

INCH-POUND

MIL-M-38510/300E  
7 JANUARY 2003  
SUPERSEDING  
MIL-M-38510/300D  
15 JULY 1987

## MILITARY SPECIFICATION

### MICROCIRCUITS, DIGITAL, BIPOLAR LOW-POWER SCHOTTKY TTL, AND GATES, MONOLITHIC SILICON

Inactive for new design after 18 April 1997.

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

#### 1. SCOPE

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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

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

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

<u>Device type</u>	<u>Circuit</u>
01	Quadruple, 2-input positive NAND gate
02	Quadruple, 2-input positive NAND gate (open collector output)
03	Hex, 1-input inverter gate
04	Hex, 1-input inverter gate (open collector output)
05	Triple, 3-input positive NAND gate
06	Triple, 3-input positive NAND gate (open collector output)
07	Dual, 4-input positive NAND gate
08	Dual, 4-input positive NAND gate (open collector output)
09	Single, 8-input positive NAND gate

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

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
A	GDFP5-F14 or CDFP6-F14	14	Flat pack
B	GDFP4-14	14	Flat pack
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
X	CQCC2-N20	20	Square leadless chip carrier
2	CQCC1-N20	20	Square leadless chip carrier

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

MIL-M-38510/300E

1.3 Absolute maximum ratings.

Supply voltage range .....	-0.5 V to +7.0 V
Input voltage range .....	-1.5 V at -18 mA to +5.5 V
Storage temperature range .....	-65° to +150°C
Maximum power dissipation, (P <sub>D</sub> ) <u>1/</u> .....	6.1 mW dc
Lead temperature (soldering, 10 seconds) .....	300°C
Thermal resistance, junction to case (θ <sub>JC</sub> ):	
Cases A, B, C, D, X, and 2 .....	(See MIL-STD-1835)
Junction temperature (T <sub>J</sub> ) .....	175°C <u>2/</u>

1.4 Recommended operating conditions.

Supply voltage (V <sub>CC</sub> ) .....	4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage (V <sub>IH</sub> ) .....	2.0 V
Maximum low level input voltage (V <sub>IL</sub> ) .....	0.7 V
Case operating temperature range (T <sub>C</sub> ) .....	-55° to +125°C

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

SPECIFICATION

DEPARTMENT OF DEFENSE

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

STANDARDS

DEPARTMENT OF DEFENSE

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

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

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

1/ Must withstand the added P<sub>D</sub> due to short-circuit test (e.g., I<sub>OS</sub>).

2/ Maximum junction temperature (T<sub>J</sub>) may be increased during the burn-in screening and steady-state life test. However, such temperatures should not be used under normal operating conditions.

### 3. REQUIREMENTS

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

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

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

3.3.1 Logic diagrams and terminal connections. The logic diagrams and terminal connections shall be as specified on figure 1.

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

3.3.3 Schematic circuits. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity (DSCC-VAS) upon request.

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

3.5.1 Post-irradiation performance characteristics. The electrical performance characteristics of radiation hardness assured devices following exposure to the designated radiation levels are as specified in table III, subgroups 1 and 9 and apply at an ambient temperature of +25°C.

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

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

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 8 (see MIL-PRF-38535, appendix A).

### 4. VERIFICATION

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

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

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

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C	Device types	Limits		Unit
				Min	Max	
High level output voltage	V <sub>OH</sub>	V <sub>CC</sub> = 4.5 V, V <sub>IL</sub> = 0.7 V; I <sub>OH</sub> = -400 μA	01, 03, 05 07, 09	2.5		V
Low level output voltage	V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 4 mA; V <sub>IH</sub> = 2.0 V	All		0.4	V
Input clamp voltage	V <sub>IC</sub>	V <sub>CC</sub> = 4.5 V, I <sub>IN</sub> = -18 mA; T <sub>C</sub> = +25°C	All		-1.5	V
Collector cut-off current	I <sub>CEX</sub>	V <sub>CC</sub> = 4.5 V, V <sub>IL</sub> = 0.7 V; V <sub>OH</sub> = 5.5 V	02, 04, 06 08		100	μA
High level input current	I <sub>IH1</sub>	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 2.7 V	All		20	μA
	I <sub>IH2</sub>	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 5.5 V	All		100	μA
Low level input current	I <sub>IL</sub>	V <sub>CC</sub> = 5.5 V, V <sub>IL</sub> = 0.4 V	01, 02, 03 04, 05, 06	-30	-400	μA
			07	-30	-380	
			08	-30	-440	
			09	0	-400	
Short circuit output current	I <sub>OS</sub>	V <sub>CC</sub> = 5.5 V <u>1/</u>	01, 03, 05 07, 09	-15	-100	mA
High level supply current	I <sub>CCH</sub>	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 0 V	01, 02		1.6	mA
			03, 04		2.4	
			05		1.2	
			06		1.4	
			07, 08		0.8	
			09		0.5	
Low level supply current	I <sub>CCL</sub>	V <sub>CC</sub> = 5.5 V, V <sub>IN</sub> = 5.5 V	01, 02		4.4	mA
			03, 04		6.6	
			05, 06		3.3	
			07, 08		2.2	
			09		1.1	
Propagation delay time high-to-low level	t <sub>PHL</sub>	C <sub>L</sub> = 50 pF R <sub>L</sub> = 2 kΩ V <sub>CC</sub> = 5.0 V	01, 03, 05, 07	2	24	ns
			02, 04, 06, 08	2	55	
			09	2	38	
Propagation delay time low-to-high level	t <sub>PLH</sub>	C <sub>L</sub> = 50 pF R <sub>L</sub> = 2 kΩ V <sub>CC</sub> = 5.0 V	01, 03, 05, 07	2	20	ns
			02, 04, 06, 08	2	50	
			09	2	32	

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

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 9, 10, 11	1*, 2, 3, 9
Group A test requirements	1, 2, 3, 9, 10, 11	1, 2, 3, 9, 10, 11
Group C end-point electrical parameters	1, 2, 3, 5, 9, 10, 11	1, 2, 3
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

\*PDA applies to subgroup 1.

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

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

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

- a. Tests shall be as specified in table II herein.
- b. Subgroups 4, 5, 6, 7, and 8 shall be omitted.

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

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

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

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

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

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

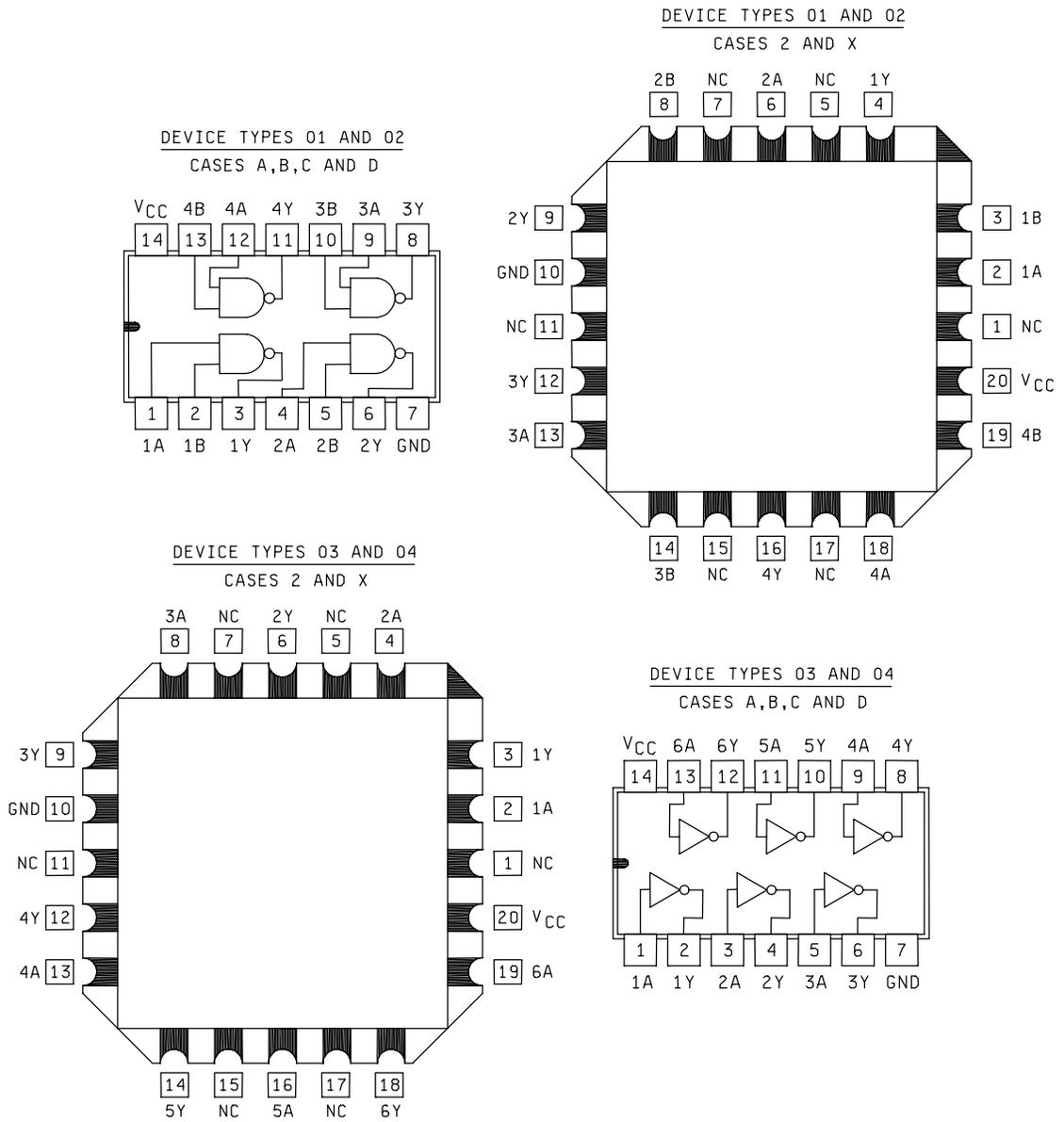


FIGURE 1. Logic diagrams and terminal connections (top view).

