INCH-POUND

MIL-M-38510/25E
1 August 2005
SUPERSEDING
MIL-M-38510/25D
8 August 1986

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, TTL, LOW POWER,
COUNTERS, MONOLITHIC SILICON

Inactive for new design after 7 September 1995.

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

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

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, Schottky TTL, binary and decade counters. Two product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.4).

1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535.

1.2.1 Device types. The device types are as follows:

Device type	Circuit
01	Low power decade counter
02	4-bit binary counter
03	Synchronous 4-bit up/down counter
04	Synchronous BCD decade counter
05	Synchronous 4-bit binary counter

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

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

Outline letter	Descriptive designator	Terminals	Package style
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

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

Supply voltage range .... 0 V dc to 8.0 V dc
Input voltage range .... 0 V dc to 5.5 V dc
Storage temperature range .... -65°C to 150°C
Maximum power dissipation (P_D): <u>1/</u>
    Device type 01 .... 65 mW
    Device type 02 .... 60 mW
    Device type 03 .... 131 mW
    Device type 04 and 05 .... 172 mW
Lead temperature (soldering, 10 seconds) .... +300°C
Thermal resistance, junction-to-case (θ_{JC}):   .... See (See MIL-STD-1835)
Junction temperature (T_J) <u>2/</u> .... +175°C

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

Supply voltage (V_{CC}) .... 4.5 V dc minimum to 5.5 V dc
                                                                                                                     maximum
Minimum high level input voltage (V_{IH}) .... 2.0 V dc
Maximum low level input voltage (V_{IL}) .... 0.7 V dc
Normalized fanout (each output): <u>3/</u>
    Device types 01, 02, 03 .... 10 maximum
    Device types 04, 05 .... 5 maximum
Width of input count pulse, t_P (in):
    Device types 01, 02 .... 200 ns, minimum
Width of any input pulse, t_W:
    Device type 03 .... 200 ns, minimum
Width of reset pulse, t_P (reset):
    Device types 01, 02 .... 200 ns, minimum
Width of master reset pulse:
    Device types 04, 05 .... 35 ns, minimum
Width of any clock pulse, t_W(clock):
    Device types 04, 05 .... 25 ns, minimum
Input clock frequency:
    Device types 01, 02, 03 .... 3 MHz
    Device types 04, 05 .... 13 MHz
Input hold time .... 0 ns
Case operating temperature range (T_C) .... -55°C to +125°C

<u>1/</u> Must withstand the added P_D due to short circuit condition (e.g., I_{OS}) at one output for 5 seconds duration.
<u>2/</u> Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening.
<u>3/</u> Device will fanout in both high and low levels to the specified number of inputs of the same device type as that
     being tested.

2. APPLICABLE DOCUMENTS

2.1 <u>General.</u> 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 <u>Government documents.</u>

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

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

2.3 <u>Order of precedence.</u> 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 <u>Qualification.</u> Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.3).

3.2 <u>Item requirements</u>. 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 <u>Design, construction, and physical dimensions.</u> The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.

3.3.1 <u>Case outlines.</u> The case outlines shall be as specified in 1.2.3.

3.3.2 <u>Logic diagram and terminal connections.</u> The logic diagram and terminal connections shall be as specified on figure 1.

3.3.3 <u>Truth tables.</u> The truth tables shall be as specified on figure 2.

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

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

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

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits		Unit
				Min	Max	
High level output voltage	V_{OH}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, I_{OH} = -100 μA, V_{IL} = 0.7 V	01, 02, 03, 04, 05	2.4	- - -	V
Low level output voltage	V_{OL}	V_{CC} = 4.5 V, V_{IH} = 2.0 V, I_{OL} = 2 mA, V_{IL} = 0.7 V	01, 02, 03, 04, 05	- - -	0.3	V
High level input current	I_{IH1}	V_{CC} = 5.5 V, V_{IN} = 2.4 V 1/	01, 02, 03	- - -	10	μA
	I_{IH2}	V_{CC} = 5.5 V, V_{IN} = 5.5 V 1/	01, 02, 03	- - -	100	μA
High level input current	I_{IH3}	V_{CC} = 5.5 V, V_{IN} = 2.4 V 2/	01	- - -	30	μA
			02	- - -	20	
	I_{IH4}	V_{CC} = 5.5 V, V_{IN} = 5.5 V 2/	01	- - -	300	μA
			02	- - -	200	
High level input current at input BD	I_{IH5}	V_{CC} = 5.5 V, V_{IN} = 2.4 V	01	- - -	60	μA
	I_{IH6}	V_{CC} = 5.5 V, V_{IN} = 5.5 V	01	- - -	600	μA
High level input current	I_{IH7}	V_{CC} = 5.5 V, V_{IN} = 2.4 V 3/	04, 05	- - -	20	μA
	I_{IH8}	V_{CC} = 5.5 V, V_{IN} = 2.4 V 4/	04, 05	- - -	40	μA
High level input current at inputs P0, P1, P2, or P3	I_{IH9}	V_{CC} = 5.5 V, V_{IN} = 2.4 V	04, 05	- - -	14	μA
High level input current at any input	I_{IH10}	V_{CC} = 5.5 V, V_{IN} = 2.4 V	04, 05	- - -	14	μA
Low level input current at any reset input	I_{IL1}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	01, 02	-0.06	-0.18	mA
Low level input current	I_{IL2}	V_{CC} = 5.5 V, V_{IN} = 0.3 V 5/	01	-0.12	-0.54	mA
			02	-0.12	-0.36	mA
Low level input current at input BD	I_{IL3}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	01	-0.29	-1.08	mA
Low level input current at any input	I_{IL4}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	03	- - -	-0.16	mA
Low level input current at inputs $\overline{MR}$ or CEP	I_{IL5}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	04, 05	- - -	-0.40	mA
Low level input current at inputs CP, $\overline{PE}$, or CET	I_{IL6}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	04, 05	- - -	-0.80	mA
Low level input current at inputs P0, P1, P2, or P3	I_{IL7}	V_{CC} = 5.5 V, V_{IN} = 0.3 V	04, 05	- - -	-0.27	mA
Short circuit output current	I_{OS}	V_{CC} = 5.5 V 6/	01, 02	-3	-15	mA
			03	-3.5	-14.5	mA
			04, 05	-2.5	-25	mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits Min	Limits Max	Unit
Supply current	I_{CC}	V_{CC} = 5.5 V	01	- - -	7.2	mA
			02	- - -	6.6	mA
Supply current	I_{CC}	V_{CC} = 5.5 V	03	- - -	14.9	mA
Supply current	I_{CC}	V_{CC} = 5.5 V	04, 05	- - -	27.5	mA
Frequency of input count pulse	f_{MAX}	V_{CC} = 5.0 V C_L = 50 pF R_L = 4 kΩ	01, 02	2.5	- - -	MHz
			03	14	- - -	MHz
			04, 05	13	- - -	MHz
Propagation delay time, low to high level, from input A	t_{PLH1}		01	- - -	510	ns
Propagation delay time, high to low level output, from input A	t_{PHL1}		01	- - -	510	ns
Propagation delay time, low to high level from input count pulse to output	t_{PLH2}		02	- - -	675	ns
Propagation delay time, high to low level from input count pulse to output	t_{PHL2}		02	- - -	675	ns
Propagation delay time, low to high level output from input count pulse to output	t_{PLH3}		03	- - -	295	ns
Propagation delay time, high to low level output, from input count pulse to output	t_{PHL3}		03	- - -	295	ns
Propagation delay time, low to high level from input A	t_{PLH5}		03	- - -	300	ns
Propagation delay time, high to low level from input A	t_{PHL5}		03	- - -	360	ns
Propagation delay time, low to high level output, from input CET	t_{PLH7}		04, 05	- - -	80	ns
Propagation delay time, high to low level output, from input CET	t_{PHL7}		04, 05	- - -	87	ns
Propagation delay time, low to high level TC output from CP input	t_{PLH8}		04, 05	- - -	125	ns
Propagation delay time, high to low level Q out from $\overline{MR}$ input	t_{PHL8}		04, 05	- - -	130	ns

1/   Input conditions: Any reset inputs for device type 01, 02; any input for device type 03.
2/   Input conditions: Input A for device type 02; inputs A or B for device type 02.
3/   Input conditions: Inputs $\overline{MR}$ or CEP.
4/   Input conditions: Inputs CP, $\overline{PE}$, or CET.
5/   Input conditions: Input A for device type 01; input A or B for device type 02.
6/   Not more than one output should be shorted at a time.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroup (see table III)	
	Class S devices	Class B devices
Interim electrical parameters (Pre Burn-In) (Method 5004)	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 electrical test parameters 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

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 8 (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 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.

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 of 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 as follows:

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

DEVICE TYPE 01

CASES A,B,C AND D

INPUT

A   NC   A   D   GND   B   C

| 14 | 13 | 12 | 11 | 10 | 9 | 8 |

| J A | J B | J C | R D |

CP   CP   CP   CP

K   K   K   S1 S2 S $\overline{D}$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

BD $R_{0(1)}$ $R_{0(2)}$ NC V_{CC} $R_{9(1)}$ $R_{9(2)}$
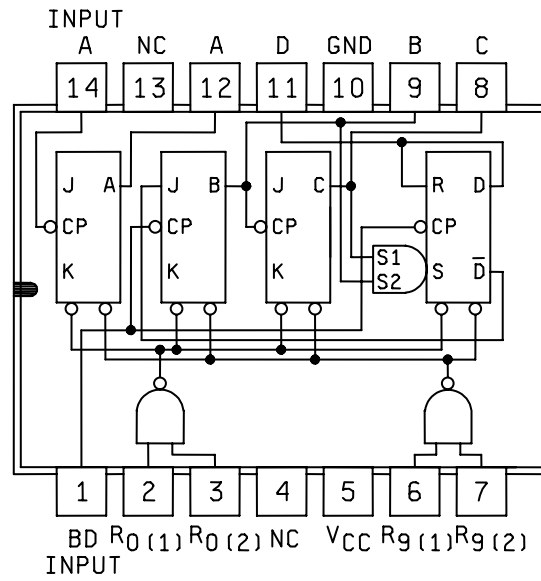
INPUT

DEVICE TYPE 02

CASES A,B,C AND D

OUTPUTS   OUTPUTS

INPUT   INPUT

A   A   D   GND   C   B   B

| 14 | 13 | 12 | 11 | 10 | 9 | 8 |

| J A | J B | J C | J D |

CP   CP   CP   CP

K $\overline{A}$ K $\overline{B}$ K $\overline{C}$ K $\overline{D}$

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

$R_{0(1)}$ $R_{0(2)}$ NC V_{CC} NC NC NC

FIGURE 1. Logic diagram and terminal connections (topview).

8
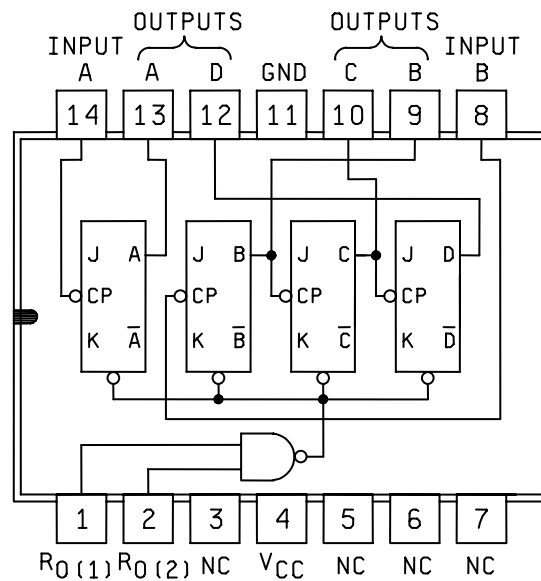
<u>DEVICE TYPE 03</u>
<u>CASES E AND F</u>
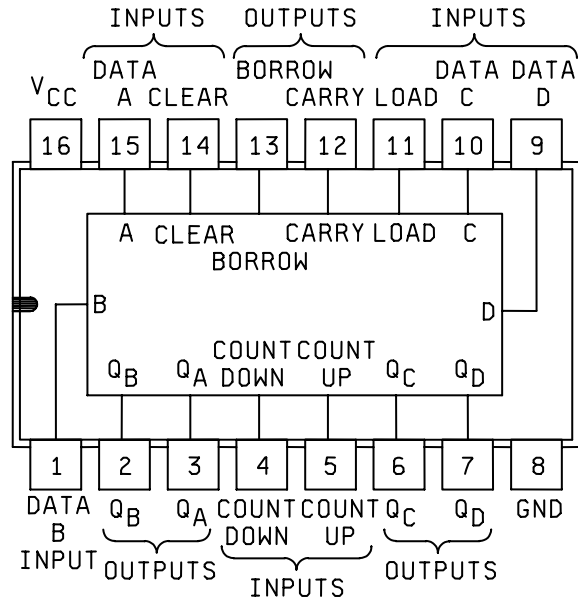
LOGIC: Low input to load sets $Q_A = A$, $Q_B = B$, $Q_C = C$, and $Q_D = D$.

FIGURE 1. <u>Logic diagram and terminal connections (topview)</u>.- Continued.

