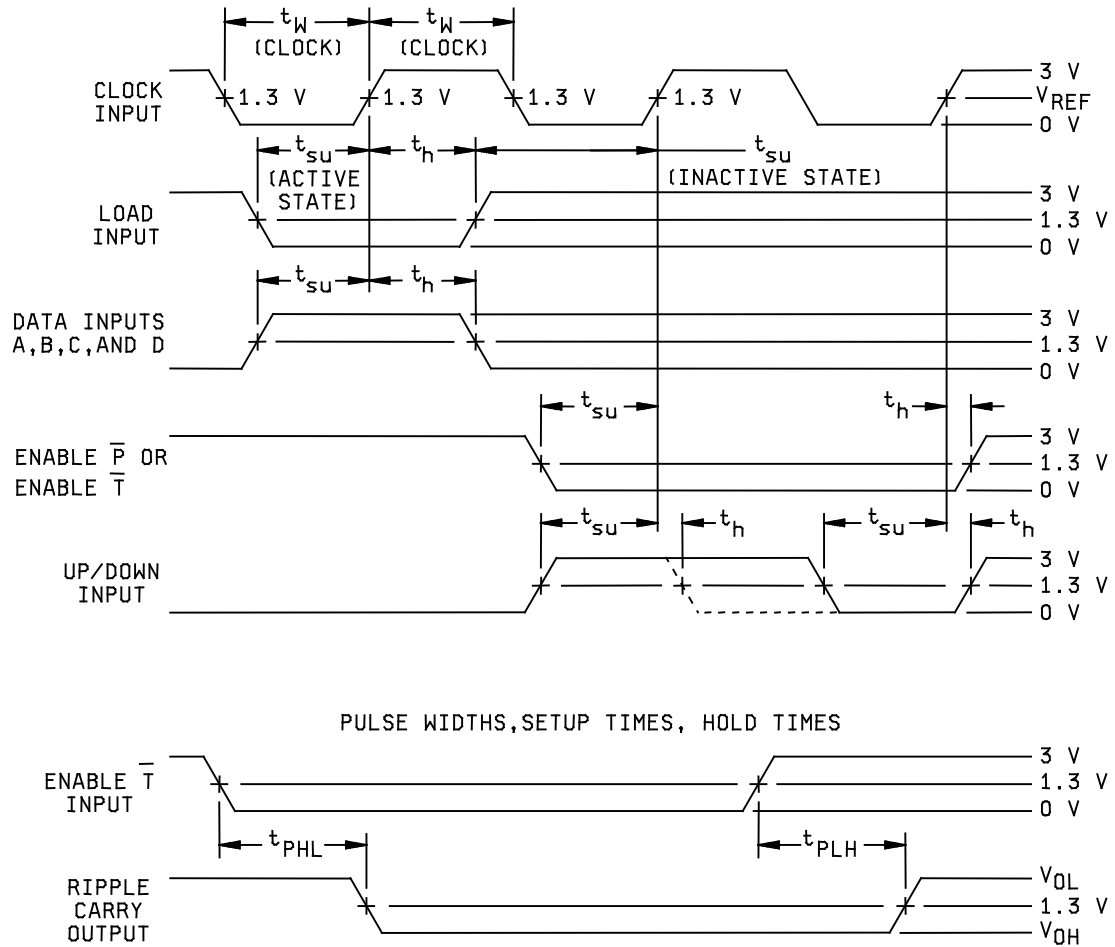
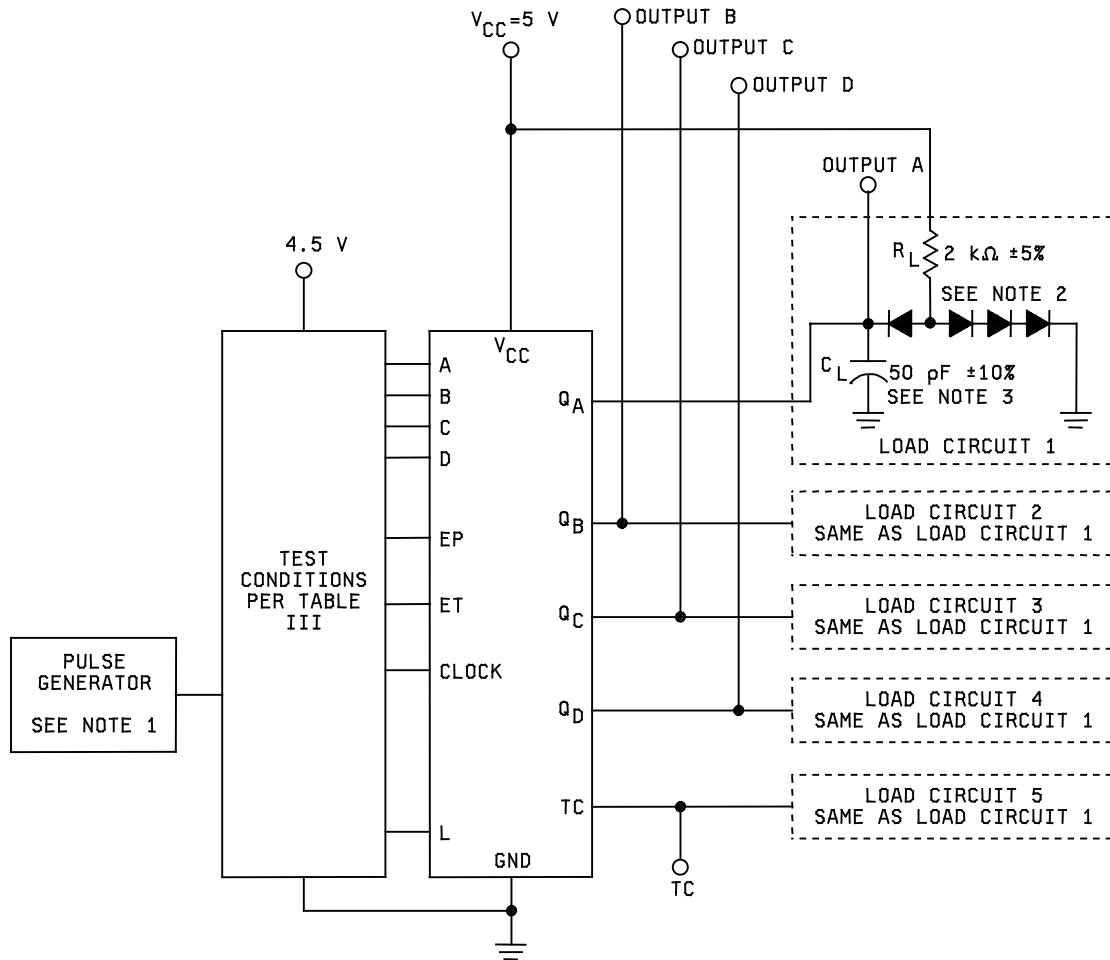


FIGURE 7. Switching time test circuit and waveforms for device types 05 and 06 – Continued.



NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.
6. The clear pulse generator has the following characteristics: $V_{gen} = 3.0\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_{w(CLEAR)} = 20\text{ ns}$.

FIGURE 7. Switching time test circuit and waveforms for device types 05 and 06 – Continued.

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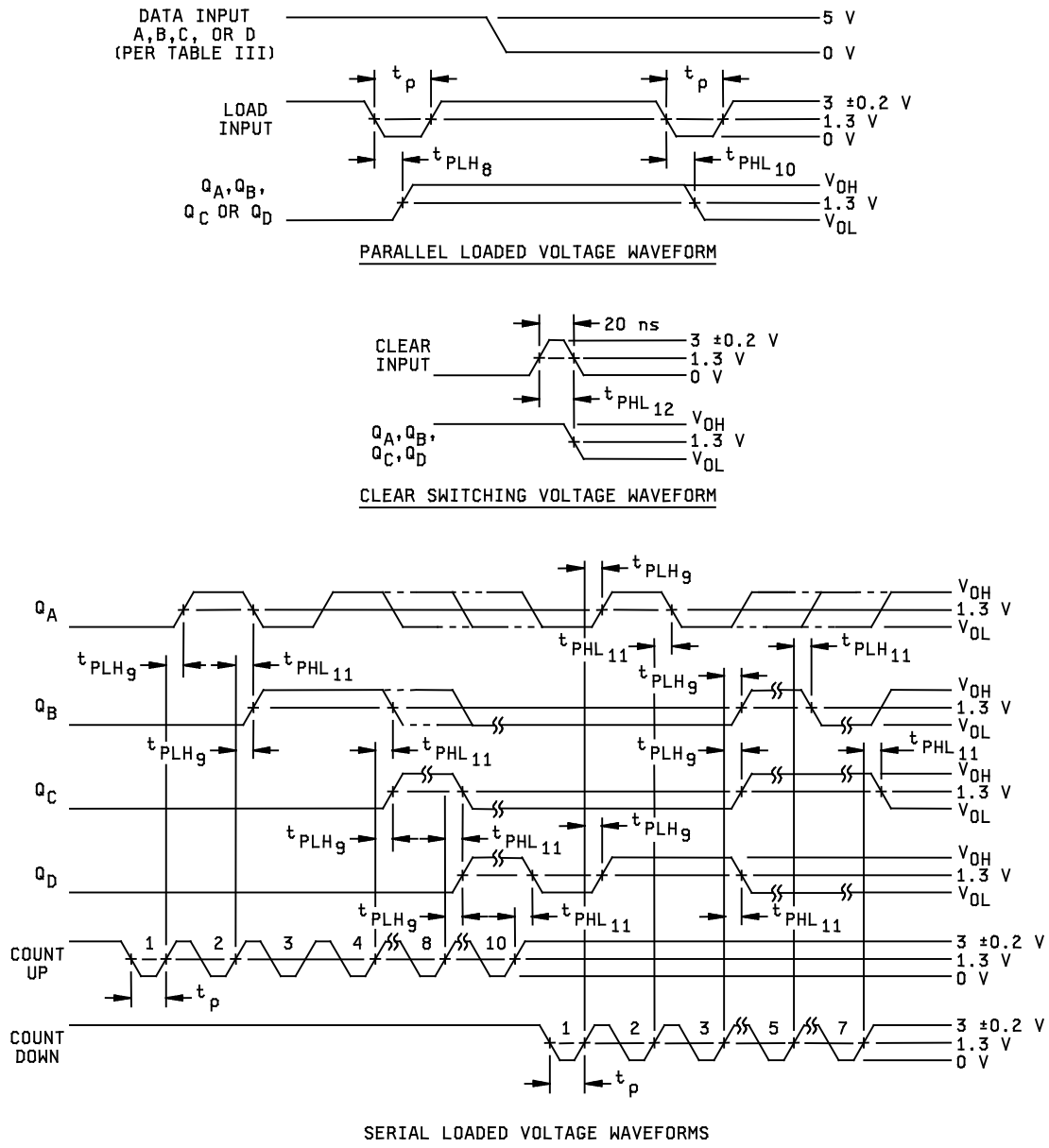
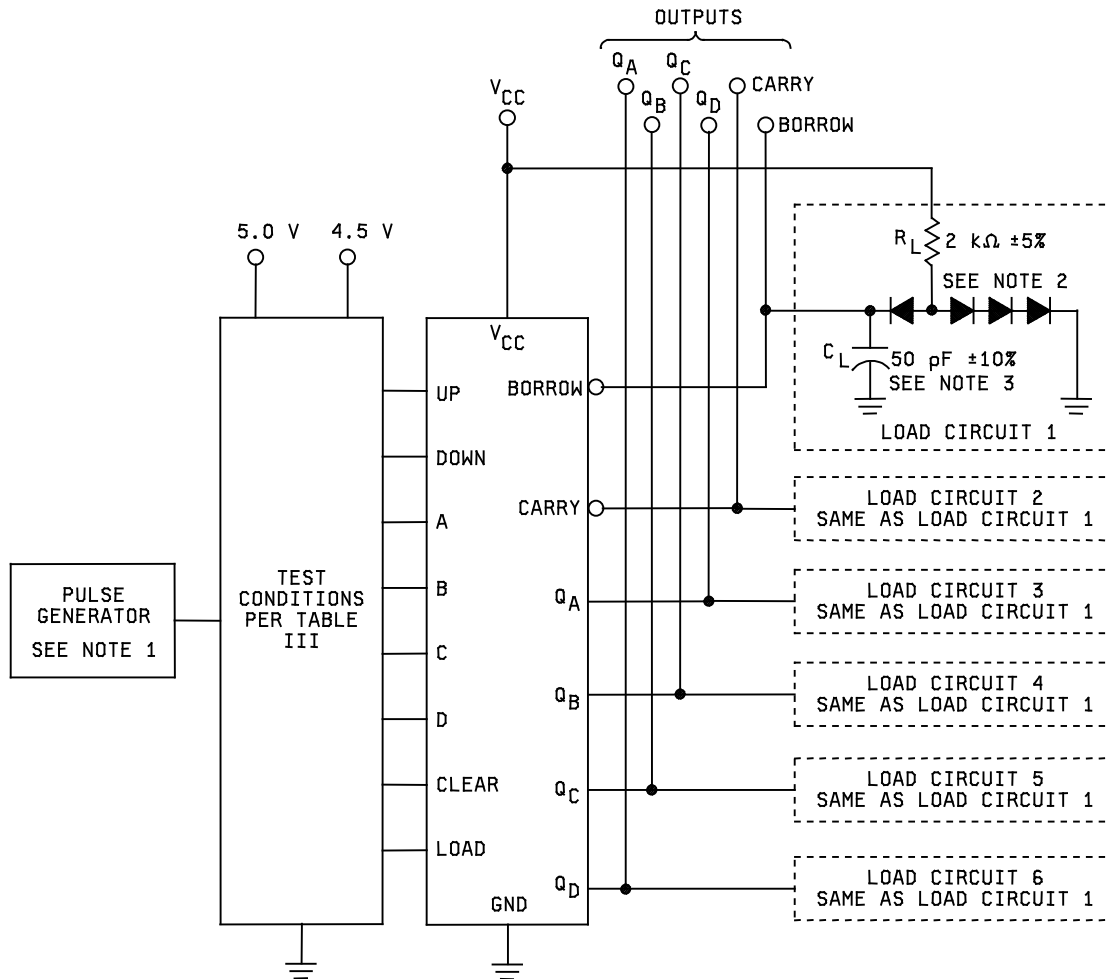


FIGURE 8. Switching time test circuit and waveforms for device types 07.



NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3 \text{ V}$, $t_p = .5 \mu\text{s}$, $PRR \leq 1 \text{ MHz}$, $Z_{out} \approx 50\Omega$, $t_r \leq 15 \text{ ns}$, $t_f \leq 6 \text{ ns}$ between 0.7 V and 2.7 V.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6 \text{ ns}$.
6. The clear pulse generator has the following characteristics: $V_{gen} = 3.0 \text{ V}$, $t_r \leq 15 \text{ ns}$, $t_f \leq 6 \text{ ns}$, between 0.7 V and 2.7 V, $t_{w(CLEAR)} = 20 \text{ ns}$.

FIGURE 8. Switching time test circuit and waveforms for device types 07 and Continued.

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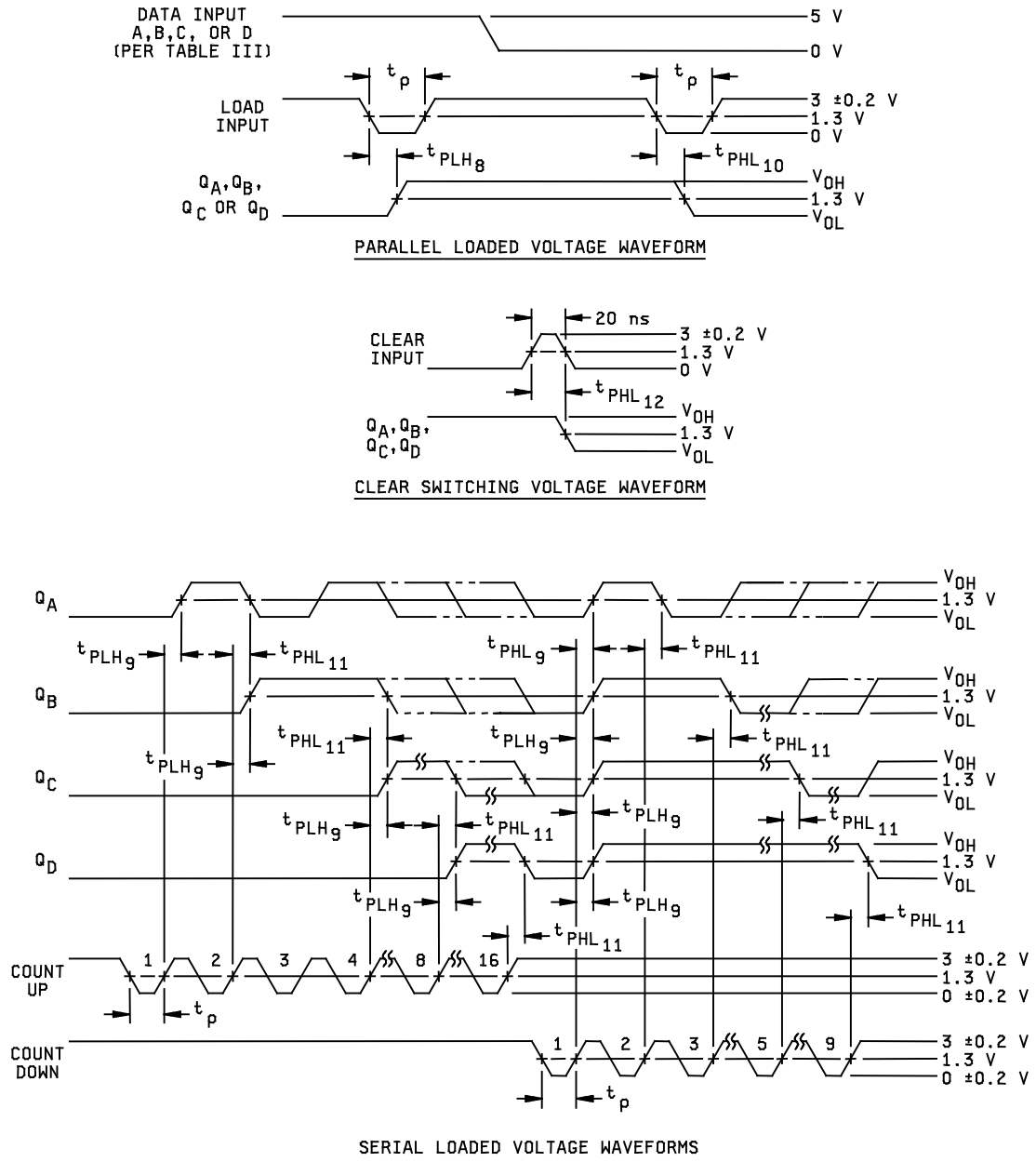
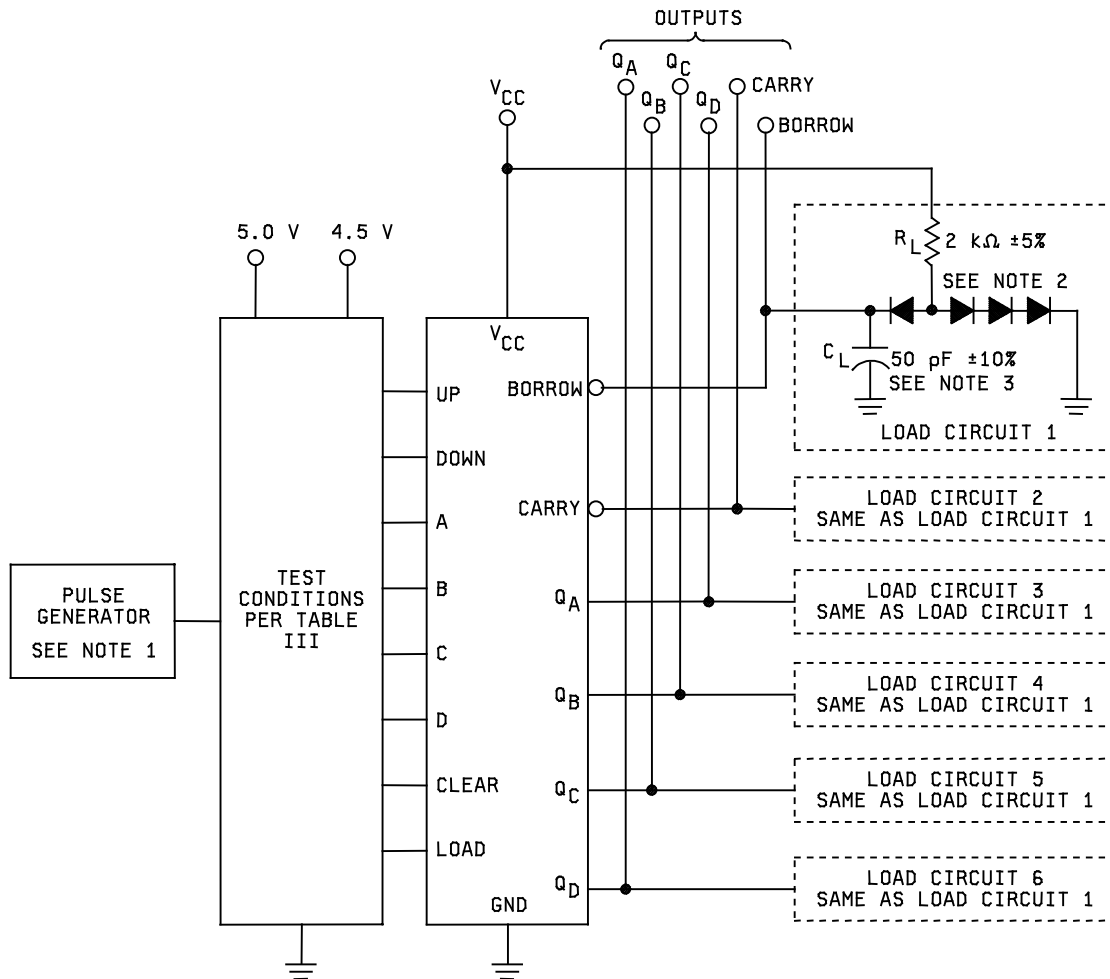


FIGURE 9. Switching time test circuit and waveforms for device type 08.



NOTES:

1. The load and count pulse generators have the following characteristics: $V_{gen} = 3\text{ V}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$ between 0.7 V and 2.7 V .
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.
6. The clear pulse generator has the following characteristics: $V_{gen} = 3.0\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, between 0.7 V and 2.7 V , $t_{w(CLEAR)} = 20\text{ ns}$.

