INCH-POUND

MIL-M-38510/175C
10 August 2004

SUPERSEDING
MIL-M-38510/175B
30 April 1984

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, CMOS, POSITIVE LOGIC,
FLIP-FLOPS AND MONOSTABLE MULTIVIBRATOR, MONOLITHIC SILICON

Reactivated after 10 Aug. 2004 and may be used for new and existing designs and acquisitions.

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, CMOS, logic microcircuits. Two product assurance classes and a choice of case outlines, lead finishes, and radiation hardness assurance (RHA) are provided and are reflected in the complete Part or Identifying Number (PIN). For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535 (see 6.3).

1.2 Part or identifying number (PIN). The PIN is in accordance with MIL-PRF-38535 and as specified herein.

1.2.1 Device types. The device types are as follows:

Device type	Circuit
01	4-bit D-type register
02	Gated J – K master-slave flip-flop (noninverting J – K)
03	Gated J – K master-slave flip-flop (inverting J – K)
04	Dual monostable multivibrator
05	Hex D-type flip-flop

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

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAC, P.O. Box 3990, Columbus, OH 43218-3990, or email CMOS@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

1.2.3 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
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
N	CDFP4-F16	16	Flat pack
X 1/ 2/	GDFP5-F14 or CDFP6-F14	14	Flat pack, except A dimension equals 0.100” (2.54 mm) max
Y 1/ 2/	GDFP1-F14 or CDFP2-F14	14	Flat pack, except A dimension equals 0.100” (2.54 mm) max
Z 1/ 2/	GDFP2-F16 or CDFP3-F16	16	Flat pack, except A dimension equals 0.100” (2.54 mm) max

1.3 Absolute maximum ratings.

Supply voltage range (V_{DD} - V_{SS}) ..... -0.5 V dc to +18.0 V dc
Input current (each input)..... ±10 mA
Input voltage range ..... (V_{SS} - 0.5 V) ≤ V_I ≤ (V_{DD} + 0.5 V)
Storage temperature range (T_{STG}) ..... -65° to +175°C
Maximum power dissipation (P_D) ..... 200 mW
Lead temperature (soldering, 10 seconds) ..... +300°C
Thermal resistance, junction to case (Θ_{JC})..... See MIL-STD-1835
Junction temperature (T_J) ..... 175°C

1.4 Recommended operating conditions.

Supply voltage range (V_{DD} - V_{SS}) ..... 4.5 V dc to 15.0 V dc
Input low voltage range (V_{IL})..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
0.0 V to 1.5 V dc @ V_{DD} = 5.0 V dc
0.0 V to 2.0 V dc @ V_{DD} = 10.0 V dc
0.0 V to 4.0 V dc @ V_{DD} = 15.0 V dc
Input high voltage range (V_{IH}) ..... V_{OL} = 10% V_{DD}, V_{OH} = 90% V_{DD}
3.5 V to 5.0 V dc @ V_{DD} = 5.0 V dc
8.0 V to 10.0 V dc @ V_{DD} = 10.0 V dc
11.0 V to 15.0 V dc @ V_{DD} = 15.0 V dc
Operating temperature range (T_A) ..... -55°C to +125°C
Minimum value of external resistance (Rx) ..... 5 kΩ
Maximum value of external capacitance (Cx) ..... 100 μF

1/ As an exception to the nickel plate and undercoating paragraph of MIL-PRF-38535, appendix A, for case outlines X, Y, and Z only, the leads of bottom brazed ceramic packages (i.e., configuration 2 of case outlines A, D, and F) may have electroless nickel undercoating which is 50 to 200 microinches (1.27 to 5.08 μm) thick provided the lead finish is hot solder dip (i.e., finish letter A) and provided that, after any lead forming, an additional hot solder dip coating is applied which extends from the outer tip of the lead to no more than 0.015 inch (0.38 mm) from the package edge.

2/ For bottom or side brazed packages, case outlines X, Y, and Z only, the S_1 dimension may go to .000 inch (.00 mm) minimum.

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

DEPARTMENT OF DEFENSE SPECIFICATION

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

DEPARTMENT OF DEFENSE STANDARDS

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

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

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

3. REQUIREMENTS

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

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

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein. Although eutectic die bonding is preferred, epoxy die bonding may be performed. However, the resin used shall be Dupont 5504 Conductive Silver Paste, or equivalent, which is cured at 200°C ±10°C for a minimum of 2 hours. The use of equivalent epoxies or cure cycles shall be approved by the qualifying activity. Equivalency shall be demonstrated in data submitted to the qualifying activity for verification.

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

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

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

3.3.4 Switching waveforms and test circuit. The switching waveforms and test circuit shall be as specified on figure 4.

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

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

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

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

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.

3.7.1 Radiation hardness assurance identifier. The radiation hardness assurance identifier shall be in accordance with MIL-PRF-38535 and 4.5.4 herein.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 38 (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 affect 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. Delete the sequence specified as interim (pre-burn-in) electrical parameters through interim (post-burn-in) electrical parameters of table IA of MIL-PRF-38535 and substitute lines 1 through 7 of table II herein.

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

(1) Unless otherwise specified in the manufacturers QM plan for static tests (test condition A), ambient temperature (T_A) shall be +125°C minimum. Test duration for each static test shall be 24 hours minimum for class S devices and in accordance with table I of method 1015 for class B devices.

i. For static burn-in I, all inputs shall be connected to 0.0 V.

ii. For static burn-in II, all inputs shall be connected to V_{DD}. V_{DD} = 15 V minimum and 18 V maximum.

iii. Except for V_{DD} and V_{SS}, the terminal shall be connected through resistors whose value is 2 kΩ to 47 kΩ. The actual measured value of the resistor selected shall not exceed ±20% of its branded value due to use, heat or age.

iv. Output may be open or connected to $V_{DD}/2$.

v. Terminals 2 and 14 shall each be connected to V_{DD} through separate 2 kΩ to 47 kΩ resisitors. This requirement is only applicable to device type 04.

(2) Unless otherwise specified in the manufacturers QM plan for dynamic test (test condition D), ambient temperature shall be +125°C minimum. Test duration shall be in accordance with table I of method 1015.

i. Except for V_{DD} and V_{SS}, the terminals shall be connected through resistors whose value is 2 kΩ to 47 kΩ. The actual measured value of the resistor selected shall not exceed ±20% of its branded value due to use, heat or age.

ii. Input signal requirements: Square wave, 50% duty cycle; 25 kHz < PRR < 1 MHz; t_{TLH} and t_{THL} < 1 µs. Voltage level: 0 to 15 V minimum to 18 V maximum peak.

iii. For device type 05, positive transition of F occurs at center of F/2.

d. Interim and final electrical test parameters shall be as specified in table II.

e. For class S devices, post dynamic burn-in, or class B devices, post static burn-in, electrical parameter measurements may, at the manufacturer’s option, be performed separately or included in the final electrical parameter requirements.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions V_{SS} = 0 V -55°C ≤ T_A ≤ +125°C Unless otherwise specified	Device type	Limits		Unit
				Min	Max	
Positive clamping input to V_{DD}	$V_{IC\ (POS)}$	T_A = +25°C, V_{DD} = GND V_{SS} = Open, Output = Open I_{IN} = 1 mA	All		1.5	V dc
Negative clamping input to V_{SS}	$V_{IC\ (NEG)}$	T_A = +25°C, V_{DD} = GND V_{SS} = GND, Output = Open I_{IN} = -1 mA	All		-6.0	V dc
Quiescent supply current	I_{SS} or I_{DD}	V_{DD} = 18 V dc V_{IN} = V_{SS} or V_{DD} All input combinations	All		-2.5	µA
High level output voltage	V_{OH1}	V_{DD} = 15 Vdc, see table III $\|I_0\| \leq 1$ µA	All	14.95		V dc
Low level output voltage	V_{OL1}	V_{DD} = 15 Vdc, see table III $\|I_0\| \leq 1$ µA	All		0.05	V dc
Three-state output leakage current	I_{OC1}	V_{DD} = 18 Vdc V_0 = V_{SS}	01		100	nA
	I_{OC2}	V_{DD} = 18 Vdc V_0 = V_{DD}	01		-100	nA
Input high voltage	V_{IH1}	V_{DD} = 5 V dc see table III $\|I_O\| \leq 1$µA	All	3.5		V dc
	V_{IH2}	V_{DD} = 10 V dc see table III $\|I_O\| \leq 1$µA	All	7.0		V dc
	V_{IH3}	V_{DD} = 15 V dc see table III $\|I_O\| \leq 1$µA	All	11.0		V dc
Input low voltage	V_{IL1}	V_{DD} = 5 V dc see table III $\|I_O\| \leq 1$µA	All		1.5	V dc
	V_{IL2}	V_{DD} = 10 V dc see table III $\|I_O\| \leq 1$µA	All		3.0	V dc
	V_{IL3}	V_{DD} = 15 V dc see table III $\|I_O\| \leq 1$µA	All		4.0	V dc
Output high (source) current	I_{OH1}	V_{DD} = 5 V dc V_{IN} = V_{DD} V_{OH} = 4.6 V dc	All	-0.36		mA dc
	I_{OH2}	V_{DD} = 15 V dc V_{IN} = V_{DD} V_{OH} = 13.5 V dc	All	-2.4		mA dc

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V_{SS} = 0 V -55°C ≤ T_A ≤ +125°C Unless otherwise specified	Device type	Limits		Unit
				Min	Max	
Output low (sink) current	I_{OL1}	V_{DD} = 5 V dc see table III V_{OL} = 0.4 V dc	All	0.36		mA dc
	I_{OL2}	V_{DD} = 15 V dc see table III V_{OL} = 1.5 V dc	All	2.4		mA dc
Input leakage 1/ current, high	I_{IH}	V_{DD} = 18 V dc Measure inputs sequentially Connect all unused inputs to V_{DD} or V_{SS}	01, 02, 03, 05		45	nA
			04		100	
Input leakage 1/ current, low	I_{IL}	V_{DD} = 18 V dc Measure inputs sequentially Connect all unused inputs to V_{DD} or V_{SS}	01, 02, 03, 05		-45	nA
			04		-100	
Input capacitance	C_i	V_{DD} = 0 V dc, f = 1 MHz, T_A = 25°C	02, 03, 04		7.5	pF
			01, 05		15	pF
Propagation delay times, CLOCK to output, high to low level and low to high level	t_{PHL1}, t_{PLH1}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 4)	01	30	840	ns
			02, 03, 04	25	700	
			05	15	420	
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 4)	01,02, 04	13	250	ns
			03	10	200	
			05	5	110	
Propagation delay times, RESET, SET, or CLEAR to output, high to low level and low to high level	t_{PHL2}, t_{PLH2} 2/	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 4)	01	23	645	ns
			02, 03, 05	15	420	
			04	23	630	
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 4)	01	10	200	ns
			02, 03	8	150	
			04	13	250	
			05	5	110	

1/ Input current of one input node.
2/ Device types 01 and 05 do not have a t_{PLH2} test.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions V_{SS} = 0 V -55°C ≤ T_A ≤ +125°C Unless otherwise specified	Device type	Limits		Unit
				Min	Max	
Transition times, high to low level and low to high level	t_{THL}, t_{TLH}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 4) see table III for device type 04	All	10	280	ns
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C, (See figure 4) see table III for device type 04	All	5	100	ns
Three-state output propagation delay times, output high to high impedance	t_{PHZ}	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01	15	420	ns
output low to high impedance	t_{PLZ}					
high impedance to output low	t_{PZL}					
high impedance to output high	t_{PZH}					
Three-state output propagation output high to high impedance	t_{PHZ}	V_{DD} = 10.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01	8	150	ns
output low to high impedance	t_{PLZ}					
high impedance to output low	t_{PZL}					
high impedance to output high	t_{PZH}					
Minimum CLOCK transition times, high to low level and low to high level	$t_{r(CLK)}$, $t_{f(CLK)}$	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01, 02, 03, 05		15	µs
Minimum data setup times, high to low level and low to high level	t_{SHL}, t_{SLH}	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01		280	ns
			02, 03		560	
			05		120	
Minimum data hold times, high to low level and low to high level	t_{HHL}, t_{HLH}	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	05		85	ns
Minimum pulse width, RESET	$t_{P(R)}$	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01		170	
			02, 03		280	
Minimum pulse width, SET	$t_{P(S)}$	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	02		280	
Minimum pulse width, CLOCK	$t_{P(CLK)}$	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01, 05		280	
			02, 03		200	
Minimum pulse width, CLEAR	$t_{P(CLR)}$	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	05		280	
Minimum CLOCK frequency	f_{CLK}	V_{DD} = 5.0 Vdc, C_L = 50 pF R_L = 200 kΩ (see figure 4)	01		1000	ns
			02, 03		1400	
			05		800	

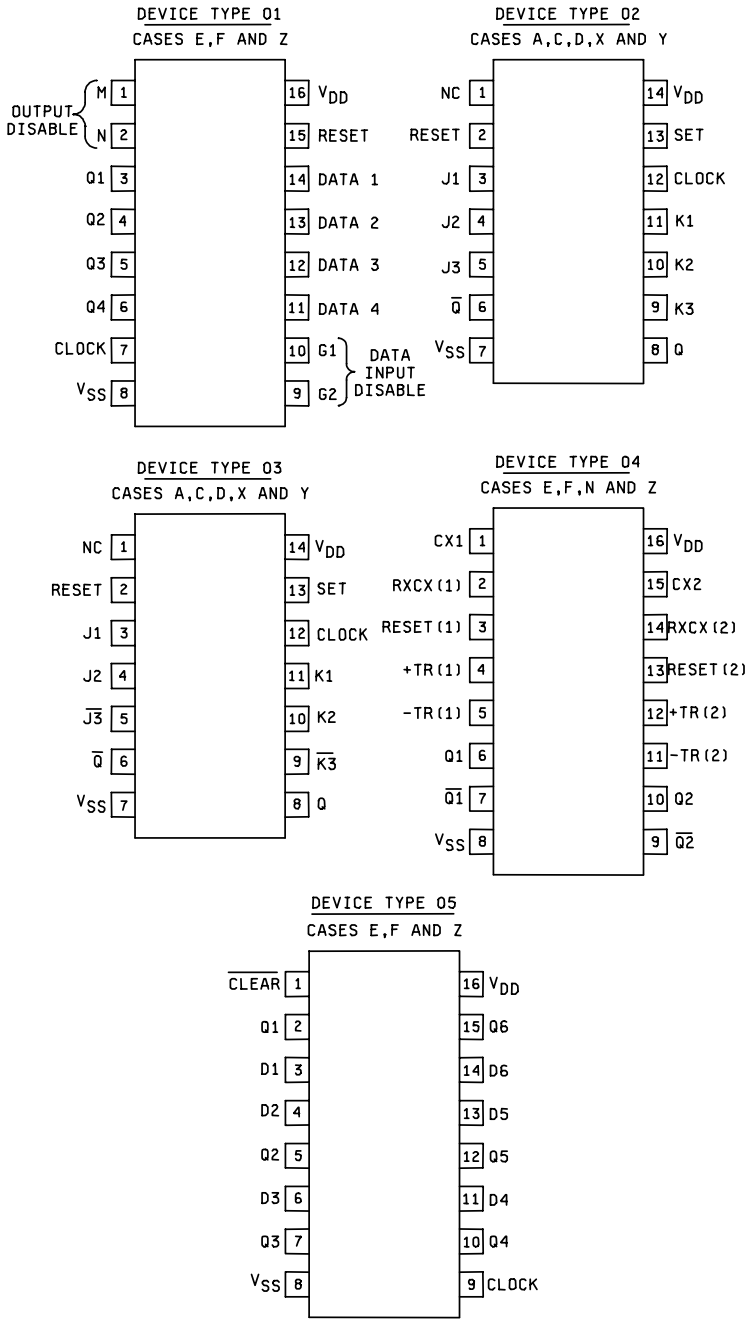


FIGURE 1. Terminal connections.

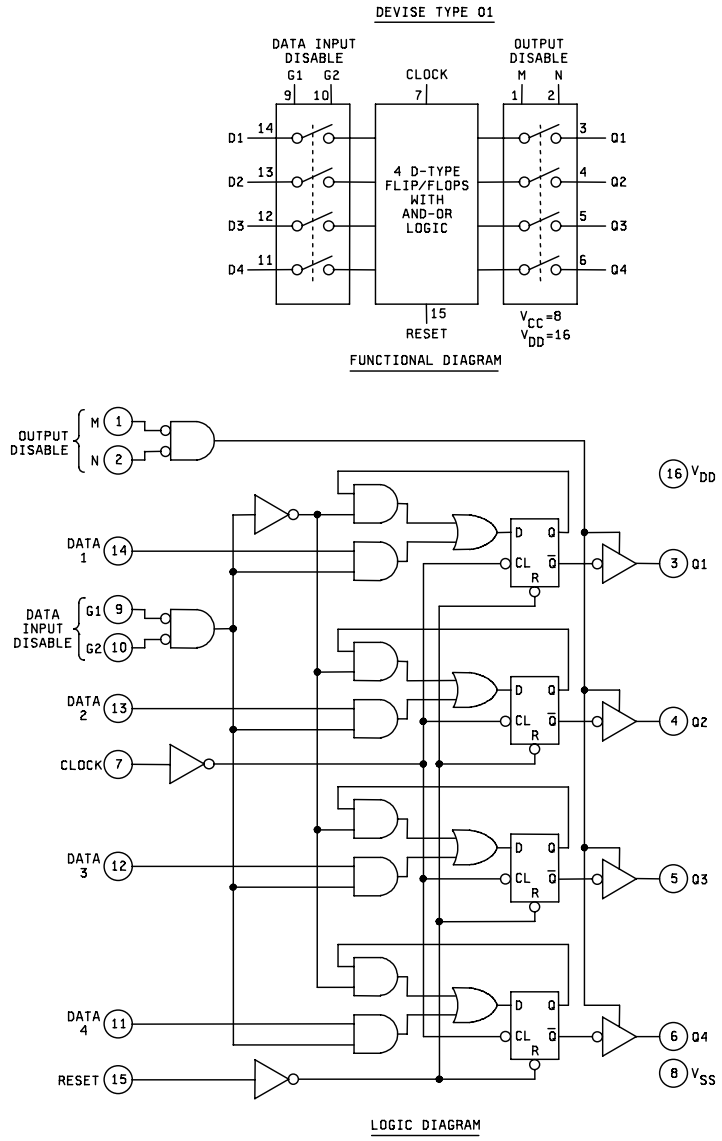
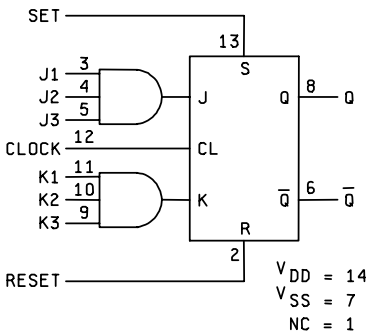
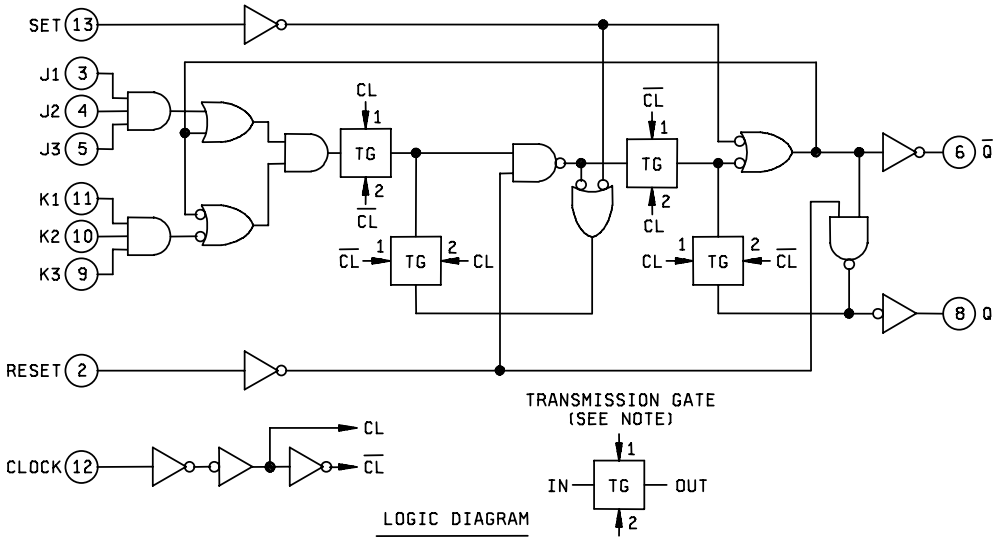


FIGURE 2. Logic diagrams.

DEVICE TYPE 02



FUNCTIONAL DIAGRAM



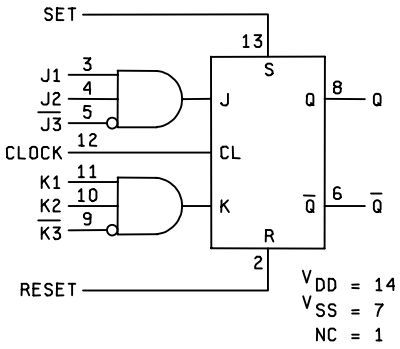
LOGIC DIAGRAM

NOTES: Input to output is:

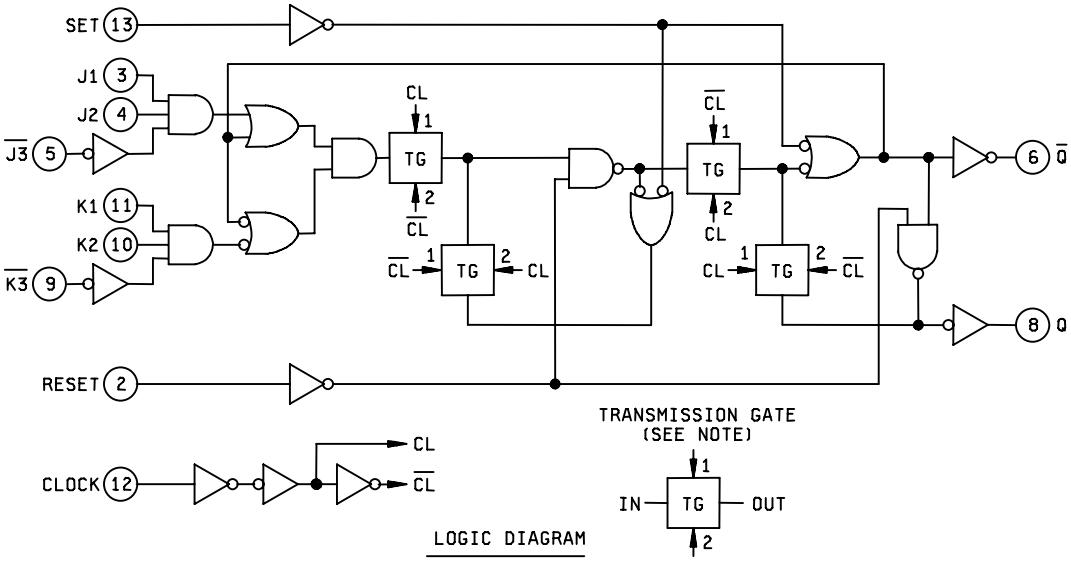
a. A bi-directional low impedance state exists when the control input 1 is low and the control input is 2 is high.
b. An open circuit state exists when the control input 1 is high and the control input 2 is low.

