INCH-POUND

MIL-M-38510/170C
18 June 2004

SUPERSEDING
MIL-M-38510/170B
30 April 1984

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, CMOS, AND GATES,
MONOLITHIC SILICON, POSITIVE LOGIC

Reactivated after 18 June. 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535 (see 6.3).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	Quad 2-input AND gate
02	Dual 4-input AND gate
03	Triple 3-input AND gate

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

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

Outline letter	Descriptive designator	Terminals	Package style
A	GDFP5-F14 or CDFP6-F14	14	Flat pack
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
T	CDFP3-F14	14	Flat pack
X 1/ 2/	GDFP5-F14 or CDFP6-F14	14	Flat pack, except A dimension equals 0.1” (2.54 mm) max
Y 1/ 2/	GDFP1-F14 or CDFP2-F14	14	Flat pack, except A dimension equals 0.1” (2.54 mm) max

1/ As an exception to MIL-PRF-38535, appendix A, for case outlines X and Y only, the leads of bottom brazed ceramic packages (i.e., configuration 2 of case outlines A and D) may have electroless nickel undercoating which should be 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 should extend 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 and Y only, the S_1 dimension may go to .000 inch (.00 mm) minimum.

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.

1.3 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_I ≤ (V_{DD} + 0.5)
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
	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
	8.0 V to 10.0 V dc @ V_{DD} = 10.0 V dc
	11 V to 15.0 V dc @ V_{DD} = 15.0 V dc
Operating temperature range (T_A)	-55°C to +125°C

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

DEPARTMENT OF DEFENSE 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 equivalency 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 Logic diagrams and terminal connections. The logic diagrams and terminal connections shall be as specified on figure 1.

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

3.3.3 Switching test circuit and waveforms. The switching test circuit and waveforms shall be as specified on figure 3.

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

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

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

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.

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 36 (see MIL-PRF-38535, appendix A).

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} = Open V_{SS} = GND, Output = Open I_{IN} = -1 mA	All		-6.0	V dc
Quiescent supply current	I_{SS}	V_{DD} = 18 V dc V_{IN} = V_{SS} or V_{DD} All input combinations	All		-750	nA
High level output voltage	V_{OH1}	V_{DD} = 15 V dc V_{IN} = V_{DD} $\lvert I_O \rvert$ ≤ 1µA	All	14.95		V dc
Low level output voltage	V_{OL1}	V_{DD} = 15 V dc Any one input = V_{DD} All others = V_{SS} $\lvert I_O \rvert$ ≤ 1µA	All		0.05	V dc
Input high voltage	V_{IH1}	V_{DD} = 5 V dc See table III $\lvert I_O \rvert$ ≤ 1µA	All	3.5		V dc
	V_{IH2}	V_{DD} = 10 V dc See table III $\lvert I_O \rvert$ ≤ 1µA	All	7.0		V dc
	V_{IH3}	V_{DD} = 15 V dc See table III $\lvert I_O \rvert$ ≤ 1µA	All	11.0		V dc
Input low voltage	V_{IL1}	V_{DD} = 5 V dc Any one input = 1.5 V All others = 3.5 V V_O = 0.5 V dc $\lvert I_O \rvert$ ≤ 1µA	All		1.5	V dc
	V_{IL2}	V_{DD} = 10 V dc Any one input = 3.0 V All others = 7.0 V V_O = 1.0 V dc $\lvert I_O \rvert$ ≤ 1µA	All		3.0	V dc
	V_{IL3}	V_{DD} = 15 V dc Any one input = 4.0 V All others = 11.0 V V_O = 1.5 V dc $\lvert I_O \rvert$ ≤ 1µA	All		4.0	V 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 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
Output low (sink) current	I_{OL1}	V_{DD} = 5 V dc Any one input = V_{DD} All other inputs = V_{SS} V_{OL} = 0.4 V dc	All	0.36		mA dc
	I_{OL2}	V_{DD} = 15 V dc Any one input = V_{DD} All other inputs = V_{SS} V_{OL} = 1.5 V dc	All	2.4		mA dc
Input leakage 1/ current	I_{IH}	V_{DD} = 18 V dc Measure inputs sequentially Connect all unused inputs to V_{DD}	All		100	nA
Input leakage 1/ current	I_{IL}	V_{DD} = 18 V dc	All		-100	nA
Input capacitance	C_i	V_{DD} = 0 V dc, f = 1 MHz, T_A = 25°C	All		7.5	pF
Propagation delay time, high to low level	t_{PHL}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 3)	All	13	350	ns
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 3)	All	6	120	ns
Propagation delay time, low to high level	t_{PLH}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 3)	All	13	350	ns
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 3)	All	6	120	ns
Transition time, high to low level	t_{THL}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 3)	All	10	280	ns
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 3)	All	5	100	ns
Transition time, low to high level	t_{TLH}	V_{DD} = 5 V dc, C_L = 50 pF R_L = 200 kΩ (See figure 3)	All	10	280	ns
		V_{DD} = 10 V dc, C_L = 50 pF R_L = 200 kΩ T_A = +25°C (See figure 3)	All	5	100	ns

1/ Input current of one input node.

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, 9			1*, 2, 3, 9, 10, 11	
9	Group A test requirements (method 5005)	4.4.1	1, 2, 3, 4, 9, 10, 11, 12		4.4.1	1, 2, 3, 4, 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.

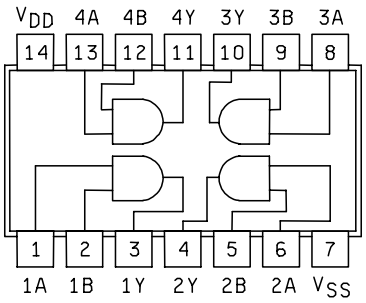
2/ * indicates PDA applies to subgroup 1 (see 4.2.1).

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 (line 1).

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.

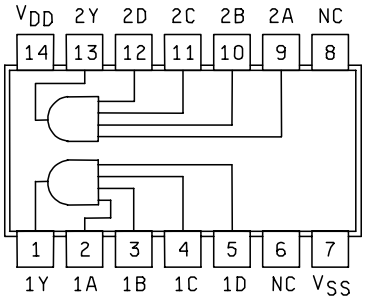
DEVICE TYPE 01

CASES A,C,D,T,X AND Y



DEVICE TYPE 02

CASES C,D,T AND Y



DEVICE TYPE 03

CASES C,D,T AND Y

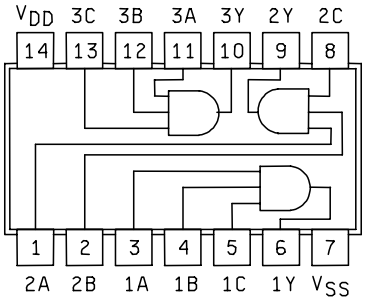


FIGURE 1. Logic diagrams and terminal connections.

Device type 01

Truth table each gate		
Input		Output
A	B	Y
L	L	L
H	L	L
L	H	L
H	H	H

Positive logic Y = A•B

Device type 02

Truth table each gate				
Input				Output
A	B	C	D	Y
L	L	L	L	L
H	L	L	L	L
L	H	L	L	L
H	H	L	L	L
L	L	H	L	L
H	L	H	L	L
L	H	H	L	L
H	H	H	L	L
L	L	L	H	L
H	L	L	H	L
L	H	L	H	L
H	H	L	H	L
L	L	H	H	L
H	L	H	H	L
L	H	H	H	L
H	H	H	H	H

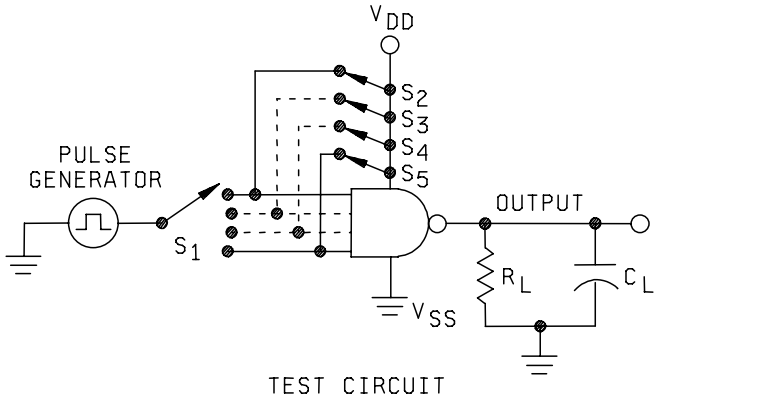
Positive logic Y = A•B•C•D

Device type 03

Truth table each gate			
Input			Output
A	B	C	Y
L	L	L	L
H	L	L	L
L	H	L	L
H	H	L	L
L	L	H	L
H	L	H	L
L	H	H	L
H	H	H	H

Positive logic Y = A•B•C

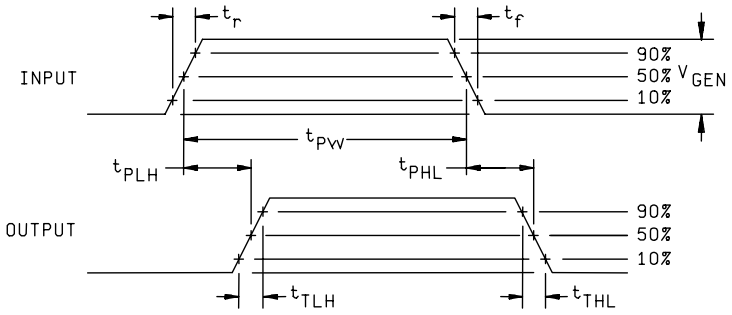
FIGURE 2. Truth tables and logic equations.



