INCH-POUND
MIL-M-38510/302D
10 January 2003
SUPERSEDING
MIL-M-38510/302C
9 August 1983

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, BIPOLAR LOW-POWER SCHOTTKY TTL, BUFFERS, 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 buffer 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).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:

Device type	Circuit
01	Dual, 4-input, positive NAND buffer
02	Quadruple, 2-input positive NAND buffer
03	Quadruple, 2-input positive NAND buffer (open collector output)
04	Quadruple, 2-input positive NOR buffer

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:

Outline letter	Descriptive designator	Terminals	Package style
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
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.

AMSC N/A FSC 5962

1.3 Absolute maximum ratings.

Supply voltage range	-0.5 V dc to +7.0 V dc
Input voltage range	-1.5 V dc at -18 mA to +5.5 V dc
Storage temperature range	-65° to +150°C
Maximum power dissipation, (P_D) 1/	17 mW dc per buffer
Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction to case (θ_{JC}):	
Cases A, B, C, D, and 2	(See MIL-STD-1835)
Junction temperature (T_J)	+175°C 2/

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	+4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage (V_{IH})	+2.0 V
Maximum low level input voltage (V_{IL})	+0.7 V
Normalized fanout (each output) 3/	30 maximum
Case operating temperature range (T_C)	-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-M-38510 - Microcircuits, General Specification for.
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

(Copies of the specification and standard required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

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_D due to short-circuit test (e.g., I_{OS}).
2/ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening condition per method 5004 of MIL-STD-883.
3/ The device shall fanout in both high and low levels to the specified number of inputs for the same device type as that being tested.

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 and logic equations. 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.

3.6 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 9 (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.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$	Device types	Limits		Unit
				Min	Max	
High level output voltage	V_{OH}	V_{CC} = +4.5 V, V_{IL} = +0.7 V, I_{OH} = -1.2 mA	01, 02 04	2.5		V
Low level output voltage	V_{OL}	V_{CC} = +4.5 V, I_{OL} = +12 mA, V_{IH} = 2.0 V	All		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = +4.5 V, I_{IN} = -18 mA, T_C = +25°C	All		-1.5	V
High level input current	I_{IH1}	V_{CC} = +5.5 V, V_{IN} = +2.7 V	All		20	µA
	I_{IH2}	V_{CC} = +5.5 V, V_{IN} = +5.5 V	All		100	µA
Low level input current	I_{IL}	V_{CC} = +5.5 V, V_{IL} = +0.4 V	All	-5	-400	µA
Short circuit output current	I_{OS}	V_{CC} = +5.5 V 2/	01, 02 04	-15	-130	mA
Maximum collector cut-off current	I_{CEX}	V_{CC} = +4.5 V, V_{IN} = +0.7 V, V_{OH} = +5.5 V	03		250	µA
High level supply current	I_{CCH}	V_{CC} = +5.5 V, V_{IN} = +0 V	01		1	mA
			02, 03		2	
			04		3.6	
Low level supply current	I_{CCL}	V_{CC} = +5.5 V, V_{IN} = +5.5 V	01		6	mA
			02, 03		12	
			04		13.8	
Propagation delay time high-to-low level	t_{PHL}	C_L = 125 pF ± 10%, R_L = 667 Ω ± 5%	01, 02	2	30	ns
			03	3	51	
			04	2	30	
Propagation delay time low-to-high level	t_{PLH}	C_L = 125 pF ± 10%, R_L = 667 Ω ± 5%	01, 02	2	30	ns
			03	3	56	
			04	2	30	

1/ Complete terminal conditions shall be as specified in table III.
2/ 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,
Group C end-point electrical parameters	1, 2, 3, 5 9, 10, 11	1, 2, 3
Additional electrical subgroup for group C periodic inspections	N/A	10, 11
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 of MIL-PRF-38535.

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

a. End-point electrical parameters shall be as specified in table II herein.

b. A subgroup shall be added to the group C inspection requirements for class B devices and shall consist of the tests, conditions and limits specified for subgroups 10 and 11 of group A.

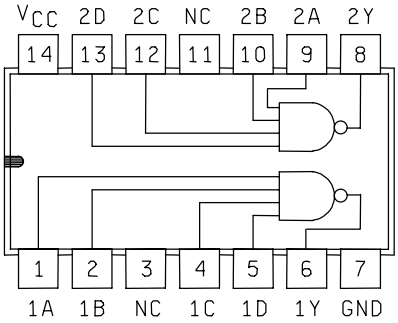
c. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology 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.