DEVICE TYPE 03
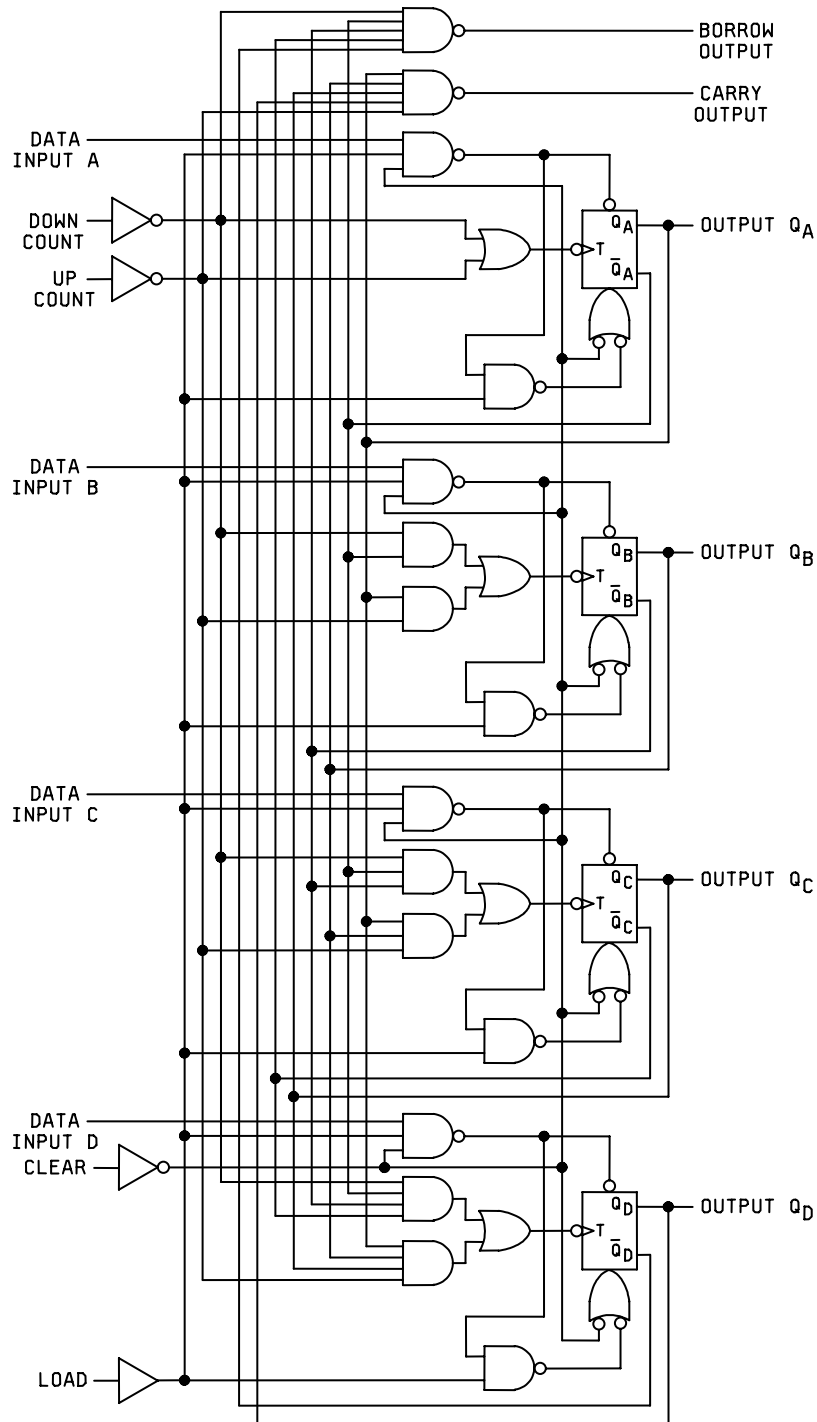
FIGURE 1. Logic diagram and terminal connections (topview).- Continued.

DEVICE TYPE 04
CASES E AND F
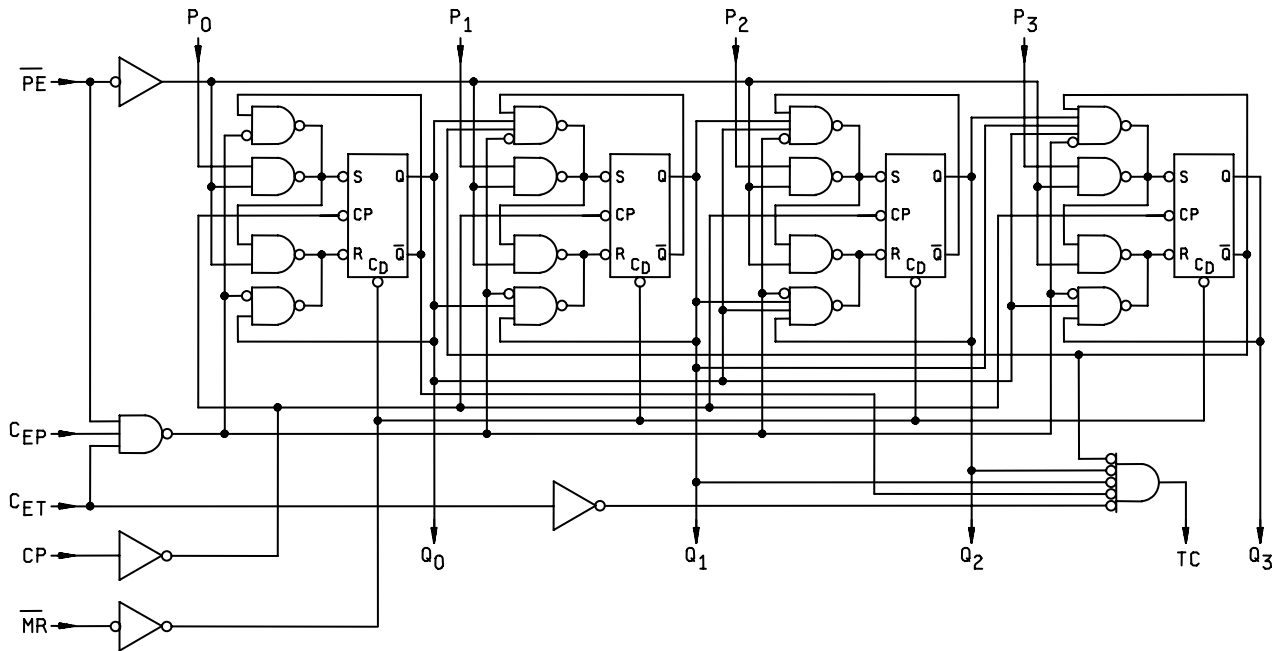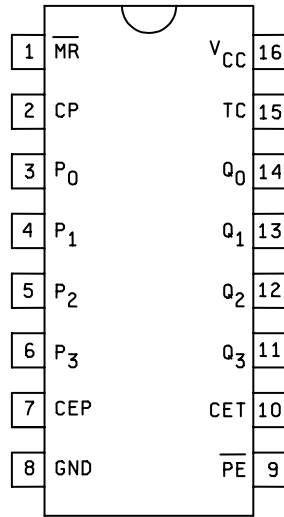
FIGURE 1. Logic diagram and terminal connections (topview).- Continued.

DEVICE TYPE 05
CASES E AND F

1	$\overline{MR}$	V_{CC}	16
2	CP	TC	15
3	P_0	Q_0	14
4	P_1	Q_1	13
5	P_2	Q_2	12
6	P_3	Q_3	11
7	CEP	CET	10
8	GND	$\overline{PE}$	9
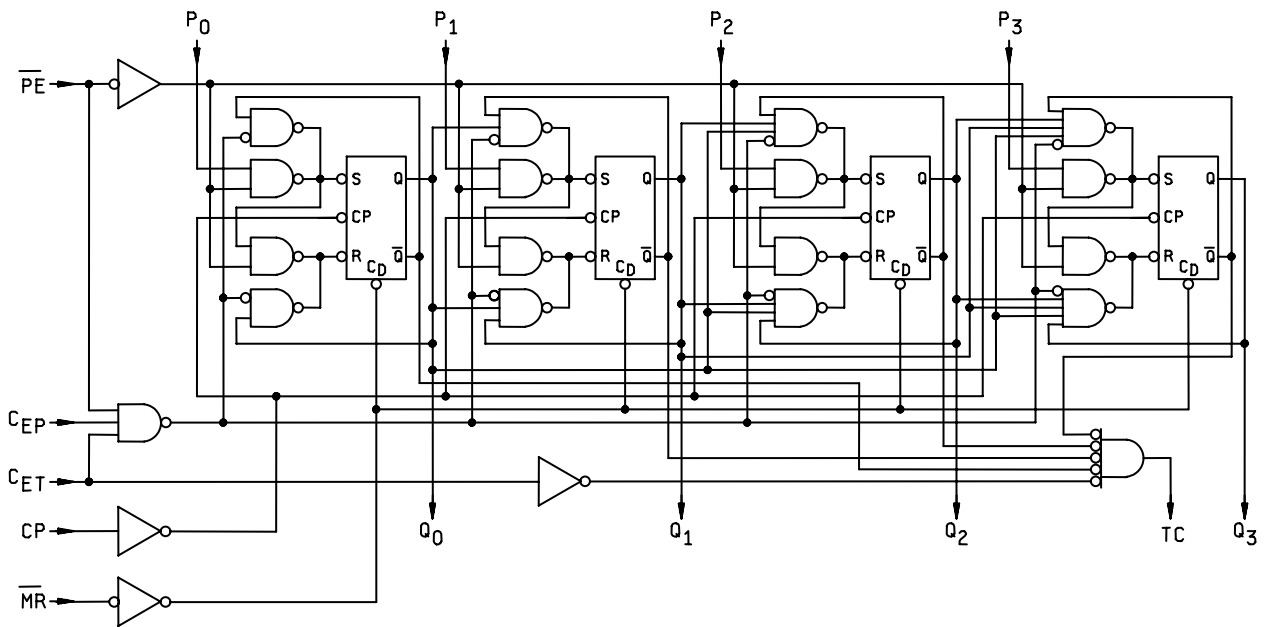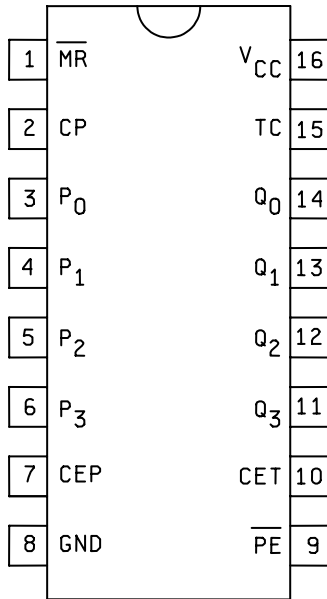
FIGURE 1. Logic diagram and terminal connections (topview).- Continued.

BCD COUNT SEQUENCE (see note 1)				
	Output			
Count	D	C	B	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 2)				
	Output			
Count	A	D	C	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			
R0(1)	R0(2)	R9(1)	R9(2)	D	C	B	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			

DEVICE TYPE 01

NOTES:
1. Output A is connected to input BD for BCD count.
2. Output D is connected to input A for BiQuinary count.
3. H = high level, L = low level, X = irrelevant.

FIGURE 2. Truth table.

Count	Output			
	D	C	B	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 02

NOTES:
1. Output A is connected to input B.
2. To reset all outputs to logical L, both R0(1) and R0(2) inputs must be at logical H.
3. Either (or both) reset inputs R0(1) and R0(2) must be at logical L to count.

FIGURE 2. Truth table - Continued.

Inputs at time tn								Outputs at time tn+1							
Count up	Count down	Load	A	B	C	D	Clear	Q_A	Q_B	Q_C	Q_D	Carry		Borrow	
												Count up	Count down	Count up	Count down
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	L if count = 15 H if count > 15	NC	NC	L if count = 0 H if count ≠ 0
P	H	H	X	X	X	X	L	Previous count plus 1 (note 1)				L if count = 15 H if count > 15	NA	NC	NA
H	P	H	X	X	X	X	L	Previous count minus 1 (note 2)				NA	NC	NA	L if count = 0 H if count ≠ 0

DEVICE TYPE 03

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 input, V_{OH} for outputs.
5. X = V_{IH} or V_{OH}.
6. NC = no change.
7. NA = not applicable.
8. P = Positive going pulse.

FIGURE 2. Truth table - Continued.

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 COUINT 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 TYPE 03

FIGURE 2. Truth table - Continued.

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MODE SELECTION

$\overline{PE}$	CEP	CET	MODE
L	L	L	Preset
L	L	H	Preset
L	H	L	Preset
L	H	H	Preset
H	L	L	No Change
H	L	H	No Change
H	H	L	No Change
H	H	H	Count

($\overline{MR}$) = HIGH

TERMINAL COUNT GENERATION

CET	93L10 (Q0 $\overline{Q}$1 $\overline{Q}$2 Q3)	93L16 (Q0 Q1 Q2 Q3)	TC
L	L	L	L
L	H	H	L
H	L	L	L
H	H	H	H

TC = CET Q0 $\overline{Q}$1 $\overline{Q}$2 Q3 (93L10)
TC = CET Q0 Q1 Q2 Q3 (93L16)

POSITIVE LOGIC = H = HIGH voltage level
                 L = LOW voltage level

DEVICE TYPES 04 AND 05

FIGURE 2. Truth table - Continued.
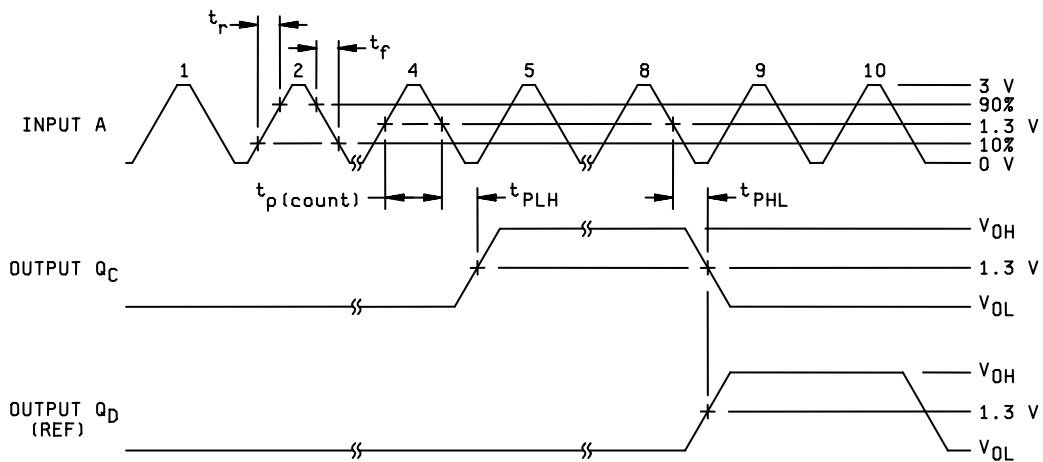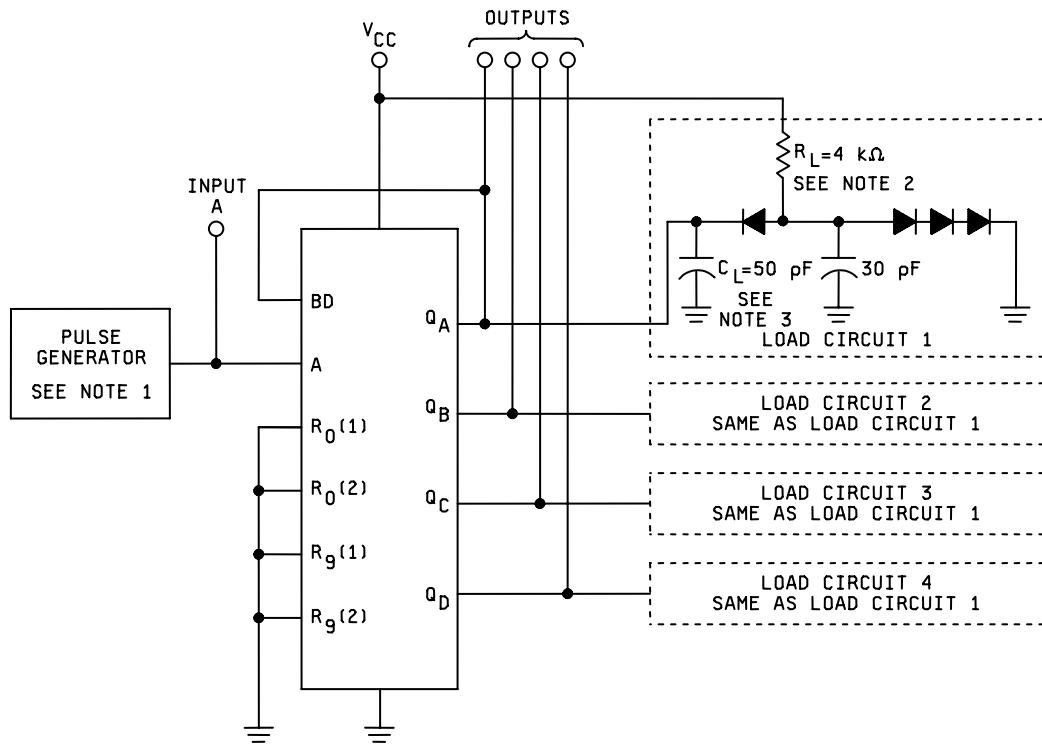
NOTES:

1. The pulse generator has the following characteristics: $t_p \geq 200$ ns, PRR = 500 kHz, $Z_{OUT} \approx 50 \ \Omega$, $t_r \leq t_f \leq 15$ ns.
2. All diodes are 1N3064, or equivalent.
3. C_L includes probe and jig capacitance.
4. When testing f_{MAX}: PRR = 3 MHz for subgroup A-9 and 2.5 MHz for subgroups A-10 and A-11. Omit load circuits 2, 3 and 4 and remove connection from output Q_A to input BD.

