MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR, LOW-POWER SCHOTTKY TTL,
CASCADABLE LATCHES, 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.

1. SCOPE

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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

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

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

Device type	Circuit
01	4 - bit cascadable bistable latch
02	Quad cascadable $\bar{S}$ - $\bar{R}$ latch
03	8 - bit cascadable addressable latch
04	4 - bit cascadable bistable latch
05	8 - bit cascadable addressable latch

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

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

Outline letter	Descriptive designator	Terminals	Package style
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat pack
X	CQCC2-N20	20	Square leadless chip carrier
2	CQCC1-N20	20	Square leadless chip carrier

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, P. O. Box 3990, Columbus, OH 43216-5000, by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A   FSC 5962
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

1.3 Absolute maximum ratings.

Supply voltage range .... -0.5 V to 7.0 V
Input voltage range .... -1.5 V at -18 mA to 5.5 V
Storage temperature range .... -65° to +150°C
Maximum power dissipation (P_D) 1/
    Device types 01 and 04 .... 66 mW
    Device type 02 .... 38.5 mW
    Device type 03 .... 198 mW
Lead temperature (soldering, 10 seconds) .... 300°C
Thermal resistance, junction to case (θ_{JC}):
  Cases E, F, X, and 2 .... (See MIL-STD-1835)
Junction temperature (T_J) 2/... +175°C

1.4 Recommended operating conditions.

Supply voltage (V_{CC}) .... 4.5 V minimum to 5.5 V maximum
Minimum high level input voltage (V_{IH}) .... 2.0 V
Maximum low level input voltage (V_{IL}) .... 0.7 V
Normalized fanout (each output) .... 10 maximum
Case operating temperature range (T_C) .... -55°C to +125°C
Setup time, $t_{(SETUP)}$:
    Data to enable:
        Device types 01 and 04 .... 20 ns minimum
    Data to enable ↑ :
        Device type 03 .... 17 ns minimum
        Device type 05 .... 24 ns minumum
    Address to enable ↓ :
        Device type 03 .... 15 ns minimum
        Device type 05 .... 0 ns minimum
Input hold time, $t_{(HOLD)}$:
    Data to enable:
        Device type 01 and 04 .... o ns minimum
    Data to enable ↑ :
        Device type 03 .... 5 ns minimum
        Device type 05 .... 0 ns minimum
    Address to enable ↓ :
        Device type 03 .... 15 ns minimum
        Device type 05 .... 0 ns minimum

NOTE: Refers to rising ↑ or falling ↓ edge of the enable pulse.

1/ Must withstand the added P_D due to short-circuit test (e.g., I_{OS}).
2/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening
   conditions in accordance with MIL-PRF-38535.

2. APPLICABLE DOCUMENTS

2.1 <u>Government documents.</u>

2.1.1 <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 shall be those listed in the issue of the Departments of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

DEPARTMENT OF DEFENSE

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

STANDARDS

DEPARTMENT OF DEFENSE

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

(Unless otherwise indicated, copies of the above specifications and standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 <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 6.4).

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>Terminal connections</u>. The terminal connections shall be as specified on figure 1.

3.3.2 <u>Truth table.</u> The truth table shall be as specified on figure 2.

3.3.3 <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.

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

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.

3.6 <u>Electrical test requirements.</u> 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 <u>Marking.</u> Marking shall be in accordance with MIL-PRF-38535.

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

4. VERIFICATION

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

   a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

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

   c. Additional screening for space level product shall be as specified in MIL-PRF-38535, appendix B.

4.3 <u>Qualification inspection.</u> Qualification inspection shall be in accordance with MIL-PRF-38535.

4.4 <u>Technology Conformance Inspection (TCI).</u> 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 <u>Group A inspection.</u> 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.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits Min	Limits Max	Unit
High level output voltage	V_{OH}	V_{CC} = 4.5 V, V_{IH} = 2.0 V V_{IL} = 0.7 V, I_{OH} = -400 µA	All	2.5		V
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	All		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V, I_{IN} = -18 mA, T_C = +25°C	All		-1.5	V
Low level input current: At data	I_{IL1}	V_{CC} = 5.5 V, V_{IN} = 0.4 V	01	-.03	-0.42	mA
			04	-.0005	-0.4	
At $\overline{S}$, $\overline{R}$			02	0	-0.4	
At all inputs			03, 05	-.005	-0.72	
Low level input current enable	I_{IL2}	V_{CC} = 5.5 V, V_{IN} = 0.4 V	01	-.06	-1.6	mA
			04	0	-1.6	
High level input current: At data	I_{IH1}	V_{CC} = 5.5 V, V_{IN} = 2.7 V	01, 04		20	µA
At $\overline{S}$, $\overline{R}$			02		20	
At all inputs			03, 05		20	
High level input current enable	I_{IH2}	V_{CC} = 5.5 V, V_{IN} = 2.7 V	01, 04		80	µA
High level input current: At data	I_{IH3}	V_{CC} = 5.5 V, V_{IN} = 5.5 V	01, 04		100	µA
At $\overline{S}$, $\overline{R}$			02		100	
At all inputs			03, 05		100	
High level input current enable	I_{IH4}	V_{CC} = 5.5 V, V_{IN} = 5.5 V	01, 04		400	µA
Short circuit output current	I_{OS}	V_{CC} = 5.5 V 1/	All	-15	-100	mA
Supply current	I_{CC}	V_{CC} = 5.5 V	01, 04		12	mA
			02		7	
			03, 05		36	
Low to high level, from D input to Q output	t_{PLH1}	C_L = 50 pF ±10%, R_L = 2 kΩ ±5% V_{CC} = 5.0 V	01, 04	3	42	ns
High to low level, from D input to Q output	t_{PHL1}		01, 04	3	29	ns
Low to high level, from D input to $\overline{Q}$ output	t_{PLH2}		01, 04	3	32	ns
High to low level, from D input to $\overline{Q}$ output	t_{PHL2}		01, 04	3	26	ns
Low to high level, from enable input to Q output	t_{PLH3}		01, 04	3	42	ns
High to low level, from enable input to Q output	t_{PHL3}		01, 04	3	39	ns

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

5

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C	Device type	Limits		Unit
				Min	Max	
Low to high level, from enable input to Q output	t_{PLH4}	C_L = 50 pF ±10%, R_L = 2 kΩ ±5% V_{CC} = 5.0 V	01, 04	3	46	ns
High to low level, from enable input to Q output	t_{PHL4}		01, 04	3	26	ns
Low to high level, from $\overline{S}$ input to Q output	t_{PLH1}		02	3	35	ns
High to low level, from $\overline{S}$ input to Q output	t_{PHL1}		02	3	26	ns
High to low level, from $\overline{R}$ input to Q output	t_{PHL2}		02	3	42	ns
High to low level, from clear input to Q output	t_{PHL1}		03	3	42	ns
			05	3	30	
Low to high level, from data input to Q output	t_{PLH2}		03	3	48	ns
			05	3	46	
High to low level, from data input to Q output	t_{PHL2}		03	3	34	ns
			05	3	33	
Low to high level, from address input to Q output	t_{PLH3}		03	3	56	ns
			05	3	42	
High to low level, from address input to Q output	t_{PHL3}		03	3	44	ns
			05	3	42	
Low to high level, from enable input to Q output	t_{PLH4}		03	3	52	ns
			05	3	38	
High to low level, from enable input to Q output	t_{PHL4}		03, 05	3	38	ns

6

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 electrical test parameters when using method 5005 QCI option	1, 2, 3, 9, 10, 11	N/A
Group C end-point electrical parameters	1, 2, 3, 9, 10, 11	1, 2, 3
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

*PDA applies to subgroup 1.

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.

Pin number	Pin symbol Device type 01		Pin symbol Device type 02		Pin symbol Device type 03		Pin symbol Device type 04		Pin symbol Device type 05	
	Case 2, X	Case E, F	Case 2, X	Case E, F	Case 2, X	Case E, F	Case 2, X	Case E, F	Case 2, X	Case E, F
1	NC	$1\overline{Q}$	NC	$1\overline{R}$	NC	A	NC	1D	NC	A
2	$1\overline{Q}$	1D	$1\overline{R}$	$1\overline{S}1$	A	B	1D	$1\overline{Q}$	A	B
3	1D	2D	$1\overline{S}1$	$1\overline{S}2$	B	C	$1\overline{Q}$	1Q	B	C
4	2D	ENBL 3-4	$1\overline{S}2$	1Q	C	Q0	1Q	ENBL 1-2	C	Q0
5	ENBL 3-4	V_{CC}	1Q	$2\overline{R}$	Q0	Q1	ENBL 1-2	2Q	Q0	Q1
6	NC	3D	NC	$2\overline{S}$	NC	Q2	NC	$2\overline{Q}$	NC	Q2
7	V_{CC}	4D	$2\overline{R}$	2Q	Q1	Q3	2Q	2D	Q1	Q3
8	3D	$4\overline{Q}$	$2\overline{S}$	GND	Q2	GND	$2\overline{Q}$	GND	Q2	GND
9	4D	4Q	2Q	3Q	Q3	Q4	2D	3D	Q3	Q4
10	$4\overline{Q}$	3Q	GND	$3\overline{R}$	GND	Q5	GND	$3\overline{Q}$	GND	Q5
11	NC	$3\overline{Q}$	NC	$3\overline{S}1$	NC	Q6	NC	3Q	NC	Q6
12	4Q	GND	3Q	$3\overline{S}2$	Q4	Q7	3D	ENBL 3-4	Q4	Q7
13	3Q	ENBL 1-2	$3\overline{R}$	4Q	Q5	DATA IN	$3\overline{Q}$	4Q	Q5	DATA IN
14	$3\overline{Q}$	$2\overline{Q}$	$3\overline{S}1$	$4\overline{R}$	Q6	$\overline{ENBL}$	3Q	$4\overline{Q}$	Q6	$\overline{ENBL}$
15	GND	2Q	$3\overline{S}2$	$4\overline{S}$	Q7	$\overline{CLR}$	ENBL 3-4	4D	Q7	$\overline{CLR}$
16	NC	1Q	NC	V_{CC}	NC	V_{CC}	NC	V_{CC}	NC	V_{CC}
17	ENBL 1-2		4Q		DATA IN		4Q		DATA IN	
18	$2\overline{Q}$		$4\overline{R}$		$\overline{ENBL}$		$4\overline{Q}$		$\overline{ENBL}$	
19	2Q		$4\overline{S}$		$\overline{CLR}$		4D		$\overline{CLR}$	
20	1Q		V_{CC}		V_{CC}		V_{CC}		V_{CC}	

FIGURE 1. Terminal connections.

8

Device type 01 and 04

Inputs		Outputs	
D	Enable	Q	$\overline{Q}$
L	H	L	H
H	H	H	L
X	L	Q0	$\overline{Q}$ 0

H = high level, L = low level, X = irrelevant
Q0 = the level of Q before the high-to-low transition of enable

Device type 02

Inputs		Outputs
$\overline{S}$ †	$\overline{R}$	Q
H	H	Q0
L	H	H
H	L	L
L	L	H*

H = high level, L = low level, Q0 = the level of Q before the indicated
  input conditions were established.
* This output level is pseudo stable; that is, it may not persist when the
    $\overline{S}$ and $\overline{R}$ inputs return to their inactive (high) level.
† For latches with double $\overline{S}$ inputs:

    H = both $\overline{S}$ inputs high

    L = one or both $\overline{S}$ inputs low

FIGURE 2. Truth tables.

9

Device type 03 and 05

Inputs		Output of addressed latch	Each other output	Function
Clear	Enable			
H	L	D	Qio	Addressable latch
H	H	Qio	Qio	Memory
L	L	D	L	8-line demultiplexer
L	H	L	L	Clear

Latch Selection Table

Select inputs			Latch
C	B	A	addressed
L	L	L	0
L	L	H	1
L	H	L	2
L	H	H	3
H	L	L	4
H	L	H	5
H	H	L	6
H	H	H	7

H = high level, L = low level
Q = the level at the data input
Qio = the level of Qi (i = 0,1,....,7, as appropriate) before
the indicated steady-state input conditions were established.

FIGURE 2. Truth tables - Continued.

10

FIGURE 3. Switching test circuit and waveforms for device types 01 and 04.