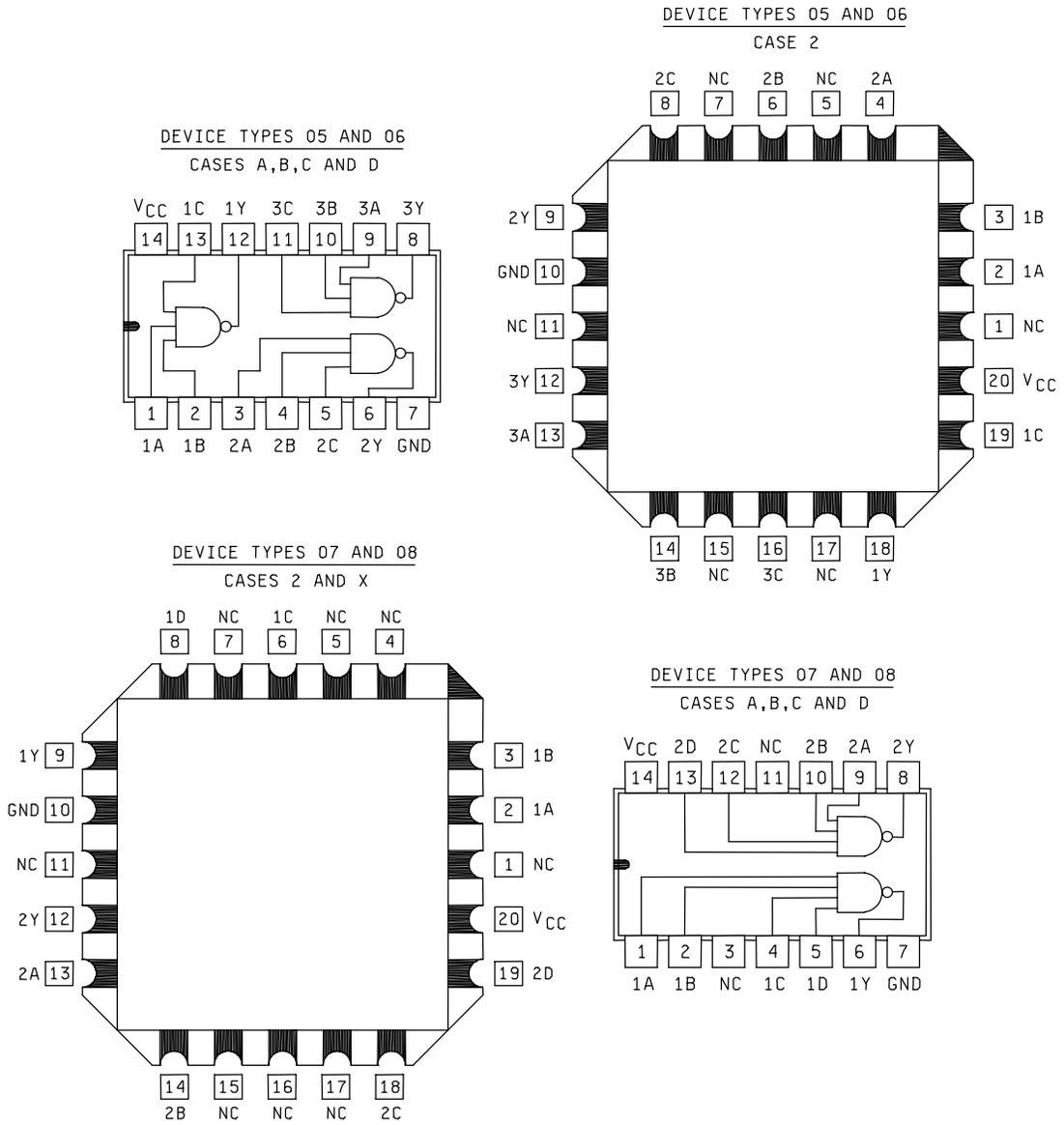
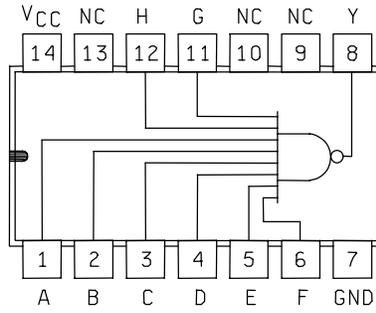


FIGURE 1. Logic diagrams and terminal connections (top view) - Continued.

MIL-M-38510/300E

DEVICE TYPES 09  
CASES A,B,C AND D



DEVICE TYPES 09  
CASES 2 AND X

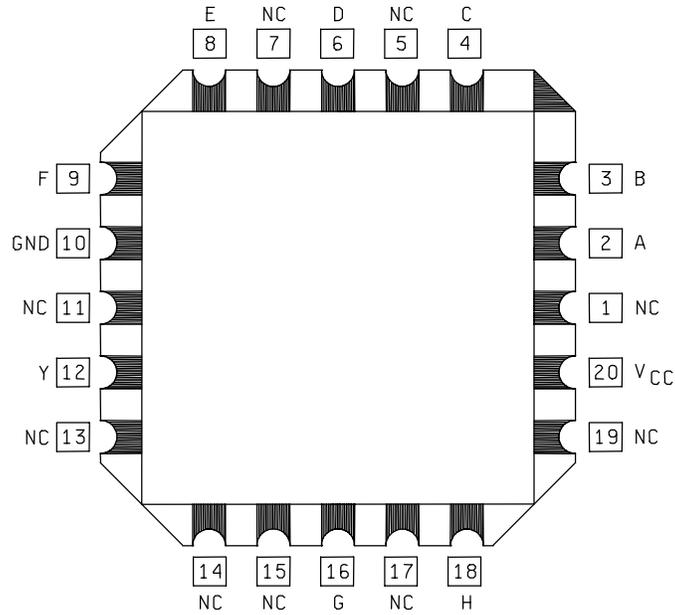


FIGURE 1. Logic diagrams and terminal connections (top view) - Continued.

Device types 01 and 02

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

Positive logic  $Y = \overline{AB}$

Device types 03 and 04

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

Positive logic  $Y = \overline{A}$

Device types 05 and 06

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

Positive logic  $Y = \overline{ABC}$

Device types 07 and 08

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

Positive logic  $Y = \overline{ABCD}$

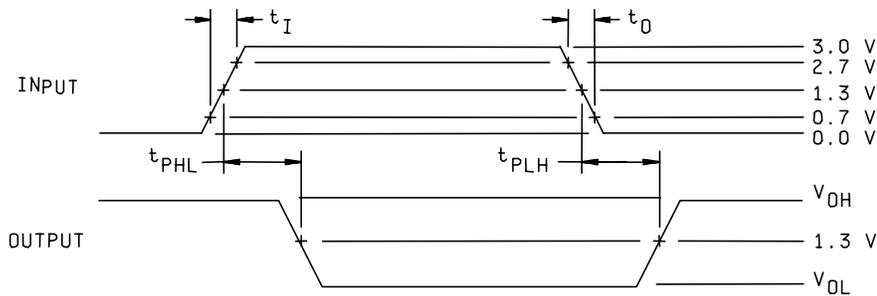
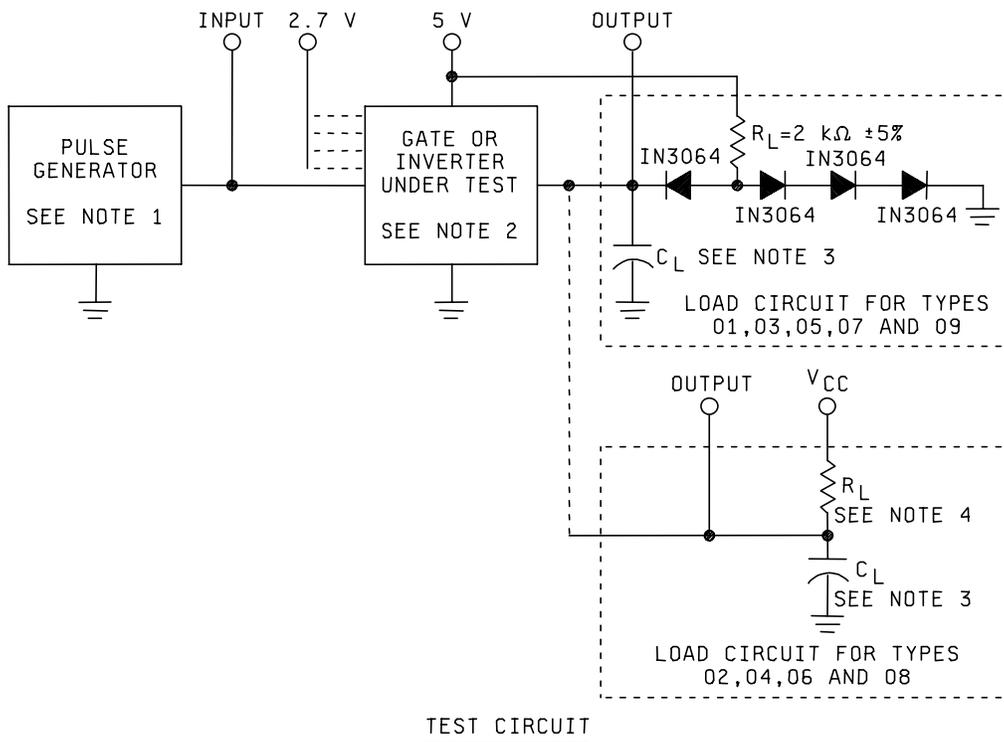
Device type 09

Truth table								
Inputs								Output
A	B	C	D	E	F	G	H	Y
H	H	H	H	H	H	H	H	L
All other combinations of H and L at the inputs give H output.								

Positive logic  $Y = \overline{ABCDEFGH}$

FIGURE 2. Truth table and logic equations.

Device types 01 thru 09



**NOTES:**

1. The pulse generator has the following characteristics:  
 $t_I \leq 15 \text{ ns}$ ,  $t_O \leq 6 \text{ ns}$ ,  $\text{PRR} \leq 1 \text{ MHz}$ , duty cycle = 50% and  $Z_{\text{OUT}} = 50\Omega$ .
2. Inputs not under test are at 2.7 V.
3.  $C_L = 50 \text{ pF} \pm 10\%$ , including scope probe, wiring, and stray capacitance.
4.  $R_L = 2 \text{ k}\Omega \pm 5\%$ .
5. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 3. Switching time test circuit and waveforms for device types 01 through 09.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit	
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max		
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V <sub>CC</sub>		1Y	2Y		3Y
1 Tc = 25°C	V <sub>OH</sub>	3006	1	5.5 V	0.7 V	-400 $\mu$ A	5.5 V	5.5 V		GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y	2.5		V	
		"	2	0.7 V	5.5 V	-400 $\mu$ A	"	5.5 V		"		"	"		"	"	"	1Y	"		"	
		"	3	5.5 V	"	"	"	0.7 V	-400 $\mu$ A	"	"	"	"	"	"	"	"	"	2Y	"		"
		"	4	"	"	"	0.7 V	5.5 V	-400 $\mu$ A	"	"	"	"	"	"	"	"	"	2Y	"		"
		"	5	"	"	"	5.5 V	"	"	"	-400 $\mu$ A	"	0.7 V	"	"	"	"	"	3Y	"		"
		"	6	"	"	"	"	"	"	"	"	-400 $\mu$ A	0.7 V	5.5 V	"	"	"	"	3Y	"		"
		"	7	"	"	"	"	"	"	"	"	"	5.5 V	"	-400 $\mu$ A	"	0.7 V	"	4Y	"		"
		"	8	"	"	"	"	"	"	"	"	"	5.5 V	"	-400 $\mu$ A	0.7 V	5.5 V	"	4Y	"		"
	V <sub>OL</sub>	3007	9	2.0 V	2.0 V	4 mA	GND	GND		"	"	GND	GND		GND	GND	"	1Y		0.4	"	
		"	10	GND	GND		2.0 V	2.0 V	4mA	"	"	GND	GND		"	"	"	"	2Y	"		"
		"	11	"	"		GND	GND		"	4 mA	2.0 V	2.0 V		"	"	"	"	3Y	"		"
		"	12	"	"		GND	GND		"	"	GND	GND	4 mA	2.0 V	2.0 V	"	"	4Y	"		"
	V <sub>IC</sub>		13	-18 mA						"	"						"	1A		-1.5	"	
			14		-18 mA					"	"						"	1B			"	
			15			-18 mA				"	"						"	2A			"	
			16				-18 mA			"	"						"	2B			"	
			17					-18 mA		"	"	-18 mA					"	3A			"	
			18							"	"		-18 mA				"	3B			"	
			19							"	"			-18 mA			"	4A			"	
			20							"	"				-18 mA		-18 mA	"	4B			"
	I <sub>H1</sub>	3010	21	2.7 V	GND		GND	GND		"	"	GND	GND		GND	GND	5.5 V	1A		20	$\mu$ A	
		"	22	GND	2.7 V		GND	"		"	"	"	"		"	"	"	1B			"	
		"	23	"	GND		2.7 V	"		"	"	"	"		"	"	"	2A			"	
		"	24	"	"		GND	2.7 V		"	"	"	"		"	"	"	2B			"	
		"	25	"	"		"	GND		"	"	2.7 V	"		"	"	"	3A			"	
		"	26	"	"		"	"		"	"	GND	2.7 V		"	"	"	3B			"	
		"	27	"	"		"	"		"	"	"	GND	2.7 V		2.7 V	"	4A			"	
		"	28	"	"		"	"		"	"	"	"	GND	2.7 V	GND	2.7 V	4B			"	
	I <sub>H2</sub>	"	29	5.5 V						"	"				"	GND	"	1A		100	"	
		"	30	GND	5.5 V					"	"				"	"	"	1B			"	
		"	31	"	GND		5.5 V	"		"	"				"	"	"	2A			"	
		"	32	"	"		GND	5.5 V		"	"				"	"	"	2B			"	
		"	33	"	"		"	GND		"	"	5.5 V	"		"	"	"	3A			"	
		"	34	"	"		"	"		"	"	GND	5.5 V		"	"	"	3B			"	
		"	35	"	"		"	"		"	"	"	GND	5.5 V		5.5 V	"	4A			"	
		"	36	"	"		"	"		"	"	"	GND	GND	5.5 V	GND	5.5 V	4B			"	
	I <sub>IL</sub>	3009	37	0.4 V	5.5 V		5.5 V	5.5 V		"	"	5.5 V	5.5 V		5.5 V	"	"	1A	2/	2/	"	
		"	38	5.5 V	0.4 V		5.5 V	"		"	"	"	"		"	"	"	1B	"		"	
		"	39	"	5.5 V		0.4 V	"		"	"	"	"		"	"	"	2A	"		"	
		"	40	"	"		5.5 V	0.4 V		"	"	"	"		"	"	"	2B	"		"	
		"	41	"	"		"	5.5 V		"	"	0.4 V	"		"	"	"	3A	"		"	
		"	42	"	"		"	"		"	"	5.5 V	0.4 V		"	"	"	3B	"		"	
		"	43	"	"		"	"		"	"	"	5.5 V	0.4 V	0.4 V	5.5 V	0.4 V	4A	"		"	
		"	44	"	"		"	"		"	"	"	"	"	5.5 V	0.4 V	0.4 V	4B	"		"	
	I <sub>OS</sub>	3011	45	GND	GND	GND				"	"						"	1Y	3/	3/	mA	
		"	46				GND	GND	GND	"	"						"	2Y	"		"	
		"	47							"	GND	GND	GND				"	3Y	"		"	
		"	48							"	"			GND	GND	GND	"	4Y	"		"	

