

MILITARY SPECIFICATION
 MICROCIRCUITS, DIGITAL, SCHOTTKY TLL, INPUT/OUTPUT PORT WITH
 THREE-STATE OUTPUT, MONOLITHIC SILICON

INACTIVE FOR NEW DESIGN AFTER DATE OF THIS REVISION

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 a monolithic silicon, Schottky TTL, input/output port with three-state output microcircuits. One product assurance class and a choice of case outlines and lead finishes are provided and are reflected in the complete part number.

1.2 Part number. The complete part number shall be in accordance with MIL-M-38510 with the exception that the "JAN" or "J" certification mark shall not be used.

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

<u>Device type</u>	<u>Circuit</u>
01	8-bit input/output port

1.2.2 Device class. The device class shall be the product assurance level as defined in MIL-M-38510.

1.2.3 Case outline. The case outline shall be designated as follows:

<u>Letter</u>	<u>Case outline, (see MIL-M-38510, appendix C)</u>
J	D-3 (24-lead, 1/2" x 1-1/4"), dual-in-line package
K	F-6 (24-lead, 3/8" x 5/8"), flat package

1.3 Absolute maximum ratings.

Current into outputs - - - - -	125 mA
Output and supply voltage range- - - - -	-0.5 V dc to +7.0 V dc
Input voltage range- - - - -	-1.0 V dc to +5.5 V dc
Storage temperature range- - - - -	-65°C to +150°C
Maximum power dissipation (P_D) 1/- - - - -	0.8 W
Lead temperature (soldering 10 seconds)- -	300°C
Thermal resistance, junction to case (θ_{JC}):	
Case J - - - - -	0.08°C/mW
Case K - - - - -	0.15°C/mW
Junction temperature (T_J)- - - - -	175°C

1.4 Recommended operating conditions.

Supply voltage range- - - - -	4.5 V dc minimum to 5.5 V dc maximum
Minimum high-level input voltage (V_{IH})- -	2.0 V dc
Maximum low-level input voltage (V_{IL}) - -	0.8 V dc
Case operating temperature range (T_C) - -	-55°C to +125°C

1/ Must withstand the added P_D due to short circuit test, (e.g., I_{OS}).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Rome Air Development Center (RBE-2), Griffiss AFB, NY 13441, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

2. APPLICABLE DOCUMENTS

2.1 Government specifications and standards. Unless otherwise specified, the following specifications and standards, of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification For.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

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 specification shall take precedence.

3. REQUIREMENTS

3.1 Detail specification. The individual item requirements shall be in accordance with MIL-M-38510 and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and 1.2.3 herein.

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

3.2.2 Truth table. The truth table shall be as specified on figure 2.

3.2.3 Logic diagram. The logic diagram shall be as specified on figure 3.

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

3.3 Lead material and finish. The lead material and finish shall be in accordance with MIL-M-38510 (see 6.5).

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

3.6 Marking. Marking shall be in accordance with MIL-M-38510 and 1.2 herein. At the option of the manufacturer, the country of origin may be omitted from the body of the microcircuit, but shall be retained on the initial container. The "JAN" or "J" certification mark shall not be used.

3.7 Manufacturers eligibility. To be eligible to supply microcircuits to this specification a manufacturer shall have a manufacturer's certification in accordance with MIL-M-38510 for at least one line, not necessarily the line producing the device type described herein.

3.8 Certification. Certification in accordance with MIL-M-38510 is not required for this device.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions	Limits		Unit
			Min	Max	
High-level output voltage	V _{OH}	V _{CC} = 4.5 Vdc; I _{OH} = -0.5 mA	3.4		V
Low-level output voltage	V _{OL}	V _{CC} = 4.5 Vdc; I _{OL} = 10 mA		0.45	V
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V; I _{IN} = -5 mA		-1.2	V
Low level input current, STD, DS ₂ , CLR, DI ₁ -DI ₈	I _{IL1}	V _{CC} = 5.5 V; V _{IN} = 0.45 V		-250	μA
Low level input current, MD	I _{IL2}	V _{CC} = 5.5 V; V _{IN} = 0.45 V		-750	μA
Low level input current, DS ₁	I _{IL3}	V _{CC} = 5.5 V; V _{IN} = 0.45 V		-1.0	mA
Input capacitance, $\overline{DS}_1$, MD	C _{I1}	V _{CC} = 5.0 V, F = 1.0 MHz, V _{BIAS} = 2.5 V		12	pF
Input capacitance, DS ₂ , STD, CRL, DI ₁ -DI ₈	C _{I2}			9	pF
Output capacitance, DO ₁ -DO ₈	C _O			12	pF
High level input current STB, DS ₂ , CLR, DI ₁ -DI ₈	I _{IH1}	V _{CC} = 5.5 V; V _{IN} = 5.5 V		10	μA
High level input current MD	I _{IH2}	V _{CC} = 5.5 V; V _{IN} = 5.5 V		30	μA
High level input current DS	I _{IH3}	V _{CC} = 5.5 V; V _{IN} = 5.5 V		40	μA
Output leakage current low, high impedance state	I _{OZL}	V _{CC} = 5.5 V; V _{OUT} = 0.45 V		-20	μA
Output leakage current high, high impedance state	I _{OZH}	V _{CC} = 5.5 V; V _{OUT} = 5.5 V		20	μA
Short circuit output current	I _{OS}	V _{CC} = 5.5 V <u>1/</u>	-15	-83	mA

1/ All unspecified inputs grounded.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions	Limits		Unit
			Min	Max	
Supply current	I_{CC}	$V_{CC} = 5.5 \text{ V}$		145	mA
Propagation delay time from DI_1 - DI_8 to DO_1 - DO_8	t_{PHL1} t_{PLH1}	$V_{CC} = 5.0 \text{ V}$; (see load, figure 5)		40	ns
Propagation delay time from STB to DO_1 - DO_8	t_{PHL2} t_{PLH2}			50	ns
Propagation delay time from STB to INT	t_{PHL3}			55	ns
Propagation delay time from DS_1 , DS_2 to INT	t_{PLH3}			35	ns
Propagation delay time from DS_1 and DS_2 to DO_1 - DO_8	t_{PHL4} t_{PLH4}			50	ns
Propagation delay time from CLR to DO_1 - DO_8	t_{PHL5}			65	ns
Propagation delay time from DS_1 , DS_2 , and MD to DO_1 - DO_8	t_{PLZ1}			50	ns
Into high impedance state	t_{PHZ1}	$V_{CC} = 5.0 \text{ V}$; (see load, figure 5 and 4.4.1)		50	ns
Out of high impedance state	t_{PZH1} t_{PZL1}	$V_{CC} = 5.0 \text{ V}$; (see load, figure 5)		50	ns
Setup time, DI_1 - DI_8 to STB, DS_1 and DS_2	t_{SLH1} t_{SHL1}		20		ns
Hold time, DI_1 - DI_8 to STB, DS_1 and DS_2	t_{HHL1} t_{HLH1}		30		ns
Pulse width, STD, DS_2	t_{WH1}		40		ns
Pulse width, $\overline{DS_1}$, CLR	t_{WL1}		40		ns

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (see table III) Class B devices
Interim electrical test parameters (pre burn-in) (method 5004)	1
Final electrical test parameters (method 5004)	*1,2,*3,7,9, 10,11
Group A test requirements (method 5005)	1,2,3,7,8,9, 10,11
Group C end-point electrical parameters (method 5005)	N/A
Group D end-point electrical parameters (method 5005)	1,2,3
Additional electrical subgroups for group C periodic inspections	N/A

*PDA applies to subgroup 1 (see 4.2c).

4. QUALITY ASSURANCE PROVISIONS

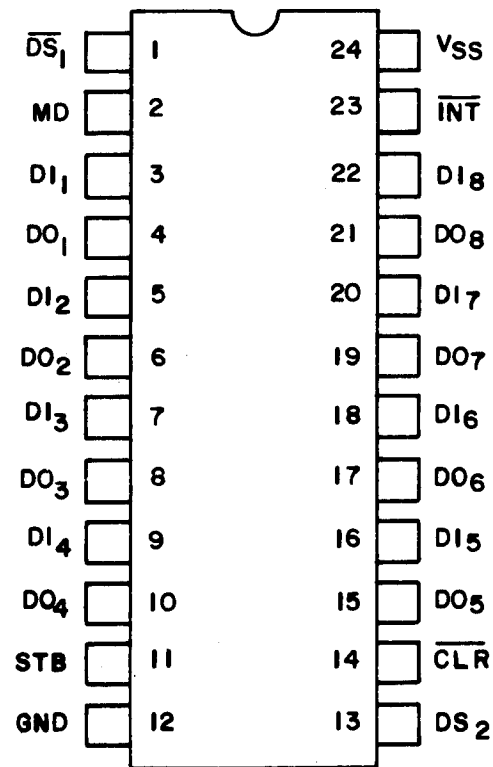
4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-M-38510 and methods 5005 and 5007 of MIL-STD-883, as applicable, except as modified herein.