TEST CIRCUIT

R_L = 200 kΩ ±5%
C_L = 50 ρF ±5%
INCLUDES WIRING AND PROBE CAPACITANCE

NOTE: All unused inputs must be tied to V_{DD}.



DYNAMIC TEST WAVEFORMS

INPUT PULSE
V_{GEN} = V_{DD} ±1.0%
t_{PW} = 1.0 ±0.1 μs
t_r AND t_f ≤ 20 ns
PRR = 200 kHz

FIGURE 3. Switching test circuit and waveforms.

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 quality conformance inspection. The following additional criteria shall apply:

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

b. Delete the sequence specified as initial (pre-burn-in) electrical parameters through interim (post-burn-in) electrical parameters of method 5004 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 GND.

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}, 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.

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

v. $V_{DD}/2 = V_{DD}/2$ ±1.0 V.

(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}, 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: Minimum = V_{SS} – 0.5 V, +10% V_{DD}; Maximum = V_{DD} + 0.5 V, -10% V_{DD}.

iii. $V_{DD} = V_{DD}/2$ ±1.0 V.

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.

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 4.4.4).

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

a. Tests shall be performed in accordance with table II herein.

b. Subgroups 5, 6, 7, and 8 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. Subgroups 12 shall be added to the group A inspection requirements for class S devices using sample size series of 15 (acceptance 0) and consist of 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-833 method	Cases A,C,D,T, and X, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1A	1B	1Y	2Y	2B	2A	V_{SS}	3A	3B	3Y	4Y	4B	4A	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1	1 mA													GND	1A		1.5					V
“		2		1 mA												“	1B		“					“
“		3					1 mA									“	2B		“					“
“		4						1 mA								“	2A		“					“
“		5								1 mA						“	3A		“					“
“		6									1 mA					“	3B		“					“
“		7												1 mA		“	4B		“					“
“		8													1 mA	“	4A		“					“
V_{IC} (neg)		9	-1 mA						GND								1A		-6.0					“
“		10		-1 mA					“								1B		“					“
“		11					-1 mA		“								2B		“					“
“		12						-1 mA	“								2A		“					“
“		13							“	-1 mA							3A		“					“
“		14							“		-1 mA						3B		“					“
“		15							“					-1 mA			4B		“					“
“		16							“						-1 mA		4A		“					“
I_{SS}	3005	17	GND	18.0V			18.0V	GND	“	GND	18.0V			18.0V	GND	18.0V	V_{SS}		-25.0		-750.0			nA
2/	“	18	18.0V	18.0V			18.0V	18.0V	“	18.0V	18.0V			18.0V	18.0V	18.0V	V_{SS}		-25.0		-750.0			nA
“	“	19	18.0V	GND			GND	18.0V	“	18.0V	GND			GND	18.0V	18.0V	V_{SS}		-25.0		-750.0			nA
V_{OL1}	3007	20	15.0V	GND			GND	GND	GND	GND	GND			GND	GND	15.0V	1Y		0.05		0.05		0.05	V
“	“	21	GND	15.0V			GND	GND	“	“	“			“	“	“	1Y		“		“		“	“
“	“	22	“	GND			15.0V	GND	“	“	“			“	“	“	2Y		“		“		“	“
“	“	23	“	“			GND	15.0V	“	“	“			“	“	“	2Y		“		“		“	“
“	“	24	“	“			“	GND	“	15.0V	“			“	“	“	3Y		“		“		“	“
“	“	25	“	“			“	“	“	GND	15.0V			“	“	“	3Y		“		“		“	“
“	“	26	“	“			“	“	“	“	GND			15.0V	“	“	4Y		“		“		“	“
“	“	27	“	“			“	“	“	“	GND			GND	15.0V	“	4Y		“		“		“	“
V_{OH1}	3006	28	15.0V	15.0V			GND	GND	GND	GND	GND			GND	GND	15.0V	1Y	14.95		14.95		14.95		“
“	“	29	GND	GND			15.0V	15.0V	GND	GND	GND			GND	GND	15.0V	2Y	“		“		“		“
“	“	30	GND	GND			GND	GND	GND	15.0V	15.0V			GND	GND	15.0V	3Y	“		“		“		“
“	“	31	GND	GND			GND	GND	GND	GND	GND			15.0V	15.0V	15.0V	4Y	“		“		“		“
V_{IL1}		32	1.5V	3.5V			GND	GND	GND	GND	GND			GND	GND	5.0V	1Y		0.5		0.5		0.5	V
“		33	3.5V	1.5V			GND	GND	“	“	“			“	“	“	1Y		“		“		“	“
“		34	GND	GND			3.5V	1.5V	“	“	“			“	“	“	2Y		“		“		“	“
“		35	“	“			1.5V	3.5V	“	“	“			“	“	“	2Y		“		“		“	“
“		36	“	“			GND	GND	“	1.5V	3.5V			“	“	“	3Y		“		“		“	“
“		37	“	“			“	“	“	3.5V	1.5V			“	“	“	3Y		“		“		“	“
“		38	“	“			“	“	“	GND	GND			3.5V	1.5V	“	4Y		“		“		“	“
“		39	“	“			“	“	“	“	“			1.5V	3.5V	“	4Y		“		“		“	“
V_{IL2}		40	3.0	7.0V			“	“	“	“	“			GND	GND	10V	1Y		1.0		1.0		1.0	“
“		41	7.0V	3.0V			“	“	“	“	“			“	“	“	1Y		“		“		“	“
“		42	GND	GND			7.0V	3.0V	“	“	“			“	“	“	2Y		“		“		“	“
“		43	“	“			3.0V	7.0V	“	“	“			“	“	“	2Y		“		“		“	“
“		44	“	“			GND	GND	“	3.0V	7.0V			“	“	“	3Y		“		“		“	“
“		45	“	“			“	“	“	7.0V	3.0V			“	“	“	3Y		“		“		“	“
“		46	“	“			“	“	“	GND	GND			7.0V	3.0V	“	4Y		“		“		“	“
“		47	“	“			“	“	“	GND	GND			3.0V	7.0V	“	4Y		“		“		“	“