FIGURE 3. <u>Switching test circuits and waveforms for device type 01.</u>
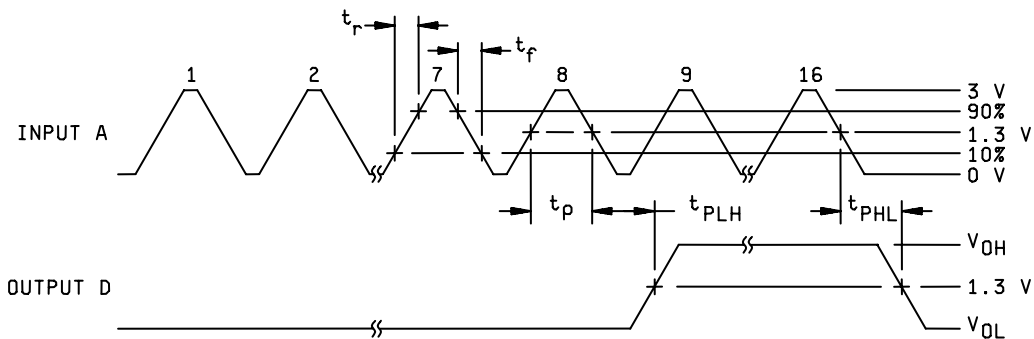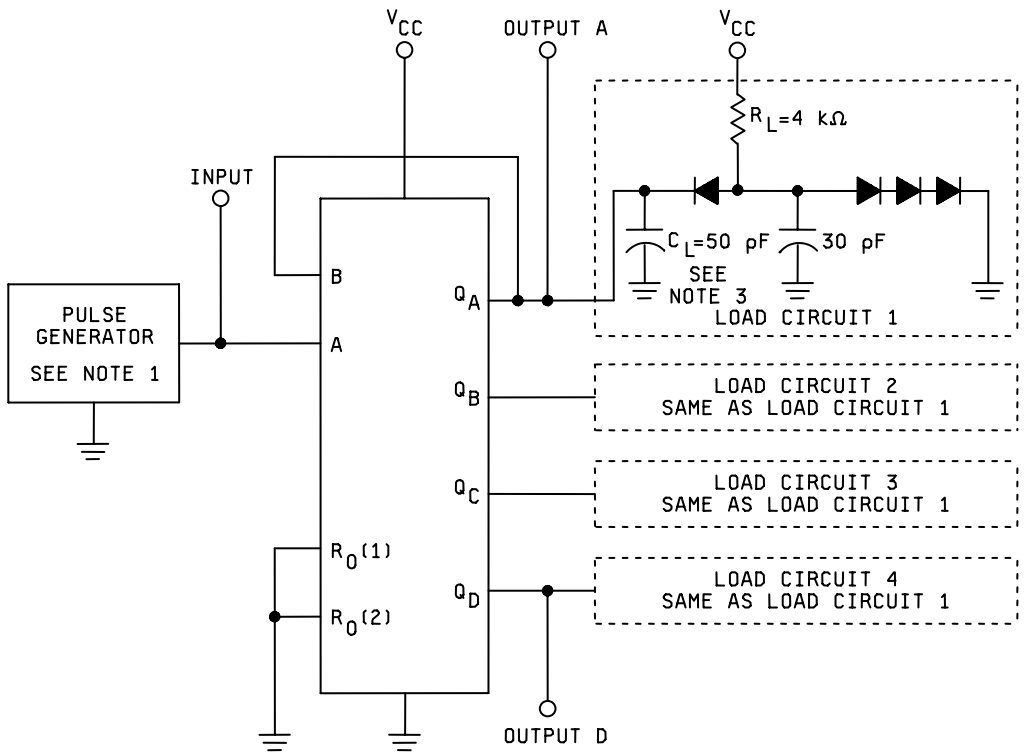
NOTES:
1. The pulse generator has the following characteristics: $t_r \le t_f \le 15$ ns, PRR = 500 kHz, $Z_{OUT} \approx 50$ Ω.
2. Voltage values are with respect to network ground terminal.
3. C_L = 50 minimum including scope probe, wiring, and stray capacitance, without package in test fixture.
4. All diodes are 1N3064, or equivalent.
5. When testing f_{MAX}: PRR = 3 MHz for tests at 25°C, and 2.5 MHz for tests at 125°C and -55°C. Omit load circuits 2, 3 and 4 and remove connection from output A to input B.

FIGURE 4. <u>Switching test circuits and waveforms for device type 02.</u>
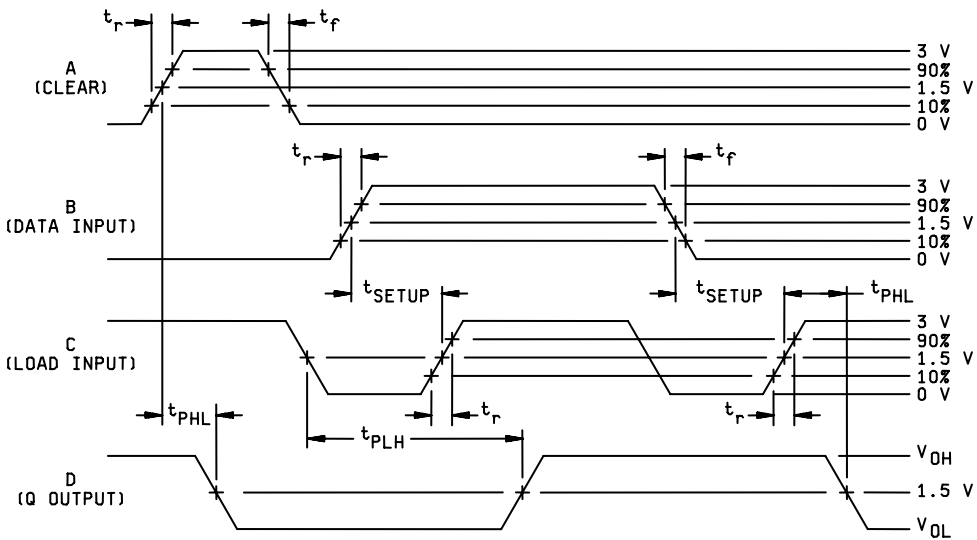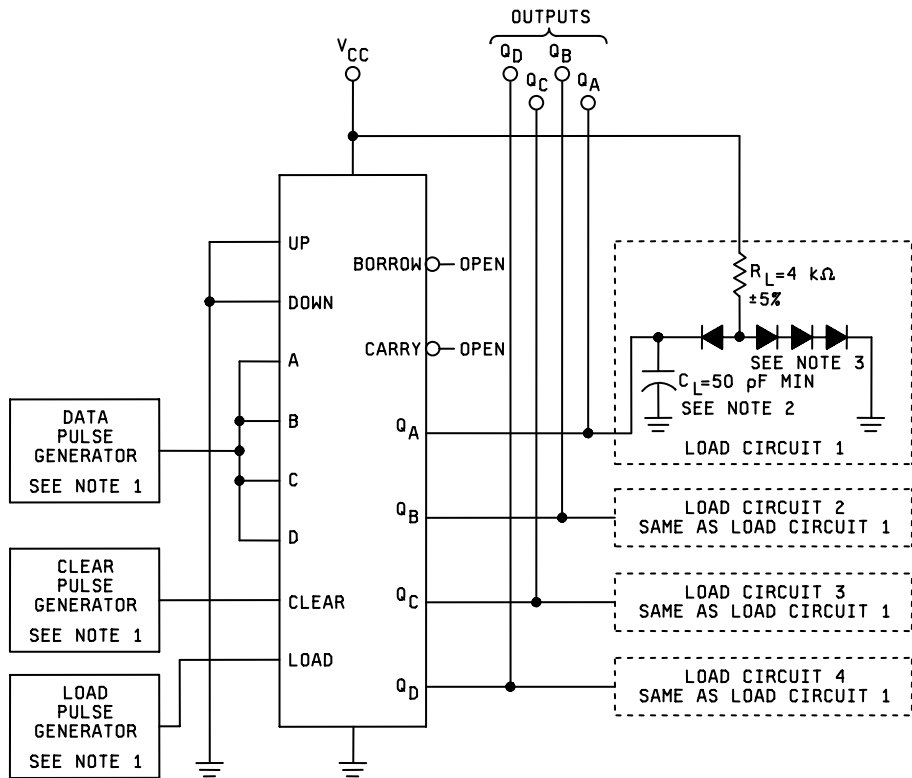
NOTES:
  1. The pulse generators have the following characteristics: $Z_{OUT} \approx 50\ \Omega$; for the data pulse generator, PRR $= 500$ kHz, duty cycle $= 50\%$; for the load pulse generator, PRR $= 1$ MHz, duty cycle $= 50\%$.
  2. C_L includes probe and jig capacitance.
  3. All diodes are 1N3064, or equivalent.

FIGURE 5A. Switching test circuits and waveforms for device type 03.