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

- a. Burn-in test (method 1015 of MIL-STD-883).
 - (1) Test condition D or E, using the circuit shown on figure 4, or equivalent.
 - (2) $T_A = +125^{\circ}\text{C}$ minimum.
- 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. The percent defective allowable (PDA) for class B devices shall be 10 percent based on failures from group A, subgroup 1 test after cooldown as final electrical test in accordance with method 5004 of MIL-STD-883, and with no intervening electrical measurements. If interim electrical parameter tests are performed prior to burn-in, failures resulting from pre burn-in screening may be excluded from the PDA. If interim electrical parameter tests prior to burn-in are omitted, then all screening failures shall be included in the PDA. The verified failures of group A, subgroup 1, after burn-in, divided by the total number of devices submitted for burn-in in that lot, shall be used to determine the percent defective for that lot, and the lot shall be accepted or rejected based on the PDA for the applicable device class.

4.3 Qualification inspection. Qualification inspection is not required.

Device type 01

FIGURE 1. Terminal connections.

Device type 01

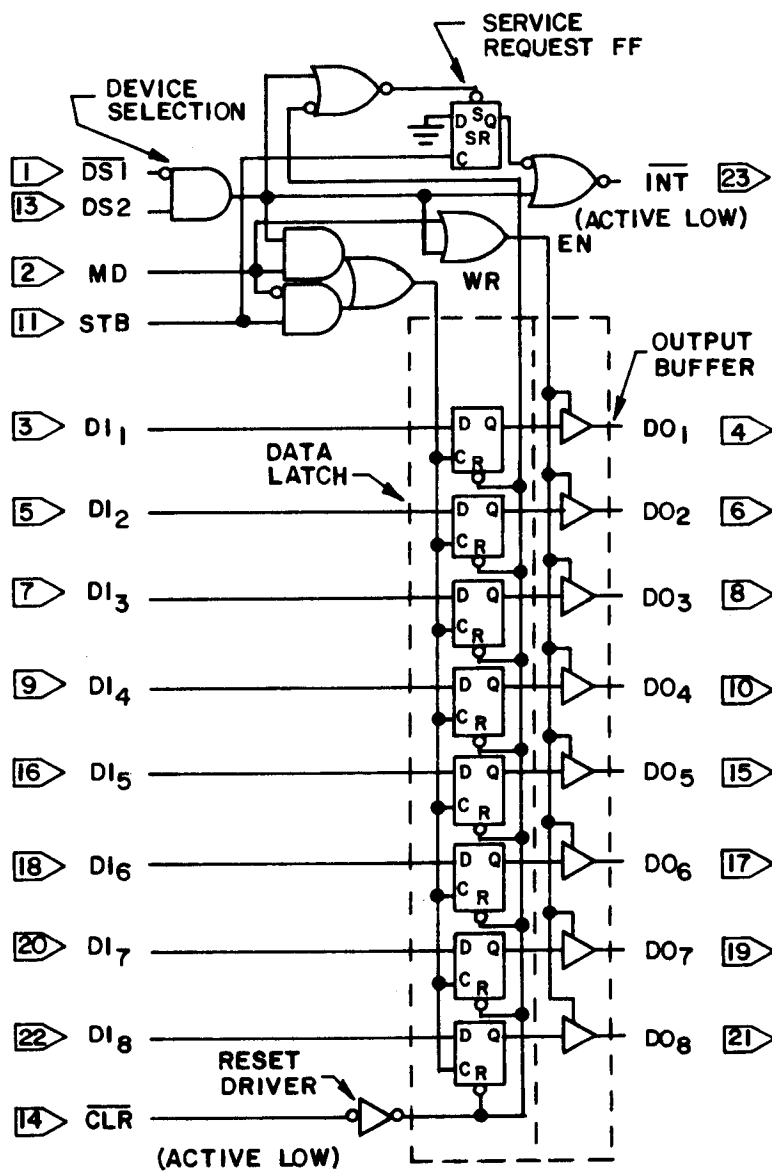
STB	MD	$\overline{DS}_1$ DS ₂	Data Out Equals	CLR	($\overline{DS}_1$ DS ₂)	STB	*SR	INT
0	0	0	3 State	0	0	0	1	1
1	0	0	3 State	0	1	0	1	0
0	1	0	Data latch	1	1		0	0
1	1	0	Data latch	1	1	0	1	0
0	0	1	Data latch	1	0	0	1	1
1	0	1	Data in	1	1		1	0
0	1	1	Data in					
1	1	1	Data in					

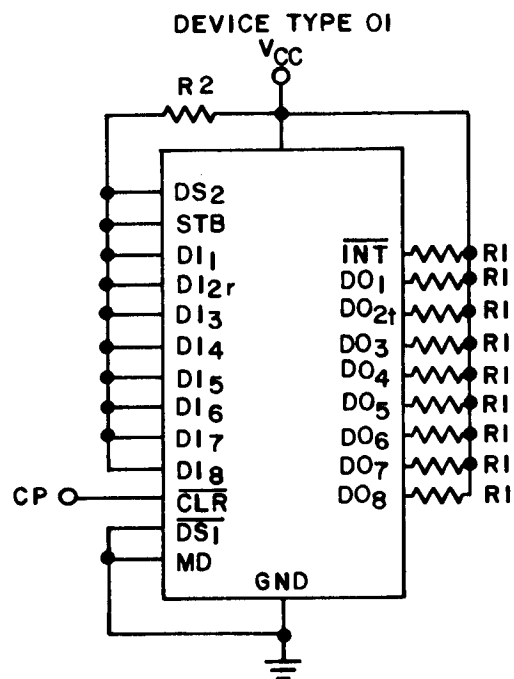
* Internal SR flip flop

CLR - Resets data latch
 sets SR flip flop
 (no effect on output buffer)

FIGURE 2. Truth table.

Device type 01

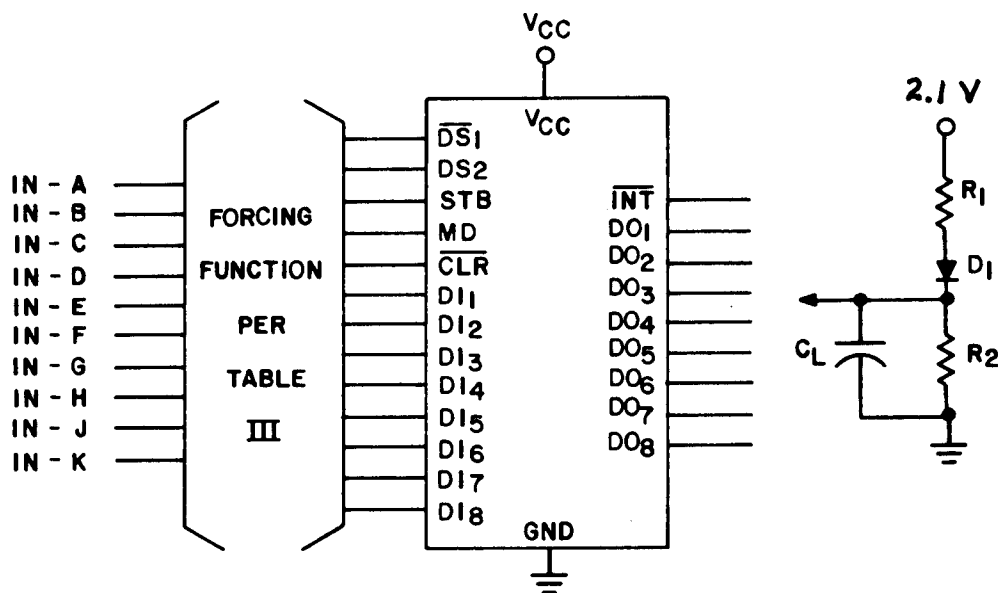
FIGURE 3. Logic diagram.