FIGURE 2. Logic diagrams – Continued.

DEVICE TYPE 03



FUNCTIONAL DIAGRAM



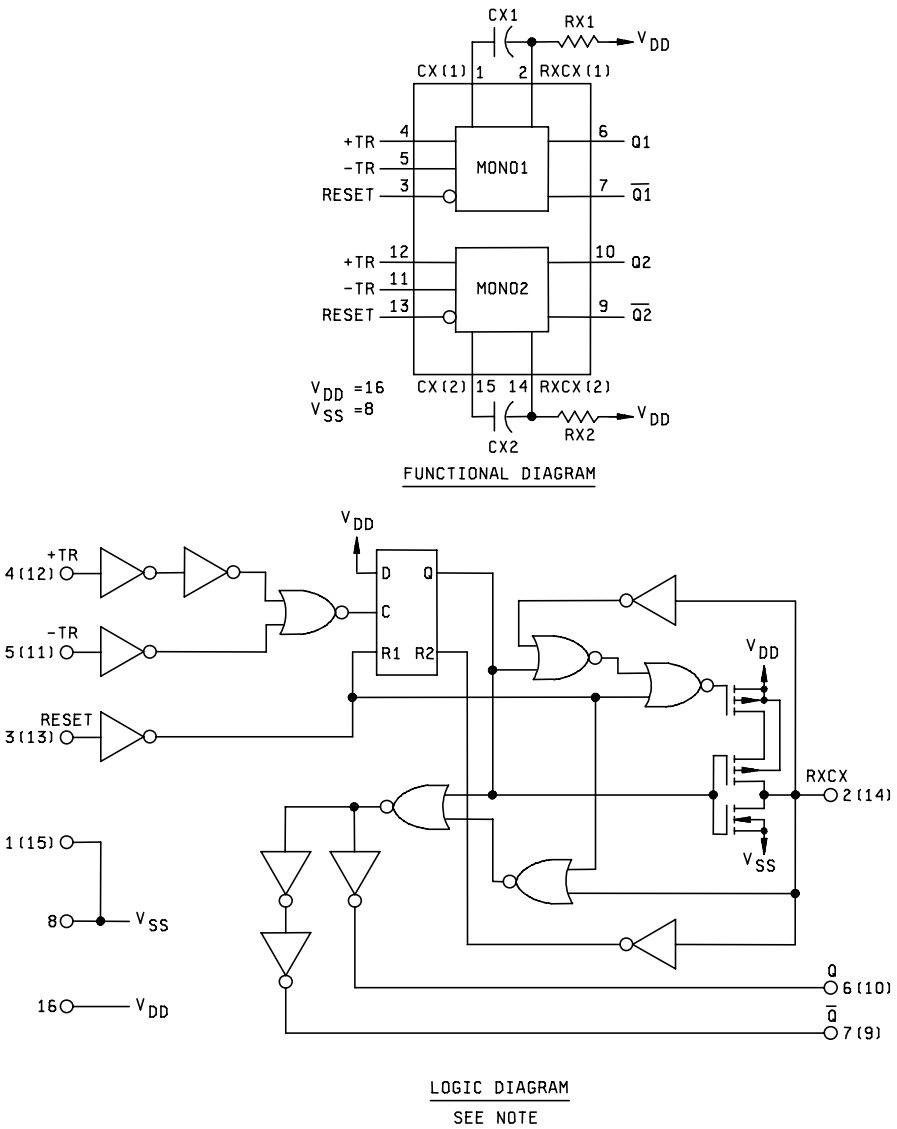
LOGIC DIAGRAM

NOTES: Input to output is:

a. A bi-directional low impedance state exists when the control input 1 is low and the control input 2 is high.
b. An open circuit state exists when the control input 1 is high and the control input 2 is low.

FIGURE 2. Logic diagrams – Continued.

DEVICE TYPE 04



NOTE: Schematic shown is 1/2 of the total package. Terminals 1, 8, and 15 are electrically connected internally.

FIGURE 2. Logic diagrams – Continued.

DEVICE TYPE 05

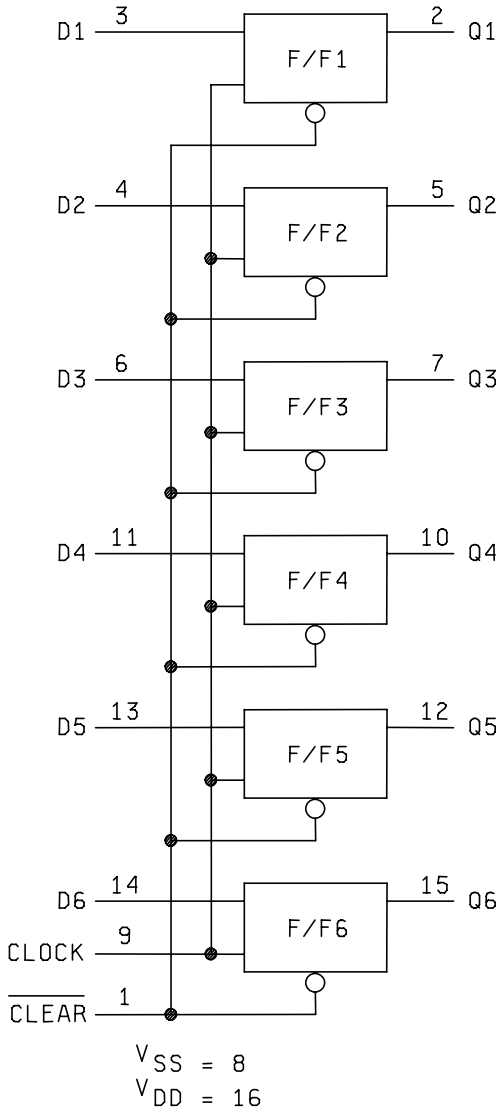


FIGURE 2. Logic diagrams – Continued.

Device type 01

Truth table						
RESET	CLOCK	Data input disable		Data	Output next state	
		G1	G2	D	Q	
H	X	X	X	X	L	
L	L	X	X	X	Q	NC
L	↑	H	X	X	Q	NC
L	↑	X	H	X	Q	NC
L	↑	L	L	H	H	
L	↑	L	L	L	L	
L	H	X	X	X	Q	NC
L	↓	X	X	X	Q	NC

When either output disable M or N is high, the outputs are disabled (high impedance state); however sequential operation of the flip-flops is not affected.
H = High level voltage
L = Low level voltage
↑ = Low-to-high transition of the clock
↓ = High-to-low transiton of the clock
X = Don't care

Device type 02 and 03

Synchronous operation
(S = 0, R = 0)

Truth table			
Inputs before positive clock transition		Outputs after positive clock transition	
Inputs		Outputs	
J *	K *	Q	$\overline{Q}$
L	L	NC	NC
L	H	L	H
H	L	H	L
H	H	Toggles	

* Device type 02

Asynchronous operation
(J and K don't care)

Truth table			
Inputs		Outputs	
S	R	Q	$\overline{Q}$
L	L	NC	NC
L	H	L	H
H	L	H	L
H	H	L	L

H = high level voltage
L = Low level voltage
NC = No change

For device type 02

J = J1•J2•J3
K = K1•K2•K3

For device type 03

J = J1•J2•$\overline{J3}$
K = K1•K2•$\overline{K3}$

FIGURE 3. Truth tables.

Device type 04

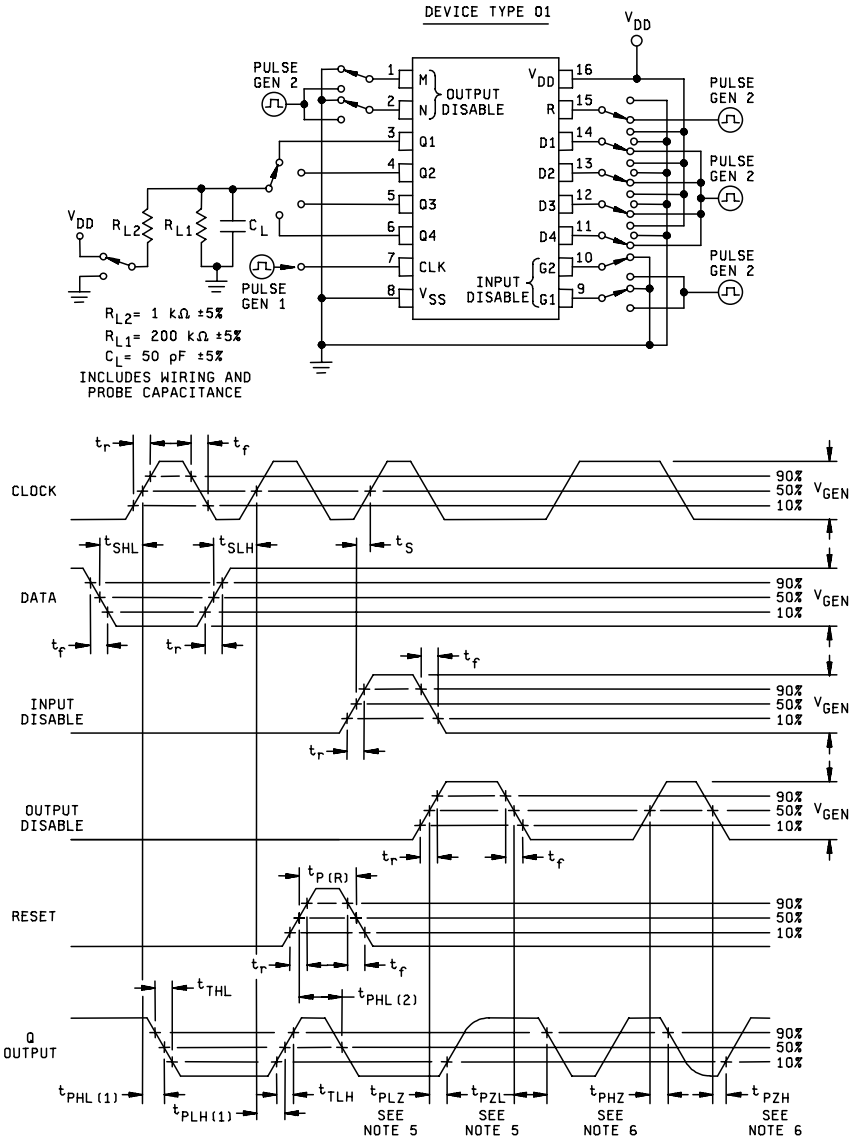
Truth table					
Inputs			Outputs		
+Trigger	-Trigger	RESET	Q	$\overline{Q}$	Rx-Cx
L	H	L	L	H	H
↑H	H	H	H	L	L
↓L	H	H	N/C	N/C	L
L	H	H	L	H	H
L	↓L	H	H	L	L
L	↑H	H	N/C	N/C	L

Device type 05

Truth table for 1 of 6 flip-flops			
Inputs			Output
CLOCK	Data	$\overline{\text{CLEAR}}$	Q
↑	L	H	L
↑	H	H	H
↓	X	H	N/C
X	X	L	L

H = High level voltage
L = Low level voltage
↑ = Low-to-high transition of the clock
↓ = High-to-low transition of the clock
X = Don't care
N/C = No change

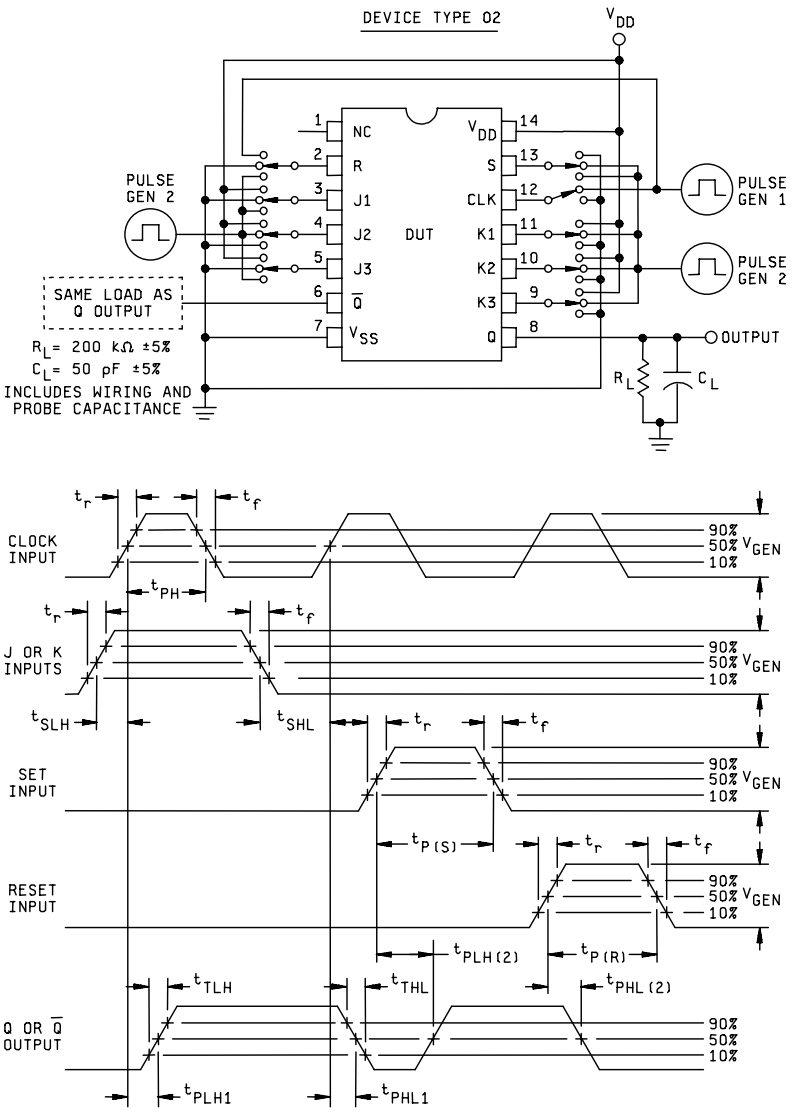
FIGURE 3. Truth tables – Continued.



NOTES:

1. Pulse generator number 1 has the following characteristics:
   $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns and PRR = 200 kHz.
2. Pulse generators number 2 have the following characteristics:
   $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns and PRR = 100 kHz.
3. Requirements for minimum clock frequency (f_{CL}), t_r, t_f, t_{SHL}, t_{SLH}, $t_{p(CL)}$, and $t_{p(R)}$ are established by setting the parameter to the limits given in table III and observing proper output state change.
4. Complete terminal conditions are as specified in table III.
5. For the t_{PLZ} and t_{PZL} measurements, the output is tied to V_{DD} through a 1 kΩ resistor.
6. For the t_{PHZ} and t_{PZH} measurements, the output is tied to V_{SS} through a 1 kΩ resistor.

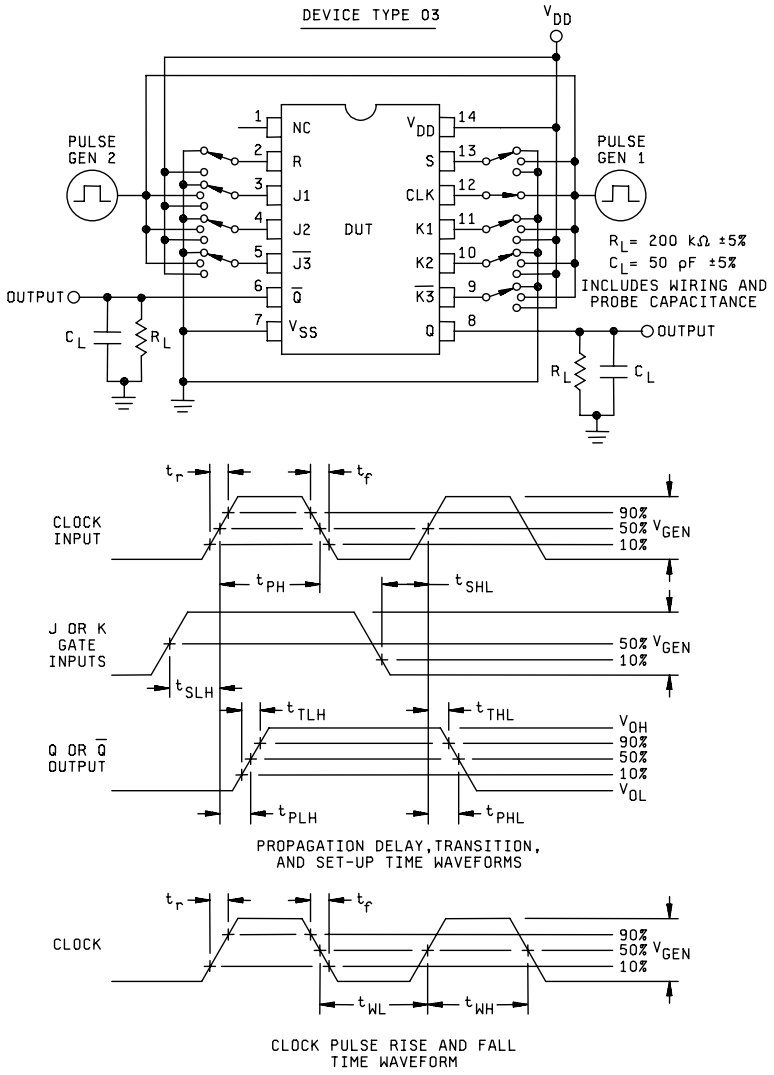
FIGURE 4. Switching waveforms and test circuit.



NOTES:

1. Pulse generator number 1 has the following characteristics:
   $V_{GEN} = V_{DD}$ ±1%, t_{PH} = 1.0 ±0.1 µs, t_r and t_f = 20 ±2 ns and PRR = 200 kHz.
2. Pulse generators number 2 have the following characteristics:
   $V_{GEN} = V_{DD}$ ±1%, t_{PH} = 1.0 ±0.1 µs, t_r and t_f = 20 ±2 ns and PRR = 100 kHz.
3. Requirements for minimum clock frequency (f_{CLK}), t_r, t_f, $t_{p(CLK)}$, $t_{p(R)}$, t_{SLH}, and t_{SHL} are established by setting the parameter to the limits given in table III and observing proper output state change.
4. Complete terminal conditions are as specified in table III.

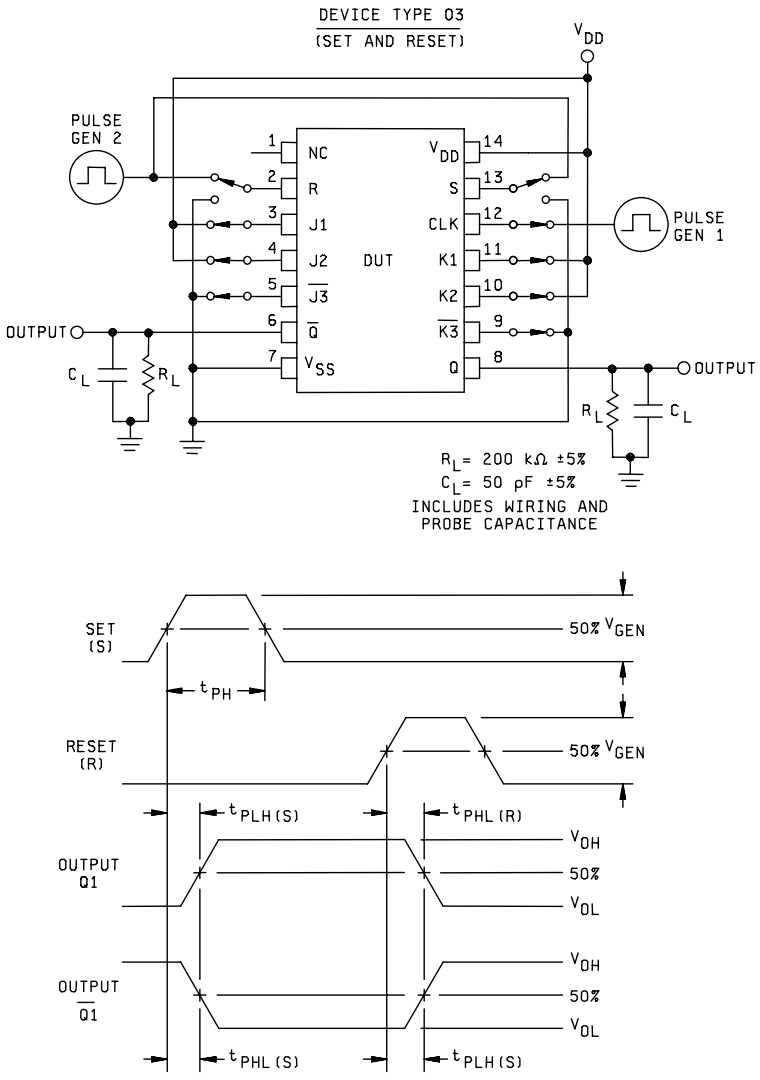
FIGURE 4. Switching waveforms and test circuit – Continued.



NOTES:

1. Pulse generator number 1 has the following characteristics:
   $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns, and PRR = 200 kHz.
2. Pulse generators number 2 have the following characteristics:
   $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns and PRR = 100 kHz.
3. Requirements for minimum clock frequency (f_{CLK}), t_r, t_f, $t_{p(CLK)}$, $t_{p(R)}$, t_{SLH}, and t_{SHL} are established by setting the parameter to the limits given in table III and observing proper output state change.
4. Complete terminal conditions are as specified in table III.

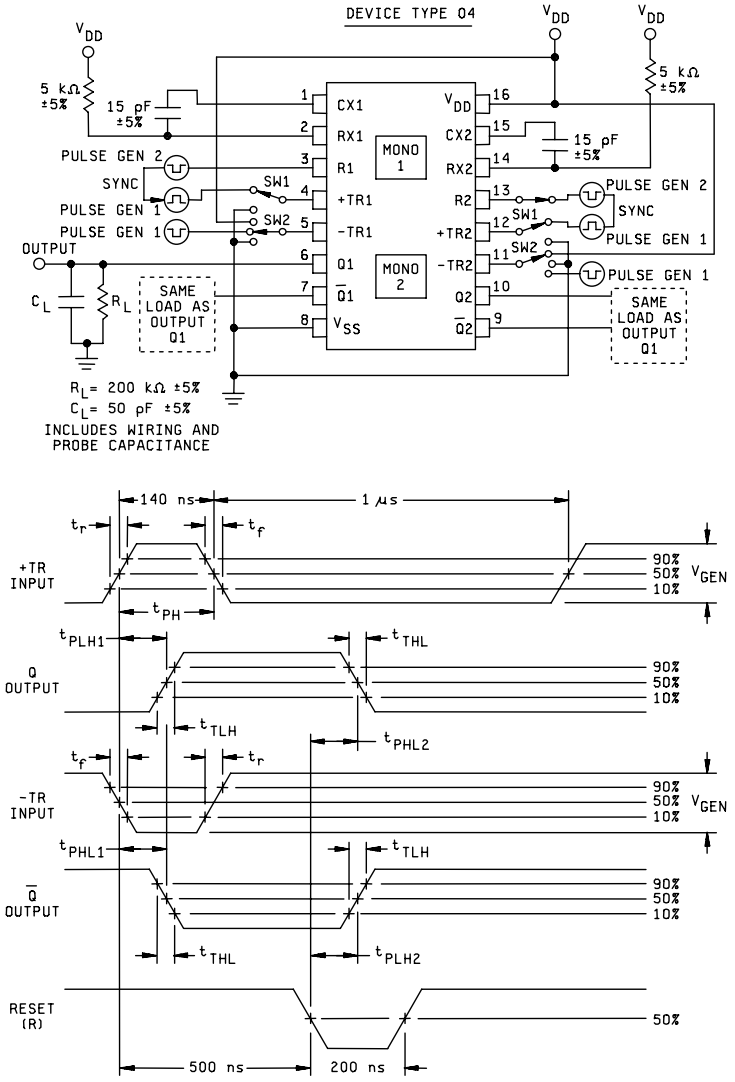
FIGURE 4. Switching waveforms and test circuit – Continued.