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases A,C,D, T, X, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1A	1B	1Y	2Y	2B	2A	V_{SS}	3A	3B	3Y	4Y	4B	4A	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IL3}		48	4.0V	11.0V			GND	GND	GND	GND	GND			GND	GND	15V	1Y		1.5		1.5		1.5	V
"		49	11.0V	4.0V			GND	GND	"	"	"			"	"	"	1Y		"		"		"	"
"		50	GND	GND			11.0V	4.0V	"	"	"			"	"	"	2Y		"		"		"	"
"		51	"	"			4.0V	11.0V	"	"	"			"	"	"	2Y		"		"		"	"
"		52	"	"			GND	GND	"	4.0V	11.0V			"	"	"	3Y		"		"		"	"
"		53	"	"			"	"	"	11.0V	4.0V			"	"	"	3Y		"		"		"	"
"		54	"	"			"	"	"	GND	GND			11.0V	4.0V	"	4Y		"		"		"	"
"		55	"	"			"	"	"	"	"			4.0V	11.0V	"	4Y		"		"		"	"
V_{IH1}		56	3.5V	3.5V			"	"	"	"	"			GND	GND	5.0V	1Y	4.5		4.5		4.5		"
"		57	GND	GND			3.5V	3.5V	"	"	"			"	"	"	2Y	"		"		"		"
"		58	"	"			GND	GND	"	3.5V	3.5V			"	"	"	3Y	"		"		"		"
"		59	"	"			"	"	"	GND	GND			3.5V	3.5V	"	4Y	"		"		"		"
V_{IH2}		60	7.0V	7.0V			"	"	"	"	"			GND	GND	10V	1Y	9.0		9.0		9.0		"
"		61	GND	GND			7.0V	7.0V	"	"	"			"	"	"	2Y	"		"		"		"
"		62	"	"			GND	GND	"	7.0V	7.0V			"	"	"	3Y	"		"		"		"
"		63	"	"			"	"	"	GND	GND			7.0V	7.0V	"	4Y	"		"		"		"
V_{IH3}		64	11V	11V			"	"	"	"	"			GND	GND	15V	1Y	13.5		13.5		13.5		"
"		65	GND	GND			11V	11V	"	"	"			"	"	"	2Y	"		"		"		"
"		66	"	"			GND	GND	"	11V	11V			"	"	"	3Y	"		"		"		"
"		67	"	"			"	"	"	GND	GND			11V	11V	"	4Y	"		"		"		"
I_{OL1}		68	"	5.0V	0.4V		"	"	"	"	"			GND	GND	5.0V	1Y	0.51		0.36		0.64		mA
"		69	5.0V	GND	0.4V		"	"	"	"	"			"	"	"	1Y	"		"		"		"
"		70	GND	"		0.4V	"	5.0V	"	"	"			"	"	"	2Y	"		"		"		"
"		71	"	"		0.4V	5.0V	GND	"	"	"			"	"	"	2Y	"		"		"		"
"		72	"	"			GND	"	"	"	5.0V	0.4V		"	"	"	3Y	"		"		"		"
"		73	"	"			"	"	"	5.0V	GND	0.4V		"	"	"	3Y	"		"		"		"
"		74	"	"			"	"	"	GND	"		0.4V	"	5.0V	"	4Y	"		"		"		"
"		75	"	"			"	"	"	"	"		0.4V	5.0V	GND	"	4Y	"		"		"		"
I_{OL2}		76	15V	"	1.5V		"	"	"	"	"			GND	"	15.0V	1Y	3.4		2.4		4.2		"
"		77	GND	15V	1.5V		"	"	"	"	"			"	"	"	1Y	"		"		"		"
"		78	"	GND		1.5V	15V	"	"	"	"			"	"	"	2Y	"		"		"		"
"		79	"	"		1.5V	GND	15V	"	"	"			"	"	"	2Y	"		"		"		"
"		80	"	"			"	GND	"	15V	"	1.5V		"	"	"	3Y	"		"		"		"
"		81	"	"			"	GND	"	GND	15V	1.5V		"	"	"	3Y	"		"		"		"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases A,C,D, T, X, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1A	1B	1Y	2Y	2B	2A	V_{SS}	3A	3B	3Y	4Y	4B	4A	V_{DD}							
		Test No.																Min	Max	Min	Max	Min	Max	
I_{OL2}		82	GND	GND			GND	GND	GND	GND	GND		1.5V	15.0V	GND	15.0V	4Y	3.4		2.4		4.2		mA
		83	GND	GND			GND	GND	"	"	"		1.5V	GND	15V	15.0V	4Y	3.4		2.4		4.2		"
I_{OH1}		84	5.0V	5.0V	4.6V		GND	GND	"	"	"			"	GND	5.0V	1Y	-0.51		-0.36		-0.64		"
"		85	GND	GND		4.6V	5.0V	5.0V	"	"	"			"	"	"	2Y	"		"		"		"
"		86	"	"			GND	GND	"	5.0V	5.0V	4.6V		"	"	"	3Y	"		"		"		"
"		87	"	"			"	"	"	GND	GND		4.6V	5.0V	5.0V	"	4Y	"		"		"		"
I_{OH2}		88	15.0V	15.0V	13.5V		"	"	"	"	"			GND	GND	15.0V	1Y	-3.4		-2.4		-4.2		"
"		89	GND	GND		13.5V	15.0V	15.0V	"	"	"			"	"	"	2Y	"		"		"		"
"		90	"	"			GND	GND	"	15.0V	15.0V	13.5V		"	"	"	3Y	"		"		"		"
"		91	"	"			"	"	"	GND	GND		13.5V	15.0V	15.0V	"	4Y	"		"		"		"
I_{IH1} 3/	3010	92	18.0V	18.0V			18.0V	18.0V	"	18.0V	18.0V			18.0V	18.0V	18.0V	All inputs together		800					nA
I_{IH2}	3010	93	"	"			"	"	"	"	"			"	"	"	1A		100		100			"
"	"	94	"	"			"	"	"	"	"			"	"	"	1B		"		"			"
"	"	95	"	"			"	"	"	"	"			"	"	"	2B		"		"			"
"	"	96	"	"			"	"	"	"	"			"	"	"	2A		"		"			"
"	"	97	"	"			"	"	"	"	"			"	"	"	3A		"		"			"
"	"	98	"	"			"	"	"	"	"			"	"	"	3B		"		"			"
"	"	99	"	"			"	"	"	"	"			"	"	"	4B		"		"			"
"	"	100	"	"			"	"	"	"	"			"	"	"	4A		"		"			"
I_{IL1}	3009	101	GND	GND			GND	GND	"	GND	GND			GND	GND	"	All inputs together		-800					"
I_{IL2}	3009	102	GND	18.0V			18.0V	18.0V	"	18.0V	18.0V			18.0V	18.0V	18.0V	1A		-100		-100			"
"	"	103	18.0V	GND			18.0V	"	"	"	"			"	"	"	1B		"		"			"
"	"	104	18.0V	18.0V			GND	"	"	"	"			"	"	"	2B		"		"			"
"	"	105	"	"			18.0V	GND	"	"	"			"	"	"	2A		"		"			"
"	"	106	"	"			"	18.0V	"	GND	"			"	"	"	3A		"		"			"
"	"	107	"	"			"	"	"	18.0V	GND			"	"	"	3B		"		"			"
"	"	108	"	"			"	"	"	"	18.0V			GND	"	"	4B		"		"			"
"	"	109	"	"			"	"	"	"	"			18.0V	GND	"	4A		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max					
C_i	3012	110	4/						GND							GND	1A		7.5					pF
"	"	111		4/					"							"	1B		"					"
"	"	112					4/		"							"	2B		"					"
"	"	113						4/	"							"	2A		"					"
"	"	114							"	4/						"	3A		"					"
"	"	115							"		4/					"	3B		"					"
"	"	116							"					4/		"	4B		"					"
"	"	117							"						4/	"	4A		"					"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases A,C,D, T, X, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1A	1B	1Y	2Y	2B	2A	V_{SS}	3A	3B	3Y	4Y	4B	4A	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
t_{PHL}	3003	118	IN	5.0V	OUT		5.0V	5.0V	GND	5.0V	5.0V			5.0V	5.0V	5.0V	1A to 1Y	13	250	18	350	13	250	ns
"	Fig. 3	119	5.0V	IN	OUT		5.0V	"	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	120	"	5.0V		OUT	IN	"	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	121	"	"		OUT	5.0V	IN	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	122	"	"			"	5.0V	"	IN	"	OUT		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	123	"	"			"	"	"	5.0V	IN	OUT		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	124	"	"			"	"	"	"	5.0V		OUT	IN	"	"	4B to 4Y	"	"	"	"	"	"	"
"	"	125	"	"			"	"	"	"	5.0V		OUT	5.0V	IN	"	4A to 4Y	"	"	"	"	"	"	"
t_{PLH}	3003	126	IN	"	OUT		"	"	"	"	5.0V			"	5.0V	"	1A to 1Y	"	"	"	"	"	"	"
"	Fig. 3	127	5.0V	IN	OUT		"	"	"	"	"			"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	128	"	5.0V		OUT	IN	"	"	"	"			"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	129	"	"		OUT	5.0V	IN	"	"	"			"	"	"	2A to 2Y	"	"	"	"	"	"	"
"	"	130	"	"			"	5.0V	"	IN	"	OUT		"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	131	"	"			"	"	"	5.0V	IN	OUT		"	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	132	"	"			"	"	"	"	5.0V		OUT	IN	"	"	4B to 4Y	"	"	"	"	"	"	"
"	"	133	"	"			"	"	"	"	5.0V		OUT	5.0V	IN	"	4A to 4Y	"	"	"	"	"	"	"
t_{THL}	3004	134	IN	"	OUT		"	"	"	"	5.0V			"	5.0V	"	1Y	10	200	14	280	10	200	"
"	Fig. 3	135	5.0V	IN	OUT		"	"	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	136	"	5.0V		OUT	IN	"	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	137	"	"		OUT	5.0V	IN	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	138	"	"			"	5.0V	"	IN	"	OUT		"	"	"	3Y	"	"	"	"	"	"	"
"	"	139	"	"			"	"	"	5.0V	IN	OUT		"	"	"	3Y	"	"	"	"	"	"	"
"	"	140	"	"			"	"	"	"	5.0V		OUT	IN	"	"	4Y	"	"	"	"	"	"	"
"	"	141	"	"			"	"	"	"	5.0V		OUT	5.0V	IN	"	4Y	"	"	"	"	"	"	"
t_{TLH}	3004	142	IN	"	OUT		"	"	"	"	5.0V			"	5.0V	"	1Y	"	"	"	"	"	"	"
"	Fig. 3	143	5.0V	IN	OUT		"	"	"	"	"			"	"	"	1Y	"	"	"	"	"	"	"
"	"	144	"	5.0V		OUT	IN	"	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	145	"	"		OUT	5.0V	IN	"	"	"			"	"	"	2Y	"	"	"	"	"	"	"
"	"	146	"	"			"	5.0V	"	IN	"	OUT		"	"	"	3Y	"	"	"	"	"	"	"
"	"	147	"	"			"	"	"	5.0V	IN	OUT		"	"	"	3Y	"	"	"	"	"	"	"
"	"	148	"	"			"	"	"	"	5.0V		OUT	IN	"	"	4Y	"	"	"	"	"	"	"
"	"	149	"	"			"	"	"	"	5.0V		OUT	5.0V	IN	"	4Y	"	"	"	"	"	"	"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases A,C,D, T, X, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		Subgroup 12 T_A = 25°C						
		Symbol	1A	1B	1Y	2Y	2B	2A	V_{SS}	3A	3B	3Y	4Y	4B	4A	V_{DD}								
		Test No.																Min	Max					
t_{PHL}	3003	150	IN	10.0V	OUT		10.0V	10.0V	GND	10.0V	10.0V			10.0V	10.0V	10.0 V	1A to 1Y	6	120					ns
"	Fig. 3	151	10.0V	IN	OUT		10.0V	10.0V	"	"	"			"	"	"	1B to 1Y	"	"					"
"	"	152	"	10.0V		OUT	IN	10.0V	"	"	"			"	"	"	2B to 2Y	"	"					"
"	"	153	"	"		OUT	10.0V	IN	"	"	"			"	"	"	2A to 2Y	"	"					"
"	"	154	"	"			"	10.0V	"	IN	"	OUT		"	"	"	3A to 3Y	"	"					"
"	"	155	"	"			"	"	"	10.0V	IN	OUT		"	"	"	3B to 3Y	"	"					"
"	"	156	"	"			"	"	"	"	10.0V		OUT	IN	"	"	4B to 4Y	"	"					"
"	"	157	"	"			"	"	"	"	"		OUT	10.0V	IN	"	4A to 4Y	"	"					"
t_{PLH}	"	158	IN	"	OUT		"	"	"	"	"			"	10.0V	"	1A to 1Y	"	"					"
"	"	159	10.0V	IN	OUT		"	"	"	"	"			"	"	"	1B to 1Y	"	"					"
"	"	160	"	10.0V		OUT	IN	"	"	"	"			"	"	"	2B to 2Y	"	"					"
"	"	161	"	"		OUT	10.0V	IN	"	"	"			"	"	"	2A to 2Y	"	"					"
"	"	162	"	"			"	10.0V	"	IN	"	OUT		"	"	"	3A to 3Y	"	"					"
"	"	163	"	"			"	"	"	10.0V	IN	OUT		"	"	"	3B to 3Y	"	"					"
"	"	164	"	"			"	"	"	"	10.0V		OUT	IN	"	"	4B to 4Y	"	"					"
"	"	165	"	"			"	"	"	"	"		OUT	10.0V	IN	"	4A to 4Y	"	"					"
t_{THL}	3004	166	IN	"	OUT		"	"	"	"	"			"	10.0V	"	1Y	5	100					"
"	Fig. 3	167	10.0V	IN	OUT		"	"	"	"	"			"	"	"	1Y	"	"					"
"	"	168	"	10.0V		OUT	IN	"	"	"	"			"	"	"	2Y	"	"					"
"	"	169	"	"		OUT	10.0V	IN	"	"	"			"	"	"	2Y	"	"					"
"	"	170	"	"			"	10.0V	"	IN	"	OUT		"	"	"	3Y	"	"					"
"	"	171	"	"			"	"	"	10.0V	IN	OUT		"	"	"	3Y	"	"					"
"	"	172	"	"			"	"	"	"	10.0V		OUT	IN	"	"	4Y	"	"					"
"	"	173	"	"			"	"	"	"	"		OUT	10.0V	IN	"	4Y	"	"					"
t_{TLH}	"	174	IN	"	OUT		"	"	"	"	"			"	10.0V	"	1Y	"	"					"
"	"	175	10.0V	IN	OUT		"	"	"	"	"			"	"	"	1Y	"	"					"
"	"	176	"	10.0V		OUT	IN	"	"	"	"			"	"	"	2Y	"	"					"
"	"	177	"	"		OUT	10.0V	IN	"	"	"			"	"	"	2Y	"	"					"
"	"	178	"	"			"	10.0V	"	IN	"	OUT		"	"	"	3Y	"	"					"
"	"	179	"	"			"	"	"	10.0V	IN	OUT		"	"	"	3Y	"	"					"
"	"	180	"	"			"	"	"	10.0V	10.0V		OUT	IN	"	"	4Y	"	"					"
"	"	181	"	"			"	"	"	10.0V	10.0V		OUT	10.0V	IN	"	4Y	"	"					"