See footnotes at end of device type 01

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V <sub>CC</sub>						
1	I <sub>CCH</sub>	3005	49	GND	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	V <sub>CC</sub>		1.6	mA		
			50	5.5 V	5.5 V		5.5 V	5.5 V		"		5.5 V	5.5 V		5.5 V	5.5 V	5.5 V		V <sub>CC</sub>			4.4	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																						
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																						
9	t <sub>PHL</sub>	3003 Fig. 3	51	IN	2.7 V	OUT	2.7 V	2.7 V		GND		2.7 V	2.7 V		2.7 V	2.7 V	5.0 V	1A to 1Y	2	17	ns		
			52	2.7 V	IN	OUT	2.7 V	"		"		"	"		"	"	"	"	1B to 1Y	"	"	"	
			53	"	2.7 V		IN	"	OUT	"		"	"		"	"	"	"	2A to 2Y	"	"	"	
			54	"	"		2.7 V	IN	OUT	"		"	"		"	"	"	"	2B to 2Y	"	"	"	
			55	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	3A to 3Y	"	"	"	
			56	"	"		"	"		"	OUT	2.7 V	IN		"	"	"	"	3B to 3Y	"	"	"	
			57	"	"		"	"		"	"	"	2.7 V	OUT	IN	"	"	"	4A to 4Y	"	"	"	
			58	"	"		"	"		"	"	"	"	OUT	2.7 V	IN	"	"	4B to 4Y	"	"	"	
	t <sub>PLH</sub>	"	"	59	IN	"	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	15	"	
				60	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	1B to 1Y	"	"	"	
				61	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	2A to 2Y	"	"	"
				62	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	2B to 2Y	"	"	"
				63	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	3A to 3Y	"	"	"
				64	"	"		"	"		"	OUT	2.7 V	IN		"	"	"	"	3B to 3Y	"	"	"
				65	"	"		"	"		"	"	"	2.7 V	OUT	IN	"	"	"	4A to 4Y	"	"	"
				66	"	"		"	"		"	"	"	"	OUT	2.7 V	IN	"	"	4B to 4Y	"	"	"
10	t <sub>PHL</sub>	"	67	IN	2.7 V	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	24	"		
			68	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	1B to 1Y	"	"	"		
			69	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	2A to 2Y	"	"	"	
			70	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	2B to 2Y	"	"	"	
			71	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	3A to 3Y	"	"	"	
			72	"	"		"	"		"	OUT	2.7 V	IN		"	"	"	"	3B to 3Y	"	"	"	
			73	"	"		"	"		"	"	"	2.7 V	OUT	IN	"	"	"	4A to 4Y	"	"	"	
			74	"	"		"	"		"	"	"	"	OUT	2.7 V	IN	"	"	4B to 4Y	"	"	"	
	t <sub>PLH</sub>	"	"	75	IN	"	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	20	"	
				76	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	1B to 1Y	"	"	"	
				77	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	2A to 2Y	"	"	"	
				78	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	2B to 2Y	"	"	"	
				79	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	3A to 3Y	"	"	"	
				80	"	"		"	"		"	OUT	2.7 V	IN		"	"	"	3B to 3Y	"	"	"	
				81	"	"		"	"		"	"	"	2.7 V	OUT	IN	"	"	4A to 4Y	"	"	"	
				82	"	"		"	"		"	"	"	2.7 V	OUT	2.7 V	IN	"	4B to 4Y	"	"	"	
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>C</sub> = -55° C.																						

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

2/ I<sub>IL</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B	-120/-360	-30/-300	-150/-360	-160/-400	-150/-380	-100/-340

3/ I<sub>OS</sub> limits for circuit C: -20/-100; for circuits A, B, D, E, and F: -15/-100.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit					
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max						
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V <sub>CC</sub>									
1 T <sub>C</sub> = 25°C	V <sub>OL</sub>	3007	1	2.0 V	2.0 V	4 mA	GND	GND										1Y			V dc					
		"	2	GND	GND		2.0 V	2.0 V	4 mA	"		GND	GND		"	"	"	4.5 V	2Y		"	"				
		"	3	"	"		GND	GND		"	4 mA	2.0 V	2.0 V		"	"	"	"	3Y		"	"				
		"	4	"	"		GND	GND		"	"	GND	GND	4 mA	2.0 V	2.0 V	"	"	4Y		"	"				
	I <sub>CEX</sub>			5	0.7 V	5.5 V	5.5 V	5.5 V	5.5 V		"		5.5 V	5.5 V		"	"	"	1Y		100	μA				
				6	5.5 V	0.7 V	5.5 V	5.5 V	"	"	"	"	"	"	"	"	"	"	"	1Y		"	"			
				7	"	5.5 V		0.7 V	"	5.5 V	"	"	"	"	"	"	"	"	"	"	2Y		"	"		
				8	"	"		5.5 V	0.7 V	5.5 V	"	"	"	"	"	"	"	"	"	"	2Y		"	"		
				9	"	"		"	5.5 V		"	5.5 V	0.7 V	"	"	"	"	"	"	"	3Y		"	"		
				10	"	"		"	"		"	5.5 V	5.5 V	0.7 V	"	"	"	"	"	"	3Y		"	"		
				11	"	"		"	"		"	"	"	5.5 V	5.5 V	0.7 V	"	"	"	"	4Y		"	"		
				12	"	"		"	"		"	"	"	"	5.5 V	5.5 V	5.5 V	0.7 V	"	"	4Y		"	"		
				V <sub>IC</sub>			13	-18 mA						"								1A		-1.5 V	V	
							14		-18 mA					"									1B		"	"
							15				-18 mA			"									2A		"	"
							16					-18 mA		"									2B		"	"
	17									-18 mA		"								3A		"	"			
	18											"		-18 mA						3B		"	"			
	19											"					-18 mA			4A		"	"			
	20											"						-18 mA		4B		"	"			
	I <sub>IH1</sub>		3010	21	2.7 V	GND		GND	GND		"			GND	GND		GND	GND	5.5 V	1A		20	μA			
				22	GND	2.7 V		GND	"		"	"	"	"	"	"	"	"	"	"	1B		"	"		
				23	"	GND		2.7 V	"		"	"	"	"	"	"	"	"	"	"	2A		"	"		
				24	"	"		GND	2.7 V		"	"	"	"	"	"	"	"	"	"	2B		"	"		
				25	"	"		"	GND		"	"	2.7 V	"	"	"	"	"	"	"	3A		"	"		
				26	"	"		"	"		"	"	"	GND	2.7 V		"	"	"	"	3B		"	"		
				27	"	"		"	"		"	"	"	"	GND		2.7 V	"	"	"	4A		"	"		
				28	"	"		"	"		"	"	"	"	"		GND	2.7 V	"	"	4B		"	"		
	I <sub>IH2</sub>			29	5.5 V			"	"		"	"	"	"	"	"	"	"	"	1A		100	"			
				30	GND	5.5 V		"	"		"	"	"	"	"	"	"	"	"	1B		"	"			
				31	"	GND		5.5 V	"		"	"	"	"	"	"	"	"	"	2A		"	"			
				32	"	"		GND	5.5 V		"	"	"	"	"	"	"	"	"	2B		"	"			
				33	"	"		"	GND		"	"	5.5 V	"	"	"	"	"	"	3A		"	"			
				34	"	"		"	"		"	"	GND	5.5 V	"	"	"	"	"	3B		"	"			
				35	"	"		"	"		"	"	"	GND		5.5 V	"	"	"	4A		"	"			
				36	"	"		"	"		"	"	"	GND	GND	5.5 V	5.5 V	5.5 V	"	4B		"	"			
	I <sub>IL</sub>		3009	37	0.4 V	5.5 V		5.5 V	5.5 V		"			5.5 V	5.5 V		5.5 V	"	"	1A	2/	2/	"			
				38	5.5 V	0.4 V		5.5 V	"		"	"	"	"	"	"	"	"	"	1B		"	"			
				39	"	5.5 V		0.4 V	"		"	"	"	"	"	"	"	"	"	2A		"	"			
				40	"	"		5.5 V	0.4 V		"	"	"	"	"	"	"	"	"	2B		"	"			
				41	"	"		"	5.5 V		"	"	"	0.4 V	"	"	"	"	"	3A		"	"			
				42	"	"		"	"		"	"	"	5.5 V	0.4 V		"	"	"	3B		"	"			
				43	"	"		"	"		"	"	"	"	5.5 V		0.4 V	"	"	4A		"	"			
				44	"	"		"	"		"	"	"	"	"		5.5 V	0.4 V	"	4B		"	"			