NOTES:

1. Pulse generator number 1 has the following characteristics:
   $V_{GEN} = V_{DD} \pm 1.0\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns and PRR = 200 kHz.
2. Pulse generators number 2 have the following characteristics:
   $V_{GEN} = V_{DD} \pm 1.0\%$, $t_{PH} = 1.0 \pm 0.1$ µs, t_r and $t_f = 20 \pm 2$ ns and delayed 2.0 µs after pulse generator number 1.
3. Complete terminal conditions are as specified in table III.

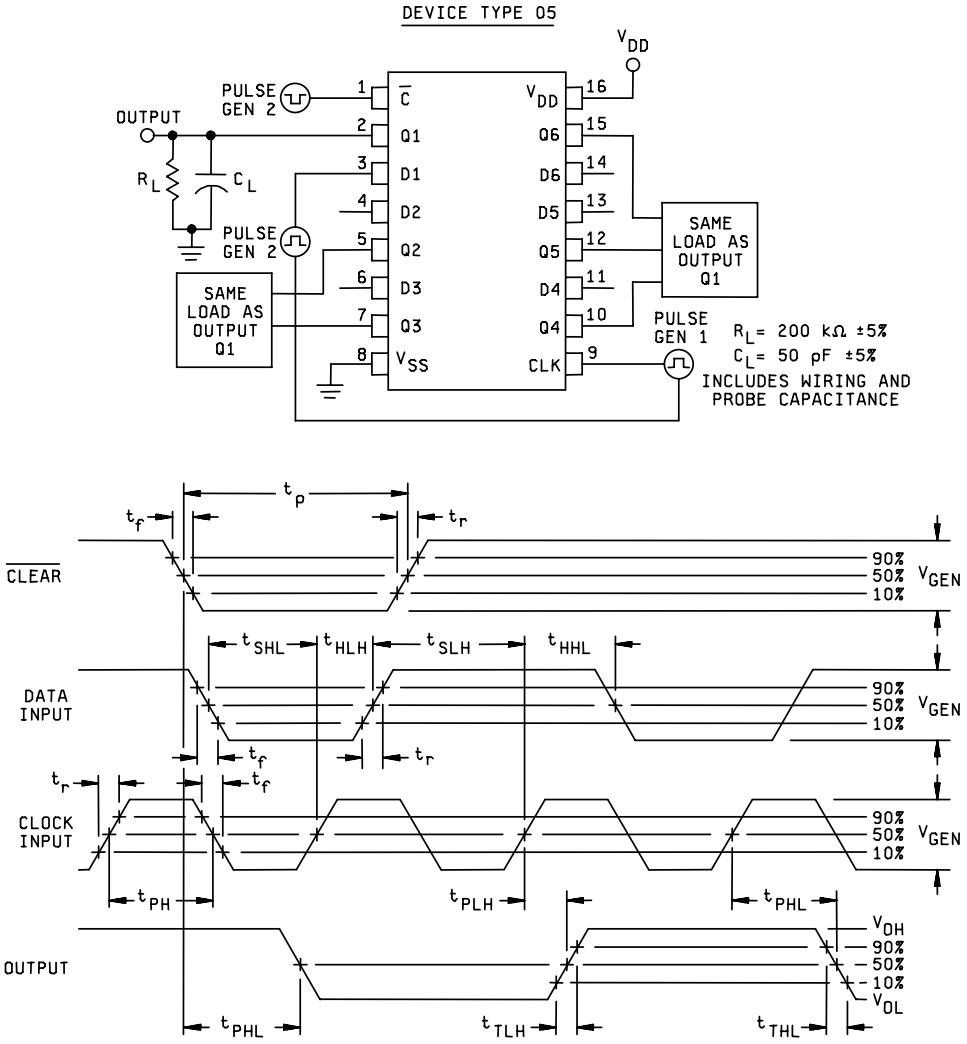
FIGURE 4. Switching waveforms and test circuit – Continued.



NOTES:

1. Pulse generator number 1 has the following characteristics: $V_{GEN} = V_{DD} \pm 1.0\%$, t_{pH} as specified in +TR and –TR waveforms, t_r and $t_f = 20 \pm 2$ ns and PRR = 877 kHz.
2. Pulse generator number 2 has the following characteristics: $V_{GEN} = V_{DD} \pm 1.0\%$, t_r and $t_f = 20 \pm 2$ ns and PRR = 877 kHz.
3. Identical switching measurements are obtained from mono 1 and mono 2.
4. Complete terminal conditions are as specified in table III.

FIGURE 4. Switching waveforms and test circuit – Continued.



NOTES:

1. Pulse generator number 1 has the following characteristics:
   $V_{GEN} = V_{DD}$ ±1%, t_{PH} = 1.0 ±0.1 µs, t_r and t_f = 20 ±2 ns, and PRR = 200 kHz.
2. Pulse generators number 2 have the following characteristics:
   $V_{GEN} = V_{DD}$ ±1%, t_{PH} = 1.0 ±0.1 µs, t_r and t_f = 20 ±2 ns, and PRR = 100 kHz.
3. Requirements for minimum clock frequency (f_{CLK}), t_r, t_f, $t_{p(CLK)}$, $t_{p(CLR)}$, t_{SLH}, t_{SHL}, t_{HHL}, and t_{HLH} are established by setting the parameter to the limits given in table III and observing proper output state change.
4. Identical switching measurements are obtained from flip flop 1 thru 6.
5. Complete terminal conditions are as specified in table III.

FIGURE 4. Switching waveforms and test circuit – Continued.

TABLE II. Electrical test requirements.

Line no.	MIL-PRF-38535 test requirements	Class S device 1/			Class B device 1/		
		Ref. par.	Table III Subgroups 2/	Table IV delta limits 3/	Ref. par.	Table III subgroups 2/	Table IV delta limits 3/
1	Interim electrical parameters		1			1	
2	Static burn-in I (method 1015)	4.2c 4.5.2					
3	Same as line 1		1	Δ			
4	Static burn-in II (method 1015)	4.2c 4.5.2			4.2c 4.5.2	4/	
5	Same as line 1	4.2e	1*	Δ	4.2e	1*	Δ
6	Dynamic burn-in (method 1015)	4.2c 4.5.2					
7	Same as line 1	4.2e	1*	Δ			
8	Final electrical parameters (method 5004)		1*, 2, 3, 7, 9			1*, 2, 3, 7, 9, 10, 11	
9	Group A test requirements (method 5005)	4.4.1	1, 2, 3, 4, 7, 8, 9, 10, 11, 12		4.4.1	1, 2, 3, 4, 7, 9	
10	Group B test when using method 5005 QCI option	4.4.2	1, 2, 3, 9, 10, 11	Δ			
11	Group C end-point electrical parameters (method 5005)				4.4.3	1, 2, 3	Δ
12	Group D end-point electrical parameters (method 5005)	4.4.4	1, 2, 3		4.4.4	1, 2, 3	

1/ Blank spaces indicate tests are not applicable.

2/ * indicates PDA applies to subgroup 1 (see 4.2.1).

3/ Δ indicates delta limits shall be required only on table III subgroup 1, where specified, and the delta values shall be computed with reference to the previous interim electrical parameters.

4/ The device manufacturer may at his option either perform delta measurements or within 24 hours after burn-in (or removal of bias) perform the final electrical parameter measurements.

4.2.1 Percent defective allowable (PDA).

a. The PDA for class S devices shall be 5 percent for static burn-in and 5 percent for dynamic burn-in, based on the exact number of devices submitted to each separate burn-in.

b. Static burn-in I and II failure shall be cumulative for determining the PDA.

c. The PDA for class B devices shall be in accordance with MIL-PRF-38535 for static burn-in. Dynamic burn-in is not required.

d. Those devices whose measured characteristics, after burn-in, exceed the specified delta (Δ) limits or electrical parameter limits specified in table III, subgroup 1, are defective and shall be removed from the lot. The verified failures divided by the total number of devices in the lot initially submitted to burn-in shall be used to determine the percent defective for the lot and the lot shall be accepted or rejected based on the specified PDA.

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, D, and E inspections (see 4.4.1 through 4.4.5).

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 performed in accordance with table II herein.

b. Subgroups 5 and 6 shall be omitted.

c. Subgroup 4 (C_I measurement) shall be measured only for initial qualification and after process or design changes that may affect input capacitance. Capacitance shall be measured between the designated terminal and V_{SS} at a frequency of 1 MHz.

d. Subgroup 12 shall be added to group A inspection requirements for class S devices using sample size series of 15 (acceptance 0) and consist of the procedures, test conditions, and limits specified in table III.

e. Subgroups 9 and 11 shall be measured only for initial qualification and after process or design changes which may affect dynamic performance.

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. Delta limits shall apply only to subgroup 1 of group C inspection and shall consist of tests specified in table IV 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.

TABLE III. Group A inspection for device type 01.

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1	1 mA															GND	M		1.5					Vdc
"		2		1 mA														"	N		"					"
"		3							1 mA									"	CLK		"					"
"		4									1 mA							"	G1		"					"
"		5										1 mA						"	G2		"					"
"		6											1 mA					"	D4		"					"
"		7												1 mA				"	D3		"					"
"		8													1 mA			"	D2		"					"
"		9														1 mA		"	D1		"					"
"		10															1 mA	"	R		"					"
V_{IC} (neg)		11	-1 mA							GND									M		-6.0					"
"		12		-1 mA						"									N		"					"
"		13							-1 mA	"									CLK		"					"
"		14								"	-1 mA								G1		"					"
"		15								"		-1 mA							G2		"					"
"		16								"			-1 mA						D4		"					"
"		17								"				-1 mA					D3		"					"
"		18								"					-1 mA				D2		"					"
"		19								"						-1 mA			D1		"					"
"		20								"							-1 mA		R		"					"
V_{OH1}	3006	21	GND	GND					13/	"	GND	GND	15.0V	15.0V	15.0V	15.0V	GND	15.0V	Q1	14.95		14.95		14.95		"
"	"	22	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"	"	23	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"	"	24	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
V_{OL1}	3007	25	"	"					GND	"	"	"	GND	GND	GND	GND	15.0V	"	Q1		0.05		0.05		0.05	"
"	"	26	"	"					"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"	"	27	"	"					"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"	"	28	"	"					"	"	"	"	"	"	"	"	"	"	Q4		"		"		"	"
I_{SS} 2/	3005	29	"	"					"	"	"	"	"	"	"	"	18.0V	18.0V	V_{SS}		-0.25		-2.25			µA
"	"	30	"	"					"	"	"	"	18.0V	18.0V	18.0V	18.0V	GND	"	"		"		"			"
"	"	31	"	"					18.0V	"	"	"	"	"	"	"	GND	"	"		"		"			"
"	"	32	18.0V	18.0V					"	"	18.0V	18.0V	"	"	"	"	GND	"	"		"		"			"
"	"	33	18.0V	18.0V					"	"	"	"	"	"	"	"	18.0V	"	"		"		"			"
I_{OC11}		34	GND	18.0V	18.0V	18.0V	18.0V	18.0V	"	"	"	"	"	"	"	"	"	"	All outputs together		100					nA
I_{OC21}		35	18.0V	GND	GND	GND	GND	GND	"	"	"	"	"	"	"	"	"	"	All outputs together		-100					"

See footnotes at end of table.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
			M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
I_{OC12}		36	GND	18.0V	18.0V				18.0V	GND	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	Q1		25		90		25	nA
"		37	"	"		18.0V			"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		38	"	"			18.0V		"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		39	"	"				18.0V	"	"	"	"	"	"	"	"	"	"	Q4		"		"		"	"
I_{OC22}		40	18.0V	GND	GND				"	"	"	"	"	"	"	"	"	"	Q1		-25		-90		-25	"
"		41	"	"		GND			"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		42	"	"			GND		"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		43	"	"				GND	"	"	"	"	"	"	"	"	"	"	Q4		"		"		"	"
V_{IH1}		44	1.5V	1.5V					14/	"	1.5V	1.5V	3.5V	1.5V	1.5V	1.5V	1.5V	5.0V	Q4	4.5		4.5		4.5		Vdc
"		45	"	"					"	"	"	"	"	3.5V	1.5V	1.5V	"	"	Q3	"		"		"		"
"		46	"	"					"	"	"	"	"	"	3.5V	1.5V	"	"	Q2	"		"		"		"
"		47	"	"					"	"	"	"	"	"	"	3.5V	"	"	Q1	"		"		"		"
"		48	"	"					"	"	3.5V	"	1.5V	"	"	"	"	"	Q4	"		"		"		"
"		49	"	"					"	"	"	"	"	1.5V	"	"	"	"	Q3	"		"		"		"
"		50	"	"					"	"	"	"	"	"	1.5V	"	"	"	Q2	"		"		"		"
"		51	"	"					"	"	"	"	"	"	"	1.5V	"	"	Q1	"		"		"		"
"		52	"	"					"	"	1.5V	3.5V	"	"	"	"	"	"	Q4	"		"		"		"
"		53	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		54	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		55	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		56	"	"					"	"	"	1.5V	3.5V	3.5V	3.5V	3.5V	3.5V	"	Q4		0.5		0.5		0.5	"
"		57	"	"					"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		58	"	"					"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		59	"	"					"	"	"	"	"	"	"	"	"	"	Q1		"		"		"	"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1		Subgroup 2		Subgroup 3		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}		T_A = 25°C		T_A = 125°C		T_A = -55°C		
		Test no.																		Min	Max	Min	Max	Min	Max	
V_{IL1}		60	1.5V	1.5V					14/	GND	1.5V	1.5V	3.5V	3.5V	3.5V	3.5V	1.5V	5.0V	Q4	4.5		4.5		4.5		Vdc
"		61	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		62	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		63	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		64	"	"					"	"	"	"	1.5V	"	"	"	"	"	Q4		0.5		0.5		0.5	"
"		65	"	"					"	"	"	"	"	1.5V	"	"	"	"	Q3		"		"		"	"
"		66	"	"					"	"	"	"	"	1.5V	1.5V	"	"	"	Q2		"		"		"	"
"		67	"	"					"	"	"	"	"	1.5V	1.5V	1.5V	"	"	Q1		"		"		"	"
"		68	"	"					"	"	"	"	3.5V	3.5V	3.5V	3.5V	"	"	Q4	4.5		4.5		4.5		"
"		69	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		70	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		71	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		72	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
"		73	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		74	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		75	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		76	"	"					"	"	"	"	1.5V	"	"	"	"	"	Q4		0.5		0.5		0.5	"
"		77	"	"					"	"	"	"	3.5V	1.5V	"	"	"	"	Q3		"		"		"	"
"		78	"	"					"	"	"	"	3.5V	3.5V	1.5V	"	"	"	Q2		"		"		"	"
"		79	"	"					"	"	"	"	3.5V	3.5V	3.5V	1.5V	"	"	Q1		"		"		"	"
V_{IH2}		80	3.0V	3.0V					15/	"	3.0V	3.0V	7.0V	3.0V	3.0V	3.0V	3.0V	10.0V	Q4	9.0		9.0		9.0		"
"		81	"	"					"	"	"	"	"	7.0V	3.0V	3.0V	"	"	Q3	"		"		"		"
"		82	"	"					"	"	"	"	"	"	7.0V	3.0V	"	"	Q2	"		"		"		"
"		83	"	"					"	"	"	"	"	"	"	7.0V	"	"	Q1	"		"		"		"
"		84	"	"					"	"	7.0V	"	3.0V	"	"	"	"	"	Q4	"		"		"		"
"		85	"	"					"	"	"	"	"	3.0V	"	"	"	"	Q3	"		"		"		"
"		86	"	"					"	"	"	"	"	"	3.0V	"	"	"	Q2	"		"		"		"
"		87	"	"					"	"	"	"	"	"	"	3.0V	"	"	Q1	"		"		"		"
"		88	"	"					"	"	3.0V	7.0V	"	"	"	"	"	"	Q4	"		"		"		"
"		89	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		90	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		91	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		92	"	"					"	"	"	3.0V	7.0V	7.0V	7.0V	7.0V	7.0V	"	Q4		1.0		1.0		1.0	"
"		93	"	"					"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		94	"	"					"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		95	"	"					"	"	"	"	"	"	"	"	"	"	Q1		"		"		"	"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
			M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
V_{IL2}		96	3.0V	3.0V					15/	GND	3.0V	3.0V	3.0V	7.0V	7.0V	7.0V	3.0V	10.0V	Q4		1.0		1.0		1.0	Vdc
"		97	"	"					"	"	"	"	"	3.0V	"	"	"	"	Q3		"		"		"	"
"		98	"	"					"	"	"	"	"	"	3.0V	"	"	"	Q2		"		"		"	"
"		99	"	"					"	"	"	"	"	"	"	3.0V	"	"	Q1		"		"		"	"
"		100	"	"					"	"	"	"	7.0V	"	"	"	"	"	Q4	9.0		9.0		9.0		"
"		101	"	"					"	"	"	"	"	7.0V	"	"	"	"	Q3	"		"		"		"
"		102	"	"					"	"	"	"	"	"	7.0V	"	"	"	Q2	"		"		"		"
"		103	"	"					"	"	"	"	"	"	"	7.0V	"	"	Q1	"		"		"		"
"		104	"	"					"	"	"	"	3.0V	"	"	"	"	"	Q4		1.0		1.0		1.0	"
"		105	"	"					"	"	"	"	"	3.0V	"	"	"	"	Q3		"		"		"	"
"		106	"	"					"	"	"	"	"	3.0V	3.0V	"	"	"	Q2		"		"		"	"
"		107	"	"					"	"	"	"	"	3.0V	3.0V	3.0V	"	"	Q1		"		"		"	"
"		108	"	"					"	"	"	"	7.0V	7.0V	7.0V	7.0V	"	"	Q4	9.0		9.0		9.0		"
"		109	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		110	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		111	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		112	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
"		113	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		114	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		115	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		116	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
"		117	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		118	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		119	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
			M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
V_{IH3}		120	4.0V	4.0V					16/	GND	4.0V	4.0V	11.0V	4.0V	4.0V	4.0V	4.0V	15.0V	Q4	13.5		13.5		13.5		Vdc
"		121	"	"					"	"	"	"	"	11.0V	4.0V	4.0V	"	"	Q3	"		"		"		"
"		122	"	"					"	"	"	"	"	"	11.0V	4.0V	"	"	Q2	"		"		"		"
"		123	"	"					"	"	"	"	"	"	"	11.0V	"	"	Q1	"		"		"		"
"		124	"	"					"	"	11.0V	"	4.0V	"	"	"	"	"	Q4	"		"		"		"
"		125	"	"					"	"	"	"	"	4.0V	"	"	"	"	Q3	"		"		"		"
"		126	"	"					"	"	"	"	"	"	4.0V	"	"	"	Q2	"		"		"		"
"		127	"	"					"	"	"	"	"	"	"	4.0V	"	"	Q1	"		"		"		"
"		128	"	"					"	"	4.0V	11.0V	"	"	"	"	"	"	Q4	"		"		"		"
"		129	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		130	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		131	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		132	"	"					"	"	"	4.0V	11.0V	11.0V	11.0V	11.0V	11.0V	"	Q4		1.5		1.5		1.5	"
"		133	"	"					"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		134	"	"					"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		135	"	"					"	"	"	"	"	"	"	"	"	"	Q1		"		"		"	"
V_{IL3}		136	"	"					"	"	"	"	4.0V	4.0V	4.0V	4.0V	4.0V	"	Q4		"		"		"	"
"		137	"	"					"	"	"	"	"	"	"	"	"	"	Q3		"		"		"	"
"		138	"	"					"	"	"	"	"	"	"	"	"	"	Q2		"		"		"	"
"		139	"	"					"	"	"	"	"	"	"	"	"	"	Q1		"		"		"	"
"		140	"	"					"	"	"	"	11.0V	"	"	"	"	"	Q4	13.5		13.5		13.5		"
"		141	"	"					"	"	"	"	"	11.0V	"	"	"	"	Q3	"		"		"		"
"		142	"	"					"	"	"	"	"	"	11.0V	"	"	"	Q2	"		"		"		"
"		143	"	"					"	"	"	"	"	"	"	11.0V	"	"	Q1	"		"		"		"
"		144	"	"					"	"	"	"	4.0V	"	"	"	"	"	Q4		1.5		1.5		1.5	"
"		145	"	"					"	"	"	"	"	4.0V	"	"	"	"	Q3		"		"		"	"
"		146	"	"					"	"	"	"	"	4.0V	4.0V	"	"	"	Q2		"		"		"	"
"		147	"	"					"	"	"	"	"	4.0V	4.0V	4.0V	"	"	Q1		"		"		"	"
"		148	"	"					"	"	"	"	11.0V	11.0V	11.0V	11.0V	"	"	Q4	13.5		13.5		13.5		"
"		149	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		150	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		151	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		152	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
"		153	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		154	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		155	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"
"		156	"	"					"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
"		157	"	"					"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		158	"	"					"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		159	"	"					"	"	"	"	"	"	"	"	"	"	Q1	"		"		"		"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
			M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
I_{IH1} 3/	3010	160	18.0V	18.0V					18.0V	GND	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	All outputs together		10					nA
I_{IH2}	"	161	18.0V	GND					GND	"	GND	GND	GND	GND	GND	GND	GND	"	M		1		45			"
"	"	162	GND	18.0V					GND	"	GND	"	"	"	"	"	"	"	N		"		"			"
"	"	163	"	GND					18.0V	"	GND	"	"	"	"	"	"	"	CLK		"		"			"
"	"	164	"	"					GND	"	18.0V	"	"	"	"	"	"	"	G1		"		"			"
"	"	165	"	"					"	"	GND	18.0V	"	"	"	"	"	"	G2		"		"			"
"	"	166	"	"					"	"	"	GND	18.0V	"	"	"	"	"	D4		"		"			"
"	"	167	"	"					"	"	"	"	GND	18.0V	"	"	"	"	D3		"		"			"
"	"	168	"	"					"	"	"	"	"	GND	18.0V	"	"	"	D2		"		"			"
"	"	169	"	"					"	"	"	"	"	"	GND	18.0V	"	"	D1		"		"			"
"	"	170	"	"					"	"	"	"	"	"	GND	GND	18.0V	"	R		"		"			"
I_{IL1} 3/	3009	171	"	"					"	"	"	"	"	"	GND	GND	GND	"	All outputs together		-10					"
I_{IL2}	"	172	"	18.0V					18.0V	"	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	"	M		-1		-45			"
"	"	173	18.0V	GND					18.0V	"	18.0V	"	"	"	"	"	"	"	N		"		"			"
"	"	174	"	18.0V					GND	"	18.0V	"	"	"	"	"	"	"	CLK		"		"			"
"	"	175	"	"					18.0V	"	GND	"	"	"	"	"	"	"	G1		"		"			"
"	"	176	"	"					"	"	18.0V	GND	"	"	"	"	"	"	G2		"		"			"
"	"	177	"	"					"	"	"	18.0V	GND	"	"	"	"	"	D4		"		"			"
"	"	178	"	"					"	"	"	"	18.0V	GND	"	"	"	"	D3		"		"			"
"	"	179	"	"					"	"	"	"	"	18.0V	GND	"	"	"	D2		"		"			"
"	"	180	"	"					"	"	"	"	"	18.0V	18.0V	GND	"	"	D1		"		"			"
"	"	181	"	"					"	"	"	"	"	18.0V	18.0V	18.0V	GND	"	R		"		"			"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test circuit						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
I_{OL1}		182	GND	GND	0.4V				GND	GND	GND	GND	GND	GND	GND	GND	5.0V	5.0V	Q1	0.51		0.36		0.64		mA
"		183	"	"		0.4V			"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		184	"	"			0.4V		"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		185	"	"				0.4V	"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
I_{OL2}		186	"	"	1.5V				"	"	"	"	"	"	"	"	15.0V	15.0V	Q1	3.4		2.4		4.2		"
"		187	"	"		1.5V			"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		188	"	"			1.5V		"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		189	"	"				1.5V	"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
I_{OH1}		190	"	"	4.6V				17/	"	"	"	5.0V	5.0V	5.0V	5.0V	GND	5.0V	Q1	-0.51		-0.36		-0.64		"
"		191	"	"		4.6V			"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		192	"	"			4.6V		"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		193	"	"				4.6V	"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
I_{OH2}		194	"	"	13.5V				13/	"	"	"	15.0V	15.0V	15.0V	15.0V	"	15.0V	Q1	-3.4		-2.4		-4.2		"
"		195	"	"		13.5V			"	"	"	"	"	"	"	"	"	"	Q2	"		"		"		"
"		196	"	"			13.5V		"	"	"	"	"	"	"	"	"	"	Q3	"		"		"		"
"		197	"	"				13.5V	"	"	"	"	"	"	"	"	"	"	Q4	"		"		"		"
																				Subgroup 4 T_A = 25°C						
																				Min	Max					
C_i	3012	198	6/							GND								GND	M		15.0					pF
"	"	199		6/						"								"	N		"					"
"	"	200							6/	"								"	CLK		"					"
"	"	201								"	6/							"	G1		"					"
"	"	202								"		6/						"	G2		"					"
"	"	203								"			6/					"	D4		7.5					"
"	"	204								"				6/				"	D3		"					"
"	"	205								"					6/			"	D2		"					"
"	"	206								"						6/		"	D1		"					"
"	"	207								"							6/	"	R		15.0					"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 7 T_A = 25°C		Subgroup 8				
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	T_A = 125°C		T_A = -55°C		
																						Min	Max	Min	Max	
Truth table test	3014	208	GND	GND	L	L	L	L	GND	GND	GND	GND	5.0V	5.0V	5.0V	5.0V	5.0V	5.0V	All outputs	See 4/ 5/						
“	“	209	“	“	L	L	L	L	GND	“	GND	“	5.0V	5.0V	5.0V	5.0V	GND	“	“							
“	“	210	“	“	H	H	H	H	5.0V	“	GND	“	5.0V	5.0V	5.0V	5.0V	“	“	“							
“	“	211	“	“	“	“	“	“	GND	“	5.0V	“	GND	GND	GND	GND	“	“	“							
“	“	212	“	“	“	“	“	“	5.0V	“	5.0V	“	“	“	“	“	“	“	“							
“	“	213	“	“	“	“	“	“	GND	“	GND	5.0V	“	“	“	“	“	“	“							
“	“	214	“	“	“	“	“	“	5.0V	“	GND	“	“	“	“	“	“	“	“							
“	“	215	“	“	“	“	“	“	GND	“	5.0V	“	“	“	“	“	“	“	“							
“	“	216	“	“	“	“	“	“	5.0V	“	5.0V	“	“	“	“	“	“	“	“							
“	“	217	“	“	“	“	“	“	GND	“	GND	GND	“	“	“	“	“	“	“							
“	“	218	“	“	L	L	L	L	5.0V	“	“	“	“	“	“	“	“	“	“							
“	“	219	“	“	“	“	“	“	GND	“	“	“	“	“	“	“	“	“	“							
“	“	220	“	“	“	“	“	“	GND	“	“	“	5.0V	5.0V	5.0V	5.0V	5.0V	“	“							
“	“	221	“	“	“	“	“	“	5.0V	“	“	“	“	“	“	“	5.0V	“	“							
“	“	222	“	“	“	“	“	“	GND	“	5.0V	5.0V	“	“	“	“	GND	“	“							
“	“	223	“	“	“	“	“	“	5.0V	“	5.0V	5.0V	“	“	“	“	“	“	“							
“	“	224	“	“	“	“	“	“	GND	“	GND	GND	“	“	“	“	“	“	“							
“	“	225	“	“	H	H	H	H	5.0V	“	“	“	“	“	“	“	“	“	“							
“	“	226	“	“	L	L	L	L	GND	“	“	“	“	“	“	“	5.0V	“	“							
“	“	227	“	“	“	L	“	L	GND	“	“	“	“	GND	“	GND	GND	“	“							
“	“	228	“	“	“	H	“	H	5.0V	“	“	“	“	GND	“	GND	“	“	“							
“	“	229	“	“	“	H	“	H	GND	“	“	“	GND	5.0V	GND	5.0V	“	“	“							
“	“	230	“	“	H	L	H	L	5.0V	“	“	“	GND	5.0V	GND	5.0V	“	“	“							