See footnotes at end of table.

TABLE III. Group A inspection for device type 02.

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1		1 mA												GND	1A		1.5					V
“		2			1 mA											“	1B		“					“
“		3				1 mA										“	1C		“					“
“		4					1 mA									“	1D		“					“
“		5									1 mA					“	2A		“					“
“		6										1 mA				“	2B		“					“
“		7											1 mA			“	2C		“					“
“		8												1 mA		“	2D		“					“
V_{IC} (neg)		9		-1 mA					GND								1A		-6.0					V
“		10			-1 mA				“								1B		“					“
“		11				-1 mA			“								1C		“					“
“		12					-1 mA		“								1D		“					“
“		13							“		-1 mA						2A		“					“
“		14							“			-1 mA					2B		“					“
“		15							“				-1 mA				2C		“					“
“		16							“					-1 mA			2D		“					“
I_{SS} 2/	3005	17		GND	18.0V	18.0V	18.0V		“		GND	18.0V	18.0V	18.0V		18.0V	V_{SS}		-25.0		-750.0			nA
“	“	18		18.0V	GND	18.0V	“		“		18.0V	GND	18.0V	“		“	“		“		“			“
“	“	19		“	18.0V	GND	“		“		“	18.0V	GND	“		“	“		“		“			“
“	“	20		“	“	18.0V	GND		“		“	“	18.0V	GND		“	“		“		“			“
“	“	21		“	“	18.0V	18.0V		“		“	“	18.0V	18.0V		“	“		“		“			“
V_{OL1}	3007	22		15.0	GND	GND	GND		“		GND	GND	GND	GND		15.0V	1Y		.05		.05		.05	V
“	“	23		GND	15.0V	GND	GND		“		“	“	“	“		“	1Y		“		“		“	“
“	“	24		“	GND	15.0V	GND		“		“	‘	“	“		“	1Y		“		“		“	“
“	“	25		“	“	GND	15.0V		“		“	“	“	“		“	1Y		“		“		“	“
“	“	26		“	“	“	GND		“		15.0	“	“	“		“	2Y		“		“		“	“
“	“	27		“	“	“	“		“		GND	15.0V	“	“		“	2Y		“		“		“	“
“	“	28		“	“	“	“		“		“	GND	15.0V	“		“	2Y		“		“		“	“
“	“	29		“	“	“	“		“		“	GND	GND	15.0V		“	2Y		“		“		“	“
V_{OH1}	3006	30		15.0V	15.0V	15.0V	15.0V		“		GND	GND	GND	GND		“	1Y	14.95		14.95		14.95		V
V_{OH1}	3006	31		GND	GND	GND	GND		“		15.0V	15.0V	15.0V	15.0V		“	2Y	14.95		14.95		14.95		“
V_{IL1}		32		1.5V	3.5V	3.5V	3.5V		“		GND	GND	GND	GND		5.0V	1Y		0.5		0.5		0.5	V
“		33		3.5V	1.5V	3.5V	3.5V		“		“	“	“	“		“	1Y		“		“		“	“
“		34		“	3.5V	1.5V	3.5V		“		“	“	“	“		“	1Y		“		“		“	“
“		35		“	3.5V	3.5V	1.5V		“		“	“	“	“		“	1Y		“		“		“	“
“		36		GND	GND	GND	GND		“		1.5V	3.5V	3.5V	3.5V		“	2Y		“		“		“	“
“		37		“	“	“	“		“		3.5V	1.5V	3.5V	3.5V		“	2Y		“		“		“	“
“		38		“	“	“	“		“		3.5V	3.5V	1.5V	3.5V		“	2Y		“		“		“	“
“		39		“	“	“	“		“		3.5V	3.5V	3.5V	1.5V		“	2Y		“		“		“	“
V_{IL2}		40		3.0V	7.0V	7.0V	7.0V		“		GND	GND	GND	GND		10V	1Y		1.0		1.0		1.0	V
“		41		7.0V	3.0V	7.0V	7.0V		“		“	“	“	“		“	1Y		“		“		“	“
“		42		“	7.0V	3.0V	7.0V		“		“	“	“	“		“	1Y		“		“		“	“
“		43		“	7.0V	7.0V	3.0V		“		“	“	“	“		“	1Y		“		“		“	“
“		44		GND	GND	GND	GND		“		3.0V	7.0V	7.0V	7.0V		“	2Y		“		“		“	“
“		45		GND	GND	GND	GND		“		7.0V	3.0V	7.0V	7.0V		“	2Y		“		“		“	“
“		46		GND	GND	GND	GND		“		7.0V	7.0V	3.0V	7.0V		“	2Y		“		“		“	“
“		47		GND	GND	GND	GND		“		7.0V	7.0V	7.0V	3.0V		“	2Y		“		“		“	“