11
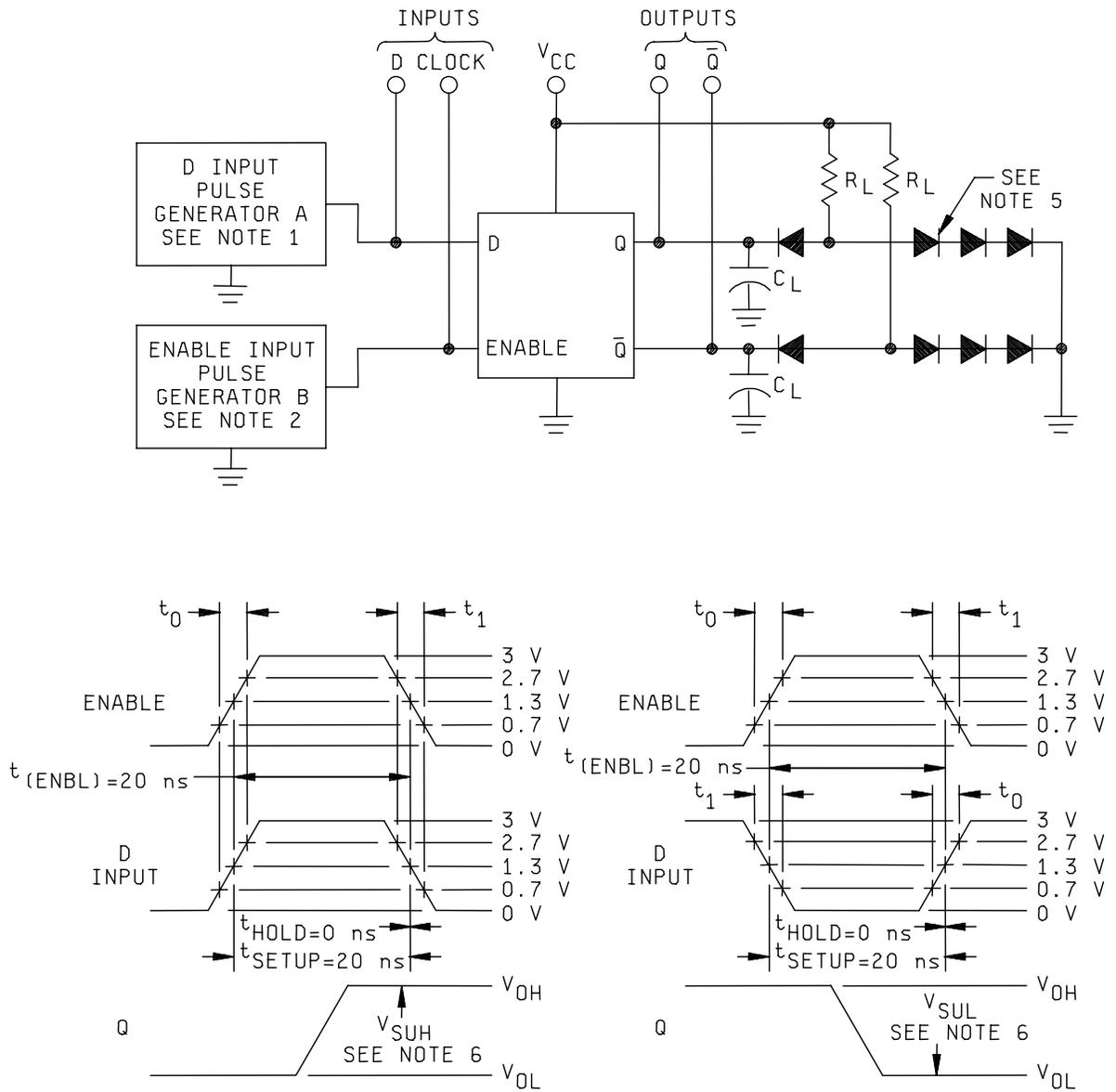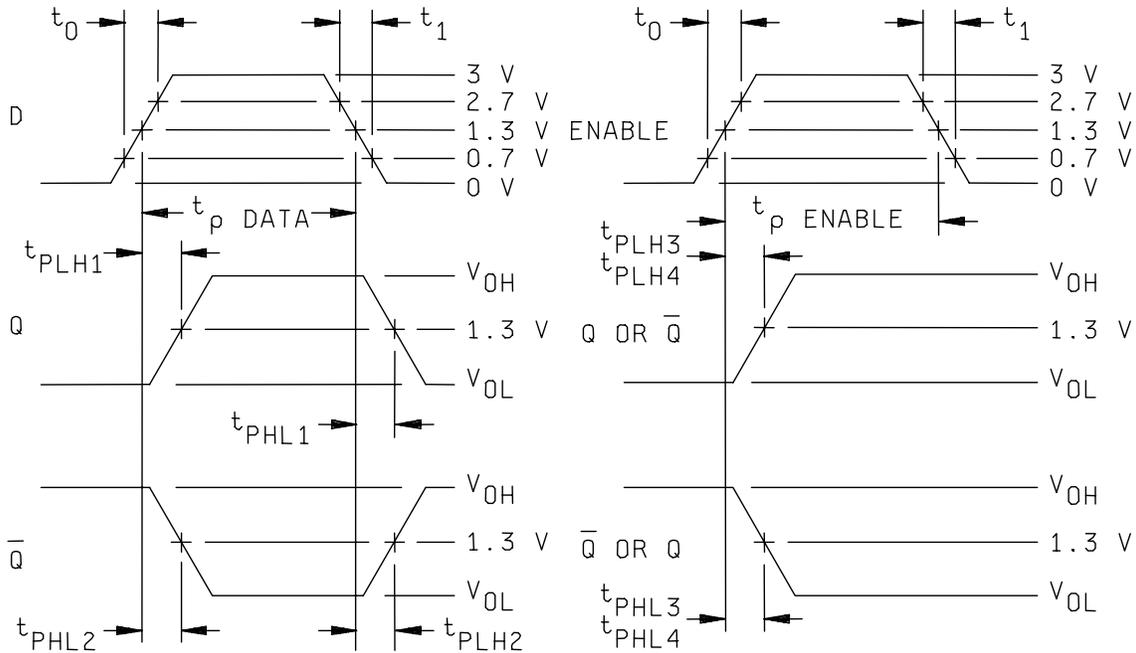
NOTES:
1. The D input pulse generator has the following characteristics: V_{GEN} = 3 V, $t_0 \leq$ 15 ns, $t_1 \leq$ 6 ns, t_P = 30 ns, and Z_{OUT} = 50Ω except when measuring V_{SETUP}.
2. The enable pulse generator is identical to the D input pulse generator.
3. C_L = 50 pF $\pm$10% and includes probe and jig capacitance.
4. R_L = 2 kΩ $\pm$5 percent.
5. All diodes are 1N3064 or equivalent.
6. V_{SETUP} is to be measured 500 ns minimum after input transitions to assure that the device has latched with minimum setup and maximum hold conditions applied to inputs.

FIGURE 3. <u>Switching test circuit and waveforms for device types 01 and 04</u> - Continued.

12
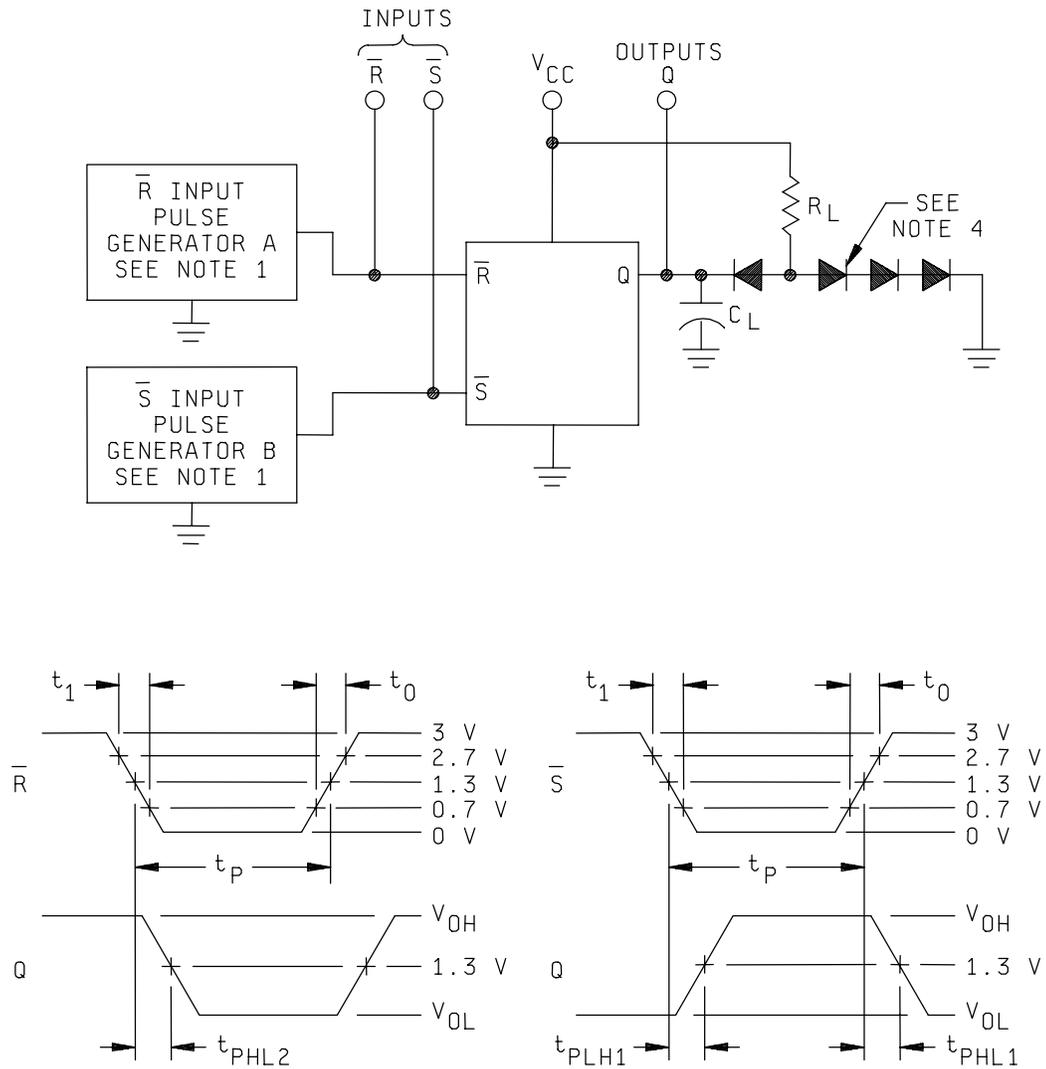
NOTES:
1. $\overline{R}$ and $\overline{S}$ pulse generator has the following characteristics: $t_P = 40 \pm 10$ ns, $t_0 \le 15$ ns, $t_1 \le 6$ ns, and PRR ≤ 1.0 MHz.
2. $C_L = 50$ pF $\pm 10\%$ and includes probe and jig capacitance.
3. $R_L = 2$ kΩ ± 5 percent.
4. All diodes are 1N3064 or equivalent.

FIGURE 4. Switching test circuit and waveforms for device type 02.

13
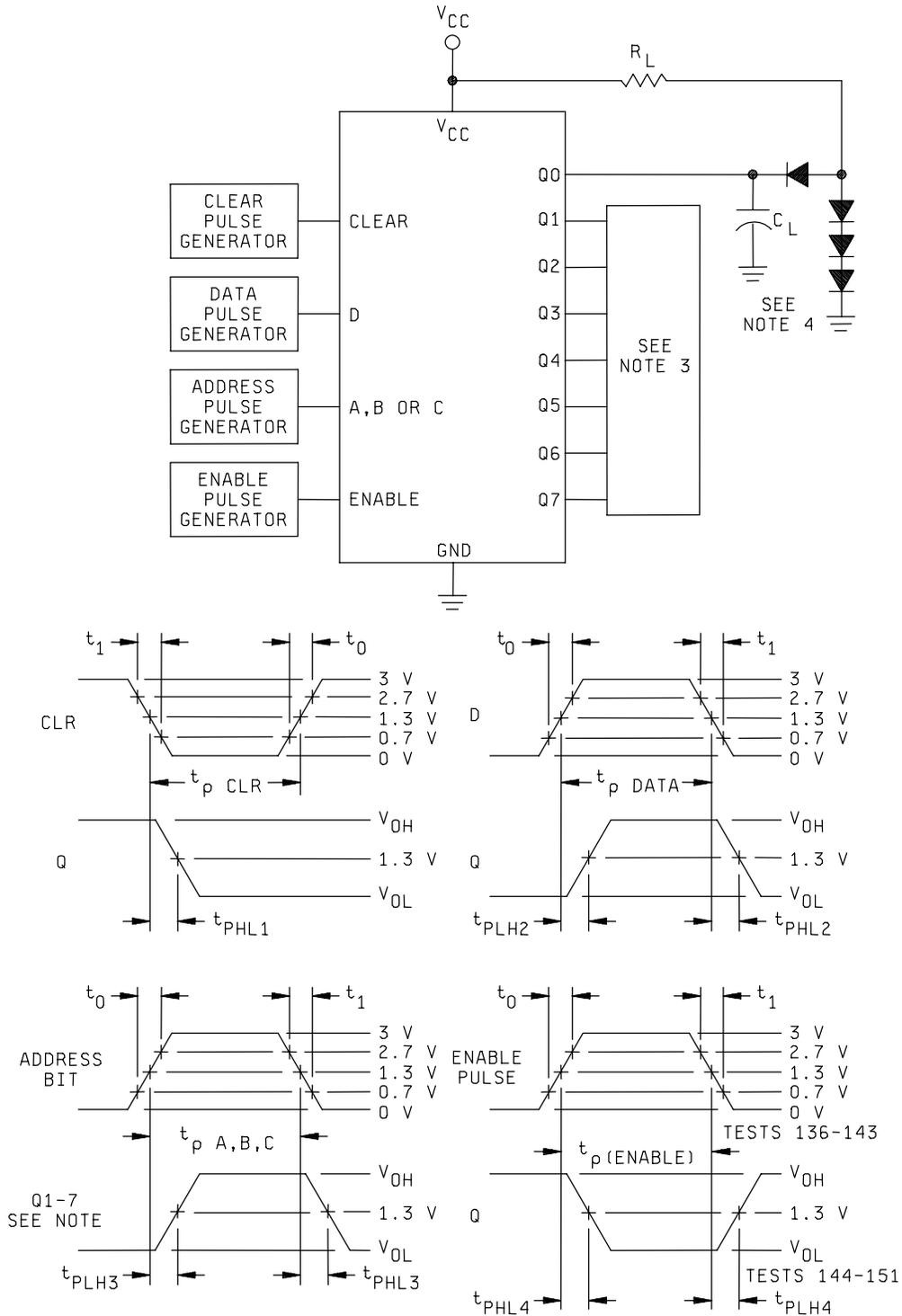
NOTE: For Q0 output waveform is inverted and t_{PLH3} and t_{PHL3} are interchanged.