NOTES:

1. $V_{CC} = 5.5 \text{ V}$.
2. $R1 = 320\Omega \pm 5\%$; $R2 = 1 \text{ k}\Omega \pm 5\%$.
3. $CP = 1 \text{ MHz} \pm 50\%$ square wave; duty cycle = $50 \pm 15\%$;
 $V_{IH} = 2.0 \text{ V to } 5.5 \text{ V}$; $V_{IL} = -0.5 \text{ V to } 0.8 \text{ V}$.

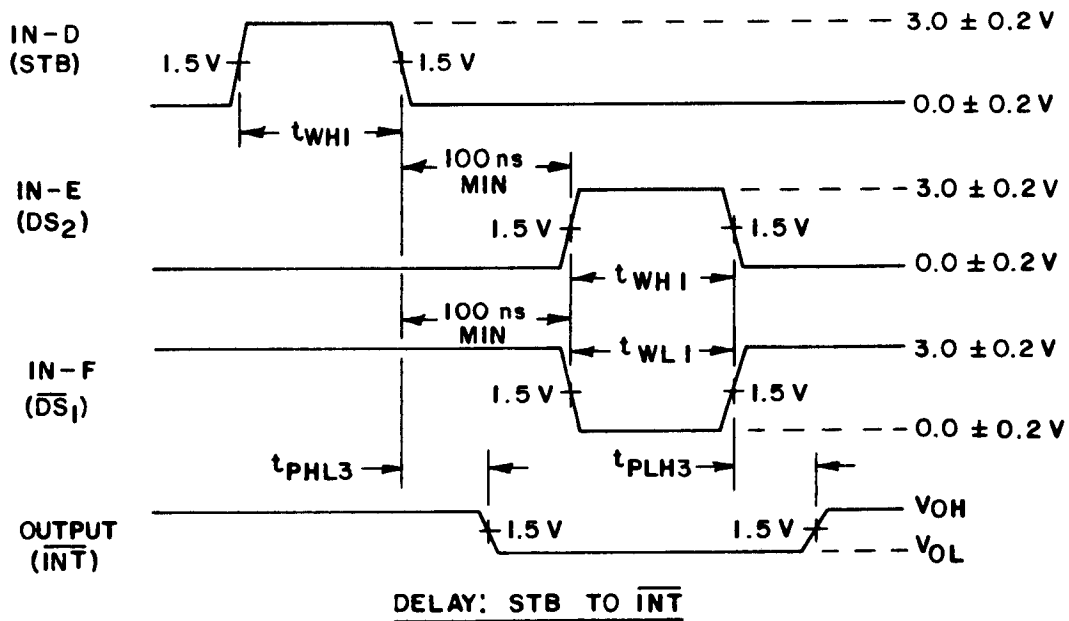
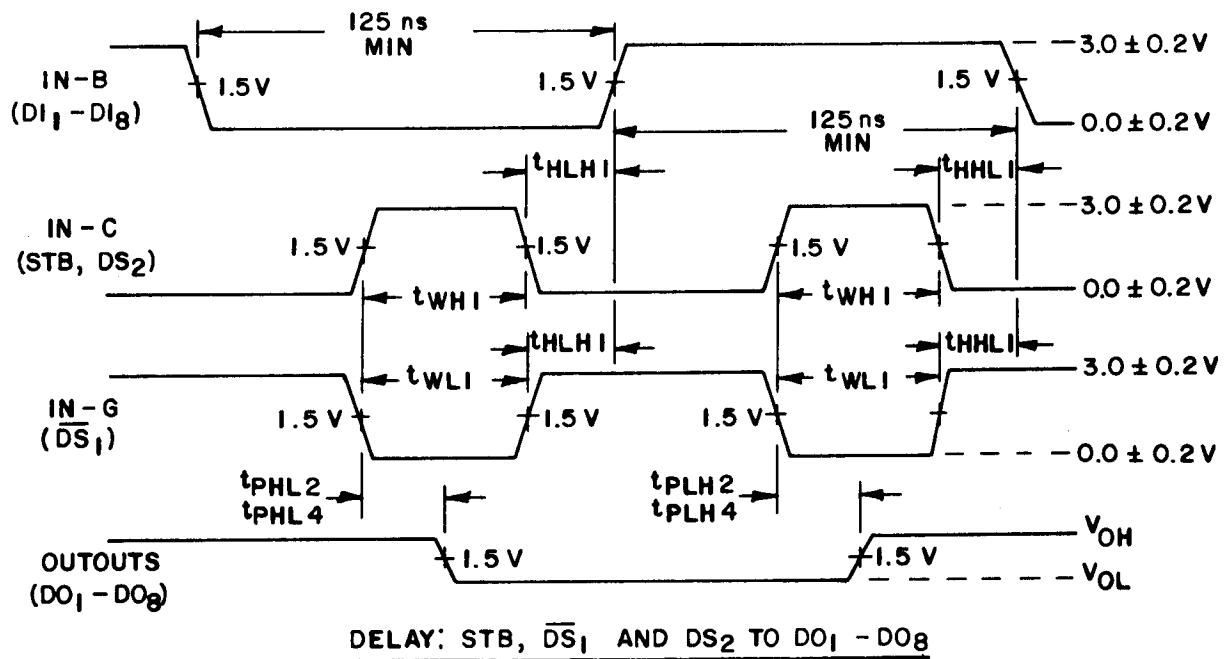
FIGURE 4. Burn-in and life test circuit.



NOTES:

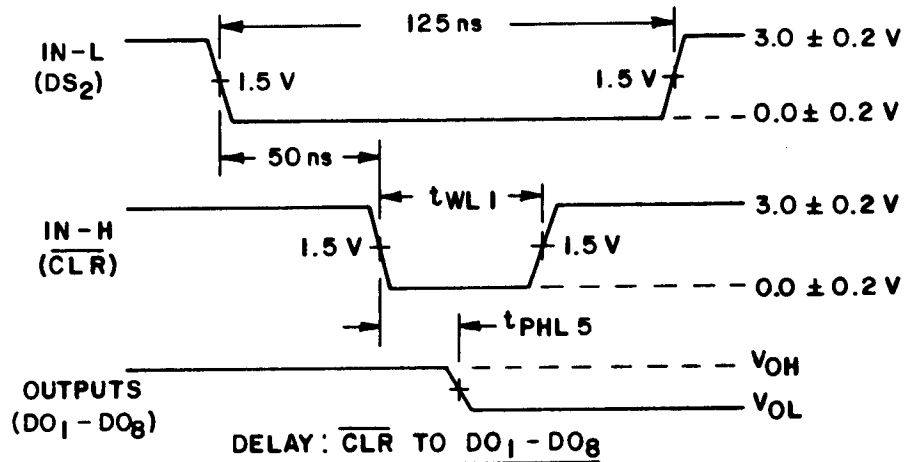
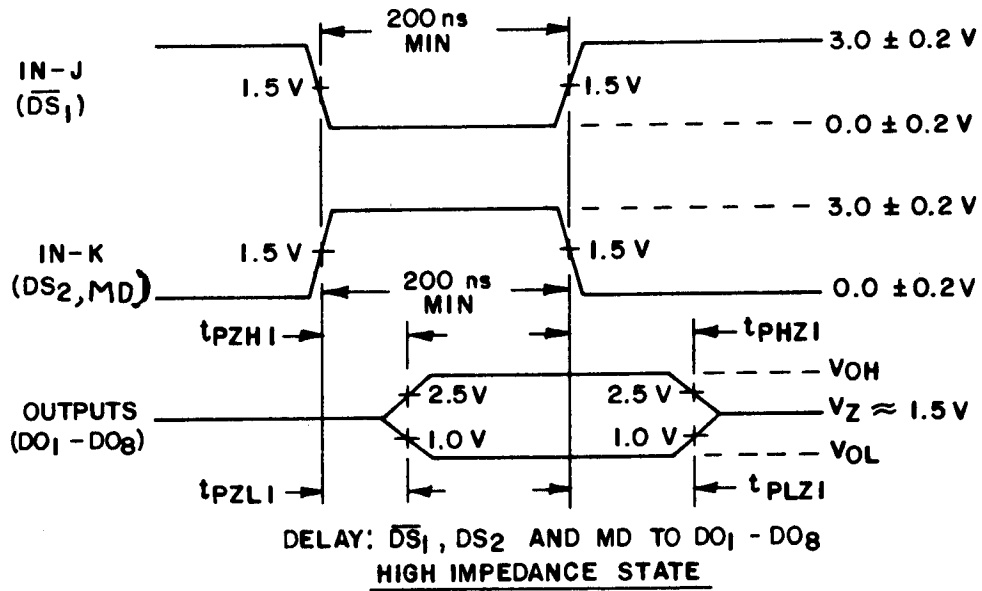
1. $V_{CC} = 5.0 \text{ V}$.
2. $D_1 = 1N3064$ or equivalent.
3. $R_1 = 105\Omega \pm 5\%$; $R_2 = 6.8 \text{ k}\Omega \pm 5\%$.
4. $C_L = 30 \text{ pF}$ (capacitance loading greater than 30 pF is acceptable. For t_{PHZ} , C_L may equal 150 pF or greater).
5. All input waveforms have a PRR of $\leq 1 \text{ MHz}$; rise time = fall time = 10 ns max.