FIGURE 9. Switching time test circuit and waveforms for device type 08 – Continued.

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w/AMENDMENT 1

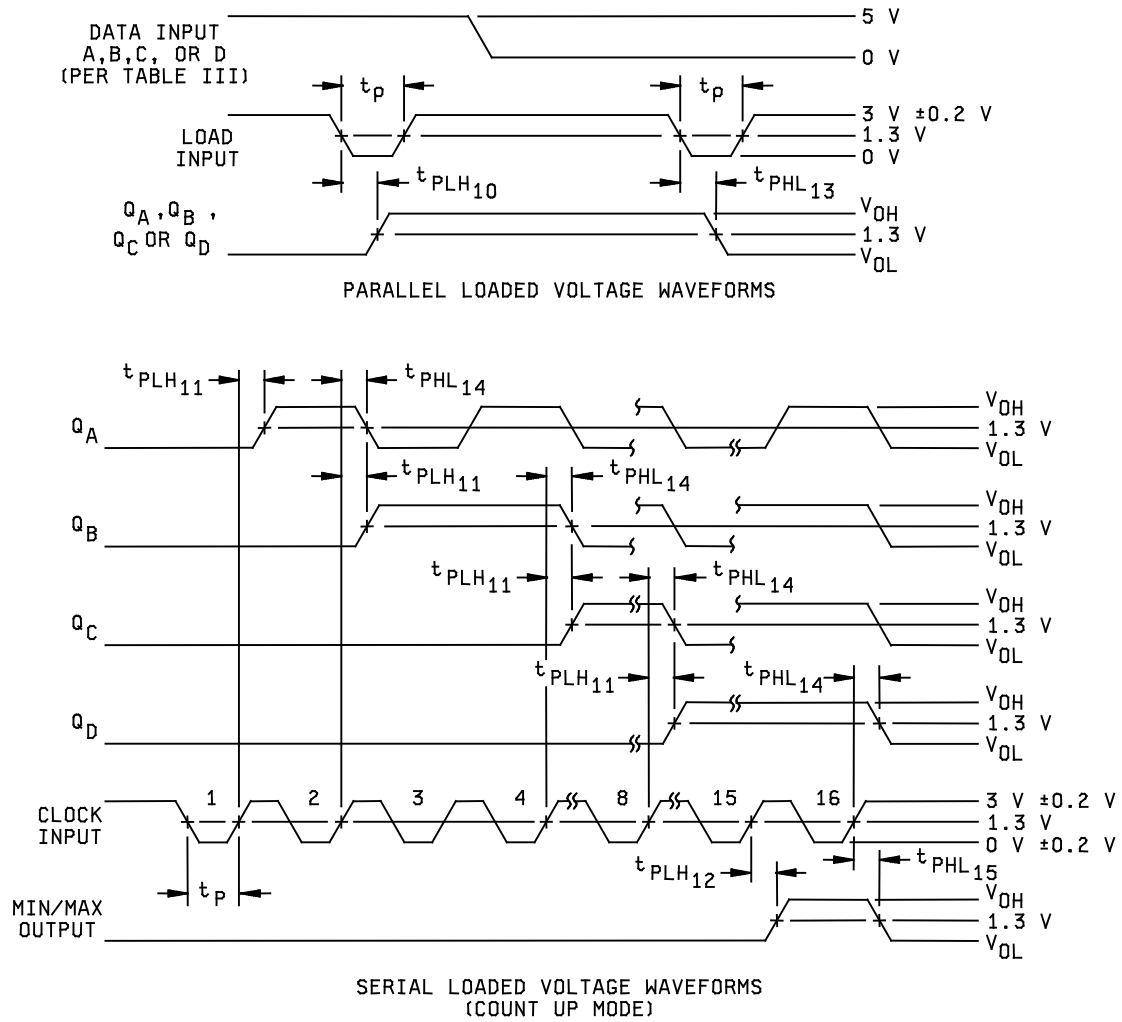
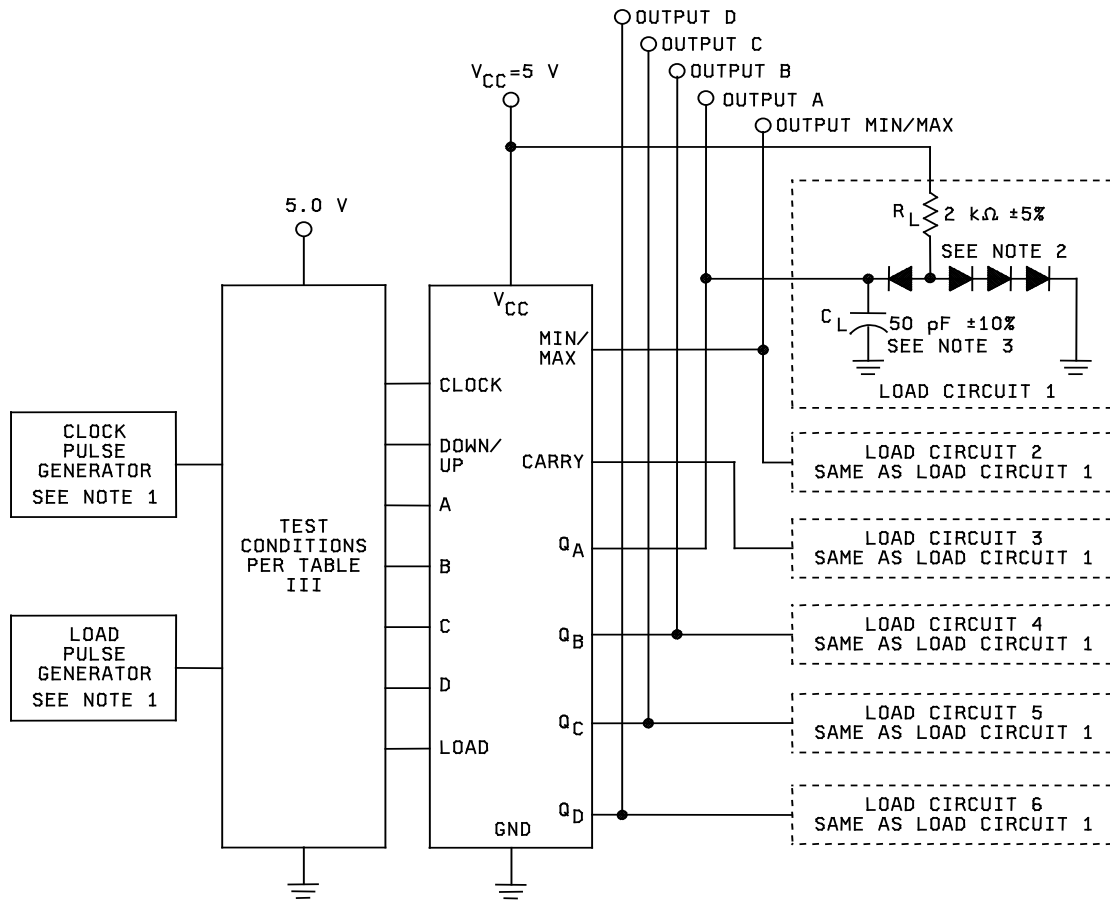


FIGURE 10. Switching time test circuit and waveforms for device type 09.



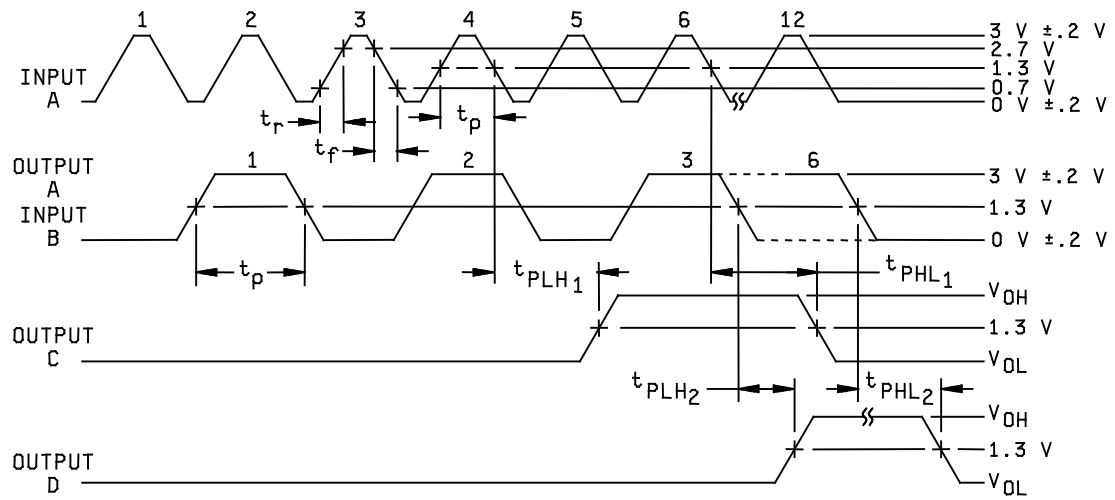
TEST CIRCUIT

NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3 \text{ V}$, $t_p = .5 \mu\text{s}$, $\text{PRR} \leq 1 \text{ MHz}$, $Z_{out} \approx 50\Omega$, $t_r \leq 15 \text{ ns}$, $t_f \leq 6 \text{ ns}$ between 0.7 V and 2.7 V.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6 \text{ ns}$.

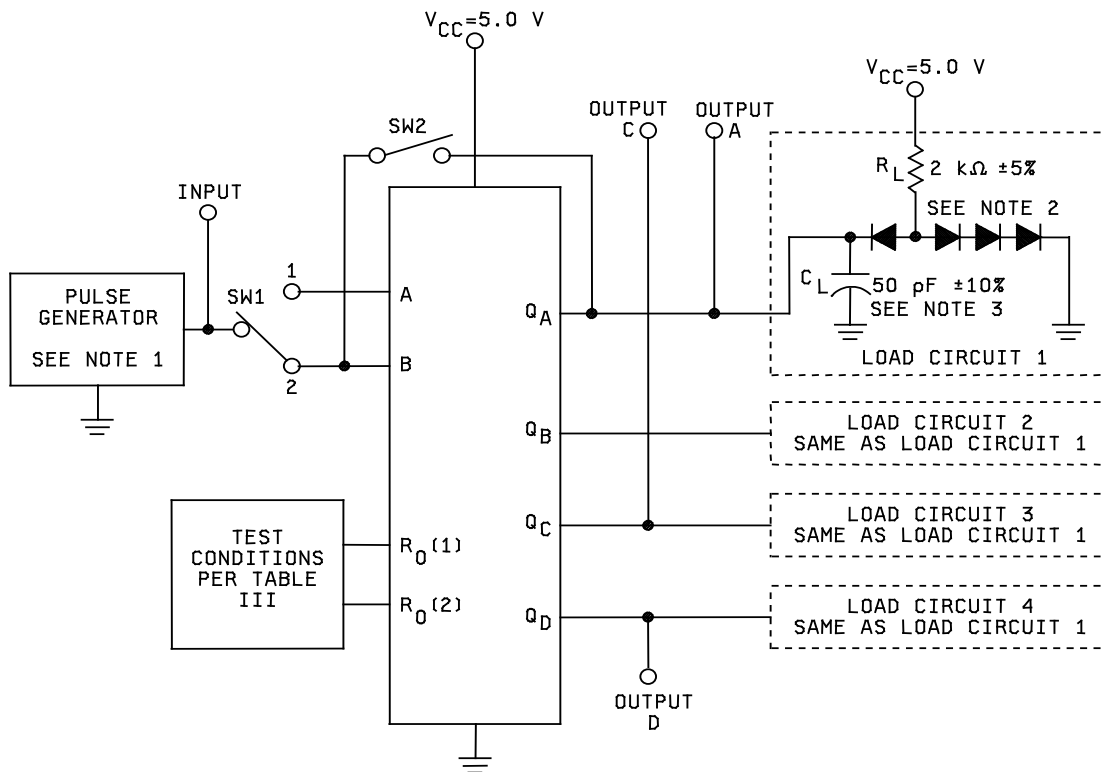
FIGURE 10. Switching time test circuit and waveforms for device type 09 – Continued.

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w/AMENDMENT 1



VOLTAGE WAVEFORMS

FIGURE 11. Switching time test circuit and waveforms for device type 10.



TEST	SWITCH POSITION	
	SW1	SW2
F MAX	1	CLOSED
A TO Q _C	1	CLOSED
B TO Q _D	2	OPEN

TEST CIRCUIT

NOTES:

1. The pulse generator has the following characteristics: $V_{gen} = 3\text{ V}$, $t_r \leq 15\text{ ns}$, $t_f \leq 6\text{ ns}$, $t_p = .5\text{ }\mu\text{s}$, $PRR \leq 1\text{ MHz}$, $Z_{out} \approx 50\Omega$.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6\text{ ns}$.

FIGURE 11. Switching time test circuit and waveforms for device type 10 – Continued.

MIL-M-38510/315D
w/AMENDMENT 1

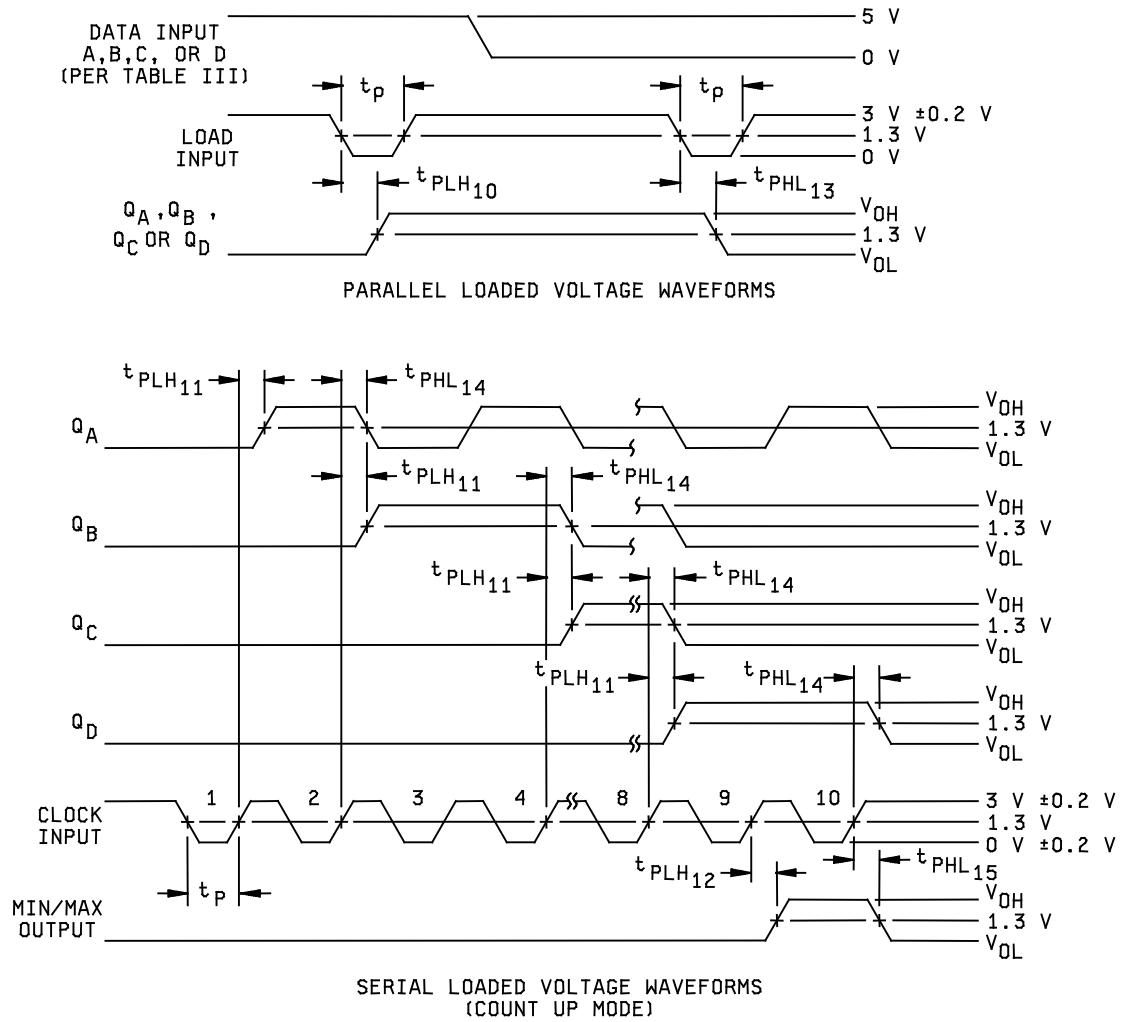
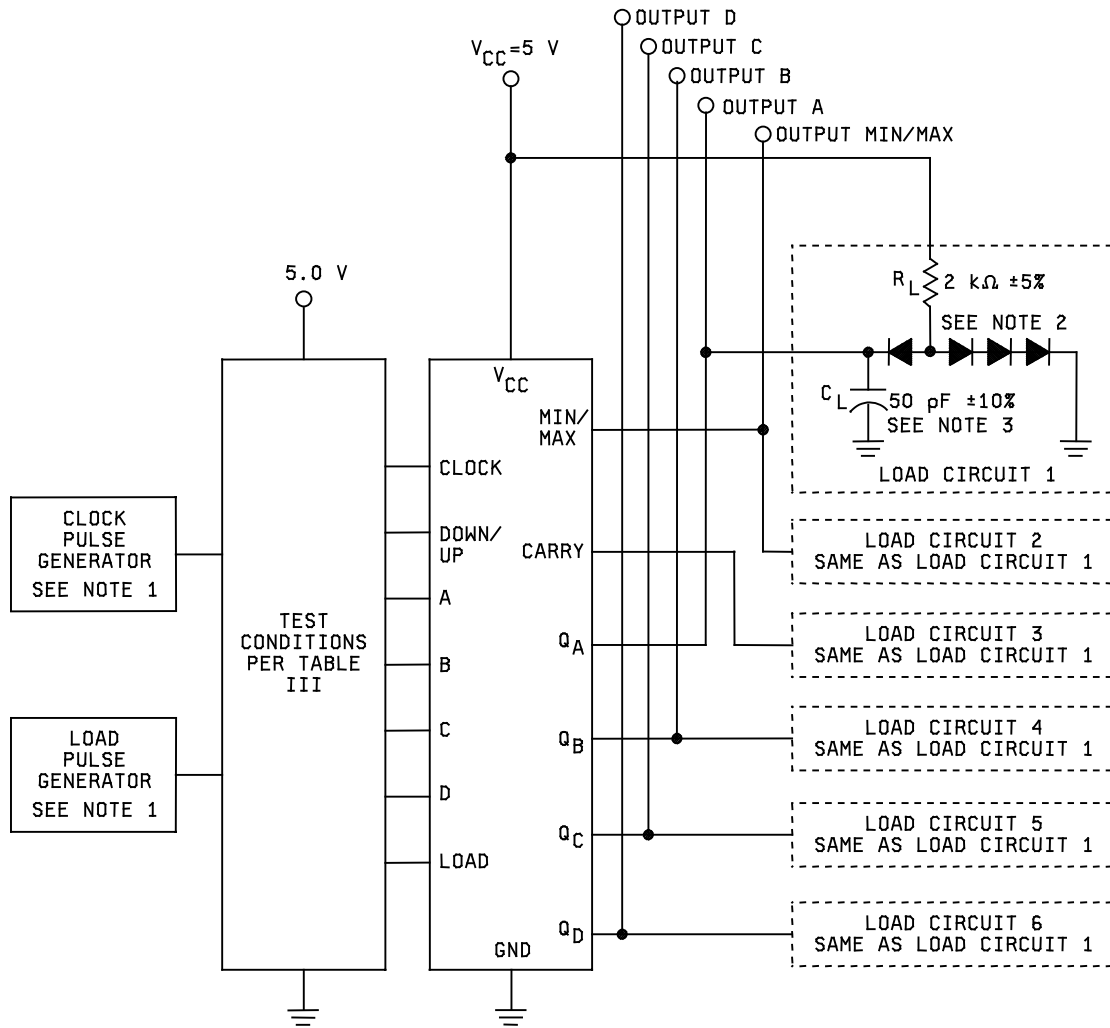


FIGURE 12. Switching time test circuit and waveforms for device type 13.



NOTES:

1. The pulse generator have the following characteristics: $V_{gen} = 3 \text{ V}$, $t_p = .5 \mu\text{s}$, $PRR \leq 1 \text{ MHz}$, $Z_{out} \approx 50\Omega$, $t_r \leq 15 \text{ ns}$, $t_f \leq 6 \text{ ns}$, between 0.7 V and 2.7 V.
2. All diodes are 1N3064 or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to ground terminal.
5. F_{MAX} : $t_r = t_f \leq 6 \text{ ns}$.

Figure 12. Switching time test circuit and waveforms for device type 13 - Continued.