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003	231	GND	GND	OUT				IN1	GND	GND	GND	GND	GND	GND	IN2	GND	5.0V	CLK to Q1	30	600	42	840	30	600	ns
"	Fig. 4	232	"	"		OUT			"	"	"	"	GND	GND	IN2	GND	"	"	CLK to Q2	"	"	"	"	"	"	"
"	"	233	"	"			OUT		"	"	"	"	GND	IN2	GND	GND	"	"	CLK to Q3	"	"	"	"	"	"	"
"	"	234	"	"				OUT	"	"	"	"	IN2	GND	GND	GND	"	"	CLK to Q4	"	"	"	"	"	"	"
t_{PLH1}	"	235	"	"	OUT				"	"	"	"	GND	GND	GND	IN2	"	"	CLK to Q1	"	"	"	"	"	"	"
"	"	236	"	"		OUT			"	"	"	"	GND	GND	IN2	GND	"	"	CLK to Q2	"	"	"	"	"	"	"
"	"	237	"	"			OUT		"	"	"	"	GND	IN2	GND	GND	"	"	CLK to Q3	"	"	"	"	"	"	"
"	"	238	"	"				OUT	"	"	"	"	IN2	GND	GND	GND	"	"	CLK to Q4	"	"	"	"	"	"	"
t_{PHL2}	"	239	"	"	OUT				"	"	"	"	5.0V	5.0V	5.0V	5.0V	IN2	"	R to Q1	23	460	33	645	23	460	"
"	"	240	"	"		OUT			"	"	"	"	"	"	"	"	"	"	R to Q2	"	"	"	"	"	"	"
"	"	241	"	"			OUT		"	"	"	"	"	"	"	"	"	"	R to Q3	"	"	"	"	"	"	"
"	"	242	"	"				OUT	"	"	"	"	"	"	"	"	"	"	R to Q4	"	"	"	"	"	"	"
t_{THL}	3004	243	"	"	OUT				"	"	"	"	"	"	"	IN2	GND	"	Q1	10	200	14	280	10	200	µs
"	Fig. 4	244	"	"		OUT			"	"	"	"	"	"	IN2	5.0V	"	"	Q2	"	"	"	"	"	"	"
"	"	245	"	"			OUT		"	"	"	"	"	IN2	5.0V	5.0V	"	"	Q3	"	"	"	"	"	"	"
"	"	246	"	"				OUT	"	"	"	"	IN2	5.0V	5.0V	5.0V	"	"	Q4	"	"	"	"	"	"	"
t_{TLH}	"	247	"	"	OUT				"	"	"	"	5.0V	5.0V	5.0V	IN2	"	"	Q1	"	"	"	"	"	"	"
"	"	248	"	"		OUT			"	"	"	"	5.0V	5.0V	IN2	5.0V	"	"	Q2	"	"	"	"	"	"	"
"	"	249	"	"			OUT		"	"	"	"	5.0V	IN2	5.0V	"	"	"	Q3	"	"	"	"	"	"	"
"	"	250	"	"				OUT	"	"	"	"	IN2	5.0V	"	"	"	"	Q4	"	"	"	"	"	"	"
t_{PHZ}	Fig. 4	251	IN2	"	OUT				"	"	"	"	5.0V	"	"	"	"	"	M to Q1	15	300	21	420	15	300	ns
7/	"	252	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"	"	"	"	"	"
"	"	253	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"	"	"	"	"	"
"	"	254	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"	"	"	"	"	"
"	"	255	GND	IN2	OUT				"	"	"	"	"	"	"	"	"	"	N to Q1	"	"	"	"	"	"	"
"	"	256	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"	"	"	"	"	"
"	"	257	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"	"	"	"	"	"
"	"	258	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"	"	"	"	"	"
t_{PLZ}	"	259	IN2	GND	OUT				"	"	"	"	GND	GND	GND	GND	"	"	M to Q1	"	"	"	"	"	"	"
8/	"	260	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"	"	"	"	"	"
"	"	261	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"	"	"	"	"	"
"	"	262	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"	"	"	"	"	"
"	"	263	GND	IN2	OUT				"	"	"	"	"	"	"	"	"	"	N to Q1	"	"	"	"	"	"	"
"	"	264	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"	"	"	"	"	"
"	"	265	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"	"	"	"	"	"
"	"	266	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"	"	"	"	"	"
t_{PZH}	"	267	IN2	GND	OUT				"	"	"	"	5.0V	5.0V	5.0V	5.0V	"	"	M to Q1	"	"	"	"	"	"	"
7/	"	268	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"	"	"	"	"	"
"	"	269	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"	"	"	"	"	"
"	"	270	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"	"	"	"	"	"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max	Min	Max	Min	Max	
t_{PZL}	Fig. 4	271	GND	IN2	OUT				IN1	GND	GND	GND	GND	GND	GND	GND	GND	5.0V	N to Q1	15	300	21	420	15	300	ns
8/	"	272	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"	"	"	"	"	"
"	"	273	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"	"	"	"	"	"
"	"	274	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"	"	"	"	"	"
t_r	"	275	"	GND	OUT				"	"	"	"	IN2	IN2	IN2	IN2	"	"	CLK to Q1		15		15		15	µs
(CLK)	"	276	"	"		OUT			"	"	"	"	"	"	"	"	"	"	CLK to Q2		"		"		"	"
11/	"	277	"	"			OUT		"	"	"	"	"	"	"	"	"	"	CLK to Q3		"		"		"	"
"	"	278	"	"				OUT	"	"	"	"	"	"	"	"	"	"	CLK to Q4		"		"		"	"
t_f	"	279	"	"	OUT				"	"	"	"	"	"	"	"	"	"	CLK to Q1		"		"		"	"
(CLK)	"	280	"	"		OUT			"	"	"	"	"	"	"	"	"	"	CLK to Q2		"		"		"	"
11/	"	281	"	"			OUT		"	"	"	"	"	"	"	"	"	"	CLK to Q3		"		"		"	"
"	"	282	"	"				OUT	"	"	"	"	"	"	"	"	"	"	CLK to Q4		"		"		"	"
$t_{P(R)}$	"	283	"	"	OUT				"	"	"	"	5.0V	5.0V	5.0V	5.0V	IN2	"	R to Q1		120		170		120	ns
10/	"	284	"	"		OUT			"	"	"	"	"	"	"	"	"	"	R to Q2		"		"		"	"
"	"	285	"	"			OUT		"	"	"	"	"	"	"	"	"	"	R to Q3		"		"		"	"
"	"	286	"	"				OUT	"	"	"	"	"	"	"	"	"	"	R to Q4		"		"		"	"
t_{SHL}	"	287	GND	GND	OUT				IN1	GND	GND	GND	5.0V	5.0V	5.0V	IN2	GND	5.0V	CLK to D1		200		280		200	ns
"	"	288	"	"		OUT			"	"	"	"	5.0V	5.0V	IN2	5.0V	"	"	CLK to D2		"		"		"	"
"	"	289	"	"			OUT		"	"	"	"	5.0V	IN2	5.0V	5.0V	"	"	CLK to D3		"		"		"	"
"	"	290	"	"				OUT	"	"	"	"	IN2	5.0V	5.0V	5.0V	"	"	CLK to D4		"		"		"	"
t_{SHL1}	"	291	"	"	OUT				"	"	"	"	5.0V	5.0V	5.0V	IN2	"	"	D1 to CLK		"		"		"	"
"	"	292	"	"		OUT			"	"	"	"	5.0V	5.0V	IN2	5.0V	"	"	D2 to CLK		"		"		"	"
"	"	293	"	"			OUT		"	"	"	"	5.0V	IN2	5.0V	"	"	"	D3 to CLK		"		"		"	"
"	"	294	"	"				OUT	"	"	"	"	IN2	5.0V	"	"	"	"	D4 to CLK		"		"		"	"
f_{CLK}	"	295	"	"	OUT				"	"	"	"	5.0V	"	"	"	"	"	CLK to Q1		670		1000		670	"
9/	"	296	"	"		OUT			"	"	"	"	"	"	"	"	"	"	CLK to Q2		"		"		"	"
"	"	297	"	"			OUT		"	"	"	"	"	"	"	"	"	"	CLK to Q3		"		"		"	"
"	"	298	"	"				OUT	"	"	"	"	"	"	"	"	"	"	CLK to Q4		"		"		"	"
t_p	"	299	"	"	OUT				"	"	"	"	"	"	"	"	"	"	CLK to Q1		200		280		200	"
(CLK)	"	300	"	"		OUT			"	"	"	"	"	"	"	"	"	"	CLK to Q2		"		"		"	"
10/	"	301	"	"			OUT		"	"	"	"	"	"	"	"	"	"	CLK to Q3		"		"		"	"
"	"	302	"	"				OUT	"	"	"	"	"	"	"	"	"	"	CLK to Q4		"		"		"	"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Unit
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 12 T_A = 25°C						
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}								
		Test no.																		Min	Max					
t_{PHL1}	3003	303	GND	GND	OUT				IN1	GND	GND	GND	GND	GND	GND	IN2	GND	10.0	CLK to Q1	13	250					ns
"	Fig. 4	304	"	"		OUT			"	"	"	"	GND	GND	IN2	GND	"	V	CLK to Q2	"	"					"
"	"	305	"	"			OUT		"	"	"	"	GND	IN2	GND	GND	"	"	CLK to Q3	"	"					"
"	"	306	"	"				OUT	"	"	"	"	IN2	GND	GND	GND	"	"	CLK to Q4	"	"					"
t_{PLH1}	"	307	"	"	OUT				"	"	"	"	GND	GND	GND	IN2	"	"	CLK to Q1	"	"					"
"	"	308	"	"		OUT			"	"	"	"	GND	GND	IN2	GND	"	"	CLK to Q2	"	"					"
"	"	309	"	"			OUT		"	"	"	"	GND	IN2	GND	GND	"	"	CLK to Q3	"	"					"
"	"	310	"	"				OUT	"	"	"	"	IN2	GND	GND	GND	"	"	CLK to Q4	"	"					"
t_{PHL2}	"	311	"	"	OUT				"	"	"	"	10.0V	10.0V	10.0V	10.0V	IN2	"	R to Q1	10	200					"
"	"	312	"	"		OUT			"	"	"	"	"	"	"	"	"	"	R to Q2	"	"					"
"	"	313	"	"			OUT		"	"	"	"	"	"	"	"	"	"	R to Q3	"	"					"
"	"	314	"	"				OUT	"	"	"	"	"	"	"	"	"	"	R to Q4	"	"					"
t_{THL}	3004	315	"	"	OUT				"	"	"	"	"	"	"	IN2	GND	"	Q1	5	100					"
"	Fig. 4	316	"	"		OUT			"	"	"	"	"	"	IN2	10.0V	"	"	Q2	"	"					"
"	"	317	"	"			OUT		"	"	"	"	"	IN2	10.0V	10.0V	"	"	Q3	"	"					"
"	"	318	"	"				OUT	"	"	"	"	IN2	10.0V	10.0V	10.0V	"	"	Q4	"	"					"
t_{TLH}	"	319	"	"	OUT				"	"	"	"	10.0V	10.0V	10.0V	IN2	"	"	Q1	"	"					"
"	"	320	"	"		OUT			"	"	"	"	10.0V	10.0V	IN2	10.0V	"	"	Q2	"	"					"
"	"	321	"	"			OUT		"	"	"	"	10.0V	IN2	10.0V	"	"	"	Q3	"	"					"
"	"	322	"	"				OUT	"	"	"	"	IN2	10.0V	10.0V	"	"	"	Q4	"	"					"
t_{PHZ}	Fig. 4	323	IN2	"	OUT				"	"	"	"	10.0V	"	"	"	"	"	M to Q1	8	150					"
7/	"	324	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"					"
"	"	325	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"					"
"	"	326	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"					"
"	"	327	GND	IN2	OUT				"	"	"	"	"	"	"	"	"	"	N to Q1	"	"					"
"	"	328	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"					"
"	"	329	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"					"
"	"	330	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"					"
t_{PLZ}	"	331	IN2	GND	OUT				"	"	"	"	GND	GND	GND	GND	"	"	M to Q1	"	"					"
8/	"	332	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"					"
"	"	333	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"					"
"	"	334	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"					"
"	"	335	GND	IN2	OUT				"	"	"	"	"	"	"	"	"	"	N to Q1	"	"					"
"	"	336	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"					"
"	"	337	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"					"
"	"	338	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"					"

See footnotes at end of device type 01.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits		Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Subgroup 12 T_A = 25°C		
		Symbol	M	N	Q1	Q2	Q3	Q4	CLK	V_{SS}	G1	G2	D4	D3	D2	D1	R	V_{DD}				
		Test no.																		Min	Max	
t_{PZH}	Fig. 4	339	IN2	GND	OUT				IN1	GND	GND	GND	10.0V	10.0V	10.0V	10.0V	GND	10.0V	M to Q1	8	150	ns
7/	"	340	"	"		OUT			"	"	"	"	"	"	"	"	"	"	M to Q2	"	"	"
"	"	341	"	"			OUT		"	"	"	"	"	"	"	"	"	"	M to Q3	"	"	"
"	"	342	"	"				OUT	"	"	"	"	"	"	"	"	"	"	M to Q4	"	"	"
t_{PZL}	"	343	GND	IN2	OUT				"	"	"	"	GND	GND	GND	GND	"	"	N to Q1	"	"	"
8/	"	344	"	"		OUT			"	"	"	"	"	"	"	"	"	"	N to Q2	"	"	"
"	"	345	"	"			OUT		"	"	"	"	"	"	"	"	"	"	N to Q3	"	"	"
"	"	346	"	"				OUT	"	"	"	"	"	"	"	"	"	"	N to Q4	"	"	"

1/ Pins not designated may be "high" level logic, "low" level logic or open. Exceptions are as follows: $V_{IC(pos)}$ tests, the V_{SS} terminals shall be open; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open, I_{SS} tests, the output terminals shall be open.
2/ The I_{SS} measurements shall be performed in sequence.
3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.
4/ The truth table tests shall be performed in sequence.
5/ The truth table tests shall be performed at V_{IH} and $V_{DD} \leq 5$ Vdc and ≥ 18 Vdc. "L" = V_{SS} + 0.5 V maximum and "H" = V_{DD} – 0.5 V minimum.
6/ See 4.4.1c.
7/ Pins 3, 4, 5, and 6 tied to V_{SS} through 1 kΩ resistors.
8/ Pins 3, 4, 5, and 6 tied to V_{DD} through 1 kΩ resistors.
9/ The minimum clock frequency (f_{CLK}) requirement is considered met if proper output state changes occur with the pulse repetition period set to that given in the limits column.
10/ The minimum clock or reset pulse width ($t_{p(CLK)}$, $t_{p(R)}$) requirement is considered met if proper output state changes occur with the pulse width set to that given in the limits column.
11/ Pulse repetition period = 100 μs, 50 percent duty cycle. The maximum clock rise or fall time ($t_{r(CLK)}$, $t_{f(CLK)}$) requirement is considered met if proper output state changes occur with the rise time set to that given in the limits column.
12/ 100 kΩ resistors shall be connected between pins 2 and 14 to GND.
13/ Apply clock pulse; V_{IN} = 0 to 15 Vdc.
14/ Apply clock pulse; V_{IN} = 1.5 to 3.5 Vdc.
15/ Apply clock pulse; V_{IN} = 3.0 to 7.0 Vdc.
16/ Apply clock pulse; V_{IN} = 4.0 to 11.0 Vdc.
17/ Apply clock pulse; V_{IN} = 0 to 5 Vdc.

TABLE III. Group A inspection for device type 02.