FIGURE 5. Switching waveforms for device type 01.



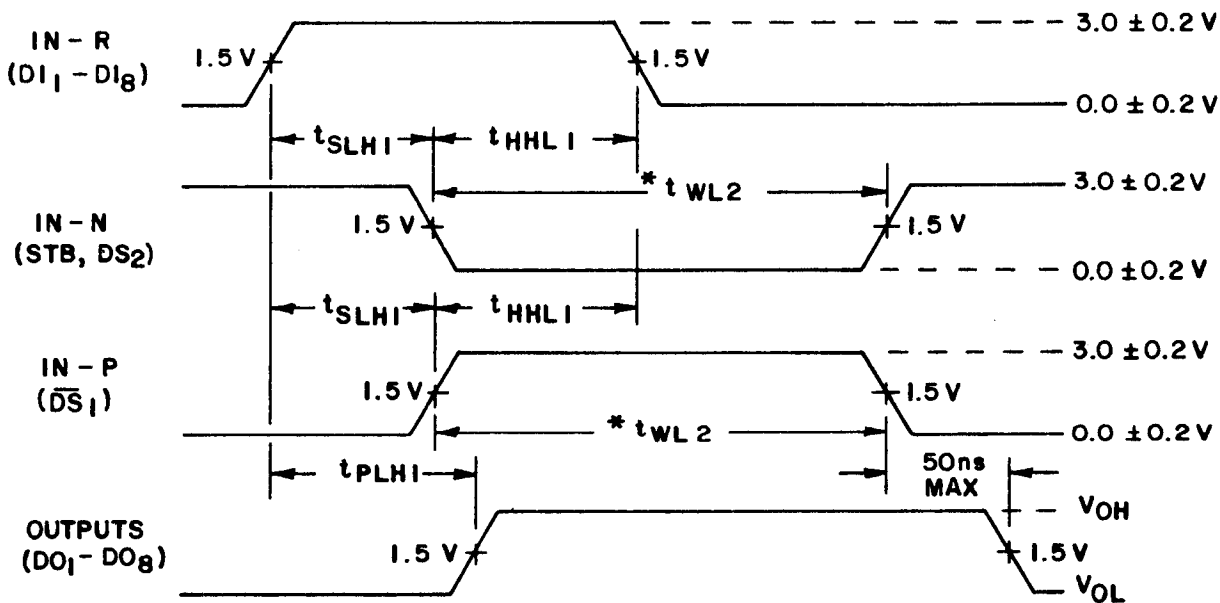
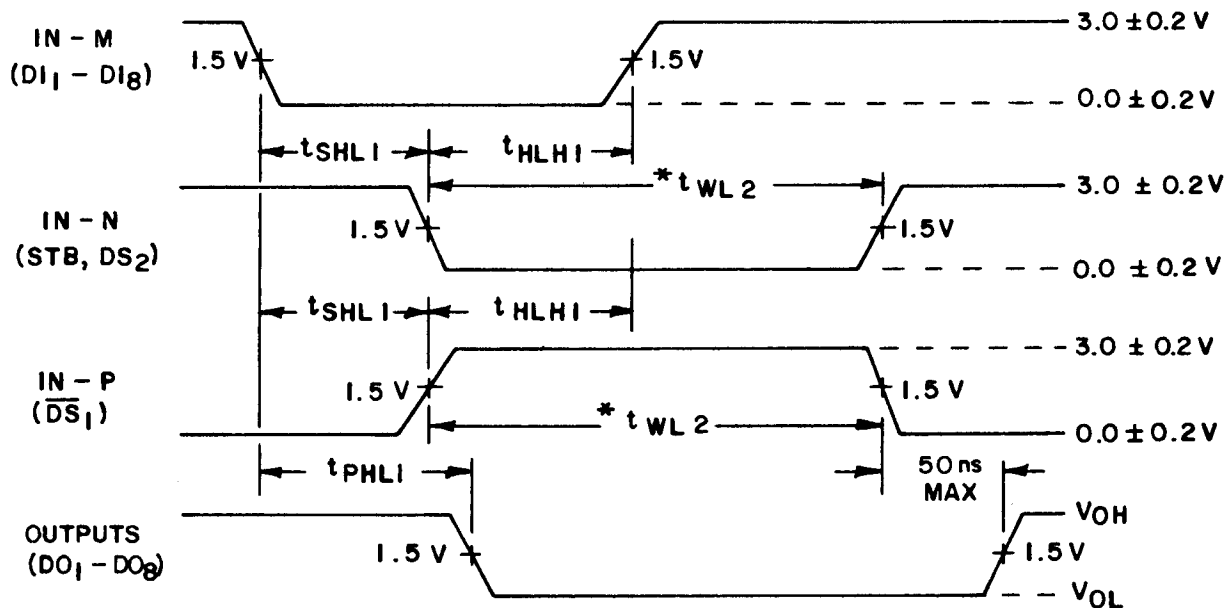
NOTE: Hold times (t_{HLH1} , t_{HHL1}) and pulse widths (t_{WH1} , t_{WL1}) are defined in table I.

FIGURE 5. Switching waveforms - Continued.



NOTE: Pulse width (t_{WL1}) is defined in table I.

FIGURE 5. Switching waveforms - Continued.



* $t_{WL2} = 50ns$ MIN

DELAY: $DI_1 - DI_8, DO_1 - DO_8$ AND $STB, \overline{DS}_1, DS_2$

SETUP AND HOLD TIME CHECK

NOTE: Setup and hold times ($t_{SHL1}, t_{SLH1}, t_{HLH1}, t_{HHL1}$) are defined in table I.

FIGURE 5. Switching waveforms - Continued.

Terminal conditions (pins not designated are open)

See notes at end of table.

TABLE III. Group A Insulation Per. device type 01 - Continued.

Terminal conditions (pins not designated are open)																													
Subgroup	Symbol	MIL-STD-883 method no.	Cases J, K test	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Max. (all)	Test limits
I _C	I _{IL2}	3009	30	DS ₁	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	5.5 V	-750 μA
	I _{IL3}	3009	31	.45 V																								DS ₁	-1.0 mA
	I _{IL1}	3010	32			5.5 V		5.5 V																				DS ₁	10 μA
			33					5.5 V			5.5 V																	DS ₁	
			34									5.5 V																DS ₁	
			35										5.5 V															DS ₁	
			36											5.5 V														DS ₁	
			37												5.5 V													DS ₁	
			38													5.5 V												DS ₁	
			39														5.5 V											DS ₁	
		40															5.5 V										DS ₁		
		41																										DS ₁	
		42																										DS ₁	
	I _{IL2}		43																									NO	30
	I _{IL3}		44	5.5 V	5.5 V																							DS ₁	40
	I _{OL}		45		NO		.45 V																					NO	-20
			46						.45 V																			NO	
			47								.45 V																	NO	
			48									.45 V																NO	
			49										.45 V															NO	
			50											.45 V														NO	
			51																									NO	
			52																									NO	
			53																									NO	
			54																									NO	
			55																									NO	
			56																									NO	
			57																									NO	
			58																									NO	

See notes at end of table.

TABLE III. Group A Inspection for device type 01 - Continued.