TABLE III. Group A inspection for device type 01.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Terminal conditions (pins not designated may be $V \geq 2.0$ V, or $V \leq 0.7$ 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	Limits		Unit	
			Cases1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max		
			Test no.	B	R _O (1)	R _O (2)	NC	V _{CC}	R9(1)	R9(2)	Q _C	Q _B	GND	Q _D	Q _A	NC	A		terminal	Min		Max
1 T _C = 25°C	V _{OL}	3007	1	2.0 V	2.0 V	2.0 V		4.5 V	GND	GND	4mA		GND					GND	Q _C		0.4	V
			2	"	"	"		"	GND	GND		4 mA	"				"	Q _B		"	"	
			3	"	"	"		"	2.0 V	0.7 V			"	4 mA			"	Q _D		"	"	
			4	GND	"	"		"	0.7 V	2.0 V			"		2/		2.0 V	Q _A		"	"	
			5	2.0 V	"	0.7 V		"	2.0 V	"	4 mA		"				GND	Q _C		"	"	
			6	2.0 V	0.7 V	2.0 V		"	"	"		4 mA	"				"	Q _B		"	"	
	V _{OH}	3006	7	2.0 V	2.0 V	0.7 V		"	"	"			"	-0.4 mA				"	Q _D	2.5		"
			8	GND	0.7 V	2.0 V		"	"	"			"		-0.4 mA		2.0 V	Q _A	"		"	
			9	2.0 V	"	0.7 V		"	"	"			"	-0.4 mA			GND	Q _D	"		"	
			10	GND	"	0.7 V		"	"	"			"		-0.4 mA		2.0 V	Q _A	"		"	
			11	3/ 4/	3/	3/		"	0.7 V	0.7 V	-0.4 mA		"				GND	Q _C	"		"	
			12	3/ 5/	3/	3/		"	0.7 V	0.7 V		-0.4 mA	"				GND	Q _B	"		"	
	I _{IL1}	3009	13		0.4 V	5.5 V		5.5 V						"					R _O (1)	6/	6/	mA
			14		5.5 V	0.4 V		"					"					R _O (2)	"	"	"	
			15					"	0.4 V	5.5 V			"					R9(1)	"	"	"	
			16					"	5.5 V	0.4 V			"					R9(2)	"	"	"	
	I _{IL2}			17		GND	GND		"	3/	3/			"			0.4 V	A	"	"	"	
	I _{IL3}			18	0.4 V	GND	GND		"	3/	3/			"				B	"	"	"	
	V _{IC}			19					4.5 V	-18 mA				"					R9(1)		-1.5	V
				20					"		-18 mA			"					R9(2)		"	"
				21					"					"			-18 mA	A		"	"	
				22	-18 mA				"					"					B		"	"
				23		-18 mA			"					"					R _O (1)		"	"
				24			-18 mA		"					"					R _O (2)		"	"
	I _{IH1}	3010		25					5.5 V	2.7 V				"					R9(1)		20	μA
				26					"		2.7 V			"					R9(2)		"	"
				27		2.7 V			"					"					R _O (1)		"	"
				28			2.7 V		"					"					R _O (2)		"	"
	I _{IH2}			29					"	5.5 V				"					R9(1)		100	"
				30					"		5.5 V			"					R9(2)		"	"
				31		5.5 V			"					"					R _O (1)		"	"
				32			5.5 V		"					"					R _O (2)		"	"
	I _{IH3}			33					"				"				2.7 V	A		80	"	
	I _{IH4}			34					"				"				5.5 V	A		400	"	
	I _{IH5}			35	2.7 V				"				"					B		160	"	
	I _{IH6}			36	5.5 V				"				"					B		800	"	

See footnotes at end of device types 01.

TABLE III. Group A inspection for device type 01 - Continued
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 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
			Cases 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	R _O (1)	R _O (2)	NC	V _{CC}	R ₉ (1)	R ₉ (2)	Q _C	Q _B	GND	Q _D	Q _A	NC	A				
1 T _C = 25°C	I _{OS}	3011	37		GND	GND		5.5 V	5.5 V	5.5 V			GND	GND				Q _D	-15	-100	mA
		"	38		GND	GND		"	5.5 V	5.5 V			"		GND			Q _A	"	"	"
		"	39	3/ 5/	3/	3/		"	GND	GND		GND	"				GND	Q _B	"	"	"
		"	40	3/ 4/	"	"		"	"	"	GND		"					Q _C	"	"	"
	I _{CC}		41	GND	"	"		"	"	"			"				"	V _{CC}		15	"
2	Same tests, terminal conditions, and limits as for subgroup 1, except T _C = 125°C and V _{IC} tests are omitted.																				
3	Same tests, terminal conditions, and limits as for subgroup 1, except T _C = -55°C and V _{IC} tests are omitted.																				
7 T _C = +25°C	Functional tests Z/	3014	42	A g/	A g/	A g/		4.5 V	A	A	L	L	GND	H	H		B g/	See g/			
		"	43	B	"	"		"	A	A	"	"	"	H	H		"				
		"	44	B	"	"		"	B	B	"	"	"	L	L		"				
		"	45	A	B	B		"	A	A	"	"	"	H	H		"				
		"	46	B	B	B		"	A	A	"	"	"	H	H		"				
		"	47	B	A	A		"	B	B	"	"	"	L	L		"				
		"	48	A	A	"		"	"	B	"	"	"	"	"		"				
		"	49	B	A	"		"	"	A	"	"	"	"	"		"				
		"	50	A	A	"		"	"	"	"	"	"	"	"		"				
		"	51	B	A	"		"	"	"	"	"	"	"	"		"				
		"	52	A	B	"		"	"	"	"	"	"	"	"		"				
		"	53	B	B	"		"	"	"	"	H	"	"	"		"				
		"	54	A	"	"		"	"	"	"	H	"	"	"		"				
		"	55	B	"	"		"	"	"	H	L	"	"	"		"				
		"	56	A	"	"		"	"	"	"	L	"	"	"		"				
		"	57	B	"	"		"	"	"	"	H	"	"	"		"				
		"	58	A	"	"		"	"	"	"	H	"	"	"		"				
		"	59	B	"	"		"	"	"	L	L	"	H	"		"				
		"	60	A	"	"		"	"	"	"	"	"	H	"		"				
		"	61	B	"	"		"	"	"	"	"	"	L	"		"				
		"	62	B	"	B		"	"	B	"	"	"	"	"		"				
		"	63	A	"	"		"	A	"	"	"	"	"	"		"				
		"	64	B	A	"		"	"	"	"	H	"	"	"		"				
		"	65	A	"	"		"	"	"	"	H	"	"	"		"				
		"	66	B	"	"		"	"	"	H	L	"	"	"		"				
		"	67	A	"	"		"	"	"	"	L	"	"	"		"				
		"	68	B	"	"		"	"	"	"	H	"	"	"		"				
		"	69	A	"	"		"	"	"	"	H	"	"	"		"				
		"	70	B	"	"		"	"	"	L	L	"	H	"		"				
		"	71	A	"	"		"	"	"	"	"	"	H	"		"				
		"	72	B	"	"		"	"	"	"	"	"	L	"		"				
		"	73	B	B	"		"	B	"	"	"	"	"	"		"				
		"	74	A	B	"		"	"	"	"	"	"	"	"		"				
		"	75	B	A	"		"	"	A	"	H	"	"	"		"				
		"	76	A	"	"		"	"	"	"	H	"	"	"		"				
		"	77	B	"	"		"	"	"	H	L	"	"	"		"				
		"	78	A	"	"		"	"	"	"	L	"	"	"		"				
		"	79	B	"	"		"	"	"	"	H	"	"	"		"				
		"	80	B	"	A		"	"	B	L	L	"	"	"		"				
		"	81	B	B	"		"	A	"	"	"	"	"	"		"				
		"	82	A	"	"		"	"	"	"	"	"	"	"		"				
		"	83	B	"	"		"	"	"	"	H	"	"	"		"				
		"	84	A	"	"		"	"	"	"	H	"	"	"		"				
		"	85	B	"	"		"	"	"	H	L	"	"	"		"				

See footnotes at end of device type 01.

TABLE III. Group A inspection for device type 01 - Continued
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 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	
			Cases 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max		
7 T _C = +25°C	Functional tests Z/	3014	86	A 8/	B 8/	A		4.5 V	A	B	H	L	GND	Q _b	Q _A	NC	A	See g/				
		"	87	B	"	A		"	"	B	H	H	"	L	L	"	B					
		"	88	A	"	B		"	"	A	L	L	"	H	H	"	"					
		"	89	"	"	B		"	"	B	"	"	"	H	H	"	"					
		"	90	"	A	A		"	B	"	"	"	"	L	L	"	"					
		"	91	B	A	A		"	"	"	"	"	"	"	"	"	"					"
		"	92	A	B	B		"	"	"	"	"	"	"	"	"	"					"
		"	93	B	"	"		"	"	"	"	H	"	"	"	"	"					"
		"	94	A	"	"		"	"	"	"	H	"	"	"	"	"					"
		"	95	B	"	"		"	"	"	H	L	"	"	"	"	"					"
		"	96	A	"	"		"	"	"	"	L	"	"	"	"	"					"
		"	97	B	"	"		"	"	"	"	H	"	"	"	"	"					"
		"	98	A	"	"		"	"	"	"	H	"	"	"	"	"					"
		"	99	B	A	A		"	"	"	L	L	"	"	"	"	"					"
		"	100	B	B	B		"	"	"	"	"	"	"	"	"	"					"
		"	101	A	"	"		"	"	"	"	"	"	"	"	"	"					"
		"	102	B	"	"		"	"	"	"	"	H	"	"	"	"					"
		"	103	A	"	"		"	"	"	"	"	H	"	"	"	"					"
		"	104	B	"	"		"	"	"	"	H	L	"	"	"	"					"
		"	105	A	"	"		"	"	"	"	"	L	"	"	"	"					"
		"	106	B	"	"		"	"	"	"	"	H	"	"	"	"					"
		"	107	A	"	"		"	"	"	"	"	H	"	"	"	"					"
		"	108	A	"	"		"	A	A	L	L	"	H	H	"	"					"
		"	109	B	"	"		"	A	A	"	"	"	"	"	"	"					"
		"	110	B	"	"		"	B	B	"	"	"	"	"	"	"					"
		"	111	A	"	"		"	"	"	"	"	"	"	"	"	"					"
		"	112	A	A	A		"	"	"	"	"	"	"	L	L	"					"
		"	113	B	A	A		"	"	"	"	"	"	"	"	"	"					"
		"	114	"	B	B		"	"	"	"	"	"	"	"	"	"					A
		"	115	"	"	"		"	"	"	"	"	"	"	"	H	"					B
		"	116	"	"	"		"	"	"	"	"	"	"	"	H	"					A
		"	117	"	"	"		"	"	"	"	"	"	"	"	L	"					B
"	118	"	"	A		"	"	"	"	"	"	"	"	"	"	A						
"	119	"	A	A		"	"	"	"	"	"	"	"	"	"	B						
"	120	"	A	B		"	"	"	"	"	"	"	"	"	"	A						
"	121	"	B	"		"	"	"	A	"	"	"	"	H	"	B						
"	122	"	"	"		"	"	"	"	"	"	"	"	"	"	A						
"	123	"	"	"		"	A	"	"	"	"	"	H	"	"	B						
"	124	"	A	"		"	"	"	B	"	"	"	"	"	"	A						
"	125	"	A	A		"	"	"	A	"	"	"	"	"	"	B						
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _C = 125°C and -55°C.																					
9 T _C = +25°C	F _{MAX}	3003 (Fig. 4)	126		GND			5.0 V	GND				GND		OUT		IN 10/	A to Q _A	29		MHz	
	t _{PLH1}	"	127		11/	A 8/		"	"		OUT		"				IN	A to Q _C	3	53	ns	
	t _{PHL1}	"	128		GND			"	"		OUT		"				IN	A to Q _C	"	58	"	
	t _{PLH2}	"	129	IN	11/	A		"	"				"	OUT				B to Q _b	"	37	"	
	t _{PHL2}	"	130	IN	GND			"	"				"	OUT				B to Q _b	"	40	"	
10 T _C = +125°C	F _{MAX}	"	131		GND			"	"				"		OUT		IN 10/	A to Q _A	29		MHz	
	t _{PLH1}	"	132		11/	A		"	"		OUT		"				IN	A to Q _C	3	74	ns	
	t _{PHL1}	"	133		GND			"	"		OUT		"				IN	A to Q _C	"	81	"	
	t _{PLH2}	"	134	IN	11/	A		"	"				"	OUT				B to Q _b	"	52	"	
	t _{PHL2}	"	135	IN	GND			"	"				"	OUT				B to Q _b	"	56	"	
11	Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C.																					

See footnotes at end of device type 01.

- 1/ Case 2 pins not referenced are N/C.
- 2/ Test 4, Pin 12; 4 mA + $I_{IL3(MAX)}$.
- 3/ Apply 4.5 V pulse then ground prior to taking measurements to set device in the desired state.
- 4/ Apply two pulses after R_O (reset) pulse.
- 5/ Apply one pulse after R_O (reset) pulse.
- 6/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
I_{IL1}	$R_O(1)$	-12/-36	-.03/-40		-.03/-40	-12/-36	-12/-36	
	$R_O(2)$	"	"		"	"	"	
	$R9(1)$	"	"		"	"	"	
	$R9(2)$	"	"		"	"	"	
I_{IL2}	A	-0.5/-2.0	-1.0/-2.4		-1.0/-2.4	-1.0/-2.4	-0.5/-2.0	
I_{IL3}	B	-0.4/-1.6	-1.3/-3.2		-1.3/-3.2	-1.3/-3.2	-1.0/-2.4	

- 7/ Only a summary of attributes data is required.
- 8/ A = 3.0 V minimum, B = 0.0 V or GND.
- 9/ H > 1.5 V; L < 1.5 V.
- 10/ F_{MAX} minimum limit specified is the frequency of the input pulse. The output pulse shall be one-half of the input frequency.
- 11/ Momentary 3.0 V (min), then ground. Maintain ground for measurement.

TABLE III. Group A inspection for device type 02.
Terminal conditions (pins not designated may be H ≥ 2.0 V; or L ≤ 0.7 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
			Cases1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	R _O (1)	R _O (2)	NC	V _{CC}	NC	NC	Q _C	Q _B	GND	Q _D	Q _A	NC	A				
1 T _C = 25°C	V _{OL}	3007	1	GND	2.0 V	2.0 V		4.5 V					GND		2/		2.0 V	Q _A		0.4	V
		"	2	2.0 V	"	"		"				4 mA	"				GND	Q _B		"	"
		"	3	"	"	"		"			4mA		"				"	Q _C		"	"
		"	4	"	"	"		"					"	4 mA			"	Q _D		"	"
	V _{OH}	3006	5	GND	3/	3/		"					"		-0.4 mA		3/ 4/	Q _A	2.5		"
		"	6	3/ 4/	3/	"		"				-0.4 mA	"				GND	Q _B	"		"
		"	7	3/ 5/	"	"		"			-0.4 mA		"				"	Q _C	"		"
		"	8	3/ 6/	"	"		"					"	-0.4 mA			"	Q _D	"		"
	V _{IC}		9					"					"				-18 mA	A		-1.5 mA	"
			10	-18 mA				"					"					B		"	"
			11		-18 mA			"					"					R _O (1)		"	"
			12			-18 mA		"					"					R _O (2)		"	"
	I _{IL1}	3009	13		0.4 V	5.5 V		5.5 V					"					R _O (1)	7/	7/	mA
		"	14		5.5 V	0.4 V		"					"					R _O (2)	"	"	"
	I _{IL2}	"	15		3/	3/		"					"				0.4 V	A	"	"	"
	I _{IL3}	"	16	0.4 V	3/	3/		"					"					B	"	"	"
	I _{IH1}	3010	17		2.7 V	GND		"					"					R _O (1)		20	μA
	I _{IH1}	"	18		GND	2.7 V		"					"					R _O (2)		20	"
	I _{IH2}	"	19		5.5 V	GND		"					"					R _O (1)		100	"
	I _{IH2}	"	20		GND	5.5 V		"					"					R _O (2)		100	"
	I _{IH3}	"	21		5.5 V	"		"					"				2.7 V	A		80	"
	I _{IH4}	"	22		"	"		"					"				5.5 V	A		400	"
	I _{IH5}	"	23	2.7 V	"	"		"					"					B		80	"
	I _{IH6}	"	24	5.5 V	"	"		"					"					B		400	"
	I _{OS}	3011	25	GND	3/	3/		"					"		GND		3/ 4/	Q _A	-15	-100	mA
		"	26	3/ 4/	"	"		"				GND	"				GND	Q _B	"	"	"
		"	27	3/ 5/	"	"		"			GND		"				"	Q _C	"	"	"
		"	28	3/ 6/	"	"		"					"	GND			"	Q _D	"	"	"
	I _{CC}	3005	29	GND				"					"					V _{CC}		15	"
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.																				

See footnotes at end of device types 02.

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

Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 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
			Cases 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	R _O (1)	R _O (2)	NC	V _{CC}	NC	NC	Q _C	Q _B	GND	Q _D	Q _A	NC	A				
7 T _C = 25°C	Functional tests g/	3014	30	B 9/	A 9/	A		4.5 V			L	L	GND	L	L		B 9/	See 10/			
		"	31	A	"	"		"			"	"	"	"	"	"	"				
		"	32	B	"	"		"			"	"	"	"	"	"	"				
		"	33	B	"	B		"			"	"	"	"	"	"	"				
		"	34	A	"	"	"	"			"	"	"	"	"	"	"				
		"	35	B	"	"	"	"			"	H	"	"	"	"	"				
		"	36	"	"	"	A	"			"	L	"	"	"	"	"				
		"	37	"	"	B	"	"			"	"	"	"	"	"	"				
		"	38	A	"	"	"	"			"	"	"	"	"	"	"				
		"	39	A	"	"	B	"			"	"	"	"	"	"	"				
		"	40	B	"	"	"	"			"	H	"	"	"	"	"				
		"	41	A	"	"	"	"			"	H	"	"	"	"	"				
		"	42	B	"	"	"	"			"	H	L	"	"	"	"				
		"	43	A	"	"	"	"			"	L	L	"	"	"	"				
		"	44	B	"	"	"	"			"	H	"	"	"	"	"				
		"	45	A	"	"	"	"			"	H	"	"	"	"	"				
		"	46	B	"	"	"	"			"	L	L	"	H	"	"				
		"	47	A	"	"	"	"			"	L	"	"	"	"	"				
		"	48	B	"	"	"	"			"	H	"	"	"	"	"				
		"	49	A	"	"	"	"			"	H	"	"	"	"	"				
		"	50	B	"	"	"	"			"	H	L	"	"	"	"				
		"	51	A	"	"	"	"			"	L	"	"	"	"	"				
		"	52	B	"	"	"	"			"	H	"	"	"	"	"				
		"	53	A	"	"	"	"			"	H	"	"	"	"	"				
		"	54	B	"	"	"	"			"	L	L	"	L	"	"				
		"	55	A	"	"	"	"			"	L	"	"	"	"	"				
		"	56	B	"	"	"	"			"	H	"	"	"	"	"				
		"	57	A	"	"	"	"			"	H	"	"	"	"	"				
		"	58	B	"	"	"	"			"	H	L	"	"	"	"				
		"	59	A	"	"	"	"			"	L	"	"	"	"	"				
		"	60	B	"	"	"	"			"	H	"	"	"	"	"				
		"	61	A	"	"	"	"			"	H	"	"	"	"	"				
		"	62	B	"	"	"	"			"	L	L	"	H	"	"				
		"	63	A	"	"	"	"			"	L	"	"	"	"	"				
		"	64	B	"	"	"	"			"	H	"	"	"	"	"				
		"	65	B	A	"	"	"			"	"	"	"	"	"	"				
		"	66	A	"	"	"	"			"	"	"	"	"	"	"				
		"	67	B	"	"	"	"			"	H	L	"	"	"	"				
		"	68	A	"	"	"	"			"	L	"	"	"	"	"				
		"	69	B	"	"	"	"			"	H	"	"	"	"	"				
		"	70	A	"	"	"	"			"	H	"	"	"	"	"				
		"	71	A	"	"	A	"			"	L	L	"	L	"	"				
		"	72	B	"	"	A	"			"	"	"	"	"	"	"				
		"	73	"	"	"	B	B			"	"	"	"	"	"	"		A		
		"	74	"	"	"	"	"			"	"	"	"	"	"	H		B		
		"	75	"	"	"	"	"			"	"	"	"	"	"	H		A		
		"	76	"	"	"	"	"			"	"	"	"	"	"	L		B		
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _C = +125°C and -55°C.																				
9 T _C = +25°C	F _{MAX}	3003 (Fig. 5)	77		GND			5.0 V					GND		OUT		IN 11/	A to Q _A	29		MHz
	t _{PLH1}	"	78		12/	A 9/		"			OUT	"	"				IN	A to Q _C	3	53	ns
	t _{PHL1}	"	79		GND			"			OUT	"	"				IN	A to Q _C	"	58	"
	t _{PLH2}	"	80	IN	12/	A		"				"	"	OUT				B to Q _D	"	56	"
	t _{PHL1}	"	81	IN	GND			"					"	OUT				B to Q _D	"	56	"

See footnotes at end of device type 02.

TABLE III. Group A inspection for device type 02 - Continued
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Terminal conditions (pins not designated may be V _{CC} ≥ 2.0 V or G ≤ 0.1 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
			Cases 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	R _O (1)	R _O (2)	NC	V _{CC}	NC	NC	Q _C	Q _B	GND	Q _D	Q _A	NC	A				
10 T _C = +125°C	F _{MAX}	3003 (Fig. 5)	82		GND			5.0 V					GND		OUT		IN 11/	A to Q _A	29		MHz
	t _{PLH1}	"	83		12/	A		"			OUT		"				IN	A to Q _C	3	74	ns
	t _{PHL1}	"	84		GND			"			OUT		"				IN	A to Q _C	"	81	"
	t _{PLH2}	"	85	IN	12/	A		"					"	OUT				B to Q _D	"	78	"
	t _{PHL2}	"	86	IN	GND			"					"	OUT				B to Q _D	"	78	"
11	Same tests, terminal conditions, and limits as for subgroup 10 except, T _C = 55°C																				

- 1/ Case 2 pins not referenced are N/C.
- 2/ For test 1, 4 mA +I_{IL3} (max).
- 3/ Apply 4.5 V pulse, then ground prior to taking measurements to set device in the desired state. Maintain ground for measurement.
- 4/ Input pulse must be applied one time after R_O pulse.
- 5/ Input pulse must be applied twice after R_O pulse.
- 6/ Input pulse must be applied four times after R_O pulse.
- 7/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
I _{IL1}	R _O (1)	-12/-36	-.03/-40	-12/-36	-.03/-40	-12/-36	-12/-36	
	R _O (2)	"	"	"	"	"	"	
I _{IL2}	A	-0.5/-2.0	-1.0/-2.4	-0.5/-2.0	-1.0/-2.4	-1.0/-2.4	-0.5/-2.0	
I _{IL3}	B	-0.4/-1.6	-0.4/-1.6	-0.4/-1.6	-0.4/-1.6	-.65/-1.6	-0.4/-1.6	

- 8/ Only a summary of attributes data is required.
- 9/ A = 3.0 V minimum; B = 0.0 V or GND.
- 10/ H > 1.5 V; L < 1.5 V.
- 11/ F_{MAX} min limit specified is the frequency of the input pulse. The output frequency shall be one-half the input frequency.
- 12/ Momentary 3.0 V (min), then ground. Maintain ground for measurement.