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IL3}		48		4.0V	11V	11V	11V		GND		GND	GND	GND	GND		15V	1Y		1.5		1.5		1.5	V
"		49		11V	4.0V	11V	11V		"		"	"	"	"		"	1Y		"		"		"	"
"		50		11V	11V	4.0V	11V		"		"	"	"	"		"	1Y		"		"		"	"
"		51		11V	11V	11V	4.0V		"		"	"	"	"		"	1Y		"		"		"	"
"		52		GND	GND	GND	GND		"		4.0V	11V	11V	11V		"	2Y		"		"		"	"
"		53		"	"	"	"		"		11V	4.0V	11V	11V		"	2Y		"		"		"	"
"		54		"	"	"	"		"		11V	11V	4.0V	11V		"	2Y		"		"		"	"
"		55		"	"	"	"		"		11V	11V	11V	4.0V		"	2Y		"		"		"	"
V_{IH1}		56		3.5V	3.5V	3.5V	3.5V		"		GND	GND	GND	GND		5.0V	1Y	4.5		4.5		4.5		"
"		57		GND	GND	GND	GND		"		3.5V	3.5V	3.5V	3.5V		5.0V	2Y	4.5		4.5		4.5		"
V_{IH2}		58		7.0V	7.0V	7.0V	7.0V		"		GND	GND	GND	GND		10V	1Y	9.0		9.0		9.0		"
"		59		GND	GND	GND	GND		"		7.0V	7.0V	7.0V	7.0V		10V	2Y	9.0		9.0		9.0		"
V_{IH3}		60		11V	11V	11V	11V		"		GND	GND	GND	GND		15V	1Y	13.5		13.5		13.5		"
"		61		GND	GND	GND	GND		"		11V	11V	11V	11V		15V	2Y	13.5		13.5		13.5		"
I_{OL1}		62	0.4	5.0V	GND	GND	GND		"		GND	GND	GND	GND		5.0V	1Y	0.51		0.36		0.64		mA
"		63	"	GND	5.0V	GND	GND		"		"	"	"	"		"	1Y	"		"		"		"
"		64	"	"	GND	5.0V	GND		"		"	"	"	"		"	1Y	"		"		"		"
"		65	"	"	"	GND	5.0V		"		"	"	"	"		"	1Y	"		"		"		"
"		66		"	"	"	GND		"		5.0V	"	"	"	0.4V	"	2Y	"		"		"		"
"		67		"	"	"	"		"		GND	5.0V	"	"	"	"	2Y	"		"		"		"
"		68		"	"	"	"		"		"	GND	5.0V	"	"	"	2Y	"		"		"		"
"		69		"	"	"	"		"		"	"	GND	5.0V	"	"	2Y	"		"		"		"
I_{OL2}		70	1.5V	15.0V	"	"	"		"		"	"	"	GND		15.0V	1Y	3.4		2.4		4.2		mA
"		71	"	GND	15.0V	"	"		"		"	"	"	"		"	1Y	"		"		"		"
"		72	"	"	GND	15.0V	"		"		"	"	"	"		"	1Y	"		"		"		"
"		73	"	"	"	GND	15.0V		"		"	"	"	"		"	1Y	"		"		"		"
"		74		"	"	"	GND		"		15.0V	"	"	"	1.5V	"	2Y	"		"		"		"
"		75		"	"	"	"		"		GND	15.0V	"	"	"	"	2Y	"		"		"		"
"		76		"	"	"	"		"		GND	GND	15.0V	"	"	"	2Y	"		"		"		"
"		77		"	"	"	"		"		GND	GND	GND	15.0V	"	"	2Y	"		"		"		"
I_{OH1}		78	4.6V	5.0V	5.0V	5.0V	5.0V		"		GND	GND	GND	GND		5.0V	1Y	-0.51		-0.36		-0.64		"
I_{OH1}		79		GND	GND	GND	GND		"		5.0V	5.0V	5.0V	5.0V	4.6V	5.0V	2Y	-0.51		-0.36		-0.64		"
I_{OH2}		80	13.5V	15.0V	15.0V	15.0V	15.0V		"		GND	GND	GND	GND		15.0V	1Y	-3.4		-2.4		-4.2		"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
																		Subgroup 1 T_A = 25°C		Subgroup 2 T_A = 125°C		Subgroup 3 T_A = -55°C		
		Symbol	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}							
		Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	Min	Max	Min	Max	
I_{OH2}		81		GND	GND	GND	GND		GND		15.0V	15.0V	15.0V	15.0V	13.5V	15.0V	2Y	-3.4		-2.4		-4.2		mA
I_{IH1} 3/	3010	82		18.0V	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	18.0V		18.0V	All inputs together		800					nA
I_{IH2}	3010	83		"	"	"	"		"		"	"	"	"		"	1A		100		100			"
"	"	84		"	"	"	"		"		"	"	"	"		"	1B		"		"			"
"	"	85		"	"	"	"		"		"	"	"	"		"	1C		"		"			"
"	"	86		"	"	"	"		"		"	"	"	"		"	1D		"		"			"
"	"	87		"	"	"	"		"		"	"	"	"		"	2A		"		"			"
"	"	88		"	"	"	"		"		"	"	"	"		"	2B		"		"			"
"	"	89		"	"	"	"		"		"	"	"	"		"	2C		"		"			"
"	"	90		"	"	"	"		"		"	"	"	"		"	2D		"		"			"
I_{IL1} 3/	3009	91		GND	GND	GND	GND		"		GND	GND	GND	GND		"	All inputs together		-800					"
I_{IL2}	3009	92		GND	18.0V	18.0V	18.0V		"		18.0V	18.0V	18.0V	18.0V		"	1A		-100		-100			"
"	"	93		18.0V	GND	18.0V	18.0V		"		"	"	"	"		"	1B		"		"			"
"	"	94		"	18.0V	GND	18.0V		"		"	"	"	"		"	1C		"		"			"
"	"	95		"	"	18.0V	GND		"		"	"	"	"		"	1D		"		"			"
"	"	96		"	"	"	18.0V		"		GND	"	"	"		"	2A		"		"			"
"	"	97		"	"	"	"		"		18.0V	GND	"	"		"	2B		"		"			"
"	"	98		"	"	"	"		"		18.0V	18.0V	GND	"		"	2C		"		"			"
"	"	99		"	"	"	"		"		18.0V	18.0V	18.0V	GND		"	2D		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max					
C_i	3012	100		4/					GND							GND	1A		7.5					pF
"	"	101			4/				"							"	1B		"					"
"	"	102				4/			"							"	1C		"					"
"	"	103					4/		"							"	1D		"					"
"	"	104							"		4/					"	2A		"					"
"	"	105							"			4/				"	2B		"					"
"	"	106							"				4/			"	2C		"					"
"	"	107							"					4/		"	2D		"					"
																		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_{PHL}	3003	108	OUT	IN	5.0V	5.0V	5.0V		GND		5.0V	5.0V	5.0V	5.0V		5.0V	1A to 1Y	13	250	18	350	13	250	ns
"	Fig. 3	109	"	5.0V	IN	5.0V	5.0V		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	110	"	"	5.0V	IN	5.0V		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	111	"	"	"	5.0V	IN		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
"	"	112		"	"	"	5.0V		"		IN	"	"	"	OUT	"	2A to 2Y	"	"	"	"	"	"	"
"	"	113		"	"	"	"		"		5.0V	IN	"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	114		"	"	"	"		"		"	5.0V	IN	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	115		"	"	"	"		"		"	"	5.0V	IN	"	"	2D to 2Y	"	"	"	"	"	"	"
t_{PLH}	3003	116	OUT	IN	"	"	"		"		"	"	"	5.0V		"	1A to 1Y	"	"	"	"	"	"	"
"	Fig. 3	117	"	5.0V	IN	"	"		"		"	"	"	"		"	1B to 1Y	"	"	"	"	"	"	"
"	"	118	"	"	5.0V	IN	"		"		"	"	"	"		"	1C to 1Y	"	"	"	"	"	"	"
"	"	119	"	"	5.0V	5.0V	IN		"		"	"	"	"		"	1D to 1Y	"	"	"	"	"	"	"
t_{PLH}	3003	120		5.0V	5.0V	5.0V	5.0V		GND		IN	5.0V	5.0V	5.0V	OUT	5.0V	2A to 2Y	13	250	18	350	13	250	ns
"	Fig. 3	121		"	"	"	"		"		5.0V	IN	5.0V	5.0V	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	122		"	"	"	"		"		5.0V	5.0V	IN	5.0V	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	123		"	"	"	"		"		5.0V	5.0V	5.0V	IN	"	"	2D to 2Y	"	"	"	"	"	"	"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	1Y	1A	1B	1C	1D	NC	V_{SS}	NC	2A	2B	2C	2D	2Y	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
t_{THL}	3004	124	OUT	IN	5.0V	5.0V	5.0V		GND		5.0V	5.0V	5.0V	5.0V		5.0V	1Y	10	200	14	280	10	200	ns
"	Fig. 3	125	"	5.0V	IN	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	126	"	"	5.0V	IN	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	127	"	"	"	5.0V	IN		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	128		"	"	"	5.0V		"		IN	"	"	"	OUT	"	2Y	"	"	"	"	"	"	"
"	"	129		"	"	"	"		"		5.0V	IN	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	130		"	"	"	"		"		"	5.0V	IN	"	"	"	2Y	"	"	"	"	"	"	"
"	"	131		"	"	"	"		"		"	"	5.0V	IN	"	"	2Y	"	"	"	"	"	"	"
t_{TLH}	3004	132	OUT	IN	"	"	"		"		"	"	"	5.0V		"	1Y	"	"	"	"	"	"	"
"	Fig. 3	133	"	5.0V	IN	"	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	134	"	"	5.0V	IN	"		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	135	"	"	"	5.0V	IN		"		"	"	"	"		"	1Y	"	"	"	"	"	"	"
"	"	136		"	"	"	5.0V		"		IN	"	"	"	OUT	"	2Y	"	"	"	"	"	"	"
"	"	137		"	"	"	"		"		5.0V	IN	"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	138		"	"	"	"		"		"	5.0V	IN	"	"	"	2Y	"	"	"	"	"	"	"
"	"	139		"	"	"	"		"		"	5.0V	5.0V	IN	"	"	2Y	"	"	"	"	"	"	"