FIGURE 5. Switching test circuit and waveforms for device types 03 and 05
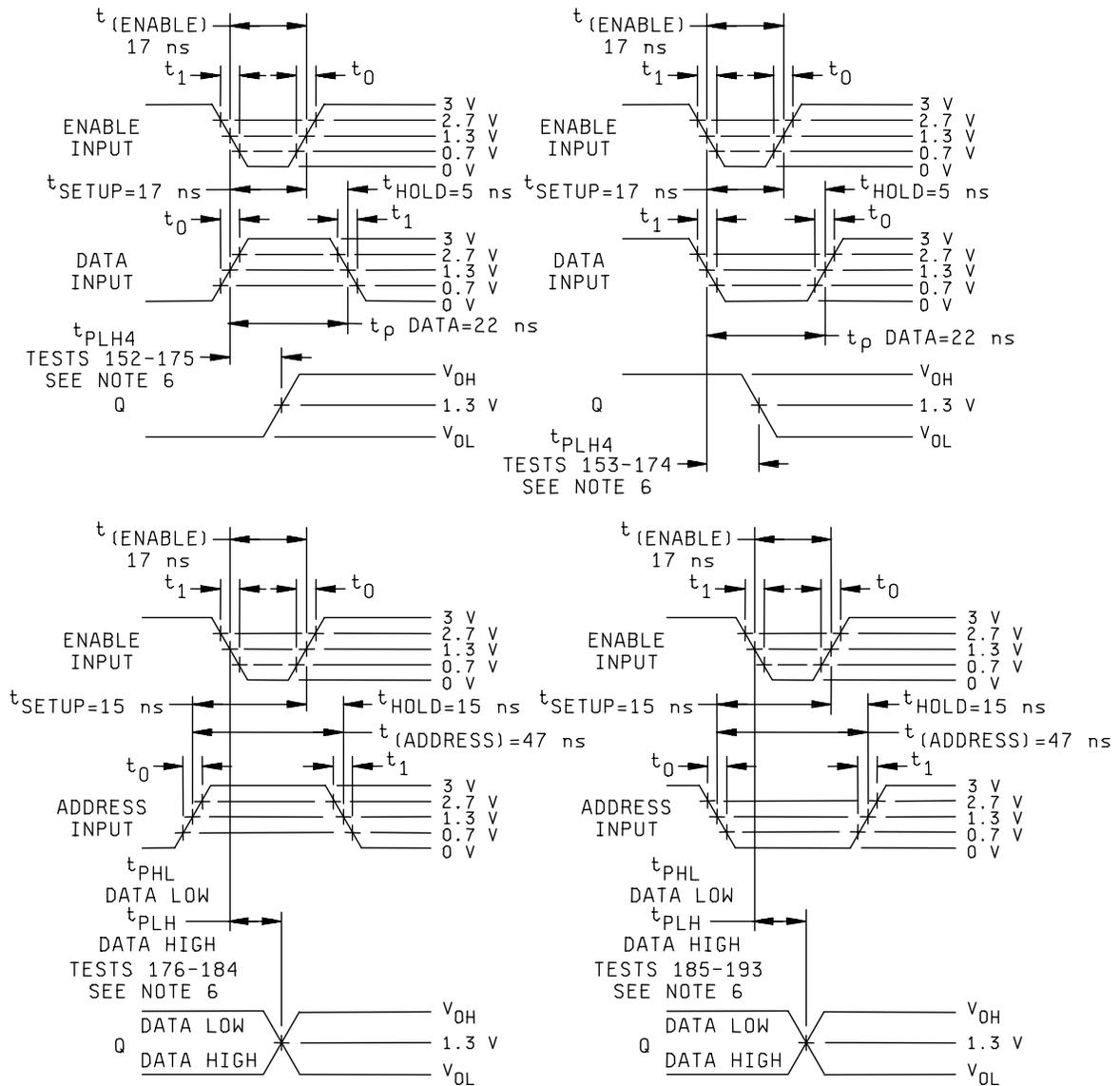
14

NOTES:
1. $R_L = 2$ kΩ ± 5 percent.
2. $C_L = 50$ pF $\pm 10\%$ and includes probe and jig capacitance.
3. All loads are the same as the Q_0 load.
4. All diodes are 1N3064 or equivalent.
5. The clear, enable, data, and address pulse generator have the following characteristics: $V_{GEN} = 3$ V, $t_0 \leq 15$ ns, $t_1 \leq 6$ ns, $t_P = 30$ ns, and PRR ≤ 1 MHz except when measuring test nos. 152 thru 193, $t_{P(ENABLE)} = 17$ ns, $t_{P(DATA)} = 22$ ns, $t_{P(ADDRESS)} = 47$ ns, and t_{SETUP} and t_{HOLD} are as specified on the waveforms above.
6. Immediately prior to test 152, all outputs shall be cleared low; then beginning with test 152, test 152 thru 193 are to be performed in sequence with a wait of 500 ns minimum between each test. These tests are to assure latchup of the outputs under worst case setup and hold input conditions.

FIGURE 6. Switching test circuit and waveforms for device type 03 - Continued.
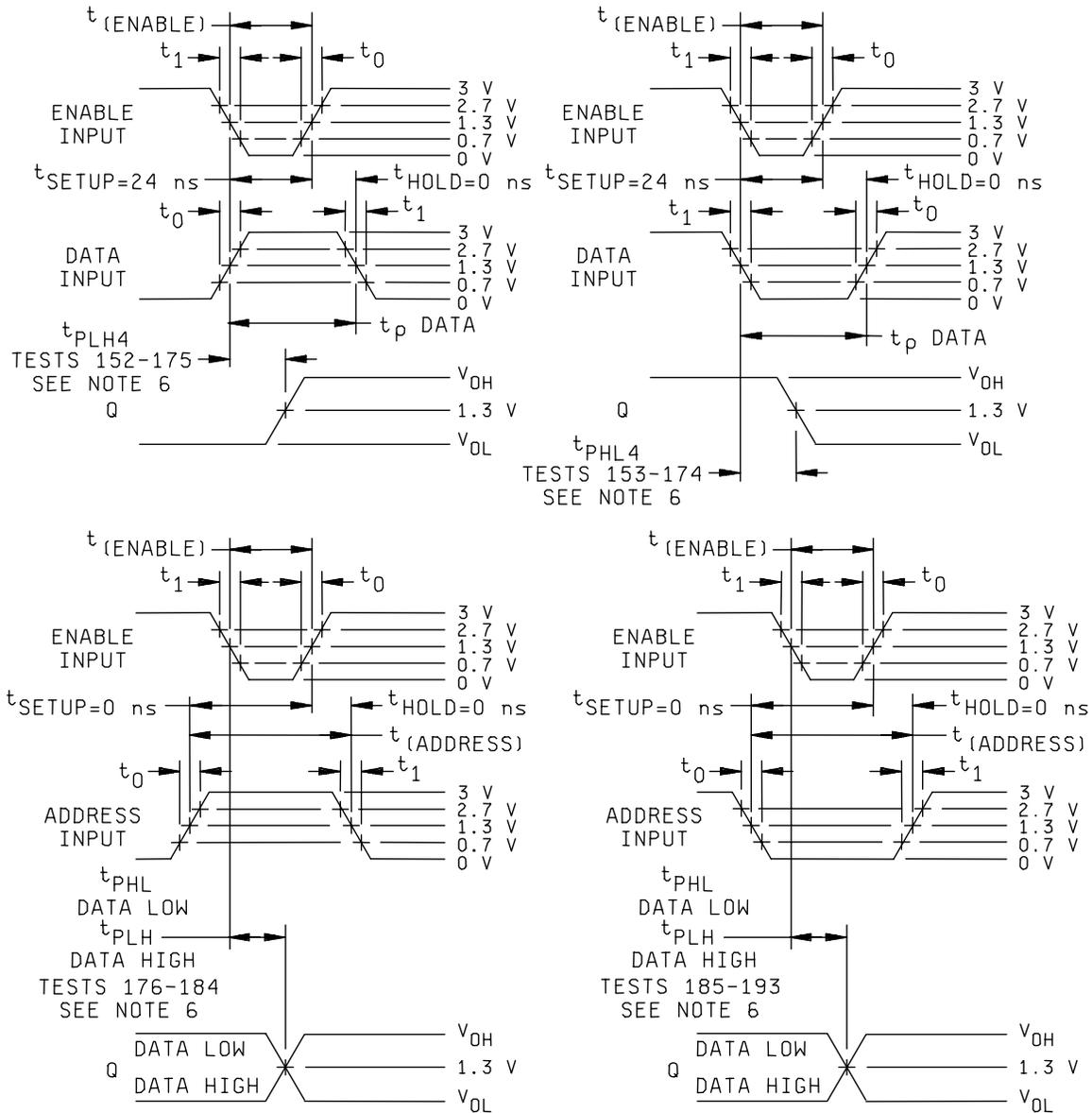
15

NOTES:
1. R_L = 2 kΩ ±5 percent.
2. C_L = 50 pF ±10% and includes probe and jig capacitance.
3. All loads are the same as the Q_0 load.
4. All diodes are 1N3064 or equivalent.
5. The clear, enable, data, and address pulse generator have the following characteristics: V_{GEN} = 3 V, $t_0 \leq 15$ ns, $t_1 \leq 6$ ns, t_P = 30 ns, and PRR ≤ 1 MHz except when measuring test nos. 152 thru 193, $t_{P(ENABLE)}$ = 24 ns, $t_{P(DATA)}$ = 24 ns, $t_{P(ADDRESS)}$ = 24 ns, and t_{SETUP} and t_{HOLD} are as specified on the waveforms above.
6. Immediately prior to test 152, all outputs shall be cleared low; then beginning with test 152, test 152 thru 193 are to be performed in sequence with a wait of 500 ns minimum between each test. These tests are to assure latchup of the outputs under worst case setup and hold input conditions.

FIGURE 5. <u>Switching test circuit and waveforms for device type 05</u> - Continued.

16

TABLE III. Group A inspection for device type 01 and 04.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Pin assignment of terminal-condition columns 1–16:

Terminal condition no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type 01 Cases E, F	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
Cases 2, X	3	1	7	12	16	9	15	14	13	11	10	8	4	6	5	3
Type 04 Cases E, F	2	1	7	12	20	9	19	18	17	14	13	10	5	8	7	4
Cases 2, X	3	2	9	15	20	12	19	18	17	14	13	10	5	8	7	4
Signal	1Q̄	1D	2D	EN 3-4	Vcc	3D	4D	4Q̄	4Q	3Q	3Q̄	GND	EN 1-2	2Q̄	2Q	1Q

Test data:

Subgroup	Symbol	MIL-STD-883 method	Test no.	1Q̄	1D	2D	EN 3-4	Vcc	3D	4D	4Q̄	4Q	3Q	3Q̄	GND	EN 1-2	2Q̄	2Q	1Q	Measured terminal	Min	Max	Unit
1 Tc = 25°C	V_OH	3006	1	-0.4 mA	0.7 V			4.5 V				2.0 V			GND	1/			1Q	1Q̄	2.5		V
	"	"	2		2.0 V			"							"	"			-0.4 mA	1Q	"		"
	"	"	3			0.7 V		"							"	"	-0.4 mA			2Q̄	"		"
	"	"	4			2.0 V		"							"	"		-0.4 mA		2Q	"		"
	"	"	5				1/	"	0.7 V					-0.4 mA	"	"				3Q̄	"		"
	"	"	6				"	"	2.0 V				-0.4 mA		"	"				3Q	"		"
	"	"	7				"	"		0.7 V	-0.4 mA				"	"				4Q̄	"		"
	"	"	8				"	"		2.0 V		-0.4 mA			"	"				4Q	"		"
	V_OL	3007	9	4 mA	2.0 V			5.5 V							"	1/				1Q̄		0.4	"
	"	"	10		0.7 V			"							"	"			4 mA	1Q		"	"
	"	"	11			2.0 V		"							"	"	4 mA			2Q̄		"	"
	"	"	12			0.7 V		"							"	"		4 mA		2Q		"	"
	"	"	13				1/	"	2.0 V					4 mA	"	"				3Q̄		"	"
	"	"	14				"	"	0.7 V				4 mA		"	"				3Q		"	"
	"	"	15				"	"		2.0 V	4 mA				"	"				4Q̄		"	"
	"	"	16				"	"		0.7 V		4 mA			"	"				4Q		"	"
	I_IL1	3009	17		0.4 V			5.5 V							"	4.5 V				1D	4/	4/	mA
	"	"	18			0.4 V		"							"	4.5 V				2D	"	"	"
	"	"	19				4.5 V	"	0.4 V						"					3D	"	"	"
	"	"	20				4.5 V	"		0.4 V					"					4D	"	"	"
	I_IL2	"	21					4.5 V							"	0.4 V				EN 1-2	"	20	µA
	"	"	22				0.4 V	4.5 V							"					EN 3-4	"	"	"
	I_IH1	3010	23		2.7 V			"							"	2.7 V				1D	"	"	"
	"	"	24			2.7 V		"							"	2.7 V				2D	"	"	"
	"	"	25					"							"					3D	"	"	"
	"	"	26					"							"					4D	"	"	"
	I_IH2	"	27					"		2.7 V					"	2.7 V				EN 1-2		80	"
	"	"	28				2.7 V	"							"					EN 3-4		80	"
	I_IH3	"	29		5.5 V			"							"					1D		100	"
	"	"	30			5.5 V		"	5.5 V						"					2D		"	"
	"	"	31					"		5.5 V					"					3D			"
	"	"	32					"		5.5 V					"					4D			"
	I_IH4	"	33					"	GND					GND	"	5.5 V				EN 1-2		0.4	mA
	"	"	34				5.5 V	"	GND	GND					"					EN 3-4		0.4	"
	I_OS	3011	35	GND	GND			"							"	4.5 V				1Q̄	-15	-100	"
	"	"	36		4.5 V			"							"			GND		1Q	"	"	"
	"	"	37			GND		"							"		GND			2Q̄	"	"	"
	"	"	38			4.5 V		"							"			GND		2Q	"	"	"
	"	"	39				4.5 V	"	GND					GND	"					3Q̄	"	"	"
	"	"	40				"	"	4.5 V				GND		"					3Q	"	"	"
	"	"	41				"	"	GND	GND					"					4Q̄	"	"	"
	"	"	42				GND	4.5 V		4.5 V	GND				"					4Q	"	"	"
	I_CC	3005	43		GND	GND	GND	"	GND	GND		GND			GND	GND				Vcc		12	"

See footnotes at end of device type 01 and 04.