TABLE III. Group A inspection for device types 03, 04, 11, and 12.
Terminal conditions (pins not designated may be H ≥ 2.0 V; or L ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
1 T _C = +25°C	V _{OL}	3007	1	4.5 V	2/				0.7 V		GND	GND		4 mA					4.5 V	Q _D		0.4	V
		"	2	"	"			0.7 V			"	"			4 mA				"	Q _C		"	"
		"	3	"	"		0.7 V				"	"				4 mA			"	Q _B		"	"
		"	4	"	"	0.7 V					"	"					4 mA		"	Q _A		"	"
		"	5	"	"						"	"	0.7 V					4 mA	"	Ripple carry		"	"
	V _{OH}	3006	6	"	2/				2.0 V		"	GND		-4 mA					"	Q _D	2.5		"
		"	7	"	"			2.0 V			"	"			-4 mA				"	Q _C	"		"
		"	8	"	"		2.0 V				"	"				-4 mA			"	Q _B	"		"
		"	9	"	"	2.0 V					"	"					-4 mA		"	Q _A	"		"
		"	10	"	"	2.0 V	3/	3/	2.0 V		"	"	2.0 V					-4 mA	"	Ripple carry	"		"
	V _{IC}		11	-18 mA							"								"	Clear		-1.5	"
			12		-18 mA						"								"	Clock		"	"
			13			-18 mA					"								"	A		"	"
			14				-18 mA				"								"	B		"	"
			15					-18 mA			"								"	C		"	"
			16						-18 mA		"								"	D		"	"
			17							-18 mA	"								"	EnP		"	"
			18								"	-18 mA							"	Load		"	"
			19								"		-18 mA						"	EnT		"	"
	I _{IL4}	3009	20	0.4 V							"								5.5 V	Clear	4/	4/	μA
	I _{IL6}	"	21		0.4 V						"								"	Clock	"	"	"
	I _{IL4}	"	22			0.4 V					"	GND							"	A	"	"	"
		"	23				0.4 V				"	"							"	B	"	"	"
		"	24					0.4 V			"	"							"	C	"	"	"
		"	25						0.4 V		"	"							"	D	"	"	"
	I _{IL5}	"	27							0.4 V	"	4.5 V	4.5 V						"	EnP	"	"	"
	I _{IL5}	"	28 5/							4.5 V	"	0.4 V	4.5 V						"	Load	"	"	"
	I _{IL5}	"								4.5 V	"	4.5 V	0.4 V						"	EnT	"	"	"
	I _{IH13}	3010	29 13/	2.7 V							"								"	Clear		20	"
	I _{IH9}	"	30		2.7 V						"								"	Clock		40	"
	I _{IH11}	"	31			2.7 V					"								"	A		20	"
		"	32				2.7 V				"								"	B		"	"
		"	33					2.7 V			"								"	C		"	"
		"	34						2.7 V		"								"	D		"	"
	I _{IH9}	"	35							2.7 V	"	GND	GND						"	EnP		"	"
	I _{IH9}	"	36							GND	"	2.7 V	GND						"	Load		40	"
	I _{IH9}	"	37							GND	"	GND	2.7 V						"	EnT		40	"

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device types 03, 04, 11, and 12 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V; or L ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
1	I _{IH14}	3010	38 13/	5.5 V							GND								5.5 V	Clear		100	μA
	I _{IH10}	"	39		5.5 V						"								"	Clock		200	"
	I _{IH12}	"	40			5.5 V					"								"	A		100	"
		"	41				5.5 V				"								"	B		"	"
		"	42					5.5 V			"								"	C		"	"
		"	43						5.5 V		"								"	D		"	"
		"	44							5.5 V	"	GND	GND						"	EnP		"	"
	I _{IH10}	"	45							GND	"	5.5 V	GND						"	Load		200	"
	I _{IH10}	"	46							GND	"	GND	5.5 V						"	EnT		200	"
	I _{OS}	3011	47	4.5 V	2/				4.5 V		"	GND		GND					"	Q _D	-15	-100	mA
		"	48	"	"			4.5 V			"	"			GND				"	Q _C	"	"	"
		"	49	"	"		4.5 V				"	"				GND			"	Q _B	"	"	"
		"	50	"	"	4.5 V					"	"					GND		"	Q _A	"	"	"
	"	"	51	"	"	4.5 V	6/	6/	4.5 V		"	"	4.5 V					GND	"	Ripple carry			"
	I _{CCH}	3005	52	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	5.5 V	5.5 V						"	V _{CC}		31	"
	I _{CCH}	"	53	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	GND	5.5 V						"	"		31	"
	I _{CCL}	"	54	GND	GND	GND	GND	GND	GND	GND	"	GND	GND						"	"		32	"
	I _{CCL}	"	55	GND	GND	GND	GND	GND	GND	GND	"	GND	GND						"	"		32	"
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.																						

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _c = +25°C	Functional tests Z/	3014	56	B g/	A g/	A g/	A g/	A	A	A	GND	A	A	L	L	L	L	L	4.5 V	See g/			
		"	57	A	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	58	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	59	"	A	A	A	A	A	"	"	"	A	"	"	"	H	"	"				
		"	60	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	61	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	62	"	A	A	A	A	A	"	"	"	A	"	"	H	L	"	"				
		"	63	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	64	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	65	"	A	A	A	A	A	"	"	"	A	"	"	"	H	"	"				
		"	66	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	67	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	68	"	A	A	A	A	A	"	"	"	A	"	H	L	L	"	"				
		"	69	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	70	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	71	"	A	A	A	A	A	"	"	"	A	"	"	"	H	"	"				
		"	72	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	73	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	74	"	A	A	A	A	A	"	"	"	A	"	"	"	H	L	"				
		"	75	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	76	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	77	"	A	A	A	A	A	"	"	"	A	"	"	"	H	"	"				
		"	78	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	79	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	80	"	A	A	A	A	A	"	"	"	A	H	L	L	L	"	"				
		"	81	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	82	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	83	"	A	A	A	A	A	"	"	"	A	"	"	"	H	H	"				
		"	84	"	A	B	B	B	B	"	"	"	B	"	"	"	"	L	"				
		"	85	"	B	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	86	"	A	"	"	"	"	"	"	"	"	"	L	"	"	L	L				
		"	87	B	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	88	A	A	"	"	"	"	"	"	B	"	"	"	"	"	"	"				
		"	89	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	90	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	91	"	A	B	B	B	B	A	"	"	"	B	"	"	"	"	"				
		"	92	"	A	A	A	A	A	"	"	"	"	"	"	"	"	"	"				
		"	93	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	94	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	95	"	A	"	"	B	B	B	"	"	B	"	"	"	"	"	"				
		"	96	"	B	"	"	B	B	B	"	"	"	"	"	"	"	"	"				
		"	97	"	A	"	"	B	B	"	"	"	"	"	"	"	"	H	"				
		"	98	"	A	"	"	A	A	"	"	"	"	"	"	"	"	"	"				
		"	99	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	100	"	A	"	"	"	"	"	"	"	"	"	"	"	H	H	"				
		"	101	"	A	"	"	"	"	"	"	"	A	"	"	"	"	"	"				
		"	102	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	103	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	104	"	A	"	"	B	B	A	"	"	B	"	"	"	"	"	"				
		"	105	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	106	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"				
		"	107	"	A	"	"	"	"	"	"	"	A	"	"	"	"	"	"				
		"	108	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	109	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	110	B	A	"	"	A	A	"	"	"	B	A	L	"	"	L	"				
		"	111	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	112	A	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	113	A	A	"	"	"	"	"	"	"	"	"	H	H	H	H	X				
		"	114	B	A	"	"	"	"	"	"	"	A	"	L	L	L	L	"				

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _C = +25°C	Functional tests Z/	3014	115	A g/	A g/	A g/	B g/	B	B	B	GND	B	B	L	L	L	L	L	4.5 V	See g/			
		"	116	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				
		"	117	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				
		"	118	"	A	B	"	"	A	A	"	"	A	"	"	"	"	"	"				
		"	119	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	120	"	A	"	"	"	"	"	"	"	"	H	"	"	"	L	"				
		"	121	"	A	"	A	"	B	B	"	"	"	"	"	"	"	"	"				
		"	122	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	123	"	A	"	"	"	"	"	"	"	"	L	"	H	"	"	"				
		"	124	"	A	"	B	A	A	"	"	"	"	"	"	"	"	"	"				
		"	125	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	126	"	A	"	"	"	"	"	"	"	"	H	H	L	"	"	"				
		"	127	"	A	"	A	"	"	"	"	"	B	"	"	"	"	"	"				
		"	128	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	129	"	A	"	"	"	"	"	"	"	"	"	"	H	"	"	"				
		"	130	"	A	A	B	B	"	A	"	"	A	"	"	"	"	"	"				
		"	131	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	132	"	A	"	"	"	"	"	"	"	"	"	"	L	L	H	H				
		"	133	"	A	"	A	A	B	B	"	"	B	"	"	"	"	"	L				
		"	134	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	135	"	A	"	"	"	"	"	"	"	"	L	H	H	"	"	"				
		"	136	"	A	B	"	B	A	A	"	"	"	"	"	"	"	"	"				
		"	137	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	138	"	A	"	"	"	"	"	"	"	"	H	L	"	L	"	"				
		"	139	"	A	A	"	"	B	"	"	"	A	"	"	"	"	"	"				
		"	140	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	141	"	A	"	"	"	"	"	"	"	"	L	"	"	H	"	"				
		"	142	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"				
		"	143	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	144	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"				
		"	145	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	146	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	147	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"				
		"	148	"	A	B	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	149	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	150	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"				
8	Repeat subgroup 7 at T _C = +125°C and T _C = -55°C.																						

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _c = +25°C	Functional tests Z/	3014	56	B g/	A g/	A g/	A	A	A	A g/	GND	A	A	L	L	L	L	L	4.5 V	See g/			
		"	57	A	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	58	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	59	"	A	A	A	A	A	A	"	"	A	"	"	"	H	"	"				
		"	60	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	61	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	62	"	A	A	A	A	A	"	"	"	A	"	"	H	L	"	"				
		"	63	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	64	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	65	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	66	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	67	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	68	"	A	A	A	A	A	"	"	"	A	"	"	H	L	L	"				
		"	69	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	70	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	71	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	72	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	73	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	74	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	L				
		"	75	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	76	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	77	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	78	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	79	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	80	"	A	A	A	A	A	"	"	"	A	"	"	H	L	L	"				
		"	81	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	82	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	83	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	84	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	85	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	86	"	A	A	A	A	A	"	"	"	A	"	"	"	H	L	"				
		"	87	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	88	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	89	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	90	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	91	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	92	"	A	A	A	A	A	"	"	"	A	"	"	"	H	L	L				
		"	93	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	94	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	95	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	"				
		"	96	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	97	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	98	"	A	A	A	A	A	"	"	"	A	"	"	"	H	L	"				
		"	99	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	"				
		"	100	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	101	"	A	A	A	A	A	"	"	"	A	"	"	"	"	H	H				
		"	102	"	A	B	B	B	B	"	"	"	B	"	"	"	"	"	L				
		"	103	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	H				
		"	104	"	A	A	A	A	A	"	"	"	A	"	"	L	L	L	L				
		"	105	"	B	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	106	"	A	A	A	A	A	"	"	"	A	"	"	"	"	"	"				
		"	107	"	B	"	"	"	"	"	"	"	B	"	"	"	"	"	"				
		"	108	"	A	"	"	"	"	"	"	"	A	"	"	"	"	"	"				
		"	109	"	B	"	"	B	B	"	"	"	"	"	"	"	"	"	"				
		"	110	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	111	"	B	"	"	"	"	"	"	"	B	"	"	"	"	"	"				
		"	112	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				
		"	113	"	A	"	"	A	A	"	"	"	"	"	"	"	"	"	"				
		"	114	"	B	"	"	A	A	"	"	"	"	"	"	"	"	"	"				

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}					
7 T _C = +25°C	Functional tests Z/	3014	115	A g/	A g/	A	A	A	B	A	GND	B	B	L	H	H	H	L	4.5 V	See g/				
		"	116	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"					
		"	117	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	118	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	119	"	B	"	B	B	A	"	"	B	"	"	"	"	"	"	"					
		"	120	"	A	"	B	B	"	"	"	"	"	H	L	L	"	"	"					
		"	121	B	A	"	A	A	"	"	"	"	A	L	"	"	L	"	"					
		"	122	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	123	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	124	"	A	"	"	"	"	"	"	"	"	H	H	H	H	H	"					
		"	125	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	126	B	A	"	"	"	"	"	"	A	"	L	L	L	L	L	"					
		"	127	A	A	B	"	"	"	"	"	B	"	"	"	"	"	"	"					
		"	128	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	129	"	A	"	"	"	"	"	"	"	"	H	H	H	"	"	"					
		"	130	"	A	"	"	B	B	"	"	"	"	"	"	"	"	"	"					
		"	131	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	132	"	A	"	"	"	"	"	"	"	"	L	L	"	"	"	"					
		"	133	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	134	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	135	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"
		"	136	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"					
		"	137	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	138	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	"					"
		"	139	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	140	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	141	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"
		"	142	"	A	B	A	"	"	"	"	"	"	"	"	"	"	"	"					
		"	143	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	144	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	"					"
		"	145	"	A	"	B	B	A	"	"	"	"	"	"	"	"	"	"					
		"	146	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	147	"	A	"	"	"	"	"	"	"	"	H	L	L	"	"	"					
		"	148	"	A	A	A	"	"	"	"	"	"	"	"	"	"	"	"					
		"	149	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					
		"	150	"	A	"	"	"	"	"	"	"	"	"	"	"	H	H	"					"
"	151	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"							
"	152	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"							
"	153	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	"	"						
"	154	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"							
"	155	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"							
"	156	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"	"						
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																							

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 11 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit					
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max						
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}									
7 T _c = +25°C	Functional tests Z/	3014	56	B g/	B g/	B g/	B	B	B g/	A g/	GND	B	A	X	X	X	X	X	4.5 V	See g/								
		"	57	B	A	"	"	"	"	"	"	"	"	"	L	L	L	L	L		"							
		"	58	A	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"						
		"	59	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"					
		"	60	B	A	A	A	A	A	A	"	"	A	"	"	"	"	"	"		"	"	"					
		"	61	B	B	A	A	A	A	A	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	62	B	A	A	A	A	A	A	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	63	A	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	64	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	65	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	"		H	"	"	"				
		"	66	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	67	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	68	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	H		L	"	"	"				
		"	69	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	70	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	71	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	"		H	"	"	"				
		"	72	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	73	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	74	"	A	A	A	A	A	A	"	"	"	"	A	"	"	H	L		L	"	"	"				
		"	75	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	76	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	77	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	"		H	"	"	"				
		"	78	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	79	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	80	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	H		L	"	"	"				
		"	81	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	82	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	83	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	"		H	"	"	"				
		"	84	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	85	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	86	"	A	A	A	A	A	A	"	"	"	"	A	H	L	L	L		L	"	"	"				
		"	87	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	88	"	B	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	89	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	90	"	A	A	A	A	A	A	"	"	"	"	A	"	"	"	"		H	H	L	"	"			
		"	91	"	A	B	B	B	B	B	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	92	"	B	A	A	A	A	A	"	"	"	"	A	"	"	"	"		"	"	H	"	"			
		"	93	"	A	"	"	"	"	"	"	"	"	"	A	"	L	"	"		L	L	"	"				
		"	94	"	A	"	"	"	"	"	"	"	B	"	"	"	"	"	"		"	"	"	"				
		"	95	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	96	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	97	"	B	"	"	"	"	"	"	"	A	"	"	B	"	"	"		"	"	"	"				
		"	98	"	A	"	"	B	B	B	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	99	"	B	"	"	"	"	"	"	"	"	"	B	"	"	"	"		"	"	"	"				
		"	100	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"		H	"	"	"				
		"	101	"	A	"	"	A	A	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	102	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	103	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	H		"	"	"	"				
		"	104	"	A	"	"	"	"	"	"	"	"	"	A	"	"	"	"		"	"	"	"				
		"	105	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	106	"	A	A	"	"	"	"	"	"	A	"	"	"	"	"	"		"	"	"	"				
		"	107	"	B	"	"	B	B	A	"	"	"	B	"	"	"	"	"		"	"	"	"				
		"	108	"	A	"	"	"	"	"	"	"	"	B	"	"	H	L	L		"	"	"	"				
		"	109	"	A	"	"	"	"	"	"	"	"	A	"	"	"	"	"		"	"	"	"				
		"	110	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	111	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"				
		"	112	"	B	B	"	A	A	"	"	"	"	"	A	"	"	"	"		"	H	"	"				
		"	113	"	B	A	"	"	"	"	"	"	"	"	"	"	"	"	L		L	L	"	"				
		"	114	"	A	A	"	"	"	"	"	"	"	B	"	"	"	"	L		L	L	"	"				

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 11 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).																							
Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _C = +25°C	Functional tests Z/	3014	115	A g/	B g/	A	B	B	A	A	GND	B	A	L	L	L	L	L	4.5 V	See g/			
		"	116	"	A	"	"	"	"	"	"	"	"	H	"	"	H	H	"				
		"	117	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	118	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	119	B	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	120	B	A	"	"	"	"	"	"	"	"	L	"	"	"	L	L				"
		"	121	A	A	B	"	"	B	"	"	"	B	"	"	"	"	"	"				"
		"	122	"	B	"	A	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	123	"	A	"	A	"	"	"	"	"	"	"	"	H	"	"	"				"
		"	124	"	A	"	B	"	A	"	"	"	"	"	"	"	"	"	"				"
		"	125	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	126	"	A	"	"	"	"	"	"	"	"	"	H	"	L	"	"				"
		"	127	"	A	"	"	"	B	"	"	"	"	A	"	"	"	"	"				"
		"	128	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	129	"	A	"	"	"	"	"	"	"	"	"	L	"	"	"	"				"
		"	130	"	A	"	A	A	A	"	"	"	"	"	"	"	"	"	"				"
		"	131	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	132	"	A	"	"	"	"	"	"	"	"	"	H	H	H	"	"				"
		"	133	"	A	A	"	B	B	"	"	"	"	"	"	"	"	"	"				"
		"	134	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	135	"	A	"	"	"	"	"	"	"	"	"	L	L	"	H	"				"
		"	136	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"				"
		"	137	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	138	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	"				"
		"	139	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	140	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	141	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"
		"	142	"	A	B	A	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	143	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	144	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"
		"	145	"	A	"	B	B	A	"	"	"	"	"	"	"	"	"	"				"
		"	146	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	147	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"				"
		"	148	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	149	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	150	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	H				"
		"	151	"	A	"	A	A	"	"	"	"	A	"	"	"	"	"	"				"
		"	152	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	153	"	A	"	"	"	"	"	"	"	"	"	L	"	"	L	L				"
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																						

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 12 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _c = +25°C	Functional tests Z/	3014	56	B g/	B g/	B g/	B	B	B	A g/	GND	B	A	X	X	X	X	X	4.5 V	See g/			
		"	57	B	A	"	"	"	"	"	"	"	"	"	L	L	L	L	"				
		"	58	A	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	59	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	60	B	A	A	A	A	A	"	"	A	"	"	"	"	"	"	"				"
		"	61	B	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	62	B	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	63	A	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	64	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	65	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	66	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	67	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	68	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	L				"
		"	69	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	70	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	71	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	72	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	73	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	74	"	A	A	A	A	A	"	"	"	"	A	"	"	H	L	L				"
		"	75	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	76	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	77	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	78	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	79	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	80	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	L				"
		"	81	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	82	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	83	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	84	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	85	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	86	"	A	A	A	A	A	"	"	"	"	A	H	L	L	L	"				"
		"	87	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	88	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	89	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	90	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	91	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	92	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	L				"
		"	93	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	94	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	95	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	"				"
		"	96	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	97	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	98	"	A	A	A	A	A	"	"	"	"	A	"	"	H	L	L				"
		"	99	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	100	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	101	"	A	A	A	A	A	"	"	"	"	A	"	"	"	"	H				"
		"	102	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	103	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	104	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	L				"
		"	105	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	"				"
		"	106	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	"				"
		"	107	"	A	A	A	A	A	"	"	"	"	A	"	"	"	H	H				"
		"	108	"	A	B	B	B	B	"	"	"	"	B	"	"	"	"	L				"
		"	109	"	B	A	A	A	A	"	"	"	"	A	"	"	"	"	H				"
		"	110	"	A	"	"	"	"	"	"	"	"	A	L	L	L	L	L				"
		"	111	"	B	"	"	"	"	"	"	B	"	B	"	"	"	"	"				"
		"	112	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	113	"	B	"	"	"	"	"	"	A	"	"	"	"	"	"	"				"
		"	114	"	A	"	B	B	B	B	B	A	"	"	"	"	"	"	"				"

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device type 12 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
7 T _C = +25°C	Functional tests Z/	3014	115	A 8/	B	A	B 8/	B 8/	B	A	GND	B	B	L	L	L	L	L	4.5 V	See 9/			
		"	116	"	A	"	B	B	"	"	"	"	"	"	"	"	H	"	"				
		"	117	"	A	"	A	A	"	"	"	"	"	"	"	"	"	"	"				
		"	118	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				
		"	119	"	A	"	"	"	"	"	"	"	"	"	H	H	"	"	"				
		"	120	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"				"
		"	121	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	122	"	A	"	B	B	A	"	"	"	"	"	"	"	"	"	"				"
		"	123	"	B	"	"	"	"	"	"	B	"	"	"	"	"	"	"				"
		"	124	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"				"
		"	125	"	A	"	A	A	"	"	"	"	"	A	"	"	"	"	"				"
		"	126	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	127	"	A	"	"	"	"	"	"	"	"	"	"	H	H	"	H				"
		"	128	"	A	B	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	129	"	B	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	130	"	B	A	B	B	B	"	"	"	"	"	"	"	"	"	"				"
		"	131	"	A	A	"	"	"	"	"	"	"	"	L	L	L	"	L				"
		"	132	"	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	133	"	"	A	"	A	A	"	"	"	"	"	"	"	"	"	"				"
		"	134	"	"	B	"	"	A	"	"	"	"	"	"	"	"	"	"				"
		"	135	"	"	A	"	"	B	"	"	"	"	"	"	"	"	"	"				"
		"	136	"	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	137	"	"	B	A	B	"	"	"	"	"	"	"	"	"	"	"				"
		"	138	"	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	139	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	140	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"				"
		"	141	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"				"
		"	142	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	143	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	"				"
		"	144	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	145	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	146	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"
		"	147	"	A	B	A	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	148	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	149	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	"				"
		"	150	"	A	"	B	B	A	"	"	"	"	"	"	"	"	"	"				"
		"	151	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	152	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	"				"
		"	153	"	A	"	A	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	154	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	155	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"				"
		"	156	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	157	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	158	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"
		"	159	"	A	B	B	A	"	"	"	"	"	"	"	"	"	"	"				"
		"	160	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	161	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	L				"
		"	162	"	A	A	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	163	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	164	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"
		"	165	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	166	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"
		"	167	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																						