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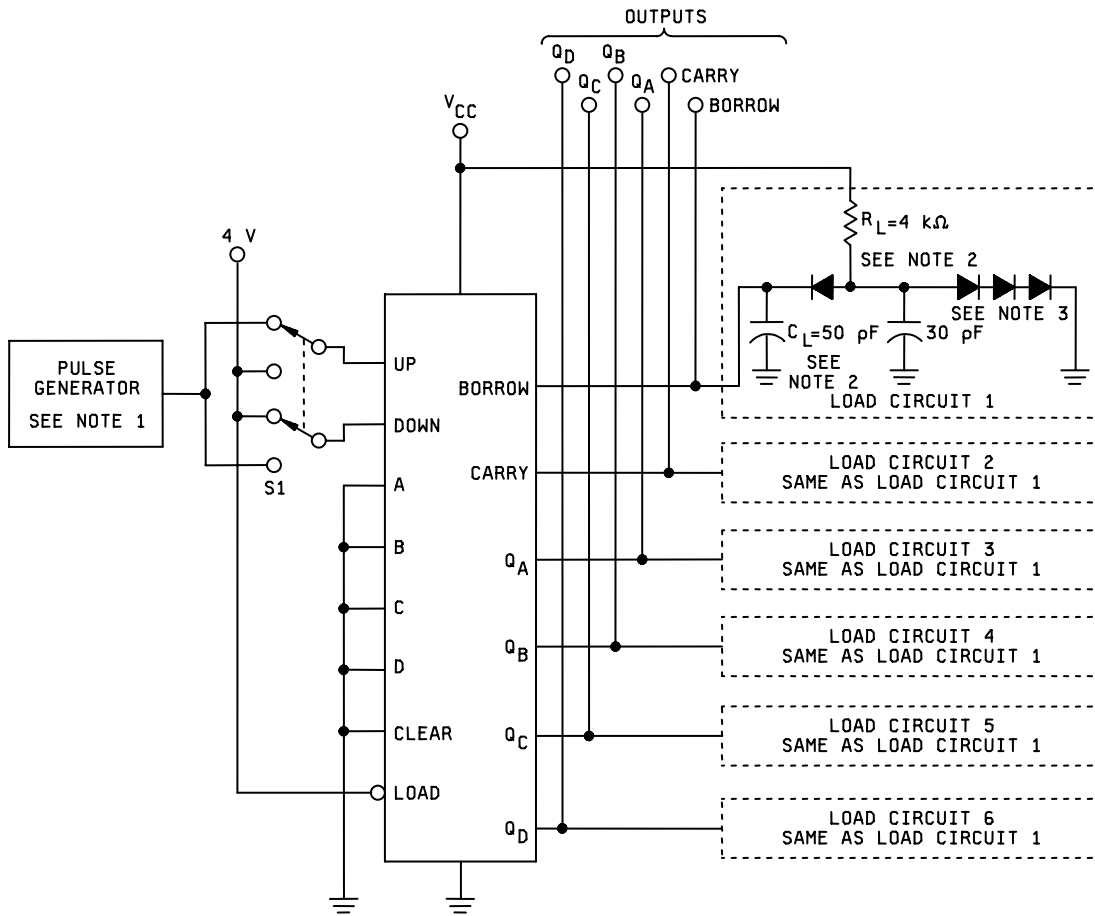
FIGURE 5B. Switching test circuits and waveforms for device type 03.
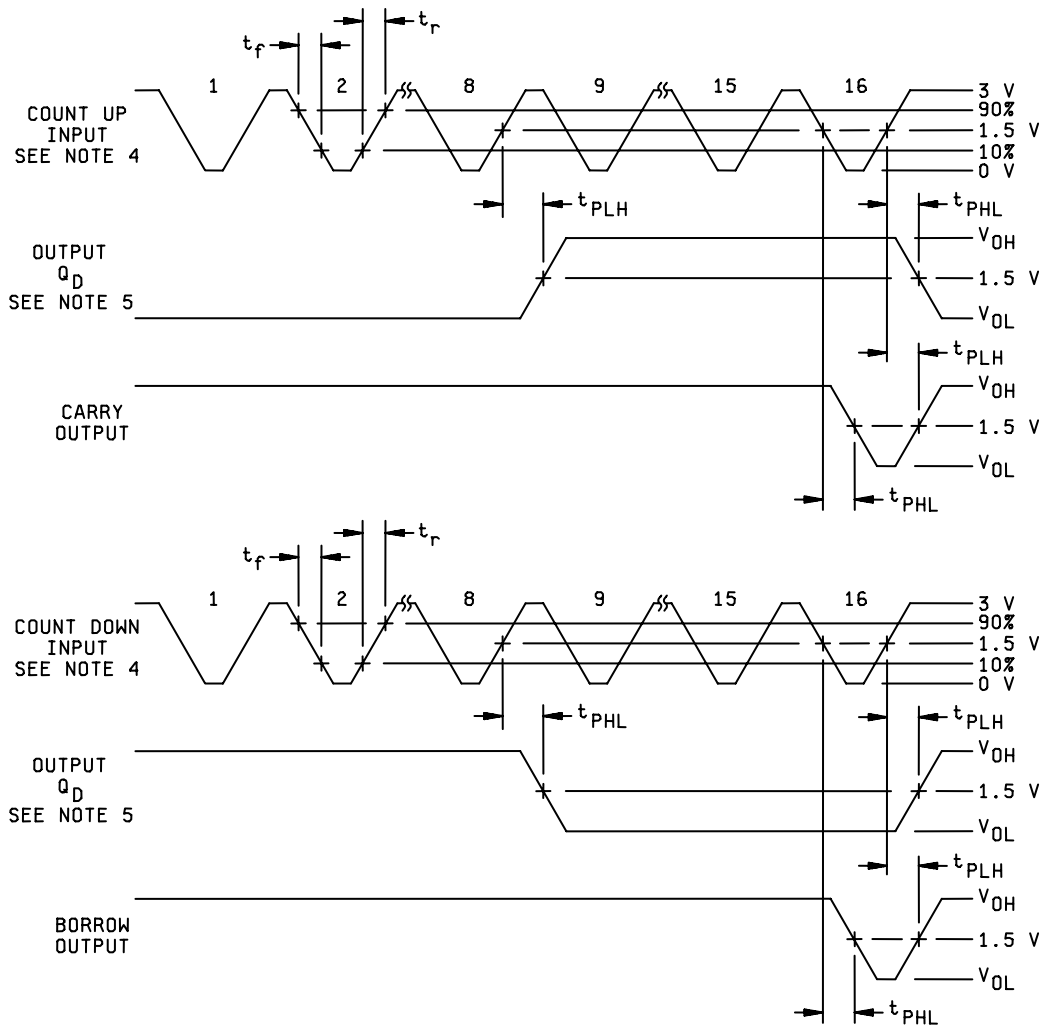
NOTES:
1. The pulse generator has the following characteristics: PRR $\leq$ 1 MHz, $Z_{OUT} \approx$ 50 Ω, duty cycle = 50%.
2. C_L includes probe and jig capacitance.
3. All diodes are 1N3064, or equivalent.
4. Count up and count down pulse shown are for device type 03.
5. Waveforms for outputs Q_A, Q_B, and Q_C are omitted to simplify the drawing.
6. t_r and $t_f \leq$ 25 ns

FIGURE 5B. <u>Switching test circuits and waveforms for device type 03</u> - Continued.
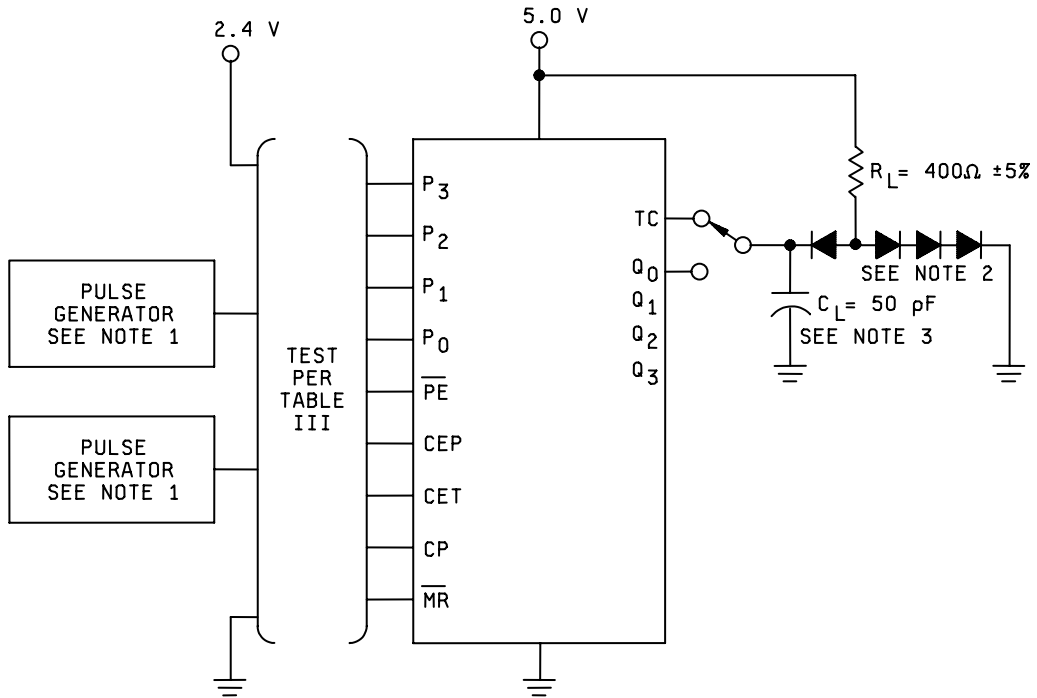
FIGURE 6. Switching test circuits and waveforms for device types 04 and 05.
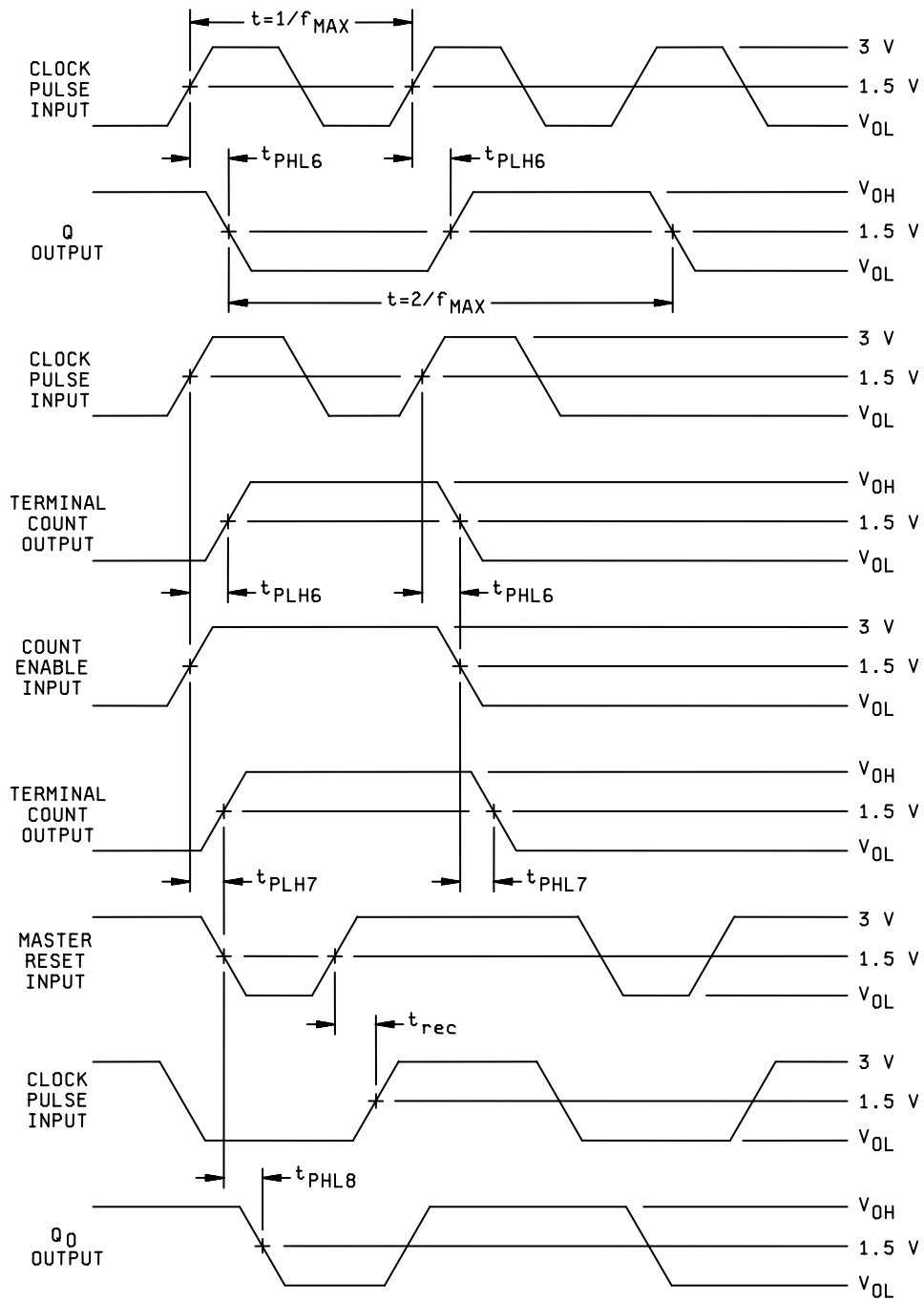
NOTES:
1. The pulse generators have the following characteristics: $t_r \leq 10$ ns, $t_f \leq 10$ ns, PRR = 10 MHz, duty cycle < 50%, $Z_{OUT} \approx 50\ \Omega$.
2. All diodes are 1N3064, or equivalent.
3. C_L includes probe and jig capacitance.
4. Voltage values are with respect to network ground terminal.

FIGURE 6. Synchronous switching test circuit for device types 04 and 05.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 BD	2 R0(1)	3 R0(2)	4 NC	5 Vcc	6 R9(1)	7 R9(2)	8 Qc	9 QB	10 GND	11 QD	12 QA	13 NC	14 Input A	Measured terminal	Limits Min	Limits Max	Unit
1 Tc= 25°C	V_{OL}	3007	1	2.0 V	2.0 V	2.0 V		4.5 V	GND	GND	2 mA		GND				GND	Q_C		0.3	V
		"	2	"	"	"		"	GND	GND		2 mA	"				"	Q_B		"	"
		"	3	"	"	"		"	4.5 V	0.7 V			"	2 mA				Q_D		"	"
		"	4	GND	"	"		"	0.7 V	4.5 V			"		2 mA		2.0 V	Q_A		"	"
		"	5	2.0 V	4.5 V	0.7 V		"	2.0 V	2.0 V	2 mA		"				GND	Q_C		"	"
		"	6	2.0 V	0.7 V	4.5 V		"	"	"		2 mA	"				GND	Q_B		"	"
	V_{OH}	3006	7	2.0 V	4.5 V	0.7 V		"	"	"			"	-0.1mA			GND	Q_D	2.4		"
		"	8	GND	0.7 V	4.5 V		"	"	"			"		-0.1mA		2.0 V	Q_A	"		"
		"	9	2.0 V	0.7 V	0.7 V		"	"	"			"	-0.1mA			GND	Q_D	"		"
		"	10	GND	0.7 V	0.7 V		"	"	"			"		-0.1mA		2.0 V	Q_A	"		"
		"	11					"	0.7 V	0.7 V	-0.1mA		"				GND	Q_C	"		"
		"	12					"	0.7 V	0.7 V		-0.1mA	"				GND	Q_B	"		"
	I_{IL1}	3009	13		0.3 V	4.5 V		5.5 V					"					R0(1)	-0.06	-0.18	mA
			14		4.5 V	0.3 V		"					"					R0(2)	"	"	"
		"	15					"	0.3 V	4.5 V			"					R9(1)	"	"	"
		"	16					"	4.5 V	0.3 V			"					R9(2)	"	"	"
	I_{IL2}	"	17		GND	GND		"	GND	GND			"				0.3 V	Input A	-0.12	-0.54	mA
	I_{IL3}	"	18	0.3 V	GND	GND		"	GND	GND			"					BD	-0.29	-1.08	mA
	I_{IH1}	3010	19		2.4 V	GND		"					"					R0(1)		10	µA
		"	20		GND	2.4 V		"					"					R0(2)		"	"
		"	21					"	2.4 V	GND			"					R9(1)		"	"
		"	22					"	GND	2.4 V			"					R9(2)		"	"
	I_{IH2}	"	23		5.5 V	GND		"					"					R0(1)		100	"
		"	24		GND	5.5 V		"					"					R0(2)		"	"
		"	25					"	5.5 V	GND			"					R9(1)		"	"
		"	26					"	GND	5.5 V			"					R9(2)		"	"
	I_{IH3}	"	27		GND	GND		"	GND	GND			"				2.4 V	Input A		30	"
	I_{IH4}	"	28		"	"		"	"	"			"				5.5 V	Input A		300	"
	I_{IH5}	"	29	2.4 V	"	"		"	"	"			"					BD		60	"
	I_{IH6}	"	30	5.5 V	"	"		"	"	"			"					BD		600	"
	I_{OS}	3011	31		"	"		"	4.5 V	4.5 V			"	GND				Q_D	-3	-15	mA
		"	32		"	"		"	4.5 V	4.5 V			"		GND			Q_A	"	"	"
		"	33	2/	1/	1/		"	GND	GND		GND	"					Q_B	"	"	"
		"	34	3/	1/	1/		"	GND	GND	GND		"					Q_C	"	"	"
	I_{CC}		35	GND	1/	1/		"	GND	GND			"				GND	V_{CC}		7.2	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C=+125°C.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C=-55°C.																				