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	K3	K2	K1	CLK	S	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IC}		1		1 mA												GND	R		1.5					Vdc
(pos)		2			1 mA											"	J1		"					"
"		3				1 mA										"	J2		"					"
"		4					1 mA									"	J3		"					"
"		5									1 mA					"	K3		"					"
"		6										1 mA				"	K2		"					"
"		7											1 mA			"	K1		"					"
"		8												1 mA		"	CLK		"					"
"		9													1 mA	"	S		"					"
V_{IC}		10		-1 mA					GND								R		-6.0					"
(neg)		11			-1 mA				"								J1		"					"
"		12				-1 mA			"								J2		"					"
"		13					-1 mA		"								J3		"					"
"		14							"		-1 mA						K3		"					"
"		15							"			-1 mA					K2		"					"
"		16							"				-1 mA				K1		"					"
"		17							"					-1 mA			CLK		"					"
"		18							"						-1 mA		S		"					"
I_{SS}	3005	19		GND	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	GND	18.0V	18.0V	V_{SS}		-.075		-2.5			µA
2/	"	20		18.0V	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	GND	GND	"	"		"		"			"
"	"	21		GND	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	18.0V	"	"	"		"		"			"
"	"	22		"	GND	GND	GND		"		GND	GND	GND	GND	"	"	"		"		"			"
V_{OH1}	3006	23		"	15.0V	15.0V	15.0V		"		15.0V	15.0V	15.0V	10/	"	15.0V	Q	14.95		14.95		14.95		Vdc
V_{OL1}	3007	24		"	"	"	"		"		"	"	"	GND	"	"	$\overline{Q}$		0.05		0.05		0.05	"
V_{OL1}	"	25		"	"	"	"		"		"	"	"	10/	"	"	Q		0.05		0.05		0.05	"
V_{OH1}	3006	26		"	"	"	"		"		"	"	"	GND	"	"	$\overline{Q}$	14.95		14.95		14.95		"

See footnotes at end of device type 02.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	K3	K2	K1	CLK	S	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IL1}		27		12/	12/	12/	12/	12/	GND	12/	12/	12/	12/	12/	12/	12/	All outputs	12/	12/	12/	12/	12/	12/	Vdc
V_{IL2}		28		"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"
V_{IL3}		29		"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"
V_{IH1}		30		"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"
V_{IH2}		31		"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"
V_{IH3}		32		"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"
I_{OH1}		33		GND	5.0V	5.0V	5.0V		"	4.6V	5.0V	5.0V	5.0V	11/	GND	5.0V	Q	-0.51		-0.36		-0.64		mA
I_{OH1}		34		"	"	"	"	4.6V	"		"	"	"	11/	"	"	Q	-0.51		-0.36		-0.64		"
I_{OL1}		35		"	"	"	"		"	0.4V	"	"	"	GND	"	"	Q	0.51		0.36		0.64		"
I_{OL1}		36		"	"	"	"	0.4V	"		"	"	"	11/	"	"	Q	0.51		0.36		0.64		"
I_{OH2}		37		"	15.0V	15.0V	15.0V		"	13.5V	15.0V	15.0V	15.0V	10/	"	15.0V	Q	-3.4		-2.4		-4.2		"
I_{OH2}		38		"	"	"	"	13.5V	"		"	"	"	10/	"	"	Q	-3.4		-2.4		-4.2		"
I_{OL2}		39		"	"	"	"		"	1.5V	"	"	"	GND	"	"	Q	3.4		2.4		4.2		"
I_{OL2}		40		"	"	"	"	1.5V	"		"	"	"	10/	"	"	Q	3.4		2.4		4.2		"
I_{IH1} 3/	3010	41		18.0V	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	All inputs together		9					nA
I_{IH2}	"	42		18.0V	GND	GND	GND		"		GND	GND	GND	GND	GND	"	R		1		45			"
"	"	43		GND	18.0V	GND	GND		"		"	"	"	"	"	"	J1		"		"			"
"	"	44		"	GND	18.0V	GND		"		"	"	"	"	"	"	J2		"		"			"
"	"	45		"	"	GND	18.0V		"		"	"	"	"	"	"	J3		"		"			"
"	"	46		"	"	"	GND		"		18.0V	"	"	"	"	"	K3		"		"			"
"	"	47		"	"	"	"		"		GND	18.0V	"	"	"	"	K2		"		"			"
"	"	48		"	"	"	"		"		"	GND	18.0V	"	"	"	K1		"		"			"
"	"	49		"	"	"	"		"		"	GND	GND	18.0V	"	"	CLK		"		"			"
"	"	50		"	"	"	"		"		"	GND	GND	GND	18.0V	"	S		"		"			"
I_{IL1} 3/	3009	51		GND	GND	GND	GND		GND		GND	GND	GND	GND	GND	18.0V	All inputs together		-9					nA
I_{IL2}	"	52		GND	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	18.0V	18.0V	"	R		-1		-45			"
"	"	53		18.0V	GND	18.0V	18.0V		"		"	"	"	"	"	"	J1		"		"			"
"	"	54		"	18.0V	GND	18.0V		"		"	"	"	"	"	"	J2		"		"			"
"	"	55		"	"	18.0V	GND		"		"	"	"	"	"	"	J3		"		"			"
"	"	56		"	"	"	18.0V		"		GND	"	"	"	"	"	K3		"		"			"
"	"	57		"	"	"	"		"		18.0V	GND	"	"	"	"	K2		"		"			"
"	"	58		"	"	"	"		"		"	18.0V	GND	"	"	"	K1		"		"			"
"	"	59		"	"	"	"		"		"	18.0V	18.0V	GND	"	"	CLK		"		"			"
"	"	60		"	"	"	"		"		"	18.0V	18.0V	18.0V	GND	"	S		"		"			"

See footnotes at end of device type 02.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
		Symbol	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 4 T_A = 25°C					
		Test No.	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	K3	K2	K1	CLK	S	V_{DD}		Min	Max				
C_i	3012	61		4/					GND							GND	R		7.5					pF
"	"	62			4/				"							"	J1		"					"
"	"	63				4/			"							"	J2		"					"
"	"	64					4/		"							"	J3		"					"
"	"	65							"		4/					"	K3		"					"
"	"	66							"			4/				"	K2		"					"
"	"	67							"				4/			"	K1		"					"
"	"	68							"					4/		"	CLK		"					"
"	"	69							"						4/	"	S		"					"
																		Subgroup 7 T_A = 25°C		Subgroup 8 T_A = 125°C		T_A = -55°C		
																		Min	Max	Min	Max	Min	Max	
Truth table test	3014	70		GND	5.0V	5.0V	5.0V	L	GND	H	5.0V	5.0V	5.0V	GND	5.0V	5.0 V	All outputs	See notes 5/, 6/						
"	"	71		5.0V	"	"	"	H	"	L	"	"	"	GND	GND	"	"							
"	"	72		GND	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	73		"	"	"	'	L	"	H	"	"	"	5.0V	"	"	"							
"	"	74		"	GND	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	75		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	76		"	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	77		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	78		"	5.0V	"	"	L	"	H	"	"	"	GND	5.0V	"	"							
"	"	79		"	"	GND	"	L	"	H	"	"	"	GND	GND	"	"							
"	"	80		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	81		"	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	82		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	83		"	"	5.0V	"	L	"	H	"	"	"	5.0V	5.0V	"	"							
"	"	84		"	"	"	GND	L	"	H	"	"	"	GND	GND	"	"							
"	"	85		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	86		"	"	"	"	"	"	"	"	"	"	GND	"	"	"							
"	"	87		"	"	"	"	"	"	"	"	"	GND	5.0V	"	"	"							
"	"	88		"	"	"	5.0V	"	"	"	"	"	"	GND	"	"	"							
"	"	89		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	90		"	"	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	91		"	"	"	"	L	"	H	"	"	GND	5.0V	"	"	"							
"	"	92		5.0V	"	"	"	H	"	L	"	"	5.0V	GND	"	"	"							
"	"	93		GND	"	"	"	H	"	L	"	GND	"	GND	"	"	"							
"	"	94		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	95		"	"	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	96		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							

See footnotes at end of device type 02.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
		Symbol	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 7 T_A = 25°C		Subgroup 8 T_A = 125°C		T_A = -55°C		
		Test No.	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	K3	K2	K1	CLK	S	V_{DD}		Min	Max	Min	Max	Min	Max	
Truth table test	3014	97		5.0V	5.0V	5.0V	5.0V	H	GND	L	GND	5.0V	5.0V	GND	GND	5.0V	All outputs	See notes 5/, 6/						
"	"	98		GND	"	"	"	H	"	L	"	"	"	GND	"	"	"								
"	"	99		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"								
"	"	100		"	"	"	"	"	"	"	"	"	"	GND	"	"	"								
"	"	101		"	"	"	"	"	"	"	"	"	"	5.0V	"	"	"								
"	"	102		"	GND	GND	GND	"	"	"	"	GND	GND	GND	"	"	"								
"	"	103		"	"	"	"	"	"	"	"	"	"	5.0V	"	"	"								
"	"	104		"	"	"	"	"	"	"	"	"	"	GND	"	"	"								
"	"	105		"	"	"	"	"	"	"	"	"	"	5.0V	"	"	"								
																		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
																		Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003	106		GND	5.0V	5.0V	5.0V		GND	OUT	5.0V	5.0V	5.0V	IN1	GND	5.0V	CLK to $\underline{Q}$	25	500	35	700	25	500	ns
t_{PHL1}	Fig. 4	107		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to Q	"	"	"	"	"	"	"
t_{PLH1}	"	108		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to $\underline{Q}$	"	"	"	"	"	"	"
t_{PLH1}	"	109		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to Q	"	"	"	"	"	"	"
t_{PHL2}	"	110		IN1	GND	GND	GND		"	OUT	GND	GND	GND	GND	IN2	"	S to $\underline{Q}$	15	300	21	420	15	300	"
t_{PHL2}	"	111		"	"	"	"	OUT	"		"	"	"	"	IN2	"	S to Q	"	"	"	"	"	"	"
t_{PLH2}	"	112		"	"	"	"		"	OUT	"	"	"	"	GND	"	R to $\underline{Q}$	"	"	"	"	"	"	"
t_{PLH2}	"	113		"	"	"	"	OUT	"		"	"	"	"	"	"	R to Q	"	"	"	"	"	"	"
t_{THL}	3004	114		GND	5.0V	5.0V	5.0V		"	OUT	5.0V	5.0V	5.0V	IN1	"	"	$\underline{\overline{Q}}$	10	200	14	280	10	200	"
t_{THL}	Fig. 4	115		"	"	"	"	OUT	"		"	"	"	"	"	"	$\overline{Q}$	"	"	"	"	"	"	"
t_{TLH}	"	116		"	"	"	"		"	OUT	"	"	"	"	"	"	$\underline{\overline{Q}}$	"	"	"	"	"	"	"
t_{TLH}	"	117		"	"	"	"	OUT	"		"	"	"	"	"	"	$\overline{Q}$	"	"	"	"	"	"	"
f_{CLK} 7/	Fig. 4	118		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to $\underline{Q}$		1000		1400		1000	"
f_{CLK} 7/	"	119		"	"	"	"	OUT	"	"	"	"	"	"	"	"	CLK to Q		1000		1400		1000	"
$t_{p(CLK)}$ 8/	Fig. 4	120		GND	5.0V	5.0V	5.0V		"	OUT	5.0V	5.0V	5.0V	IN1	GND	5.0V	CLK to $\underline{Q}$		140		200		140	ns
	"	121		"	"	"	"	OUT	"		"	"	"	"	GND	"	CLK to $\overline{Q}$		140		200		140	"
t_{ps} 8/	"	122		"	"	"	"		"	OUT	"	"	"	"	IN2	"	S to $\underline{Q}$		200		280		200	"
t_{ps} 8/	"	123		"	"	"	"	OUT	"		"	"	"	"	IN2	"	S to Q		"		"		"	"
t_{pr} 8/	"	124		IN2	"	"	"		"	OUT	"	"	"	"	GND	"	R to $\underline{Q}$		"		"		"	"
t_{pr} 8/	"	125		IN2	"	"	"	OUT	"		"	"	"	"	"	"	R to Q		"		"		"	"
$t_{r(CLK)}$ 9/	"	126		GND	"	"	"		"	OUT	"	"	"	"	"	"	CLK to $\underline{Q}$		15		15		15	µs
	"	127		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$		"		"		"	"
$t_{f(CLK)}$ 9/	"	128		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to $\underline{Q}$		"		"		"	"
	"	129		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to Q		"		"		"	"

See footnotes at end of device type 02.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
		Symbol	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Test No.	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	K3	K2	K1	CLK	S	V_{DD}		Min	Max	Min	Max	Min	Max	
t_{SHL1}	Fig. 4	130		GND	IN2	5.0V	5.0V		GND	OUT	5.0V	5.0V	5.0V	IN1	GND	5.0V	CLK to J1		400		560		400	ns
"	"	131		"	5.0V	IN2	"		"	"	"	"	"	"	"	"	CLK to J2		"		"		"	"
"	"	132		"	"	5.0V	IN2		"	"	"	"	"	"	"	"	CLK to J3		"		"		"	"
"	"	133		"	"	"	5.0V		"	"	IN2	"	"	"	"	"	CLK to K3		"		"		"	"
"	"	134		"	"	"	"		"	"	5.0V	IN2	"	"	"	"	CLK to K2		"		"		"	"
"	"	135		"	"	"	"		"	"	"	5.0V	IN2	"	"	"	CLK to K1		"		"		"	"
t_{SLH1}	"	136		"	IN2	"	"		"	"	"	"	5.0V	"	"	"	J1 to CLK		"		"		"	"
"	"	137		"	5.0V	IN2	"		"	"	"	"	"	"	"	"	J2 to CLK		"		"		"	"
"	"	138		"	"	5.0V	IN2		"	"	"	"	"	"	"	"	J3 to CLK		"		"		"	"
"	"	139		"	"	"	5.0V		"	"	IN2	"	"	"	"	"	K3 to CLK		"		"		"	"
"	"	140		"	"	"	"		"	"	5.0V	IN2	"	"	"	"	K2 to CLK		"		"		"	"
"	"	141		"	"	"	"		"	"	5.0V	5.0V	IN2	"	"	"	K1 to CLK		"		"		"	"
																		Subgroup 12 T_A = 25°C						
																		Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003	142		GND	10.0V	10.0V	10.0V		GND	OUT	10.0V	10.0V	10.0V	IN1	GND	10.0V	CLK to $\overline{Q}$	13	250					ns
"	Fig. 4	143		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to Q	"	"					"
t_{PLH1}	"	144		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to $\overline{Q}$	"	"					"
"	"	145		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to Q	"	"					"
t_{PHL2}	"	146		IN1	GND	GND	GND		"	OUT	GND	GND	GND	GND	IN2	"	S to $\overline{Q}$	8	150					"
"	"	147		"	"	"	"	OUT	"		"	"	"	"	IN2	"	S to Q	"	"					"
t_{PLH2}	"	148		"	"	"	"		"	OUT	"	"	"	"	GND	"	R to $\overline{Q}$	"	"					"
"	"	149		"	"	"	"	OUT	"		"	"	"	"	"	"	R to Q	"	"					"
t_{THL}	3004	150		GND	10.0V	10.0V	10.0V		"	OUT	10.0V	10.0V	10.0V	IN1	"	10.0V	$\overline{Q}$	5	100					"
"	Fig. 4	151		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"					"
t_{TLH}	"	152		"	"	"	"		"	OUT	"	"	"	"	"	"	$\overline{Q}$	"	"					"
"	"	153		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"					"

1/ Pins not designated may be "high" level logic, "low" level logic or open. Exceptions are as follows: $V_{IC(pos)}$ tests, the V_{SS} terminals shall be open; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open; I_{SS} tests, the output terminals shall be open.
2/ The I_{SS} measurements shall be performed in sequence.
3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.
4/ See 4.4.1c.
5/ The truth table tests shall be performed in sequence.
6/ The truth table tests shall be performed at V_{IH} and $V_{DD} \leq 5$ Vdc and ≥ 18 Vdc. "L" = V_{SS} + 0.5 V maximum and "H" = V_{DD} - 0.5 V minimum.
7/ The minimum clock frequency (f_{CLK}) requirement is considered met if proper output state changes occur with the pulse repetition period set to that given in the limits column.
8/ The minimum clock, reset, or set pulse width ($t_{p(CLK)}$, $t_{p(R)}$, $t_{p(S)}$) requirement is considered met if proper output state changes occur with the pulse width set to that given in the limits column.
9/ Pulse repetition period = 100 µs, 50 percent duty cycle. The maximum clock rise or fall time ($t_{r(CLK)}$, $t_{f(CLK)}$) requirement is considered met if proper output state changes occur with the rise time set to that given in the limits column.
10/ Apply clock pulse; V_{IN} = 0 to 15 Vdc.
11/ Apply clock pulse; V_{IN} = 0 to 5 Vdc.

12/ The input/output conditions and timing sequence shall apply:

Input/output conditions					
Test	V_{DD}	Input levels		Output levels	
		1	0	1	0
				Min	Max
V_{IL1}	5.0V		1.5V	4.5V	0.5V
V_{IH1}	"	3.5V		"	"
V_{IL2}	10.0V		3.0V	9.0V	1.0V
V_{IH2}	"	7.0V		"	"
V_{IL3}	15.0V		4.0V	13.5V	1.5V
V_{IH3}	"	11.0V		"	"

*	Time slot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
INPUTS	R	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	J_1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	J_2	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	J_3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	K_3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	K_2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0
	K_1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	CLK	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1
	S	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTPUTS	$\overline{Q}$	0	1	1	0	0	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0
	Q	1	0	0	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1

* Tests are to be run in sequence.

TABLE III. Group A inspection for device type 03.

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	NC	R	J1	J2	$\overline{J3}$	$\overline{Q}$	V_{SS}	Q	$\overline{K3}$	K2	K1	CLK	S	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
$V_{IC\ (pos)}$		1		1 mA												GND	R		1.5					Vdc
"		2			1 mA											"	J1		"					"
"		3				1 mA										"	J2		"					"
"		4					1 mA									"	J3		"					"
"		5									1 mA					"	K3		"					"
"		6										1 mA				"	K2		"					"
"		7											1 mA			"	K1		"					"
"		8												1 mA		"	CLK		"					"
"		9													1 mA	"	S		"					"
$V_{IC\ (neg)}$		10		-1 mA					GND								R		-6.0					"
"		11			-1 mA				"								J1		"					"
"		12				-1 mA			"								J2		"					"
"		13					-1 mA		"								J3		"					"
"		14							"		-1 mA						K3		"					"
"		15							"			-1 mA					K2		"					"
"		16							"				-1 mA				K1		"					"
"		17							"					-1 mA			CLK		"					"
"		18							"						-1 mA		S		"					"
I_{SS}	3005	19		GND	18.0V	18.0V	GND		"		GND	18.0V	18.0V	GND	18.0V	18.0V	V_{SS}		-.075		-2.5			µA
2/	"	20		18.0V	18.0V	18.0V	GND		"		GND	18.0V	18.0V	GND	GND	"	"		"		"			"
"	"	21		GND	18.0V	18.0V	GND		"		GND	18.0V	18.0V	18.0V	"	"	"		"		"			"
"	"	22		"	GND	GND	18.0V		"		18.0V	GND	GND	GND	"	"	"		"		"			"
V_{OH1}	3006	23		"	15V	15V	GND		"		GND	15V	15V	10/	"	15V	Q	14.95		14.95		14.95		Vdc
V_{OL1}	3007	24		"	"	"	"		"		"	"	"	GND	"	"	Q		0.05		0.05		0.05	"
V_{OL1}	"	25		"	"	"	"		"		"	"	"	10/	"	"	Q		0.05		0.05		0.05	"
V_{OH1}	3006	26		"	"	"	"		"		"	"	"	GND	"	"	Q	14.95		14.95		14.95		"
V_{IL1}		27		12/	12/	12/	12/	12/	GND	12/	12/	12/	12/	12/	12/	12/	All Outputs	12/	12/	12/	12/	12/	12/	"
V_{IL2}		28		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
V_{IL3}		29		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
V_{IH1}		30		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
V_{IH2}		31		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
V_{IH3}		32		"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
I_{OH1}		33		GND	5.0V	5.0V	GND		"	4.6V	GND	5.0V	5.0V	11/	GND	5.0V	Q	-0.51		-0.36		-0.64		mA
"		34		"	"	"	"	4.6V	"		"	"	"	11/	"	"	Q	-0.51		-0.36		-0.64		"
I_{OL1}		35		"	"	"	"		"	0.4V	"	"	"	GND	"	"	Q	0.51		0.36		0.64		"
"		36		"	"	"	"	0.4V	"		"	"	"	11/	"	"	Q	0.51		0.36		0.64		"
I_{OH2}		37		"	15.0V	15.0V	"		"	13.5V	"	15.0V	15.0V	10/	"	15.0V	Q	-3.4		-2.4		-4.2		"
"		38		"	"	"	"	13.5V	"		"	"	"	10/	"	"	Q	-3.4		-2.4		-4.2		"
I_{OL2}		39		"	"	"	"		"	1.5V	"	"	"	GND	"	"	Q	3.4		2.4		4.2		"
"		40		"	"	"	"	1.5V	"		"	"	"	10/	"	"	Q	3.4		2.4		4.2		"

See footnotes at end of device type 03.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	NC	R	J1	J2	J3	$\overline{Q}$	V_{SS}	Q	$\overline{K3}$	K2	K1	CLK	S	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
I_{IH1} 3/	3010	41		18.0V	18.0V	18.0V	18.0V		GND		18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	All inputs together		9					nA
I_{IH2}	"	42		18.0V	GND	GND	GND		"		GND	GND	GND	GND	GND	"	R		1		45			"
"	"	43		GND	18.0V	GND	GND		"		"	"	"	"	"	"	J1		"		"			"
"	"	44		"	GND	18.0V	GND		"		"	"	"	"	"	"	J2		"		"			"
"	"	45		"	"	GND	18.0V		"		"	"	"	"	"	"	J3		"		"			"
"	"	46		"	"	"	GND		"		18.0V	"	"	"	"	"	K3		"		"			"
"	"	47		"	"	"	"		"		GND	18.0V	"	"	"	"	K2		"		"			"
"	"	48		"	"	"	"		"		"	GND	18.0V	"	"	"	K1		"		"			"
"	"	49		"	"	"	"		"		"	"	GND	18.0V	"	"	CLK		"		"			"
"	"	50		"	"	"	"		"		"	"	GND	GND	18.0V	"	S		"		"			"
I_{IL1} 3/	3009	51		"	"	"	"		"		"	"	GND	GND	GND	"	All inputs together		-9					"
I_{IL2}	3009	52		GND	18.0V	18.0V	18.0V		GND		18.0V	18.0V	18.0V	18.0V	18.0V	18.0V	R		-1		-45			nA
"	"	53		18.0V	GND	18.0V	18.0V		"		"	"	"	"	"	"	J1		"		"			"
"	"	54		"	18.0V	GND	18.0V		"		"	"	"	"	"	"	J2		"		"			"
"	"	55		"	"	18.0V	GND		"		"	"	"	"	"	"	J3		"		"			"
"	"	56		"	"	"	18.0V		"		GND	"	"	"	"	"	K3		"		"			"
"	"	57		"	"	"	"		"		18.0V	GND	"	"	"	"	K2		"		"			"
"	"	58		"	"	"	"		"		"	18.0V	GND	"	"	"	K1		"		"			"
"	"	59		"	"	"	"		"		"	18.0V	18.0V	GND	"	"	CLK		"		"			"
"	"	60		"	"	"	"		"		"	18.0V	18.0V	18.0V	GND	"	S		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max					
C_i	3012	61		6/					GND							GND	R		7.5					pF
"	"	62			6/				"							"	J1		"					"
"	"	63				6/			"							"	J2		"					"
"	"	64					6/		"							"	J3		"					"
"	"	65							"		6/					"	K3		"					"
"	"	66							"			6/				"	K2		"					"
"	"	67							"				6/			"	K1		"					"
"	"	68							"					6/		"	CLK		"					"
"	"	69							"						6/	"	S		"					"