17

TABLE III. Group A inspection for device type 01 and 04 - Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V: low ≤ 0.7 V; or open).

Legend — the 16 terminal-condition columns correspond to the following package pins / signal functions:

Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type 01 Cases E, F	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
Cases 2, X	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20
Type 04 Cases E, F	2	1	7	12	16	9	15	19	14	18	20	13	10	17	4	5
Cases 2, X	3	2	9	15	20	12	19	14	18	14	13	10	17	4	5	8
Terminal	1Q̄	1D	2D	EN 3-4	V_{CC}	3D	4D	$\overline{4Q}$	4Q	3Q	$\overline{3Q}$	GND	EN 1-2	$\overline{2Q}$	2Q	1Q

Main inspection table:

Subgroup	Symbol	MIL-STD-883 method	Test no.	Terminal conditions (columns 1–16)	Measured terminal	Min	Max	Unit
1 ($T_C=25°C$)	V_{IC}	3014	44	$V_{CC}=4.5V$; GND; 1D = −18 mA	1D	3/	−1.5	V
			45	GND; 2D = −18 mA	2D	"	"	"
			46	GND; 3D = −18 mA	3D	"	"	"
			47	GND; 4D = −18 mA	4D	"	"	"
			48	GND; EN 1-2 = −18 mA	EN 1-2	"	"	"
			49	GND; EN 3-4 = −18 mA	EN 3-4	"	"	"
2	Same tests, terminal conditions, and limits as subgroup 1, except $T_C=+125°C$ and V_{IC} tests are omitted.							
3	Same tests, terminal conditions, and limits as subgroup 1, except $T_C=-55°C$ and V_{IC} tests are omitted.							
7 2/ ($T_C=25°C$)	Truth table tests	3014	50	$V_{CC}=5.0V$; GND; inputs A; outputs L/H		3/		
			51	A/B		"		
			52	B		"		
			53	A/B; H		"		
8	Same tests and terminal conditions as for subgroup 7 except $T_C=+125°C$ and $T_C=-55°C$.							
9 ($T_C=25°C$)	t_{PLH1}	3003 Fig. 4	54	1D = IN; $V_{CC}=5.0V$; GND; 1Q = OUT	1D to 1Q	3	32	ns
	t_{PHL2}		55	1D = IN; 1Q̄ = OUT	1D to 1Q̄	"	20	"
	PLH1	"	56	2D = IN; 2Q = OUT	2D to 2Q	"	32	"
	PLH2	"	57	2D = IN; 2Q̄ = OUT	2D to 2Q̄	"	20	"
	PLH1	"	58	3D = IN, 4.5 V; 3Q = OUT	3D to 3Q	"	32	"
	PLH2	"	59	3D = IN; 3Q̄ = OUT	3D to 3Q̄	"	20	"
	PLH1	"	60	4D = IN; 4Q = OUT	4D to 4Q	"	32	"
	PHL2	"	61	4D = IN; 4Q̄ = OUT	4D to 4Q̄	"	20	"
	PHL1	"	62	1D = IN, 4.5 V; 1Q = OUT	1D to 1Q	"	22	"
	PHL2	"	63	1D = IN; 1Q̄ = OUT	1D to 1Q̄	"	25	"
	PHL1	"	64	2D = IN; 2Q = OUT	2D to 2Q	"	22	"
	PHL2	"	65	2D = IN; 2Q̄ = OUT	2D to 2Q̄	"	25	"
	PHL1	"	66	3D = IN, 4.5 V; 3Q = OUT	3D to 3Q	"	22	"
	PHL2	"	67	3D = IN; 3Q̄ = OUT	3D to 3Q̄	"	25	"
	PHL1	"	68	4D = IN; 4Q = OUT	4D to 4Q	"	22	"
	PHL2	"	69	4D = IN; 4Q̄ = OUT	4D to 4Q̄	"	25	"
	PLH3	"	70	EN 1-2 = IN, 4.5 V; 1Q = OUT	EN to 1Q	"	32	"
		"	71	EN = IN; 2Q = OUT	EN to 2Q	"	"	"
		"	72	EN = IN; 3Q = OUT	EN to 3Q	"	"	"
		"	73	EN = IN; 4Q = OUT	EN to 4Q	"	"	"
	PHL3	"	74	EN = IN, 4.5 V; GND; 1Q = OUT	EN to 1Q	"	30	"
		"	75	EN = IN; 2Q = OUT	EN to 2Q	"	"	"
		"	76	EN = IN; 3Q = OUT	EN to 3Q	"	"	"
		"	77	EN = IN; 4Q = OUT	EN to 4Q	"	"	"
	PLH4	"	78	EN = IN; GND; 1Q̄ = OUT	EN to 1 Q̄	"	35	"
		"	79	EN = IN; GND; 2Q̄ = OUT	EN to 2 Q̄	"	"	"
		"	80	EN = IN; GND; 3Q̄ = OUT	EN to 3 Q̄	"	"	"
		"	81	EN = IN; GND; 4Q̄ = OUT	EN to 4 Q̄	"	"	"

See footnotes at end of device types 01 and 04.

18

TABLE III. Group A inspection for device type 01 and 04 - Continued.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Pin assignment (terminal function vs. package pin number)

Terminal column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Function	1Q̄	1D	2D	EN 3-4	Vcc	3D	4D	4Q̄	4Q	3Q	3Q̄	GND	EN 1-2	2Q̄	2Q	1Q
Type 01 Cases E, F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type 01 Cases 2, X	2	3	4	5	7	8	9	10	11	13	14	15	17	18	19	20
Type 04 Cases E, F	2	1	7	12	16	9	15	14	13	11	10	8	4	6	5	3
Type 04 Cases 2, X	3	2	9	15	20	12	19	18	17	14	13	10	5	8	7	4

Test conditions

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 (1Q̄)	2 (1D)	3 (2D)	4 (EN 3-4)	5 (Vcc)	6 (3D)	7 (4D)	8 (4Q̄)	9 (4Q)	10 (3Q)	11 (3Q̄)	12 (GND)	13 (EN 1-2)	14 (2Q̄)	15 (2Q)	16 (1Q)	Measured terminal	Min	Max	Unit
9 Tc = 25°C	t_{PHL4}	3003	82	OUT	4.5 V			5.0 V							GND	IN				EN to 1 Q̄	3	20	ns
		Fig. 3	83		4.5 V			"							"	IN	OUT			EN to 2 Q̄	"	"	"
		"	84				IN	"	4.5 V					OUT	"					EN to 3 Q̄	"	"	"
		"	85				IN	"		4.5 V	OUT				"					EN to 4 Q̄	"	"	"
	SUH	"	86		IN										"	IN			OUT	1Q	2.5		V
		"	87			IN									"	IN		OUT		2Q	"		"
		"	88				IN		IN				OUT		"					3Q	"		"
		"	89				IN			IN		OUT			"					4Q	"		"
	SUL	"	90		IN										"	IN			OUT	1Q		0.4	"
		"	91			IN									"	IN		OUT		2Q		"	"
		"	92				IN		IN				OUT		"					3Q		"	"
		"	93				IN			IN		OUT			"					4Q		"	"

Subgroup 10, Tc = 125°C — Same tests and terminal conditions as for subgroup 9, except T_C = +125°C and test limits as shown:

Symbol	Min	Max	Unit
t_{PLH1}	3	42	ns
t_{PHL1}	"	29	"
PLH2	"	32	"
PLH3	"	26	"
PLH4	"	42	"
PHL4	"	39	"
	"	46	"
	"	26	"
SUH	2.5		V
SUL		0.4	V

11 Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.

1/ Apply 0V/3V - 5V/0V momentary pulse 500 ns minimum prior to measurement.

2/ A = 2.4 V, B = 0.4 V.

3/ H ≥ 1.5 V, L ≤ 1.5 V.

4/ I_{IL} limits are as follows:

Test	Min/max limits (mA)				
	Circuit A, B	Circuit C	Circuit D		Circuit E
			Circuit 01 Device 01	Device 04	
I_{IL1}	-.16/-.40	-.0005/-.40	-.03/-.40	-.16/-.40	-.19/-.42
I_{IL2}	-.64/-1.60	0/-1.20	-.12/-1.20	-.64/-1.60	-.75/-1.60

19

TABLE III. Group A inspection for device type 02.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Condition-column pin numbering — Cases E,F: pins 1–16 (1R̄, 1S̄1, 1S̄2, 1Q, 2R̄, 2S̄, 2Q, GND, 3Q, 3R̄, 3S̄1, 3S̄2, 4Q, 4R̄, 4S̄, Vcc). Cases 2,X: pins 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20 respectively.

Subgroup	Symbol	MIL-STD-883 method	Test no.	1R̄	1S̄1	1S̄2	1Q	2R̄	2S̄	2Q	GND	3Q	3R̄	3S̄1	3S̄2	4Q	4R̄	4S̄	Vcc	Measured terminal	Min	Max	Unit
1 Tc = 25°C	VOH	3006	1								GND					−0.4 mA	2.0 V	1/	4.5 V	4Q	2.5		V
	VOH	″	2								″	−0.4 mA	2.0 V	2.0 V	1/				″	3Q	″		″
	VOH	″	3					2.0 V	1/	−0.4 mA	″								″	2Q	″		″
	VOH	″	4	2.0 V	2.0 V	1/	−0.4 mA				″								″	1Q	″		″
	VOL	3007	5	1/	2.0 V	2.0 V	4 mA				″								″	1Q		0.4	″
	VOL	″	6					1/	2.0 V	4 mA	″								″	2Q		″	″
	VOL	″	7								″	4 mA	1/	2.0 V	2.0 V				″	3Q		″	″
	VOL	″	8								″					4 mA	1/	2.0 V	″	4Q		″	″
	IL1	3009	9	0.4 V							″								5.5 V	1R̄	4/	4/	mA
	IL1	″	10	GND	0.4 V	4.5 V					″								″	1S̄1			″
	IL1	″	11	GND	4.5 V	0.4 V					″								″	1S̄2			″
	IL1	″	12					0.4 V	GND		″								″	2R̄			″
	IL1	″	13					GND	0.4 V		″								″	2S̄			″
	IL1	″	14								″		0.4 V						″	3R̄			″
	IL1	″	15								″		GND	0.4 V	4.5 V				″	3S̄1			″
	IL1	″	16								″		GND	4.5 V	0.4 V				″	3S̄2			″
	IL1	″	17								″						0.4 V	GND	″	4R̄			″
	IL1	″	18								″						GND	0.4 V	″	4S̄			″
	IH1	3010	19	2.7 V							″								5.5 V	1R̄		20	μA
	IH1	″	20		2.7 V						″								″	1S̄1		″	″
	IH1	″	21			2.7 V					″								″	1S̄2		″	″
	IH1	″	22					2.7 V			″								″	2R̄		″	″
	IH1	″	23						2.7 V		″								″	2S̄		″	″
	IH1	″	24								″		2.7 V						″	3R̄		″	″
	IH1	″	25								″			2.7 V					″	3S̄1		″	″
	IH1	″	26								″				2.7 V				″	3S̄2		″	″
	IH1	″	27								″						2.7 V		″	4R̄		″	″
	IH1	″	28								″							2.7 V	″	4S̄		″	″
	IH3	″	29	5.5 V							″								5.5 V	1R̄		100	μA
	IH3	″	30		5.5 V						″								″	1S̄1		″	″
	IH3	″	31			5.5 V					″								″	1S̄2		″	″
	IH3	″	32					5.5 V			″								″	2R̄		″	″
	IH3	″	33						5.5 V		″								″	2S̄		″	″
	IH3	″	34								″		5.5 V						″	3R̄		″	″
	IH3	″	35								″			5.5 V					″	3S̄1		″	″
	IH3	″	36								″				5.5 V				″	3S̄2		″	″
	IH3	″	37								″						5.5 V		″	4R̄		″	″
	IH3	″	38								″							5.5 V	″	4S̄		″	″

See footnotes at end of device type 02.