See notes 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, L ≤ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 BD	2 R0(1)	3 R0(2)	4 NC	5 V_{CC}	6 R9(1)	7 R9(2)	8 Q_C	9 Q_B	10 GND	11 Q_D	12 Q_A	13 NC	14 Input A	Measured terminal	Limits Min	Max	Unit
7 T_C= 25°C	Truth table tests 6/		36	A 5/	A 5/	A 5/		4.5 V	A 5/	A 5/	L	L	GND	H	H		B 5/	All outputs	H or L as shown 4/		
			37	A	"	"		"	"	"	L	L	"	H	H		A	"	"		
			38	A	"	"		"	"	"	L	L	"	H	H		B	"	"		
			39	B	"	"		"	"	"	L	L	"	H	H		B	"	"		
			40	B	"	"		"	B	B	L	L	"	L	L		B	"	"		
			41	A	B	B		"	A	A	L	L	"	H	H		B	"	"		
			42	B	"	"		"	"	"	L	L	"	H	H		A	"	"		
			43	A	"	"		"	"	"	L	L	"	H	H		B	"	"		
			44	B	A	A		"	B	B	L	L	"	L	L		B	"	"		
			45	A	"	"		"	"	B	L	L	"	L	L		A	"	"		
			46	B	"	"		"	"	B	L	L	"	L	L		B	"	"		
			47	B	B	"		"	"	A	L	L	"	L	L		B	"	"		
			48	B	"	"		"	"	"	L	L	"	L	L		A	"	"		
			49	A	"	"		"	"	"	L	L	"	L	H		B	"	"		
			50	A	"	"		"	"	"	L	L	"	L	H		A	"	"		
			51	B	"	"		"	"	"	L	H	"	L	L		B	"	"		
			52	B	"	"		"	"	"	L	H	"	L	L		A	"	"		
			53	A	"	"		"	"	"	L	H	"	L	H		B	"	"		
			54	A	"	"		"	"	"	L	H	"	L	H		A	"	"		
			55	B	"	"		"	"	"	H	L	"	L	L		B	"	"		
			56	B	"	"		"	"	"	H	L	"	L	L		A	"	"		
			57	A	"	"		"	"	"	H	L	"	L	H		B	"	"		
			58	A	"	"		"	"	"	H	L	"	L	H		A	"	"		
			59	B	"	"		"	"	"	H	H	"	L	L		B	"	"		
			60	B	"	"		"	"	"	H	H	"	L	L		A	"	"		
			61	A	"	"		"	"	"	H	H	"	L	H		B	"	"		
			62	A	"	"		"	"	"	H	H	"	L	H		A	"	"		
			63	B	"	"		"	"	"	L	L	"	H	L		B	"	"		
			64	B	"	"		"	"	"	L	L	"	H	L		A	"	"		
			65	A	"	"		"	"	"	L	L	"	H	H		B	"	"		
			66	A	"	"		"	"	"	L	L	"	H	H		A	"	"		
			67	B	"	"		"	"	"	L	L	"	L	L		B	"	"		
			68	B	"	B		"	"	B	L	L	"	L	L		A	"	"		
			69	A	"	"		"	A	"	L	L	"	L	H		B	"	"		
			70	A	"	"		"	"	"	L	L	"	L	H		A	"	"		
			71	B	A	"		"	"	"	L	H	"	L	L		B	"	"		
			72	B	"	"		"	"	"	L	H	"	L	L		A	"	"		
			73	A	"	"		"	"	"	L	H	"	L	H		B	"	"		
			74	A	"	"		"	"	"	L	H	"	L	H		A	"	"		
			75	B	"	"		"	"	"	H	L	"	L	L		B	"	"		
			76	B	"	"		"	"	"	H	L	"	L	L		A	"	"		
			77	A	"	"		"	"	"	H	L	"	L	H		B	"	"		
			78	A	"	"		"	"	"	H	L	"	L	H		A	"	"		
			79	B	"	"		"	"	"	H	H	"	L	L		B	"	"		
			80	B	"	"		"	"	"	H	H	"	L	L		A	"	"		
			81	A	"	"		"	"	"	H	H	"	L	H		B	"	"		
			82	A	"	"		"	"	"	H	H	"	L	H		A	"	"		
			83	B	"	"		"	"	"	L	L	"	H	L		B	"	"		
			84	B	"	"		"	"	"	L	L	"	H	L		A	"	"		
			85	A	"	"		"	"	"	L	L	"	H	H		B	"	"		
			86	A	"	"		"	"	"	L	L	"	H	H		A	"	"		
			87	B	"	"		"	"	"	L	L	"	L	L		B	"	"		

See notes at end of device type 01.

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 BD	2 R0(1)	3 R0(2)	4 NC	5 V_{CC}	6 R9(1)	7 R9(2)	8 Q_C	9 Q_B	10 GND	11 Q_D	12 Q_A	13 NC	14 Input A	Measured terminal	Min	Max	Unit
7 T_C= 25°C	Truth table tests 6/		88	B 5/	B 5/	B 5/		4.5 V	B 5/	B 5/	L	L	GND	L	L		A 5/	All outputs		H or L as shown 4/	
			89	A	B	"		"	"	"	L	L	"	L	H		B	outputs		"	
			90	A	B	"		"	"	"	L	L	"	L	H		A	"		"	
			91	B	A	"		"	"	A	L	H	"	L	L		B	"		"	
			92	B	"	"		"	"	"	L	H	"	L	L		A	"		"	
			93	A	"	"		"	"	"	L	H	"	L	H		B	"		"	
			94	A	"	"		"	"	"	L	H	"	L	H		A	"		"	
			95	B	"	"		"	"	"	H	L	"	L	L		B	"		"	
			96	B	"	"		"	"	"	H	L	"	L	L		A	"		"	
			97	A	"	"		"	"	"	H	L	"	L	H		B	"		"	
			98	A	"	"		"	"	"	H	L	"	L	H		A	"		"	
			99	B	"	A		"	"	B	H	H	"	L	L		B	"		"	
			100	B	"	A		"	"	B	L	L	"	L	L		B	"		"	
			101	B	B	"		"	A	"	L	L	"	L	L		B	"		"	
			102	B	"	"		"	"	"	L	L	"	L	L		A	"		"	
			103	A	"	"		"	"	"	L	H	"	L	H		B	"		"	
			104	A	"	"		"	"	"	L	H	"	L	H		A	"		"	
			105	B	"	"		"	"	"	L	H	"	L	L		B	"		"	
			106	B	"	"		"	"	"	L	H	"	L	L		A	"		"	
			107	A	"	"		"	"	"	L	H	"	L	H		B	"		"	
			108	A	"	"		"	"	"	L	H	"	L	H		A	"		"	
			109	B	"	"		"	"	"	H	L	"	L	L		B	"		"	
			110	B	"	"		"	"	"	H	L	"	L	L		A	"		"	
			111	A	"	"		"	"	"	H	L	"	L	H		B	"		"	
			112	A	"	"		"	"	"	H	L	"	L	H		A	"		"	
			113	B	"	"		"	"	"	H	H	"	L	L		B	"		"	
			114	A	"	B		"	"	A	L	L	"	H	H		B	"		"	
			115	A	"	B		"	B	B	L	L	"	H	H		B	"		"	
			116	A	A	A		"	"	"	L	L	"	L	L		A	"		"	
			117	B	A	A		"	"	"	L	L	"	L	L		B	"		"	
			118	B	A	A		"	"	"	L	L	"	L	L		A	"		"	
			119	A	B	B		"	"	"	L	L	"	L	H		B	"		"	
			120	A	"	"		"	"	"	L	L	"	L	H		A	"		"	
			121	B	"	"		"	"	"	L	H	"	L	L		B	"		"	
			122	B	"	"		"	"	"	L	H	"	L	L		A	"		"	
			123	A	"	"		"	"	"	L	H	"	L	H		B	"		"	
			124	A	"	"		"	"	"	L	H	"	L	H		A	"		"	
			125	B	"	"		"	"	"	H	L	"	L	L		B	"		"	
			126	B	"	"		"	"	"	H	L	"	L	L		A	"		"	
			127	A	"	"		"	"	"	H	L	"	L	H		B	"		"	
			128	A	"	"		"	"	"	H	L	"	L	H		A	"		"	
			129	B	"	"		"	"	"	H	H	"	L	L		B	"		"	
			130	B	"	"		"	"	"	H	H	"	L	L		A	"		"	
			131	A	"	"		"	"	"	H	H	"	L	H		B	"		"	
			132	B	A	A		"	"	"	L	L	"	L	L		B	"		"	
			133	B	B	B		"	"	"	L	L	"	L	L		A	"		"	
			134	A	"	"		"	"	"	L	L	"	L	H		B	"		"	
			135	A	"	"		"	"	"	L	L	"	L	H		A	"		"	
			136	B	"	"		"	"	"	L	H	"	L	L		B	"		"	

See notes at end of device type 01.

MIL–M–38510/25E

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

Terminal conditions (pins not designated may be H ≥ 2.0 V, L ≤ 0.8 V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 BD	2 R0(1)	3 R0(2)	4 NC	5 Vcc	6 R9(1)	7 R9(2)	8 Qc	9 Qb	10 GND	11 Qd	12 Qa	13 NC	14 Input A	Measured terminal	Min	Max	Unit
7 Tc= 25°C	Truth table tests 6/		137	B 5/	B 5/	B 5/		4.5 V	B 5/	B 5/	L	H	GND	L	L		A 5/	All outputs	H or L		
			138	A	"	"		"	"	"	L	H	"	L	H		B	outputs	As shown 4/		"
			139	A	"	"		"	"	"	L	H	"	L	H		A	"	"		"
			140	B	"	"		"	"	"	H	L	"	L	L		B	"	"		"
			141	B	"	"		"	"	"	H	L	"	L	L		A	"	"		"
			142	A	"	"		"	"	"	H	L	"	L	H		B	"	"		"
			143	A	"	"		"	"	"	H	L	"	L	H		A	"	"		"
			144	B	"	"		"	"	"	H	H	"	L	L		B	"	"		"
			145	B	"	"		"	"	"	H	H	"	L	L		A	"	"		"
			146	A	"	"		"	"	"	H	H	"	L	H		B	"	"		"
			147	A	"	"		"	A	A	L	L	"	H	H		A	"	"		"
			148	A	"	"		"	A	A	L	L	"	H	H		A	"	"		"
			149	B	"	"		"	A	A	L	L	"	H	H		B	"	"		"
			150	B	"	"		"	B	B	L	L	"	H	H		A	"	"		"
			151	A	"	"		"	"	"	L	L	"	H	L		B	"	"		"
			152	A	A	A		"	"	"	L	L	"	L	L		A	"	"		"
			153	B	A	A		"	"	"	L	L	"	L	L		B	"	"		"
8	Same tests, terminal conditions and limits as for subgroup 7 except Tc=125°C and -55°C.																				
9 Tc= 25°C	fMAX 7/	(Fig. 3)	154		GND	GND		5.0 V	GND	GND			GND		OUT		IN	Qa	6		MHz
	tPLH1	3003 (Fig. 3)	155	Qa	"	"		"	"	"			"		OUT		"	Qa		85	ns
		"	156	"	"	"		"	"	"		OUT	"		"		"	Qb		170	"
		"	157	"	"	"		"	"	"	OUT		"		"		"	Qc		255	"
		"	158	"	"	"		"	"	"			"	OUT	"		"	Qd		340	"
	tPHL1	"	159	"	"	"		"	"	"			"		OUT		"	Qa		85	"
		"	160	"	"	"		"	"	"		OUT	"		"		"	Qb		170	"
		"	161	"	"	"		"	"	"	OUT		"		"		"	Qc		255	"
		"	162	"	"	"		"	"	"			"	OUT	"		"	Qd		340	"
10 Tc=+125°C	fMAX 7/	"	163		"	"		"	"	"			"		OUT		"	Qa	5		MHz
	tPLH1	"	164	Qa	"	"		"	"	"			"		OUT		"	Qa		125	ns
		"	165	"	"	"		"	"	"		OUT	"		"		"	Qb		255	"
		"	166	"	"	"		"	"	"	OUT		"		"		"	Qc		380	"
		"	167	"	"	"		"	"	"			"	OUT	"		"	Qd		510	"
	tPHL1	"	168	"	"	"		"	"	"			"		OUT		"	Qa		125	"
		"	169	"	"	"		"	"	"		OUT	"		"		"	Qb		255	"
		"	170	"	"	"		"	"	"	OUT		"		"		"	Qc		380	"
		"	171	"	"	"		"	"	"			"	OUT	"		"	Qd		510	"
11	Same tests, terminal conditions and limits as for subgroup 7 except Tc= -55°C.																				

1/ Momentarily apply 2.0 V, then ground prior to taking measurements to set the device in desired state. Maintain ground for measurement.

2/ Same as 1/, except apply one pulse after reset (R0) pulses.

3/ Same as 1/, except apply two pulses after reset (R0) pulses.

4/ Output voltages shall be either: (a) H = 2.4 V, minimum and L = 0.3 V maximum when using a high speed checker double comparator; or (b) H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

5/ Input voltages shown are: A = 2.4 V; B = 0.3 V.

6/ Only a summary of attributes data is required.