DEVICE TYPE 01
CASES A,B,C,AND D



DEVICE TYPE 01
CASE 2

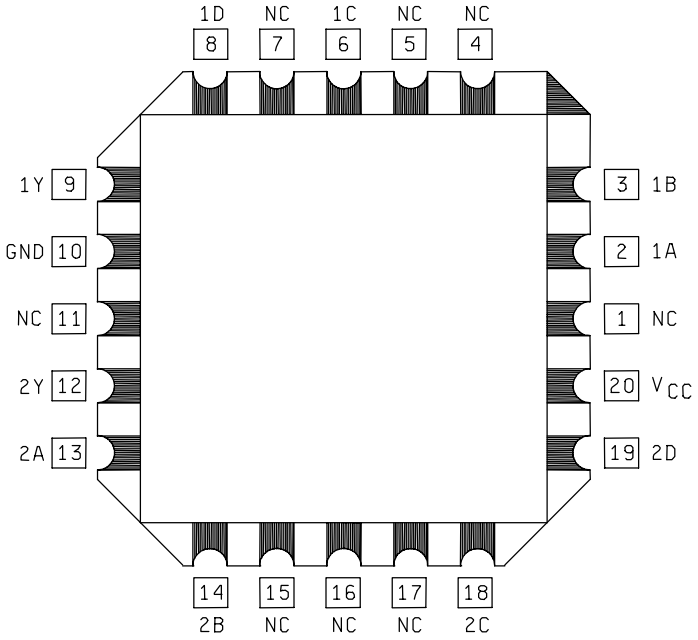
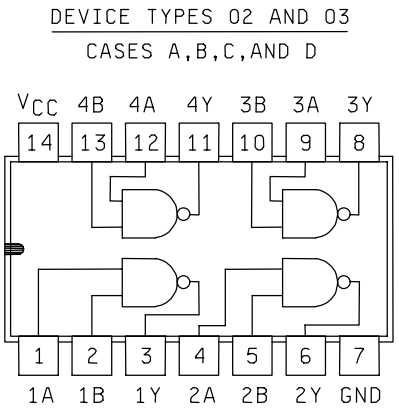


FIGURE 1. Logic diagram and terminal connections (top views).



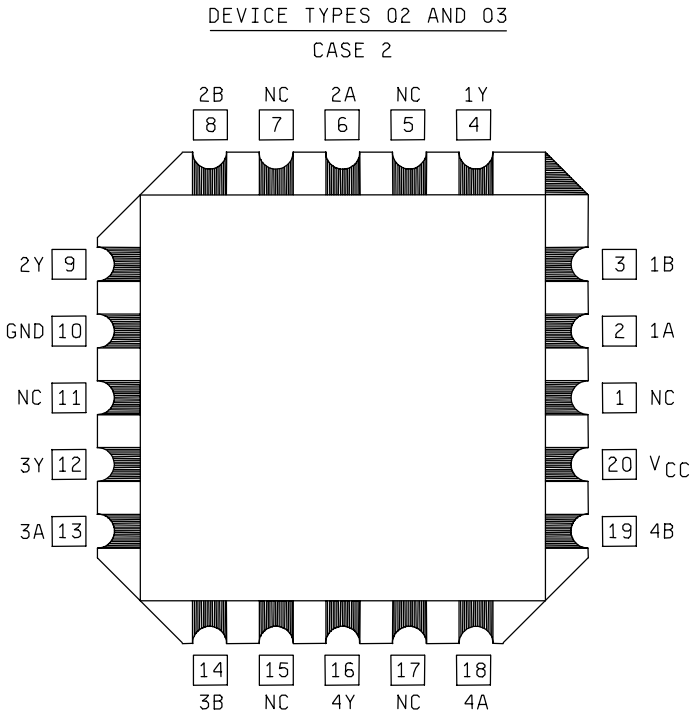
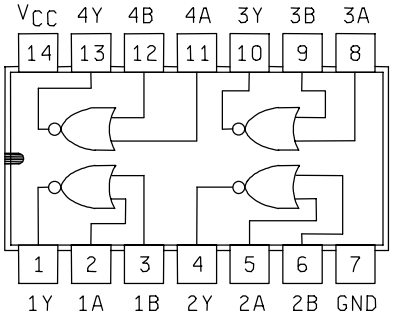


FIGURE 1. Logic diagram and terminal connections (top views) - Continued.

DEVICE TYPE 04
CASES A,B,C,AND D



DEVICE TYPE 04
CASE 2

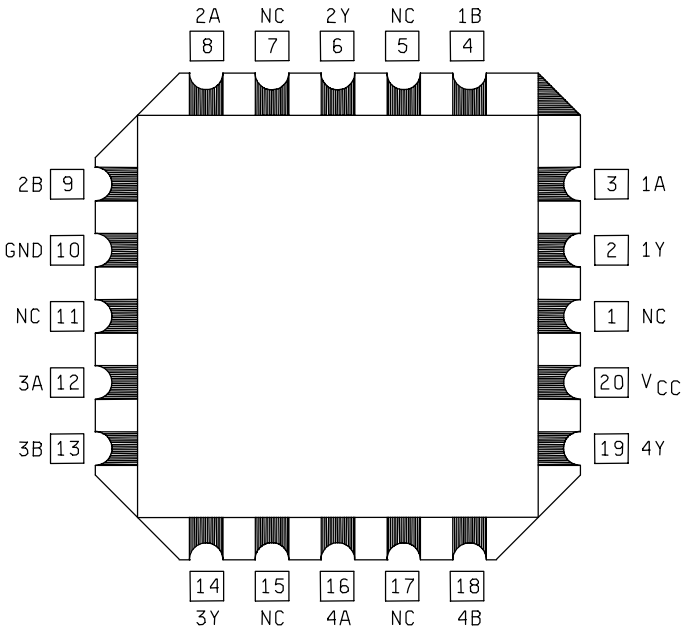


FIGURE 1. Logic diagram and terminal connections (top views) - Continued.