20

TABLE III. Group A inspection for device type 02.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E,F / Cases 2,X — Test no.	1 R̄ (2)	1 S 1 (3)	1 S 2 (4)	1 Q (5)	2 R̄ (7)	2 S̄ (8)	2 Q (9)	GND (10)	3 Q (12)	3 R̄ (13)	3 S 1 (14)	3 S 2 (15)	4 Q (17)	4 R̄ (18)	4 S̄ (19)	V_CC (20)	Measured terminal	Min	Max	Unit
1, Tc=25°C	I_OS	3011	39	5.0 V	GND	GND	GND	5.0 V	GND	GND	GND								5.5 V	1Q	-15	-100	mA
	"	"	40							GND	"								"	2Q	"	"	"
	"	"	41								"	GND							"	3Q	"	"	"
	"	"	42								"					GND			"	4Q	"	"	"
	I_CC	3005	43	GND	4.5 V	4.5 V	GND	GND	4.5 V	4.5 V	"	GND	5.0 V	4.5 V	4.5 V	GND	5.0 V	4.5 V	4.5 V	V_CC		7	V
	I_C		44	-18 mA							"			4.5 V			GND			1 R̄		-1.5	V
			45		-18 mA						"									1 S 1		"	"
			46			-18 mA					"									1 S 2		"	"
			47					-18 mA			"									2 R̄		"	"
			48						-18 mA		"									2 S̄		"	"
			49								"		-18 mA							3 R̄		"	"
			50								"			-18 mA						3 S 1		"	"
			51								"				-18 mA					3 S 2		"	"
			52								"						-18 mA			4 R̄		"	"
			53								"							-18 mA		4 S̄		"	"
2	Same tests, terminal conditions, and limits as subgroup 1, except T_C = +125°C and V_IC tests are omitted.																						
3	Same tests, terminal conditions, and limits as subgroup 1, except T_C = -55°C and V_IC tests are omitted.																						
7 2/, Tc=25°C	Truth table tests	3014	54	B	B	B	H	B	B	H	GND	H	B	B	B	H	B	B	5.0 V		3/		
		"	55	B	A	A	L	B	A	L	"	L	B	A	A	L	B	A	"		"		
		"	56	A	A		L	A	A	L	"	L	A	A		L	A	A	"				
		"	57	"	"		H		B	H	"	H		B		H		B	"		"		
		"	58	"	A	B	H		B	H	"	H			B	H		B	"		"		
8	Same tests and terminal conditions as for subgroup 7 except T_C = +125°C and T_C = -55°C.																						
9, Tc=25°C	t_PLH1	3003, Fig. 4	59	GND	IN	4.5 V	OUT				GND								5.0 V	1 S 1 to 1Q	3	27	ns
		"	60	GND	4.5 V	IN	OUT				"								"	1 S 2 to 1Q	"	"	"
		"	61					GND	IN	OUT	"								"	2 S̄ to 2Q	"	"	"
		"	62								"	OUT	GND	IN	4.5 V				"	3 S 1 to 3Q	"	"	"
		"	63								"	OUT	GND	4.5 V	IN				"	3 S 2 to 3Q	"	"	"
		"	64								"					OUT	GND	IN	"	4 S̄ to 4Q	"	"	"
	t_PHL1	"	65	GND	IN		OUT				"								"	1 S 1 to 1Q	"	20	"
		"	66	GND	4.5 V	IN	OUT				"								"	1 S 2 to 1Q	"	"	"
		"	67					GND	IN	OUT	"								"	2 S̄ to 2Q	"	"	"
		"	68								"	OUT	GND	IN	4.5 V				"	3 S 1 to 3Q	"	"	"
		"	69								"	OUT	GND	4.5 V	IN				"	3 S 2 to 3Q	"	"	"
		"	70								"					OUT	GND	IN	"	4 S̄ to 4Q	"	"	"

See footnotes at end of device type 02.

21

TABLE III. Group A inspection for device type 02.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Min	Max	Unit
			Cases E,F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
			Cases 2,X	2	3	4	5	6	7	8	9	10	13	14	15	17	18	19	20				
			Test no.	$1\overline{R}$	$1\overline{S}1$	$1\overline{S}2$	$1Q$	$2\overline{R}$	$2\overline{S}$	$2Q$	GND	$3Q$	$3\overline{R}$	$3\overline{S}1$	$3\overline{S}2$	$4Q$	$4\overline{R}$	$4\overline{S}$	V_{CC}		Min	Max	
9 ($T_C = 25°C$)	t_{PHL2}	3003 Fig. 4	71	IN	4.5 V	4.5 V	OUT				GND								5.0 V	$1\overline{R}$ to $1Q$	3	32	ns
			72					IN	4.5 V	OUT	"								"	$2\overline{R}$ to $2Q$	"	"	"
			73								"	OUT	IN	4.5 V	4.5 V				"	$3\overline{R}$ to $3Q$	"	"	"
			74								"					OUT	IN	4.5 V	"	$4\overline{R}$ to $4Q$	"	"	"
10 ($T_C = 125°C$)	t_{PLH1}																					"	35	"
	t_{PHL1}																					"	26	"
	t_{PHL2}																					"	42	"

10 $T_C = 125°C$ — Same tests and terminal conditions as for subgroup 9, except T_C = +125°C and test limits as shown

11 — Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55°C.

1/ Apply a 3V - 5V ��⌐‾‾‾⌐ 0 V momentary pulse 500 ns minimum prior to measurement.

2/ A = 2.4 V, B = 0.4 V.

3/ H ≥ 1.5 V, L ≤ 1.5 V.

4/ I_{IL} limits are as follows:

Min/max limits (mA)

Test	Circuit A		Circuit B	Circuit C	Circuit D		Circuit E
	Tests	Limits	Limits	Limits	Tests	Limits	Limits
I_{IL}	9, 12, 14, 17	0/-0.2	-.16/-.40	-.135/-.370	9, 12, 14, 17	-.001/-.15	-.16/-.40
	10, 11, 13, 15, 16, 18	0/-0.2			10, 11, 13, 15, 16, 18	-.03/-.30	

TABLE III. Group A inspection for device type 03.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Test no.	A (2)	B (3)	C (4)	Q0 (5)	Q1 (7)	Q2 (8)	Q3 (9)	GND (10)	Q4 (12)	Q5 (13)	Q6 (14)	Q7 (15)	DATA IN (17)	$\overline{ENBL}$ (18)	$\overline{CLR}$ (19)	V_{CC} (20)	Measured terminal	Min	Max	Unit
1 Tc = 25°C	V_{OH}	3006	1	0.7 V	0.7 V	0.7 V	-0.4 mA				GND					2.0 V	1/	2.0 V	4.5 V	Q0	2.5		V
		"	2	2.0 V	0.7 V	0.7 V		-0.4 mA			GND					2.0 V	"	2.0 V	4.5 V	Q1	"		"
		"	3	0.7 V	2.0 V	0.7 V			-0.4 mA		GND					2.0 V	"	2.0 V	4.5 V	Q2	"		"
		"	4	2.0 V	2.0 V	0.7 V				-0.4 mA	GND					2.0 V	"	2.0 V	4.5 V	Q3	"		"
		"	5	0.7 V	0.7 V	2.0 V					GND	-0.4 mA				2.0 V	"	2.0 V	4.5 V	Q4	"		"
		"	6	2.0 V	0.7 V	2.0 V					GND		-0.4 mA			2.0 V	"	2.0 V	4.5 V	Q5	"		"
		"	7	0.7 V	2.0 V	2.0 V					GND			-0.4 mA		2.0 V	"	2.0 V	4.5 V	Q6	"		"
		"	8	2.0 V	2.0 V	2.0 V					GND				-0.4 mA	2.0 V	"	2.0 V	4.5 V	Q7	"		"
	V_{OL}	3007	9	0.7 V	0.7 V	0.7 V	4 mA				GND					0.7 V	"	2.0 V	4.5 V	Q0		0.4	"
		"	10	2.0 V	0.7 V	0.7 V		4 mA			GND					0.7 V	"	2.0 V	4.5 V	Q1		"	"
		"	11	0.7 V	2.0 V	0.7 V			4 mA		GND					0.7 V	"	2.0 V	4.5 V	Q2		"	"
		"	12	2.0 V	2.0 V	0.7 V				4 mA	GND					0.7 V	"	2.0 V	4.5 V	Q3		"	"
		"	13	0.7 V	0.7 V	2.0 V					GND	4 mA				0.7 V	"	2.0 V	4.5 V	Q4		"	"
		"	14	2.0 V	0.7 V	2.0 V					GND		4 mA			0.7 V	"	2.0 V	4.5 V	Q5		"	"
		"	15	0.7 V	2.0 V	2.0 V					GND			4 mA		0.7 V	"	2.0 V	4.5 V	Q6		"	"
		"	16	2.0 V	2.0 V	2.0 V					GND				4 mA	0.7 V	"	2.0 V	4.5 V	Q7		"	"
	I_{IL}	3009	17	0.4 V							GND								5.5 V	A	4/	4/	mA
		"	18		0.4 V						GND								5.5 V	B	"	"	"
		"	19			0.4 V					GND								5.5 V	C	"	"	"
		"	20								GND					0.4 V			5.5 V	DATA IN	"	"	"
		"	21								GND						0.4 V		5.5 V	$\overline{ENBL}$	"	"	"
		"	22								GND							0.4 V	5.5 V	$\overline{CLR}$	"	"	"
	I_{IH}	3010	23	2.7 V							GND								5.5 V	A		20	µA
		"	24		2.7 V						GND								5.5 V	B		"	"
		"	25			2.7 V					GND								5.5 V	C		"	"
		"	26								GND					2.7 V			5.5 V	DATA IN		"	"
		"	27								GND						2.7 V		5.5 V	$\overline{ENBL}$		"	"
		"	28								GND							2.7 V	5.5 V	$\overline{CLR}$		"	"
	I_{IH3}		29	5.5 V							GND								5.5 V	A		100	"
			30		5.5 V						GND								5.5 V	B		"	"
			31			5.5 V					GND								5.5 V	C		"	"
			32								GND					5.5 V			5.5 V	DATA IN		"	"
			33								GND						5.5 V		5.5 V	$\overline{ENBL}$		"	"
			34								GND							5.5 V	5.5 V	$\overline{CLR}$		"	"
	I_{C}		35	-18 mA							GND								5.5 V	A		-1.5	V
			36		-18 mA						GND								5.5 V	B		"	"
			37			-18 mA					GND								5.5 V	C		"	"
			38								GND					-18 mA			5.5 V	DATA IN		"	"
			39								GND						-18 mA		5.5 V	$\overline{ENBL}$		"	"
			40								GND							-18 mA	5.5 V	$\overline{CLR}$		"	"
	I_{OS}	3011	41	GND	GND	GND					GND					5.0 V	GND	5.0 V	4.5 V	Q0	-15	-100	mA
		"	42	5.0 V	GND	GND					GND					5.0 V	GND	5.0 V	4.5 V	Q1	"	"	"
		"	43	GND	5.0 V	GND					GND					5.0 V	GND	5.0 V	4.5 V	Q2	"	"	"
		"	44	5.0 V	5.0 V	GND					GND					5.0 V	GND	5.0 V	4.5 V	Q3	"	"	"
		"	45	GND	GND	5.0 V					GND					5.0 V	GND	5.0 V	4.5 V	Q4	"	"	"
		"	46	5.0 V	GND	5.0 V					GND					5.0 V	GND	5.0 V	4.5 V	Q5	"	"	"
		"	47	GND	5.0 V	5.0 V					GND					5.0 V	GND	5.0 V	4.5 V	Q6	"	"	"
		"	48	5.0 V	5.0 V	5.0 V					GND					5.0 V	GND	5.0 V	4.5 V	Q7	"	"	"
	I_{CC}	3005	49	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	5.5 V	V_{CC}		36	"

See footnotes at end of device type 05.

23

TABLE III. Group A inspection for device type 03.