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

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D / Test no.	1: R0(1)	2: R0(2)	3: NC	4: Vcc	5: NC	6: NC	7: NC	8: Input B	9: QB	10: QC	11: GND	12: QD	13: QA	14: Input A	Measured terminal	Min	Max	Unit
1, Tc=25°C	VOL	3007	1	2.0 V	2.0 V		4.5 V				GND			GND		2 mA	2.0 V	QA		0.3	V
	"	"	2	"	"		"				2.0 V	2 mA		"			GND	QB		"	"
	"	"	3	"	"		"				"		2 mA	"				QC		"	"
	"	"	4	"	"		"				"			"	2 mA			QD		"	"
	VOH	3006	5	1/	1/		"				GND 2/ 3/ 4/			"		-0.1mA		QA	2.4		"
	"	"	6	"	"		"					-0.1mA		"			GND	QB	"		"
	"	"	7	"	"		"						-0.1mA	"				QC	"		"
	"	"	8	"	"		"							"	-0.1mA			QD	"		"
	IOS	3011	9	"	"		5.5 V				GND 2/ 3/ 4/			"		GND		QA	-3	-15	mA
	"	"	10	"	"		"					GND		"			GND	QB	"	"	"
	"	"	11	"	"		"						GND	"				QC	"	"	"
	"	"	12	"	"		"							"	GND			QD	"	"	"
	IIH1	3010	13	2.4 V	GND		"							"				R0(1)		10	μA
	"	"	14	GND	2.4 V		"							"				R0(2)		10	"
	IIH2	"	15	5.5 V	GND		"							"				R0(1)		100	"
	"	"	16	GND	5.5 V		"							"				R0(2)		100	"
	IIH3	"	17				"							"			2.4 V	Input A		20	"
	"	"	18				"				2.4 V			"				Input B		20	"
	IIH4	"	19				"							"			5.5 V	Input A		200	"
	"	"	20				"				5.5 V			"				Input B		200	"
	IIL1	3009	21	0.3 V	4.5 V		"							"				R0(1)	-0.06	-0.18	mA
	"	"	22	4.5 V	0.3 V		"							"				R0(2)	-0.06	-0.18	"
	IIL2	"	23				"							"			0.3 V	Input A	-0.12	-0.36	"
	"	"	24				"				0.3 V			"				Input B	-0.12	-0.36	"
	ICC	3005	25				"							"				Vcc		6.6	"
2	Same tests, terminal conditions and limits as for subgroup 1, except Tc = 125°C.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except Tc = -55°C.																				
7, Tc=25°C	Truth table tests 7/		26	A 6/	A 6/		4.5 V				B 6/	L	L	GND	L	L	B 6/	All outputs		H or L as shown 5/	
			27	"	"		"				A	"	"	"	"	"	"	"		"	
			28	"	B		"				B	"	"	"	"	"	"	"		"	
			29	"	"		"				B	"	"	"	"	"	"	"		"	
			30	"	"		"				A	"	"	"	"	"	"	"		"	
			31	"	"		"				B	H	"	"	"	"	"	"		"	
			32	"	A		"				B	L	"	"	"	"	"	"		"	
			33	B	"		"				B	"	"	"	"	"	"	"		"	
			34	"	"		"				A	"	"	"	"	"	"	"		"	
			35	"	"		"				B	H	"	"	"	"	"	"		"	
			36	A	"		"				B	L	"	"	"	"	"	"		"	
			37	"	B		"				A	L	"	"	"	"	"	"		"	
			38	"	"		"				B	H	"	"	"	"	"	"		"	
			39	"	"		"				A	H	"	"	"	"	B	"		"	

See notes at end of device type 02.

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

Terminal conditions (pins not designated may be H ≥ 2.0 V, L ≤ 0.8V, or open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 R0(1)	2 R0(2)	3 NC	4 V_CC	5 NC	6 NC	7 NC	8 Input B	9 Q_B	10 Q_C	11 GND	12 Q_D	13 Q_A	14 Input A	Measured terminal	Min	Max	Unit
7 T_C= 25°C	Truth table tests 7/		40	B 6/	B 6/		4.5 V				B 6/	L	H	GND	L	L	B 6/	All outputs		H or L as shown 5/	
			41	"	"		"				A	L	"	"	"	"	"	"		as shown "	
			42	"	"		"				B	H	"	"	"	"	"	"		"	
			43	"	"		"				A	H	"	"	"	"	"	"		"	
			44	"	"		"				B	L	L	"	H	"	"	"		"	
			45	"	"		"				A	L	"	"	"	"	"	"		"	
			46	"	"		"				B	H	"	"	"	"	"	"		"	
			47	"	"		"				A	H	"	"	"	"	"	"		"	
			48	"	"		"				B	L	H	"	"	"	"	"		"	
			49	"	"		"				A	L	"	"	"	"	"	"		"	
			50	"	"		"				B	H	"	"	"	"	"	"		"	
			51	"	"		"				A	H	"	"	"	"	"	"		"	
			52	"	"		"				B	L	L	"	L	"	"	"		"	
			53	"	"		"				A	L	"	"	"	"	"	"		"	
			54	"	"		"				B	H	"	"	"	"	"	"		"	
			55	"	"		"				A	H	"	"	"	"	"	"		"	
			56	"	"		"				B	L	H	"	"	"	"	"		"	
			57	"	"		"				A	L	"	"	"	"	"	"		"	
			58	"	"		"				B	H	"	"	"	"	"	"		"	
			59	"	"		"				A	H	"	"	"	"	"	"		"	
			60	"	"		"				B	L	L	"	H	"	"	"		"	
			61	"	"		"				A	L	"	"	"	"	"	"		"	
			62	A	"		"				B	H	"	"	"	"	"	"		"	
			63	"	"		"				A	H	"	"	"	"	"	"		"	
			64	"	"		"				B	L	H	"	"	"	"	"		"	
			65	"	"		"				A	L	"	"	"	"	"	"		"	
			66	"	"		"				B	H	"	"	"	"	"	"		"	
			67	"	"		"				A	H	"	"	"	"	"	"		"	
			68	"	A		"				A	L	L	"	L	"	"	"		"	
			69	"	A		"				B	"	"	"	"	"	"	"		"	
			70	B	B		"				"	"	"	"	"	"	A	"		"	
			71	"	"		"				"	"	"	"	"	H	B	"		"	
			72	"	"		"				"	"	"	"	"	H	A	"		"	
			73	"	"		"				"	"	"	"	"	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 8/	(Fig. 4)	74	GND	GND		5.0 V							GND		OUT	IN	Q_A	6		MHz
	t_PLH2	3003 (Fig. 4)	75	"	"		"				OUT A			"		OUT	"	Q_A		110	ns
		"	76	"	"		"				"	OUT		"			"	Q_B		220	"
			77	"	"		"				"		OUT	"			"	Q_C		330	"
			78	"	"		"				"			"	OUT		"	Q_D		450	"
	t_PHL2	"	80	"	"		"				"			"		OUT	"	Q_A		110	"
		"	81	"	"		"				"	OUT		"			"	Q_B		220	"
		"	82	"	"		"				"		OUT	"			"	Q_C		330	"
		"	83	"	"		"				"			"	OUT		"	Q_D		450	"

See notes at end of device type 02.

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D Test no.	1 R0(1)	2 R0(2)	3 NC	4 V_CC	5 NC	6 NC	7 NC	8 Input B	9 Q_B	10 Q_C	11 GND	12 Q_D	13 Q_A	14 Input A	Measured terminal	Min	Max	Unit
10 T_C=+125°C	f_MAX 8/	3003 (Fig. 4)	84	GND	GND		GND							GND		OUT	IN	Q_A	5		MHz
	t_PLH2	"	85	"	"		"				OUT A			"		OUT	"	Q_A		165	ns
		"	86	"	"		"				"	OUT		"			"	Q_B		330	"
		"	87	"	"		"				"		OUT	"			"	Q_C		500	"
		"	88	"	"		"				"			"	OUT		"	Q_D		675	"
	t_PHL2	"	89	"	"		"				"			"		OUT	"	Q_A		165	"
		"	91	"	"		"				"	OUT		"			"	Q_B		330	"
		"	92	"	"		"				"		OUT	"			"	Q_C		500	"
		"	93	"	"		"				"			"	OUT		"	Q_D		675	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.																				

1/ Momentarily apply 2.0 V, then ground prior to taking measurements to set the device in desired state. Maintain ground for measurement.
2/ Same as 1/, except apply one pulse after reset (R0) pulses.
3/ Same as 1/, except apply two pulses after reset (R0) pulses.
4/ Same as 1/, except apply four pulses after reset (R0) pulses.
5/ Output voltages shall be either: (a) H = 2.4 V, minimum and L = 0.3 V maximum when using a high speed checker double comparator; or
   (b) H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.
6/ Input voltages shown are: A = 2.4 V; B = 0.3 V.
7/ Only a summary of attributes data is required.
8/ f_MAX, minimum limit specified is the frequency of the input pulse. The output frequency shall be one-half of the input frequency.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 Input B	2 QB	3 QA	4 Count down	5 Count up	6 QC	7 QD	8 GND	9 Input D	10 Input C	11 Load	12 Carry	13 Borrow	14 Clear	15 Input A	16 VCC	Measured terminal	Min	Max	Unit
1 TC= 25°C	IIH1	3010	1								GND			4.5 V			4.5 V	2.4 V	5.5 V	Input A		10	µA
	"	"	2	2.4 V							"			"			"	"	"	Input B		"	"
		"	3								"		2.4 V	"			"	"	"	Input C		"	"
		"	4								"	2.4 V		"			"	"	"	Input D		"	"
		"	5	GND			GND	2.4 V			"	GND	GND	GND			GND	GND	"	Count up		"	"
		"	6	"			2.4 V	GND			"	"	"	GND			"	"	"	Count down		"	"
		"	7	"			GND	"			"	"	"	2.4 V			"	"	"	Load		"	"
		"	8	"			GND	"			"	"	"	GND			2.4 V	"	"	Clear		"	"
	IIH2	"	9								"			4.5 V			4.5 V	5.5 V	"	Input A		100	µA
		"	10	5.5 V							"			"			"	"	"	Input B		"	"
		"	11								"		5.5 V	"			"	"	"	Input C		"	"
		"	12								"	5.5 V		"			"	"	"	Input D		"	"
		"	13	GND			GND	5.5 V			"	GND	GND	GND			GND	GND	"	Count up		"	"
		"	14	"			5.5 V	GND			"	"	"	GND			"	"	"	Count down		"	"
		"	15	"			GND	"			"	"	"	5.5 V			"	"	"	Load		"	"
		"	16	"			GND	"			"	"	"	GND			5.5 V	"	"	Clear		"	"
	VOL	3007	17	2.0 V		2.6 mA	4.5 V	4.5 V			"	2.0 V	2.0 V	"			1/	0.7 V	4.5 V	QA		0.3	V
		"	18	0.7 V	2.6 mA		"	"			"	"	2.0 V	"			"	2.0 V	"	QB		"	"
		"	19	2.0 V			"	"	2.6 mA		"	"	0.7 V	"			"	"	"	QC		"	"
		"	20	"			"	"		2.6 mA	"	0.7 V	2.0 V	"			"	"	"	QD		"	"
		"	21	"			"	0.7 V			"	2.0 V	2.0 V	"	2.6 mA		"	"	"	Carry		"	"
		"	22	0.7 V			0.7 V	4.5 V			"	0.7 V	0.7 V	"		2.6 mA	"	0.7 V	"	Borrow		"	"
	VOH	3006	23	0.7 V		-110µA	4.5 V	"			"	"	"	"			"	2.0 V	"	QA	2.4		"
		"	24	2.0 V	-110µA		"	"			"	"	"	"			"	0.7 V	"	QB	"		"
		"	25	0.7 V			"	"	-110µA		"	2.0 V	"	"			"	"	"	QC	"		"
		"	26	0.7 V			"	"		-110µA	"	2.0 V	"	"			"	"	"	QD	"		"
		"	27	2.0 V			"	0.7 V			"	0.7 V	2.0 V	"	-110µA		"	2.0 V	"	Carry	"		"
		"	28	0.7 V			0.7 V	4.5 V			"	2.0 V	0.7 V	"		-110µA	"	0.7 V	"	Borrow	"		"
	IIL4	3009	29	GND			GND	GND			"	GND	GND	"			GND	0.3 V	5.5 V	Input A		-160	µA
		"	30	0.3 V			"	"			"	GND	GND	"			"	"	"	Input B		"	"
		"	31	GND			"	"			"	0.3 V	0.3 V	"			"	"	"	Input C		"	"
		"	32	"			"	"			"	GND	GND	"			"	"	"	Input D		"	"
		"	33	"			"	0.3 V			"	"	"	"			"	"	"	Count up		"	"
		"	34	"			0.3 V	GND			"	"	"	"			"	"	"	Count down		"	"
		"	35	"			GND	"			"	"	"	0.3 V			"	"	"	Load		"	"
		"	36	"			GND	"			"	"	"	GND			0.3 V	"	"	Clear		"	"
	IOS	3011	37	4.5 V		GND	4.5 V	4.5 V			"	4.5 V	4.5 V	"			GND	4.5 V	"	QA	-3.5	-14.5	mA
		"	38	"	GND		"	"			"	"	"	"			"	"	"	QB	"	"	"
		"	39	"			"	"	GND		"	"	"	"			"	"	"	QC	"	"	"
		"	40	"			"	"		GND	"	"	"	"			"	"	"	QD	"	"	"
		"	41	"			"	"			"	"	"	"	GND		"	"	"	Carry	"	"	"
		"	42	"			"	"			"	"	"	"		GND	"	"	"	Borrow	"	"	"
	ICC		43	"			"	"			"	"	"	"			"	"	"	VCC		14.9	"

See footnotes at end of device type 03.

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TABLE III. <u>Group A inspection for device type 03</u> – Continued.

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

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 Input B	2 Q_B	3 Q_A	4 Count down	5 Count up	6 Q_C	7 Q_D	8 GND	9 Input D	10 Input C	11 Load	12 Carry	13 Borrow	14 Clear	15 Input A	16 V_{CC}	Measured terminal	Min	Max	Unit
1 T_C=25°C	V_{IC}	3010	44	-12 mA							GND								4.5 V	Input B		-1.4	V
			45				-12 mA				"								"	Count down		"	"
			46					-12 mA			"								"	Count up		"	"
			47								"	-12 mA							"	Input D		"	"
			48								"		-12 mA						"	Input C		"	"
			49								"			-12 mA					"	Load		"	"
			50								"						-12 mA		"	Clear		"	"
			51								"							-12 mA	"	Input A		"	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C=125C.																					
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C=-55C.																					
7 T_C=25°C	Truth table tests 4/		52	B 3/	L	L	A 3/	A 3/	L	L	GND	B 3/	B 3/	B 3/	H	H	B 3/	B 3/	5.0 V	All outputs	H or L as shown 2/		
			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	"	"	"		
			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	"	"	"	"	"	"	L	"	"	"	"		
			88	"	H	H	B	"	H	H	"	"	"	"	"	"	H	"	"	"	"		
			89	"	H	L	A	"	H	H	"	"	"	"	"	"	H	"	"	"	"		

See footnotes at end of device type 03.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 Input B	2 Q_B	3 Q_A	4 Count down	5 Count up	6 Q_C	7 Q_D	8 GND	9 Input D	10 Input C	11 Load	12 Carry	13 Borrow	14 Clear	15 Input A	16 V_{CC}	Measured terminal	Min	Max	Unit
7 T_C= 25°C	Truth table tests 4/		90	A 3/	H	L	B 3/	A 3/	H	H	GND	A 3/	A 3/	A 3/	H	H	B 3/	A 3/	5.0 V	All outputs	H or L as shown 2/		
			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	"	"	"	"	"	"	"	"	"	"	"	"	"		"	
			108		"	H	B	"	"	"	"	"	"	"	"	"	"	"	"	"		"	
			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	"	"	"	"	"	"	"	"	"	"	"	"		"	

See footnotes at end of device type 03.