See footnotes at end of table 03.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 7		Subgroup 8				
		Symbol	NC	R	J1	J2	$\overline{J3}$	$\overline{Q}$	V_{SS}	Q	$\overline{K3}$	K2	K1	CLK	S	V_{DD}		T_A = 25°C		T_A = 125°C		T_A = -55°C		
		Test No.																Min	Max	Min	Max	Min	Max	
Truth table test	3014	70		GND	5.0V	5.0V	GND	L	GND	H	GND	5.0V	5.0V	GND	5.0V	5.0V	All outputs	See 4/, 5/						
"	"	71		5.0V	"	"	"	H	"	L	"	"	"	GND	GND	"	"							
"	"	72		GND	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	73		GND	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	74		GND	"	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	75		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	76		"	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	77		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	78		"	5.0V	"	"	L	"	H	"	"	"	GND	5.0V	"	"							
"	"	79		"	"	GND	"	L	"	H	"	"	"	GND	GND	"	"							
"	"	80		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	81		"	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	82		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	83		"	"	5.0V	"	L	"	H	"	"	"	GND	5.0V	"	"							
"	"	84		"	"	"	5.0V	L	"	H	"	"	"	GND	GND	"	"							
"	"	85		"	"	"	"	H	"	L	"	"	"	5.0V	"	"	"							
"	"	86		"	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	87		"	"	"	"	H	"	L	"	"	GND	5.0V	"	"	"							
"	"	88		"	"	"	GND	H	"	L	"	"	"	GND	"	"	"							
"	"	89		"	"	"	"	L	"	H	"	"	GND	5.0V	"	"	"							
"	"	90		"	"	"	"	L	"	H	"	"	5.0V	GND	"	"	"							
"	"	91		"	"	"	"	L	"	H	"	"	5.0V	5.0V	"	"	"							
"	"	92		5.0V	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	93		GND	"	"	"	H	"	L	"	GND	"	GND	"	"	"							
"	"	94		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	95		"	"	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	96		"	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	97		5.0V	"	"	"	H	"	L	5.0V	5.0V	"	GND	"	"	"							
"	"	98		GND	"	"	"	H	"	L	"	"	"	GND	"	"	"							
"	"	99		GND	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	100		GND	"	"	"	L	"	H	"	"	"	GND	"	"	"							
"	"	101		GND	"	"	"	L	"	H	"	"	"	5.0V	"	"	"							
"	"	102		"	GND	GND	5.0V	"	"	"	"	GND	GND	GND	"	"	"							
"	"	103		"	"	"	"	"	"	"	"	"	"	5.0V	"	"	"							
"	"	104		"	"	"	"	"	"	"	"	"	"	GND	"	"	"							
"	"	105		"	"	"	"	"	"	"	"	"	"	5.0V	"	"	"							

See footnotes at end of device type 03.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	NC	R	J1	J2	$\overline{J3}$	$\overline{Q}$	V_{SS}	Q	$\overline{K3}$	K2	K1	CLK	S	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003	106		GND	5.0V	5.0V	GND		GND	OUT	GND	5.0V	5.0V	IN1	GND	5.0V	CLK to Q	25	500	35	700	25	500	ns
"	Fig. 4	107		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$	"	"	"	"	"	"	"
t_{PLH1}	"	108		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to Q	"	"	"	"	"	"	"
"	"	109		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$	"	"	"	"	"	"	"
t_{PHL2}	"	110		IN1	GND	GND	5.0V		"	OUT	5.0V	GND	GND	GND	IN2	"	S to Q	15	300	21	420	15	300	"
"	"	111		"	"	"	"	OUT	"		"	"	"	"	IN2	"	S to $\overline{Q}$	"	"	"	"	"	"	"
t_{PLH2}	"	112		"	"	"	"		"	OUT	"	"	"	"	GND	"	R to Q	"	"	"	"	"	"	"
"	"	113		"	"	"	"	OUT	"		"	"	"	"	"	"	R to $\overline{Q}$	"	"	"	"	"	"	"
t_{THL}	3004	114		GND	5.0V	5.0V	GND		"	OUT	GND	5.0V	5.0V	IN1	"	"	$\overline{Q}$	10	200	14	280	10	200	"
"	Fig. 4	115		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"	"	"	"	"	"
t_{TLH}	"	116		"	"	"	"		"	OUT	"	"	"	"	"	"	$\overline{Q}$	"	"	"	"	"	"	"
"	"	117		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"	"	"	"	"	"
f_{CLK}	Fig. 4	118		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to Q		1000		1400		1000	"
7/	"	119		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$		1000		1400		1000	"
$t_{p(CLK)}$	"	120		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to Q		140		200		140	"
8/	"	121		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$		140		200		140	"
$t_{p(S)}$	"	122		"	"	"	"		"	OUT	"	"	"	"	IN2	"	S to Q		200		280		200	"
8/	"	123		"	"	"	"	OUT	"		"	"	"	"	IN2	"	S to $\overline{Q}$		"		"		"	"
$t_{p(R)}$	"	124		IN2	"	"	"		"	OUT	"	"	"	"	GND	"	R to Q		"		"		"	"
8/	"	125		IN2	"	"	"	OUT	"		"	"	"	"	GND	"	R to $\overline{Q}$		"		"		"	"
$t_{r(CLK)}$	"	126		GND	5.0V	5.0V	GND		GND	OUT	GND	5.0V	5.0V	IN1	GND	5.0V	CLK to Q		15		15		15	µs
9/	"	127		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$		"		"		"	"
$t_{f(CLK)}$	"	128		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to Q		"		"		"	"
9/	"	129		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$		"		"		"	"
t_{SHL1}	"	130		"	IN2	"	"		"	OUT	"	"	"	"	"	"	CLK to J1		400		560		400	ns
"	"	131		"	5.0V	IN2	"		"	"	"	"	"	"	"	"	CLK to $\overline{J2}$		"		"		"	"
"	"	132		"	"	5.0V	IN2		"	"	"	"	"	"	"	"	CLK to $\overline{J3}$		"		"		"	"
"	"	133		"	"	"	GND		"	"	IN2	"	"	"	"	"	CLK to $\overline{K3}$		"		"		"	"
"	"	134		"	"	"	"		"	"	GND	IN2	"	"	"	"	CLK to K2		"		"		"	"
"	"	135		"	"	"	"		"	"	"	5.0V	IN2	"	"	"	CLK to K1		"		"		"	"
t_{SLH1}	"	136		"	IN2	"	"		"	"	"	"	5.0V	"	"	"	J1 to CLK		"		"		"	"
"	"	137		"	5.0V	IN2	"		"	"	"	"	"	"	"	"	$\overline{J2}$ to CLK		"		"		"	"
"	"	138		"	"	5.0V	IN2		"	"	"	"	"	"	"	"	$\overline{J3}$ to CLK		"		"		"	"
"	"	139		"	"	"	GND		"	"	IN2	"	"	"	"	"	$\overline{K3}$ to CLK		"		"		"	"
"	"	140		"	"	"	GND		"	"	GND	IN2	"	"	"	"	K2 to CLK		"		"		"	"
"	"	141		"	"	"	GND		"	"	GND	5.0V	IN2	"	"	"	K1 to CLK		"		"		"	"

See footnotes at end of device type 03.

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

Symbol	MIL-STD-883 method	Cases A,C,D,X,Y	Terminal conditions 1/														Measured terminal	Test limits						Units
		Symbol																Subgroup 12 T_A = 25°C						
			NC	R	J1	J2	$\overline{J3}$	$\overline{Q}$	V_{SS}	Q	$\overline{K3}$	K2	K1	CLK	S	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max					
t_{PHL1}	3003	142		GND	10.0V	10.0V	GND		GND	OUT	GND	10.0V	10.0V	IN1	GND	10.0V	CLK to Q	10	200					ns
"	Fig. 4	143		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$	"	"					"
t_{PLH1}	"	144		"	"	"	"		"	OUT	"	"	"	"	"	"	CLK to Q	"	"					"
"	"	145		"	"	"	"	OUT	"		"	"	"	"	"	"	CLK to $\overline{Q}$	"	"					"
t_{PHL2}	"	146		IN1	GND	GND	10.0V		"	OUT	10.0V	GND	GND	GND	IN2	"	S to Q	8	150					"
"	"	147		IN1	GND	GND	10.0V	OUT	"		10.0V	GND	GND	GND	IN2	"	S to $\overline{Q}$	8	150					"
t_{PLH2}	3003	148		IN1	GND	GND	10.0V		GND	OUT	10.0V	GND	GND	GND	GND	10.0V	R to Q	8	150					ns
"	Fig. 4	149		IN1	GND	GND	10.0V	OUT	"		10.0V	GND	GND	GND	"	"	R to $\overline{Q}$	8	150					"
t_{THL}	3004	150		GND	10.0V	10.0V	GND		"	OUT	GND	10.0V	10.0V	IN1	"	"	$\overline{Q}$	5	100					"
"	Fig. 4	151		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"					"
t_{TLH}	"	152		"	"	"	"		"	OUT	"	"	"	"	"	"	$\overline{Q}$	"	"					"
"	"	153		"	"	"	"	OUT	"		"	"	"	"	"	"	Q	"	"					"

1/ Pins not designated may be "high" level logic, "low" level logic or open. Exceptions are as follows: $V_{IC(pos)}$ tests, the V_{SS} terminals shall be open; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open, I_{SS} tests, the output terminals shall be open.
2/ The I_{SS} measurements shall be performed in sequence.
3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.
4/ The truth table tests shall be performed in sequence.
5/ The truth table tests shall be performed at V_{IH} and $V_{DD} \leq 5$ Vdc and ≥ 18 Vdc. "L" = V_{SS} + 0.5 V maximum and "H" = V_{DD} – 0.5 V minimum.
6/ See 4.4.1c.
7/ The minimum clock frequency (f_{CLK}) requirement is considered met if proper output state changes occur with the pulse repetition period set to that given in the limits column.
8/ The minimum clock, reset, or set pulse width ($t_{p(CLK)}$, $t_{p(R)}$, $t_{p(S)}$) requirement is considered met if proper output state changes occur with the pulse width set to that given in the limits column.
9/ Pulse repetition period = 100 µs, 50 percent duty cycle. The maximum clock rise or fall time ($t_{r(CLK)}$, $t_{f(CLK)}$) requirement is considered met if proper output state changes occur with the rise time set to that given in the limits column.
10/ Apply clock pulse; V_{IN} = 0 to 15 Vdc.
11/ Apply clock pulse; V_{IN} = 0 to 5 Vdc.

12/ The input/output conditions and timing sequence shall apply:

Input/output conditions					
Test	V_{DD}	Input levels		Output levels	
		1	0	1	0
				Min	Max
V_{IL1}	5.0V		1.5V	4.5V	0.5V
V_{IH1}	"	3.5V		"	"
V_{IL2}	10.0V		3.0V	9.0V	1.0V
V_{IH2}	"	7.0V		"	"
V_{IL3}	15.0V		4.0V	13.5V	1.5V
V_{IH3}	"	11.0V		"	"

* Time slot		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
INPUTS	R	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	J_1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	$\overline{J_2}$	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	$\overline{J_3}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
	$\overline{K_3}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
	K_2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0
	K_1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
	CLK	0	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1
	S	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OUTPUTS	$\overline{Q}$	0	1	1	0	0	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0
	Q	1	0	0	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	0	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	1

* Tests are to be run in sequence.

TABLE III. Group A inspection for device type 04.

Symbol	MIL-STD-883 method	Cases E,F,N,Z Symbol	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
			CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1		1mA														GND	RC1		1.5					Vdc
"		2			1mA													"	R1		"					"
"		3				1mA												"	+TR1		"					"
"		4					1mA											"	-TR1		"					"
"		5											1mA					"	-TR2		"					"
"		6												1mA				"	+TR2		"					"
"		7													1mA			"	R2		"					"
"		8														1mA		"	RC2		"					"
V_{IC} (neg)		9		-1mA						GND									RC1		-6.0					"
"		10			-1mA					"									R1		"					"
"		11				-1mA				"									+TR1		"					"
"		12					-1mA			"									-TR1		"					"
"		13								"			-1mA						-TR2		"					"
"		14								"				-1mA					+TR2		"					"
"		15								"					-1mA				R2		"					"
"		16								"						-1mA			RC2		"					"
I_{SS}	3005	17		8/	GND	GND	GND			"			GND	GND	GND	8/		18.0V	V_{SS}		-.075		-2.5			µA
"	"	18		"	18.0V	GND	18.0V			"			18.0V	GND	18.0V	"		"	"		"		"			"
"	"	19		"	18.0V	18.0V	"			"			"	18.0V	18.0V	"		"	"		"		"			"
"	"	20		"	GND	18.0V	"			"			"	18.0V	GND	"		"	"		"		"			"
"	"	21		"	18.0V	GND	"			"			"	GND	18.0V	"		"	"		"		"			"
"	"	22		"	18.0V	GND	GND			"			GND	GND	18.0V	"		"	"		"		"			"
"	"	23		"	GND	GND	GND			"			GND	GND	GND	"		"	"		"		"			"

See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
V_{OH1}	3006	24			GND	GND	15.0V			GND			15.0V	GND	GND			15.0V	$\overline{Q1}$	14.95		14.95		14.95		Vdc
V_{OH1}	3006	25			"	"	"			"			"	"	"			"	Q2	14.95		14.95		14.95		"
V_{OL1}	3007	26			"	"	"			"			"	"	"			"	Q1		0.05		0.05		0.05	"
V_{OL1}	3007	27			"	"	"			"			"	"	"			"	Q2		0.05		0.05		0.05	"
V_{OH1}	3006	28		7/	15.0V	15.0V	"			"			"	15.0V	15.0V	7/		"	Q1	14.95		14.95		14.95		"
V_{OH1}	3006	29		"	"	"	"			"			"	"	"	"		"	Q2	14.95		14.95		14.95		"
V_{OL1}	3007	30		"	"	"	"			"			"	"	"	"		"	$\overline{Q1}$		0.05		0.05		0.05	"
V_{OL1}	3007	31		"	"	"	"			"			"	"	"	"		"	Q2		0.05		0.05		0.05	"
V_{IL1}		32		10/	10	10/	10/	10/	10/	"	10/	10/	10/	10/	10/	10/	10/	5.0 V	All	10/	10/	10/	10/	10/	10/	"
V_{IL2}		33		"	"	"	"	"	"	"	"	"	"	"	"	"	"	10.0V	outputs	"	"	"	"	"	"	"
V_{IL3}		34		"	"	"	"	"	"	"	"	"	"	"	"	"	"	15.0V	"	"	"	"	"	"	"	"
V_{IH1}		35		"	"	"	"	"	"	"	"	"	"	"	"	"	"	5.0 V	"	"	"	"	"	"	"	"
V_{IH2}		36		"	"	"	"	"	"	"	"	"	"	"	"	"	"	10.0V	"	"	"	"	"	"	"	"
V_{IH3}		37		"	"	"	"	"	"	"	"	"	"	"	"	"	"	15.0V	"	"	"	"	"	"	"	"
I_{OL1}		38		5.0V	GND	GND	GND	0.4V		"			GND	GND	GND	5.0V		5.0V	Q1	0.51		0.36		0.64		mA
"		39		5.0V	GND	"	GND			"		0.4V	GND	"	GND	5.0V		"	Q2	"		"		"		"
"		40		8/	GND	"	5.0V			"			5.0V	"	GND	8/		"	None	"		"		"		"
"		41		"	5.0V	"	"			"			"	"	5.0V	"		"	None	"		"		"		"
"		42		"	5.0V	5.0V	"		0.4V	"			"	5.0V	5.0V	"		"	Q1	"		"		"		"
"		43		"	5.0V	5.0V	"			"	0.4V		"	5.0V	5.0V	"		"	Q2	"		"		"		"
I_{OH1}		44		4.6V	GND	GND	GND			"			GND	GND	GND	5.0V		"	RC1	-0.51		-0.36		-0.64		"
"		45		5.0V	"	"	"		4.6V	"			"	"	"	5.0V		"	Q1	"		"		"		"
"		46		5.0V	"	"	"			"	4.6V		"	"	"	5.0V		"	Q2	"		"		"		"
"		47		5.0V	"	"	"			"			"	"	"	4.6V		"	RC2	"		"		"		"
"		48		8/	"	"	5.0V			"			5.0V	"	"	8/		"	None	"		"		"		"

See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
I_{OH1}		49		8/	5.0V	GND	5.0V			GND			5.0V	GND	5.0V	8/		5.0V	None	-0.51		-0.36		-0.64		mA
"		50		8/	5.0V	5.0V	5.0V	4.6V		"			5.0V	5.0V	"	8/		5.0V	Q1	"		"		"		"
"		51		8/	5.0V	5.0V	5.0V			"		4.6V	5.0V	5.0V	"	8/		5.0V	Q2	"		"		"		"
I_{OL2}		52		15.0V	GND	GND	GND	1.5V		"			GND	GND	GND	15.0V		15.0V	Q1	3.4		2.4		4.2		"
"		53		15.0V	GND	"	GND			"		1.5V	GND	"	"	15.0V		"	Q2	"		"		"		"
"		54		8/	GND	"	15.0V			"			15.0V	"	"	8/		"	None	"		"		"		"
"		55		"	15.0V	"	"			"			"	"	15.0V	"		"	None	"		"		"		"
"		56		"	15.0V	15.0V	"		1.5V	"			"	15.0V	15.0V	"		"	Q1	"		"		"		"
"		57		"	15.0V	15.0V	"			"	1.5V		"	15.0V	15.0V	"		"	Q2	"		"		"		"
I_{OH2}		58		13.5V	GND	GND	GND			"			GND	GND	GND	15.0V		"	RC1	-3.4		-2.4		-4.2		"
"		59		15.0V	"	"	"		13.5V	"			"	"	"	15.0V		"	Q1	"		"		"		"
"		60		15.0V	"	"	"			"	13.5V		"	"	"	15.0V		"	Q2	"		"		"		"
"		61		15.0V	"	"	"			"			"	"	"	13.5V		"	RC2	"		"		"		"
"		62		8/	"	"	15.0V			"			15.0V	"	"	8/		"	None	"		"		"		"
"		63		"	15.0V	"	"			"			"	"	15.0V	"		"	None	"		"		"		"
"		64		"	15.0V	15.0V	"	13.5V		"			"	15.0V	15.0V	"		"	Q1	"		"		"		"
"		65		"	15.0V	15.0V	"			"		13.5V	"	15.0V	15.0V	"		"	Q2	"		"		"		"
I_{IH1} 3/	3010	66			18.0V	18.0V	18.0V			"			18.0V	18.0V	18.0V			18.0V	All input together		600					nA
I_{IH2}	"	67			18.0V	GND	GND			"			GND	GND	GND			"	R1		100		100			"
"	"	68			GND	18.0V	GND			"			GND	"	"			"	+TR1		"		"			"
"	"	69			"	GND	18.0V			"			GND	"	"			"	-TR1		"		"			"
"	"	70			"	"	GND			"			18.0V	"	"			"	-TR2		"		"			"
"	"	71			"	"	"			"			GND	18.0V	"			"	+TR2		"		"			"
"	"	72			"	"	"			"			GND	GND	18.0V			"	R2		"		"			"
I_{IL1} 3/	3009	73			"	"	"			"			GND	GND	GND			"	All inputs together		-600					"

See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
I_{IL2}	3009	74			GND	18.0V	18.0V			GND			18.0V	18.0V	18.0V			18.0V	R1		-100		-100			nA
"	"	75			18.0V	GND	18.0V			"			18.0V	"	"			"	+TR1		"		"			"
"	"	76			"	18.0V	GND			"			18.0V	"	"			"	-TR1		"		"			"
"	"	77			"	"	18.0V			"			GND	"	"			"	-TR2		"		"			"
"	"	78			"	"	18.0V			"			18.0V	GND	"			"	+TR2		"		"			"
"	"	79			"	"	18.0V			"			18.0V	18.0V	GND			"	R2		"		"			"
																				Subgroup 4 T_A = 25°C						
																				Min	Max					
C_i	3012	80			6/					GND								GND	R1		7.5					pF
"	"	81				6/				"								"	+TR1		"					"
"	"	82					6/			"								"	-TR1		"					"
"	"	83								"			6/					"	-TR2		"					"
"	"	84								"				6/				"	+TR2		"					"
"	"	85								"					6/			"	R2		"					"
																				Subgroup 7 T_A = 25°C		Subgroup 8				
																						T_A = 125°C		T_A = -55°C		
																				Min	Max	Min	Max	Min	Max	
Truth table tests	3014	86		L	L	L	H	L	H	GND	H	L	H	L	L	L		NOTES	All outputs	See notes 4/, 5/, 10/						
	"	87		L	H	L	H	L	H	"	H	L	H	L	H	L		"	"							
	"	88		L	H	H	H	H	L	"	L	H	H	H	H	L		"	"							
"	"	89		L	H	L	H	H	L	"	L	H	H	L	H	L		"	"							
"	"	90		H	H	L	H	L	H	"	H	L	H	L	H	H		"	"							
"	"	91		L	H	L	H	L	H	"	H	L	H	L	H	L		"	"							
"	"	92		L	H	L	L	H	L	"	L	H	L	L	H	L		"	"							
"	"	93		L	H	L	H	H	L	"	L	H	H	L	H	L		"	"							
"	"	94		H	H	L	H	L	H	"	H	L	H	L	H	H		"	"							
"	"	95		L	H	L	H	L	H	"	H	L	H	L	H	L		"	"							
"	"	96		L	L	L	H	L	H	"	H	L	H	L	L	L		"	"							
"	"	97		L	L	H	H	L	H	"	H	L	H	H	L	L		"	"							
"	"	98		L	L	L	H	L	H	"	H	L	H	L	L	L		"	"							
"	"	99		L	L	L	L	L	H	"	H	L	L	L	L	L		"	"							
"	"	100		L	L	L	H	L	H	"	H	L	H	L	L	L		"	"							
"	"	101		L	H	L	H	L	H	"	H	L	H	L	H	L		"	"							
"	"	102A		L	H	H	H	H	L	"	L	H	H	H	H	L		"	"							
"	"	103A		L	H	L	H	H	L	"	L	H	H	L	H	L		"	"							
"	"	104A		L	L	L	H	L	H	"	H	L	H	L	L	L		"	"							
"	"	105A		L	L	H	H	L	H	"	H	L	H	H	L	L		"	"							
"	"	106A		L	H	H	H	L	H	"	H	L	H	H	H	L		"	"							
"	"	107A		L	H	H	L	L	H	"	H	L	L	H	H	L		"	"							
"	"	108A		L	H	L	L	L	H	"	H	L	L	L	H	L		"	"							
"	"	109A		L	H	H	L	L	H	"	H	L	L	H	H	L		"	"							