Terminal conditions (pins not designated may be high $\geq$ 2.0 V; low $\leq$ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E, F (1 / 2)	Cases 2, X (2 / 3)	C (3 / 4)	Q0 (4 / 5)	Q1 (5 / 7)	Q2 (6 / 8)	Q3 (7 / 9)	GND (8 / 10)	Q4 (9 / 12)	Q5 (10 / 13)	Q6 (11 / 14)	Q7 (12 / 15)	DATA IN (13 / 17)	ENBL (14 / 18)	CLR (15 / 19)	Vcc (16 / 20)	Measured terminal	Limits Min	Limits Max	Unit
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 2/ T_C = 25°C	Truth table tests	3014	Test no.																			
			50 / A	B	B	L	L	L	L	GND	L	L	L	L	A	A	B	5.0 V		3/		
		"	51 / B	"	"	H	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	52 / A	"	"	L	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	53 / A	"	"	"	H	"	"	"	"	"	"	"	"	B	"	"		"		
		"	54 / B	A	"	"	L	"	"	"	"	"	"	"	"	A	"	"		"		
		"	55 / B	"	"	"	"	H	"	"	"	"	"	"	"	B	"	"		"		
		"	56 / A	"	"	"	"	L	"	"	"	"	"	"	"	A	"	"		"		
		"	57 / A	"	"	"	"	"	H	"	"	"	"	"	"	B	"	"		"		
		"	58 / B	B	A	"	"	"	L	"	"	"	"	"	"	A	"	"		"		
		"	59 / B	"	"	"	"	"	"	"	H	"	"	"	"	B	"	"		"		
		"	60 / A	"	"	"	"	"	"	"	L	"	"	"	"	A	"	"		"		
		"	61 / A	"	"	"	"	"	"	"	"	H	"	"	"	B	"	"		"		
		"	62 / B	A	"	"	"	"	"	"	"	L	"	"	"	A	"	"		"		
		"	63 / B	"	"	"	"	"	"	"	"	"	H	"	"	B	"	"		"		
		"	64 / A	"	"	"	"	"	"	"	"	"	L	"	"	A	"	"		"		
		"	65 / "	"	"	"	"	"	"	"	"	"	"	H	"	B	A	"		"		
		"	66 / B	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	67 / B	"	"	"	"	"	"	"	"	"	"	"	B	B	"	"		"		
		"	68 / A	B	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	69 / B	B	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	70 / A	A	B	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	71 / B	A	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	72 / A	B	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	73 / B	"	"	"	"	"	"	"	"	"	"	"	A	A	"	"		"		
		"	74 / "	"	"	H	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	75 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	76 / A	"	"	"	H	"	"	"	"	"	"	"	"	A	"	"		"		
		"	77 / "	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	78 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	79 / B	A	"	"	"	H	"	"	"	"	"	"	"	A	"	"		"		
		"	80 / "	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	81 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	82 / A	"	"	"	"	"	H	"	"	"	"	"	"	A	"	"		"		
		"	83 / "	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	84 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	85 / B	B	A	"	"	"	"	"	H	"	"	"	"	A	"	"		"		
		"	86 / "	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	87 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	88 / A	"	"	"	"	"	"	"	"	H	"	"	"	A	"	"		"		
		"	89 / "	"	"	"	"	"	"	"	"	"	H	"	"	B	"	"		"		
		"	90 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	91 / B	A	"	"	"	"	"	"	"	"	"	H	"	A	"	"		"		
		"	92 / "	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"	93 / "	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	94 / A	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"	95 / A	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
8		"	Same tests and terminal conditions as for subgroup 7 except T_C = +125°C and T_C = -55°C.																			

See footnotes at end of device type 05.

24

TABLE III. Group A inspection for device type 03.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Test no. (Cases E,F)	A	B	C	Q0	Q1	Q2	Q3	GND	Q4	Q5	Q6	Q7	DATA IN	ENBL	CLR	Vcc	Measured terminal	Min	Max	Unit
			Cases E,F / 2,X pins	2/A	3/B	4/C	5/Q0	7/Q1	8/Q2	9/Q3	10/GND	12/Q4	13/Q5	14/Q6	15/Q7	17/DATA IN	18/ENBL	19/CLR	20/Vcc				
			Col #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
9 Tc = 25°C	tPLH1	3003 Fig. 5	96	GND	GND	GND	OUT				GND					4.5 V	6/	IN	5.0 V	C̄L̄R̄ to Q0	3	32	ns
		"	97	4.5 V	GND	"		OUT			"					"	"	"	"	C̄L̄R̄ to Q1	"	"	"
		"	98	GND	4.5 V	"			OUT		"					"	"	"	"	C̄L̄R̄ to Q2	"	"	"
		"	99	4.5 V	4.5 V	"				OUT	"					"	"	"	"	C̄L̄R̄ to Q3	"	"	"
		"	100	GND	GND	4.5 V					"	OUT				"	"	"	"	C̄L̄R̄ to Q4	"	"	"
		"	101	4.5 V	GND	"					"		OUT			"	"	"	"	C̄L̄R̄ to Q5	"	"	"
		"	102	GND	4.5 V	"					"			OUT		"	"	"	"	C̄L̄R̄ to Q6	"	"	"
		"	103	4.5 V	4.5 V	"					"				OUT	"	"	"	"	C̄L̄R̄ to Q7	"	"	"
	PLH2	"	104	GND	GND	GND	OUT				"					IN	GND	GND	"	DI to Q0	"	37	"
		"	105	4.5 V	GND	"		OUT			"					"	"	"	"	DI to Q1	"	"	"
		"	106	GND	4.5 V	"			OUT		"					"	"	"	"	DI to Q2	"	"	"
		"	107	4.5 V	4.5 V	"				OUT	"					"	"	"	"	DI to Q3	"	"	"
		"	108	GND	GND	4.5 V					"	OUT				"	"	"	"	DI to Q4	"	"	"
		"	109	4.5 V	GND	"					"		OUT			"	"	"	"	DI to Q5	"	"	"
		"	110	GND	4.5 V	"					"			OUT		"	"	"	"	DI to Q6	"	"	"
		"	111	4.5 V	4.5 V	"					"				OUT	"	"	"	"	DI to Q7	"	"	"
	PHL2	"	112	GND	GND	GND	OUT				"					IN	GND	GND	"	DI to Q0	"	26	"
		"	113	4.5 V	GND	"		OUT			"					"	"	"	"	DI to Q1	"	"	"
		"	114	GND	4.5 V	"			OUT		"					"	"	"	"	DI to Q2	"	"	"
		"	115	4.5 V	4.5 V	"				OUT	"					"	"	"	"	DI to Q3	"	"	"
		"	116	GND	GND	4.5 V					"	OUT				"	"	"	"	DI to Q4	"	"	"
		"	117	4.5 V	GND	"					"		OUT			"	"	"	"	DI to Q5	"	"	"
		"	118	GND	4.5 V	"					"			OUT		"	"	"	"	DI to Q6	"	"	"
		"	119	4.5 V	4.5 V	"					"				OUT	"	"	"	"	DI to Q7	"	"	"
	PLH3	"	120	IN	GND	GND	OUT				"					4.5 V	"	"	"	A to Q0	"	43	"
		"	121	IN	GND	"		OUT			"					"	"	"	"	A to Q1	"	"	"
		"	122	GND	IN	"			OUT		"					"	"	"	"	B to Q2	"	"	"
		"	123	IN	4.5 V	"				OUT	"					"	"	"	"	A to Q3	"	"	"
		"	124	GND	GND	IN					"	OUT				"	"	"	"	C to Q4	"	"	"
		"	125	IN	GND	4.5 V					"		OUT			"	"	"	"	A to Q5	"	"	"
		"	126	GND	IN	"					"			OUT		"	"	"	"	B to Q6	"	"	"
		"	127	IN	4.5 V	"					"				OUT	"	"	"	"	A to Q7	"	"	"
	PHL3	"	128	IN	GND	GND	OUT				"					"	"	"	"	A to Q0	"	34	"
		"	129	IN	GND	"		OUT			"					"	"	"	"	A to Q1	"	"	"
		"	130	GND	IN	"			OUT		"					"	"	"	"	B to Q2	"	"	"
		"	131	IN	4.5 V	"				OUT	"					"	"	"	"	A to Q3	"	"	"
		"	132	GND	GND	IN					"	OUT				"	"	"	"	C to Q4	"	"	"
		"	133	IN	GND	4.5 V					"		OUT			"	"	"	"	A to Q5	"	"	"
		"	134	GND	IN	"					"			OUT		"	"	"	"	B to Q6	"	"	"
		"	135	IN	4.5 V	"					"				OUT	"	"	"	"	A to Q7	"	"	"
	PLH4	"	136	GND	GND	GND	OUT				"						IN		"	E̅N̅B̅L̅ to Q0	"	39	"
		"	137	4.5 V	GND	"		OUT			"						"		"	E̅N̅B̅L̅ to Q1	"	"	"
		"	138	GND	4.5 V	"			OUT		"						"		"	E̅N̅B̅L̅ to Q2	"	"	"
		"	139	4.5 V	4.5 V	"				OUT	"						"		"	E̅N̅B̅L̅ to Q3	"	"	"
		"	140	GND	GND	4.5 V					"	OUT					"		"	E̅N̅B̅L̅ to Q4	"	"	"
		"	141	4.5 V	GND	"					"		OUT				"		"	E̅N̅B̅L̅ to Q5	"	"	"
		"	142	GND	4.5 V	"					"			OUT			"		"	E̅N̅B̅L̅ to Q6	"	"	"
		"	143	4.5 V	4.5 V	"					"				OUT		"		"	E̅N̅B̅L̅ to Q7	"	"	"

See footnotes at end of device type 05.

25

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

Subgroup	Symbol	MIL-STD-883 method	Test no.	A (1/2)	B (2/3)	C (3/4)	Q0 (4/5)	Q1 (5/7)	Q2 (6/8)	Q3 (7/9)	GND (8/10)	Q4 (9/12)	Q5 (10/13)	Q6 (11/14)	Q7 (12/15)	DATA IN (13/17)	ENBL (14/18)	CLR (15/19)	Vcc (16/20)	Measured terminal	Min	Max	Unit
9 Tc = 25°C	tPHL4	3003	144	GND	GND	GND	OUT				GND					4.5 V	IN	GND	5.0 V	ENBL to Q0	3	29	ns
		Fig 6	145	4.5 V	GND	"		OUT			"					"	"	"	"	ENBL to Q1	"	"	"
		"	146	GND	4.5 V	"			OUT		"					"	"	"	"	ENBL to Q2	"	"	"
		"	147	4.5 V	4.5 V	"				OUT	"					"	"	"	"	ENBL to Q3	"	"	"
		"	148	GND	GND	4.5 V					"	OUT				"	"	"	"	ENBL to Q4	"	"	"
		"	149	4.5 V	GND	"					"		OUT			"	"	"	"	ENBL to Q5	"	"	"
		"	150	GND	4.5 V	"					"			OUT		"	"	"	"	ENBL to Q6	"	"	"
		"	151	4.5 V	4.5 V	"					"				OUT	"	"	"	"	ENBL to Q7	"	"	"
†	PLH4	" 5/	152	GND	GND	GND	OUT				"					IN	IN	4.5 V	"	ENBL to Q0	"	39	"
†	PHL4	"	153	"	"	"	"				"					"	"	"	"	ENBL to Q0	"	29	"
†	PLH4	"	154	"	"	"	"				"					"	"	"	"	ENBL to Q0	"	39	"
†	PLH4	"	155	4.5 V	"	"		OUT			"					"	"	"	"	ENBL to Q1	"	39	"
†	PHL4	"	156	"	"	"		"			"					"	"	"	"	ENBL to Q1	"	29	"
†	PHL4	"	157	"	"	"		"			"					"	"	"	"	ENBL to Q1	"	39	"
†	PLH4	"	158	GND	4.5 V	"			OUT		"					"	"	"	"	ENBL to Q2	"	39	"
†	PHL4	"	159	"	"	"			"		"					"	"	"	"	ENBL to Q2	"	29	"
†	PHL4	"	160	"	"	"			"		"					"	"	"	"	ENBL to Q2	"	39	"
†	PLH4	"	161	4.5 V	"	"				OUT	"					"	"	"	"	ENBL to Q3	"	39	"
†	PHL4	"	162	"	"	"				"	"					"	"	"	"	ENBL to Q3	"	29	"
†	PHL4	"	163	"	"	"				"	"					"	"	"	"	ENBL to Q3	"	39	"
†	PLH4	"	164	GND	GND	4.5 V					"	OUT				"	"	"	"	ENBL to Q4	"	39	"
†	PHL4	"	165	"	"	"					"	"				"	"	"	"	ENBL to Q4	"	29	"
†	PHL4	"	166	"	"	"					"	"				"	"	"	"	ENBL to Q4	"	39	"
†	PLH4	"	167	4.5 V	"	"					"		OUT			"	"	"	"	ENBL to Q5	"	39	"
†	PHL4	"	168	"	"	"					"		"			"	"	"	"	ENBL to Q5	"	29	"
†	PHL4	"	169	"	"	"					"		"			"	"	"	"	ENBL to Q5	"	39	"
†	PLH4	"	170	GND	4.5 V	"					"			OUT		"	"	"	"	ENBL to Q6	"	39	"
†	PHL4	"	171	"	"	"					"			"		"	"	"	"	ENBL to Q6	"	29	"
†	PHL4	"	172	"	"	"					"			"		"	"	"	"	ENBL to Q6	"	39	"
†	PLH4	"	173	4.5 V	"	"					"				OUT	"	"	"	"	ENBL to Q7	"	39	"
†	PHL4	"	174	"	"	"					"				"	"	"	"	"	ENBL to Q7	"	29	"
†	PHL4	"	175	"	"	"					"				"	"	"	"	"	ENBL to Q7	"	39	"
†	PLH4	"	176	IN	GND	GND		OUT			"					GND	"	"	"	ENBL to Q1	"	29	"
†	PHL4	"	177	"	"	"		"			"					4.5 V	"	"	"	ENBL to Q1	"	39	"
†	PHL4	"	178	"	"	"		"			"					GND	"	"	"	ENBL to Q1	"	29	"

See footnotes at end of device type 05.