See footnotes at end of device type 02

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V <sub>CC</sub>						
1	I <sub>CC L</sub>	3005	45	5.5 V	5.5 V		5.5 V	5.5 V			GND		5.5 V	5.5 V		5.5 V	5.5 V	V <sub>CC</sub>		4.4	mA		
	I <sub>CC H</sub>	3005	46	GND	GND		GND	GND			GND		GND	GND		GND	GND	5.5 V	V <sub>CC</sub>		1.6	mA	
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																						
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																						
9 T <sub>C</sub> = 25° C	t <sub>PHL</sub>	3003 Fig. 3	47	IN	2.7 V	OUT	2.7 V	2.7 V			GND		2.7 V	2.7 V		2.7 V	2.7 V	5.0 V	1A to 1Y	2	36	ns	
			48	2.7 V	IN	OUT	2.7 V	"			"		"	"	"	"	"	"	"	1B to 1Y	"	"	"
			49	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	"	2A to 2Y	"	"	"
			50	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	"	2B to 2Y	"	"	"
			51	"	"		"	2.7 V			"	OUT	IN	"		"	"	"	"	3A to 3Y	"	"	"
			52	"	"		"	"			"	OUT	2.7 V	IN		"	"	"	"	3B to 3Y	"	"	"
			53	"	"		"	"			"	"	"	2.7 V	OUT	IN	"	"	"	4A to 4Y	"	"	"
			54	"	"		"	"			"	"	"	"	OUT	2.7 V	IN	"	"	4B to 4Y	"	"	"
	t <sub>PLH</sub>	"	"	55	IN	"	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	40	"	
				56	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"
				57	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	2A to 2Y	"	"	"
				58	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	2B to 2Y	"	"	"
				59	"	"		"	2.7 V			"	OUT	IN	"		"	"	"	3A to 3Y	"	"	"
				60	"	"		"	"			"	OUT	2.7 V	IN		"	"	"	3B to 3Y	"	"	"
10 T <sub>C</sub> = 125° C	t <sub>PHL</sub>	"	63	IN	"	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	55	"		
			64	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"	
			65	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	2A to 2Y	"	"	"	
			66	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	2B to 2Y	"	"	"	
			67	"	"		"	2.7 V			"	OUT	IN	"		"	"	"	3A to 3Y	"	"	"	
			68	"	"		"	"			"	OUT	2.7 V	IN		"	"	"	3B to 3Y	"	"	"	
			69	"	"		"	"			"	"	"	2.7 V	OUT	IN	"	"	4A to 4Y	"	"	"	
			70	"	"		"	"			"	"	"	"	OUT	2.7 V	IN	"	4B to 4Y	"	"	"	
t <sub>PLH</sub>	"	"	71	IN	"	OUT	"	"		"	"	"	"	"	"	2.7 V	"	1A to 1Y	"	60	"		
			72	2.7 V	IN	OUT	"	"		"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"	
			73	"	2.7 V		IN	"	OUT	"		"	"	"	"	"	"	"	2A to 2Y	"	"	"	
			74	"	"		2.7 V	IN	OUT	"		"	"	"	"	"	"	"	2B to 2Y	"	"	"	
			75	"	"		"	2.7 V			"	OUT	IN	"		"	"	"	3A to 3Y	"	"	"	
			76	"	"		"	"			"	OUT	2.7 V	IN		"	"	"	3B to 3Y	"	"	"	
			77	"	"		"	"			"	"	"	2.7 V	OUT	IN	"	"	4A to 4Y	"	"	"	
			78	"	"		"	"			"	"	"	2.7 V	OUT	2.7 V	IN	"	4B to 4Y	"	"	"	
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>C</sub> = -55° C.																						

1/ For case X and 2, pins not referenced are NC.  
2/ I<sub>IL</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B	-160/-400	-30/-300	-150/-380	-160/-400	-150/-380	-100/-340

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V <sub>CC</sub>						
1 T <sub>c</sub> = 25°C	V <sub>OH</sub>	3006	1	0.7 V	-400 $\mu$ A	5.5 V		5.5 V		GND		5.5 V		5.5 V		5.5 V	4.5 V	1Y	2.5		V		
			2	5.5 V		0.7 V	-400 $\mu$ A	5.5 V											2Y			"	
			3	"		5.5 V		0.7 V	-400 $\mu$ A											3Y			"
			4	"				5.5 V				-400 $\mu$ A	0.7 V							4Y			"
			5	"									5.5 V		-400 $\mu$ A	0.7 V				5Y			"
			6	"										5.5 V		5.5 V	-400 $\mu$ A	0.7 V		6Y			"
	V <sub>OL</sub>	3007	7	2.0 V	4 mA	GND		GND					GND		GND		GND		1Y		0.4	"	
			8	GND		2.0 V	4 mA	GND												2Y			"
			9	"		GND		2.0 V	4 mA											3Y			"
			10	"				GND			4 mA									4Y			"
			11	"									4 mA	2.0 V						5Y			"
			12	"										GND	4 mA	2.0 V		4 mA	2.0 V	6Y			"
	V <sub>IC</sub>		13	-18 mA															1A		-1.5	"	
			14			-18 mA														2A			"
			15					-18 mA												3A			"
			16										-18 mA							4A			"
			17													-18 mA				5A			"
			18															-18 mA		6A			"
	I <sub>IH1</sub>	3010	19	2.7 V		GND		GND					GND		GND		GND	5.5 V	1A		20	$\mu$ A	
			20	GND		2.7 V		GND												2A			"
			21	"		GND		2.7 V												3A			"
			22	"				GND					2.7 V							4A			"
			23	"									GND		2.7 V					5A			"
			24	"											GND		2.7 V			6A			"
	I <sub>IH2</sub>		25	5.5 V													GND		1A		100	"	
			26	GND		5.5 V														2A			"
			27	"		GND		5.5 V												3A			"
			28	"				GND					5.5 V							4A			"
			29	"									GND		5.5 V					5A			"
			30	"									GND		GND		5.5 V			6A			"
	I <sub>IL</sub>	3009	31	0.4 V		5.5 V		5.5 V					5.5 V		5.5 V				1A	2/	2/	"	
			32	5.5 V		0.4 V		5.5 V												2A			"
			33	"		5.5 V		0.4 V												3A			"
			34	"				5.5 V					0.4 V							4A			"
			35	"									5.5 V		0.4 V					5A			"
			36	"									5.5 V		5.5 V		0.4 V			6A			"
	I <sub>OS</sub>	3011	37	GND	GND														1Y	3/	3/	mA	
			38			GND	GND													2Y			"
			39					GND	GND											3Y			"
			40									GND	GND							4Y			"
			41											GND	GND					5Y			"
			42														GND	GND		6Y			"

See footnotes at end of device type 03.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit				
				Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19		20	Min		Max			
				Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A		V <sub>CC</sub>						
1	I <sub>CC</sub> H	3005	43	GND		GND		GND		GND		GND		GND		GND	5.5 V	V <sub>CC</sub>		2.4	mA				
	I <sub>CC</sub> L	3005	44	5.5 V		5.5 V		5.5 V		"		5.5 V		5.5 V		5.5 V	"					V <sub>CC</sub>		6.6	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																								
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																								
9	T <sub>C</sub> = 25° C	3003 (Fig. 3)	t <sub>PHL</sub>	45	IN	OUT	2.7 V		2.7 V		GND		2.7 V		2.7 V		2.7 V	5.0 V	1A to 1Y	2	17	ns			
				46	2.7 V		IN	OUT	2.7 V		"		"		"		"	"	"	2A to 2Y	"	"	"		
				47	"		2.7 V		IN	OUT	"		"		"		"	"	"	"	3A to 3Y	"	"	"	
				48	"		"		2.7 V		"	OUT	IN		"		"	"	"	"	4A to 4Y	"	"	"	
				49	"		"		"		"		2.7 V	OUT	IN		"	"	"	"	5A to 5Y	"	"	"	
				50	"		"		"		"		"		2.7 V	OUT	IN	"	"	"	6A to 6Y	"	"	"	
				51	IN	OUT	"		"		"		"		"		2.7 V	OUT	IN	"	1A to 1Y	"	15	"	
				52	2.7 V		IN	OUT	"		"		"		"		"	"	"	"	2A to 2Y	"	"	"	
	53		"		2.7 V		IN	OUT	"		"		"		"	"	"	"	3A to 3Y	"	"	"			
	54		"		"		2.7 V		"	OUT	IN		"		"	"	"	"	4A to 4Y	"	"	"			
	55		"		"		"		"		2.7 V	OUT	IN		"	"	"	"	5A to 5Y	"	"	"			
	56		"		"		"		"		"		2.7 V	OUT	IN	"	"	"	6A to 6Y	"	"	"			
	10		T <sub>C</sub> = 125° C	3003 (Fig. 3)	t <sub>PHL</sub>	57	IN	OUT	"		"		GND		"		"		2.7 V	"	1A to 1Y	"	24	"	
						58	2.7 V		IN	OUT	"		"		"		"		"	"	"	2A to 2Y	"	"	"
						59	"		2.7 V		IN	OUT	"		"		"		"	"	"	3A to 3Y	"	"	"
						60	"		"		2.7 V		"	OUT	IN		"		"	"	"	4A to 4Y	"	"	"
61		"					"		"		"		2.7 V	OUT	IN		"	"	"	5A to 5Y	"	"	"		
62		"					"		"		"		"		2.7 V	OUT	IN	"	"	6A to 6Y	"	"	"		
63		IN				OUT	"		"		"		"		"		2.7 V	OUT	IN	"	1A to 1Y	"	20	"	
64		2.7 V					IN	OUT	"		"		"		"		"	"	"	"	2A to 2Y	"	"	"	
65	"		2.7 V			IN	OUT	"		"		"		"	"	"	"	3A to 3Y	"	"	"				
66	"		"			2.7 V		"	OUT	IN		"		"	"	"	"	4A to 4Y	"	"	"				
67	"		"			"		"		2.7 V	OUT	IN		"	"	"	"	5A to 5Y	"	"	"				
68	"		"			"		"		2.7 V		2.7 V	OUT	IN	"	"	"	6A to 6Y	"	"	"				
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>C</sub> = -55° C.																								

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

2/ I<sub>IL</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 2A, 3A, 4A, 5A, 6A	-150/-380	-30/-300	-150/-380	-160/-400	-150/-380	-100/-340

3/ I<sub>OS</sub> limits for circuit C: -20/-100 mA; for circuits A, B, D, E, and F: -15/-100 mA.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit					
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max						
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V <sub>CC</sub>		1Y	2Y		3Y	4Y	5Y	6Y	100
1	V <sub>OL</sub>	3007	1	2.0 V	4 mA	GND	2Y	GND		GND				GND				1Y		0.4	"					
		"	2	GND		2.0 V	4 mA	GND		"		"			"				2Y		"	"				
		"	3	"		GND		2.0 V	4 mA	"		"			"				3Y		"	"				
		"	4	"		"		GND		"	4 mA	2.0 V			"				4Y		"	"				
		"	5	"		"		"		"	"	GND	4 mA	2.0 V	"				5Y		"	"				
		"	6	"		"		"		"	"	GND		GND	4 mA	2.0 V	"		6Y		"	"				
	I <sub>CEX</sub>	"	"	7	0.7 V	5.5 V	5.5 V		5.5 V		"		5.5 V		5.5 V		5.5 V	"	1Y		100	$\mu$ A				
				8	5.5 V		0.7 V	5.5 V	5.5 V	"	"	"	"	"	"	"	"	"	"	2Y		"	"			
				9	"		5.5 V		0.7 V	5.5 V	"	"	"	"	"	"	"	"	"	3Y		"	"			
				10	"		"		5.5 V		"	5.5 V	0.7 V			"	"	"	"	4Y		"	"			
				11	"		"		"		"	"	5.5 V	5.5 V	0.7 V		"	"	"	5Y		"	"			
				12	"		"		"		"	"	5.5 V		5.5 V	5.5 V	0.7 V		"	6Y		"	"			
	V <sub>IC</sub>	"	"	13	-18 mA					"								"	1A		-1.5	V				
				14			-18 mA			"								"	2A		"	"				
				15					-18 mA		"							"	3A		"	"				
				16						"			-18 mA					"	4A		"	"				
				17							"					-18 mA		"	5A		"	"				
				18							"							-18 mA	"	6A		"	"			
	I <sub>IH1</sub>	"	3010	19	2.7 V		GND		GND		"		GND		GND		GND	5.5 V	1A		20	$\mu$ A				
				20	GND		2.7 V		GND		"		"		"		"	"	2A		"	"				
				21	"		GND		2.7 V		"		"		"		"	"	3A		"	"				
				22	"		"		GND		"		2.7 V		"		"	"	4A		"	"				
				23	"		"		"		"		GND		2.7 V		"	"	5A		"	"				
				24	"		"		"		"		"		GND		2.7 V	"	6A		"	"				
	I <sub>IH2</sub>	"	"	25	5.5 V		"		"		"		"		"		GND	"	1A		100	"				
				26	GND		5.5 V		"		"		"		"		"	"	2A		"	"				
				27	"		GND		5.5 V		"		"		"		"	"	3A		"	"				
				28	"		"		GND		"		5.5 V		"		"	"	4A		"	"				
				29	"		"		"		"		GND		5.5 V		"	"	5A		"	"				
				30	"		"		"		"		GND		GND		5.5 V	"	6A		"	"				
	I <sub>IL</sub>	"	3009	31	0.4 V		5.5 V		5.5 V		"		5.5 V		5.5 V		5.5 V	"	1A	2/	2/	"				
				32	5.5 V		0.4 V		5.5 V		"		"		"		"	"	2A		"	"				
				33	"		5.5 V		0.4 V		"		"		"		"	"	3A		"	"				
				34	"		"		5.5 V		"		0.4 V		"		"	"	4A		"	"				
				35	"		"		"		"		5.5 V		0.4 V		"	"	5A		"	"				
				36	"		"		"		"		"		5.5 V		0.4 V	"	6A		"	"				
	I <sub>CCL</sub>	3005	37	"		"		"		"		"		"		5.5 V	"	V <sub>CC</sub>		6.6	mA					
	I <sub>CCH</sub>	3005	38	GND		GND		GND		"		GND		GND		GND	"	V <sub>CC</sub>		2.4	mA					
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																									
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																									