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

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 Input B	2 Q_B	3 Q_A	4 Count down	5 Count up	6 Q_C	7 Q_D	8 GND	9 Input D	10 Input C	11 Load	12 Carry	13 Borrow	14 Clear	15 Input A	16 V_{CC}	Measured terminal	Min	Max	Unit
7 T_C= 25°C	Truth table tests 4/		140	A 3/	H	H	A 3/	B 3/	L	H	GND	A 3/	A 3/	A 3/	H	H	B 3/	A 3/	5.0 V	All outputs		H or L as shown 2/	
			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	"	"	"	"	"		"	
			150	"	"	"	"	A	"	"	"	"	"	"	H	"	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	"	"	"	"	"	"	"	"	"	"	"	"	"		"	
			160	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"	"	"		"	
8	Repeat subgroup 7 at T_C = +125°C and T_C = -55°C.																						
9 T_C= 25°C	f_{MAX} 5/	(Fig. 5B)	161			OUT	3.0 V	IN			GND			3.0 V			GND		5.0 V	Q_A	14		MHz
	t_{PHL3}	3003 (Fig. 5)	162	3.0 V			"	"			"	3.0 V	3.0 V	6/	OUT		"	GND	"	Carry		130	ns
	t_{PLH3}	"	163	3.0 V			"	"			"	3.0 V	3.0 V	"	OUT		"	GND	"	Carry		"	"
	t_{PHL4}	"	164	GND			IN	3.0 V			"	GND	GND	"		OUT	"	3.0 V	"	Borrow		"	"
	t_{PLH4}	"	165	"			IN	3.0 V			"	"	"	"		OUT	"	3.0 V	"	Borrow		"	"
	t_{PHL5}	"	166	"		OUT	3.0 V	IN			"	"	"	3.0 V			6/	GND	"	Q_A		240	"
	t_{PLH5}	"	167	"		OUT	"	"			"	"	"	"			GND	"	"	Q_A		200	"
	t_{PLH5}	"	168		OUT		"	"			"	"	"	"			"	"	"	Q_B		240	"
	t_{PLH5}	"	169		OUT		"	"			"	"	"	"			"	"	"	Q_B		200	"
	t_{PLH5}	"	170	"			"	"	OUT		"	"	"	"			"	"	"	Q_C		240	"
	t_{PLH5}	"	171	"			"	"	OUT		"	"	"	"			"	"	"	Q_C		200	"
	t_{PLH5}	"	172				"	"		OUT	"	"	"	"			"	"	"	Q_D		240	"
	t_{PLH5}	"	173				"	"		OUT	"	"	"	"			"	"	"	Q_D		200	"
	t_{PLH5}	"	174	"		OUT	"	3.0 V			"	"	"	6/			"	IN	"	Q_A		240	"
	t_{PLH5}	"	175	"		OUT	"	"			"	"	"	"			"	IN	"	Q_A		200	"
	t_{PLH5}	"	176	IN	OUT		"	"			"	"	"	"			"	GND	"	Q_B		240	"
	t_{PLH5}	"	177	IN	OUT		"	"			"	"	"	"			"	"	"	Q_B		200	"
	t_{PLH5}	"	178	GND			"	"	OUT		"	"	IN	"			"	"	"	Q_C		240	"
	t_{PLH5}	"	179	"			"	"	OUT		"	"	IN	"			"	"	"	Q_C		200	"
	t_{PLH5}	"	180	"			"	"		OUT	"	IN	GND	"			"	"	"	Q_D		240	"
	t_{PLH5}	"	181	"			"	"		OUT	"	IN	GND	3.0 V			"	"	"	Q_D		200	"
	t_{PLH5}	"	182	3.0 V		OUT	"	"			"	3.0 V	3.0 V	"			6/	3.0 V	"	Q_A		"	"
	t_{PLH5}	"	183	"	OUT		"	"			"	"	"	"			"	"	"	Q_B		"	"
	t_{PLH5}	"	184	"			"	"	OUT		"	"	"	"			"	"	"	Q_C		"	"
	t_{PLH5}	"	185	"			"	"		OUT	"	"	"	"			"	"	"	Q_D		"	"
10 T_C=+125°C	f_{MAX} 5/		186			OUT	3.0 V	IN			"			3.0 V			GND		"	Q_A	14		MHz

See footnotes at end of device type 03.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 Input B	2 QB	3 QA	4 Count down	5 Count up	6 QC	7 QD	8 GND	9 Input D	10 Input C	11 Load	12 Carry	13 Borrow	14 Clear	15 Input A	16 VCC	Measured terminal	Min	Max	Unit
10 T_C=+125°C	t_{PHL3}	3003 (Fig. 5)	187	3.0 V			3.0 V	IN			GND	3.0 V	3.0 V	6/	OUT		GND	GND	5.0 V	Carry		295	ns
	t_{PLH3}		188	3.0 V			3.0 V	IN			"	3.0 V	3.0 V	"	OUT		"	GND	"	Carry		"	"
	t_{PHL4}	"	189	GND			IN	3.0 V			"	GND	GND	"		OUT	"	3.0 V	"	Borrow		"	"
	t_{PLH4}	"	190	"			IN	3.0 V			"	"	"	"		OUT	"	3.0 V	"	Borrow		"	"
	t_{PLH5}	"	191	"		OUT	3.0 V	IN			"	"	"	3.0 V			6/	GND	"	QA		360	"
	t_{PLH5}	"	192	"		OUT	"	"			"	"	"	"			GND	"	"	QA		300	"
	t_{PLH5}	"	193	"	OUT		"	"			"	"	"	"			"	"	"	QB		360	"
	t_{PLH5}	"	194	"	OUT		"	"			"	"	"	"			"	"	"	QB		300	"
	t_{PLH5}	"	195	"			"	"	OUT		"	"	"	"			"	"	"	QC		360	"
	t_{PLH5}	"	196	"			"	"	OUT		"	"	"	"			"	"	"	QC		300	"
	t_{PLH5}	"	197	"			"	"		OUT	"	"	"	"			"	"	"	QD		360	"
	t_{PLH5}	"	198	"			"	"		OUT	"	"	"	"			"	"	"	QD		300	"
	t_{PLH5}	"	199	"		OUT	"	3.0 V			"	"	"	6/			"	IN	"	QA		360	"
	t_{PLH5}	"	200	"		OUT	"	"			"	"	"	"			"	IN	"	QA		300	"
	t_{PLH5}	"	201	IN	OUT		"	"			"	"	"	"			"	GND	"	QB		360	"
	t_{PLH5}	"	202	IN	OUT		"	"			"	"	"	"			"	"	"	QB		300	"
	t_{PLH5}	"	203	GND			"	"	OUT		"	"	IN	"			"	"	"	QC		360	"
	t_{PLH5}	"	204	"			"	"	OUT		"	"	IN	"			"	"	"	QC		300	"
	t_{PLH5}	"	205	"			"	"		OUT	"	IN	GND	"			"	"	"	QD		360	"
	t_{PLH5}	"	206	"			"	"		OUT	"	IN	GND	"			"	"	"	QD		300	"
	t_{PLH5}	"	207	3.0 V		OUT	"	"			"	3.0 V	3.0 V	"			6/	3.0 V	"	QA		"	"
	t_{PLH5}	"	208	"	OUT		"	"			"	"	"	"			"	"	"	QB		"	"
	t_{PLH5}	"	209	"			"	"	OUT		"	"	"	"			"	"	"	QC		"	"
	t_{PLH5}	"	210	"			"	"		OUT	"	"	"	"			"	"	"	QD		"	"
11	Same tests, terminal conditions and limits as subgroup 10, except T_C= -55°C.																						

1/ Momentarily apply 4.5 V then ground prior to taking measurements to set the device in desired state. Maintain ground for measurement.

2/ Output voltages shall be either: (a) H = 2.4 V, minimum and L = 0.3 V, maximum when using a high speed checker double comparator; or
(b) H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

3/ Input voltages shown are: A = 2.4 V; B = 0.3 V.

4/ Only a summary of attributes data is required.

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

6/ See figure 5A.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 $\overline{MR}$	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 $\overline{PE}$	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 Vcc	Measured terminal	Min	Max	Unit
1 Tc=25°C	V_{OL1}	3007	1	1/	4.5 V	4.5 V				4.5 V	GND	2.0 V	4.5 V				3.2 mA		4.5 V	Q0		0.3	V
		"	2	"	"		4.5 V			"	"	"	"			3.2 mA			"	Q1		"	"
		"	3	"	"			4.5 V		"	"	"	"		3.2 mA				"	Q2		"	"
		"	4	"	"				4.5 V	"	"	"	"	3.2 mA					"	Q3		"	"
		"	5	"	"	4.5 V	0.7 V	0.7 V	4.5 V	"	"	"	"					3.2 mA	"	TC		"	"
	V_{OH}	3006	6	4.5 V	1/	2.0 V					"	0.7 V					-320µA		"	Q0	2.4		"
		"	7	"	"		2.0 V				"	"				-320µA			"	Q1	"		"
		"	8	"	"			2.0 V			"	"			-320µA				"	Q2	"		"
		"	9	"	"				2.0 V		"	"		-320µA					"	Q3	"		"
		"	10	"	"	4.5 V	GND	GND	4.5 V		"	"	4.5 V					-320µA	"	TC	"		"
	I_{IH7}	3010	11	2.4 V	"						"								5.5 V	$\overline{MR}$		20	µA
	I_{IH7}	"	12		"					2.4 V	"	GND	GND						"	CEP		20	"
	I_{IH8}	"	13		2.4 V						"								"	$\overline{CP}$		40	"
	I_{IH8}	"	14							GND	"	2.4 V	GND						"	PE		40	"
	I_{IH8}	"	15							GND	"	GND	2.4 V						"	CET		40	"
	I_{IH9}	"	16			2.4 V					"	4.5 V							"	P0		14	"
	I_{IH9}	"	17				2.4 V				"	"							"	P1		"	"
	I_{IH9}	"	18					2.4 V			"	"							"	P2		"	"
	I_{IH9}	"	19						2.4 V		"	"							"	P3		"	"
	I_{IL5}	3009	20	0.3 V							"								"	$\overline{MR}$		-400	"
	I_{IL5}	"	21							0.3 V	"	4.5 V	4.5 V						"	CEP		-400	"
	I_{IL6}	"	22		0.3 V						"								"	$\overline{CP}$		-800	"
	I_{IL6}	"	23							4.5 V	"	0.3 V	4.5 V						"	PE		-800	"
	I_{IL6}	"	24							4.5 V	"	4.5 V	0.3 V						"	CET		-800	"
	I_{IL7}	"	25			0.3 V				GND	"	GND							"	P0		-270	"
	I_{IL7}	"	26				0.3 V			"	"	"							"	P1		-270	"
	I_{IL7}	"	27					0.3 V		"	"	"							"	P2		-270	"
	I_{IL7}	"	28						0.3 V	"	"	"							"	P3		-270	"
	I_{OS}	3011	29	4.5 V	1/	4.5 V				"	"						GND		"	Q0	-2.5	-25	mA
		"	30	"	"		4.5 V			"	"					GND			"	Q1	"	"	"
		"	31	"	"			4.5 V		"	"				GND				"	Q2	"	"	"
		"	32	"	"				4.5 V	"	"			GND					"	Q3	"	"	"
		"	33	"	"	4.5 V	GND	GND	4.5 V	"	"		GND					GND	"	TC	"	"	"
	V_{IC}		34	-10 mA							"								4.5 V	$\overline{MR}$		-1.5	V
			35							-10 mA	"								"	CEP		"	"
			36		-10 mA						"								"	$\overline{CP}$		"	"
			37								"	-10 mA							"	PE		"	"
			38								"		-10 mA						"	CET		"	"
			39			-10 mA					"								"	P0		"	"
			40				-10 mA				"								"	P1		"	"
			41					-10 mA			"								"	P2		"	"
			42						-10 mA		"								"	P3		"	"
	I_{CC}		43	1/							"								5.5 V	Vcc		27.5	mA
2	Same tests, terminal conditions and limits as for subgroup 1, except Tc = 125°C and V_{IC} tests are omitted.																						
3	Same tests, terminal conditions and limits as for subgroup 1, except Tc = -55°C and V_{IC} tests are omitted.																						

See footnotes at end of device type 04.

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

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 MR̄	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 P̄Ē	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 Vcc	Measured terminal	Min	Max	Unit
7 Tc= 25°C	Truth table tests 4/		44	B 3/	A 3/	B 3/	B 3/	B 3/	B 3/	B 3/	GND	A 3/	B 3/	L	L	L	L	L	4.5 V	All outputs		H or L as shown 2/	
			45	A	B	"	"	"	"	A	"	"	A	"	"	"	L	"	"			"	
			46	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			47	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			48	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"			"	
			49	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"			"	
			50	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			51	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			52	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"			"	
			53	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"			"	
			54	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			55	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			56	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"			"	
			57	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"			"	
			58	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"			"	
			59	"	A	"	"	"	"	B	"	"	"	"	"	"	"	"	"			"	
			60	"	B	"	"	"	"	B	"	"	"	"	"	"	"	"	"			"	
			61	"	A	"	"	"	"	B	"	"	"	"	"	"	"	"	"			"	
			62	"	B	"	"	"	"	A	"	"	"	H	L	L	L	"	"			"	
			63	"	A	"	"	"	"	"	"	"	"	"	"	"	L	"	"			"	
			64	"	B	"	"	"	"	"	"	"	"	"	"	"	H	H	"			"	
			65	"	A	"	"	"	"	"	"	"	"	"	"	"	H	H	"			"	
			66	"	A	"	"	"	"	"	"	"	B	"	"	"	"	L	"			"	
			67	"	A	"	"	"	"	"	"	"	B	"	"	"	"	L	"			"	
			68	"	A	"	"	"	"	"	"	"	A	"	"	"	"	H	"			"	
			69	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"			"	
			70	"	B	"	"	"	"	"	"	B	"	L	"	"	"	L	"			"	
			71	"	A	"	"	"	"	"	"	B	B	L	"	"	L	"	"			"	
			72	"	A	A	A	A	A	"	"	"	"	L	"	"	L	"	"			"	
			73	"	B	A	A	A	A	"	"	"	"	"	"	"	L	"	"			"	
			74	"	A	A	A	A	A	"	"	"	"	H	H	H	H	"	"			"	
			75	"	B	B	B	B	B	"	"	"	"	H	H	H	H	"	"			"	
			76	"	A	B	B	B	B	"	"	"	"	L	L	L	L	"	"			"	
			77	"	B	A	A	A	A	"	"	"	"	L	L	L	L	"	"			"	
			78	"	A	"	"	"	"	"	"	"	"	H	H	H	H	"	"			"	
			79	"	B	"	"	"	"	"	"	"	"	H	H	H	H	"	"			"	
			80	B	B	"	"	"	"	"	"	"	"	L	L	L	L	"	"			"	
			81	A	B	"	"	"	"	"	"	"	"	L	L	L	L	"	"			"	
			82	"	A	"	"	"	"	"	"	"	"	H	H	H	H	"	"			"	
			83	"	A	"	"	"	"	"	"	"	"	H	H	"	"	"	"			"	
			84	"	B	"	"	B	"	"	"	"	A	H	"	"	"	"	"			"	
			85	"	A	"	"	B	"	"	"	"	"	L	"	"	"	"	"			"	
			86	"	B	"	B	A	"	"	"	"	"	L	"	"	"	"	"			"	
			87	"	A	"	B	A	"	"	"	"	"	H	L	"	"	"	"			"	
8	Same tests, terminal conditions and limits as for subgroup 7, except Tc = 125°C and -55°C.																						