Device type 01

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 types 02 and 03

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

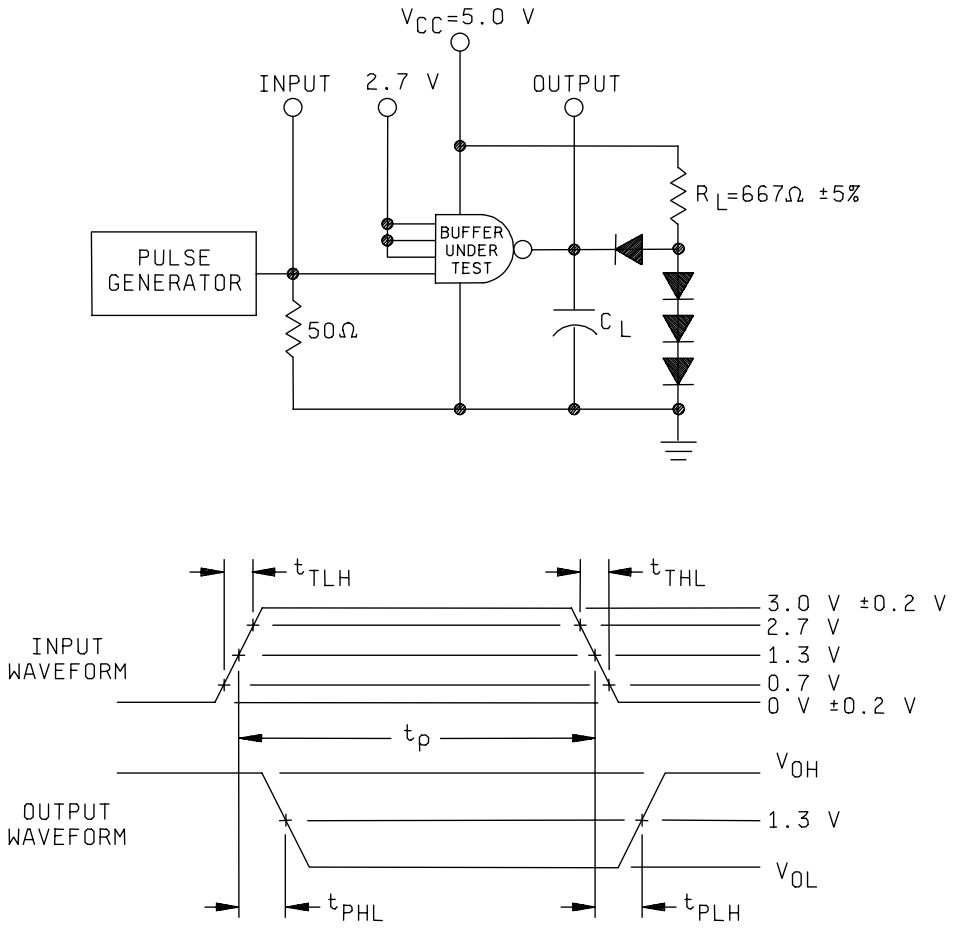
Positive logic Y = $\overline{AB}$

Device type 04

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

Positive logic Y = $\overline{A + B}$

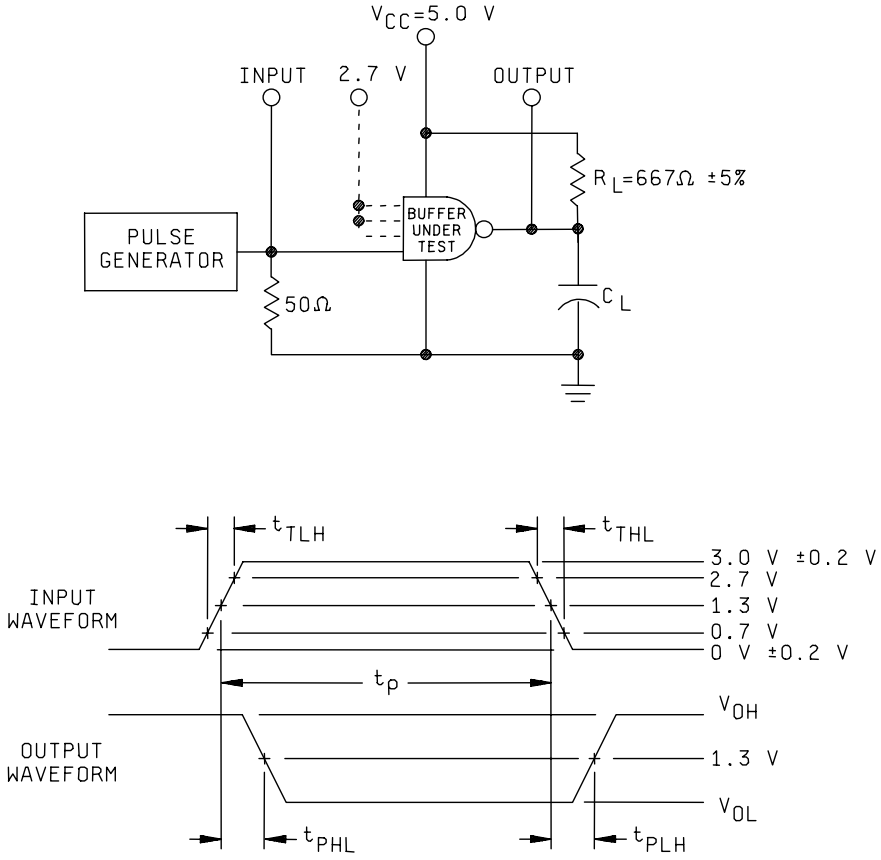
FIGURE 2. Truth tables and logic equations.



NOTES:

1. The pulse generator has the following characteristics: PRR ≤ 1 MHz, t_{TLH} ≤ 15 ns, t_{THL} ≤ 6 ns, t_P = 200 ns ±20 ns and Z_{OUT} ≅ 50Ω.
2. Including scope probe, wiring, and stray capacitance, without package in test fixture, C_L = 125 pF ±10%.
3. Voltage measurements are to be made with respect to network ground terminal.
4. All diodes are 1N3064 or equivalent.