See footnotes at end of device type 04.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1Y	2A	2Y	3A	3Y	GND	4Y	4A	5Y	5A	6Y	6A	V <sub>CC</sub>						
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 (Fig. 3)	39	IN	OUT	2.7 V		2.7 V		GND		2.7 V		2.7 V		2.7 V	5.0 V	1A to 1Y	2	36	ns		
			40	2.7 V		IN	OUT	2.7 V											2A to 2Y				
			41	"			2.7 V		IN	OUT	"		"		"		"	"		3A to 3Y			
			42	"			"		"		"	OUT	IN		"		"	"		4A to 4Y			
			43	"			"		"		"		2.7 V	OUT	IN		"	"		5A to 5Y			
	44		"			"		"		"				2.7 V	OUT	IN			6A to 6Y				
	45		IN	OUT	"		"		"		"		"			2.7 V	"		1A to 1Y		40		
	46		2.7 V			IN	OUT	"		"		"		"		"	"		2A to 2Y				
	47		"			2.7 V		IN	OUT	"		"		"		"	"		3A to 3Y				
	48		"			"		2.7 V		"	OUT	IN		"		"	"		4A to 4Y				
49	"			"		"		"		2.7 V	OUT	IN		"	"		5A to 5Y						
50	"			"		"		"		"		2.7 V	OUT	IN		"	6A to 6Y						
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>	51	IN	OUT	"		"		"		"		"		2.7 V	"		1A to 1Y		55			
		52	2.7 V			IN	OUT	"		"		"		"	"	"		2A to 2Y					
		53	"			2.7 V		IN	OUT	"		"		"	"	"		3A to 3Y					
		54	"			"		2.7 V		"	OUT	IN		"	"	"		4A to 4Y					
		55	"			"		"		"		2.7 V	OUT	IN		"	"		5A to 5Y				
		56	"			"		"		"		"		2.7 V	OUT	IN	"		6A to 6Y				
	57	IN	OUT	"		"		"		"		"		"	2.7 V	"		1A to 1Y		60			
	58	2.7 V			IN	OUT	"		"		"		"	"	"	"		2A to 2Y					
	59	"			2.7 V		IN	OUT	"		"		"	"	"	"		3A to 3Y					
	60	"			"		2.7 V		"	OUT	IN		"	"	"	"		4A to 4Y					
	61	"			"		"		"		2.7 V	OUT	IN		"	"		5A to 5Y					
	62	"			"		"		"		2.7 V		2.7 V	OUT	IN	"		6A to 6Y					
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																						

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

2/ I<sub>L</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 2A, 3A, 4A, 5A, 6A	-150/-380	-30/-300	-150/-380	-160/-400	-150/-380	-120/-360

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V <sub>CC</sub>						
1 Tc = 25°C	V <sub>OH</sub>	3006	1	0.7 V	5.5 V	5.5 V	5.5 V	5.5 V										1Y	2.5		V		
		"	2	5.5 V	0.7 V	"	"	"											1Y	"		"	
		"	3	"	5.5 V	"	"	"											1Y	"		"	
		"	4	"	"	0.7 V	"	"											2Y	"		"	
		"	5	"	"	5.5 V	0.7 V	"											2Y	"		"	
		"	6	"	"	"	5.5 V	0.7 V	"										2Y	"		"	
		"	7	"	"	"	"	5.5 V											3Y	"		"	
		"	8	"	"	"	"	"	"										3Y	"		"	
		"	9	"	"	"	"	"	"										3Y	"		"	
	V <sub>OL</sub>	3007	10	2.0 V	2.0 V	GND	GND	GND											1Y		0.4	"	
		"	11	GND	GND	2.0 V	2.0 V	2.0 V	4 mA										2Y			"	
		"	12	GND	GND	GND	GND	GND											3Y			"	
	V <sub>IC</sub>	3010	13	-18 mA															1A		-1.5	"	
			14		-18 mA														1B			"	
			15			-18 mA													2A			"	
			16				-18 mA												2B			"	
			17					-18 mA											2C			"	
			18							-18 mA									3A			"	
			19												-18 mA				3B			"	
			20													-18 mA			3C			"	
			21														-18 mA		1C			"	
			I <sub>IH1</sub>	3010	22	2.7 V	GND	GND	GND	GND											1A		20
	"	23		GND	2.7 V	"	"	"											1B			"	
	"	24		"	GND	"	"	"											1C			"	
	"	25		"	"	2.7 V	"	"											2A			"	
	"	26		"	"	GND	2.7 V	"											2B			"	
	"	27		"	"	"	GND	2.7 V											2C			"	
	"	28		"	"	"	"	GND											3A			"	
	"	29		"	"	"	"	"											3B			"	
	"	30		"	"	"	"	"											3C			"	
	I <sub>IH2</sub>	3010	31	5.5 V	"	"	"	"											1A		100	"	
			"	32	GND	5.5 V	"	"	"											1B			"
			"	33	"	GND	"	"	"											1C			"
			"	34	"	"	5.5 V	"	"											2A			"
			"	35	"	"	GND	5.5 V	"											2B			"
			"	36	"	"	"	GND	5.5 V											2C			"
			"	37	"	"	"	"	GND											3A			"
			"	38	"	"	"	"	"											3B			"
			"	39	"	"	"	"	"											3C			"
	I <sub>IL</sub>	3009	40	0.4 V	5.5 V	5.5 V	5.5 V	5.5 V											1A	2/	2/	"	
			"	41	5.5 V	0.4 V	"	"	"											1B	"	"	"
			"	42	"	5.5 V	"	"	"											1C	"	"	"
			"	43	"	"	0.4 V	"	"											2A	"	"	"
			"	44	"	"	5.5 V	0.4 V	"											2B	"	"	"
			"	45	"	"	"	5.5 V	0.4 V											2C	"	"	"
			"	46	"	"	"	"	5.5 V											3A	"	"	"
			"	47	"	"	"	"	"											3B	"	"	"
			"	48	"	"	"	"	"											3C	"	"	"

See footnotes at end of device type 05

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V <sub>CC</sub>						
1 T <sub>c</sub> = 25°C	I <sub>OS</sub>	3011	49	GND	GND										GND	GND	5.5 V	1Y	3/	3/	mA		
			50			GND	GND	GND	GND										2Y				
			51										GND	GND	GND	GND				3Y			
	I <sub>COH</sub>	3005	52	GND	GND	GND	GND	GND				GND	GND	GND		GND		V <sub>CC</sub>			1.2		
I <sub>COL</sub>	3005	53	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V					5.5 V	5.5 V	5.5 V		5.5 V		V <sub>CC</sub>			3.3		
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>c</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																						
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>c</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																						
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 Fig. 3	54	IN	2.7 V	2.7 V	2.7 V	2.7 V			GND		2.7 V	2.7 V	2.7 V	OUT	2.7 V	5.0 V	1A to 1Y	2	17	ns	
			55	2.7 V	IN													2.7 V		1B to 1Y			
			56		2.7 V													IN		1C to 1Y			
			57			IN					OUT							2.7 V		2A to 2Y			
			58			2.7 V	IN													2B to 2Y			
			59				2.7 V	IN												2C to 2Y			
			60					2.7 V				OUT	IN							3A to 3Y			
			61											2.7 V	IN					3B to 3Y			
	62												2.7 V	IN				3C to 3Y					
	t <sub>PLH</sub>		63	IN										2.7 V	OUT			1A to 1Y		15	ns		
			64	2.7 V	IN														1B to 1Y				
			65		2.7 V												IN		1C to 1Y				
			66			IN				OUT							2.7 V		2A to 2Y				
			67			2.7 V	IN												2B to 2Y				
		68				2.7 V	IN											2C to 2Y					
		69					2.7 V			OUT	IN							3A to 3Y					
		70										2.7 V	IN					3B to 3Y					
		71											2.7 V	IN				3C to 3Y					
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>		72	IN											2.7 V	OUT			1A to 1Y		24	ns	
			73	2.7 V	IN															1B to 1Y			
			74		2.7 V													IN		1C to 1Y			
			75			IN					OUT							2.7 V		2A to 2Y			
			76			2.7 V	IN													2B to 2Y			
			77				2.7 V	IN												2C to 2Y			
			78					2.7 V	IN											3A to 3Y			
			79											2.7 V	IN					3B to 3Y			
			80												2.7 V	IN				3C to 3Y			
			t <sub>PLH</sub>		81	IN										2.7 V	OUT			1A to 1Y		20	ns
			82	2.7 V	IN														1B to 1Y				
			83		2.7 V												IN		1C to 1Y				
			84			IN				OUT							2.7 V		2A to 2Y				
			85			2.7 V	IN												2B to 2Y				
			86				2.7 V	IN											2C to 2Y				
			87					2.7 V			OUT	IN							3A to 3Y				
			88										2.7 V	IN					3B to 3Y				
			89										2.7 V	2.7 V	IN				3C to 3Y				
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																						

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

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

2/  $I_{IL}$  limits in  $\mu A$  are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 1C, 2A, 2B, 2C 1C, 2C, 3C	-120/-360	-30/-300	-150/-380	-150/-380	-160/-400	-100/-340