See footnotes at end of device type 04.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 MR	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 PE	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 VCC	Measured terminal	Min	Max	Unit
9 Tc= 25°C	fMAX 5/	(Fig. 6)	88	5.0 V	IN						GND						OUT		5.0 V	Q0	13		MHz
	tPLH6	3003 (Fig. 6)	89	"	"					5.0 V	"	5.0 V	5.0 V					OUT	"	TC	18	102	ns
	tPHL6	"	90	"	"					5.0 V	"	"	5.0 V					OUT	"	TC	9	52	"
	tPLH6	"	91	"	"						"	"					OUT		"	Q0	9	57	"
	tPHL6	"	92	"	"						"	"					OUT		"	Q0	9	62	"
	tPLH7	"	93	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	62	"
	tPHL7	"	94	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	67	"
	tPHL8	"	95	IN		5.0 V	5.0 V	5.0 V	5.0 V		"	GND					OUT		"	Q0	18	102	"
10 Tc=+125°C	fMAX 5/	(Fig. 6)	96	5.0 V	IN						"						OUT		"	Q0	13		MHz
	tPLH6	"	97	"	"					5.0 V	"	5.0 V	5.0 V					OUT	"	TC	18	125	ns
	tPHL6	"	98	"	"					5.0 V	"	"	5.0 V					OUT	"	TC	9	75	"
	tPLH6	"	99	"	"						"	"					OUT		"	Q0	9	72	"
	tPHL6	"	100	"	"						"	"					OUT		"	Q0	9	85	"
	tPLH7	"	101	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	80	"
	tPHL7	"	102	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	87	"
	tPHL8	"	103	IN		5.0 V	5.0 V	5.0 V	5.0 V		"	GND					OUT		"	Q0	18	130	"
11	Same tests, terminal conditions and limits as subgroup 10, except Tc = -55°C																						

1/ Momentarily apply 2.0 V then ground prior to taking measurements to set the device in desired state. Maintain ground for measurement.

2/ Output voltages shall be either: (a) H = 2.4 V, minimum and L = 0.3 V, maximum when using a high speed checker double comparator; or (b)
H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

3/ Input voltages shown are: A = 2.4 V; B = 0.3 V.

4/ Only a summary of attributes data is required.

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

TABLE III. Group A inspection for device type 05.

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 $\overline{MR}$	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 $\overline{PE}$	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 Vcc	Measured terminal	Min	Max	Unit
1 T_C=25°C	V_{OL1}	3007	1	1/	4.5 V	4.5 V				4.5 V	GND	2.0 V	4.5 V				3.2 mA		4.5 V	Q0		0.3	V
		"	2	"	"		4.5 V			"	"	"				3.2 mA			"	Q1		"	"
		"	3	"	"			4.5 V		"	"	"			3.2 mA				"	Q2		"	"
		"	4	"	"				4.5 V	"	"	"		3.2 mA					"	Q3		"	"
		"	5	"	"	4.5 V	4.5 V	4.5 V	4.5 V	"	"	"						3.2 mA	"	TC		"	"
	V_{OH}	3006	6	4.5 V	1/	2.0 V					"	0.7 V					-320µA		"	Q0	2.4		"
		"	7	"	"		2.0 V				"	"				-320µA			"	Q1	"		"
		"	8	"	"			2.0 V			"	"			-320µA				"	Q2	"		"
		"	9	"	"				2.0 V		"	"		-320µA					"	Q3	"		"
		"	10	"	"	4.5 V	4.5 V	4.5 V	4.5 V		"	GND	4.5 V					-320µA	"	TC	"		"
	I_{IH7}	3010	11	2.4	"						"								5.5 V	$\overline{MR}$		20	µA
	I_{IH7}	"	12							2.4 V	"	GND	GND						"	CEP		20	"
	I_{IH8}	"	13		2.4 V						"								"	$\overline{CP}$		40	"
	I_{IH8}	"	14							GND	"	2.4 V	GND						"	PE		40	"
	I_{IH8}	"	15							GND	"	GND	2.4 V						"	CET		40	"
	I_{IH9}	"	16			2.4 V					"	4.5 V							"	P0		14	"
	I_{IH9}	"	17				2.4 V				"	"							"	P1		"	"
	I_{IH9}	"	18					2.4 V			"	"							"	P2		"	"
	I_{IH9}	"	19						2.4 V		"	"							"	P3		"	"
	I_{IL5}	3009	20	0.3 V							"	4.5 V	4.5 V						"	$\overline{MR}$		-400	"
	I_{IL5}	"	21							0.3 V	"	4.5 V	4.5 V						"	CEP		-400	"
	I_{IL6}	"	22		0.3 V						"								"	$\overline{CP}$		-800	"
	I_{IL6}	"	23							4.5 V	"	0.3 V	4.5 V						"	PE		-800	"
	I_{IL6}	"	24							4.5 V	"	4.5 V	0.3 V						"	CET		-800	"
	I_{IL7}	"	25			0.3 V				GND	"	GND							"	P0		-270	"
	I_{IL7}	"	26				0.3 V			"	"	"							"	P1		-270	"
	I_{IL7}	"	27					0.3 V		"	"	"							"	P2		-270	"
	I_{IL7}	"	28						0.3 V	"	"	"							"	P3		-270	"
	I_{OS}	3011	29	4.5 V	1/	4.5 V					"	"					GND		"	Q0	-2.5	-25	mA
		"	30	"	"		4.5 V				"	"				GND			"	Q1	"	"	"
		"	31	"	"			4.5 V			"	"			GND				"	Q2	"	"	"
		"	32	"	"				4.5 V		"	"		GND					"	Q3	"	"	"
		"	33	"	"	4.5 V	4.5 V	4.5 V	4.5 V		"	"	4.5 V					GND	"	TC	"	"	"
	V_{IC}		34	-10 mA							"								4.5 V	$\overline{MR}$		-1.5	V
			35							-10 mA	"								"	CEP		"	"
			36		-10 mA						"								"	$\overline{CP}$		"	"
			37								"	-10 mA							"	PE		"	"
			38								"		-10 mA						"	CET		"	"
			39			-10 mA					"								"	P0		"	"
			40				-10 mA				"								"	P1		"	"
			41					-10 mA			"								"	P2		"	"
			42						-10 mA		"								"	P3		"	"
	I_{CC}		43	1/							"								5.5 V			27.5	mA
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = 125°C and V_{IC} tests are omitted.																						
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																						

See footnotes at end of device type 05.

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

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

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 $\overline{MR}$	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 $\overline{PE}$	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 V_{CC}	Measured terminal	Test limit Min / Max	Unit
7 T_C= 25°C	Truth table tests 4/		44	B 3/	A 3/	B 3/	B 3/	B 3/	B 3/	B 3/	GND	A 3/	B 3/	L	L	L	L	L	4.5 V	All outputs	H or L as shown 2/	
			45	A	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			46	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			47	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			48	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"	"	"	
			49	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			50	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			51	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			52	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"	"	"	
			53	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			54	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			55	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			56	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"	"	"	
			57	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			58	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			59	"	A	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"	
			60	"	B	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"	
			61	"	A	"	"	"	"	B	"	"	"	"	"	"	"	"	"	"	"	
			62	"	B	"	"	"	"	A	"	"	"	"	"	"	"	"	"	"	"	
			63	"	A	"	"	"	"	"	"	"	"	H	L	L	L	"	"	"	"	
			64	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			65	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			66	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			67	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"	"	"	
			68	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			69	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			70	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			71	"	A	"	"	"	"	"	"	"	"	"	H	L	L	"	"	"	"	
			72	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			73	"	A	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			74	"	B	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	"	
			75	"	A	"	"	"	"	"	"	"	"	"	"	H	L	"	"	"	"	
			76	"	B	"	"	"	"	"	"	"	"	"	"	"	L	"	"	"	"	
			77	"	A	"	"	"	"	"	"	"	"	"	"	"	H	H	"	"	"	
			78	"	A	"	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	
			79	"	A	"	"	"	"	"	"	"	B	"	"	"	"	L	"	"	"	
			80	"	B	"	"	"	"	"	"	"	B	"	"	"	"	L	"	"	"	
			81	"	A	"	"	"	"	"	"	"	B	"	"	"	"	L	"	"	"	
			82	"	B	"	"	"	"	"	"	"	A	"	"	"	"	H	"	"	"	
			83	"	B	"	"	"	"	"	"	"	"	"	"	"	"	H	"	"	"	
			84	"	A	"	"	"	"	"	"	"	"	L	L	L	L	L	"	"	"	
			85	"	A	"	"	"	"	"	"	B	"	L	L	L	L	L	"	"	"	
			86	"	B	A	A	A	A	"	"	"	"	L	L	L	L	L	"	"	"	
			87	"	A	"	"	"	"	"	"	"	"	H	H	H	H	H	"	"	"	
			88	"	B	"	"	"	"	"	"	"	"	H	H	H	H	H	"	"	"	
			89	B	B	"	"	"	"	"	"	"	"	L	L	L	L	L	"	"	"	
			90	A	B	"	"	"	"	"	"	"	"	L	L	L	L	L	"	"	"	
			91	"	A	"	"	"	"	"	"	"	"	H	H	H	H	H	"	"	"	
			92	"	B	B	B	B	B	B	"	"	"	H	H	H	H	H	"	"	"	
			93	"	A	B	B	B	B	B	"	"	"	L	L	L	L	L	"	"	"	
			94	"	B	A	A	A	A	A	"	"	"	L	L	L	L	L	"	"	"	
			95	"	A	A	A	A	A	A	"	"	"	H	H	H	H	H	"	"	"	
8	Same tests, terminal conditions and limits as for subgroup 7, except T_C = 125°C and -55°C.																					

See footnotes at end of device type 05.

TABLE III. <u>Group A inspection for device type 05</u>.- Continued.
Terminal conditions (pins not designated may be H ≥ 2.0 V, L ≤ 0.8 V, or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E and F Test no.	1 MR̄	2 CP	3 P0	4 P1	5 P2	6 P3	7 CEP	8 GND	9 P̄Ē	10 CET	11 Q3	12 Q2	13 Q1	14 Q0	15 TC	16 Vcc	Measured terminal	Min	Max	Unit
9 T_C= 25°C	f_{MAX} 5/	(Fig. 6)	96	5.0 V	IN						GND						OUT		5.0 V	Q0	13		MHz
	t_{PLH6}	3003	97	"	"					5.0 V	"	5.0 V	5.0 V					OUT	"	TC	18	102	ns
	t_{PHL6}	(Fig. 6)	98	"	"					5.0 V	"	"	5.0 V					OUT	"	TC	9	52	"
	t_{PLH6}	"	99	"	"						"	"					OUT		"	Q0	9	57	"
	t_{PHL6}	"	100	"	"						"	"					OUT		"	Q0	9	62	"
	t_{PLH7}	"	101	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	62	"
	t_{PHL7}	"	102	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	67	"
	t_{PHL8}	"	103	IN	1/	5.0 V	5.0 V	5.0 V	5.0 V		"	GND					OUT		"	Q0	18	102	"
10 T_C=+125°C	f_{MAX} 5/	(Fig.6)	104	5.0 V	IN						"						OUT		"	Q0	13		MHz
	t_{PLH6}	"	105	"	"					5.0 V	"	5.0 V	5.0 V					OUT	"	TC	18	125	ns
	t_{PHL6}	"	106	"	"					5.0 V	"	"	5.0 V					OUT	"	TC	9	75	"
	t_{PLH6}	"	107	"	"						"	"					OUT		"	Q0	9	72	"
	t_{PHL6}	"	108	"	"						"	"					OUT		"	Q0	9	85	"
	t_{PLH7}	"	109	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	80	"
	t_{PHL7}	"	110	"	5.0 V					5.0 V	"	"	IN					OUT	"	TC	9	87	"
	t_{PHL8}	"	111	IN	1/	5.0 V	5.0 V	5.0 V	5.0 V		"	GND					OUT		"	Q0	18	130	"
11	Same tests, terminal conditions and limits as subgroup 10, except T_C= -55°C.																						

1/ Momentarily apply 2.0 V then ground prior to taking measurements to set the device in desired state. Maintain ground for measurement.

2/ Output voltages shall be either: (a) H = 2.4 V, minimum and L = 0.3 V, maximum when using a high speed checker double comparator; or (b) H ≥ 1.5 V and L ≤ 1.5 V when using a high speed checker single comparator.

3/ Input voltages shown are: A = 2.4 V; B = 0.3 V.

4/ Only a summary of attributes data is required.

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

5. PACKAGING

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

6. NOTES

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

6.1 <u>Intended use.</u> Microcircuits conforming to this specification are intended for logistic support of existing equipment.

6.2 <u>Acquisition requirements.</u> Acquisition documents should specify the following:

    a.   Title, number, and date of the specification.

    b.   PIN and compliance identifier, if applicable (see 1.2).

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

    d.   Requirements for certificate of compliance, if applicable.

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

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

    g.   Requirements for product assurance options.

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

    i.   Requirements for "JAN" marking.

    j.   Packaging requirements (see 5.1).

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

6.4 <u>Superseding information.</u> 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.

6.5 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
V_{IN} .... Voltage level at an input terminal
I_{IN} .... Current flowing into 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-35810 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.

Military device type	Generic-industry type
01	54L90
02	54L93
03	54L193
04	93L10
05	93L16

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

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

Preparing activity:
 DLA - CC

(Project 5962-2122)

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

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