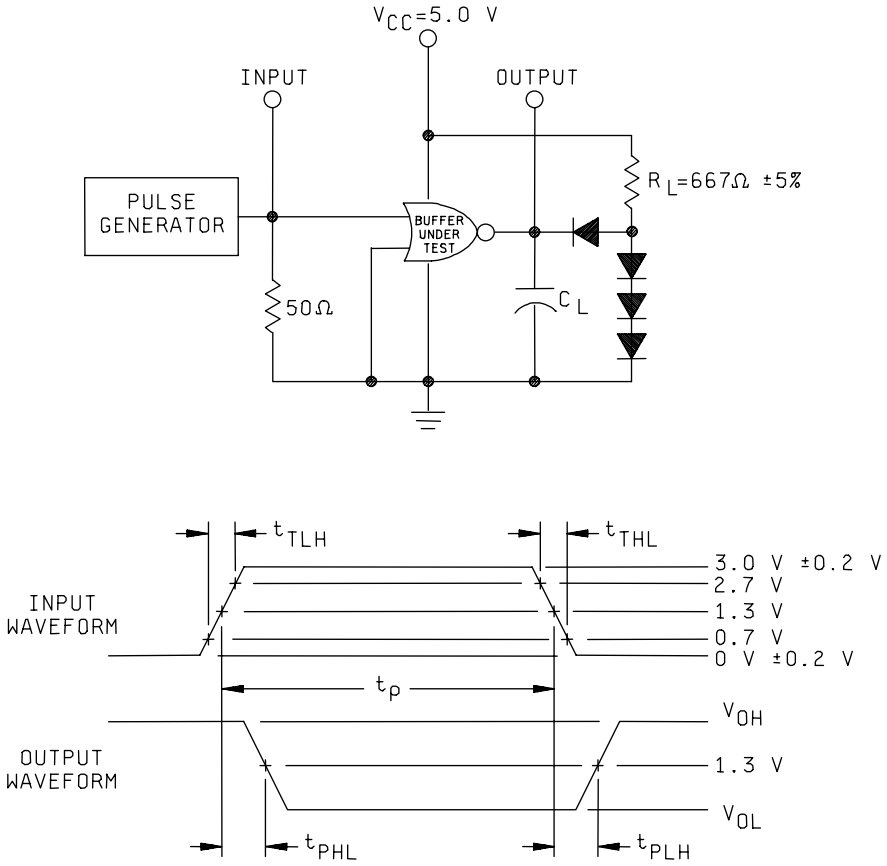
FIGURE 3. Switching time test circuit and waveforms for device types 01 and 02.



NOTES:

1. The pulse generator has the following characteristics: PRR ≤ 1 MHz, t_{TLH} ≤ 15 ns, t_{THL} ≤ 6 ns, t_P = 200 ns ±20 ns and Z_{OUT} ≅ 50Ω.
2. Including scope probe, wiring, and stray capacitance, without package in test fixture, C_L = 125 pF ±10%.
3. Voltage measurements are to be made with respect to network ground terminal.
4. All diodes are 1N3064 or equivalent.

FIGURE 4. Switching time test circuit and waveforms for device types 03.



NOTES:

1. The pulse generator has the following characteristics: PRR ≤ 1 MHz, t_{TLH} ≤ 15 ns, t_{THL} ≤ 6 ns, t_P = 200 ns ±20 ns and Z_{OUT} ≅ 50Ω.
2. Including scope probe, wiring, and stray capacitance, without package in test fixture, C_L = 125 pF ±10%.
3. All diodes are 1N3064 or equivalent.
4. Voltage measurements are to be made with respect to network ground terminal.

FIGURE 5. Switching time test circuit and waveforms for device type 04.

TABLE III. Group A inspection for device type 01.

Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V_{CC}		Min	Max	
1 Tc = 25°C	V_{OL}	3007	1	2.0 V	2.0 V		2.0 V	2.0 V	12 mA	GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y		0.4	V
		3007	2	5.5 V	5.5 V		5.5 V	5.5 V		"	12 mA	2.0 V	2.0 V		2.0 V	2.0 V	"	2Y		0.4	"
	V_{OH}	3006	3	0.7 V	5.5 V		"	"	-1.2 mA	"		5.5 V	5.5 V		5.5 V	5.5 V	"	1Y	2.5		"
		"	4	5.5 V	0.7 V		"	"	"	"		"	"		"	"	"	1Y	"		"
		"	5	"	5.5 V		0.7 V	"	"	"		"	"		"	"	"	1Y	"		"
		"	6	"	"		5.5 V	0.7 V	"	"		"	"		"	"	"	1Y	"		"
		"	7	"	"		"	5.5 V		"	-1.2 mA	0.7 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	"	2Y	"		"
	V_{IC}		11	-18 mA						"							"	1A		-1.5	"
			12		-18 mA					"							"	1B		"	"
			13				-18 mA			"							"	1C		"	"
			14					-18 mA		"							"	1D		"	"
			15							"		-18 mA					"	2A		"	"
			16							"			-18 mA				"	2B		"	"
			17							"					-18 mA		"	2C		"	"
			18							"						-18 mA	"	2D		"	"
	I_{OS} 2/	3011	19	GND	GND		GND	GND	GND	"							5.5 V	1Y	-30	-130	mA
		3011	20							"	GND	GND	GND		GND	GND	"	2Y	-30	-130	mA
	I_{IH1}	3010	21	2.7 V	GND		"	"		"		"	"		"	"	"	1A		20	µA
		"	22	GND	2.7 V		"	"		"		"	"		"	"	"	1B		"	"
		"	23	"	GND		2.7 V	"		"		"	"		"	"	"	1C		"	"
		"	24	"	"		GND	2.7 V		"		"	"		"	"	"	1D		"	"
		"	25	"	"		"	GND		"		2.7 V	"		"	"	"	2A		"	"
		"	26	"	"		"	"		"		GND	2.7 V		"	"	"	2B		"	"
		"	27	"	"		"	"		"		"	GND		2.7 V	"	"	2C		"	"
		"	28	"	"		"	"		"		"	"		GND	2.7 V	"	2D		"	"
	I_{IH2}	"	29	5.5 V	"		"	"		"		"	"		"	GND	"	1A		100	"
		"	30	GND	5.5 V		"	"		"		"	"		"	"	"	1B		"	"
		"	31	"	GND		5.5 V	"		"		"	"		"	"	"	1C		"	"
		"	32	"	"		GND	5.5 V		"		"	"		"	"	"	1D		"	"
		"	33	"	"		"	GND		"		5.5 V	"		"	"	"	2A		"	"
		"	34	"	"		"	"		"		GND	5.5 V		"	"	"	2B		"	"
		"	35	"	"		"	"		"		"	GND		5.5 V	"	"	2C		"	"
		"	36	"	"		"	"		"		"	GND		GND	5.5 V	"	2D		"	"
	I_{IL} 3/	3009	37	0.4 V	5.5 V		5.5 V	5.5 V		"		5.5 V	5.5 V		5.5 V	"	"	1A	-160	-400	"
		"	38	5.5 V	0.4 V		5.5 V	"		"		"	"		"	"	"	1B	"	"	"
		"	39	"	5.5 V		0.4 V	"		"		"	"		"	"	"	1C	"	"	"
		"	40	"	"		5.5 V	0.4 V		"		"	"		"	"	"	1D	"	"	"
		"	41	"	"		"	5.5 V		"		0.4 V	"		"	"	"	2A	"	"	"
		"	42	"	"		"	"		"		5.5 V	0.4 V		"	"	"	2B	"	"	"
		"	43	"	"		"	"		"		"	5.5 V		0.4 V	"	"	2C	"	"	"
		"	44	"	"		"	"		"		"	"		5.5 V	0.4 V	"	2D	"	"	"
	I_{CCL}	3005	45	"	"		5.5 V	5.5 V		"		"	"		5.5 V	5.5 V	"	V_{CC}		6	mA
	I_{CCH}	3005	46	GND	GND		GND	GND		"		GND	GND		GND	GND	"	V_{CC}		1	"
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = +125°C and V_{IC} tests are omitted.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55°C and V_{IC} tests are omitted.																				

See footnotes at end of device type 01

TABLE III. Group A inspection for device type 01 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	NC	1C	1D	1Y	GND	2Y	2A	2B	NC	2C	2D	V_{CC}		Min	Max	
9	t_{PHL}	3003	47	IN	2.7 V		2.7 V	2.7 V	OUT	GND							5.0 V	1A to 1Y	2	25	ns
Tc = 25°C		Fig. 3	48							"	OUT	IN	2.7 V		2.7 V	2.7 V	"	2A to 2Y	"	"	"
	t_{PLH}	"	49	IN	2.7 V		2.7 V	2.7 V	OUT	"							"	1A to 1Y	"	"	"
		"	50							"	OUT	IN	2.7 V		2.7 V	2.7 V	"	2A to 2Y	"	"	"
10	t_{PHL}	"	51	IN	2.7 V		2.7 V	2.7 V	OUT	"							"	1A to 1Y	"	30	"
Tc = 125°C		"	52							"	OUT	IN	2.7 V		2.7 V	2.7 V	"	2A to 2Y	"	"	"
	t_{PLH}	"	53	IN	2.7 V		2.7 V	2.7 V	OUT	"							"	1A to 1Y	"	"	"
		"	54							"	OUT	IN	2.7 V		2.7 V	2.7 V	"	2A to 2Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55° C.																				

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

2/ I_{OS} limits for CKTS B, C, and D are -15/-100 mA.

3/ I_{IL} limits for CKT B are -30 to -300 µA; CKT C, -150 to -380 µA; CKT D, -120 to -360 µA; CKT F, -5 to -400 µA.