3/  $I_{OS}$  limits for circuit C are: -20/-100 mA; for circuit B are: -30/-300 mA; for circuits A, D, E, and F: -15/-100 mA.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit				
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max					
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	GND	3A	3B	3C	1Y	1C		V <sub>CC</sub>						
1 T <sub>C</sub> = 25°C	V <sub>OL</sub>	3007	1	2.0 V	2.0 V	GND	GND	GND											1Y		0.4	V dc			
			2	GND	GND	2.0 V	2.0 V	2.0 V	4 mA				GND	GND	GND					2Y					
			3	GND	GND	GND	GND	GND				4 mA	2.0 V	2.0 V	2.0 V		GND			3Y					
			4	0.7 V	5.5 V	5.5 V	5.5 V	5.5 V						5.5 V	5.5 V	5.5 V	5.5 V	5.5 V		1Y		100	μA		
			5	5.5 V	0.7 V														5.5 V		1Y				
			6		5.5 V														0.7 V		1Y				
			7			0.7 V						5.5 V							5.5 V		2Y				
			8			5.5 V	0.7 V														2Y				
			9				5.5 V	0.7 V													2Y				
			10					5.5 V						5.5 V	0.7 V						3Y				
			11												5.5 V	0.7 V					3Y				
			12													5.5 V	0.7 V				3Y				
	V <sub>IC</sub>			13	-18 mA															1A		-1.5	V dc		
				14		-18 mA															1B				
				15															-18 mA			1C			
				16			-18 mA															2A			
				17				-18 mA														2B			
				18					-18 mA													2C			
				19						-18 mA												3A			
				20												-18 mA						3B			
				21													-18 mA					3C			
	I <sub>IH1</sub>		3010	22	2.7 V	GND	GND	GND	GND					GND	GND	GND		GND	5.5 V	1A		20	μA		
				23	GND	2.7 V													GND		1B				
				24		GND													2.7 V		1C				
				25			2.7 V												GND		2A				
				26			GND	2.7 V													2B				
				27				GND	2.7 V												2C				
				28					GND	2.7 V											3A				
				29												GND	2.7 V				3B				
				30													GND	2.7 V			3C				
	I <sub>IH2</sub>			31	5.5 V															1A		100	μA		
				32	GND	5.5 V															1B				
				33		GND													5.5 V		1C				
				34			5.5 V												GND		2A				
				35			GND	5.5 V													2B				
				36				GND	5.5 V												2C				
				37					GND	5.5 V						5.5 V					3A				
				38												GND	5.5 V				3B				
				39													GND	5.5 V			3C				
	I <sub>IL</sub>		3009	40	0.4 V	5.5 V	5.5 V	5.5 V	5.5 V					5.5 V	5.5 V			5.5 V		1A	2/	2/			
				41	5.5 V	0.4 V													5.5 V		1B				
				42		5.5 V													0.4 V		1C				
				43			0.4 V												5.5 V		2A				
				44			5.5 V	0.4 V													2B				
				45				5.5 V	0.4 V												2C				
				46					5.5 V							0.4 V					3A				
				47												5.5 V	0.4 V				3B				
				48												5.5 V	5.5 V	0.4 V			3C				
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																								
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																								

See footnotes at end of device type 06

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	2A	2B	2C	2Y	GND	3Y	3A	3B	3C	1Y	1C	V <sub>CC</sub>						
1	I <sub>CCH</sub>	3005	49	GND	GND	GND	GND	GND		GND		GND	GND	GND		GND	5.5 V	V <sub>CC</sub>		1.4	mA		
	I <sub>CLL</sub>	3005	50	5.5 V		"		5.5 V	5.5 V	5.5 V		5.5 V	"	V <sub>CC</sub>		3.3	mA						
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 Fig. 3	51	IN	2.7 V	2.7 V	2.7 V	2.7 V		"		2.7 V	2.7 V	2.7 V	OUT	2.7 V	5.0 V	1A to 1Y	2	36	ns		
			52	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	2.7 V	"	1B to 1Y	"	"	"	
			53	"	2.7 V	"	"	"	"	"	"	"	"	"	"	"	IN	"	1C to 1Y	"	"	"	
			54	"	"	IN	"	"	"	OUT	"	"	"	"	"	"	2.7 V	"	2A to 2Y	"	"	"	
			55	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	2B to 2Y	"	"	"	
			56	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	2C to 2Y	"	"	"	
			57	"	"	"	"	2.7 V	"	"	OUT	IN	"	"	"	"	"	"	3A to 3Y	"	"	"	
			58	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	"	3B to 3Y	"	"	"	
			59	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	3C to 3Y	"	"	"	
	t <sub>PLH</sub>	"	"	60	IN	"	"	"	"	"	"	"	"	"	2.7 V	OUT	"	"	1A to 1Y	"	40	ns	
				61	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"
				62	"	2.7 V	"	"	"	"	"	"	"	"	"	"	"	IN	"	1C to 1Y	"	"	"
				63	"	"	IN	"	"	"	OUT	"	"	"	"	"	"	2.7 V	"	2A to 2Y	"	"	"
				64	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	2B to 2Y	"	"	"
				65	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	2C to 2Y	"	"	"
				66	"	"	"	"	2.7 V	"	"	OUT	IN	"	"	"	"	"	"	3A to 3Y	"	"	"
				67	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	"	"	3B to 3Y	"	"	"
				68	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	3C to 3Y	"	"	"
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>	3003 Fig. 3	69	IN	"	"	"	"	"	"	"	"	2.7 V	2.7 V	2.7 V	OUT	"	"	1A to 1Y	2	55	"	
			70	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"	
			71	"	2.7 V	"	"	"	"	"	"	"	"	"	"	"	IN	"	1C to 1Y	"	"	"	
			72	"	"	IN	"	"	"	OUT	"	"	"	"	"	"	2.7 V	"	2A to 2Y	"	"	"	
			73	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	2B to 2Y	"	"	"	
			74	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	2C to 2Y	"	"	"	
			75	"	"	"	"	2.7 V	"	"	OUT	IN	"	"	"	"	"	"	3A to 3Y	"	"	"	
			76	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	"	"	3B to 3Y	"	"	"	
			77	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	3C to 3Y	"	"	"	
	t <sub>PLH</sub>	"	"	78	IN	"	"	"	"	"	"	"	"	"	"	2.7 V	OUT	"	"	1A to 1Y	"	60	"
				79	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	1B to 1Y	"	"	"
				80	"	2.7 V	"	"	"	"	"	"	"	"	"	"	"	IN	"	1C to 1Y	"	"	"
				81	"	"	IN	"	"	"	OUT	"	"	"	"	"	"	2.7 V	"	2A to 2Y	"	"	"
				82	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	2B to 2Y	"	"	"
				83	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	2C to 2Y	"	"	"
				84	"	"	"	"	2.7 V	"	"	OUT	IN	"	"	"	"	"	"	3A to 3Y	"	"	"
				85	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	"	3B to 3Y	"	"	"
				86	"	"	"	"	"	"	"	"	"	2.7 V	2.7 V	IN	"	"	"	3C to 3Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																						

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

2/ I<sub>L</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 3C	-160/-400	-30/-300	-150/-380	-160/-400	-150/-380	-150/-380

TABLE III. Group A inspection for device type 07.  
Terminal conditions (pins not designated may be high  $\geq 2.0$  V or low  $\leq 0.7$  V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit				
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max					
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V <sub>CC</sub>								
1 T <sub>C</sub> = 25°C	V <sub>OH</sub>	3006	1	0.7 V	5.5 V		5.5 V	5.5 V	-400 μA	GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y	2.5 V		V				
		"	2	5.5 V	0.7 V		5.5 V	"	"	"	"	"	"	"	"	"	"	"	1Y	"		"			
		"	3	"	5.5 V		0.7 V	"	"	"	"	"	"	"	"	"	"	"	1Y	"		"			
		"	4	"	"		5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	1Y	"		"			
		"	5	"	"		"	5.5 V	"	"	-400 μA	0.7 V	"	"	"	"	"	"	2Y	"		"			
		"	6	"	"		"	"	"	"	"	5.5 V	0.7 V	"	"	"	"	"	2Y	"		"			
		"	7	"	"		"	"	"	"	"	"	5.5 V	"	0.7 V	"	"	"	2Y	"		"			
		"	8	"	"		"	"	"	"	"	"	"	5.5 V	"	0.7 V	"	"	2Y	"		"			
	V <sub>OL</sub>	3007	9	2.0 V	2.0 V		2.0 V	2.0 V	4mA	"	"	GND	GND	"	GND	0.7 V	"	"	1Y		0.4	"			
		3007	10	GND	GND		GND	GND	"	4mA	2.0 V	2.0 V	"	2.0 V	2.0 V	"	"	"	2Y		0.4	"			
	V <sub>IC</sub>			11	-18 mA						"								1A		-1.5	"			
				12		-18 mA						"								"			1B	"	
				13				-18 mA				"								"			1C	"	
				14					-18mA			"								"			1D	"	
				15								"		-18 mA						"			2A	"	
				16								"			-18 mA					"			2B	"	
				17								"				-18 mA				"			2C	"	
				18								"					-18 mA			"			2D	"	
				I <sub>IH1</sub>	3010		19	2.7 V	GND		GND	GND		"		GND	GND		GND	GND	5.5 V	1A		20	μA
							20	GND	2.7 V		GND	"		"	"	"	"	"	"	"	"	"	1B		"
	21	"	GND					2.7 V	"		"	"	"	"	"	"	"	"	"	1C		"	"		
	22	"	"					GND	2.7 V	"	"	"	"	"	"	"	"	"	"	1D		"	"		
	23	"	"					"	GND	"	"	"	"	2.7 V	"	"	"	"	"	2A		"	"		
	24	"	"					"	"	"	"	"	"	GND	2.7 V	"	"	"	"	2B		"	"		
	25	"	"					"	"	"	"	"	"	"	GND	"	2.7 V	"	"	2C		"	"		
	26	"	"					"	"	"	"	"	"	"	"	"	GND	2.7 V	"	2D		"	"		
	I <sub>IH2</sub>			27	5.5 V	"		"	"	"	"	"	"	"	"	"	"	"	1A		100	"			
				28	GND	5.5 V		"	"	"	"	"	"	"	"	"	"	"	"	1B		"	"		
				29	"	GND		5.5 V	"	"	"	"	"	"	"	"	"	"	"	1C		"	"		
				30	"	"		GND	5.5 V	"	"	"	"	"	"	"	"	"	"	1D		"	"		
				31	"	"		"	GND	"	"	"	"	5.5 V	"	"	"	"	"	2A		"	"		
				32	"	"		"	"	"	"	"	"	GND	5.5 V	"	"	"	"	2B		"	"		
				33	"	"		"	"	"	"	"	"	"	GND	"	5.5 V	"	"	2C		"	"		
				34	"	"		"	"	"	"	"	"	"	GND	"	GND	5.5 V	"	2D		"	"		
	I <sub>IL</sub>	3009		35	0.4 V	5.5 V		5.5 V	5.5 V	"	"	"	5.5 V	5.5 V	"	5.5 V	"	"	1A	2/	2/	"			
				36	5.5 V	0.4 V		5.5 V	"	"	"	"	"	"	"	"	"	"	"	1B	"	"	"		
				37	"	5.5 V		0.4 V	"	"	"	"	"	"	"	"	"	"	"	1C	"	"	"		
				38	"	"		5.5 V	0.4 V	"	"	"	"	"	"	"	"	"	"	1D	"	"	"		
				39	"	"		"	5.5 V	"	"	"	"	"	"	"	"	"	"	2A	"	"	"		
				40	"	"		"	"	"	"	"	"	0.4 V	"	"	"	"	"	2B	"	"	"		
				41	"	"		"	"	"	"	"	"	5.5 V	0.4 V	"	0.4 V	"	"	2C	"	"	"		
				42	"	"		"	"	"	"	"	"	"	5.5 V	"	5.5 V	0.4 V	"	2D	"	"	"		
	I <sub>OS</sub>	3011	43	GND	GND		GND	GND	GND	"	"	"	"	"	"	"	"	"	1Y	3/	3/	mA			
		3011	44							"	GND	GND	GND	"	GND	GND	"	2Y	3/	3/	"				
	I <sub>CC H</sub>	3005	49	GND	GND		GND	GND	"	"	"	GND	GND	"	GND	GND	"	V <sub>CC</sub>		0.8	"				
	I <sub>CC L</sub>	3005	50	5.5 V	5.5 V		5.5 V	5.5 V	"	"	"	5.5 V	5.5 V	"	5.5 V	5.5 V	"	V <sub>CC</sub>		2.2	"				
	2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																							
	3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																							