26

TABLE III. Group A inspection for device type 03.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 A	2 B	3 C	4 Q0	5 Q1	6 Q2	7 Q3	8 GND	9 Q4	10 Q5	11 Q6	12 Q7	13 DATA IN	14 ENBL	15 CLR	16 VCC	Measured terminal	Min	Max	Unit
9 $T_C = 25°C$	t_{PHL4}	3003	179	GND	IN	GND			OUT		GND					GND	IN	4.5 V	5.0 V	$\overline{ENBL}$ to Q2	3	29	ns
	t_{PLH4}	Fig 6	180	"	"	"			"		"					4.5 V	"	"	"	$\overline{ENBL}$ to Q2	"	39	"
	PHL4		181	"	"	"			"		"					GND	"	"	"	$\overline{ENBL}$ to Q2	"	29	"
	PHL4		182	"	GND	IN					"	OUT				GND	"	"	"	$\overline{ENBL}$ to Q4	"	29	"
	PLH4		183	"	"	"					"	"				4.5 V	"	"	"	$\overline{ENBL}$ to Q4	"	39	"
	PHL4		184	"	"	"					"	"				GND	"	"	"	$\overline{ENBL}$ to Q4	"	29	"
	PHL4		185	IN	"	GND	OUT				"					GND	"	"	"	$\overline{ENBL}$ to Q0	"	29	"
	PLH4		186	"	"	"	"				"					4.5 V	"	"	"	$\overline{ENBL}$ to Q0	"	39	"
	PHL4		187	"	"	"	"				"					GND	"	"	"	$\overline{ENBL}$ to Q0	"	29	"
	PHL4		188	4.5 V	IN	4.5 V					"		OUT			GND	"	"	"	$\overline{ENBL}$ to Q5	"	29	"
	PLH4		189	"	"	"					"		"			4.5 V	"	"	"	$\overline{ENBL}$ to Q5	"	39	"
	PHL4		190	"	"	"					"		"			GND	"	"	"	$\overline{ENBL}$ to Q5	"	29	"
	PHL4		191	"	4.5 V	IN				OUT	"					GND	"	"	"	$\overline{ENBL}$ to Q3	"	29	"
	PLH4		192	"	"	"				"	"					4.5 V	"	"	"	$\overline{ENBL}$ to Q3	"	39	"
	PHL4		193	"	"	"				"	"					GND	"	"	"	$\overline{ENBL}$ to Q3	"	29	"
10 $T_C = 125°C$	t_{PHL1}			Same tests and terminal conditions as for subgroup 9, except $T_C = +125°C$ and test limits as shown																	"	42	"
	t_{PLH2}																				"	48	"
	PHL2																				"	34	"
	PLH3																				"	56	"
	PHL4																				"	44	"
	PLH4																				"	52	"
	PHL4																				"	38	"
11				Same tests, terminal conditions and limits as for subgroup 10, except $T_C = -55°C$.																			

See footnotes at end of device type 05.

27

TABLE III. Group A inspection for device type 05.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Test no.	A	B	C	Q0	Q1	Q2	Q3	GND	Q4	Q5	Q6	Q7	DATA IN	ENBL	CLR	Vcc	Measured terminal	Min	Max	Unit
(Cases E,F pin)				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
(Cases 2,X pin)				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
1, Tc = 25°C	V_OH	3006	1	0.7 V	0.7 V	0.7 V	-0.4 mA				GND					2.0 V	1/	2.0 V	4.5 V	Q0	2.5		V
	"	"	2	2.0 V	0.7 V	"		-0.4 mA			"					"	"	"	"	Q1	"		"
	"	"	3	0.7 V	2.0 V	"			-0.4 mA		"					"	"	"	"	Q2	"		"
	"	"	4	2.0 V	2.0 V	"				-0.4 mA	"					"	"	"	"	Q3	"		"
	"	"	5	0.7 V	0.7 V	2.0 V					"	-0.4 mA				"	"	"	"	Q4	"		"
	"	"	6	2.0 V	0.7 V	2.0 V					"		-0.4 mA			"	"	"	"	Q5	"		"
	"	"	7	0.7 V	2.0 V	2.0 V					"			-0.4 mA		"	"	"	"	Q6	"		"
	"	"	8	2.0 V	2.0 V	2.0 V					"				-0.4 mA	"	"	"	"	Q7	"		"
	OL	3007	9	0.7 V	0.7 V	0.7 V	4 mA				"					0.7 V	"	2.0 V	"	Q0		0.4	"
	"	"	10	2.0 V	0.7 V	"		4 mA			"					"	"	"	"	Q1		"	"
	"	"	11	0.7 V	2.0 V	"			4 mA		"					"	"	"	"	Q2		"	"
	"	"	12	2.0 V	2.0 V	2.0 V				4 mA	"					"	"	"	"	Q3		"	"
	"	"	13	0.7 V	0.7 V	2.0 V					"	4 mA				"	"	"	"	Q4		"	"
	"	"	14	2.0 V	0.7 V	"					"		4 mA			"	"	"	"	Q5		"	"
	"	"	15	0.7 V	2.0 V	"					"			4 mA		"	"	"	"	Q6		"	"
	"	"	16	2.0 V	2.0 V	"					"				4 mA	"	"	"	"	Q7		"	"
	IL1	3009	17	0.4 V							"								5.5 V	A	4/	4/	mA
	"	"	18		0.4 V						"								"	B	"	"	"
	"	"	19			0.4 V					"								"	C	"	"	"
	"	"	20								"					0.4 V			"	DATA IN	"	"	"
	"	"	21								"						0.4 V		"	ENBL	"	"	"
	"	"	22								"							0.4 V	"	CLR	"	"	"
	IH1	3010	23	2.7 V							"								5.5 V	A		20	µA
	"	"	24		2.7 V						"								"	B		"	"
	"	"	25			2.7 V					"								"	C		"	"
	"	"	26								"					2.7 V			"	DATA IN		"	"
	"	"	27								"						2.7 V		"	ENBL		"	"
	"	"	28								"							2.7 V	"	CLR		"	"
	IH3		29	5.5 V							"								5.5 V	A		100	"
	"		30		5.5 V						"								"	B		"	"
	"		31			5.5 V					"								"	C		"	"
	"		32								"					5.5 V			"	DATA IN		"	"
	"		33								"						5.5 V		"	ENBL		"	"
	"		34								"							5.5 V	"	CLR		"	"
	IC		35	-18 mA							"								4.5 V	A		-1.5	V
	"		36		-18 mA						"								"	B		"	"
	"		37			-18 mA					"								"	C		"	"
	"		38								"					-18 mA			"	DATA IN		"	"
	"		39								"						-18 mA		"	ENBL		"	"
	"		40								"							-18 mA	"	CLR		"	"
	OS	3011	41	GND	GND	GND					"					5.0 V	GND	5.0 V	5.5 V	Q0	-15	-100	mA
	"	"	42	5.0 V	GND	"					"					"	"	"	"	Q1	"	"	"
	"	"	43	GND	5.0 V	"					"					"	"	"	"	Q2	"	"	"
	"	"	44	5.0 V	5.0 V	"					"					"	"	"	"	Q3	"	"	"
	"	"	45	GND	GND	5.0 V					"					"	"	"	"	Q4	"	"	"
	"	"	46	5.0 V	GND	5.0 V					"					"	"	"	"	Q5	"	"	"
	"	"	47	GND	5.0 V	"					"					"	"	"	"	Q6	"	"	"
	"	"	48	5.0 V	5.0 V	"					"					"	"	"	"	Q7	"	"	"
	CC	3005	49	GND	GND	GND					"				GND	GND		GND	GND	Vcc		36	"

See footnotes at end of device type 05.

28

TABLE III. Group A inspection for device type 05.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E,F	Cases 2,X	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Min	Max	Unit
				Test no.	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
					A	B	C	Q0	Q1	Q2	Q3	GND	Q4	Q5	Q6	Q7	DATA IN	ENBL	CLR	Vcc				
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 2/ T_C = 25°C	Truth table tests	3014		50	A	B	B	L	L	L	L	GND	L	L	L	L	A	A	B	5.0 V		3/		
		"		51	B	"	"	H	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		52	A	A	"	L	H	"	"	"	"	"	"	"	"	A	"	"		"		
		"		53	A	"	"	H	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		54	B	A	"	L	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		55	B	B	"	"	H	"	"	"	"	"	"	"	"	B	"	"		"		
		"		56	A	"	"	"	L	"	"	"	"	"	"	"	"	A	"	"		"		
		"		57	A	"	"	"	"	H	H	"	"	"	"	"	"	B	"	"		"		
		"		58	B	B	A	"	"	L	L	"	"	"	"	"	"	A	"	"		"		
		"		59	B	B	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		60	A	A	"	"	"	"	"	"	H	"	"	"	"	A	"	"		"		
		"		61	A	"	"	"	"	"	"	"	L	H	"	"	"	B	"	"		"		
		"		62	B	A	"	"	"	"	"	"	"	L	"	"	"	A	"	"		"		
		"		63	B	"	"	"	"	"	"	"	"	"	H	"	"	B	"	"		"		
		"		64	A	"	"	"	"	"	"	"	"	"	L	"	"	A	"	"		"		
		"		65	"	"	"	"	"	"	"	"	"	"	"	H	"	B	"	"		"		
		"		66		"	"	"	"	"	"	"	"	"	"	"	"	A	A	"	"		"		
		"		67	B	B	"	"	"	"	"	"	"	"	"	"	B	"	"	"		"		
		"		68	A	A	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		69	B	B	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		70	A	A	B	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		71	B	A	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		72	A	B	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		73	B	"	"	"	"	"	"	"	"	"	"	"	A	B	"	"		"		
		"		74	"	"	"	H	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		75	A	"	"	"	H	"	"	"	"	"	"	"	"	A	"	"		"		
		"		76	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		77	"	"	"	"	"	"	"	"	"	"	H	"	"	A	"	"		"		
		"		78	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		79	B	A	"	"	"	H	"	"	"	"	"	"	"	A	"	"		"		
		"		80	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		81	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		82	A	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		83	"	"	"	"	"	"	H	"	"	"	"	"	"	B	"	"		"		
		"		84	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		85	B	B	A	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		86	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		87	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		88	A	"	"	"	"	"	"	"	H	"	"	"	"	A	"	"		"		
		"		89	"	"	"	"	"	"	"	"	"	"	"	H	"	B	"	"		"		
		"		90	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		91	B	A	"	"	"	"	"	"	"	"	H	"	"	A	"	"		"		
		"		92	"	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
		"		93	"	"	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		94	A	A	"	"	"	"	"	"	"	"	"	"	"	A	"	"		"		
		"		95	A	"	"	"	"	"	"	"	"	"	"	"	"	B	"	"		"		
8		"			Same tests and terminal conditions as for subgroup 7 except T_C = +125°C and T_C = -55°C.																			