TABLE III. Group A inspection for device type 02.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,C,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Case 1/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}		Min	Max	
1 Tc = 25°C	V_{OL}	3007	1	2.0 V	2.0 V	12 mA	5.5 V	5.5 V		GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y		0.4	V
		"	2	5.5 V	5.5 V		2.0 V	2.0 V	12 mA	"		5.5 V	5.5 V		"	"	"	2Y		"	"
		"	3	"	"		5.5 V	5.5 V		"	12 mA	2.0 V	2.0 V		"	"	"	3Y		"	"
		"	4	"	"		"	"		"		5.5 V	5.5 V	12 mA	2.0 V	2.0 V	"	4Y		"	"
	V_{OH}	3006	5	0.7 V	"	-1.2 mA	"	"		"		"	"		5.5 V	5.5 V	"	1Y	2.5		"
		"	6	5.5 V	0.7 V	-1.2 mA	"	"		"		"	"		"	"	"	1Y	"		"
		"	7	"	5.5 V		0.7 V	"	-1.2 mA	"		"	"		"	"	"	2Y	"		"
		"	8	"	"		5.5 V	0.7 V	-1.2 mA	"		"	"		"	"	"	2Y	"		"
		"	9	"	"		"	5.5 V		"	-1.2 mA	0.7 V	"		"	"	"	3Y	"		"
		"	10	"	"		"	"		"	-1.2 mA	5.5 V	0.7 V		"	"	"	3Y	"		"
		"	11	"	"		"	"		"		"	5.5 V	-1.2 mA	0.7 V	"	"	4Y	"		"
		"	12	"	"		"	"		"		"	5.5 V	-1.2 mA	5.5 V	0.7 V	"	4Y	"		"
	V_{IC}		13	-18 mA						"							"	1A		-1.5	"
			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_{OS} 2/	3011	21	GND	GND	GND				"							5.5 V	1Y	-30	-130	mA
		"	22				GND	GND	GND	"							"	2Y	"	"	"
		"	23							"	GND	GND	GND				"	3Y	"	"	"
		"	24							"				GND	GND	GND	"	4Y	"	"	"
	I_{IH1}	3010	25	2.7 V	GND		GND	GND		"		GND	GND		"	"	"	1A		20	µA
		"	26	GND	2.7 V		GND	"		"		"	"		"	"	"	1B		"	"
		"	27	"	GND		2.7 V	"		"		"	"		"	"	"	2A		"	"
		"	28	"	"		GND	2.7 V		"		"	"		"	"	"	2B		"	"
		"	29	"	"		"	GND		"		2.7 V	"		"	"	"	3A		"	"
		"	30	"	"		"	"		"		GND	2.7 V		"	"	"	3B		"	"
		"	31	"	"		"	"		"		"	GND		2.7 V	"	"	4A		"	"
		"	32	"	"		"	"		"		"	"		GND	2.7 V	"	4B		"	"
	I_{IH2}	"	33	5.5 V	"		"	"		"		"	"		"	GND	"	1A		100	"
		"	34	GND	5.5 V		"	"		"		"	"		"	"	"	1B		"	"
		"	35	"	GND		5.5 V	"		"		"	"		"	"	"	2A		"	"
		"	36	"	"		GND	5.5 V		"		"	"		"	"	"	2B		"	"
		"	37	"	"		"	GND		"		5.5 V	"		"	"	"	3A		"	"
		"	38	"	"		"	"		"		GND	5.5 V		"	"	"	3B		"	"
		"	39	"	"		"	"		"		"	GND		5.5 V	"	"	4A		"	"
		"	40	"	"		"	"		"		"	GND		GND	5.5 V	"	4B		"	"
	I_{IL} 3/	3009	41	0.4 V	5.5 V		5.5 V	5.5 V		"		5.5 V	5.5 V		5.5 V	"	"	1A	-160	-400	"
		"	42	5.5 V	0.4 V		5.5 V	"		"		"	"		"	"	"	1B	"	"	"
		"	43	"	5.5 V		0.4 V	"		"		"	"		"	"	"	2A	"	"	"
		"	44	"	"		5.5 V	0.4 V		"		"	"		"	"	"	2B	"	"	"
		"	45	"	"		"	5.5 V		"		0.4 V	"		"	"	"	3A	"	"	"
		"	46	"	"		"	"		"		5.5 V	0.4 V		"	"	"	3B	"	"	"
		"	47	"	"		"	"		"		"	5.5 V		0.4 V	"	"	4A	"	"	"
		"	48	"	"		"	"		"		"	"		5.5 V	0.4 V	"	4B	"	"	"

See footnotes at end of device type.

TABLE III. Group A inspection for device type 02 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}		Min	Max	
1	I_{CCL}	3005	49	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	5.5 V	V_{CC}		12	mA
Tc = 25°C	I_{CCH}	3005	50	GND	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	V_{CC}		2	mA
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = +125° C, and V_{IC} tests are omitted.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C, and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	51	IN	2.7 V	OUT				GND							5.0 V	1A to 1Y	2	25	ns
Tc = 25°C		Fig. 3	52				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	53							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	54							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
	t_{PLH}	"	55	IN	2.7 V	OUT				"							"	1A to 1Y	"	"	"
		"	56				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	57							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	58							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
10	t_{PHL}	"	59	IN	2.7 V	OUT				"							"	1A to 1Y	"	30	"
Tc = 125°C		"	60				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	61							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	62							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
	t_{PLH}	"	63	IN	2.7 V	OUT				"							"	1A to 1Y	"	"	"
		"	64				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	65							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	66							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55° C.																				

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

2/ I_{OS} limits for CKTS B, C, and D are -15/-100 mA.

3/ I_{IL} limits for CKT B are -30 to -300 µA; CKT C, -150 to -380 µA; CKT D, -120 to -360 µA; CKT F, -5 to -400 µA.

TABLE III. Group A inspection for device type 03.

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

Subgroup	Symbol	MIL-STD-883 method	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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}		Min	Max	
1 Tc = 25°C	V_{OL}	3007	1	2.0 V	2.0 V	12 mA	5.5 V	5.5 V		GND		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y		0.4	V
		"	2	5.5 V	5.5 V		2.0 V	2.0 V	12 mA	"		5.5 V	5.5 V		"	"	"	2Y		"	"
		"	3	"	"		5.5 V	5.5 V		"	12 mA	2.0 V	2.0 V		"	"	"	3Y		"	"
		"	4	"	"		"	"		"		5.5 V	5.5 V	12 mA	2.0 V	2.0 V	"	4Y		"	"
	I_{CEX}	"	5	0.7 V	"	5.5 V	"	"		"		"	"		"	"	"	1Y		250	µA
		"	6	5.5 V	0.7 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_{IC}		13	-18 mA						"							"	1A		-1.5	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_{IH1}	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_{IH2}	"	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	"	"	4A		"	"
		"	36	"	"		"	"		"		"	GND		GND	5.5 V	"	4B		"	"
	I_{IL} 2/	3009	37	0.4 V	5.5 V		5.5 V	5.5 V		"		5.5 V	5.5 V		5.5 V	"	"	1A	-160	-400	"
		"	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.