See footnotes at end of device type 07.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V <sub>CC</sub>							
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 Fig. 3	47	IN	2.7 V		2.7 V	2.7 V	OUT	GND		2.7 V	2.7 V		2.7 V	2.7 V	5.0 V	1A to 1Y	2	17	ns			
			48	2.7 V	IN		2.7 V	"	"	"		"	"		"	"	"	"	1B to 1Y	"	"	"		
			49	"	2.7 V		IN	"	"	"		"	"		"	"	"	"	"	1C to 1Y	"	"	"	
			50	"	"		2.7 V	IN	"	"	"		"	"		"	"	"	"	1D to 1Y	"	"	"	
			51	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	"	2A to 2Y	"	"	"	
			52	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	"	2B to 2Y	"	"	"	
			53	"	"		"	"		"	"	"	2.7 V		IN	"	"	"	"	2C to 2Y	"	"	"	
			54	"	"		"	"		"	"	"	"		2.7 V	IN	"	"	"	2D to 2Y	"	"	"	
	t <sub>PLH</sub>	"	"	55	IN	"		"	"	OUT	"		"	"		"	2.7 V	"	1A to 1Y	"	15	"		
				56	2.7 V	IN		"	"	"	"		"	"		"	"	"	"	1B to 1Y	"	"	"	
				57	"	2.7 V		IN	"	"	"		"	"		"	"	"	"	1C to 1Y	"	"	"	
				58	"	"		2.7 V	IN	"	"		"	"		"	"	"	"	"	1D to 1Y	"	"	"
				59	"	"		"	2.7 V		OUT	IN	"		"	"	"	"	"	"	2A to 2Y	"	"	"
				60	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	"	2B to 2Y	"	"	"
61				"	"		"	"		"	"	"	2.7 V		IN	"	"	"	"	2C to 2Y	"	"	"	
62				"	"		"	"		"	"	"	"		2.7 V	IN	"	"	"	2D to 2Y	"	"	"	
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>	3003 Fig. 3	63	IN	"		"	"	OUT	"		"	"		"	2.7 V	5.0 V	1A to 1Y	"	24	"			
			64	2.7 V	IN		"	"	"	"		"	"		"	"	"	"	1B to 1Y	"	"	"		
			65	"	2.7 V		IN	"	"	"		"	"		"	"	"	"	"	1C to 1Y	"	"	"	
			66	"	"		2.7 V	IN	"	"		"	"		"	"	"	"	"	1D to 1Y	"	"	"	
			67	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	"	2A to 2Y	"	"	"	
			68	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	"	2B to 2Y	"	"	"	
			69	"	"		"	"		"	"	"	2.7 V		IN	"	"	"	"	2C to 2Y	"	"	"	
			70	"	"		"	"		"	"	"	"		2.7 V	IN	"	"	"	2D to 2Y	"	"	"	
	t <sub>PLH</sub>	"	"	71	IN	"		"	"	OUT	"		"	"		"	2.7 V	"	1A to 1Y	"	20	"		
				72	2.7 V	IN		"	"	"	"		"	"		"	"	"	"	1B to 1Y	"	"	"	
				73	"	2.7 V		IN	"	"	"		"	"		"	"	"	"	"	1C to 1Y	"	"	"
				74	"	"		2.7 V	IN	"	"		"	"		"	"	"	"	"	1D to 1Y	"	"	"
				75	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	"	2A to 2Y	"	"	"
				76	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	"	2B to 2Y	"	"	"
				77	"	"		"	"		"	"	"	2.7 V		IN	"	"	"	"	2C to 2Y	"	"	"
				78	"	"		"	"		"	"	"	"		2.7 V	IN	"	"	"	2D to 2Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																							

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

2/ I<sub>L</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	-120/-360	-30/-300	-160/-400	-120/-360	-150/-380	-100/-340

3/ I<sub>OS</sub> limits for circuit C: -20/-100 mA; for circuits A, B, D, E, and F: -15/-100 mA.

TABLE III. Group A inspection for device type 08.  
Terminal conditions (pins not designated may be high  $\geq 2.0$  V or low  $\leq 0.7$  V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V <sub>CC</sub>							
1 T <sub>C</sub> = 25°C	V <sub>OL</sub>	3007 3007	1	2.0 V	2.0 V		2.0 V	2.0 V	4mA	GND		GND	GND	NC	GND	GND	4.5 V	1Y		0.4	V			
			2	GND	GND		GND	GND		GND	4mA	2.0 V	2.0 V		GND	2.0 V	2.0 V	"	2Y		0.4	V		
	I <sub>CEX</sub>		3	0.7 V	5.5 V		5.5 V	5.5 V	5.5 V	"	"	"	"	"	"	5.5 V	5.5 V	"	1Y		100	μA		
			4	5.5 V	0.7 V		5.5 V	"	"	"	"	"	"	"	"	"	"	"	"	1Y		"	"	
			5	"	5.5 V		0.7 V	"	"	"	"	"	"	"	"	"	"	"	"	1Y		"	"	
			6	"	"		5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	"	1Y		"	"	
			7	"	"		"	5.5 V	"	"	"	"	"	"	"	"	"	"	"	2Y		"	"	
			8	"	"		"	"	"	"	"	5.5 V	0.7 V	"	"	"	"	"	"	2Y		"	"	
			9	"	"		"	"	"	"	"	"	"	5.5 V	"	"	0.7 V	"	"	2Y		"	"	
			10	"	"		"	"	"	"	"	"	"	"	"	"	5.5 V	0.7 V	"	2Y		"	"	
			V <sub>IC</sub>		11	-18 mA							"							"	1A		-1.5	V
					12		-18 mA						"								"	1B		"
	13						-18 mA				"								"	1C		"	"	
	14							-18mA			"								"	1D		"	"	
	15										"		-18 mA						"	2A		"	"	
	16										"			-18 mA					"	2B		"	"	
	17										"				-18 mA				"	2C		"	"	
	18										"							-18 mA	"	2D		"	"	
	I <sub>IH1</sub>	3010	19	2.7 V	GND		GND	GND		"	"		GND	GND		GND	GND	5.5 V	1A		20	μA		
			20	GND	2.7 V		GND	"		"	"	"	"	"	"	"	"	"	"	1B		"	"	
			21	"	GND		2.7 V	"		"	"	"	"	"	"	"	"	"	"	1C		"	"	
			22	"	"		GND	2.7 V		"	"	"	"	"	"	"	"	"	"	1D		"	"	
			23	"	"		"	GND		"	"	"	2.7 V	"	"	"	"	"	"	2A		"	"	
			24	"	"		"	"		"	"	"	GND	2.7 V	"	"	"	"	"	2B		"	"	
			25	"	"		"	"		"	"	"	"	GND	2.7 V	"	"	"	"	2C		"	"	
			26	"	"		"	"		"	"	"	"	"	"	GND	2.7 V	2.7 V	"	2D		"	"	
	I <sub>IH2</sub>		27	5.5 V	"		"	"		"	"	"	"	"	"	"	GND	"	1A		100	"		
			28	GND	5.5 V		"	"		"	"	"	"	"	"	"	"	"	"	1B		"	"	
			29	"	GND		5.5 V	"		"	"	"	"	"	"	"	"	"	"	1C		"	"	
			30	"	"		GND	5.5 V		"	"	"	"	"	"	"	"	"	"	1D		"	"	
			31	"	"		"	GND		"	"	"	5.5 V	"	"	"	"	"	"	2A		"	"	
			32	"	"		"	"		"	"	"	GND	5.5 V	"	"	"	"	"	2B		"	"	
			33	"	"		"	"		"	"	"	"	GND	5.5 V	"	5.5 V	"	"	2C		"	"	
			34	"	"		"	"		"	"	"	"	GND	5.5 V	"	GND	5.5 V	"	2D		"	"	
	I <sub>IL</sub>	3009	35	0.4 V	5.5 V		5.5 V	5.5 V		"	"	"	5.5 V	5.5 V		5.5 V	"	"	1A	2/	2/	"		
			36	5.5 V	0.4 V		5.5 V	"		"	"	"	"	"	"	"	"	"	"	1B		"	"	
			37	"	5.5 V		0.4 V	"		"	"	"	"	"	"	"	"	"	"	1C		"	"	
			38	"	"		5.5 V	0.4 V		"	"	"	"	"	"	"	"	"	"	1D		"	"	
			39	"	"		"	5.5 V		"	"	"	0.4 V	"	"	"	"	"	"	2A		"	"	
			40	"	"		"	"		"	"	"	5.5 V	0.4 V	"	"	"	"	"	2B		"	"	
			41	"	"		"	"		"	"	"	"	5.5 V	"	"	0.4 V	"	"	2C		"	"	
			42	"	"		"	"		"	"	"	"	5.5 V	"	"	5.5 V	0.4 V	"	2D		"	"	
I <sub>CCL</sub>	3005	43	"	"		"	"		"	"	"	"	"	5.5 V	5.5 V	"	V <sub>CC</sub>		2.2	mA				
I <sub>CH</sub>	3005	44	GND	GND		GND	GND		"	"	GND	GND		GND	GND	"	V <sub>CC</sub>		0.8	mA				
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																							
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																							

See footnotes at end of device type 08.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit		
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max			
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V <sub>CC</sub>						
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 Fig. 3	45	IN	2.7 V		2.7 V	2.7 V	OUT	GND		2.7 V	2.7 V		2.7 V	2.7 V	5.0 V	1A to 1Y	2	36	ns		
			46	2.7 V	IN		2.7 V	"	"	"		"	"		"	"	"	"	1B to 1Y	"	"	"	
			47	"	2.7 V		IN	"	"	"		"	"		"	"	"	"	1C to 1Y	"	"	"	
			48	"	"		2.7 V	IN	"	"	"		"	"		"	"	"	1D to 1Y	"	"	"	
			49	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	2A to 2Y	"	"	"	
			50	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	2B to 2Y	"	"	"	
	51	"	"		"	"		"	"	"	2.7 V		IN	"	"	"	2C to 2Y	"	"	"			
	52	"	"		"	"		"	"	"	"		2.7 V	IN	"	"	2D to 2Y	"	"	"			
	t <sub>PLH</sub>	"	"	53	IN	"		"	"	OUT	"		"	"		"	2.7 V	"	1A to 1Y	"	40	"	
				54	2.7 V	IN		"	"	"	"	"	"		"	"	"	"	1B to 1Y	"	"	"	
				55	"	2.7 V		IN	"	"	"	"	"		"	"	"	"	"	1C to 1Y	"	"	"
				56	"	"		2.7 V	IN	"	"	"	"		"	"	"	"	"	1D to 1Y	"	"	"
57				"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	2A to 2Y	"	"	"	
58				"	"		"	"		"	"	2.7 V	IN		"	"	"	"	2B to 2Y	"	"	"	
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>	"	61	IN	"		"	"	OUT	"		"	"		"	2.7 V	"	1A to 1Y	"	55	"		
			62	2.7 V	IN		"	"	"	"	"	"		"	"	"	"	1B to 1Y	"	"	"		
			63	"	2.7 V		IN	"	"	"	"	"		"	"	"	"	"	1C to 1Y	"	"	"	
			64	"	"		2.7 V	IN	"	"	"	"		"	"	"	"	"	1D to 1Y	"	"	"	
			65	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	"	2A to 2Y	"	"	"	
			66	"	"		"	"		"	"	2.7 V	IN		"	"	"	"	2B to 2Y	"	"	"	
	t <sub>PLH</sub>	"	"	67	"	"		"	"	"	"	2.7 V		IN	"	"	"	"	2C to 2Y	"	"	"	
				68	"	"		"	"		"	"	"		2.7 V	IN	"	"	2D to 2Y	"	"	"	
				69	IN	"		"	"	"	OUT	"		"	"	"	2.7 V	"	1A to 1Y	"	60	"	
				70	2.7 V	IN		"	"	"	"	"	"		"	"	"	"	"	1B to 1Y	"	"	"
				71	"	2.7 V		IN	"	"	"	"	"		"	"	"	"	"	1C to 1Y	"	"	"
				72	"	"		2.7 V	IN	"	"	"	"		"	"	"	"	"	1D to 1Y	"	"	"
"	"	"	73	"	"		"	2.7 V		"	OUT	IN	"		"	"	"	2A to 2Y	"	"	"		
			74	"	"		"	"		"	"	2.7 V	IN		"	"	"	2B to 2Y	"	"	"		
			75	"	"		"	"		"	"	"	2.7 V		IN	"	"	2C to 2Y	"	"	"		
			76	"	"		"	"		"	"	"	2.7 V		2.7 V	IN	"	2D to 2Y	"	"	"		
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																						

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

2/ I<sub>L</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	-160/-400	-30/-300	-160/-400	-200/-440	-150/-380	-120/-360

TABLE III. Group A inspection for device type 09.  
Terminal conditions (pins not designated may be high  $\geq 2.0$  V or low  $\leq 0.7$  V or open).