																	Measured terminal	Test limits						Unit
																		Subgroup 12 T_A = 25°C						
																		Min	Max					
t_{PHL}	3003	140	OUT	IN	10.0V	10.0V	10.0V		GND		10.0V	10.0V	10.0V	10.0V		10.0V	1A to 1Y	6	120					ns
"	Fig. 3	141	"	10.0V	IN	10.0V	10.0V		"		"	"	"	"		"	1B to 1Y	"	"					"
"	"	142	"	"	10.0V	IN	10.0V		"		"	"	"	"		"	1C to 1Y	"	"					"
"	"	143	"	"	"	10.0V	IN		"		"	"	"	"		"	1D to 1Y	"	"					"
"	"	144		"	"	"	10.0V		"		IN	"	"	"	OUT	"	2A to 2Y	"	"					"
"	"	145		"	"	"	"		"		10.0V	IN	"	"	"	"	2B to 2Y	"	"					"
"	"	146		"	"	"	"		"		"	10.0V	IN	"	"	"	2C to 2Y	"	"					"
"	"	147		"	"	"	"		"		"	"	10.0V	IN	"	"	2D to 2Y	"	"					"
t_{PLH}	"	148	OUT	IN	"	"	"		"		"	"	"	10.0V		"	1A to 1Y	"	"					"
"	"	149	"	10.0V	IN	"	"		"		"	"	"	"		"	1B to 1Y	"	"					"
"	"	150	"	"	10.0V	IN	"		"		"	"	"	"		"	1C to 1Y	"	"					"
"	"	151	"	"	"	10.0V	IN		"		"	"	"	"		"	1D to 1Y	"	"					"
"	"	152		"	"	"	10.0V		"		IN	"	"	"	OUT	"	2A to 2Y	"	"					"
"	"	153		"	"	"	"		"		10.0V	IN	"	"	"	"	2B to 2Y	"	"					"
"	"	154		"	"	"	"		"		"	10.0V	IN	"	"	"	2C to 2Y	"	"					"
"	"	155		"	"	"	"		"		"	"	10.0V	IN	"	"	2D to 2Y	"	"					"
t_{THL}	3004	156	OUT	IN	"	"	"		"		"	"	"	10.0V		"	1Y	5	100					"
"	Fig. 3	157	"	10.0V	IN	"	"		"		"	"	"	"		"	1Y	"	"					"
"	"	158	"	"	10.0V	IN	"		"		"	"	"	"		"	1Y	"	"					"
"	"	159	"	"	"	10.0V	IN		"		"	"	"	"		"	1Y	"	"					"
"	"	160		"	"	"	10.0V		"		IN	"	"	"	OUT	"	2Y	"	"					"
"	"	161		"	"	"	"		"		10.0V	IN	"	"	"	"	2Y	"	"					"
"	"	162		"	"	"	"		"		"	10.0V	IN	"	"	"	2Y	"	"					"
"	"	163		"	"	"	"		"		"	"	10.0V	IN	"	"	2Y	"	"					"
t_{TLH}	"	164	OUT	IN	"	"	"		"		"	"	"	10.0V		"	1Y	"	"					"
"	"	165	"	10.0V	IN	"	"		"		"	"	"	"		"	1Y	"	"					"
"	"	166	"	"	10.0V	IN	"		"		"	"	"	"		"	1Y	"	"					"
"	"	167	"	"	"	10.0V	IN		"		"	"	"	"		"	1Y	"	"					"
"	"	168		"	"	"	10.0V		"		IN	"	"	"	OUT	"	2Y	"	"					"
"	"	169		"	"	"	"		"		10.0V	IN	"	"	"	"	2Y	"	"					"
"	"	170		"	"	"	"		"		10.0V	10.0V	IN	"	"	"	2Y	"	"					"
"	"	171		"	"	"	"		"		10.0V	10.0V	10.0V	IN	"	"	2Y	"	"					"

See footnotes at end of table.

TABLE III. Group A inspection for device type 03.

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	2A	2B	1A	1B	1C	1Y	V_{SS}	2C	2Y	3Y	3A	3B	3C	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IC} (pos)		1	1 mA													GND	2A		1.5					V
“		2		1 mA												“	2B		“					“
“		3								1 mA						“	2C		“					“
“		4			1 mA											“	1A		“					“
“		5				1 mA										“	1B		“					“
“		6					1 mA									“	1C		“					“
“		7											1 mA			“	3A		“					“
“		8												1 mA		“	3B		“					“
“		9													1 mA	“	3C		“					“
V_{IC} (neg)		10	-1 mA						GND								2A		-6.0					“
“		11		-1 mA					“								2B		“					“
“		12							“	-1 mA							2C		“					“
“		13			-1 mA				“								1A		“					“
“		14				-1 mA			“								1B		“					“
“		15					-1 mA		“								1C		“					“
“		16							“				-1 mA				3A		“					“
“		17							“					-1 mA			3B		“					“
“		18							“						-1 mA		3C		“					“
I_{SS} 2/	3005	19	18.0V	GND	18.0V	GND	GND		“	GND			18.0V	GND	GND	18.0V	V_{SS}		-25.0		-750.0			nA
“	“	20	GND	18.0V	GND	18.0V	GND		“	GND			GND	18.0V	GND	“	“		“		“			“
“	“	21	GND	GND	GND	GND	18.0V		“	18.0V			GND	GND	18.0V	“	“		“		“			“
“	“	22	GND	GND	GND	GND	GND		“	GND			GND	GND	GND	“	“		“		‘			“
V_{OL1}	3007	23	15.0V	GND	GND	GND	GND		“	GND			“	“	“	15.0V	2Y		.05		.05		.05	V
“	“	24	GND	15.0V	“	“	“		“	GND			“	“	“	“	2Y		“		“		“	“
“	“	25	“	GND	“	“	“		“	15.0V			“	“	“	“	2Y		“		“		“	“
“	“	26	“	“	15.0V	“	“		“	GND			“	“	“	“	1Y		“		“		“	“
“	“	27	“	“	GND	15.0V	“		“	“			“	“	“	“	1Y		“		“		“	“
“	“	28	“	“	“	GND	15.0V		“	“			“	“	“	“	1Y		“		“		“	“
“	“	29	“	“	“	“	GND		“	“			15.0V	“	“	“	3Y		“		“		“	“
“	“	30	“	“	“	“	“		“	“			GND	15.0V	“	“	3Y		“		“		“	“
“	“	31	“	“	“	“	“		“	“			GND	GND	15.0V	“	3Y		“		“		“	“
V_{OH1}	3006	32	15.0V	15.0V	“	“	“		“	15.0V			GND	GND	GND	15.0V	2Y	14.95		14.95		14.95		“
V_{OH1}	“	33	GND	GND	15.0V	15.0V	15.0V		“	GND			GND	GND	GND	“	1Y	“		“		“		“
V_{OH1}	“	34	GND	GND	GND	GND	GND		“	GND			15.0V	15.0V	15.0V	“	3Y	“		“		“		“
V_{IL1}		35	1.5V	3.5V	“	“	“		“	3.5V			GND	GND	GND	5.0V	2Y		0.5		0.5		0.5	V
“		36	3.5V	1.5V	“	“	“		“	3.5V			“	“	“	“	2Y		“		“		“	“
“		37	3.5V	3.5V	“	“	“		“	1.5V			“	“	“	“	2Y		“		“		“	“
“		38	GND	GND	1.5V	3.5V	3.5V		“	GND			“	“	“	“	1Y		“		“		“	“
“		39	“	“	3.5V	1.5V	3.5V		“	“			“	“	“	“	1Y		“		“		“	“
“		40	“	“	3.5V	3.5V	1.5V		“	“			“	“	“	“	1Y		“		“		“	“
“		41	“	“	GND	GND	GND		“	“			1.5V	3.5V	3.5V	“	3Y		“		“		“	“
“		42	“	“	“	“	“		“	“			3.5V	1.5V	3.5V	“	3Y		“		“		“	“
“		43	“	“	“	“	“		“	“			3.5V	3.5V	1.5V	“	3Y		“		“		“	“
V_{IL2}		44	3.0V	7.0V	“	“	“		“	7.0V			GND	GND	GND	10V	2Y		1.0		1.0		1.0	“
“		45	7.0V	3.0V	“	“	“		“	7.0V			“	“	“	“	2Y		“		“		“	“
“		46	7.0V	7.0V	“	“	“		“	3.0V			“	“	“	“	2Y		“		“		“	“
“		47	GND	GND	3.0V	7.0V	7.0V		“	GND			“	“	“	“	1Y		“		“		“	“
“		48	GND	GND	7.0V	3.0V	7.0V		“	GND			“	“	“	“	1Y		“		“		“	“
“		49	GND	GND	7.0V	7.0V	3.0V		GND	GND			GND	GND	GND	10V	1Y		1.0		1.0		1.0	V
“		50	GND	GND	GND	GND	GND		“	GND			3.0V	7.0V	7.0V	“	3Y		“		“		“	“
“		51	GND	GND	“	“	“		“	GND			7.0V	3.0V	7.0V	“	3Y		“		“		“	“
“		52	GND	GND	“	“	“		“	GND			7.0V	7.0V	3.0V	“	3Y		“		“		“	“