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device types 03, 04, 11, and 12.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case 1/				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no. (Device types)				Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
9 T _c = +125°C	F _{MAX} 10/	3003 (Fig 6)	151	157	154	168	4.5 V	IN					4.5 V	GND	4.5 V	4.5 V				OUT		5.0 V	Q _A	22		MHz
	t _{PLH4}	"	152	158	155	169	"	"					"	"	"	"					OUT	"	Clk to carry	3	40	ns
	t _{PHL4}	"	153	159	156	170	"	"					"	"	"	"					OUT	"	Clk to carry	"	40	"
	t _{PLH5}	"	154	160	157	171	"	"					"	"	"	"				OUT		"	Clk to Q _A	"	29	"
		"	155	161	158	172	"	"					"	"	"	"			OUT			"	Clk to Q _B	"	"	"
		"	156	162	159	173	"	"					"	"	"	"		OUT				"	Clk to Q _C	"	"	"
		"	157	163	160	174	"	"					"	"	"	"	OUT					"	Clk to Q _D	"	"	"
	t _{PHL5}	"	158	164	161	175	"	"					"	"	"	"				OUT		"	Clk to Q _A	"	32	"
		"	159	165	162	176	"	"					"	"	"	"			OUT			"	Clk to Q _B	"	"	"
		"	160	166	163	177	"	"					"	"	"	"		OUT				"	Clk to Q _C	"	"	"
		"	161	167	164	178	"	"					"	"	"	"	OUT					"	Clk to Q _D	"	"	"
	t _{PLH6}	"	162	168	165	179	"	"	IN				"	GND						OUT		"	Clk to Q _A	"	29	"
	t _{PHL6}	"	163	169	166	180	"	"	IN				"	"						OUT		"	Clk to Q _A	"	32	"
	t _{PLH6}	"	164	170	167	181	"	"		IN			"	"					OUT			"	Clk to Q _B	"	29	"
	t _{PHL6}	"	165	171	168	182	"	"		IN			"	"					OUT			"	Clk to Q _B	"	32	"
	t _{PLH6}	"	166	172	169	183	"	"			IN		"	"				OUT				"	Clk to Q _C	"	29	"
	t _{PHL6}	"	167	173	170	184	"	"			IN		"	"				OUT				"	Clk to Q _C	"	32	"
	t _{PLH6}	"	168	174	171	185	"	"				IN	"	"			OUT					"	Clk to Q _D	"	29	"
	t _{PHL6}	"	169	175	172	186	"	"				IN	"	"			OUT					"	Clk to Q _D	"	32	"
	t _{PLH7}	"	170	176	173	187	"	"					4.5 V	"	4.5 V	IN					OUT	"	EnT to C _V	"	19	"
	t _{PHL7}	"	171	177	174	188	"	"					4.5 V	"	4.5 V	IN					OUT		EnT to C _V	"	19 11/	"
	t _{PHL8}	"	172	178	175	189	IN	12/	4.5 V					"	GND					OUT			Clr to Q _A	"	33	"
	t _{PHL8}	"	173	179	176	190	"	"		4.5 V				"	"				OUT				Clr to Q _B	"	"	"
	t _{PHL8}	"	174	180	177	191	"	"			4.5 V			"	"			OUT					Clr to Q _C	"	"	"
	t _{PHL8}	"	175	181	178	192	"	"				4.5 V		"	"		OUT						Clr to Q _D	"	"	"

See footnotes at end of device types 03, 04, 11, and 12.

TABLE III. Group A inspection for device types 03, 04, 11, and 12.

Subgroup	Symbol	MIL-STD-883 method	Cases E, F				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit																				
			Case 1/				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max																					
			Test no. (Device types)				Clear	Clock	A	B	C	D	EnP	GND	Load	EnT	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}																								
			03	04	11	12																																								
10 T _C = +125°C	F _{MAX} 10/	3003 (Fig 6)	176	182	179	193	Same terminal conditions as for subgroup 9.																				Clk to Q _A	22		MHz																
	t _{PLH4}	"	177	183	180	194																					Clk to Carry	3	56	ns																
	t _{PHL4}	"	178	184	181	195																					Clk to carry	"	56	"																
	t _{PLH5}	"	179	185	182	196																					Clk to Q _A	"	41	"																
		"	180	186	183	197																					Clk to Q _B	"	"	"																
		"	181	187	184	198																					Clk to Q _C	"	"	"																
		"	182	188	185	199																					Clk to Q _D	"	"	"																
	t _{PHL5}	"	183	189	186	200																					Clk to Q _A	"	45	"																
		"	184	190	187	201																					Clk to Q _B	"	"	"																
		"	185	191	188	202																					Clk to Q _C	"	"	"																
		"	186	192	189	203																					Clk to Q _D	"	"	"																
	t _{PLH6}	"	187	193	190	204																					Clk to Q _A	"	42	"																
	t _{PHL6}	"	188	194	191	205																					Clk to Q _A	"	48	"																
	t _{PLH6}	"	189	195	192	206																					Clk to Q _B	"	42	"																
	t _{PHL6}	"	190	196	193	207																					Clk to Q _B	"	48	"																
	t _{PLH6}	"	191	197	194	208																					Clk to Q _C	"	42	"																
	t _{PHL6}	"	192	198	195	209																					Clk to Q _C	"	48	"																
	t _{PLH6}	"	193	199	196	210																					Clk to Q _D	"	42	"																
	t _{PHL6}	"	194	200	197	211																					Clk to Q _D	"	48	"																
	t _{PLH7}	"	195	201	198	212																					EnT to carry	"	28	"																
	t _{PHL7}	"	196	202	199	213																					EnT to carry	"	28	"																
	t _{PHL8}	"	197	203	200	214																					Clr to Q _A	"	46	"																
		"	198	204	201	215																					Clr to Q _B	"	46	"																
		"	199	205	202	216																					Clr to Q _C	"	46	"																
		"	200	206	203	217																					Clr to Q _D	"	46	"																
	11	Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C.																																												

See footnotes at end of device types 03, 04, 11, and 12.

1/ For case 2, pins not referenced are NC.

2/ Apply one pulse prior to measurement as follows:



3/ Apply 0.7 V for types 03 and 11; apply 2.0 V for types 04 and 12.

4/ I_L limits (μA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
	Clear 03	-160/-400	-30/-300	-120/-360	-160/-400	-120/-360	-0/-100	-16/-400
	Clear 04	"	"	"	"	"	"	"
	Clear 11	"	"	-290/-630	"	"	-150/-450	"
	Clear 12	"	"	-120/-360	"	"	-150/-380	"
	EnP	"	"	-160/-400	"	-120/-360	-150/-380	"
	A, B, C, D	"	"	-160/-400	"	-150/-380	-0/-100	"
	Load	-320/-800	-30/-300	-290/-630	-320/-800	-120/-360	-160/-400	-320/-800
I_{L5}	Ent		-340/-860	-340/-860		-240/-720	-300/-760	
I_{L6}	Clock	-160/-400	-0/-100	-290/-630	-160/-400	-180/-420	-0/-100	-160/-400

5/ For types 03 and 11, set outputs to 9th count ($Q_A = 1$, $Q_D = 1$, Q_B and $Q_C = 0$) prior to measurement.

For types 04 and 12, set outputs to 15th count (Q_A , Q_B , Q_C and $Q_D = 1$) prior to measurement.

6/ Apply GND for types 03 and 11; apply 4.5 V for types 04 and 12.

7/ Only a summary of attributes data is required.

8/ A = 3.0 V minimum; B = 0.0 V or GND.

9/ H > 1.5 V; L < 1.5 V; X = don't care.

10/ The F_{max} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency. For type 04, circuit C, 20 MHz minimum.

11/ The limit for circuit B shall be 23 ns.

12/ For types 03 and 04, apply one clock pulse prior to test. For types 11 and 12 apply one clock pulse prior to test and another pulse during test.

13/ I_{H13} limit for types 11 and 12: 40 μA maximum.

I_{H14} limit for types 11 and 12: 200 μA maximum.

TABLE III. Group A inspection for device types 05 and 06.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	U/D	CK	A	B	C	D	EP	GND	L	ET	Q _{D'}	Q _{C'}	Q _{B'}	Q _{A'}	Ripple carry	V _{CC}				
1 T _C = +25°C	V _{OL}	3007	1	4.5 V	2/	0.7 V	0.7 V	0.7 V	0.7 V	4.5 V	GND	0.7 V	4.5 V	4 mA					4.5 V	Q _D		0.4	V
		"	2		"	"	"	"	"	"	"	"	"		4 mA				"	Q _C		"	"
		"	3		"	"	"	"	"	"	"	"	"			4 mA			"	Q _B		"	"
		"	4		"	"	"	"	"	"	"	"	"				4 mA		"	Q _A		"	"
		"	5	0.7 V	"	"	"	"	"	0.7 V	"	"	0.7 V					4 mA	"	Ripple carry		"	"
	V _{OH}	3006	6	4.05 V	"	2.0 V	2.0 V	2.0 V	2.0 V	"	"	"	"	-4 mA					"	Q _D	2.5		"
		"	7		"	"	"	"	"	"	"	"	"		-4 mA				"	Q _C	"		"
		"	8		"	"	"	"	"	"	"	"	"			-4 mA			"	Q _B	"		"
		"	9		"	"	"	"	"	"	"	"	"				-4 mA		"	Q _A	"		"
		"	10	0.7 V	"	"	"	"	"	"	"	"	"					-4 mA	"	Ripple carry	"		"
	V _{IC}		11	-18 mA							"								"	U/D		-1.5	"
			12		-18 mA						"								"	CK		"	"
			13			-18 mA					"								"	A		"	"
			14				-18 mA				"								"	B		"	"
			15					-18 mA			"								"	C		"	"
			16						-18 mA		"								"	D		"	"
			17							-18 mA	"								"	EP		"	"
			18								"	-18 mA							"	L		"	"
			19								"		-18 mA						"	ET		"	"
	I _{IL12}	3009	20			0.4 V					"	GND							5.5 V	A	3/	3/	μA
		"	21				0.4 V				"	"							"	B			"
		"	22					0.4 V			"	"							"	C			"
		"	23						0.4 V		"	"							"	D			"
	I _{IL13}	"	24	0.4 V							"								"	U/D	3/	3/	"
		"	25		0.4 V						"								"	CK			"
		"	26								"	0.4 V							"	L			"
	I _{IL14}	"	27							0.4 V	"								"	EP	3/	3/	"
	I _{IL15}	"	28								"		0.4 V						"	ET	3/	3/	"
	I _{IL17}	3010	29	2.7 V							"								"	U/D		20	"
		"	30		2.7 V						"								"	CK		"	"
		"	31			2.7 V					"								"	A		"	"
		"	32				2.7 V				"								"	B		"	"
		"	33					2.7 V			"								"	C		"	"
		"	34						2.7 V		"								"	D		"	"
		"	35							2.7 V	"								"	EP		"	"
		"	36								"	2.7 V							"	L		"	"
	I _{IH19}	"	37								"		2.7 V						"	ET		40	"

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device types 05 and 06.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	U/ D	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
1 T _C = +25°C	I _{IH18}	3010	38	5.5 V							GND								5.5 V	U/ D		100	μA
		"	39		5.5 V						"								"	CK		"	"
		"	40			5.5 V					"								"	A		"	"
		"	41				5.5 V				"								"	B		"	"
		"	42					5.5 V			"								"	C		"	"
		"	43						5.5 V		"								"	D		"	"
		"	44							5.5 V	"								"	EP		"	"
		"	45								"	5.5 V							"	L		"	"
	I _{IL20}	"	46								"		5.5 V						"	ET		200	"
	I _{OS}	3011	47	5.5 V	2/	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"	GND	5.5 V	GND					"	Q _D	-15	-100	"
		"	48	"	"	"	"	"	"	"	"	"	"		GND				"	Q _C	"	"	"
		"	49	"	"	"	"	"	"	"	"	"	"			GND			"	Q _B	"	"	"
		"	50	"	"	"	"	"	"	"	"	"	"				GND		"	Q _A	"	"	"
		"	51	"	"	"	"	"	"	"	"	"	"					GND	"	Ripple carry	"	"	"
	I _{CC}	3005	52	GND	"	GND	GND	GND	GND	GND	"	5.5 V	GND						"	V _{CC}		34	"
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.																						

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit			
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max				
			Test no.	U/ D	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}							
7 T _C = +25°C	Functional tests 4/	3014	53	A 5/	B 5/	B	B	B	B	B	GND	B	B	X	X	X	X	X	4.5 V	See 6/						
		"	54	"	A	"	"	"	"	"	"	"	B	"	L 5/	L	L	L	H 5/					"		
		"	55	"	B	"	"	"	"	"	"	"	A	"	"	"	"	L	"					"		
		"	56	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	57	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	58	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L					"	"	
		"	59	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"					"		
		"	60	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	61	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	62	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	L					"	"	
		"	63	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	L					"	"	
		"	64	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	65	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	66	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L					"	"	
		"	67	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"					"		
		"	68	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	69	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"		
		"	70	"	A	"	"	"	"	"	"	"	"	"	"	H	L	L	L					"	"	
		"	71	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"					"		
		"	72	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L					"	"	
		"	73	"	B	"	"	"	"	"	"	A	"	"	"	"	"	"	L					"	"	
		"	74	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"					"	"	
		"	75	"	B	"	"	"	"	"	"	B	"	"	"	"	"	"	"					"	"	
		"	76	"	A	"	"	"	"	"	"	"	"	"	A	"	"	"	"					H	"	
		"	77	"	A	"	"	"	"	"	"	"	"	"	A	"	"	"	"					H	"	
		"	78	"	B	"	"	"	"	"	"	"	"	"	B	"	"	"	"					L	"	
		"	79	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					H	"	
		"	80	"	B	A	"	"	"	"	A	"	"	B	"	"	"	"	L					"	"	
		"	81	"	A	"	"	"	"	"	"	"	"	B	"	"	"	"	H					L	"	
		"	82	"	B	B	"	"	"	"	"	"	"	A	"	"	"	"	H					H	"	
		"	83	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	84	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	85	"	A	"	"	"	"	"	"	"	"	"	"	L	H	H	H					"	"	
		"	86	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"	
		"	87	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	88	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					L	"	
		"	89	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					H	"	
		"	90	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"					"	"	
		"	91	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"					L	"	"
		"	92	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	93	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					H	"	"
		"	94	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"	
		"	95	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	96	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"	
		"	97	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					H	"	"
		"	98	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"	
		"	99	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					L	"	"
"	100	"	B	"	"	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"						
"	101	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"						
"	102	"	B	"	"	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"						
"	103	"	B	"	"	"	"	"	"	"	"	"	A	"	"	"	"	H	"	"						
"	104	"	A	"	"	"	"	"	"	"	"	"	A	"	"	"	"	H	"	"						
"	105	"	B	"	"	"	"	"	"	"	"	"	B	"	"	"	"	L	"	"						
"	106	"	B	B	A	A	"	"	"	"	"	B	"	"	"	"	"	L	"	"						
"	107	"	A	B	A	A	"	"	"	"	"	B	"	"	"	"	H	H	"	"						
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																									

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 06 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit		
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max			
			Test no.	U/ D	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}						
7 Tc = +25°C	Functional tests 4/	3014	53	A 5/	B 5/	B	B	B	B	B	GND	B	B	X	X	X	X	X	X	See 6/					
		"	54	"	A	"	"	"	"	"	"	B	"	L 5/	L	L	L	H 5/	"						
		"	55	"	B	"	"	"	"	"	"	A	"	"	"	"	L	"	"						
		"	56	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"						
		"	57	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"						
		"	58	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	"				"		
		"	59	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	60	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	61	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	62	"	A	"	"	"	"	"	"	"	"	"	"	"	H	L	L				"	"	
		"	63	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	64	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	65	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	66	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"	"	
		"	67	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	68	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	69	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	70	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				L	"	"
		"	71	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	72	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	73	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	74	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"	"	
		"	75	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	76	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	77	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	78	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				L	"	"
		"	79	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	80	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	81	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"				"		
		"	82	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"	"	
		"	83	"	B	"	"	"	"	"	"	"	"	"	"	"	"	L	"				"		
		"	84	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	L				"	"	
		"	85	"	B	"	"	"	"	"	"	A	"	"	"	"	"	"	"				"		
		"	86	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"				"		
		"	87	"	B	"	"	"	"	"	"	B	"	"	"	"	"	"	"				"		
		"	88	"	B	"	"	"	"	"	"	"	"	A	"	"	"	"	"				H	"	
		"	89	"	A	"	"	"	"	"	"	"	"	A	"	"	"	"	"				H	"	
		"	90	"	B	"	"	"	"	"	"	"	"	B	"	"	"	"	"				L	"	
		"	91	"	A	"	"	"	"	"	"	"	"	"	"	L	L	L	L				H	"	
		"	92	"	B	"	A	A	A	A	A	"	"	B	"	L	L	L	L				H	"	
		"	93	"	A	"	"	"	"	"	"	"	"	B	"	H	H	H	H				L	"	
		"	94	"	B	"	B	"	"	"	"	"	"	A	"	"	"	"	H				H	"	
		"	95	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"				"	"	
		"	96	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	97	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				H	"	
		"	98	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"	"	
		"	99	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	100	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	101	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				H	"	
		"	102	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"	"	
		"	103	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	104	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	105	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				H	"	
		"	106	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H				"	"	
		"	107	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	
		"	108	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L				"	"	

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 06 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit		
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max			
			Test no.	U/ D	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}						
7 T _C = +25°C	Functional tests 4/	3014	109	B 5/	A 5/	A	A	A	A	B	GND	A	B	L	H	H	H	H	4.5 V	See 6/					
		"	110	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"					"	
		"	111	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	112	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	113	"	A	"	"	"	"	"	"	"	"	"	"	"	"	L	H					"	"
		"	114	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"
		"	115	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	116	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	117	"	A	"	"	"	"	"	"	"	"	"	"	"	L	H	H					"	"
		"	118	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"
		"	119	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	120	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	L					"	"
		"	121	"	A	"	"	"	"	"	"	"	"	"	"	"	"	L	H					"	"
		"	122	"	B	"	"	"	"	"	"	"	"	"	"	"	"	"	H					"	"
		"	123	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"	L					L	"
		"	124	"	B	"	"	"	"	"	"	A	"	"	"	"	"	"	"					"	"
		"	125	"	A	"	"	"	"	"	"	A	"	"	"	"	"	"	"					"	"
		"	126	"	B	"	"	"	"	"	"	B	"	"	A	"	"	"	"					H	"
		"	127	"	A	"	"	"	"	"	"	"	"	A	"	"	"	"	"					H	"
		"	128	"	B	"	"	"	"	"	"	"	"	B	"	"	"	"	"					L	"
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																								

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 05– Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	U/ $\bar{D}$	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
9 T _c = +25°C	t _{PLH5}	See	108	5.0 V	IN $\bar{Z}$ /	GND	GND	GND	GND	GND	GND	IN $\bar{Z}$ /	GND				OUT		5.0 V	CK TO Q _A	3	22	ns
		fig. 7	109	"	IN	"	"	"	"	"	"	5.0 V				OUT			"	CK TO Q _B	"	"	"
		"	110	"	IN $\bar{Z}$ /	"	"	"	"	"	"	"			OUT				"	CK TO Q _C	"	"	"
		"	111	"	IN $\bar{Z}$ /	"	"	"	"	"	"	"		OUT					"	CK TO Q _D	"	"	"
	t _{PHL5}	"	112	"	IN $\bar{Z}$ /	5.0 V	"	"	"	"	"	IN					OUT		"	CK TO Q _A	"	"	"
		"	113	"	"	5.0 V	"	"	"	"	"	"				OUT			"	CK TO Q _B	"	"	"
		"	114	"	"	"	5.0 V	"	"	"	"	"			OUT				"	CK TO Q _C	"	"	"
		"	115	"	"	"	"	"	5.0 V	"	"	"		OUT					"	CK TO Q _D	"	"	"
	t _{PHL15}	"	116	"	"	"	"	"	"	"	"	"						OUT	"	CK TO RC	"	32	"
	t _{PLH12}	"	117	"	IN	"	"	"	"	"	"	5.0 V						OUT	"	CK TO RC	"	30	"
	t _{PLH5}	"	118	GND	IN $\bar{Z}$ /	IN	GND	GND	GND	"	"	GND					OUT		"	CK TO Q _A	"	22	"
	t _{PHL5}	"	119	"	IN	GND	GND	"	"	"	"	"				OUT			"	CK TO Q _A	"	"	"
	t _{PLH5}	"	120	"	"	"	5.0 V	"	"	"	"	"				OUT			"	CK TO Q _B	"	"	"
	t _{PHL5}	"	121	"	"	"	GND	"	"	"	"	"					OUT		"	CK TO Q _B	"	"	"
	t _{PLH5}	"	122	"	"	"	"	5.0 V	"	"	"	"				OUT			"	CK TO Q _C	"	"	"
	t _{PHL5}	"	123	"	"	"	"	GND	"	"	"	"				OUT			"	CK TO Q _C	"	"	"
	t _{PLH5}	"	124	"	"	"	"	"	5.0 V	"	"	"		OUT					"	CK TO Q _D	"	"	"
	t _{PHL5}	"	125	"	"	"	"	GND	"	"	"	"		OUT					"	CK TO Q _D	"	"	"
	t _{PHL7}	"	126	5.0 V	IN $\bar{Z}$ /	5.0 V	"	"	5.0 V	"	"	IN	IN					OUT	"	ET to RC	"	24	"
	t _{PHL7}	"	127	5.0 V	GND	"	"	"	"	"	"	5.0 V	IN					OUT	"	ET to RC	"	15	"
	t _{PHL11}	"	128	IN	IN $\bar{Z}$ /	"	"	"	"	"	"	IN	GND					OUT	"	U/ $\bar{D}$ to RC	"	28	"
	t _{PLH9}	"	129	IN	GND	"	"	"	"	"	"	5.0 V	GND						"	U/ $\bar{D}$ to RC	"	22	"
	t _{PHL7}	"	130	GND	IN $\bar{Z}$ /	GND	"	"	"	"	"	IN	IN						"	ET to RC	"	24	"
	t _{PLH7}	"	131	GND	GND	"	"	"	"	"	"	5.0 V	IN						"	ET to RC	"	15	"
	t _{PHL11}	"	132	IN	IN $\bar{Z}$ /	"	"	"	"	"	"	IN	GND						"	U/ $\bar{D}$ to RC	"	28	"
	t _{PLH9}	"	133	IN	GND	"	"	"	"	"	"	5.0 V							"	U/ $\bar{D}$ to RC	"	22	"
	F _{MAX} 10/	"	134	5.0 V	IN					"	"	5.0 V		OUT	OUT	OUT	OUT		"	CK to Q _n	25		MHz
	F _{MAX} 10/	"	135	GND	IN					"	"	5.0 V		OUT	OUT	OUT	OUT		"	CK to Q _n	25		MHz

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 05– Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V or L ≤ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit		
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max			
			Test no.	U/ $\overline{D}$	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}						
10 T _C = +125°C	t _{PLH5}	See	136	Same conditions as for subgroup 9.																		CK TO Q _A	3	26	ns
		fig. 7	137																			CK TO Q _B	"	"	"
		"	138																			CK TO Q _C	"	"	"
		"	139																			CK TO Q _D	"	"	"
	t _{PHL5}	"	140																			CK TO Q _A	"	"	"
		"	141																			CK TO Q _B	"	"	"
		"	142																			CK TO Q _C	"	"	"
		"	143																			CK TO Q _D	"	"	"
	t _{PHL15}	"	144																			CK TO RC	"	37	"
	t _{PLH12}	"	145																			CK TO RC	"	35	"
	t _{PLH5}	"	146																			CK TO Q _A	"	26	"
	t _{PHL5}	"	147																			CK TO Q _A	"	"	"
	t _{PLH5}	"	148																			CK TO Q _B	"	"	"
	t _{PHL5}	"	149																			CK TO Q _B	"	"	"
	t _{PLH5}	"	150																			CK TO Q _C	"	"	"
	t _{PHL5}	"	151																			CK TO Q _C	"	"	"
	t _{PLH5}	"	152																			CK TO Q _D	"	"	"
	t _{PHL5}	"	153																			CK TO Q _D	"	"	"
	t _{PHL7}	"	154																			ET to RC	"	28	"
	t _{PLH7}	"	155																			ET to RC	"	18	"
	t _{PHL11}	"	156																			U/ $\overline{D}$ to RC	"	33	"
	t _{PLH9}	"	157																			U/ $\overline{D}$ to RC	"	26	"
	t _{PHL7}	"	158																			ET to RC	"	28	"
	t _{PLH7}	"	159																			ET to RC	"	18	"
	t _{PHL11}	"	160																			U/ $\overline{D}$ to RC	"	33	"
	t _{PLH9}	"	161																			U/ $\overline{D}$ to RC	"	26	"
F _{MAX}	"	162	CK to Q _n	25		MHz																			
F _{MAX}	"	163	CK to Q _n	25		MHz																			
11	Same tests, conditions and limits as for subgroup 10 except T _C = -55°C and V _{CC} = 4.5 for F _{MAX} .																								