See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{PLH1}	3003	102		9/	5.0V	IN	5.0V	OUT		GND			5.0V	GND	5.0V	9/		5.0V	+TR1 to Q1	25	500	35	700	25	500	ns
"	Fig. 4	103		"	"	GND	5.0V			"		OUT	5.0V	IN	"	"		"	+TR2to Q2	"	"	"	"	"	"	"
"	"	104		"	"	GND	IN	OUT		"			5.0V	GND	"	"		"	-TR1 to Q1	"	"	"	"	"	"	"
"	"	105		"	"	GND	5.0V			"		OUT	IN	GND	"	"		"	-TR2 to Q2	"	"	"	"	"	"	"
t_{PHL1}	"	106		"	"	IN	5.0V		OUT	"			5.0V	GND	"	"		"	+TR1 to $\overline{Q1}$	"	"	"	"	"	"	"
"	"	107		"	"	GND	5.0V			"	OUT		5.0V	IN	"	"		"	+TR2to $\overline{Q2}$	"	"	"	"	"	"	"
"	"	108		"	"	GND	IN		OUT	"			5.0V	GND	"	"		"	-TR1 to $\overline{Q1}$	"	"	"	"	"	"	"
"	"	109		"	"	GND	5.0V			"	OUT		IN	GND	"	"		"	-TR2 to $\overline{Q2}$	"	"	"	"	"	"	"
t_{PHL2}	"	110		"	IN	IN	5.0V	OUT		"			5.0V	IN	IN	"		"	R1 to Q1	23	450	32	630	23	450	"
t_{PHL2}	"	111		"	"	"	"			"		OUT	"	"	"	"		"	R2 to Q2	"	"	"	"	"	"	"
t_{PLH2}	"	112		"	"	"	"		OUT	"			"	"	"	"		"	R1 to $\overline{Q1}$	"	"	"	"	"	"	"
t_{PLH2}	"	113		"	"	"	"			"	OUT		"	"	"	"		"	R2 to Q2	"	"	"	"	"	"	"
t_{TLH1}	3004	114		"	5.0V	"	"	OUT		"			"	"	5.0V	"		"	Q1	10	200	14	280	10	200	"
t_{TLH1}	Fig. 4	115		"	"	"	"			"		OUT	"	"	"	"		"	Q2	"	"	"	"	"	"	"
t_{THL1}	"	116		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	"	"	"	"	"	"	"
t_{THL1}	"	117		"	"	"	"			"	OUT		"	"	"	"		"	Q2	"	"	"	"	"	"	"
t_{THL2}	"	118		"	IN	"	"	OUT		"			"	"	IN	"		"	Q1	"	"	"	"	"	"	"
"	"	119		"	"	"	"	OUT		"			"	"	"	"		"	Q1	15	300	21	420	15	300	"
"	"	120		"	"	"	"	OUT		"			"	"	"	"		"	Q1	25	500	35	700	25	500	"
"	"	121		"	"	"	"			"		OUT	"	"	"	"		"	Q2	10	200	14	280	10	200	"
"	"	122		"	"	"	"			"		OUT	"	"	"	"		"	Q2	15	300	21	420	15	300	"

See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{THL2}	3004 Fig. 4	123		9/	IN	IN	5.0V			GND		OUT	5.0V	IN	IN	9/		5.0V	Q2	25	500	35	700	25	700	ns
t_{TLH2}	"	124		"	5.0V	"	"		OUT	"			"	"	5.0V	"		"	$\overline{Q1}$	10	200	14	280	10	200	"
"	"	125		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	15	300	21	420	15	300	"
"	"	126		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	25	500	35	700	25	500	"
"	"	127		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	10	200	14	280	10	200	"
"	"	128		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	15	300	21	420	15	300	"
"	"	129		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	25	500	35	700	25	500	"
																				Subgroup 12 T_A = 25°C						
																				Min	Max	Min	Max	Min	Max	
t_{PLH1}	3003 Fig. 4	130		9/	10.0V	IN	10.0V	OUT		GND			10.0V	GND	10.0V	9/		10.0V	+TR1 to Q1	13	250					ns
"		131		"	"	GND	10.0V			"		OUT	10.0V	IN	"	"		"	+TR2 to Q2	"	"					"
"	"	132		"	"	"	IN	OUT		"			10.0V	GND	"	"		"	-TR1 to Q1	"	"					"
"	"	133		"	"	"	10.0V			"		OUT	IN	GND	"	"		"	-TR2 to Q2	"	"					"
t_{PHL1}	"	134		"	"	IN	10.0V		OUT	"			10.0V	GND	"	"		"	+TR1 to $\overline{Q1}$	"	"					"
"	"	135		"	"	GND	10.0V			"	OUT		10.0V	IN	"	"		"	+TR2 to $\overline{Q2}$	"	"					"
"	"	136		"	"	"	IN		OUT	"			10.0V	GND	"	"		"	-TR1 to $\overline{Q1}$	"	"					"
"	"	137		"	"	"	10.0V			"	OUT		IN	GND	"	"		"	-TR2 to $\overline{Q2}$	"	"					"
t_{PHL2}	"	138		"	IN	IN	10.0V	OUT		"			10.0V	IN	IN	"		"	R1 to Q1	"	"					"
t_{PHL2}	"	139		"	"	"	"			"		OUT	"	"	"	"		"	R2 to Q2	"	"					"
t_{PLH2}	"	140		"	"	"	"		OUT	"			"	"	"	"		"	R1 to $\overline{Q1}$	"	"					"
t_{PLH2}	"	141		"	"	"	"			"	OUT		"	"	"	"		"	R2 to $\overline{Q2}$	"	"					"
t_{TLH1}	3004 Fig. 4	142		"	10.0V	"	"	OUT		"			"	"	10.0V	"		"	Q1	5	100					µs
t_{TLH1}		143		"	"	"	"			"		OUT	"	"	"	"		"	Q2	"	"					"
t_{THL1}	"	144		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	"	"					"
t_{THL1}	"	145		"	"	"	"			"	OUT		"	"	"	"		"	Q2	"	"					"

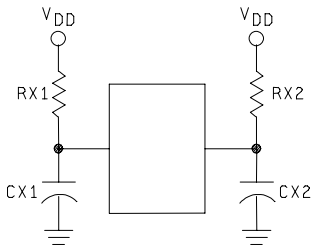
See footnotes at end of device type 04.

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

Symbol	MIL-STD-883 method	Cases E,F,N,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
		Symbol																		Subgroup 12 T_A = 25°C						
			CX1	RC1	R1	+TR1	-TR1	Q1	$\overline{Q1}$	V_{SS}	$\overline{Q2}$	Q2	-TR2	+TR2	R2	RC2	CX2	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{THL2}	3004	146		9/	IN	IN	10.0V	OUT		GND			10.0V	IN	IN	9/		10.0V	Q1	5	100					ns
"	Fig. 4	147		"	"	"	"	OUT		"			"	"	"	"		"	Q1	8	150					"
"	"	148		"	"	"	"	OUT		"			"	"	"	"		"	Q1	15	300					"
"	"	149		"	"	"	"			"		OUT	"	"	"	"		"	Q2	5	100					"
"	"	150		"	"	"	"			"		OUT	"	"	"	"		"	Q2	8	150					"
"	"	151		"	"	"	"			"		OUT	"	"	"	"		"	Q2	15	300					"
t_{TLH2}	"	152		"	10.0V	"	"		OUT	"			"	"	10.0V	"		"	$\overline{Q1}$	5	100					"
"	"	153		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	8	150					"
"	"	154		"	"	"	"		OUT	"			"	"	"	"		"	$\overline{Q1}$	15	300					"
"	"	155		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	5	100					"
"	"	156		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	8	150					"
"	"	157		"	"	"	"			"	OUT		"	"	"	"		"	$\overline{Q2}$	15	300					"

1/ Pins not designated may be "high" level logic, "low" level logic or open. Exceptions are as follows: $V_{IC(pos)}$ tests, the V_{SS} terminals shall be open; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open, I_{SS} tests, the output terminals shall be open.
2/ The I_{SS} measurements shall be performed in sequence.
3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.
4/ The truth table tests shall be performed in sequence.
5/ The truth table tests shall be performed at $V_{DD} \leq 5$ V and ≥ 18 V. See footnote 10/ which contains complete tabulation of input/output voltage levels.
6/ See 4.4.1c.
7/ For tests 28 through 31, terminals 2 and 14 are each connected through separate 22 kΩ ±10% resistors to V_{SS}.
8/ Terminals 2 and 14 are each connected through separate 22 kΩ ±10% resistors to V_{SS}.

9/ Connect RX1, CX1, RX2, and CX2 using the values in the table below:



Test	RX1, 2	CX1, 2
	KΩ ± 10%	pF ± 10%
t_{PLH1}	10	100
t_{PHL1}	10	100
t_{PLH2} *	10	100
t_{PHL2} *	10	100
t_{TLH1}	10	100
t_{THL1}	10	100
t_{THL2}	10	0.01 µF
t_{THL2}	10	0.1 µF
t_{THL2}	10	1.0 µF
t_{TLH2}	10	0.01 µF
t_{TLH2}	10	0.1 µF
t_{TLH2}	10	1.0 µF

* Reset pulse shall be applied before the RXCX times out.

10/ The following terminal conditions shall apply. The tests shall be performed using the logical timing sequence of test numbers 86 through 109. The parenthetical terminal conditions are used for the "truth table test". The nonparenthetical terminal conditions are used for the "$V_{IH}1$, 2, 3/$V_{IL}1$, 2, 3" tests. The RX1, RX2 terminal conditions are for both of these tests.

Input/output conditions

V_{DD}	Input levels		Output levels		RX1, RX2 Input levels	
	H	L	H	L	H	L
(≤ 5.0 V) 5.0 V	Max	Min 1.5V (V_{SS})	Min (V_{DD} – 0.5 V) 4.5V	Max (V_{SS} = 0.8 V) 0.5V	V_{DD} Through 22 kΩ ±10%	V_{SS} Through 22 kΩ ±10%
	(V_{DD}) 3.5 V					
10.0V		3.0V	9.0V	1.0V		
	7.0V					
15.0V (≥ 18.0 V)		4.0V (V_{SS})	13.5V (V_{DD} – 0.5 V)	1.5V (V_{SS} + 0.5 V)		
	(V_{DD}) 11.0V					

TABLE III. Group A inspection for device type 05.

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1	1mA															GND	$\overline{C}$		1.5					Vdc
"		2			1mA													"	D1		"					"
"		3				1mA												"	D2		"					"
"		4						1mA										"	D3		"					"
"		5									1mA							"	CLK		"					"
"		6											1mA					"	D4		"					"
"		7													1mA			"	D5		"					"
"		8														1mA		"	D6		"					"
V_{IC} (neg)		9	-1mA							GND									$\overline{C}$		-6.0					"
"		10			-1mA					"									D1		"					"
"		11				-1mA				"									D2		"					"
"		12						-1mA		"									D3		"					"
"		13								"	-1mA								CLK		"					"
"		14								"			-1mA						D4		"					"
"		15								"					-1mA				D5		"					"
"		16								"						-1mA			D6		"					"
I_{SS}	3005	17	GND		18.0V	18.0V		18.0V		"	GND		18.0V		18.0V	18.0V		18.0V	V_{SS}		-.075		-2.5			µA
"	"	18	18.0V		18.0V	18.0V		18.0V		"	7/		18.0V		18.0V	18.0V		"	"		"		"			"
"	"	19	18.0V		GND	GND		GND		"	7/		GND		GND	GND		"	"		"		"			"
"	"	20	18.0V		GND	GND		GND		"	GND		GND		GND	GND		"	"		"		"			"
V_{OH1}	3006	21	15.0V		15.0V	15.0V		15.0V		"	8/		15.0V		15.0V	15.0V		15.0V	Q1	14.95		14.95		14.95		Vdc
"	"	22	"		"	"		"		"	15.0V		"		"	"		"	Q2	"		"		"		"
"	"	23	"		"	"		"		"	"		"		"	"		"	Q3	"		"		"		"
"	"	24	"		"	"		"		"	"		"		"	"		"	Q4	"		"		"		"
"	"	25	"		"	"		"		"	"		"		"	"		"	Q5	"		"		"		"
"	"	26	"		"	"		"		"	"		"		"	"		"	Q6	"		"		"		"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
V_{OL1}	3007	27	15.0V		GND	GND		GND		GND	8/		GND		GND	GND		15.0V	Q1		0.05		0.05		0.05	Vdc
"	"	28	"		"	"		"		"	15.0V		"		"	"		"	Q2		"		"		"	"
"	"	29	"		"	"		"		"	"		"		"	"		"	Q3		"		"		"	"
"	"	30	"		"	"		"		"	"		"		"	"		"	Q4		"		"		"	"
"	"	31	"		"	"		"		"	"		"		"	"		"	Q5		"		"		"	"
"	"	32	"		"	"		"		"	"		"		"	"		"	Q6		"		"		"	"
"	"	33	GND		15.0V	15.0V		15.0V		"	8/		15.0V		15.0V	15.0V		"	Q1		"		"		"	"
"	"	34	"		"	"		"		"	15.0V		"		"	"		"	Q2		"		"		"	"
"	"	35	"		"	"		"		"	"		"		"	"		"	Q3		"		"		"	"
"	"	36	"		"	"		"		"	"		"		"	"		"	Q4		"		"		"	"
"	"	37	"		"	"		"		"	"		"		"	"		"	Q5		"		"		"	"
"	"	38	"		"	"		"		"	"		"		"	"		"	Q6		"		"		"	"
V_{IL1}		39	13/	13/	13/	13/	13/	13/	13/	"	13/	13/	13/	13/	13/	13/	13/	13/	All outputs	13/	13/	13/	13/	13/	13/	"
V_{IL2}		40	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"
V_{IL3}		41	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"
V_{IH1}		42	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"
V_{IH2}		43	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"
V_{IH3}		44	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		"	"	"	"	"	"	"	"
I_{OL1}		45	5.0V	0.4V	GND	GND		GND		"	9/		GND		GND	GND		5.0V	Q1	0.51		0.36		0.64		mA
"		46	"		"	"	0.4V	"		"	5.0V		"		"	"		"	Q2	"		"		"		"
"		47	"		"	"		"	0.4V	"	"		"		"	"		"	Q3	"		"		"		"
"		48	"		"	"		"		"	"	0.4V	"		"	"		"	Q4	"		"		"		"
"		49	"		"	"		"		"	"		"	0.4V	"	"		"	Q5	"		"		"		"
"		50	"		"	"		"		"	"		"		"	"	0.4V	"	Q6	"		"		"		"
I_{OH1}		51	"	4.6V	5.0V	5.0V		5.0V		"	9/		5.0V		5.0V	5.0V		"	Q1	-0.51		-0.36		-0.64		"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
I_{OH1}		52	5.0V		5.0V	5.0V	4.6V	5.0V		GND	5.0V		5.0V		5.0V	5.0V		5.0V	Q2	-0.51		-0.36		-0.64		mA
"		53	"		"	"		"	4.6V	"	"		"		"	"		"	Q3	"		"		"		"
"		54	"		"	"		"		"	"	4.6V	"		"	"		"	Q4	"		"		"		"
"		55	"		"	"		"		"	"		"	4.6V	"	"		"	Q5	"		"		"		"
"		56	"		"	"		"		"	"		"		"	"	4.6V	"	Q6	"		"		"		"
I_{OL2}		57	15.0V	1.5V	GND	GND		GND		"	8/		GND		GND	GND		15.0V	Q1	3.4		2.4		4.2		"
"		58	"		"	"	1.5V	"		"	15.0V		"		"	"		"	Q2	"		"		"		"
"		59	"		"	"		"	1.5V	"	"		"		"	"		"	Q3	"		"		"		"
"		60	"		"	"		"		"	"	1.5V	"		"	"		"	Q4	"		"		"		"
"		61	"		"	"		"		"	"		"	1.5V	"	"		"	Q5	"		"		"		"
"		62	"		"	"		"		"	"		"		"	"	1.5V	"	Q6	"		"		"		"
I_{OH2}		63	"	13.5V	15.0V	15.0V		15.0V		"	8/		15.0V		15.0V	15.0V		"	Q1	-3.4		-2.4		-4.2		"
"		64	"		"	"	13.5V	"		"	15.0V		"		"	"		"	Q2	"		"		"		"
"		65	"		"	"		"	13.5V	"	"		"		"	"		"	Q3	"		"		"		"
"		66	"		"	"		"		"	"	13.5V	"		"	"		"	Q4	"		"		"		"
"		67	"		"	"		"		"	"		"	13.5V	"	"		"	Q5	"		"		"		"
"		68	"		"	"		"		"	"		"		"	"	13.5V	"	Q6	"		"		"		"
I_{IH1} 3/	3010	69	18.0V		18.0V	18.0V		18.0V		"	18.0V		18.0V		18.0V	18.0V		18.0V	All inputs together		8					nA
I_{IH2}	"	70	18.0V		GND	GND		GND		"	GND		GND		GND	GND		"	$\overline{C}$		1		45			"
"	"	71	GND		18.0V	GND		GND		"	"		"		"	"		"	D1		"		"			"
"	"	72	"		GND	18.0V		GND		"	"		"		"	"		"	D2		"		"			"
"	"	73	"		"	GND		18.0V		"	"		"		"	"		"	D3		"		"			"
"	"	74	"		"	"		GND		"	18.0V		"		"	"		"	CLK		"		"			"
"	"	75	"		"	"		"		"	GND		18.0V		"	"		"	D4		"		"			"
"	"	76	"		"	"		"		"	"		GND		18.0V	"		"	D5		"		"			"
"	"	77	"		"	"		"		"	"		GND"		GND	18.0V		"	D6		"		"			"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
I_{IL1} 3/	3009	78	GND		GND	GND		GND		GND	GND		GND		GND	GND		18.0V	All inputs together		-8					nA
I_{IL2}	"	79	GND		18.0V	18.0V		18.0V		"	18.0V		18.0V		18.0V	18.0V		"	$\overline{C}$		-1		-45			"
"	"	80	18.0V		GND	"		18.0V		"	"		"		"	"		"	D1		"		"			"
"	"	81	"		18.0V	GND		18.0V		"	"		"		"	"		"	D2		"		"			"
"	"	82	"		"	18.0V		GND		"	"		"		"	"		"	D3		"		"			"
"	"	83	"		"	"		18.0V		"	GND		"		"	"		"	CLK		"		"			"
"	"	84	"		"	"		"		"	18.0V		GND		"	"		"	D4		"		"			"
"	"	85	"		"	"		"		"	18.0V		18.0V		GND	"		"	D5		"		"			"
"	"	86	"		"	"		"		"	18.0V		18.0V		18.0V	GND		"	D6		"		"			"
																				Subgroup 4 T_A = 25°C						
																				Min	Max					
C_i	3012	87	6/		6/					GND								GND	$\overline{C}$		15					pF
"	"	88				6/				"								"	D1		7.5					"
"	"	89						6/		"								"	D2		"					"
"	"	90								"	6/							"	D3		"					"
"	"	91								"			6/					"	CLK		"					"
"	"	92								"					6/			"	D4		"					"
"	"	93								"						6/		"	D5		"					"
"	"	94								"								"	D6		"					"
																				Subgroup 7 T_A = 25°C		Subgroup 8				
																						T_A = 125°C		T_A = -55°C		
																				Min	Max	Min	Max	Min	Max	
Truth table test	3014	95	GND	L	5.0V	5.0V	L	5.0V	L	GND	GND	L	5.0V	L	5.0V	5.0V	L	5.0V	All outputs	See notes 4/, 5/						
"	"	96	5.0V	L	"	"	L	"	L	"	GND	L	"	L	"	"	L	"	"							
"	"	97	5.0V	H	"	"	H	"	H	"	5.0V	H	"	H	"	"	H	"	"							
"	"	98	5.0V	H	"	"	H	"	H	"	GND	H	"	H	"	"	H	"	"							
"	"	99	GND	L	"	"	L	"	L	"	GND	L	"	L	"	"	L	"	"							

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 7		Subgroup 8				
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}		T_A = 25°C		T_A = 125°C		T_A = -55°C		
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
Truth table test	3014	100	GND	L	5.0V	5.0V	L	5.0V	L	GND	5.0V	L	5.0V	L	5.0V	5.0V	L	5.0V	All outputs	See notes 4/, 5/						
“	“	101	5.0V	L	5.0V	5.0V	L	5.0V	L	“	GND	L	5.0V	L	5.0V	5.0V	L	“	“							
“	“	102	“	H	5.0V	5.0V	H	5.0V	H	“	5.0V	H	5.0V	H	5.0V	5.0V	H	“	“							
“	“	103	”	H	GND	GND	H	GND	H	“	GND	H	GND	H	GND	GND	H	“	“							
“	“	104	“	L	GND	GND	L	GND	L	“	5.0V	L	GND	L	GND	GND	L	“	“							
“	“	105	“	L	5.0V	5.0V	L	5.0V	L	“	GND	L	5.0V	L	5.0V	5.0V	L	“	“							
“	“	106	“	H	5.0V	5.0V	H	5.0V	H	“	5.0V	H	5.0V	H	5.0V	5.0V	H	“	“							
“	“	107	GND	L	5.0V	5.0V	L	5.0V	L	“	5.0V	L	5.0V	L	5.0V	5.0V	L	“	“							
“	“	108	GND	L	GND	GND	L	GND	L	“	GND	L	GND	L	GND	GND	L	“	“							
																				Subgroup 9		Subgroup 10		Subgroup 11		
																				T_A = 25°C		T_A = 125°C		T_A = -55°C		
																				Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003 Fig. 4	109	5.0V	OUT	IN2	GND		GND		GND	IN1		GND		GND	GND		5.0V	CLK to Q1	15	300	21	420	15	300	ns
“	“	110	“		GND	IN2	OUT	GND		“	“		GND		“	“		“	CLK to Q2	“	“	“	“	“	“	“
“	“	111	“		“	GND		IN2	OUT	“	“		GND		“	“		“	CLK to Q3	“	“	“	“	“	“	“
“	“	112	“		“	“		GND		“	“	OUT	IN2		“	“		“	CLK to Q4	“	“	“	“	“	“	“
“	“	113	“		“	“		“		“	“		GND	OUT	IN2	“		“	CLK to Q5	“	“	“	“	“	“	“
“	“	114	“		“	“		“		“	“		“		GND	IN2	OUT	“	CLK to Q6	“	“	“	“	“	“	“
t_{PHL2}	“	115	IN2	OUT	5.0V	“		“		“	“		“		“	GND		“	$\overline{C}$ to Q1	15	300	21	420	15	300	“
“	“	116	“		GND	5.0V	OUT	“		“	“		“		“	“		“	$\overline{C}$ to Q2	“	“	“	“	“	“	“
“	“	117	“		“	GND		5.0V	OUT	“	“		“		“	“		“	$\overline{C}$ to Q3	“	“	“	“	“	“	“
“	“	118	“		“	“		GND		“	“	OUT	5.0V		“	“		“	$\overline{C}$ to Q4	“	“	“	“	“	“	“
“	“	119	“		“	“		“		“	“		GND	OUT	5.0V	“		“	$\overline{C}$ to Q5	“	“	“	“	“	“	“
“	“	120	“		“	“		“		“	“		“		GND	5.0V	OUT	“	C to Q6	“	“	“	“	“	“	“
t_{PLH1}	“	121	5.0V	OUT	IN2	“		“		“	IN1		“		“	GND		“	CLK to Q1	15	300	21	420	15	300	“
“	“	122	5.0V		GND	IN2	OUT	“		“	IN1		“		“	GND		“	CLK to Q2	15	300	21	420	15	300	“
“	“	123	5.0V		GND	GND		IN2	OUT	“	IN1		“		“	GND		“	CLK to Q3	15	300	21	420	15	300	“