Terminal conditions (pins not designated are open)																																		
Subgroup	Symbol	MIL-STD-883 method	Cases J _s , K _s , L _s Test no.																									Test limits						
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal	Min	Max	Unit			
1 T _c = 25°C	I _{OZL}		59	4.5 V																												µA		
	I _{OZL}		60	4.5 V																											µA			
	I _{OZH}		61				5.5 V																								20			
			62							5.5 V																								
			63																															
			64																															
			65																															
			66																															
			67																															
			68																															
			69	4.5 V			4.5 V 5.5 V																											
			70																															
			71																															
			72																															
			73																															
			74																															
			75																															
			76																															
	I _{OS}	3013	77	GND	4.5 V	4.5 V	GND									4.5 V																-15	-83	mA
			78																															
			79																															
			80																															
			81																															
			82																															
			83																															
			84																															
			85																															

See notes at end of table.

TABLE III. Group A Inspection for device type 01 - Continued.

Terminal conditions (pins not designated are open)																																	
Subgroup	Symbol	MIL-STD-883 method no.	Cases J, K test no.	Terminal conditions (pins not designated are open)																								Test limits					
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal	Min	Max	Unit		
1 $T_C = 25^\circ\text{C}$	I_{CC}	3005	86	DS ₁	MO	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	STB	GND	DS ₂	CLR	DO ₅	DI ₅	DO ₆	DI ₆	DO ₇	DI ₇	DO ₈	DI ₈	INT	V _{CC}	5.5 V	145	mA			
			87	GND	4.5 V	4.5 V	4.5 V	4.5 V		4.5 V		4.5 V				4.5 V	4.5 V	GND	4.5 V	4.5 V	4.5 V		4.5 V										
			88	GND	GND											GND	4.5 V	4.5 V															
	V_{IC}		89	-5 mA	-5 mA																											-1.2 V	
2			90																														
			91																														
			92																														
			93																														
			94																														
			95																														
			96																														
			97																														
			98																														
			99																														
			100																														
			101																														
Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = 125^\circ\text{C}$ and V_{IC} tests are omitted.																																	
3	Same tests, terminal conditions, and limits as for subgroup 1, except $T_C = -55^\circ\text{C}$ and V_{IC} tests are omitted.																																
4 $T_C = 25^\circ\text{C}$	C_1		102																													12	pF
	C_1		103																													12	pF
	C_2		104																													9	
			105																														
			106																														
			107																														
			108																														
			109																														
			110																														
			111																														
			112																														

See notes at end of table.

TABLE III. Group A Inspection for device type 01 - Continued.

Terminal conditions (pins not designated are open)																															
Subgroup	Symbol	MIL-STD-883 method	Cases and test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal	Test limits		
				DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	STB	GRD	DS ₂	CLK	DO ₅	DI ₅	DO ₆	DI ₆	DO ₇	DI ₇	DO ₈	DI ₈	DO ₉	DI ₉		V _{CC}	Unit	Min
4	C _{I2}	C _{I2}	113													GRD							4/					DI ₇	9	pF	
			114											GRD														DI ₈	9	pF	
			115		GRD		4/																						DO ₁	12	
			116																										DO ₂		
			117																										DO ₃		
			118																										DO ₄		
			119																										DO ₅		
			120																										DO ₆		
			121																										DO ₇		
			122																										DO ₈		
7	Func-t (case) test	3014	123	B	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H		All outputs			
			124	A	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			125	B	B	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			126	A	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			127	B	B	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			128	A	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			129	B	B	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			130	A	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			131	B	B	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			132	A	A	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
			133	B	B	B	L	B	L	B	L	B	L	B	B	A	B	L	B	L	B	L	B	L	B	H					
See notes 1, 2, and 3																															

See notes 1, 2, and 3

See notes at end of table.

TABLE III. State A Transition for Device Type B - Continued.

Terminal conditions (pins not designated are open)																																		
Subgroup	Symbol	MIL-STD-883 method no.	Cases J test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean. terminal	Test limits					
				D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃	D ₁₄	D ₁₅	D ₁₆	D ₁₇	D ₁₈	D ₁₉	D ₂₀	D ₂₁	D ₂₂	D ₂₃	V _{CC}		Min	Max	Unit			
7 T _{amb} = 25°C	Functional test	3014	142	B	B	A	A	A	A	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L	All outputs	See inputs 1, 2, and 3				
			143	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			144	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			145	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			146	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			147	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			148	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			149	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			150	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			151	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			152	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			153	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			154	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			155	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			156	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			157	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
			158	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A					L	L
159	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
160	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
161	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
162	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
163	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
164	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
165	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
166	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
167	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
168	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
169	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							
170	B	B	A	A	A	H	A	H	A	H	A	H	A	A	QND	A	A	H	A	H	A	H	A	A	A	L	L							

See notes 1, 2, and 3

See notes at end of table.

TABLE III. Group A Inspection for device type 01 - Continued.

Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases J F test no.	Terminal conditions (pins not designated are open)																				Meas. terminal All outputs	Test limits							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		21	22	23	24	V _{CC}	Min	Max	Unit
7 T _C = 25°C	Func- tional test	3014	171	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	5.0 V				
			172	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			173	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			174	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			175	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			176	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			177	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			178	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			179	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			180	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			181	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			182	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			183	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			184	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
			185	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L					
186	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
187	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
188	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
189	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
190	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
191	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
192	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
193	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
194	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
195	B	B	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L	B	L								
8	Same tests, terminal conditions, and limits as for subgroup 7, except T _C = 125°C and -55°C.																															

See
notes
1, 2, and 3

See notes at end of table.

TABLE III. Group A Inspection for device type 01 - Continued.
Terminal conditions (pins not designated are open)

Symbol	MIL-STD-883 method	Cases J, K Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Test limits subgroup 5				Test limits subgroups 10 and 11 T _C = -55°C, 125°C
																											T _C = 25°C		T _C		
																											Min	Max	Unit	Min	
t _{PHL1}	3003	196	US ₁	IN-P	4.5 V	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	IN-M	OUT	ns	40	ns	
		197																													
		198																													
		199																													
		200																													
		201																													
		202																													
		203																													
t _{PHL1}		204			IN-R	OUT																									
		205					IN-R	OUT	IN-R	OUT	IN-R	OUT																			
		206																													
		207																													
		208																													
		209																													
		210																													
		211																													
t _{PHL2}		212			IN-B	OUT									4.5 V																
		213					IN-B	OUT	IN-B	OUT	IN-B	OUT																	50		
		214																													
		215																													
		216																													
		217																													
		218																													
		219																													
t _{PHL2}		220			IN-B	OUT							IN-C																		
		221					IN-B	OUT	IN-B	OUT	IN-B	OUT																			
		222																													
		223																													
		224																													

See notes at end of table.

TABLE III. Group A inspection for device type OI - Continued.
Terminal conditions (pins not designated are open)