See footnotes at end of device types 05 and 06.

TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	U/ $\overline{D}$	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}				
9 T _C = +25°C	t _{PLH5}	See	129	5.0 V	IN <u>7/</u>	GND	GND	GND	GND	GND	GND	IN	GND				OUT		5.0 V	CK to Q _A	3	22	ns
		fig. 7	130	"	"	5.0 V	"	"	"	"	"	"	"	"			OUT		"	CK to Q _B	"	"	"
		"	131	"	"	"	5.0 V	"	"	"	"	"	"	"		OUT			"	CK to Q _C	"	"	"
		"	132	"	"	"	"	5.0 V	"	"	"	"	"	"	OUT				"	CK to Q _D	"	"	"
	t _{PHL5}	"	133	"	" <u>7/</u>	5.0 V	GND	GND	GND	"	GND	IN	GND				OUT		"	CK to Q _A	"	32	"
		"	134	"	"	"	5.0 V	"	"	"	"	"	"			OUT			"	CK to Q _B	"	"	"
		"	135	"	"	"	"	5.0 V	"	"	"	"	"		OUT				"	CK to Q _C	"	"	"
		"	136	"	"	"	"	"	5.0 V	"	"	"	"	OUT					"	CK to Q _D	"	"	"
	t _{PHL15}	"	137	"	"	GND	"	"	"	"	"	"	"					OUT	"	CK to RC	"	35	"
	t _{PLH12}	"	138	"	"	GND	"	"	"	"	"	5.0 V	"					OUT	"	CK to RC	"	33	"
	t _{PLH5}	"	139	GND	"	5.0 V	GND	GND	GND	"	"	5.0 V	"				OUT		"	CK to Q _A	"	22	"
	t _{PHL5}	"	140	"	"	GND	GND	"	"	"	"	"	"				OUT		"	CK to Q _A	"	32	"
	t _{PLH5}	"	141	"	"	"	5.0 V	"	"	"	"	"	"			OUT			"	CK to Q _B	"	22	"
	t _{PHL5}	"	142	"	"	"	GND	"	"	"	"	"	"			OUT	OUT		"	CK to Q _B	"	32	"
	t _{PLH5}	"	143	"	"	"	"	5.0 V	"	"	"	"	"		OUT				"	CK to Q _C	"	22	"
	t _{PHL5}	"	144	"	"	"	"	GND	"	"	"	"	"		OUT				"	CK to Q _C	"	32	"
	t _{PLH5}	"	145	"	"	"	"	"	5.0 V	"	"	"	"	OUT					"	CK to Q _D	"	22	"
	t _{PHL5}	"	146	"	"	"	"	"	GND	"	"	"	"	OUT	OUT				"	CK to Q _D	"	32	"
	t _{PHL7}	"	147	5.0 V	" <u>7/</u>	5.0 V	5.0 V	5.0 V	5.0 V	"	"	5.0 V	IN					OUT	"	ET to RC	"	28	"
	t _{PLH7}	"	148	5.0 V	"	"	"	"	"	"	"	"	5.0 V	IN				OUT	"	ET to RC	"	24	"
	t _{PHL11}	"	149	IN	IN <u>7/</u>	"	"	"	"	"	"	"	5.0 V	GND				OUT	"	$\overline{U/ D}$ to RC	"	32	"
	t _{PLH9}	"	150	IN	IN	"	"	"	"	"	"	"	5.0 V	GND				"	"	$\overline{U/ D}$ to RC	"	28	"
	t _{PHL7}	"	151	GND	IN <u>7/</u>	GND	GND	GND	GND	"	"	"	5.0 V	IN				"	"	ET to RC	"	28	"
	t _{PLH7}	"	152	GND	IN	"	"	"	"	"	"	"	5.0 V	IN				"	"	ET to RC	"	24	"
	t _{PHL11}	"	153	IN	IN <u>7/</u>	"	"	"	"	"	"	"	5.0 V	GND				"	"	$\overline{U/ D}$ to RC	"	32	"
	t _{PLH9}	"	154	IN	IN	"	"	"	"	"	"	"	5.0 V	"				"	"	$\overline{U/ D}$ to RC	"	22	"
	F _{MAX}	"	155	5.0 V	IN	"	"	"	"	"	"	"	5.0 V	"	OUT	OUT	OUT	OUT	"	CK to Q _n	25		MHz
	F _{MAX}	"	156	GND	IN	5.0 V	5.0 V	5.0 V	5.0 V	"	"	"	5.0 V	"	OUT	OUT	OUT	OUT	"	CK to Q _n	25		MHz

See footnotes at end of device types 05 and 06.

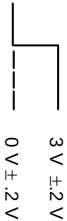
TABLE III. Group A inspection for device type 06.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V or L $\leq$ 0.7 V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	U/ $\overline{D}$	CK	A	B	C	D	EP	GND	L	ET	Q _D	Q _C	Q _B	Q _A	Ripple carry	V _{CC}					
10 T _C = +125°C	t _{PLH5}	See	157	Same conditions as for subgroup 9.																	CK TO Q _A	3	26	ns
		fig. 7	158																		CK TO Q _B	"	"	"
		"	159																		CK TO Q _C	"	"	"
		"	160																		CK TO Q _D	"	"	"
	t _{PHL5}	"	161																		CK TO Q _A	"	36	"
		"	162																		CK TO Q _B	"	"	"
		"	163																		CK TO Q _C	"	"	"
		"	164																		CK TO Q _D	"	"	"
	t _{PHL15}	"	165																		CK TO RC	"	40	"
	t _{PLH12}	"	166																		CK TO RC	"	38	"
	t _{PLH5}	"	167																		CK TO Q _A	"	26	"
	t _{PHL5}	"	168																		CK TO Q _A	"	36	"
	t _{PLH5}	"	169																		CK TO Q _B	"	26	"
	t _{PHL5}	"	170																		CK TO Q _B	"	36	"
	t _{PLH5}	"	171																		CK TO Q _C	"	26	"
	t _{PHL5}	"	172																		CK TO Q _C	"	36	"
	t _{PLH5}	"	173																		CK TO Q _D	"	26	"
	t _{PHL5}	"	174																		CK TO Q _D	"	36	"
	t _{PHL7}	"	175																		ET to RC	"	32	"
	t _{PLH7}	"	176																		ET to RC	"	28	"
	t _{PHL11}	"	177																		U/ $\overline{D}$ to RC	"	37	"
	t _{PLH9}	"	178																		U/ $\overline{D}$ to RC	"	32	"
	t _{PHL7}	"	179																		ET to RC	"	32	"
	t _{PLH7}	"	180																		ET to RC	"	28	"
	t _{PHL11}	"	181																		U/ $\overline{D}$ to RC	"	37	"
	t _{PLH9}	"	182																		U/ $\overline{D}$ to RC	"	32	"
	F _{MAX}	"	183																		CK to Q _n	25		MHz
	F _{MAX}	"	184																		CK to Q _n	25		MHz
11	Same tests, conditions and limits as for subgroup 10 except T _C = -55°C and V _{CC} = 4.5 for F _{MAX} .																							

See footnotes at end of device types 05 and 06.

1/ Case 2, pins not referenced are N/C.

2/ Apply one clock pulse prior to test as follows:



3/ I_{LE} limits (μA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
I_{L12}	A, B, C, D		-0.5/-400	-160/-400		-0.5/-400		
I_{L13}	$U/\bar{D}$, CK, L		-50/-370	-160/-400		-135/-370		
I_{L14}	EP		-50/-385	160/-400		-150/-385		
I_{L15}	ET		-50/-760	-140/-720		-280/-760		

4/ Only a summary of attributes data is required.

5/ A = 3.0 V minimum; B = 0.0 V or GND.

6/ H > 1.5 V; L < 1.5 V; X = don't care.

7/ Apply one clock pulse with "L" low prior to test.

8/ Apply three clock pulses prior to test.

9/ Apply one clock pulse with "A" low prior to test.

10/ On (Q_A , Q_B , Q_C , and Q_D) shall respond as specified in the truth table with the minimum F_{max} frequency input to "CK".

TABLE III. Group A inspection for device types 07 and 08.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F																	Measured terminal	Limits		Unit		
			Cases 1/2	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	Min		Max				
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A				V _{CC}			
1 T _C = +25°C	V _{OL}	3007	1			4 mA					GND			0.7 V			0.7 V	0.7 V	4.5 V	Q _A		0.4	V		
		"	2	0.7 V	4 mA															Q _B		"	"		
		"	3						4 mA					0.7 V	"						Q _C		"	"	
		"	4							4 mA	"		0.7 V	"	"						Q _D		"	"	
		"	5	2/				0.7 V			"		2.0 V	2/	"	4 mA			2.0 V	4.5 V	Ripple carry		"	"	
		"	6				0.7 V				"					4 mA	2.0 V		4.5 V	Borrow		"	"		
	V _{OH}	3006	7			-0.4 mA					"				0.7 V			0.7 V	2.0 V	"	Q _A	2.5		"	
		"	8	2.0 V	-0.4 mA						"				"						Q _B	"		"	
		"	9						-0.4 mA		"			2.0 V	"						Q _C	"		"	
		"	10							-0.4 mA	"		2.0 V	"							Q _D	"		"	
		"	11					2.0 V			"					-0.4 mA		"			Ripple Carry	"		"	
	V _{IC}		12				2.0 V				"						-0.4 mA				Borrow	"		"	
			13								"								-18 mA		A		-1.5	"	
			14	-18 mA							"										B			"	
			15								"		-18 mA		-18 mA						C		"	"	
			16								"										D		"	"	
			17								"				-18 mA						Load		"	"	
			18								"						-18 mA				Clear		"	"	
			19					-18 mA			"										Count up		"	"	
	I _{IL9}		20				-18 mA			"											Count down		"	"	
			3009	21								"				GND			GND	0.4 V	5.5 V	A	3/	3/	μA
			"	22	0.4 V							"										B	"	"	"
			"	23								"		0.4 V								C	"	"	"
	I _{IL10}		24								"		0.4 V		"						D	"	"	"	
			"	25								"				0.4 V					Load	"	"	"	
			I _{IL11}		26								"						0.4 V			Clear	"	"	"
					27					0.4 V				"									Count up	"	"
	I _{IH17}		28				0.4 V				"										Count down	"	"	"	
			3010	29								"				5.5 V			5.5 V	2.7 V	"	A		20	"
			"	30	2.7 V							"										B	"	"	"
			"	31								"				2.7 V	"					C	"	"	"
			"	32								"		2.7 V		"						D	"	"	"
"			33								"				2.7 V						Load	"	"	"	
"			34								"						2.7 V				Clear	"	"	"	
"			35					2.7 V			"										Count up	"	"	"	
I _{IH18}		36				2.7 V				"											Count down	"	"	"	
		"	37												5.5 V			5.5 V	5.5 V	"	A		100	"	
		"	38	5.5 V								"									B	"	"	"	
		"	39									"		5.5 V							C	"	"	"	
		"	40									"				5.5 V					D	"	"	"	
		"	41									"									Load	"	"	"	
		"	42									"						5.5 V			Clear	"	"	"	
		"	43					5.5 V				"									Count up	"	"	"	
		44				5.5 V				"										Count down	"	"	"		

See footnotes at end of device types 07 and 08.

TABLE III. Group A inspection for device types 07 and 08 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A	V _{CC}				
1 T _C = +25°C	I _{OS}	3011	45			GND					GND			GND			GND	5.5 V	5.5 V	Q _A	4/	4/	mA
		"	46	5.5 V	GND						"			"			"		"	Q _B	"	"	"
		"	47						GND		"		5.5 V	"			"		"	Q _C	"	"	"
		"	48						GND	"	5.5 V			"			"		"	Q _D	"	"	"
		"	49					5.5 V			"				GND		"		"	Ripple carry	"	"	"
		"	50				5.5 V				"					GND			"	Borrow	"	"	"
	I _{CC}	3005	51								"			GND			GND		"	V _{CC}		34	"
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.																						

See footnotes at end of device types 07 and 08.

TABLE III. Group A inspection for device types 07 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A	V _{CC}				
7 T _c = +25°C	Functional tests 5/	3014	52	A 6/	L	L	A	A	L	L	GND	A	A	A	H	H	A	A	4.5 V	See 7/			
		"	53	"	"	L	"	A	"	"	"	"	"	"	"	"	B 6/	"	"				
		"	54	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	55	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	56	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	57	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	58	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	59	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	60	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	61	"	L	L	"	A	H	"	"	"	"	"	"	"	"	"	"				
		"	62	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	63	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	64	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	65	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	66	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	67	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	68	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	69	"	L	L	"	A	L	H	"	"	"	"	"	"	"	"	"				
		"	70	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	71	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	72	"	"	H	"	B	"	"	"	"	"	"	"	L	"	"	"				
		"	73	"	"	L	"	A	"	"	L	"	"	"	"	H	"	"	"				
		"	74	"	"	L	"	B	"	"	"	"	"	"	"	"	L	"	"				
		"	75	"	"	H	A	"	"	"	H	"	"	"	"	"	H	"	"				
		"	76	"	"	H	B	"	"	"	"	"	"	"	"	"	H	"	"				
		"	77	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	78	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	79	"	H	H	A	"	"	H	L	"	"	"	"	"	"	"	"				
		"	80	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	81	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	82	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	83	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	84	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	85	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	86	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	87	"	H	H	A	"	"	L	"	"	"	"	"	"	"	"	"				
		"	88	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	89	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	90	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	91	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	92	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	93	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	94	"	"	L	B	"	"	"	"	"	"	"	"	"	L	"	"				
		"	95	"	"	H	A	"	"	"	H	"	"	"	"	"	H	"	"				
		"	96	"	H	H	"	"	"	H	H	"	"	"	"	B	"	"	"				
		"	97	"	L	L	"	"	"	L	L	"	"	"	"	"	"	A	"				
		"	98	"	H	H	"	"	"	H	H	"	"	"	"	"	"	B	"				
		"	99	"	H	H	"	"	"	H	H	"	"	"	"	A	"	B	"				
		"	100	"	L	L	"	"	"	L	L	"	"	"	"	"	"	A	"				
		"	101	"	L	L	"	"	"	L	L	"	"	"	"	"	"	B	"				

See footnotes at end of device types 07 and 08.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A	V _{CC}					
7 T _C = +25°C	Functional tests 5/	3014	102	A 6/	H	H	A	A	H	H	GND	A	A	B 6/	H	H	B	A	4.5 V	See 7/				
		"	103	A	"	"	"	"	"	"	"	A	A	A	"	"	"	A	"					
		"	104	B	"	"	"	"	"	"	"	B	B	A	"	"	"	B	"					
		"	105	"	L	L	"	"	"	L	L	"	"	"	B	"	"	"	"					"
		"	106	"	"	"	B	"	"	"	"	"	"	"	"	"	L	"	"					"
		"	107	"	"	"	A	"	"	"	"	"	"	"	"	"	H	"	"					"
		"	108	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"					"
		"	109	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"					"
		"	110	"	"	"	"	"	"	"	"	"	"	"	A	"	"	"	"					"
		"	111	"	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"					"
		"	112	"	"	"	B	"	"	"	"	"	"	"	"	"	L	"	"					"
		"	113	"	"	"	A	"	"	"	"	"	"	"	"	"	H	"	"					"
		"	114	"	"	"	A	B	"	"	"	"	"	"	"	"	"	"	"					"
		"	115	"	"	"	A	A	"	"	"	"	"	"	"	"	"	"	"					"
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																							

See footnotes at end of device types 07 and 08.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A	V _{CC}				
7 T _c = +25°C	Functional tests 5/	3014	52	B 6/	L	L	A 6/	A	L	L	GND	B	B	B	H	H	B	B	4.5 V	See 7/			
		"	53	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	54	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	55	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	56	A	H	L	"	"	"	"	"	"	"	B	"	"	"	B	"				
		"	57	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	58	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	59	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	60	B	L	L	"	"	H	"	"	"	A	B	"	"	"	B	"				
		"	61	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	62	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	63	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	64	A	H	L	"	"	"	"	"	"	"	B	"	"	"	B	"				
		"	65	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	66	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	67	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	68	B	L	L	"	"	L	H	"	A	B	B	"	"	"	B	"				
		"	69	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	70	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	71	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	72	A	H	L	"	"	"	"	"	"	"	B	"	"	"	B	"				
		"	73	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	74	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	75	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	76	B	L	L	"	"	H	"	"	"	A	B	"	"	"	B	"				
		"	77	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	78	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	79	"	"	H	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	80	A	H	L	"	"	"	"	"	"	"	B	"	"	"	B	"				
		"	81	"	"	L	"	"	"	"	"	"	"	A	"	"	"	B	"				
		"	82	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A	"				
		"	83	"	L	L	"	"	L	L	"	"	"	B	"	"	A	"	"				
		"	84	"	"	"	"	"	"	"	"	"	"	A	"	"	"	A	"				
		"	85	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"				
		"	86	"	"	"	B	"	"	"	"	"	"	"	"	"	"	L	"				
		"	87	"	H	H	A	"	H	H	"	"	"	"	"	"	H	"	"				
		"	88	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	89	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	90	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	91	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	92	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	93	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	94	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	95	"	H	H	A	"	L	"	"	"	"	"	"	"	"	"	"				
		"	96	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	97	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	98	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	99	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	100	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	101	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	102	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	103	"	H	H	A	"	H	L	"	"	"	"	"	"	"	"	"				
		"	104	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	105	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	106	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	107	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				

See footnotes at end of device types 07 and 08.

TABLE III. Group A inspection for device types 08 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Count down	Count Up	Q _C	Q _D	GND	D	C	Load	Ripple Carry	Borrow	Clear	A	V _{CC}				
7 T _C = +25°C	Functional tests 5/	3014	108	A 6/	L	H	B 6/	A	H	L	GND	A	A	A	H	H	B 8/	A	4.5 V	See Z/			
		"	109	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	110	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	111	"	H	H	A	"	L	"	"	"	"	"	"	"	"	"	"				
		"	112	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	113	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	114	"	"	L	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	115	"	L	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	116	"	"	H	B	"	"	"	"	"	"	"	"	"	"	"	"				
		"	117	"	"	L	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	118	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	119	"	"	H	A	"	"	"	"	"	"	"	"	"	"	"	"				
		"	120	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	121	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	122	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	123	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	124	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	125	"	L	L	"	A	H	"	"	"	"	"	"	"	"	"	"				
		"	126	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	127	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	128	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	129	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	130	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	131	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	132	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	133	"	L	L	"	A	L	H	"	"	"	"	"	"	"	"	"				
		"	134	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	135	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	136	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	137	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	138	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	139	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"				
"	140	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	141	"	L	L	"	A	H	"	"	"	"	"	"	"	"	"	"						
"	142	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	143	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"						
"	144	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	145	"	H	L	"	A	"	"	"	"	"	"	"	"	"	"	"						
"	146	"	"	L	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	147	"	"	H	"	A	"	"	"	"	"	"	"	"	"	"	"						
"	148	"	"	H	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	149	"	L	L	"	A	L	L	"	"	"	"	"	L	H	"	"						
"	150	"	"	"	"	A	"	"	"	"	"	"	"	"	"	A	"						
"	151	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"						
"	152	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"						
"	153	"	"	"	"	B	"	"	"	"	"	"	"	"	L	"	"						
"	154	"	"	"	"	A	"	"	"	"	"	"	"	"	H	"	"						
"	155	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"						
"	156	"	H	H	"	"	H	H	"	"	"	"	B	"	"	"	"						
"	157	"	"	"	"	B	"	"	"	"	"	"	"	L	"	"	"						
"	158	"	"	"	"	A	"	"	"	"	"	"	"	H	"	"	"						
"	159	"	"	"	"	B	A	"	"	"	"	"	"	"	"	"	"						
"	160	"	"	"	"	A	A	"	"	"	"	"	"	"	"	"	"						
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																						

See footnotes at end of device types 07 and 08.