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{PLH1}	3003	124	5.0V		GND	GND		GND		GND	IN1	OUT	IN2		GND	GND		5.0V	CLK to Q4	15	300	21	420	15	300	ns
"	Fig. 4	125	5.0V		GND	"		"		"	"		GND	OUT	IN2	GND		"	CLK to Q5	15	300	21	420	15	300	"
"	"	126	5.0V		GND	"		"		"	"		"		GND	IN2	OUT	"	CLK to Q6	15	300	21	420	15	300	"
t_{THL}	3004	127	5.0V	OUT	IN2	"		"		"	"		"		"	GND		"	Q1	10	200	14	280	10	200	"
"	Fig. 4	128	"		GND	IN2	OUT	"		"	"		"		"	"		"	Q2	"	"	"	"	"	"	"
"	"	129	"		"	GND		IN2	OUT	"	"		"		"	"		"	Q3	"	"	"	"	"	"	"
"	"	130	"		"	"		GND		"	"	OUT	IN2		"	"		"	Q4	"	"	"	"	"	"	"
"	"	131	"		"	"		"		"	"		GND	OUT	IN2	"		"	Q5	"	"	"	"	"	"	"
"	"	132	"		"	"		"		"	"		"		GND	IN2	OUT	"	Q6	"	"	"	"	"	"	"
t_{TLH}	"	133	"	OUT	IN2	"		"		"	"		"		"	GND		"	Q1	"	"	"	"	"	"	"
"	"	134	"		GND	IN2	OUT	"		"	"		"		"	"		"	Q2	"	"	"	"	"	"	"
"	"	135	"		"	GND		IN2	OUT	"	"		"		"	"		"	Q3	"	"	"	"	"	"	"
"	"	136	"		"	"		GND		"	"	OUT	IN2		"	"		"	Q4	"	"	"	"	"	"	"
"	"	137	"		"	"		"		"	"		GND	OUT	IN2	"		"	Q5	"	"	"	"	"	"	"
"	"	138	"		"	"		"		"	"		"		GND	IN2	OUT	"	Q6	"	"	"	"	"	"	"
f_{CLK}	Fig. 4	139	"	OUT	IN2	"		"		"	"		"		"	GND		"	CLK to Q1		570		800		570	"
10/	"	140	"		GND	IN2	OUT	"		"	"		"		"	"		"	CLK to Q2		"		"		"	"
"	"	141	"		"	GND		IN2	OUT	"	"		"		"	"		"	CLK to Q3		"		"		"	"
"	"	142	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4		"		"		"	"
"	"	143	"		"	"		GND		"	"		GND	OUT	IN2	"		"	CLK to Q5		"		"		"	"
"	"	144	"		"	"		GND		"	"		GND		GND	IN2	OUT	"	CLK to Q6		"		"		"	"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
$t_{p(CLK)}$	Fig. 4	145	5.0V	OUT	IN2	GND		GND		GND	IN1		GND		GND	GND		5.0V	CLK to Q1		200		280		200	ns
11/	"	146	"		GND	IN2	OUT	GND		"	"		GND		"	"		"	CLK to Q2		"		"		"	"
"	"	147	"		"	GND		IN2	OUT	"	"		GND		"	"		"	CLK to Q3		"		"		"	"
"	"	148	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4		"		"		"	"
"	"	149	"		"	"		GND		"	"		GND	OUT	IN2	"		"	CLK to Q5		"		"		"	"
"	"	150	"		"	"		GND		"	"		GND		GND	IN2	OUT	"	CLK to Q6		"		"		"	"
$t_{p(CLR)}$	"	151	IN2	OUT	5.0V	5.0V		5.0V		"	"		5.0V		5.0V	5.0V		"	$\overline{C}$ to Q1		"		"		"	"
11/	"	152	"		"	"	OUT	"		"	"		"		"	"		"	$\overline{C}$ to Q2		"		"		"	"
"	"	153	"		"	"		"	OUT	"	"		"		"	"		"	$\overline{C}$ to Q3		"		"		"	"
"	"	154	"		"	"		"		"	"	OUT	"		"	"		"	$\overline{C}$ to Q4		"		"		"	"
"	"	155	"		"	"		"		"	"		"	OUT	"	"		"	$\overline{C}$ to Q5		"		"		"	"
"	"	156	"		"	"		"		"	"		"		"	"	OUT	"	C to Q6		"		"		"	"
t_{SLH}	"	157	5.0V		IN2	GND		GND		"	"		GND		GND	GND		"	D1 to CLK		80		120		80	"
"	"	158	"		GND	IN2		GND		"	"		GND		"	"		"	D2 to CLK		"		"		"	"
"	"	159	"		"	GND		IN2		"	"		GND		"	"		"	D3 to CLK		"		"		"	"
"	"	160	"		"	"		GND		"	"		IN2		"	"		"	D4 to CLK		"		"		"	"
"	"	161	"		"	"		"		"	"		GND		IN2	"		"	D5 to CLK		"		"		"	"
"	"	162	"		"	"		"		"	"		"		GND	IN2		"	D6 to CLK		"		"		"	"
t_{SHL}	"	163	"		IN2	"		"		"	"		"		"	GND		"	CLK to D1		"		"		"	"
"	"	164	"		GND	IN2		"		"	"		"		"	"		"	CLK to D2		"		"		"	"
"	"	165	"		"	GND		IN2		"	"		"		"	"		"	CLK to D3		"		"		"	"
"	"	166	"		"	"		GND		"	"		IN2		"	"		"	CLK to D4		"		"		"	"
"	"	167	"		"	"		"		"	"		GND		IN2	"		"	CLK to D5		"		"		"	"
"	"	168	"		"	"		"		"	"		"		GND	IN2		"	CLK to D6		"		"		"	"
t_{HHL}	"	169	"		IN2	"		"		"	"		"		"	GND		"	CLK to D1		60		85		60	"
t_{HHL}	"	170	"		GND	IN2		"		"	"		"		"	GND		"	CLK to D2		60		85		60	"
t_{HHL}	"	171	"		GND	GND		IN2		"	"		"		"	GND		"	CLK to D3		60		85		60	"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 9 T_A = 25°C		Subgroup 10 T_A = 125°C		Subgroup 11 T_A = -55°C		
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{HHL}	Fig. 4	172	5.0V		GND	GND		GND		GND	IN1		IN2		GND	GND		5.0V	CLK to D4		60		85		60	ns
t_{HHL}	"	173	"		"	"		"		"	"		GND		IN2	GND		"	CLK to D5		"		"		"	"
t_{HHL}	"	174	"		"	"		"		"	"		"		GND	IN2		"	CLK to D6		"		"		"	"
t_{HLH}	"	175	"		IN2	"		"		"	"		"		"	GND		"	D1 to CLK		"		"		"	"
"	"	176	"		GND	IN2		"		"	"		"		"	"		"	D2 to CLK		"		"		"	"
"	"	177	"		"	GND		IN2		"	"		"		"	"		"	D3 to CLK		"		"		"	"
"	"	178	"		"	"		GND		"	"		IN2		"	"		"	D4 to CLK		"		"		"	"
"	"	179	"		"	"		"		"	"		GND		IN2	"		"	D5 to CLK		"		"		"	"
"	"	180	"		"	"		"		"	"		"		GND	IN2		"	D6 to CLK		"		"		"	"
$t_{r(CLK)}$ 12/	"	181	"	OUT	IN2	"		"		"	"		"		"	GND		"	CLK to Q1		15		15		15	µs
"	"	182	"		GND	IN2	OUT	"		"	"		"		"	"		"	CLK to Q2		"		"		"	"
"	"	183	"		"	GND		IN2	OUT	"	"		"		"	"		"	CLK to Q3		"		"		"	"
"	"	184	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4		"		"		"	"
"	"	185	"		"	"		"		"	"		GND	OUT	IN2	"		"	CLK to Q5		"		"		"	"
"	"	186	"		"	"		"		"	"		"		GND	IN2	OUT	"	CLK to Q6		"		"		"	"
$t_{f(CLK)}$ 12/	"	187	"	OUT	IN2	"		"		"	"		"		"	GND		"	CLK to Q1		"		"		"	"
"	"	188	"		GND	IN2	OUT	"		"	"		"		"	"		"	CLK to Q2		"		"		"	"
"	"	189	"		"	GND		IN2	OUT	"	"		"		"	"		"	CLK to Q3		"		"		"	"
"	"	190	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4		"		"		"	"
"	"	191	"		"	"		GND		"	"		GND	OUT	IN2	"		"	CLK to Q5		"		"		"	"
"	"	192	"		"	"		GND		"	"		GND		GND	IN2	OUT	"	CLK to Q6		"		"		"	"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 12 T_A = 25°C						
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{PHL1}	3003	193	10.0V	OUT	IN2	GND		GND		GND	IN1		GND		GND	GND		10.0V	CLK to Q1	5	110					ns
"	Fig. 4	194	"		GND	IN2	OUT	GND		"	"		GND		"	"		"	CLK to Q2	"	"					"
"	"	195	"		"	GND		IN2	OUT	"	"		GND		"	"		"	CLK to Q3	"	"					"
"	"	196	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4	"	"					"
"	"	197	"		"	"		"		"	"		GND	OUT	IN2	"		"	CLK to Q5	"	"					"
"	"	198	"		"	"		"		"	"		"		GND	IN2	OUT	"	CLK to Q6	"	"					"
t_{PHL2}	"	199	IN2	OUT	10.0V	"		"		"	"		"		"	GND		"	$\overline{C}$ to Q1	"	"					"
"	"	200	"		GND	10.0V	OUT	"		"	"		"		"	"		"	C to Q2	"	"					"
"	"	201	"		"	GND		10.0V	OUT	"	"		"		"	"		"	C to Q3	"	"					"
"	"	202	"		"	"		GND		"	"	OUT	10.0V		"	"		"	C to Q4	"	"					"
"	"	203	"		"	"		"		"	"		GND	OUT	10.0V	"		"	C to Q5	"	"					"
"	"	204	"		"	"		"		"	"		"		GND	10.0V	OUT	"	C to Q6	"	"					"
t_{PLH1}	"	205	10.0V	OUT	IN2	"		"		"	"		"		"	GND		"	CLK to Q1	"	"					"
"	"	206	"		GND	IN2	OUT	"		"	"		"		"	"		"	CLK to Q2	"	"					"
"	"	207	"		"	GND		IN2	OUT	"	"		"		"	"		"	CLK to Q3	"	"					"
"	"	208	"		"	"		GND		"	"	OUT	IN2		"	"		"	CLK to Q4	"	"					"
"	"	209	"		"	"		"		"	"		GND	OUT	IN2	"		"	CLK to Q5	"	"					"
"	"	210	"		"	"		"		"	"		"		GND	IN2	OUT	"	CLK to Q6	"	"					"
t_{THL}	3004	211	"	OUT	IN2	"		"		"	"		"		"	GND		"	Q1	"	100					µs
"	Fig. 4	212	"		GND	IN2	OUT	"		"	"		"		"	GND		"	Q2	"	"					"
"	"	213	"		GND	GND		IN2	OUT	"	"		"		"	GND		"	Q3	"	"					"

See footnotes at end of device type 05.

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

Symbol	MIL-STD-883 method	Cases E,F,Z	Terminal conditions 1/																Measured terminal	Test limits						Units
																				Subgroup 12 T_A = 25°C						
		Symbol	$\overline{C}$	Q1	D1	D2	Q2	D3	Q3	V_{SS}	CLK	Q4	D4	Q5	D5	D6	Q6	V_{DD}								
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	Min	Max	Min	Max	
t_{THL}	3004	214	10.0V		GND	GND		GND		GND	IN1	OUT	IN2		GND	GND		10.0V	Q4	5	100					µs
t_{THL}	Fig. 4	215	"		GND	"		"		"	"		GND	OUT	IN2	GND		"	Q5	"	"					"
t_{THL}	"	216	"		GND	"		"		"	"		"		GND	IN2	OUT	"	Q6	"	"					"
t_{TLH}	"	217	"	OUT	IN2	"		"		"	"		"		"	GND		"	Q1	"	"					"
"	"	218	"		GND	IN2	OUT	"		"	"		"		"	"		"	Q2	"	"					"
"	"	219	"		"	GND		IN2	OUT	"	"		"		"	"		"	Q3	"	"					"
"	"	220	"		"	"		GND		"	"	OUT	IN2		"	"		"	Q4	"	"					"
"	"	221	"		"	"		GND		"	"		GND	OUT	IN2	"		"	Q5	"	"					"
"	"	222	"		"	"		GND		"	"		GND		GND	IN2	OUT	"	Q6	"	"					"

1/ Pins not designated may be "high" level logic, "low" level logic or open. Exceptions are as follows: $V_{IC(pos)}$ tests, the V_{SS} terminals shall be open; $V_{IC(neg)}$ tests, the V_{DD} terminal shall be open; I_{SS} tests, the output terminals shall be open.
2/ The I_{SS} measurements shall be performed in sequence.
3/ The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together.
4/ The truth table tests shall be performed in sequence.
5/ The truth table tests shall be performed at V_{IH} and $V_{DD} \leq 5$ Vdc and ≥ 18 Vdc. "L" = V_{SS} + 0.5 V maximum and "H" = V_{DD} –0.5 V minimum.
6/ See 4.4.1c.
7/ Apply clock pulse V_{IN} = 0 to 18 Vdc.
8/ Apply clock pulse V_{IN} = 0 to 15 Vdc.
9/ Apply clock pulse V_{IN} = 0 to 5 Vdc.
10/ The minimum clock frequency (f_{CLK}) requirement is considered met if proper output state changes occur with the pulse repetition period set to that given in the limits column.
11/ The minimum clock, or clear pulse width ($t_{pH(CLK)}$, and $t_{pH(CLR)}$ requirement is considered met if proper output changes occur with the pulse width set to that given in the limits column.
12/ Pulse repetition period = 100 µs, 50 percent duty cycle. The maximum clock transition time ($t_{r(CLK)}$, $t_{f(CLK)}$) requirement is considered met if proper output state changes occur with rise time set to that given in the limits column.

13/ The following timing sequence and input/output conditions shall apply:

Input/output conditions					
Test	V_{DD}	Input levels		Output levels	
		1	0	1	0
V_{IL1} V_{IH1}	5.0 V	3.5 V	1.5 V	Min 4.5 V	Max 0.5 V
V_{IL2} V_{IH2}	10.0 V	7.0 V	3.0 V	9.0 V	1.0 V
V_{IL3} V_{IH3}	15.0 V	11.0 V	4.0 V	13.5 V	1.5 V

	* Time slot	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	$\overline{C}$	0	1	1	1	0	0	1	1	1	1	1	1	0	0
I	D1	1	1	1	1	1	1	1	1	0	0	1	1	1	0
N	D2	1	1	1	1	1	1	1	1	0	0	1	1	1	0
P	D3	1	1	1	1	1	1	1	1	0	0	1	1	1	0
U	CLK	0	0	1	0	0	1	0	1	0	1	0	1	1	0
T	D4	1	1	1	1	1	1	1	1	0	0	1	1	1	0
S	D5	1	1	1	1	1	1	1	1	0	0	1	1	1	0
	D6	1	1	1	1	1	1	1	1	0	0	1	1	1	0
O	Q1	0	0	1	1	0	0	0	1	1	0	0	1	0	0
U	Q2	0	0	1	1	0	0	0	1	1	0	0	1	0	0
T	Q3	0	0	1	1	0	0	0	1	1	0	0	1	0	0
P	Q4	0	0	1	1	0	0	0	1	1	0	0	1	0	0
U	Q5	0	0	1	1	0	0	0	1	1	0	0	1	0	0
T	Q6	0	0	1	1	0	0	0	1	1	0	0	1	0	0
S															

* Test shall be run in sequence.

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.

4.4.5 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.7 herein). RHA levels for device classes B and S shall be as specified in MIL-PRF-38535 and 4.5.4 herein.

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

4.5.1 Voltage and current. Unless otherwise specified, all voltages given are referenced to the microcircuit V_{SS} terminal. Currents given are conventional current and positive when flowing into the referenced terminal.

4.5.2 Burn-in and life test cool down procedures. When the burn-in and life tests are completed and prior to removal of bias voltages, the devices under test (DUT) shall be cooled to a temperature of 25°C ±3°C; then, electrical parameter end-point measurements shall be performed.

TABLE IV. Delta limits at 25°C.

Parameter 1/	Device types				
	01	02	03	04	05
I_{SS}	±10 nA	±10 nA	±10 nA	±10 nA	±10 nA
I_{OL1}	±15%	±15%	±15%	±15%	±15%
I_{OH1}	±15%	±15%	±15%	±15%	±15%

1/ Each of the above parameters shall be recorded before and after the required burn-in and life tests to determine delta (Δ).

4.5.3 Quiescent supply current (I_{SS} test). When performing quiescent supply current measurements (I_{SS}), the meter shall be placed so that all currents flow through the meter.

4.5.4 Radiation hardness assurance (RHA) testing. The RHA testing shall be performed in accordance with test procedures and sampling specified in MIL-PRF-38535 and herein.

a. Before irradiation, selected samples shall be assembled in qualified packages and pass the governing electrical parameters (group A subgroup 1 at 25°C) and also be subjected to the threshold-voltage test in table VII in order to calculate the delta threshold (ΔV_T) after irradiation.

b. The devices shall be subjected to a total radiation dose as specified in MIL-PRF-38535 for the radiation hardness assurance level being tested, and meet the end-point electrical parameters as defined in table V at 25°C, after exposure. The start and completion of the end-point electrical parameter measurements shall not exceed 2 hours following irradiation.

c. Threshold-voltage test circuit conditions shall be as specified in table VII and on figure 5. In situ and remote testing, the tests shall be performed with the devices biased in accordance with table VI and the bias may be interrupted for up to 1 minute to remove devices to the remote bias fixture.

d. After irradiation, the devices shall pass the truth table test as specified in subgroup 7 in table III or if subgroup 7 is not required, then an equivalent truth table test shall be performed.

TABLE V. Radiation hardened end-point electrical parameters at 25°C.

Parameter	All device types	V_{DD}
V_{TN}	0.3 V min	10 V
V_{TP}	2.8 V max	10 V
ΔV_T	1.4 V max	10 V
I_{SS}	100 x max limit	18 V
t_{PLH}	1.35 x max limit	5 V
t_{PHL}	1.35 x max limit	5 V

TABLE VI. Bias during exposure to radiation.

Device type	Pin connections 1/		
	V_{DD} = 10 V dc (through a 30 kΩ to 60 kΩ resistor)	V_{SS} = GND	V_{DD} = 10 V dc
01	1, 2, 7, 9, 10, 11, 12, 13, 14, 15	8	16
02	2, 3, 4, 5, 9, 10, 11, 12, 13	7	14
03	2, 3, 4, 5, 9, 10, 11, 12, 13	7	14
04	3, 4, 5, 11, 12, 13	8	16
05	1, 3, 4, 6, 9, 11, 13, 14	8	16

1/ Pins not designated are open, or tied to 10 V dc through a 30 kΩ to 60 kΩ resistor.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of material is to be performed by DoD or in-house contractor 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 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

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

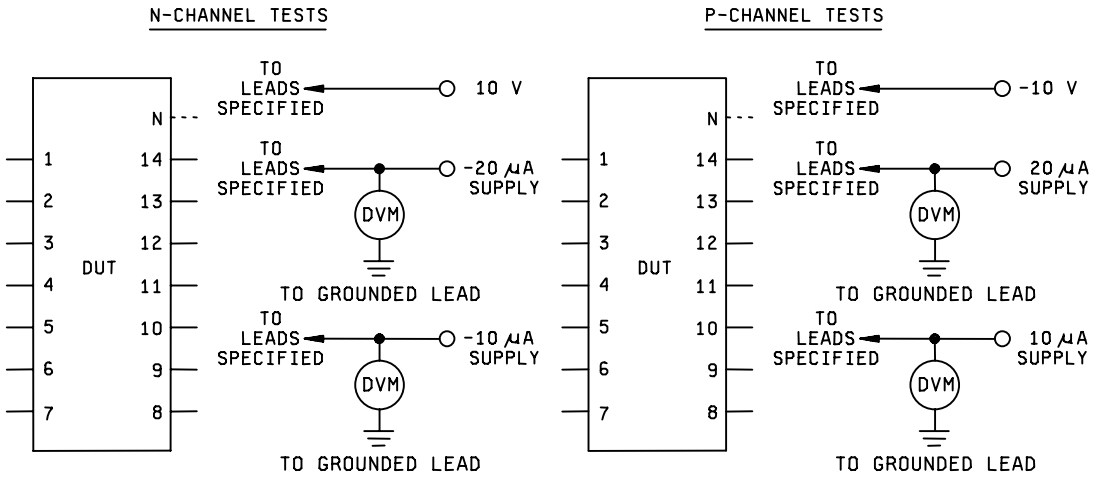


FIGURE 5. Threshold-voltage test circuit.

TABLE VII. Threshold-voltage test circuit conditions.

Device type	GND	10 V	V_{TN} measured at		GND	-10 V	V_{TP} measured at	
			-20 µA supply	-10 µA supply			20 µA supply	10 µA supply
01	7	1, 2, 9-16		8	7	1, 2, 8-15		16
02	12	14		2-5, 7, 9-11, 13	12	2-5, 7, 9-11, 13		14
03	12	14		2-5, 7, 9-11, 13	12	2-5, 7, 9-11, 13		14
04	4	5, 11, 12, 16		1, 3, 8, 13, 15	4	1, 3, 8, 13, 15		5, 11, 12, 16
05	3	1, 4, 6, 9, 11, 13, 14, 16		8	3	8		1, 4, 6, 9, 11, 13, 14, 16

6.2 Acquisition requirements. Acquisition documents should specify the following:

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

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

c. Requirements for delivery of one copy of the 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 and radiation hardness assurance options.

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

i. Requirements for "JAN" marking.

j. Packaging requirements. (see 5.1)

6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractors 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, P.O. Box 3990 Columbus, Ohio 43218-3990.

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:

C_I ..... Input terminal-to-GND capacitance.
GND ..... Ground zero voltage potential.
I_{OC} ..... Three-state output leakage current.
I_{SS} ..... Quiescent supply current.
T_A ..... Free air temperature.
V_{DD} ..... Positive supply voltage.
V_{SS} ..... Negative supply voltage.

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 S for National Aeronautics and Space Administration or class B for Department of Defense (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 Data reporting. When specified in the purchase order or contract, a copy of the following data, as applicable, will be supplied.

a. Attributes data for all screening tests (see 4.2) and variables data for all static burn-in, dynamic burn-in, and steady-state life tests (see 3.6).

b. A copy of each radiograph.

c. The technology conformance inspection (TCI) data (see 4.4).

d. Parameter distribution data on parameters evaluated during burn-in (see 3.6).

e. Final electrical parameters data (see 4.2d).

f. RHA delta limits.

6.8 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, post irradiation performance 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	4076B
02	4095B
03	4096B
04	4098B
05	40174B

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

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

Preparing activity:
DLA - CC

(Project 5962-2042)

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 ASSIST Online database at www.dodssp.daps.mil.