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V_{CC}		Min	Max	
1	I_{CCL}	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	5.5 V	V_{CC}		12	mA
Tc = 25°C	I_{CCH}	3005	46	GND	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	V_{CC}		2	mA
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = +125° C, and V_{IC} tests are omitted.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C, and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	47	IN	2.7 V	OUT				GND							5.0 V	1A to 1Y	3	39	ns
Tc = 25°C		(Fig. 4)	48				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	49							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	50							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
	t_{PLH}	"	51	IN	27 V	OUT				"							"	1A to 1Y	"	43	"
		"	52				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	53							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	54							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
10	t_{PHL}	"	55	IN	2.7 V	OUT				"							"	1A to 1Y	"	51	"
Tc =+125°C		"	56				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	57							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	58							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
	t_{PLH}	"	59	IN	27 V	OUT				"							"	1A to 1Y	"	56	"
		"	60				IN	2.7 V	OUT	"							"	2A to 2Y	"	"	"
		"	61							"	OUT	IN	2.7 V				"	3A to 3Y	"	"	"
		"	62							"				OUT	IN	2.7 V	"	4A to 4Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55° C.																				

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

2/ I_{IL} limits for CKT B are -30 to -300 µA; CKT C, -150 to -380 µA; CKT D, -120 to -360 µA; CKT F, -5 to -400 µA.

TABLE III. Group A inspection for device type 04.

Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1Y	1A	1B	2Y	2A	2B	GND	3A	3B	3Y	4A	4B	4Y	V_{CC}		Min	Max	
1 Tc = 25°C	V_{OL}	3007	1	12 mA	2.0 V	GND				GND							4.5 V	1Y		0.4	V
		"	2	12 mA	GND	2.0 V				"							"	1Y		"	"
		"	3				12 mA	2.0 V	GND	"							"	2Y		"	"
		"	4				12 mA	GND	2.0 V	"							"	2Y		"	"
		"	5							"	2.0 V	GND	12 mA				"	3Y		"	"
		"	6							"	GND	2.0 V	12 mA				"	3Y		"	"
		"	7							"				2.0 V	GND	12 mA	"	4Y		"	"
		"	8							"				GND	2.0 V	12 mA	"	4Y		"	"
	V_{OH}	3006	9	-1.2 mA	0.7 V	0.7 V				"							"	1Y	2.5		"
		"	10				-1.2 mA	0.7 V	0.7 V	"							"	2Y	"		"
		"	11							"	0.7 V	0.7 V	-1.2 mA				"	3Y	"		"
		"	12							"				0.7 V	0.7 V	-1.2 mA	"	4Y	"		"
	V_{IC}		13		-18 mA					"							"	1A		-1.5	"
			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_{OS}	3011	21	GND	GND	GND				"							5.5 V	1Y	-30	-130	mA
		"	22				GND	GND	GND	"							"	2Y	"	"	"
		"	23							"	GND	GND	GND				"	3Y	"	"	"
		"	24							"				GND	GND	GND	"	4Y	"	"	"
	I_{IH1}	3010	25		2.7 V	GND		GND	GND	"	GND	GND		"	"		"	1A		20	µA
		"	26		GND	2.7 V		GND	"	"	"	"		"	"		"	1B		"	"
		"	27		"	GND		2.7 V	"	"	"	"		"	"		"	2A		"	"
		"	28		"	"		GND	2.7 V	"	"	"		"	"		"	2B		"	"
		"	29		"	"		"	GND	"	2.7 V	"		"	"		"	3A		"	"
		"	30		"	"		"	"	"	GND	2.7 V		"	"		"	3B		"	"
		"	31		"	"		"	"	"	"	GND		2.7 V	"		"	4A		"	"
		"	32		"	"		"	"	"	"	"		GND	2.7 V		"	4B		"	"
	I_{IH2}	"	33		5.5 V	"		"	"	"	"	"		"	GND		"	1A		100	"
		"	34		GND	5.5 V		"	"	"	"	"		"	"		"	1B		"	"
		"	35		"	GND		5.5 V	"	"	"	"		"	"		"	2A		"	"
		"	36		"	"		GND	5.5 V	"	"	"		"	"		"	2B		"	"
		"	37		"	"		"	GND	"	5.5 V	"		"	"		"	3A		"	"
		"	38		"	"		"	"	"	GND	5.5 V		"	"		"	3B		"	"
		"	39		"	"		"	"	"	"	GND		5.5 V	"		"	4A		"	"
		"	40		"	"		"	"	"	"	GND		GND	5.5 V		"	4B		"	"
	I_{IL} 3/	3009	41		0.4 V	5.5 V		5.5 V	5.5 V	"	5.5 V	5.5 V		5.5 V	"		"	1A	-160	-400	"
		"	42		5.5 V	0.4 V		5.5 V	"	"	"	"		"	"		"	1B	"	"	"
		"	43		"	5.5 V		0.4 V	"	"	"	"		"	"		"	2A	"	"	"
		"	44		"	"		5.5 V	0.4 V	"	"	"		"	"		"	2B	"	"	"
		"	45		"	"		"	5.5 V	"	0.4 V	"		"	"		"	3A	"	"	"
		"	46		"	"		"	"	"	5.5 V	0.4 V		"	"		"	3B	"	"	"
		"	47		"	"		"	"	"	"	5.5 V		0.4 V	"		"	4A	"	"	"
		"	48		"	"		"	"	"	"	"		5.5 V	0.4 V		"	4B	"	"	"

See footnotes at end of device type.