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	2A	2B	1A	1B	1C	1Y	V_{SS}	2C	2Y	3Y	3A	3B	3C	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
V_{IL3}		53	4.0V	11V	GND	GND	GND		GND	11V			GND	GND	GND	15V	2Y		1.5		1.5		1.5	V
"		54	11V	4.0V	"	"	"		"	11V			"	"	"	"	2Y		"		"		"	"
"		55	11V	11V	"	"	"		"	4.0V			"	"	"	"	2Y		"		"		"	"
"		56	GND	GND	4.0V	11V	11V		"	GND			"	"	"	"	1Y		"		"		"	"
"		57	"	"	11V	4.0V	11V		"	"			"	"	"	"	1Y		"		"		"	"
"		58	"	"	11V	11V	4.0V		"	"			"	"	"	"	1Y		"		"		"	"
"		59	"	"	GND	GND	GND		"	"			4.0V	11V	11V	"	3Y		"		"		"	"
"		60	"	"	"	"	"		"	"			11V	4.0V	11V	"	3Y		"		"		"	"
"		61	"	"	"	"	"		"	"			11V	11V	4.0V	"	3Y		"		"		"	"
V_{IH1}		62	3.5V	3.5V	"	"	"		"	3.5V			GND	GND	GND	5.0V	2Y	4.5		4.5		4.5		"
"		63	GND	GND	3.5V	3.5V	3.5V		"	GND			GND	GND	GND	5.0V	1Y	"		"		"		"
"		64	GND	GND	GND	GND	GND		"	GND			3.5V	3.5V	3.5V	5.0V	3Y	"		"		"		"
V_{IH2}		65	7.0V	7.0V	GND	GND	GND		"	7.0V			GND	GND	GND	10V	2Y	9.0		9.0		9.0		"
"		66	GND	GND	7.0V	7.0V	7.0V		"	GND			GND	GND	GND	10V	1Y	"		"		"		"
"		67	GND	GND	GND	GND	GND		"	GND			7.0V	7.0V	7.0V	10V	3Y	"		"		"		"
V_{IH3}		68	11V	11V	GND	GND	GND		"	11V			GND	GND	GND	15V	2Y	13.5		13.5		13.5		"
"		69	GND	GND	11V	11V	11V		"	GND			GND	GND	GND	15V	1Y	"		"		"		"
"		70	GND	GND	GND	GND	GND		"	"			11V	11V	11V	15V	3Y	"		"		"		"
I_{OL1}		71	5.0V	GND	"	"	"		"	"	0.4V		GND	GND	GND	5.0V	2Y	0.51		0.36		0.64		mA
"		72	GND	5.0V	"	"	"		"	"	0.4V		"	"	"	"	2Y	"		"		"		"
"		73	"	GND	"	"	"		"	5.0V	0.4V		"	"	"	"	2Y	"		"		"		"
"		74	"	"	5.0V	"	"	0.4V	"	GND			"	"	"	"	1Y	"		"		"		"
"		75	"	"	GND	5.0V	"	0.4V	"	"			"	"	"	"	1Y	"		"		"		"
"		76	"	"	"	GND	5.0V	0.4V	"	"			"	"	"	"	1Y	"		"		"		"
"		77	"	"	"	"	GND		"	"		0.4V	5.0V	"	"	"	3Y	"		"		"		"
"		78	"	"	"	"	GND		"	"		0.4V	GND	5.0V	"	"	3Y	"		"		"		"
I_{OL1}		79	GND	GND	GND	GND	GND		GND	GND		0.4V	GND	GND	5.0V	5.0V	3Y	0.51		0.36		0.64		mA
I_{OL2}		80	15.0V	GND	GND	"	"		"	GND	1.5V		"	"	GND	15.0V	2Y	3.4		2.4		4.2		"
"		81	GND	15.0V	GND	"	"		"	GND	1.5V		"	"	"	"	2Y	"		"		"		"
"		82	"	GND	GND	"	"		"	15.0V	1.5V		"	"	"	"	2Y	"		"		"		"
"		83	"	"	15.0V	"	"	1.5V	"	GND			"	"	"	"	1Y	"		"		"		"
"		84	"	"	GND	15.0V	"	"	"	"			"	"	"	"	1Y	"		"		"		"
"		85	"	"	"	GND	15.0V	"	"	"			"	"	"	"	1Y	"		"		"		"
"		86	"	"	"	"	GND		"	"		1.5V	15.0V	"	"	"	3Y	"		"		"		"
"		87	"	"	"	"	"		"	"		1.5V	GND	15.0V	"	"	3Y	"		"		"		"
"		88	"	"	"	"	"		"	"		1.5V	GND	GND	15.0V	"	3Y	"		"		"		"
I_{OH1}		89	5.0V	5.0V	"	"	"		"	5.0V	4.6V		GND	GND	GND	5.0V	2Y	-0.51		-0.36		-0.64		"
"		90	GND	GND	5.0V	5.0V	5.0V	4.6V	"	GND			GND	GND	GND	5.0V	1Y	-0.51		-0.36		-0.64		"
"		91	GND	GND	GND	GND	GND		"	GND		4.6V	5.0V	5.0V	5.0V	5.0V	3Y	-0.51		-0.36		-0.64		"
I_{OH2}		92	15.0V	15.0V	"	"	"		"	15.0V	13.5V		GND	GND	GND	15.0V	2Y	-3.4		-2.4		-4.2		"
"		93	GND	GND	15.0V	15.0V	15.0V	13.5V	"	GND			GND	GND	GND	15.0V	1Y	-3.4		-2.4		-4.2		"
"		94	GND	GND	GND	GND	GND		"	GND		13.5V	15.0V	15.0V	15.0V	15.0V	3Y	-3.4		-2.4		-4.2		"
I_{IH1} 3/	3010	95	18.0V	18.0V	18.0V	18.0V	18.0V		"	18.0V			18.0V	18.0V	18.0V	18.0V	All inputs together		900					nA
I_{IH2}	3010	96	"	"	"	"	"		"	"			"	"	"	"	2A		100		100			"
"	"	97	"	"	"	"	"		"	"			"	"	"	"	2B		"		"			"
"	"	98	"	"	"	"	"		"	"			"	"	"	"	2C		"		"			"
"	"	99	"	"	"	"	"		"	"			"	"	"	"	1A		"		"			"
"	"	100	"	"	"	"	"		"	"			"	"	"	"	1B		"		"			"
"	"	101	"	"	"	"	"		"	"			"	"	"	"	1C		"		"			"
"	"	102	"	"	"	"	"		"	"			"	"	"	"	3A		"		"			"
"	"	103	"	"	"	"	"		"	"			"	"	"	"	3B		"		"			"
"	"	104	"	"	"	"	"		"	"			"	"	"	"	3C		"		"			"
I_{IL1} 3/	3009	105	GND	GND	GND	GND	GND		"	GND			GND	GND	GND	18.0V	All inputs together		-900					"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	2A	2B	1A	1B	1C	1Y	V_{SS}	2C	2Y	3Y	3A	3B	3C	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
I_{IL2}	3009	106	GND	18.0V	18.0V	18.0V	18.0V		GND	18.0V			18.0V	18.0V	18.0V	18.0V	2A		-100		-100			nA
"	"	107	18.0V	GND	18.0V	"	"		"	18.0V			"	"	"	"	2B		"		"			"
"	"	108	"	18.0V	18.0V	"	"		"	GND			"	"	"	"	2C		"		"			"
"	"	109	"	"	GND	"	"		"	18.0V			"	"	"	"	1A		"		"			"
"	"	110	"	"	18.0V	GND	"		"	"			"	"	"	"	1B		"		"			"
"	"	111	"	"	"	18.0V	GND		"	"			"	"	"	"	1C		"		"			"
"	"	112	"	"	"	"	18.0V		"	"			GND	"	"	"	3A		"		"			"
"	"	113	"	"	"	"	18.0V		"	"			18.0V	GND	"	"	3B		"		"			"
"	"	114	"	"	"	"	18.0V		"	"			18.0V	18.0	GND	"	3C		"		"			"
																		Subgroup 4 T_A = 25°C						
																		Min	Max	Min	Max	Min	Max	
C_I	3012	115	4/						GND							GND	2A		7.5					pF
"	"	116		4/					"							"	2B		"					"
"	"	117							"	4/						"	2C		"					"
"	"	118			4/				"							"	1A		"					"
"	"	119				4/			"							"	1B		"					"
"	"	120					4/		"							"	1C		"					"
"	"	121							"				4/			"	3A		"					"
"	"	122							"					4/		"	3B		"					"
"	"	123							"						4/	"	3C		"					"
																		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_{PHL}	3003	124	IN	5.0V	5.0V	5.0V	5.0V		GND	5.0V	OUT		5.0V	5.0V	5.0V	5.0V	2A to 2Y	13	250	18	350	13	250	ns
"	Fig. 3	125	5.0V	IN	5.0V	"	"		"	5.0V	"		"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	126	"	5.0V	5.0V	"	"		"	IN	"		"	"	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	127	"	"	IN	"	"	OUT	"	5.0V			"	"	"	"	1A to 1Y	"	"	"	"	"	"	"
"	"	128	"	"	5.0V	IN	"	"	"	"			"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	129	"	"	"	5.0V	IN	"	"	"			"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	130	"	"	"	"	5.0V		"	"		OUT	IN	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	131	"	"	"	"	"		"	"		"	5.0V	IN	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	132	"	"	"	"	"		"	"		"	5.0V	5.0V	IN	"	3C to 3Y	"	"	"	"	"	"	"
t_{PLH}	3003	133	IN	"	"	"	"		"	"	OUT		"	"	5.0V	"	2A to 2Y	"	"	"	"	"	"	"
"	Fig. 3	134	5.0V	IN	"	"	"		"	"	"		"	"	"	"	2B to 2Y	"	"	"	"	"	"	"
"	"	135	"	5.0V	"	"	"		"	IN	"		"	'	"	"	2C to 2Y	"	"	"	"	"	"	"
"	"	136	"	"	IN	"	"	OUT	"	5.0V			"	"	"	"	1A to 1Y	"	"	"	"	"	"	"
"	"	137	"	"	5.0V	IN	"	"	"	"			"	"	"	"	1B to 1Y	"	"	"	"	"	"	"
"	"	138	"	"	"	5.0V	IN	"	"	"			"	"	"	"	1C to 1Y	"	"	"	"	"	"	"
"	"	139	"	"	"	"	5.0V		"	"		OUT	IN	"	"	"	3A to 3Y	"	"	"	"	"	"	"
"	"	140	"	"	"	"	"		"	"		"	5.0V	IN	"	"	3B to 3Y	"	"	"	"	"	"	"
"	"	141	"	"	"	"	"		"	"		"	"	5.0V	IN	"	3C to 3Y	"	"	"	"	"	"	"
t_{THL}	3004	142	IN	"	"	"	"		"	"	OUT		"	"	5.0V	"	2Y	10	200	14	280	10	200	"
"	Fig. 3	143	5.0V	IN	"	"	"		"	"	"		"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	144	"	5.0V	"	"	"		"	IN	"		"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	145	"	"	IN	"	"	OUT	"	5.0V			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	146	"	"	5.0V	IN	"	"	"	5.0V			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	147	"	"	"	5.0V	IN	"	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	148	"	"	"	"	5.0V		"	"		OUT	IN	"	"	"	3Y	"	"	"	"	"	"	"
"	"	149	"	"	"	"	"		"	"		"	5.0V	IN	"	"	3Y	"	"	"	"	"	"	"
"	"	150	"	"	"	"	"		"	"		"	5.0V	5.0V	IN	"	3Y	"	"	"	"	"	"	"

See footnotes at end of table.