TABLE III. Group A inspection for device types 07 and 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; or low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case 1/2		2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			(Device type)		B	Q _B	Q _A	Count down	Count up	Q _C	Q _D	GND	D	C	Load	Ripple carry	Borrow	Clear	A	V _{CC}				
			07	08																				
9 T _C = +25°C	F _{MAX} g/	3003 g/	116	161			OUT	5.0 V	IN			GND			5.0 V			GND		5.0 V	Count up to Q _A	22		MHz
	F _{MAX} g/	"	117	162			OUT	IN	5.0 V			"			5.0 V			GND		"	Count down to Q _A	22		MHz
	t _{PLH8}	"	118	163			OUT					"			IN			GND	5.0 V	"	Load to Q _A	3	45	ns
		"	119	164	5.0 V	OUT						"						"		"	Load to Q _B	"	"	"
		"	120	165						OUT		"		5.0 V	"			"		"	Load to Q _C	"	"	"
		"	121	166							OUT	"	5.0 V	"				"		"	Load to Q _D	"	"	"
		t _{PHL10}	"	122	167			OUT				"			"			GND	GND	"	Load to Q _A	"	"	"
		"	123	168	GND	OUT						"			"			"		"	Load to Q _B	"	"	"
		"	124	169						OUT		"		GND	"			"		"	Load to Q _C	"	"	"
		"	125	170							OUT	"	GND	"				"		"	Load to Q _D	"	"	"
		t _{PLH9}	"	126	171			OUT	5.0 V	IN			"			5.0 V			"		"	Count up to Q _A	"	43
		"	127	172		OUT		"	"			"			"			"		"	Count up to Q _B	"	"	"
		"	128	173				"	"	OUT		"			"			"		"	Count up to Q _C	"	"	"
		"	129	174				"	"		OUT	"			"			"		"	Count up to Q _D	"	"	"
		"	130	175				IN	5.0 V		OUT	"			"			"		"	Count down to Q _D	"	"	"
		"	131	176				"	"	OUT		"			"			"		"	Count down to Q _C	"	"	"
		"	132	177		OUT		"	"			"			"			"		"	Count down to Q _B	"	"	"
		"	133	178			OUT	"	"			"			"			"		"	Count down to Q _A	"	"	"
		t _{PHL11}	"	134	179			OUT	5.0 V	IN		"			"			"		"	Count up to Q _A	"	52	"
		"	135	180		OUT		"	"			"			"			"		"	Count up to Q _B	"	"	"
		"	136	181				"	"		OUT	"			"			"		"	Count up to Q _C	"	"	"
		"	137	182				"	"			OUT	"		"			"		"	Count up to Q _D	"	"	"
		"	138	183				IN	5.0 V		OUT	"			"			"		"	Count down to Q _D	"	"	"
		"	139	184				"	"	OUT		"			"			"		"	Count down to Q _C	"	"	"
		"	140	185		OUT		"	"			"			"			"		"	Count down to Q _B	"	"	"
		"	141	186			OUT	"	"			"			"			"		"	Count down to Q _A	"	"	"
		t _{PHL12}	"	142	187			OUT				"			10/			IN	5.0 V	"	Clear to Q _A	"	40	"
		"	143	188	5.0 V	OUT						"			5.0 V	"		"		"	Clear to Q _B	"	"	"
		"	144	189						OUT		"		5.0 V	"			"		"	Clear to Q _C	"	"	"
		"	145	190							OUT	"	5.0 V	"				"		"	Clear to Q _D	"	"	"

See footnotes at end of device types 07 and 08.

TABLE III. Group A inspection for device types 07 and 08 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; or low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Case 1/2		2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			(Device type)		B	Q _B	Q _A	Count down	Count up	Q _C	Q _D	GND	D	C	Load	Ripple carry	Borrow	Clear	A	V _{CC}					
			07	08																					
9 T _C = +25°C	F _{MAX} 8/	3003 9/	146	191	Same terminal conditions as for subgroup 9.																	Count up to Q _A	22		MHz
	F _{MAX} 8/	"	147	192																		Count down to Q _A	22		MHz
	t _{PLH8}	"	148	193																		Load to Q _A	3	63	ns
		"	149	194																		Load to Q _B	"	"	"
		"	150	195																		Load to Q _C	"	"	"
		"	151	196																		Load to Q _D	"	"	"
	t _{PHL10}	"	152	197																		Load to Q _A	"	"	"
		"	153	198																		Load to Q _B	"	"	"
		"	154	199																		Load to Q _C	"	"	"
		"	155	200																		Load to Q _D	"	"	"
	t _{PLH9}	"	156	201																		Count up to Q _A	"	60	"
		"	157	202																		Count up to Q _B	"	"	"
		"	158	203																		Count up to Q _C	"	"	"
		"	159	204																		Count up to Q _D	"	"	"
		"	160	205																		Count down to Q _D	"	"	"
		"	161	206																		Count down to Q _C	"	"	"
		"	162	207																		Count down to Q _B	"	"	"
		"	163	208																		Count down to Q _A	"	"	"
	t _{PHL11}	"	164	209																		Count up to Q _A	"	73	"
		"	165	210																		Count up to Q _B	"	"	"
		"	166	211																		Count up to Q _C	"	"	"
		"	167	212																		Count up to Q _D	"	"	"
		"	168	213																		Count down to Q _D	"	"	"
		"	169	214																		Count down to Q _C	"	"	"
		"	170	215																		Count down to Q _B	"	"	"
		"	171	216																		Count down to Q _A	"	"	"
	t _{PHL12}	"	172	217																		Clear to Q _A	"	56	"
		"	173	218																		Clear to Q _B	"	"	"
		"	174	219																		Clear to Q _C	"	"	"
		"	175	220																		Clear to Q _D	"	"	"
11	Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C.																								

See footnotes at end of device types 07 and 08.

- 1/ Case 2, pins not referenced are N/C.
- 2/ Apply 0.7 V for device type 07; apply 2.0 V for device type 08.
- 3/ I_{IL} limits (μA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
		-160/-400	-160/-400	-160/-400	-100/-340	-100/-340	-120/-360	-135/-370
I_{IL9}	A	"	"	"	"	"	"	"
	B	"	"	"	"	"	"	"
	C	"	"	"	"	"	"	"
	D	"	"	"	"	"	"	"
I_{IL10}	Load	-100/-340	"	-150/-380	-120/-360	-120/-360	"	-100/-340
I_{IL11}	Clear	-160/-400	"	-150/-380	"	"	"	-135/-370
	Count up	"	"	"	"	"	"	"
	Count down	"	"	"	"	"	"	"

- 4/ I_{OS} limits (mA) min/max values for circuits shown: -15/-100 for circuits A, C, D, E, F, and G and -15/-110 for circuit B.
- 5/ Only a summary of attributes data is required.
- 6/ A = 3.0 V minimum; B = 0.0 V or GND.
- 7/ H > 1.5 V; L < 1.5 V; X = don't care.
- 8/ F_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.
- 9/ See figure 8 for device type 07 and figure 9 for device type 08.
- 10/ Apply momentary GND, then 4.5 V minimum prior to input pulses. Maintain 4.5 V minimum for measurement.

TABLE III. Group A inspection for device types 09 and 13 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple carry	Clock	A	V _{CC}					
1 T _C = +25°C	V _{OL}	3007	1	0.7 V	4 mA						GND			0.7 V					4.5 V	Q _B		0.4	V	
		"	2			4 mA					"			"				0.7 V	"	Q _A		"	"	
		"	3						4 mA		"		0.7 V	"					"	Q _C		"	"	
		"	4							4 mA	"	0.7 V	"	"					"	Q _D		"	"	
		"	5	2.0 V				2.0 V				"		"	4 mA				"	Max/Min		"	"	
		"	6	2/			0.7 V	0.7 V			"	2.0 V	2/	"		4 mA	0.7 V	2.0 V	"	Ripple carry		"	"	
	V _{OH}	3006	7	2.0 V	-0.4 mA						"			"					2.0 V	"	Q _B	2.5 V		"
		"	8			-0.4 mA					"			"					2.0 V	"	Q _A	"		"
		"	9						-0.4 mA		"		2.0 V	"						"	Q _C	"		"
		"	10							-0.4 mA	"	2.0 V	"	"					"	Q _D	"		"	
		"	11	0.7 V				2.0 V			"	0.7 V	0.7 V	"	-0.4 mA			0.7 V	"	Max/Min	"		"	
		"	12				2.0 V				"			"		-0.4 mA			"	Ripple carry	"		"	
	V _{IC}		13	-18 mA							"									"	B		-1.5 V	"
			14				-18 mA				"									"	Enable G			"
			15					-18 mA			"									"	Down/up			"
			16								"	-18 mA								"	D			"
			17								"		-18 mA							"	C			"
			18								"			-18 mA						"	Load			"
			19								"							-18 mA		"	Clock			"
			20								"								-18 mA	"	A			"
	I _{IL7}	3009	21				0.4 V	5.5 V			"								5.5 V	Enable G	3/	3/	μA	
	I _{IL8}	"	22	0.4 V							"				GND					"	B	"	"	"
		"	23					0.4 V			"									"	Down/up	"	"	"
		"	24								"	0.4 V		"						"	D	"	"	"
		"	25								"		0.4 V	"						"	C	"	"	"
		"	26								"			0.4 V						"	Load	"	"	"
		"	27								"						0.4 V		"	Clock	"	"	"	
		"	28								"				GND				0.4 V	"	A	"	"	"
	I _{IH15}	3010	29				2.7 V				"								"	Enable G		60	"	
	I _{IH16}	"	30				5.5 V				"								"	Enable G		300	"	
	I _{IH17}	"	31	2.7 V							"				5.5 V					"	B		20	"
		"	32					2.7 V			"									"	Down/up		"	"
		"	33								"	2.7 V		5.5 V						"	D		"	"
		"	34								"		2.7 V	5.5 V						"	C		"	"
		"	35								"			2.7 V						"	Load		"	"
		"	36								"							2.7 V		"	Clock		"	"
		"	37								"			5.5 V					2.7 V	"	A		"	"

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 09 and 13 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V; or L ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	B	Q _B	Q _A	Enable G	Down/Up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple Carry	Clock	A	V _{CC}					
1 T _C = +25°C	I _{HI18}	3010	38	5.5 V							GND			5.5 V					5.5 V	B		100	μA	
		"	39					5.5 V			"								"	Down/up		"	"	
		"	40								"	5.5 V		5.5 V					"	D		"	"	
		"	41								"		5.5 V	"					"	C		"	"	
		"	42								"			"					"	Load		"	"	
		"	43								"						5.5 V		"	Clock		"	"	
		"	44								"			5.5 V				5.5 V	"	A		"	"	
	I _{OS}	3011	45	5.5 V	GND							"			GND				5.5 V	"	Q _B	4/	4/	mA
		"	46				GND				"				"				5.5 V	"	Q _A	"	"	"
		"	47							GND	"		5.5 V	"					"	"	Q _C	"	"	"
		"	48								GND	"	5.5 V	"					"	"	Q _D	"	"	"
		"	49	GND					5.5 V			"	GND	GND	"	GND			GND	"	Max/Min	"	"	"
	I _{CC}	3005	50					5.5 V			"						GND			"	Ripple carry	"	"	"
			51	GND				GND	GND			"	GND	GND	GND			GND	GND	"	V _{CC}		35	"
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.																							

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 09 – Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V; or L ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple Carry	Clock	A	V _{CC}				
7 Tc = +25°C	Functional tests 5/	3014	52	A 6/	H	H	B 6/	B	H	H	GND	A	A	B	H	H	A	A	4.5 V	See 7/			
		"	53	"	"	"	A	"	"	"	"	"	"	B	"	"	"	"	"				
		"	54	"	"	"	"	"	"	"	"	"	"	A	"	"	"	"	"				
		"	55	B	"	"	"	"	"	"	"	B	B	"	"	"	B	B	"				
		"	56	B	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"				
		"	57	B	"	"	B	"	"	"	"	"	"	"	"	"	A	"	"				
		"	58	A	"	"	"	"	"	"	"	A	A	"	"	L	B	A	"				
		"	59	"	L	L	"	"	L	L	"	"	"	"	L	H	A	"	"				
		"	60	"	"	L	"	"	"	"	"	"	"	"	"	"	B	"	"				
		"	61	"	"	H	"	"	"	"	"	"	"	"	"	"	A	B	"				
		"	62	"	"	H	"	"	"	"	"	"	"	"	"	"	B	"	"				
		"	63	B	H	L	"	"	"	"	"	B	B	"	"	"	A	"	"				
		"	64	A	"	L	"	"	"	"	"	A	A	"	"	"	B	A	"				
		"	65	"	"	H	"	"	"	"	"	"	A	"	"	"	A	A	"				
		"	66	"	"	H	"	"	"	"	"	"	B	"	"	"	B	B	"				
		"	67	"	L	L	"	"	H	"	"	"	"	"	"	"	A	B	"				
		"	68	"	"	L	"	"	"	"	"	B	"	"	"	"	B	A	"				
		"	69	"	"	H	"	"	"	"	"	A	A	"	"	"	A	B	"				
		"	70	"	"	H	"	"	"	"	"	"	B	"	"	"	B	B	"				
		"	71	"	H	L	"	"	"	"	"	"	A	"	"	"	A	A	"				
		"	72	"	"	L	"	"	"	"	"	B	"	"	"	"	B	B	"				
		"	73	"	"	H	"	"	"	"	"	B	"	"	"	"	A	A	"				
		"	74	B	"	H	"	"	"	"	"	A	B	"	"	"	B	B	"				
		"	75	B	L	L	"	"	L	H	"	A	B	"	"	"	A	B	"				
		"	76	A	"	L	"	"	"	"	"	B	A	"	"	"	B	A	"				
		"	77	"	"	H	"	"	"	"	"	"	"	"	"	"	A	A	"				
		"	78	"	"	H	"	"	"	"	"	"	"	"	"	"	B	B	"				
		"	79	B	H	L	"	"	"	"	"	A	B	"	"	"	A	A	"				
		"	80	"	"	L	"	"	"	"	"	"	B	"	"	"	B	"	"				
		"	81	"	"	H	"	"	"	"	"	"	A	"	"	"	A	"	"				
		"	82	"	"	H	"	"	"	"	"	"	A	"	"	"	B	B	"				
		"	83	"	L	L	"	"	H	"	"	"	B	"	"	"	A	"	"				
		"	84	"	"	L	"	"	"	"	"	B	B	"	"	"	B	"	"				
		"	85	A	"	H	"	"	"	"	"	A	A	"	"	"	A	A	"				
		"	86	B	"	H	"	"	"	"	"	B	B	"	"	"	B	B	"				
		"	87	A	H	L	"	"	"	"	"	A	A	"	"	"	A	A	"				
		"	88	B	"	L	"	"	"	"	"	B	B	"	"	"	B	"	"				
		"	89	A	"	H	"	"	"	"	"	A	A	"	H	"	A	"	"				
		"	90	B	"	H	"	"	"	"	"	B	B	"	H	L	B	B	"				
		"	91	A	L	L	"	"	L	L	"	A	A	"	L	H	A	A	"				
		"	92	B	"	"	"	A	"	"	"	B	B	"	H	"	"	B	"				
		"	93	A	"	"	A	"	"	"	"	A	A	"	"	"	"	A	"				
		"	94	B	"	"	"	"	"	"	"	B	B	"	"	"	B	B	"				
		"	95	A	"	"	"	"	"	"	"	B	A	"	"	"	A	"	"				
		"	96	B	"	"	B	"	"	"	"	A	B	"	"	"	A	"	"				
		"	97	A	"	"	"	"	"	"	"	"	B	"	"	L	B	"	"				
		"	98	A	H	H	"	"	H	H	"	"	A	"	L	H	A	A	"				
		"	99	B	"	H	"	"	"	"	"	B	B	"	"	"	B	B	"				
		"	100	B	"	L	"	"	"	"	"	B	B	"	"	"	A	B	"				
		"	101	A	"	L	"	"	"	"	"	A	A	"	"	"	B	A	"				

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 09 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Cases J/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			Test no.	B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple Carry	Clock	A	V _{CC}				
7 T _C = +25°C	Functional tests 5/	3014	102	A 6/	L	H	B 6/	A	H	H	GND	B	A	A	L	H	A	B	4.5 V	See Z/			
		"	103	B	"	H	"	"	"	"	"	A	A	"	"	"	B	B	"				
		"	104	A	"	L	"	"	"	"	"	B	B	"	"	"	A	A	"				
		"	105	A	"	L	"	"	"	"	"	B	B	"	"	"	B	A	"				
		"	106	A	H	H	"	"	L	"	"	A	A	"	"	"	A	B	"				
		"	107	B	"	H	"	"	"	"	"	A	B	"	"	"	B	A	"				
		"	108	B	"	L	"	"	"	"	"	B	A	"	"	"	A	A	"				
		"	109	A	"	L	"	"	"	"	"	A	B	"	"	"	B	A	"				
		"	110	A	L	H	"	"	"	"	"	B	A	"	"	"	A	B	"				
		"	111	A	"	H	"	"	"	"	"	B	A	"	"	"	B	B	"				
		"	112	B	"	L	"	"	"	"	"	A	B	"	"	"	A	A	"				
		"	113	B	"	L	"	"	"	"	"	B	B	"	"	"	B	A	"				
		"	114	B	H	H	"	"	H	L	"	B	B	"	"	"	A	B	"				
		"	115	A	"	H	"	"	"	"	"	A	A	"	"	"	B	A	"				
		"	116	B	"	L	"	"	"	"	"	B	B	"	"	"	A	B	"				
		"	117	A	"	L	"	"	"	"	"	A	A	"	"	"	B	B	"				
		"	118	B	L	H	"	"	"	"	"	B	B	"	"	"	A	A	"				
		"	119	A	"	H	"	"	"	"	"	A	A	"	"	"	B	B	"				
		"	120	A	"	L	"	"	"	"	"	B	B	"	"	"	A	A	"				
		"	121	A	"	L	"	"	"	"	"	B	B	"	"	"	B	"	"				
		"	122	B	H	H	"	"	L	"	"	B	A	"	"	"	A	"	"				
		"	123	B	"	H	"	"	"	"	"	A	A	"	"	"	B	"	"				
		"	124	B	"	L	"	"	"	"	"	B	B	"	"	"	A	"	"				
		"	125	A	"	L	"	"	"	"	"	B	B	"	"	"	B	B	"				
		"	126	A	L	H	"	"	"	"	"	A	B	"	"	"	A	A	"				
		"	127	A	"	H	"	"	"	"	"	A	A	"	"	"	B	A	"				
		"	128	B	"	L	"	"	"	"	"	B	B	"	H	"	A	B	"				
		"	129	A	"	L	"	"	"	"	"	A	A	"	L	"	B	A	"				
		"	130	B	H	H	"	"	H	H	"	B	B	"	L	H	A	B	"				
		"	131	A	"	"	"	"	"	"	"	A	A	B	L	H	A	A	"				
		"	132	"	"	"	"	"	B	"	"	"	"	"	"	H	L	B	"				
		"	133	"	"	"	"	"	"	"	"	"	"	"	"	"	H	A	"				
		"	134	"	"	"	"	A	"	"	"	"	"	"	"	"	"	B	"				
		"	135	B	L	L	"	"	L	L	"	B	B	"	L	"	"	B	"				
		"	136	B	L	H	"	"	H	L	"	B	A	"	"	"	"	A	"				
		"	137	A	H	L	"	"	L	H	"	A	B	"	"	"	"	B	"				
		"	138	B	L	H	"	A	H	L	"	B	A	"	"	"	"	A	"				
		"	139	A	H	L	B	"	L	H	"	A	B	"	"	"	"	B	"				
		"	140	B	L	H	"	"	H	L	"	B	A	"	"	"	"	A	"				
		"	141	A	H	L	"	"	L	H	"	A	B	"	"	"	A	B	"				
		"	142	A	"	"	"	"	"	"	"	A	B	A	"	"	"	B	"				
		"	143	B	"	"	"	"	"	"	"	B	A	"	"	"	"	A	"				
		"	144	"	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"				
		"	145	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	146	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"				
		"	147	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"				
		"	148	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"				
		"	149	A	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"				
		"	150	"	"	"	"	"	"	"	H	L	"	"	"	B	"	B	"				
		"	151	"	"	"	"	"	"	"	H	L	"	"	"	A	"	B	"				
		8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																				