Symbol	MIL-STD-883C method	Cases J Test no.	General Conditions (pins not designated are open)																								Test limits subgroup T _a = 25°C				Test limits subgroups in sec. 1.25°C T _a = -55°C, 125°C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal		Min		Max		Unit																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
																											V _{CC}	I _{TR}	DO ₆	DO ₇	DO ₈	DO ₉	DO ₁₀	DO ₁₁	DO ₁₂	DO ₁₃	DO ₁₄	DO ₁₅	DO ₁₆	DO ₁₇	DO ₁₈	DO ₁₉	DO ₂₀	DO ₂₁	DO ₂₂	DO ₂₃	DO ₂₄	DO ₂₅	DO ₂₆	DO ₂₇	DO ₂₈	DO ₂₉	DO ₃₀	DO ₃₁	DO ₃₂	DO ₃₃	DO ₃₄	DO ₃₅	DO ₃₆	DO ₃₇	DO ₃₈	DO ₃₉	DO ₄₀	DO ₄₁	DO ₄₂	DO ₄₃	DO ₄₄	DO ₄₅	DO ₄₆	DO ₄₇	DO ₄₈	DO ₄₉	DO ₅₀	DO ₅₁	DO ₅₂	DO ₅₃	DO ₅₄	DO ₅₅	DO ₅₆	DO ₅₇	DO ₅₈	DO ₅₉	DO ₆₀	DO ₆₁	DO ₆₂	DO ₆₃	DO ₆₄	DO ₆₅	DO ₆₆	DO ₆₇	DO ₆₈	DO ₆₉	DO ₇₀	DO ₇₁	DO ₇₂	DO ₇₃	DO ₇₄	DO ₇₅	DO ₇₆	DO ₇₇	DO ₇₈	DO ₇₉	DO ₈₀	DO ₈₁	DO ₈₂	DO ₈₃	DO ₈₄	DO ₈₅	DO ₈₆	DO ₈₇	DO ₈₈	DO ₈₉	DO ₉₀	DO ₉₁	DO ₉₂	DO ₉₃	DO ₉₄	DO ₉₅	DO ₉₆	DO ₉₇	DO ₉₈	DO ₉₉	DO ₁₀₀	DO ₁₀₁	DO ₁₀₂	DO ₁₀₃	DO ₁₀₄	DO ₁₀₅	DO ₁₀₆	DO ₁₀₇	DO ₁₀₈	DO ₁₀₉	DO ₁₁₀	DO ₁₁₁	DO ₁₁₂	DO ₁₁₃	DO ₁₁₄	DO ₁₁₅	DO ₁₁₆	DO ₁₁₇	DO ₁₁₈	DO ₁₁₉	DO ₁₂₀	DO ₁₂₁	DO ₁₂₂	DO ₁₂₃	DO ₁₂₄	DO ₁₂₅	DO ₁₂₆	DO ₁₂₇	DO ₁₂₈	DO ₁₂₉	DO ₁₃₀	DO ₁₃₁	DO ₁₃₂	DO ₁₃₃	DO ₁₃₄	DO ₁₃₅	DO ₁₃₆	DO ₁₃₇	DO ₁₃₈	DO ₁₃₉	DO ₁₄₀	DO ₁₄₁	DO ₁₄₂	DO ₁₄₃	DO ₁₄₄	DO ₁₄₅	DO ₁₄₆	DO ₁₄₇	DO ₁₄₈	DO ₁₄₉	DO ₁₅₀	DO ₁₅₁	DO ₁₅₂	DO ₁₅₃	DO ₁₅₄	DO ₁₅₅	DO ₁₅₆	DO ₁₅₇	DO ₁₅₈	DO ₁₅₉	DO ₁₆₀	DO ₁₆₁	DO ₁₆₂	DO ₁₆₃	DO ₁₆₄	DO ₁₆₅	DO ₁₆₆	DO ₁₆₇	DO ₁₆₈	DO ₁₆₉	DO ₁₇₀	DO ₁₇₁	DO ₁₇₂	DO ₁₇₃	DO ₁₇₄	DO ₁₇₅	DO ₁₇₆	DO ₁₇₇	DO ₁₇₈	DO ₁₇₉	DO ₁₈₀	DO ₁₈₁	DO ₁₈₂	DO ₁₈₃	DO ₁₈₄	DO ₁₈₅	DO ₁₈₆	DO ₁₈₇	DO ₁₈₈	DO ₁₈₉	DO ₁₉₀	DO ₁₉₁	DO ₁₉₂	DO ₁₉₃	DO ₁₉₄	DO ₁₉₅	DO ₁₉₆	DO ₁₉₇	DO ₁₉₈	DO ₁₉₉	DO ₂₀₀	DO ₂₀₁	DO ₂₀₂	DO ₂₀₃	DO ₂₀₄	DO ₂₀₅	DO ₂₀₆	DO ₂₀₇	DO ₂₀₈	DO ₂₀₉	DO ₂₁₀	DO ₂₁₁	DO ₂₁₂	DO ₂₁₃	DO ₂₁₄	DO ₂₁₅	DO ₂₁₆	DO ₂₁₇	DO ₂₁₈	DO ₂₁₉	DO ₂₂₀	DO ₂₂₁	DO ₂₂₂	DO ₂₂₃	DO ₂₂₄	DO ₂₂₅	DO ₂₂₆	DO ₂₂₇	DO ₂₂₈	DO ₂₂₉	DO ₂₃₀	DO ₂₃₁	DO ₂₃₂	DO ₂₃₃	DO ₂₃₄	DO ₂₃₅	DO ₂₃₆	DO ₂₃₇	DO ₂₃₈	DO ₂₃₉	DO ₂₄₀	DO ₂₄₁	DO ₂₄₂	DO ₂₄₃	DO ₂₄₄	DO ₂₄₅	DO ₂₄₆	DO ₂₄₇	DO ₂₄₈	DO ₂₄₉	DO ₂₅₀	DO ₂₅₁	DO ₂₅₂	DO ₂₅₃	DO ₂₅₄	DO ₂₅₅	DO ₂₅₆	DO ₂₅₇	DO ₂₅₈	DO ₂₅₉	DO ₂₆₀	DO ₂₆₁	DO ₂₆₂	DO ₂₆₃	DO ₂₆₄	DO ₂₆₅	DO ₂₆₆	DO ₂₆₇	DO ₂₆₈	DO ₂₆₉	DO ₂₇₀	DO ₂₇₁	DO ₂₇₂	DO ₂₇₃	DO ₂₇₄	DO ₂₇₅	DO ₂₇₆	DO ₂₇₇	DO ₂₇₈	DO ₂₇₉	DO ₂₈₀	DO ₂₈₁	DO ₂₈₂	DO ₂₈₃	DO ₂₈₄	DO ₂₈₅	DO ₂₈₆	DO ₂₈₇	DO ₂₈₈	DO ₂₈₉	DO ₂₉₀	DO ₂₉₁	DO ₂₉₂	DO ₂₉₃	DO ₂₉₄	DO ₂₉₅	DO ₂₉₆	DO ₂₉₇	DO ₂₉₈	DO ₂₉₉	DO ₃₀₀	DO ₃₀₁	DO ₃₀₂	DO ₃₀₃	DO ₃₀₄	DO ₃₀₅	DO ₃₀₆	DO ₃₀₇	DO ₃₀₈	DO ₃₀₉	DO ₃₁₀	DO ₃₁₁	DO ₃₁₂	DO ₃₁₃	DO ₃₁₄	DO ₃₁₅	DO ₃₁₆	DO ₃₁₇	DO ₃₁₈	DO ₃₁₉	DO ₃₂₀	DO ₃₂₁	DO ₃₂₂	DO ₃₂₃	DO ₃₂₄	DO ₃₂₅	DO ₃₂₆	DO ₃₂₇	DO ₃₂₈	DO ₃₂₉	DO ₃₃₀	DO ₃₃₁	DO ₃₃₂	DO ₃₃₃	DO ₃₃₄	DO ₃₃₅	DO ₃₃₆	DO ₃₃₇	DO ₃₃₈	DO ₃₃₉	DO ₃₄₀	DO ₃₄₁	DO ₃₄₂	DO ₃₄₃	DO ₃₄₄	DO ₃₄₅	DO ₃₄₆	DO ₃₄₇	DO ₃₄₈	DO ₃₄₉	DO ₃₅₀	DO ₃₅₁	DO ₃₅₂	DO ₃₅₃	DO ₃₅₄	DO ₃₅₅	DO ₃₅₆	DO ₃₅₇	DO ₃₅₈	DO ₃₅₉	DO ₃₆₀	DO ₃₆₁	DO ₃₆₂	DO ₃₆₃	DO ₃₆₄	DO ₃₆₅	DO ₃₆₆	DO ₃₆₇	DO ₃₆₈	DO ₃₆₉	DO ₃₇₀	DO ₃₇₁	DO ₃₇₂	DO ₃₇₃	DO ₃₇₄	DO ₃₇₅	DO ₃₇₆	DO ₃₇₇	DO ₃₇₈	DO ₃₇₉	DO ₃₈₀	DO ₃₈₁	DO ₃₈₂	DO ₃₈₃	DO ₃₈₄	DO ₃₈₅	DO ₃₈₆	DO ₃₈₇	DO ₃₈₈	DO ₃₈₉	DO ₃₉₀	DO ₃₉₁	DO ₃₉₂	DO ₃₉₃	DO ₃₉₄	DO ₃₉₅	DO ₃₉₆	DO ₃₉₇	DO ₃₉₈	DO ₃₉₉	DO ₄₀₀	DO ₄₀₁	DO ₄₀₂	DO ₄₀₃	DO ₄₀₄	DO ₄₀₅	DO ₄₀₆	DO ₄₀₇	DO ₄₀₈	DO ₄₀₉	DO ₄₁₀	DO ₄₁₁	DO ₄₁₂	DO ₄₁₃	DO ₄₁₄	DO ₄₁₅	DO ₄₁₆	DO ₄₁₇	DO ₄₁₈	DO ₄₁₉	DO ₄₂₀	DO ₄₂₁	DO ₄₂₂	DO ₄₂₃	DO ₄₂₄	DO ₄₂₅	DO ₄₂₆	DO ₄₂₇	DO ₄₂₈	DO ₄₂₉	DO ₄₃₀	DO ₄₃₁	DO ₄₃₂	DO ₄₃₃	DO ₄₃₄	DO ₄₃₅	DO ₄₃₆	DO ₄₃₇	DO ₄₃₈	DO ₄₃₉	DO ₄₄₀	DO ₄₄₁	DO ₄₄₂	DO ₄₄₃	DO ₄₄₄	DO ₄₄₅	DO ₄₄₆	DO ₄₄₇	DO ₄₄₈	DO ₄₄₉	DO ₄₅₀	DO ₄₅₁	DO ₄₅₂	DO ₄₅₃	DO ₄₅₄	DO ₄₅₅	DO ₄₅₆	DO ₄₅₇	DO ₄₅₈	DO ₄₅₉	DO ₄₆₀	DO ₄₆₁	DO ₄₆₂	DO ₄₆₃	DO ₄₆₄	DO ₄₆₅	DO ₄₆₆	DO ₄₆₇	DO ₄₆₈	DO ₄₆₉	DO ₄₇₀	DO ₄₇₁	DO ₄₇₂	DO ₄₇₃	DO ₄₇₄	DO ₄₇₅	DO ₄₇₆	DO ₄₇₇	DO ₄₇₈	DO ₄₇₉	DO ₄₈₀	DO ₄₈₁	DO ₄₈₂	DO ₄₈₃	DO ₄₈₄	DO ₄₈₅	DO ₄₈₆	DO ₄₈₇	DO ₄₈₈	DO ₄₈₉	DO ₄₉₀	DO ₄₉₁	DO ₄₉₂	DO ₄₉₃	DO ₄₉₄	DO ₄₉₅	DO ₄₉₆	DO ₄₉₇	DO ₄₉₈	DO ₄₉₉	DO ₅₀₀	DO ₅₀₁	DO ₅₀₂	DO ₅₀₃	DO ₅₀₄	DO ₅₀₅	DO ₅₀₆	DO ₅₀₇	DO ₅₀₈	DO ₅₀₉	DO ₅₁₀	DO ₅₁₁	DO ₅₁₂	DO ₅₁₃	DO ₅₁₄	DO ₅₁₅	DO ₅₁₆	DO ₅₁₇	DO ₅₁₈	DO ₅₁₉	DO ₅₂₀	DO ₅₂₁	DO ₅₂₂	DO ₅₂₃	DO ₅₂₄	DO ₅₂₅	DO ₅₂₆	DO ₅₂₇	DO ₅₂₈	DO ₅₂₉	DO ₅₃₀	DO ₅₃₁	DO ₅₃₂	DO ₅₃₃	DO ₅₃₄	DO ₅₃₅	DO ₅₃₆	DO ₅₃₇	DO ₅₃₈	DO ₅₃₉	DO ₅₄₀	DO ₅₄₁	DO ₅₄₂	DO ₅₄₃	DO ₅₄₄	DO ₅₄₅	DO ₅₄₆	DO ₅₄₇	DO ₅₄₈	DO ₅₄₉	DO ₅₅₀	DO ₅₅₁	DO ₅₅₂	DO ₅₅₃	DO ₅₅₄	DO ₅₅₅	DO ₅₅₆	DO ₅₅₇	DO ₅₅₈	DO ₅₅₉	DO ₅₆₀	DO ₅₆₁	DO ₅₆₂	DO ₅₆₃	DO ₅₆₄	DO ₅₆₅	DO ₅₆₆	DO ₅₆₇	DO ₅₆₈	DO ₅₆₉	DO ₅₇₀	DO ₅₇₁	DO ₅₇₂	DO ₅₇₃	DO ₅₇₄	DO ₅₇₅	DO ₅₇₆	DO ₅₇₇	DO ₅₇₈	DO ₅₇₉	DO ₅₈₀	DO ₅₈₁	DO ₅₈₂	DO ₅₈₃	DO ₅₈₄	DO ₅₈₅	DO ₅₈₆	DO ₅₈₇	DO ₅₈₈	DO ₅₈₉	DO ₅₉₀	DO ₅₉₁	DO ₅₉₂	DO ₅₉₃	DO ₅₉₄	DO ₅₉₅	DO ₅₉₆	DO ₅₉₇	DO ₅₉₈	DO ₅₉₉	DO ₆₀₀	DO ₆₀₁	DO ₆₀₂	DO ₆₀₃	DO ₆₀₄	DO ₆₀₅	DO ₆₀₆	DO ₆₀₇	DO ₆₀₈	DO ₆₀₉	DO ₆₁₀	DO ₆₁₁	DO ₆₁₂	DO ₆₁₃	DO ₆₁₄	DO ₆₁₅	DO ₆₁₆	DO ₆₁₇	DO ₆₁₈	DO ₆₁₉	DO ₆₂₀	DO ₆₂₁	DO ₆₂₂	DO ₆₂₃	DO ₆₂₄	DO ₆₂₅	DO ₆₂₆	DO ₆₂₇	DO ₆₂₈	DO ₆₂₉	DO ₆₃₀	DO ₆₃₁	DO ₆₃₂	DO ₆₃₃	DO ₆₃₄	DO ₆₃₅	DO ₆₃₆	DO ₆₃₇	DO ₆₃₈	DO ₆₃₉	DO ₆₄₀	DO ₆₄₁	DO ₆₄₂	DO ₆₄₃	DO ₆₄₄	DO ₆₄₅	DO ₆₄₆	DO ₆₄₇	DO ₆₄₈	DO ₆₄₉	DO ₆₅₀	DO ₆₅₁	DO ₆₅₂	DO ₆₅₃	DO ₆₅₄	DO ₆₅₅	DO ₆₅₆	DO ₆₅₇	DO ₆₅₈	DO ₆₅₉	DO ₆₆₀	DO ₆₆₁	DO ₆₆₂	DO ₆₆₃	DO ₆₆₄	DO ₆₆₅	DO ₆₆₆	DO ₆₆₇	DO ₆₆₈	DO ₆₆₉	DO ₆₇₀	DO ₆₇₁	DO ₆₇₂	DO ₆₇₃	DO ₆₇₄	DO ₆₇₅	DO ₆₇₆	DO ₆₇₇	DO ₆₇₈	DO ₆₇₉	DO ₆₈₀	DO ₆₈₁	DO ₆₈₂	DO ₆₈₃	DO ₆₈₄	DO ₆₈₅	DO ₆₈₆	DO ₆₈₇	DO ₆₈₈	DO ₆₈₉	DO ₆₉₀	DO ₆₉₁	DO ₆₉₂	DO ₆₉₃	DO ₆₉₄	DO ₆₉₅	DO ₆₉₆	DO ₆₉₇	DO ₆₉₈	DO ₆₉₉	DO ₇₀₀	DO ₇₀₁	DO ₇₀₂	DO ₇₀₃	DO ₇₀₄	DO ₇₀₅	DO ₇₀₆	DO ₇₀₇	DO ₇₀₈	DO ₇₀₉	DO ₇₁₀	DO ₇₁₁	DO ₇₁₂	DO ₇₁₃	DO ₇₁₄	DO ₇₁₅	DO ₇₁₆	DO ₇₁₇	DO ₇₁₈	DO ₇₁₉	DO ₇₂₀	DO ₇₂₁	DO ₇₂₂	DO ₇₂₃	DO ₇₂₄	DO ₇₂₅	DO ₇₂₆	DO ₇₂₇	DO ₇₂₈	DO ₇₂₉	DO ₇₃₀	DO ₇₃₁	DO ₇₃₂	DO ₇₃₃	DO ₇₃₄	DO ₇₃₅	DO ₇₃₆	DO ₇₃₇	DO ₇₃₈	DO ₇₃₉	DO ₇₄₀	DO ₇₄₁	DO ₇₄₂	DO ₇₄₃	DO ₇₄₄	DO ₇₄₅	DO ₇₄₆	DO ₇₄₇	DO ₇₄₈	DO ₇₄₉	DO ₇₅₀	DO ₇₅₁	DO ₇₅₂	DO ₇₅₃	DO ₇₅₄	DO ₇₅₅	DO ₇₅₆	DO ₇₅₇	DO ₇₅₈	DO ₇₅₉	DO ₇₆₀	DO ₇₆₁	DO ₇₆₂	DO ₇₆₃	DO ₇₆₄	DO ₇₆₅	DO ₇₆₆	DO ₇₆₇	DO ₇₆₈	DO ₇₆₉	DO ₇₇₀	DO ₇₇₁	DO ₇₇₂	DO ₇₇₃	DO ₇₇₄	DO ₇₇₅	DO ₇₇₆	DO ₇₇₇	DO ₇₇₈	DO ₇₇₉	DO ₇₈₀	DO ₇₈₁	DO ₇₈₂	DO ₇₈₃	DO ₇₈₄	DO ₇₈₅	DO ₇₈₆	DO ₇₈₇	DO ₇₈₈	DO ₇₈₉	DO ₇₉₀	DO ₇₉₁	DO ₇₉₂	DO ₇₉₃	DO ₇₉₄	DO ₇₉₅	DO ₇₉₆	DO ₇₉₇	DO ₇₉₈	DO ₇₉₉	DO ₈₀₀	DO ₈₀₁	DO ₈₀₂	DO ₈₀₃	DO ₈₀₄	DO ₈₀₅	DO ₈₀₆	DO ₈₀₇	DO ₈₀₈	DO ₈₀₉	DO ₈₁₀	DO ₈₁₁	DO ₈₁₂	DO ₈₁₃	DO ₈₁₄	DO ₈₁₅	DO ₈₁₆	DO ₈₁₇	DO ₈₁₈	DO ₈₁₉	DO ₈₂₀	DO ₈₂₁	DO ₈₂₂	DO ₈₂₃	DO ₈₂₄	DO ₈₂₅	DO ₈₂₆	DO ₈₂₇	DO ₈₂₈	DO ₈₂₉	DO ₈₃₀	DO ₈₃₁	DO ₈₃₂	DO ₈₃₃	DO ₈₃₄	DO ₈₃₅	DO ₈₃₆	DO ₈₃₇	DO ₈₃₈	DO ₈₃₉	DO ₈₄₀