TABLE III. Group A inspection for device type 04 – Continued.
Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 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/ 2	2	3	4	6	8	9	10	12	13	14	16	18	19	20				
			Test no.	1Y	1A	1B	2Y	2A	2B	GND	3A	3B	3Y	4A	4B	4Y	V_{CC}		Min	Max	
	I_{CCL}	3005	49		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		5.5 V	V_{CC}		13.8	mA
	I_{CCH}	3005	50		GND	GND		GND	GND	GND	GND	GND		GND	GND		"	V_{CC}		3.6	mA
2	Same tests, terminal conditions and limits as for subgroup 1, except T_C = +125° C, and V_{IC} tests are omitted.																				
3	Same tests, terminal conditions and limits as for subgroup 1, except T_C = -55° C, and V_{IC} tests are omitted.																				
9	t_{PHL}	3003	51	OUT	IN	GND				GND							5.0 V	1A to 1Y	2	25	ns
Tc = 25°C		(Fig. 5)	52	OUT	GND	IN				"							"	1B to 1Y	"	"	"
		"	53				OUT	IN	GND	"							"	2A to 2Y	"	"	"
		"	54				OUT	GND	IN	"							"	2B to 2Y	"	"	"
		"	55							"	IN	GND	OUT				"	3A to 3Y	"	"	"
		"	56							"	GND	IN	OUT				"	3B to 3Y	"	"	"
		"	57							"				IN	GND	OUT	"	4A to 4Y	"	"	"
		"	58							"				GND	IN	OUT	"	4B to 4Y	"	"	"
	t_{PLH}	"	59	OUT	IN	GND				"							"	1A to 1Y	"	"	"
		"	60	OUT	GND	IN				"							"	1B to 1Y	"	"	"
		"	61				OUT	IN	GND	"							"	2A to 2Y	"	"	"
		"	62				OUT	GND	IN	"							"	2B to 2Y	"	"	"
		"	63							"	IN	GND	OUT				"	3A to 3Y	"	"	"
		"	64							"	GND	IN	OUT				"	3B to 3Y	"	"	"
		"	65							"				IN	GND	OUT	"	4A to 4Y	"	"	"
		"	66							"				GND	IN	OUT	"	4B to 4Y	"	"	"
10	t_{PHL}	"	67	OUT	IN	GND				"							"	1A to 1Y	"	30	"
Tc = 125°C		"	68	OUT	GND	IN				"							"	1B to 1Y	"	"	"
		"	69				OUT	IN	GND	"							"	2A to 2Y	"	"	"
		"	70				OUT	GND	IN	"							"	2B to 2Y	"	"	"
		"	71							"	IN	GND	OUT				"	3A to 3Y	"	"	"
		"	72							"	GND	IN	OUT				"	3B to 3Y	"	"	"
		"	73							"				IN	GND	OUT	"	4A to 4Y	"	"	"
		"	74							"				GND	IN	OUT	"	4B to 4Y	"	"	"
	t_{PLH}	"	75	OUT	IN	GND				"							"	1A to 1Y	"	"	"
		"	76	OUT	GND	IN				"							"	1B to 1Y	"	"	"
		"	77				OUT	IN	GND	"							"	2A to 2Y	"	"	"
		"	78				OUT	GND	IN	"							"	2B to 2Y	"	"	"
		"	79							"	IN	GND	OUT				"	3A to 3Y	"	"	"
		"	80							"	GND	IN	OUT				"	3B to 3Y	"	"	"
		"	81							"				IN	GND	OUT	"	4A to 4Y	"	"	"
		"	82							"				GND	IN	OUT	"	4B to 4Y	"	"	"
11	Same tests, terminal conditions and limits as for subgroup 10, except T_C = -55° C.																				

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

2/ I_{OS} limits for CKTS B and D are -15 to -100 mA.

3/ I_{IL} limits for CKT B are -30 to -300 μA; CKT D, -120 to -360 μA; CKT F, -5 to -400 μA.

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.

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_{IN} ..... Current flowing into an input terminal
V_{IC} ..... Input clamp voltage
V_{IN} ..... 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	54LS40
02	54LS37
03	54LS38
04	54LS28

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. Manufacturers' designation.

Device type	Circuits					
	A	B	C	D	E	F
	Texas Instruments	Signetics Corp.	National Semiconductor Corporation	Raytheon Company	Motorola Inc	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

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.

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

Preparing activity:
DLA - CC

(Project 5962-1948)

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

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.

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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-M-38510/302D	2. DOCUMENT DATE *(YYYYMMDD)* 2003-01-10

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

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

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First Middle Initial)*	b. ORGANIZATION	
c. ADDRESS *(Include Zip Code)*	d. TELEPHONE *(Include Area Code)* (1) Commercial (2) DSN *(If applicable)*	7. DATE SUBMITTED *(YYYYMMDD)*

8. PREPARING ACTIVITY

a. NAME Defense Supply Center, Columbus	b. TELEPHONE *(Include Area Code* (1) Commercial 614-692-0536 (2) DSN 850-0536
c. ADDRESS *(Include Zip Code)* DSCC-VA P. O. Box 3990 Columbus, Ohio 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6221 Telephone (703)767-6888 DSN 427-6888