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit			
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max				
			Test no.	A	B	C	D	E	F	GND	Y	NC	NC	G	H	NC	V <sub>CC</sub>							
1 T <sub>C</sub> = 25°C	V <sub>OH</sub>	3006	1	0.7 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	-400 μA			5.5 V	5.5 V		Y	2.5 V		V			
		"	2	5.5 V	0.7 V	5.5 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
		"	3	"	5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		"	4	"	"	5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
		"	5	"	"	"	5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		"	6	"	"	"	"	5.5 V	0.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
		"	7	"	"	"	"	"	5.5 V	0.7 V	"	"	"	"	"	0.7 V	"	"	"	"	"	"	"	"
		"	8	"	"	"	"	"	"	5.5 V	0.7 V	"	"	"	"	5.5 V	0.7 V	"	"	"	"	"	"	"
	V <sub>OL</sub>	3007	9	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	"	4 mA			2.0 V	2.0 V		"			0.4	"		
	V <sub>IC</sub>	"	"	10	-18 mA						"							"	A		-1.5	"		
		"	"	11		-18 mA					"							"	B			"	"	
		"	"	12			-18 mA				"							"	C			"	"	
		"	"	13				-18 mA			"							"	D			"	"	
		"	"	14					-18 mA		"							"	E			"	"	
		"	"	15						-18 mA	"							"	F			"	"	
		"	"	16							"				-18 mA			"	G			"	"	
		"	"	17							"					-18 mA			H			"	"	"
		I <sub>IH1</sub>	3010	18	2.7 V	GND	GND	GND	GND	GND	GND	"				GND	GND		5.5 V	A		20	μA	
	"		"	19	GND	2.7 V	GND	"	"	"	"	"	"	"	"	"	"	"	B			"	"	
	"		"	20	"	GND	2.7 V	"	"	"	"	"	"	"	"	"	"	"	C			"	"	
	"		"	21	"	"	GND	2.7 V	"	"	"	"	"	"	"	"	"	"	D			"	"	
	"		"	22	"	"	"	GND	2.7 V	"	"	"	"	"	"	"	"	"	E			"	"	
	"		"	23	"	"	"	"	GND	2.7 V	"	"	"	"	"	"	"	"	F			"	"	
	"		"	24	"	"	"	"	"	GND	"	"	"	"	"	2.7 V	"	"	G			"	"	
	"		"	25	"	"	"	"	"	"	"	"	"	"	"	GND	2.7 V	"	H			"	"	
	I <sub>IH2</sub>	"	"	26	5.5 V	"	"	"	"	"	"	"	"	"	"	"	"	"	A		100	"		
		"	"	27	GND	5.5 V	"	"	"	"	"	"	"	"	"	"	"	"	B			"	"	
		"	"	28	"	GND	5.5 V	"	"	"	"	"	"	"	"	"	"	"	C			"	"	
		"	"	29	"	"	GND	5.5 V	"	"	"	"	"	"	"	"	"	"	D			"	"	
		"	"	30	"	"	"	GND	5.5 V	"	"	"	"	"	"	"	"	"	E			"	"	
		"	"	31	"	"	"	"	GND	5.5 V	"	"	"	"	"	"	"	"	F			"	"	
		"	"	32	"	"	"	"	"	GND	"	"	"	"	"	5.5 V	"	"	G			"	"	
		"	"	33	"	"	"	"	"	GND	"	"	"	"	"	GND	5.5 V	"	H			"	"	
	I <sub>IL</sub>	3009	34	0.4 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"				5.5 V	"		"	A	2/	2/	"		
		"	"	35	5.5 V	0.4 V	5.5 V	"	"	"	"	"	"	"	"	"	"	"	B			"	"	
		"	"	36	"	5.5 V	0.4 V	"	"	"	"	"	"	"	"	"	"	"	C			"	"	
		"	"	37	"	"	5.5 V	0.4 V	"	"	"	"	"	"	"	"	"	"	D			"	"	
		"	"	38	"	"	"	5.5 V	0.4 V	"	"	"	"	"	"	"	"	"	E			"	"	
		"	"	39	"	"	"	"	5.5 V	0.4 V	"	"	"	"	"	"	"	"	F			"	"	
		"	"	40	"	"	"	"	"	5.5 V	"	"	"	"	"	0.4 V	"	"	G			"	"	
		"	"	41	"	"	"	"	"	"	5.5 V	"	"	"	"	5.5 V	0.4 V	"	H			"	"	
I <sub>OS</sub>	3011	42	GND	GND	GND	GND	GND	GND	GND	"	GND			GND	GND		"	Y	3/	3/	mA			
I <sub>CC H</sub>	3006	43	GND	GND	GND	GND	GND	GND	GND	"				GND	GND		"	V <sub>CC</sub>		0.5	"			
I <sub>CC L</sub>	3005	44	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	"				5.5 V	5.5 V		"	V <sub>CC</sub>		1.1	"			
2	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = 125° C, and V <sub>IC</sub> tests are omitted.																							
3	Same tests, terminal conditions and limits as for subgroup 1, except T <sub>C</sub> = -55° C, and V <sub>IC</sub> tests are omitted.																							

See footnotes at end of device type 09.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit				
			Case 1/ X and 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20		Min	Max					
			Test no.	A	B	C	D	E	F	GND	Y	NC	NC	G	H	NC	V <sub>CC</sub>								
9 T <sub>c</sub> = 25°C	t <sub>PHL</sub>	3003 Fig. 3	45	IN	2.7 V	GND	OUT			2.7 V	2.7 V		5.0 V	A to Y	2	28	ns								
			46	2.7 V	IN	2.7 V	"	"	"	"	"	"	"	"	"	"	"	"	"	B to Y	"	"	"		
			47	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	C to Y	"	"	"	
			48	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	D to Y	"	"	"	
			49	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	E to Y	"	"	"	
			50	"	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	F to Y	"	"	"	
			51	"	"	"	"	"	2.7 V	"	"	"	"	"	"	IN	"	"	"	"	G to Y	"	"	"	
			52	"	"	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	H to Y	"	"	"	
	t <sub>PLH</sub>	"	"	53	IN	"	"	"	"	"	"	"	"	"	"	"	2.7 V	"	"	"	A to Y	"	20	"	
				54	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B to Y	"	"	"
				55	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	C to Y	"	"	"
				56	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	D to Y	"	"	"
				57	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	E to Y	"	"	"
				58	"	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	F to Y	"	"	"
				59	"	"	"	"	"	2.7 V	"	"	"	"	"	"	IN	"	"	"	"	G to Y	"	"	"
				60	"	"	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	H to Y	"	"	"
10 T <sub>c</sub> = 125°C	t <sub>PHL</sub>	"	61	IN	"	"	"	"	"	"	"	"	"	"	"	2.7 V	"	"	"	A to Y	"	38	"		
			62	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B to Y	"	"	"	
			63	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	C to Y	"	"	"	
			64	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	D to Y	"	"	"	
			65	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	E to Y	"	"	"	
			66	"	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	F to Y	"	"	"	
			67	"	"	"	"	"	2.7 V	"	"	"	"	"	"	IN	"	"	"	"	G to Y	"	"	"	
			68	"	"	"	"	"	"	"	"	"	"	"	"	2.7 V	IN	"	"	"	H to Y	"	"	"	
	t <sub>PLH</sub>	"	"	69	IN	"	"	"	"	"	"	"	"	"	"	"	2.7 V	"	"	"	A to Y	"	32	"	
				70	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	B to Y	"	"	"
				71	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	"	C to Y	"	"	"
				72	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	"	D to Y	"	"	"
				73	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	"	E to Y	"	"	"
				74	"	"	"	"	2.7 V	IN	"	"	"	"	"	"	"	"	"	"	"	F to Y	"	"	"
				75	"	"	"	"	"	2.7 V	"	"	"	"	"	"	IN	"	"	"	"	G to Y	"	"	"
				76	"	"	"	"	"	2.7 V	"	"	"	"	"	"	2.7 V	IN	"	"	"	H to Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T <sub>c</sub> = -55° C.																								

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

2/ I<sub>IL</sub> limits in  $\mu$ A are as follows:

Measured terminal	Min/max limits for circuit					
	A	B	C	D	E	F
A, B, C, D, E, F, G, H	-0/-360	-30/-300	-160/-400	-160/-400	-150/380	-160/-400

3/ I<sub>OS</sub> limits for circuit C: -20/-100 mA; for circuits A, B, D, E, and F: -15/-100 mA.

## 5. PACKAGING

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

## 6. NOTES

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

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

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

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

MIL-M-38510/300E

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

- GND ..... Ground zero voltage potential
- I<sub>IN</sub> ..... Current flowing into an input terminal
- V<sub>IC</sub> ..... Input clamp voltage
- V<sub>IN</sub> ..... Voltage level at an input terminal

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

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information shall 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	54LS00
02	54LS03
03	54LS04
04	54LS05
05	54LS10
06	54LS12
07	54LS20
08	54LS22
09	54LS30

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

TABLE IV. Substitutability and manufacturers' designation.

Device type	Manufacturer					
	Circuit A Texas Instruments Inc.	Circuit B Signetics Corporation	Circuit C National Semiconductor Corp	Circuit D Raytheon Company	Circuit E Motorola Inc	Circuit F Fairchild Semiconductor
01	X	X	X	X	X	X
02	X	X	X	X	X	X
03	X	X	X	X	X	X
04	X	X	X	X	X	X
05	X	X	X	X	X	X
06	X	X	X	X	X	X
07	X	X	X	X	X	X
08	X	X	X	X	X	X
09	X	X	X	X	X	X

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

MIL-M-38510/300E

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

Preparing activity:  
DLA - CC  
  
(Project 5962-1945)

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

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

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1. DOCUMENT NUMBER  
MIL-M-38510/300E

2. DOCUMENT DATE (YYYYMMDD)  
2003-01-07

3. DOCUMENT TITLE

MICROCIRCUITS, DIGITAL, BIPOLAR LOW-POWER SCHOTTKY TTL, AND GATES, MONOLITHIC SILICON

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

5. REASON FOR RECOMMENDATION

6. SUBMITTER

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

b. ORGANIZATION

c. ADDRESS (*Include Zip Code*)

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(2) DSN  
(*If applicable*)

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8. PREPARING ACTIVITY

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Defense Supply Center, Columbus

b. TELEPHONE (*Include Area Code*)  
(1) Commercial 614-692-0536      (2) DSN 850-0536

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DSCC-VA  
P. O. Box 3990  
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