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

Symbol	MIL-STD-833 method	Cases C,D, T, and Y	Terminal conditions 1/														Measured terminal	Test limits						Unit
			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	2A	2B	1A	1B	1C	1Y	V_{SS}	2C	2Y	3Y	3A	3B	3C	V_{DD}								
		Test No.																Min	Max	Min	Max	Min	Max	
t_{TLH}	3004	151	IN	5.0V	5.0V	5.0V	5.0V		GND	5.0V	OUT		5.0V	5.0V	5.0V	5.0V	2Y	10	200	14	280	10	200	ns
"	Fig. 3	152	5.0V	IN	"	"	"		"	5.0V	"		"	"	"	"	2Y	"	"	"	"	"	"	"
"	"	153	"	5.0V	"	"	"		"	IN	"		"	'	"	"	2Y	"	"	"	"	"	"	"
"	"	154	"	"	IN	"	"	OUT	"	5.0V			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	155	"	"	5.0V	IN	"	"	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	156	"	"	"	5.0V	IN	"	"	"			"	"	"	"	1Y	"	"	"	"	"	"	"
"	"	157	"	"	"	"	5.0V		"	"		OUT	IN	"	"	"	3Y	"	"	"	"	"	"	"
"	"	158	"	"	"	"	"		"	"		"	5.0V	IN	"	"	3Y	"	"	"	"	"	"	"
"	"	159	"	"	'	"	"		"	"		"	5.0V	5.0V	IN	"	3Y	"	"	"	"	"	"	"
																		Subgroup 12 T_A = 25°C						
																		Min	Max					
t_{PHL}	3003	160	IN	10.0V	10.0V	10.0V	10.0V		GND	10.0V	OUT		10.0V	10.0V	10.0V	10.0V	2A to 2Y	6	120					ns
"	Fig. 3	161	10.0V	IN	10.0V	"	"		"	10.0V	"		"	"	"	"	2B to 2Y	"	"					"
"	"	162	"	10.0V	10.0V	"	"		"	IN	"		"	"	"	"	2C to 2Y	"	"					"
"	"	163	"	"	IN	"	"	OUT	"	10.0V			"	"	"	"	1A to 1Y	"	"					"
"	"	164	"	"	10.0V	IN	"	"	"	"			"	"	"	"	1B to 1Y	"	"					"
"	"	165	"	"	"	10.0V	IN	"	"	"			"	"	"	"	1C to 1Y	"	"					"
"	"	166	"	"	"	"	10.0V		"	"		OUT	IN	"	"	"	3A to 3Y	"	"					"
"	"	167	"	"	"	"	"		"	"		"	10.0V	IN	"	"	3B to 3Y	"	"					"
"	"	168	"	"	"	"	"		"	"		"	"	10.0V	IN	"	3C to 3Y	"	"					"
t_{PLH}	"	169	IN	"	"	"	"		"	"	OUT		"	"	10.0V	"	2A to 2Y	"	"					"
"	"	170	10.0V	IN	"	"	"		"	"	"		"	"	"	"	2B to 2Y	"	"					"
"	"	171	"	10.0V	"	"	"		"	IN	"		"	"	"	"	2C to 2Y	"	"					"
"	"	172	"	"	IN	"	"	OUT	"	10.0V			"	"	"	"	1A to 1Y	"	"					"
"	"	173	"	"	10.0V	IN	"	"	"	"			"	"	"	"	1B to 1Y	"	"					"
"	"	174	"	"	"	10.0V	IN	"	"	"			"	"	"	"	1C to 1Y	"	"					"
"	"	175	"	"	"	"	10.0V		"	"		OUT	IN	"	"	"	3A to 3Y	"	"					"
"	"	176	"	"	"	"	"		"	"		"	10.0V	IN	"	"	3B to 3Y	"	"					"
"	"	177	"	"	"	"	"		"	"		"	"	10.0V	IN	"	3C to 3Y	"	"					"
t_{THL}	3004	178	IN	"	"	"	"		"	"	OUT		"	"	10.0V	"	2Y	5	100					"
"	Fig. 3	179	10.0V	IN	"	"	"		"	"	"		"	"	"	"	2Y	"	"					"
"	"	180	"	10.0V	"	"	"		"	IN	"		"	"	"	"	2Y	"	"					"
"	"	181	"	"	IN	"	"	OUT	"	10.0V			"	"	"	"	1Y	"	"					"
"	"	182	"	"	10.0V	IN	"	"	"	"			"	"	"	"	1Y	"	"					"
"	"	183	"	"	"	10.0V	IN	"	"	"			"	"	"	"	1Y	"	"					"
"	"	184	"	"	"	"	10.0V		"	"		OUT	IN	"	"	"	3Y	"	"					"
"	"	185	"	"	"	"	"		"	"		"	10.0V	IN	"	"	3Y	"	"					"
"	"	186	"	"	"	"	"		"	"		"	"	10.0V	IN	"	3Y	"	"					"
t_{TLH}	"	187	IN	"	"	"	"		"	"	OUT		"	"	10.0V	"	2Y	"	"					"
"	"	188	10.0V	IN	"	"	"		"	"	"		"	"	"	"	2Y	"	"					"
"	"	189	"	10.0V	"	"	"		"	IN	"		"	"	"	"	2Y	"	"					"
"	"	190	"	"	IN	"	"	OUT	"	10.0V			"	"	"	"	1Y	"	"					"
"	"	191	"	"	10.0V	IN	"	"	"	"			"	"	"	"	1Y	"	"					"
"	"	192	"	"	"	10.0V	IN	"	"	"			"	"	"	"	1Y	"	"					"
"	"	193	"	"	"	"	10.0V		"	"		OUT	IN	"	"	"	3Y	"	"					"
"	"	194	"	"	"	"	"		"	"		"	10.0V	IN	"	"	3Y	"	"					"
"	"	195	"	"	"	"	"		"	"		"	10.0V	10.0V	IN	"	3Y	"	"					"

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.

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 within 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
I_{SS}	±10 nA	±10 nA	±10 nA
I_{OL1}	±15%	±15%	±15%
I_{OH1}	±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	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, 5, 6, 8, 9, 12, 13	7	14
02	2, 3, 4, 5, 9, 10, 11, 12	7	14
03	1, 2, 3, 4, 5, 8, 11, 12, 13	7	14

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

4.6 Data reporting. When specified in the purchase order or contract, a copy of the following data, as applicable, shall 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.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements are 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 commands. 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.

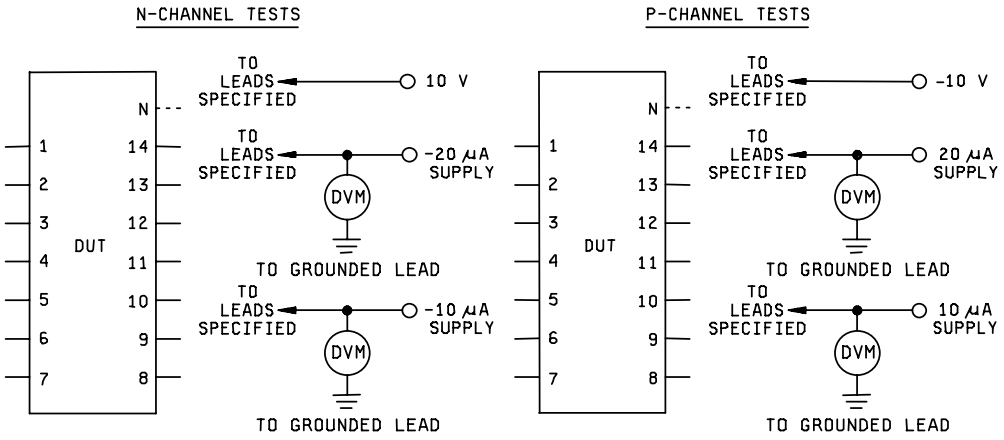


FIGURE 4. Threshold-voltage test circuit.

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	2	1, 14		5, 6, 7, 8, 9, 12, 13	2	5, 6, 7, 8, 9, 12, 13		1, 14
02	2	3, 4, 5, 14		7, 9, 10, 11, 12	2	5, 6, 7, 8, 9, 10, 11, 12, 13		3, 4, 5, 14
03	3	4, 5, 14		1, 2, 7, 8, 11, 12, 13	3	1, 2, 7, 8, 11, 12, 13		4, 5, 14

6. NOTES

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

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

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

c. Requirements for delivery of one copy of the 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.
T_A ..... Free air temperature.
V_{DD} ..... Positive supply voltage.
V_{SS} ..... Negative supply voltage.
I_{SS} ..... Quiescent supply current.

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 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	4081B
02	4082B
03	4073B

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

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

Preparing activity:
DLA - CC

(Project 5962-2017)

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.