See notes at end of table.

TABLE III. GROUP A Inspection for Service Type 91 - Continued.
Terminal conditions (pins not designated are open)

[illegible]

See notes at end of table.

TABLE III. Setup A: Injection for device type B1 - Continued.
Terminal conditions (pins not denoted are open)

Symbol	MIL-STD-883 Method	Cases	Terminal conditions (pins not designated are gnd)																Test limits subgroup				Test limits subgroups																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean, Terminal		T _C = 25°C		T _C = -55°C, 125°C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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See notes at end of table.

TABLE III. Group A Inspection for device type D1 - Continued.
Terminal conditions (plus not designated are zero)

Symbol	MIL-STD-883 method	Cases test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Meas. terminal	Test limits subgroup 9			Test limits subgroup 10 and 11		
			DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁		Min	Max	Unit	Min	Max	Unit
14L21	3003	312	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₂			ns			ns
		313	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₃						
		314	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₄						
		315	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₅						
		316	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₆						
		317	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₇						
		318	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₈						
		319	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₁			5/			5/
14L21	3003	320	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₂						
		321	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₃						
		322	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₄						
		323	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₅						
		324	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₆						
		325	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₇						
		326	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₈						
		327	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₁						
		328	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₂						
		329	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₃						
		330	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₄						
		331	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₅						
		332	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₆						
		333	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₇						
		334	DS ₁	WD	DI ₁	DO ₁	DI ₂	DO ₂	DI ₃	DO ₃	DI ₄	DO ₄	DI ₅	DO ₅	DI ₆	DO ₆	DI ₇	DO ₇	DI ₈	DO ₈	DI ₉	DO ₉	DI ₁₀	DO ₁₀	DI ₁₁	DO ₁₁	DO ₈						

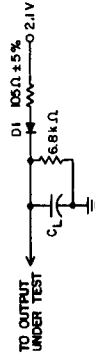
NOTES:

- Input voltages are: A = 2.0 V; B = 0.8 V.
- Output voltages are: H = 3.4 V minimum; L = 0.45 V maximum.
- Output voltages shall be checked at every data point noted in subgroup 7. Either of the two following test procedures may be used:

a. Forcing a voltage and measuring the resultant current.

Forcing voltage	Limit for resulting current
0.45 V	±20 μA
5.5 V	±20 μA

b. A load as shown below is connected to the output. The output voltage shall be measured 1 μs after the high impedance level is enabled. The resultant voltage at the output pin shall be 1.0 V ± 0.2 V, OUT ± 2.0 V.



D1 = 1N3064 or equivalent; $C_L = 30 \pm 5$ pF (includes tester, wiring, probe and load capacitance).

4. The capacitance measurement shall be made between the indicated terminal and the ground terminal (GND) at a frequency of 1 MHz. The dc bias of the measuring instrument shall be 2.5 V. The ac signal amplitude shall be less than 50 mVrms.

5. a. Maximum limit is 270 ns for a 30 pF load in figure 5.

b. Maximum limit is 160 ns for a 150 pF load in figure 5.

c. Maximum limit is 50 ns for a 5 pF load in figure 5.

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-M-38510. Inspections to be performed shall be as specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4). Generic test data (see 6.6) may be used to satisfy the requirement for groups C and D inspections. Quality conformance inspection shall be completed on the specific devices covered by this specification before they are shipped.

4.4.1 Group A inspection. Group A inspection shall be in accordance with table I of method 5005 of MIL-STD-883 and as follows:

- a. Tests shall be as specified in table II herein.
- b. Subgroup 1 (C_I , C_O measurements) shall be performed only after process or design changes which may affect design capacitance.
- c. Subgroup 4, 5, 6, 10, and 11 of table I of method 5005 of MIL-STD-883 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of method 5005 of MIL-STD-883. Electrical parameters shall be as specified in table II herein.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table III of method 5005 of MIL-STD-883 and as follows:

- a. End-point electrical parameters shall be as specified in table II herein.
- b. Subgroups 3 and 4 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. Steady-state life test (method 1005 of MIL-STD-883) conditions:
 - (1) Test condition D or E, using the circuit shown on figure 4, or equivalent.
 - (2) $T_A = +125^\circ\text{C}$, minimum.
 - (3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table IV of method 5005 of MIL-STD-883. End-point electrical parameters shall be as specified in table II herein.

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

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

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be as specified in MIL-M-38510.

6. NOTES

6.1 Notes. The notes specified in MIL-M-38510 are applicable to this specification.

6.2 Intended use. Microcircuits conforming to this specification are intended for logistic support of existing equipment.

6.3 Ordering data. The acquisition document should specify the following:

- a. Complete part number (see 1.2).
- b. 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.
- c. Requirement for certificate of compliance, if applicable.
- d. Requirements for notification of change of product or process to the contracting activity, if applicable.
- e. Requirements for packaging and packing.
- f. 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 or direct shipment to the Government.

6.4 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-M-38510 and MIL-STD-1331.

6.5 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2) and lead material and finish C (see 3.3). Longer length leads and lead forming shall not affect the part number.

6.6 Generic test data. Generic test data may be used to satisfy the requirements of 4.4.3. Group C generic test data shall be on date codes no more than one year old and on a die in the same microcircuit group (see appendix E of MIL-M-38510) with the same material, design and process and from the same plant as the die represented. Group D (see 4.4.4) generic data shall be on date codes no more than one year old and on the same package type, (see terms, definitions, and symbols of MIL-M-38510) and from the same plant as the package represented. The vendor is required to retain the generic data for a period of not less than 36 months from the date of shipment.

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification shall 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-M-38510.

Military
device type

01

Generic-industry type

8212, 54S412

6.8 Ordering guidance. Since the qualification and certification requirements have been removed from the specification, orders may be placed immediately.

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.

Custodian:

Army - ER
Navy - EC
Air Force - 17

Preparing activity:

Air Force - 17

(Project 5962-0603-4)

Review activities:

Army - AR, MI
Air Force - 11, 19, 85, 99
Navy - OS, SH
DLA - ES

User activities:

Army - SM
Navy - AS, CG, MC

Agent:

DLA - ES