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E,F / Cases 2,X Test no.	A (2/1)	B (3/2)	C (4/3)	Q0 (5/4)	Q1 (7/5)	Q2 (8/6)	Q3 (9/7)	GND (10/8)	Q4 (12/9)	Q5 (13/10)	Q6 (14/11)	Q7 (15/12)	DATA IN (17/13)	ENBL (18/14)	CLR (19/15)	Vcc (20/16)	Measured terminal	Min	Max	Unit
9, Tc = 25°C	t_{PHL1}	3003 Fig. 5	96	GND	GND	GND	OUT				GND					4.5 V	6/	IN	5.0 V	$\overline{CLR}$ to Q0	3	23	ns
		"	97	4.5 V	GND	"		OUT			"					"	"	"	"	$\overline{CLR}$ to Q1	"	"	"
		"	98	GND	4.5 V	"			OUT		"					"	"	"	"	$\overline{CLR}$ to Q2	"	"	"
		"	99	4.5 V	4.5 V	"				OUT	"					"	"	"	"	$\overline{CLR}$ to Q3	"	"	"
		"	100	GND	GND	4.5 V					"	OUT				"	"	"	"	$\overline{CLR}$ to Q4	"	"	"
		"	101	4.5 V	GND	"					"		OUT			"	"	"	"	$\overline{CLR}$ to Q5	"	"	"
		"	102	GND	4.5 V	"					"			OUT		"	"	"	"	$\overline{CLR}$ to Q6	"	"	"
		"	103	4.5 V	4.5 V	"					"				OUT	"	"	"	"	$\overline{CLR}$ to Q7	"	"	"
	t_{PLH2}	"	104	GND	GND	GND	OUT				"					IN	GND	GND	"	DI to Q0	"	35	"
		"	105	4.5 V	GND	"		OUT			"					"	"	"	"	DI to Q1	"	"	"
		"	106	GND	4.5 V	"			OUT		"					"	"	"	"	DI to Q2	"	"	"
		"	107	4.5 V	4.5 V	"				OUT	"					"	"	"	"	DI to Q3	"	"	"
		"	108	GND	GND	4.5 V					"	OUT				"	"	"	"	DI to Q4	"	"	"
		"	109	4.5 V	GND	"					"		OUT			"	"	"	"	DI to Q5	"	"	"
		"	110	GND	4.5 V	"					"			OUT		"	"	"	"	DI to Q6	"	"	"
		"	111	4.5 V	4.5 V	"					"				OUT	"	"	"	"	DI to Q7	"	"	"
	t_{PHL2}	"	112	GND	GND	GND	OUT				"					"	"	"	"	DI to Q0	"	25	"
		"	113	4.5 V	GND	"		OUT			"					"	"	"	"	DI to Q1	"	"	"
		"	114	GND	4.5 V	"			OUT		"					"	"	"	"	DI to Q2	"	"	"
		"	115	4.5 V	4.5 V	"				OUT	"					"	"	"	"	DI to Q3	"	"	"
		"	116	GND	GND	4.5 V					"	OUT				"	"	"	"	DI to Q4	"	"	"
		"	117	4.5 V	GND	"					"		OUT			"	"	"	"	DI to Q5	"	"	"
		"	118	GND	4.5 V	"					"			OUT		"	"	"	"	DI to Q6	"	"	"
		"	119	4.5 V	4.5 V	"					"				OUT	"	"	"	"	DI to Q7	"	"	"
	t_{PLH3}	"	120	IN	GND	GND	OUT				"					4.5 V	"	"	"	A to Q0	"	32	"
		"	121	IN	GND	"		OUT			"					"	"	"	"	A to Q1	"	"	"
		"	122	GND	IN	"			OUT		"					"	"	"	"	B to Q2	"	"	"
		"	123	IN	4.5 V	"				OUT	"					"	"	"	"	A to Q3	"	"	"
		"	124	GND	GND	IN					"	OUT				"	"	"	"	C to Q4	"	"	"
		"	125	IN	GND	4.5 V					"		OUT			"	"	"	"	A to Q5	"	"	"
		"	126	GND	IN	"					"			OUT		"	"	"	"	B to Q6	"	"	"
		"	127	IN	4.5 V	"					"				OUT	"	"	"	"	A to Q7	"	"	"
	t_{PHL3}	"	128	IN	GND	GND	OUT				"					"	"	"	"	A to Q0	"	"	"
		"	129	IN	GND	"		OUT			"					"	"	"	"	A to Q1	"	"	"
		"	130	GND	IN	"			OUT		"					"	"	"	"	B to Q2	"	"	"
		"	131	IN	4.5 V	"				OUT	"					"	"	"	"	A to Q3	"	"	"
		"	132	GND	GND	IN					"	OUT				"	"	"	"	C to Q4	"	"	"
		"	133	IN	GND	4.5 V					"		OUT			"	"	"	"	A to Q5	"	"	"
		"	134	GND	IN	"					"			OUT		"	"	"	"	B to Q6	"	"	"
		"	135	IN	4.5 V	"					"				OUT	"	"	"	"	A to Q7	"	"	"
	t_{PLH4}	"	136	GND	GND	GND	OUT				"					"	IN	"	"	$\overline{ENBL}$ to Q0	"	29	"
		"	137	4.5 V	GND	"		OUT			"					"	"	"	"	$\overline{ENBL}$ to Q1	"	"	"
		"	138	GND	4.5 V	"			OUT		"					"	"	"	"	$\overline{ENBL}$ to Q2	"	"	"
		"	139	4.5 V	4.5 V	"				OUT	"					"	"	"	"	$\overline{ENBL}$ to Q3	"	"	"
		"	140	GND	GND	4.5 V					"	OUT				"	"	"	"	$\overline{ENBL}$ to Q4	"	"	"
		"	141	4.5 V	GND	"					"		OUT			"	"	"	"	$\overline{ENBL}$ to Q5	"	"	"
		"	142	GND	4.5 V	"					"			OUT		"	"	"	"	$\overline{ENBL}$ to Q6	"	"	"
		"	143	4.5 V	4.5 V	"					"				OUT	"	"	"	"	$\overline{ENBL}$ to Q7	"	"	"

See footnotes at end of device type 05.

30

TABLE III. Group A inspection for device type 05.

Terminal conditions (pins not designated may be high ≥ 2.0 V: low ≤ 0.7 V: or open).

Subgroup	Symbol	MIL-STD-883 method	Cases E,F Test no.	1 A	2 B	3 C	4 Q0	5 Q1	6 Q2	7 Q3	8 GND	9 Q4	10 Q5	11 Q6	12 Q7	13 DATA IN	14 ENBL	15 CLR	16 Vcc	Measured terminal	Min	Max	Unit
9 / Tc = 25°C	t_PHL4	3003 Fig 5	144	GND	GND	GND	OUT				GND					4.5 V	IN	GND	5.0 V	ENBL to Q0	3	29	ns
		"	145	4.5 V	GND	"		OUT			"					"	"	"	"	ENBL to Q1	"	"	"
		"	146	GND	4.5 V	"			OUT		"					"	"	"	"	ENBL to Q2	"	"	"
		"	147	4.5 V	4.5 V	4.5 V				OUT	"					"	"	"	"	ENBL to Q3	"	"	"
		"	148	GND	GND	4.5 V					"	OUT				"	"	"	"	ENBL to Q4	"	"	"
		"	149	4.5 V	GND	"					"		OUT			"	"	"	"	ENBL to Q5	"	"	"
		"	150	GND	4.5 V	"					"			OUT		"	"	"	"	ENBL to Q6	"	"	"
		"	151	4.5 V	4.5 V	"					"				OUT	"	"	"	"	ENBL to Q7	"	"	"
	PLH4	" 5/	152	GND	GND	GND	OUT				"					IN	IN	4.5 V	"	ENBL to Q0	"	"	"
	PHL4	"	153	"	"	"	"				"					"	"	"	"	ENBL to Q0	"	"	"
	PLH4	"	154	"	"	"	"				"					"	"	"	"	ENBL to Q0	"	"	"
	PLH4	"	155	4.5 V	"	"		OUT			"					"	"	"	"	ENBL to Q1	"	"	"
	PHL4	"	156	"	"	"		"			"					"	"	"	"	ENBL to Q1	"	"	"
	PHL4	"	157	"	"	"		"			"					"	"	"	"	ENBL to Q1	"	"	"
	PLH4	"	158	GND	4.5 V	"			OUT		"					"	"	"	"	ENBL to Q2	"	"	"
	PHL4	"	159	"	"	"			"		"					"	"	"	"	ENBL to Q2	"	"	"
	PHL4	"	160	"	"	"			"		"					"	"	"	"	ENBL to Q2	"	"	"
	PLH4	"	161	4.5 V	"	"				OUT	"					"	"	"	"	ENBL to Q3	"	"	"
	PHL4	"	162	"	"	"				"	"					"	"	"	"	ENBL to Q3	"	"	"
	PHL4	"	163	"	"	"				"	"					"	"	"	"	ENBL to Q3	"	"	"
	PLH4	"	164	GND	GND	4.5 V					"	OUT				"	"	"	"	ENBL to Q4	"	"	"
	PHL4	"	165	"	"	"					"	"				"	"	"	"	ENBL to Q4	"	"	"
	PHL4	"	166	"	"	"					"	"				"	"	"	"	ENBL to Q4	"	"	"
	PLH4	"	167	4.5 V	"	"					"		OUT			"	"	"	"	ENBL to Q5	"	"	"
	PHL4	"	168	"	"	"					"		"			"	"	"	"	ENBL to Q5	"	"	"
	PHL4	"	169	"	"	"					"		"			"	"	"	"	ENBL to Q5	"	"	"
	PLH4	"	170	GND	4.5 V	"					"			OUT		"	"	"	"	ENBL to Q6	"	"	"
	PHL4	"	171	"	"	"					"			"		"	"	"	"	ENBL to Q6	"	"	"
	PHL4	"	172	"	"	"					"			"		"	"	"	"	ENBL to Q6	"	"	"
	PLH4	"	173	4.5 V	"	"					"				OUT	"	"	"	"	ENBL to Q7	"	"	"
	PHL4	"	174	"	"	"					"				"	"	"	"	"	ENBL to Q7	"	"	"
	PLH4	"	175	"	"	"					"				"	"	"	"	"	ENBL to Q7	"	"	"
	PLH4	"	176	IN	GND	GND		OUT			"					GND	"	"	"	ENBL to Q1	"	"	"
	PHL4	"	177	"	"	"		"			"					4.5 V	"	"	"	ENBL to Q1	"	"	"
	PHL4	"	178	"	"	"		"			"					GND	"	"	"	ENBL to Q1	"	"	"

See footnotes at end of device type 05.

31

TABLE III. Group A inspection for device type 05.

Terminal conditions (pins not designated may be high ≥ 2.0 V; low ≤ 0.7 V; or open).

Subgroup	Symbol	MIL-STD-883 method	Test no.	1 (A)	2 (B)	3 (C)	4 (Q0)	5 (Q1)	6 (Q2)	7 (Q3)	8 (GND)	9 (Q4)	10 (Q5)	11 (Q6)	12 (Q7)	13 (DATA IN)	14 (ENBL)	15 (CLR)	16 (Vcc)	Measured terminal	Min	Max	Unit
			Cases E,F →	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
9 Tc = 25°C	t_{pHL4}	3003 Fig 5	179	GND	IN	GND			OUT		GND					GND	IN	4.5 V	5.0 V	ENBL to Q2	3	29	ns
	t_{pLH4}		180	"	"	"			"		"					4.5 V	"	"	"	ENBL to Q2	"	"	"
	PHL4		181	"	"	"			"		"					GND	"	"	"	ENBL to Q2	"	"	"
	PHL4		182	"	GND	IN					"	OUT				GND	"	"	"	ENBL to Q4	"	"	"
	PLH4		183	"	"	"					"	"				4.5 V	"	"	"	ENBL to Q4	"	"	"
	PLH4		184	"	"	"					"	"				GND	"	"	"	ENBL to Q4	"	"	"
	PHL4		185	IN	"	GND	OUT				"					GND	"	"	"	ENBL to Q0	"	"	"
	PHL4		186	"	"	"	"				"					4.5 V	"	"	"	ENBL to Q0	"	"	"
	PHL4		187	"	"	"	"				"					GND	"	"	"	ENBL to Q0	"	"	"
	PHL4		188	4.5 V	IN	4.5 V					"		OUT			GND	"	"	"	ENBL to Q5	"	"	"
	PLH4		189	"	"	"					"		"			4.5 V	"	"	"	ENBL to Q5	"	"	"
	PLH4		190	"	"	"					"		"			GND	"	"	"	ENBL to Q5	"	"	"
	PHL4		191	"	4.5 V	IN				OUT	"					GND	"	"	"	ENBL to Q3	"	"	"
	PLH4		192	"	"	"				"	"					4.5 V	"	"	"	ENBL to Q3	"	"	"
	PLH4		193	"	"	"				"	"					GND	"	"	"	ENBL to Q3	"	"	"
10 Tc = 125°C	t_{pHL1}			Same tests and terminal conditions as for subgroup 9, except Tc = +125°C and test limits as shown																	"	30	"
	t_{pLH2}																				"	46	"
	PHL2																				"	33	"
	PLH3																				"	42	"
	PLH3																				"	42	"
	PHL4																				"	38	"
	PHL4																				"	38	"
11				Same tests, terminal conditions and limits as for subgroup 10, except Tc = -55°C.																			

1/ Apply a   3V/0V/3V momentary pulse 500 ns minimum prior to measurements.

2/ A = 2.4 V, B = 0.4 V.

3/ H ≥ 1.5 V, L ≤ 1.5 V.

4/ I_{IL} limits are as follows:

Symbol	Min/max limits (mA) Circuit B, C Device 03	Circuit A Device 05
I_{IL1}	-.12/-.36	-.16/-.40
	Test 21 -.005/-.72	Test 21 -.005/-0.20

5/ See note 6 of figure 5.

6/ Apply   4.5V / 0V ⌐‾‾⌐ 4.5 v   momentary pulse prior to each test.

5. PACKAGING

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

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.   Complete part number (see 1.2).

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

   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.

   j.   Requirements for "JAN" marking.

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

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

6.5 <u>Abbreviations, symbols, and definitions.</u> 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_{IN} .... Voltage level at an input terminal.
V_{SUH} .... Setup high
V_{SUL} .... Setup low

6.6 <u>Logistic support.</u> 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 <u>Substitutability.</u> 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.

Military device type	Generic-industry type
01	54LS75
02	54LS279
03	54LS259
04	54LS375
05	54LS259B

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

TABLE IV. <u>Manufacturer's designator.</u>

Device type	CIRCUITS				
	A	B	C	D	E
	Texas Instruments	Motorola Inc.	Fairchild Co.	Signetics Corp.	National Semconductor
01	X	X		X	X
02	X	X	X	X	X
03	X	X	X		X
04	X	X	X	X	
05	X				

6.9 <u>Changes from previous issue.</u> Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

34

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

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

Preparing activity:
 DLA - CC

(Project 5962-1965)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-M-38510/316E	2. DOCUMENT DATE *(YYYYMMDD)* 2003-07-14

3. DOCUMENT TITLE
   MICROCIRCUITS, DIGITAL, BIPOLAR, LOW-POWER SCHOTTKY TTL, CASCADABLE LATCHES, MONOLITHIC SILICON

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First Middle Initial)*	b. ORGANIZATION	

c. ADDRESS *(Include Zip Code)*	d. TELEPHONE *(Include Area Code)*
	(1) Commercial
	(2) DSN
	   (If applicable)
		7. DATE SUBMITTED
		   (YYYYMMDD)

8. PREPARING ACTIVITY

a. NAME Defense Supply Center, Columbus	b. TELEPHONE *(Include Area Code* (1) Commercial 614-692-0536 (2) DSN 850-0536

c. ADDRESS *(Include Zip Code)*
   DSCC-VA
   P. O. Box 3990
   Columbus, Ohio 43216-5000
	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
	   Defense Standardization Program Office (DLSC-LM)
	   8725 John J. Kingman Road, Suite 2533
	   Fort Belvoir, Virginia 22060-6221
	   Telephone (703)767-6888 DSN 427-6888