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 13 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit		
			Cases 1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max			
			Test no.	B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple carry	Clock	A	V _{CC}						
7 Tc = +25°C	Functional tests 5/	3014	52	B 6/	L	H	A 6/	B	L	H	GND	A	B	B 6/	H	H	B	A	4.5 V	See Z/					
		"	53	"	"	"	"	"	"	"	"	"	"	"	A	"	"	B	"				"		
		"	54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"				"		
		"	55	"	"	"	B	"	"	"	"	"	"	"	"	"	"	A	"				"		
		"	56	"	"	"	"	"	"	"	"	"	"	"	"	"	L	B	"				"		
		"	57	"	"	"	L	"	"	"	"	L	"	"	"	"	L	H	A				"	"	
		"	58	A	"	"	L	"	"	"	"	"	"	A	"	"	"	B	"				"		
		"	59	A	"	"	H	"	"	"	"	"	"	"	"	"	"	A	"				"		
		"	60	B	"	"	H	"	"	"	"	"	"	"	"	"	"	"	B				B	"	
		"	61	B	"	H	"	L	"	"	"	"	B	B	"	"	"	"	A				B	"	
		"	62	A	"	"	L	"	"	"	"	"	A	A	"	"	"	"	B				A	"	
		"	63	B	"	"	H	"	"	"	"	"	"	B	"	"	"	"	A				"	"	
		"	64	"	"	"	H	"	"	"	"	"	"	B	"	"	"	"	B				"	"	
		"	65	"	"	"	L	"	"	"	"	H	"	"	A	"	"	"	A				B	"	
		"	66	A	"	"	"	L	"	"	"	"	"	A	"	"	"	"	B				"	"	
		"	67	B	"	"	"	H	"	"	"	"	"	B	B	"	"	"	A				"	"	
		"	68	A	"	"	"	H	"	"	"	"	"	A	"	"	"	"	B				"	"	
		"	69	"	"	"	H	"	"	"	"	"	"	"	B	"	"	"	A				"	"	
		"	70	"	"	"	"	L	"	"	"	"	"	"	B	"	"	"	B				"	"	
		"	71	"	"	"	"	H	"	"	"	"	"	A	A	"	"	"	A				A	"	
		"	72	B	"	"	"	H	"	"	"	"	"	B	B	"	"	"	B				B	"	
		"	73	A	"	"	L	"	"	"	"	L	H	"	A	A	"	"	"				A	A	"
		"	74	A	"	"	"	L	"	"	"	"	"	A	A	"	"	"	"				B	A	"
		"	75	B	"	"	"	H	"	"	"	"	"	B	B	"	"	H	"				A	B	"
		"	76	B	"	"	"	H	"	"	"	"	"	"	"	"	"	H	L				B	"	"
		"	77	B	"	"	"	L	"	"	"	"	L	"	"	"	"	L	H				A	"	"
		"	78	A	"	"	"	"	"	"	"	"	"	A	A	"	"	"	"				B	A	"
		"	79	B	"	"	"	"	"	"	"	"	"	A	B	"	"	"	"				A	A	"
		"	80	A	"	"	"	"	A	A	"	"	"	B	A	"	"	"	"				B	B	"
		"	81	A	"	"	"	"	"	"	"	"	"	B	A	"	"	"	"				A	B	"
		"	82	B	"	"	"	"	"	"	"	"	"	A	B	"	"	"	"				B	A	"
		"	83	"	"	"	"	"	"	"	"	"	"	"	B	"	"	"	"				A	A	"
		"	84	"	"	"	"	"	B	"	"	"	"	"	A	"	"	"	"				B	B	"
		"	85	"	"	"	"	"	L	"	"	"	"	"	A	"	"	H	"				A	"	"
		"	86	"	"	"	"	"	"	"	"	"	"	B	B	"	"	H	L				B	"	"
		"	87	A	"	"	"	"	H	"	"	"	H	"	"	"	"	L	H				A	A	"
		"	88	"	"	"	"	"	H	"	"	"	"	"	"	"	"	L	H				B	"	"
		"	89	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				A	"	"
		"	90	"	"	"	"	"	"	"	"	"	"	A	A	"	"	"	"				B	"	"
		"	91	"	"	"	"	H	"	"	"	H	L	"	"	"	"	"	"				A	"	"
		"	92	"	"	"	"	"	H	"	"	"	"	"	"	"	"	"	"				B	B	"
		"	93	"	"	"	"	"	L	"	"	"	"	"	"	"	"	"	"				A	"	"
		"	94	"	"	"	"	"	"	"	"	"	"	B	B	"	"	"	"				B	"	"
		"	95	"	"	"	"	L	"	"	"	"	"	"	B	"	"	"	"				A	"	"
		"	96	B	"	"	"	"	H	"	"	"	"	"	A	"	"	"	"				B	A	"
		"	97	B	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				A	B	"
		"	98	A	"	"	"	"	"	"	"	"	"	A	"	"	"	"	"				B	B	"
		"	99	"	"	"	"	"	H	"	"	"	"	"	"	"	"	"	"				A	A	"
		"	100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				B	"	"
		"	101	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"				A	"	"

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 13-- Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit	
			Cases1/2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max		
			Test no.	B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple Carry	Clock	A	V _{CC}					
7 T _C = +25°C	Functional tests 5/	3014	102	B 6/	H	L	B 6/	A 6/	L	L	GND	B	B 6/	A	L	H	B	B	4.5 V	See Z/				
		"	103	"	L	H	"	"	"	"	"	"	"	"	"	"	A	B	"					
		"	104	"	"	H	"	"	"	"	"	"	"	"	"	"	B	A	"					
		"	105	"	"	L	"	"	"	"	"	"	"	"	H	"	A	A	"					
		"	106	A	"	L	A	"	"	"	"	"	A	A	"	"	A	B	"					
		"	107	A	"	"	"	"	"	"	"	"	A	A	"	"	"	B	"				"	
		"	108	B	"	"	"	"	"	"	"	"	B	B	"	"	"	A	"				"	
		"	109	"	"	"	"	B	"	"	"	"	"	"	"	"	"	A	"				"	
		"	110	"	"	"	"	"	"	"	"	"	"	"	"	"	"	L	B				"	"
		"	111	A	"	H	"	"	"	"	"	H	"	A	A	"	L	H	A				A	"
		"	112	"	"	H	"	"	"	"	"	"	"	"	"	"	"	"	B				B	"
		"	113	"	"	L	"	"	"	"	"	"	"	"	"	"	"	"	A				A	"
		"	114	B	"	H	"	"	"	"	"	"	"	B	B	"	"	"	"				"	"
		"	115	"	"	"	"	"	"	"	"	"	"	"	A	"	"	"	"				"	"
		"	116	"	"	"	"	"	"	"	"	"	"	B	"	"	"	"	"				B	"
		"	117	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"				"	"
		"	118	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B				"	"
		"	119	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	A				"	"
		"	120	"	"	"	"	"	B	"	"	"	"	"	"	"	H	"	A				"	"
		"	121	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B				"	"
		"	122	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	A				"	"
		"	123	A	"	"	"	B	"	"	"	"	"	A	A	"	"	"	A				A	"
		"	124	"	"	"	"	"	"	"	"	"	"	"	"	"	"	L	B				"	"
		"	125	"	"	"	L	"	"	"	L	L	"	"	"	"	L	H	A				"	"
		"	126	B	"	"	H	"	"	"	H	"	"	B	"	B	"	"	A				"	"
		"	127	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B				"	"
		"	128	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	A				"	"
		"	129	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"	"				"	"
		"	130	A	"	"	"	"	"	"	"	"	"	A	B	"	"	"	"				B	"
		"	131	A	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B				"	"
		"	132	B	"	"	L	"	"	"	L	H	"	"	"	"	"	"	B				"	"
		"	133	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"	A				"	"
		"	134	"	"	"	"	A	A	"	"	"	"	"	"	A	"	"	A				"	"
		"	135	"	"	"	"	"	"	"	"	"	"	B	A	"	"	"	B				A	"
		"	136	"	"	"	"	"	"	"	"	"	"	B	A	"	"	"	A				"	"
		"	137	"	"	"	H	"	"	"	"	"	"	A	B	B	"	"	"				"	"
		"	138	A	H	L	"	"	"	"	H	L	"	B	A	"	"	"	"				B	"
		"	139	A	H	H	"	"	"	"	H	"	"	"	A	"	"	"	"				A	"
		"	140	B	L	L	"	B	"	"	L	"	"	"	B	"	"	"	"				B	"
		"	141	B	"	"	"	B	"	"	"	"	"	"	B	A	"	"	"				B	"
		"	142	A	"	"	"	"	"	"	"	"	"	A	A	"	"	"	"				A	"
		"	143	"	"	"	"	"	A	"	"	"	"	"	"	"	H	"	"				"	"
		"	144	"	"	"	"	"	"	"	"	"	"	"	"	"	H	L	B				"	"
		"	145	"	"	"	H	"	"	"	"	H	"	B	"	"	L	H	A				B	"
		"	146	"	"	"	"	"	B	"	"	"	"	B	"	"	H	H	A				B	"
		"	147	"	"	"	"	"	"	"	"	"	"	A	"	"	"	H	L				B	A
		"	148	"	"	"	L	"	"	"	"	"	"	"	"	"	"	L	H				A	"
		"	149	"	"	H	H	"	"	"	H	H	"	"	"	B	H	H	A				"	"
8	Repeat subgroup 7 at T _C = +125 and T _C = -55°C.																							

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 09 and 13 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case 1/2		2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			(Device type)		B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple carry	Clock	A	V _{CC}				
			09	13																				
9 T _C = +25°C	F _{MAX} g/	3003 g/	152	150			OUT	GND	GND			GND			5.0 V			IN		5.0 V	Ck to Q _A	18		MHz
	t _{PLH10}	"	153	151			OUT					"			IN			GND	5.0 V	"	Load to Q _A	3	38	ns
		"	154	152	5.0 V	OUT						"			"			"		"	Load to Q _B	"	"	"
		"	155	153						OUT		"		5.0 V	"			"		"	Load to Q _C	"	"	"
		"	156	154							OUT	"	5.0 V		"			"		"	Load to Q _D	"	"	"
	t _{PHL13}	"	157	155			OUT					"			"			"	GND	"	Load to Q _A	"	55	"
		"	158	156	GND	OUT						"			"			"		"	Load to Q _B	"	"	"
		"	159	157						OUT		"		GND	"			"		"	Load to Q _C	"	"	"
		"	160	158							OUT	"	GND		"			"		"	Load to Q _D	"	"	"
	t _{PLH11}	"	161	159			OUT	GND	GND						5.0 V			IN		"	Ck to Q _A	"	29	"
		"	162	160		OUT						"						"		"	Ck to Q _B	"	"	"
		"	163	161				"	"	OUT		"			"			"		"	Ck to Q _C	"	"	"
		"	164	162							OUT	"	"		"			"		"	Ck to Q _D	"	"	"
	t _{PHL14}	"	165	163			OUT	"	"			"			"			"		"	Ck to Q _A	"	41	"
		"	166	164		OUT		"	"			"			"			"		"	Ck to Q _B	"	"	"
		"	167	165				"	"	OUT		"			"			"		"	Ck to Q _C	"	"	"
		"	168	166				"	"		OUT	"			"			"		"	Ck to Q _D	"	"	"
	t _{PLH12}	"	169	167				"	"			"			"	OUT		"		"	Ck to Max/Min	"	47	"
	t _{PHL15}	"	170	168				"	"			"			"	OUT		"		"	Ck to Max/Min	"	57	"

See footnotes at end of device types 09 and 13.

TABLE III. Group A inspection for device types 09 and 13 – Continued.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case 1/2		2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20		Min	Max	
			(Device type)		B	Q _B	Q _A	Enable G	Down/up	Q _C	Q _D	GND	D	C	Load	Max/Min	Ripple carry	Clock	A	V _{CC}				
			09	13																				
10 T _C = +125°C	F _{MAX} g/	3003 g/	171	169	Same terminal conditions as for subgroup 9.																Ck to Q _A	18		MHz
	t _{PLH10}	"	172	170																	Load to Q _A	3	53	ns
		"	173	171																	Load to Q _B	"	"	"
		"	174	172																	Load to Q _C	"	"	"
		"	175	173																	Load to Q _D	"	"	"
	t _{PHL13}	"	176	174																	Load to Q _A	"	77	"
		"	177	175																	Load to Q _B	"	"	"
		"	178	176																	Load to Q _C	"	"	"
		"	179	177																	Load to Q _D	"	"	"
	t _{PLH11}	"	180	178																	Ck to Q _A	"	41	"
		"	181	179																	Ck to Q _B	"	"	"
		"	182	180																	Ck to Q _C	"	"	"
		"	183	181																	Ck to Q _D	"	"	"
	t _{PHL14}	"	184	182																	Ck to Q _A	"	57	"
		"	185	183																	Ck to Q _B	"	"	"
		"	186	184																	Ck to Q _C	"	"	"
		"	187	185																	Ck to Q _D	"	"	"
	t _{PLH12}	"	188	186																	Ck to Max/Min	"	66	"
	t _{PHL15}	"	189	187																	Count up to Q _B	"	80	"
	11	Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C.																						

See footnotes at end of device types 09 and 13.

- 1/ Case 2, pins not referenced are N/C.
- 2/ Apply 2.0 for device type 09; apply 0.7 V for device type 13.
- 3/ I_{IL} limits (μA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
I_{IL7}	Enable G	-360/-1080	-160/-400	-360/-1080	-360/-1080	-360/-1080	-360/-1080	-360/-1080
I_{IL8}	A, B, C, D	-130/-400	-160/-400	-160/-400	-160/-400	-120/-360	-120/-360	-120/-360
	Down/up	"	"	-150/-380	"	"	"	"
	Clock	"	"	"	"	"	"	"
	Load	-100/-340	"	"	-100/-340	"	"	"

- 4/ I_{OS} limits (mA) min/max values for circuits shown: -15/-100 for circuits A, C, D, E, F, and G and -15/-110 for circuit B.
- 5/ Only a summary of attributes data is required.
- 6/ A = 3.0 V minimum; B = 0.0 V or GND.
- 7/ H > 1.5 V; L < 1.5 V; X = don't care.
- 8/ F_{MAX} minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.
- 9/ See figure 10 for device type 09 and figure 12 for device type 13.

TABLE III. Group A inspection for device types 10.
Terminal conditions (pins not designated may be H $\geq$ 2.0 V; or L $\leq$ 0.7 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
			Cases 1/2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	NC	NC	NC	V _{CC}	R _O (1)	R _O (2)	Q _D	Q _C	GND	Q _B	Q _A	NC	A				
1 T _C = +25°C	V _{OL}	3007	1	GND				4.5 V	2.0 V	2.0 V			GND		4 mA	4 mA	2.0 V	Q _A		0.4	V
		"	2	2.0 V				"	"	"			"	4 mA	+I _{IL3} (max)		GND	Q _B		"	"
		"	3	"				"	"	"			"				"	Q _C		"	"
		"	4	"				"	"	"	4 mA		"				"	Q _D		"	"
	V _{OH}	3006	5	GND				"	2/	2/			"		-0.4 mA	-0.4 mA	2/ 3/	Q _A	2.5		"
		"	6	2/ 3/				"	"	"			"	-0.4 mA			GND	Q _B	"		"
		"	7	2/ 4/				"	"	"		-0.4 mA	"				"	Q _C	"		"
		"	8	2/ 5/				"	"	"	-0.4 mA		"				"	Q _D	"		"
	V _{IC}		9					"					"				-18 mA	A		-1.5	"
			10	-18 mA				"					"					B		"	"
			11					"	-18 mA				"					R _O (1)		"	"
			12					"		-18 mA			"					R _O (2)		"	"
	I _{IL1}	3009	13					5.5 V	0.4 V	5.5 V			"					R _O (1)	6/	6/	mA
		"	14					"	5.5 V	0.4 V			"					R _O (2)	"	"	"
	I _{IL2}	"	15					"	2/	2/			"				0.4 V	A	"	"	"
	I _{IL3}	"	16	0.4 V				"	"	"			"					B	"	"	"
	I _{IH1}	3010	17					"	2.7 V	GND			"					R _O (1)		20	μA
	I _{IH1}	"	18					"	GND	2.7 V			"					R _O (2)		20	"
	I _{IH2}	"	19					"	5.5 V	GND			"					R _O (1)		100	"
	I _{IH2}	"	20					"	GND	5.5 V			"					R _O (2)		100	"
	I _{IH3}	"	21					"	5.5 V	5.5 V			"				2.7 V	A		80	"
	I _{IH4}	"	22					"	"	"			"				5.5 V	A		400	"
	I _{IH5}	"	23	2.7 V				"	"	"			"					B	13/	80	"
	I _{IH6}	"	24	5.5 V				"	"	"			"					B		400	"
	I _{OS}	3011	25	GND				"	2/	2/			"		GND		2/ 3/	Q _A	7/	7/	mA
		"	26	2/ 3/				"	"	"			"	GND			GND	Q _B	"	"	"
		"	27	2/ 4/				"	"	"		GND	"				"	Q _C	"	"	"
		"	28	2/ 5/				"	"	"	GND		"				"	Q _D	"	"	"
	I _{CC}	3005	29	GND				"					"					V _{CC}		15	"
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.																				

See footnotes at end of device type 10.

TABLE III. Group A inspection for device type 10- Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V; or low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E A, B, C, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Cases1/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max	
			Test no.	B	NC	NC	NC	V _{CC}	R _O (1)	R _O (2)	Q _D	Q _C	GND	Q _B	Q _A	NC	A				
7 T _C = +25°C	Func-Tional tests g/	3014	30	B 9/				4.5 V	A 9/	A 9/	L	L	GND	L	L		B 9/	See 10/			
		"	31	A				"	"	"	"	"	"	"	"	"	"				
		"	32	B				"	"	"	"	"	"	"	"	"	"				
		"	33	B				"	B	"	"	"	"	"	"	"	"				
		"	34	A				"	"	"	"	"	"	"	"	"	"				
		"	35	B				"	"	"	"	"	"	H	"	"	"				
		"	36	B				"	A	"	"	"	"	L	"	"	"				
		"	37	B				"	"	X	"	"	"	"	"	"	"				
		"	38	A				"	"	B	"	"	"	"	"	"	"				
		"	39	B				"	"	"	"	"	"	H	"	"	"				
		"	40	A				"	"	"	"	"	"	H	"	"	"				
		"	41	B				"	"	"	"	H	"	L	"	"	"				
		"	42	A				"	"	"	"	H	"	"	"	"	"				
		"	43	B				"	"	"	H	L	"	"	"	"	"				
		"	44	A				"	"	"	"	"	"	"	"	"	"				
		"	45	B				"	"	"	"	"	"	H	"	"	"				
		"	46	A				"	"	"	"	"	"	H	"	"	"				
		"	47	B				"	"	"	"	H	"	L	"	"	"				
		"	48	B				"	"	A	L	L	"	"	"	"	"				
		"	49	B				"	B	"	"	"	"	"	"	"	"				
		"	50	A				"	"	"	"	"	"	"	"	"	"				
		"	51	B				"	"	"	"	"	"	H	"	"	"				
		"	52	A				"	"	"	"	"	"	H	"	"	"				
		"	53	B				"	"	"	"	H	"	L	"	"	"				
		"	54	A				"	"	"	"	H	"	"	"	"	"				
		"	55	B				"	"	"	H	L	"	"	"	"	"				
		"	56	A				"	"	"	"	"	"	"	"	"	"				
		"	57	B				"	"	"	"	"	"	H	"	"	"				
		"	58	A				"	"	"	"	"	"	H	"	"	"				
		"	59	B				"	"	"	"	H	"	L	"	"	"				
		"	60	A				"	"	"	"	H	"	"	"	"	"				
		"	61	B				"	"	"	"	L	L	"	"	"	"				
		"	62	"				"	"	"	"	"	"	"	"	"	A				
		"	63	"				"	"	"	"	"	"	"	"	H	B				
		"	64	"				"	"	"	"	"	"	"	"	H	A				
		"	65	"				"	"	"	"	"	"	"	"	L	B				
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _C = +125°C and -55°C.																				
9 T _C = +25°C	F _{MAX}	3003	66					5.0 V	GND				GND		OUT		IN 12/	A to Q _A	29		MHz
	t _{PLH1}	(Fig 11)	67					"	11/	A 9/		OUT	"				IN	A to Q _C	3	53	ns
	t _{PHL1}	"	68					"	GND			OUT	"				IN	A to Q _C	"	58	"
	t _{PLH2}	"	69	IN				"	11/	A 9/	OUT		"					B to Q _D	"	37	"
	t _{PHL2}	"	70	IN				"	GND		OUT		"					B to Q _D	"	50	"
10 T _C = +125°C	F _{MAX}	"	71					"	GND				"		OUT		IN 12/	A to Q _A	29		MHz
	t _{PLH1}	"	72					"	11/	A 9/		OUT	"				IN	A to Q _C	3	74	ns
	t _{PHL1}	"	73					"	GND			OUT	"				IN	A to Q _C	"	81	"
	t _{PLH2}	"	74	IN				"	11/	A 9/	OUT		"					B to Q _D	"	52	"
	t _{PHL2}	"	75	IN				"	GND		OUT		"					B to Q _D	"	56	"
11	Same tests, terminal conditions, and limits as for subgroup 10, except T _C = -55°C.																				

See footnotes at end of device type 10.

- 1/ Case 2, pins not referenced are N/C.
- 2/ Apply 4.5 volts pulse, then ground prior to taking measurements to set device in the desired state. Maintain ground for measurement.
- 3/ Input pulse must be applied one time after R_O pulse.
- 4/ Input pulse must be applied twice after R_O pulse.
- 5/ Input pulse must be applied four times after R_O pulse.
- 6/ I_{IL} limits (mA) min/max values for circuits shown:

Parameter	Terminals	Circuits						
		A	B	C	D	E	F	G
I_{IL1}	$R_O(1)$ $R_O(2)$	-.12/- .36 "	-.03/- .40 "	-.03/- .40 "	-.03/- .40 "		-.12/- .36 "	
I_{IL2}	A	-0.5/-2.0	-1.0/-2.4	-1.0/-2.4	-1.0/-2.4		-0.5/-2.0	
I_{IL3}	B	-0.7/-3.2	-0.7/-3.2	-0.7/-3.2	-0.4/-1.6		-0.7/-3.2	

- 7/ I_{OS} limits (mA) min/max values for circuits shown:

Parameter	Measured terminals	Circuits						
		A	B	C	D	E	F	G
I_{OS}	$Q_A, Q_B,$ Q_C, Q_D	-15/-100	-15/-100	-30/-130	-15/-100		-15/-100	

- 8/ Only a summary of attributes data is required.
- 9/ A = 3.0 V minimum; B = 0.0 V or GND.
- 10/ H > 1.5 V; L < 1.5 V; X = don't care.
- 11/ Momentary 3.0 V (min), then ground. Maintain ground for measurement.
- 12/ F_{MAX} min limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.
- 13/ The minimum limit for circuit F shall be -150 μA .

5. PACKAGING

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

6. NOTES

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

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

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

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

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DLA Land and Maritime -VQ, 3990 E. Broad Street, Columbus, Ohio 43218-3990.

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w/AMENDMENT 1

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

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

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

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

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

<u>Military device type</u>	<u>Generic-industry type</u>
01	54LS90
02	54LS93
03	54LS160
04	54LS161
05	54LS168
06	54LS169
07	54LS192
08	54LS193
09	54LS191
10	54LS92
11	54LS162
12	54LS163
13	54LS190

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

TABLE IV. Manufacturers' designation.

Device type	Circuit	A	B	C	D	E	F	G
	Manufacturer Commercial Type	Texas Instruments, Incorporated	Signetics Corp.	National Semi-Conductor Corp.	Raytheon Company	Fairchild Semi-conductor	Motorola, Inc.	Advanced Micro Devices Inc.
01	54LS90	X	X		X	X	X	
02	54LS93	X	X	X	X	X	X	
03	54LS160A	X	X	X	X	X	X	X
04	54LS161A	X	X	X	X	X	X	X
05	54LS168		X	X		X		
06	54LS169A		X	X		X		
07	54LS192	X	X	X	X	X	X	X
08	54LS193	X	X	X	X	X	X	X
09	54LS191	X	X	X	X	X	X	X
10	54LS92	X		X	X		X	
11	54LS162A	X	X	X	X	X	X	X
12	54LS163A	X	X	X	X	X	X	X
13	54LS190	X	X	X	X	X	X	X

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Custodians:

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

Preparing activity:

DLA - CC

Review activities:

Army - SM, MI
Navy - AS, CG, MC, SH
Air Force - 03, 19, 99

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