INCH-POUND
MIL-M-38510/1F
16 March 2005
SUPERSEDING
MIL-M-38510/1E
1 June 1982

MILITARY SPECIFICATION

MICROCIRCUITS, DIGITAL, TTL, NAND GATES, MONOLITHIC SILICON

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

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF 38535

- 1. SCOPE
- 1.1 <u>Scope.</u> This specification covers the detail requirements for monolithic silicon, TTL, positive NAND logic gating 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).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 or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.
 - 1.2.1 <u>Device types</u>. The device types are as follows:

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

- 1.2.2 Device class. The device class is the product assurance level as defined in MIL-PRF-38535.
- 1.2.3 <u>Case outlines.</u> The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	<u>Terminals</u>	Package style
Α	GDFP5-F14 or CDFP6-F14	14	Flat
В	GDFP4-F14	14	Flat
С	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat

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

AMSC N/A FSC 5962

1.3 Absolute maximum ratings.

	Supply voltage range	-0.5 V to +7.0 V
	Input voltage range	-1.5 V at -12 mA to +5.5 V
	Storage temperature range	-65° to +150°C
	Maximum power dissipation per gate (P _D) 1/	40 mW
	Lead temperature (soldering, 10 seconds)	300°C
	Thermal resistance, junction to case (θ_{JC})	(See MIL-STD-1835)
	Junction temperature (T _J) <u>2</u> /	175°C
1	Recommended operating conditions.	
	· •	
	Supply voltage	
	Minimum high lovel input voltage	.201/

1.4

Supply voltage	+4.5 V minimum to +5.5 V maximum
Minimum high level input voltage	+2.0 V
Maximum low level input voltage (V _{IL})	+0.8 V
Normalized fanout (each output) 3/	. 10 maximum
Case operating temperature range	55° to +125°C

 $[\]overline{\underline{1}/}$ Must withstand the added P_D due to short-circuit test (e.g., I_{OS}). $\underline{2}/$ Maximum junction temperature shall not be exceeded except for allowable short duration burn-in screening conditions in accordance with MIL-PRF-38535.

^{3/} Device will fanout in both high and low levels to the specified number of inputs of the same device type as that being tested.

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.

MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

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

2.3 <u>Order of precedence.</u> 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.

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 <u>Item requirements</u>. 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 <u>Design, construction, and physical dimensions.</u> The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.
- 3.3.1 <u>Terminal connections and logic diagrams.</u> The terminal connections and logic diagrams 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 <u>Schematic circuits</u>. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity 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 <u>Electrical performance characteristics</u>. The electrical performance characteristics are as specified in table I, and apply over the full recommended case operating temperature range, unless otherwise specified.

TABLE I. <u>Electrical performance characteristics.</u>

Test	Symbol	Conditions	Device	Lir	Unit	
		-55°C ≤ T _C ≤ +125°C	types	Min	Max	
High level output	V _{OH}	$V_{CC} = 4.5 \text{ V}, \ \ V_{IN} = 0.8 \text{ V},$	01, 02,	2.4		V
voltage		I _{OH} = -400 μA <u>1</u> /	03, 04,			
			05			
Low level output	V _{OL}	$V_{CC} = 4.5 \text{ V}, I_{OL} = 16 \text{ mA},$	All		0.4	V
voltage		V _{IN} = 2.0 V for all inputs of gate under				
		test <u>1</u> /				
Input clamp voltage	V _{IC}	$V_{CC} = 4.5 \text{ V}, I_{IN} = -12 \text{ mA}$	All		-1.5	V
		T _C = 25°C				
Maximum collector	I _{CEX}	V _{CC} = 4.5 V, V _{IN} = 0.8 V,	06, 07		250	μА
cut-off current		V _{OH} = 5.5 V	08, 09			
High level input	I _{IH1}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 2.4 \text{ V}$ $\underline{2}$	All		40	μА
current						
High level input	I _{IH2}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 5.5 \text{ V}$	All		100	μА
current						
Low level input	I _{IL}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 0.4 \text{ V}$ 1/	All	-0.7	-1.6	mA
current						
Short circuit output	I _{os}	V _{CC} = 5.5 V <u>2</u> / <u>3</u> /	01, 02,	-20	-55	mA
current			03, 04,			
			05			
High level supply	I _{CCH}	$V_{CC} = 5.5 \text{ V}, V_{IN} = 0 \text{ V} $ 2/	All		1.65	mA
current per gate						
Low level supply	I _{CCL}	V _{CC} = 5.5 V, V _{IN} = 5.5 V <u>1</u> /	All		5.0	mA
current per gate						
Propagation delay time,	t _{PHL}	$C_L = 50 \text{ pF},$	01, 02,	3	24	ns
high-to-low level		$R_L = 390\Omega$	03, 04,			
			05			
			06, 07,	3	29	ns
			08, 09			
Propagation delay time,	t _{PLH}	C _L = 50 pF,	01, 02,	3	27	ns
low-to-high level		$R_L = 390\Omega$	03, 04,			
			05			
			06, 07,	3	35	ns
			08, 09			

 ^{1/} All unspecified inputs at 5.5 volts.
 2/ All unspecified inputs grounded.
 3/ Not more than one output should be shorted at a time.

3.6 <u>Electrical test requirements.</u> 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.

TABLE II. Electrical test requirements.

MIL-PRF-38535	Subgroups (see table III)					
test requirements	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 B electrical test parameters when using the method 5005 QCI option	1, 2, 3, 9, 10, 11	N/A				
Group C end-point electrical parameters	1, 2, 3, 9, 10, 11	1, 2, 3				
Additional electrical parameters 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.

- 3.7 Marking. Marking shall be in accordance with MIL-PRF-38535.
- 3.8 <u>Microcircuit group assignment.</u> The devices covered by this specification shall be in microcircuit group number 1 (see MIL-PRF-38535, appendix A).

4. VERIFICATION

- 4.1 <u>Sampling and inspection.</u> Sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.
- 4.2 <u>Screening.</u> Screening shall be in accordance with MIL-PRF-38535 and shall be conducted on all devices prior to qualification and conformance inspection. The following additional criteria shall apply:
 - a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
 - b. 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.

- 4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.
- 4.4 <u>Technology Conformance inspection (TCI)</u>. 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 <u>Group A inspection.</u> Group A inspection shall be in accordance with table III of MIL-PRF-3853<u>5</u> 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 <u>Group D inspection.</u> 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 as specified and as follows:
- 4.5.1 <u>Voltage and current.</u> All voltages given are referenced to the microcircuit ground terminal. Currents given are conventional and positive when flowing into the referenced terminal.

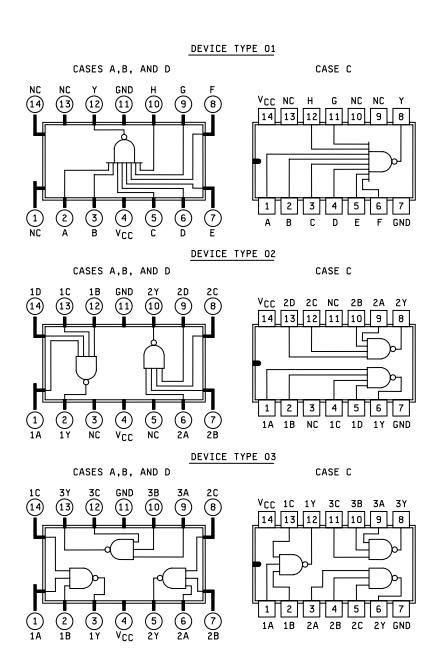
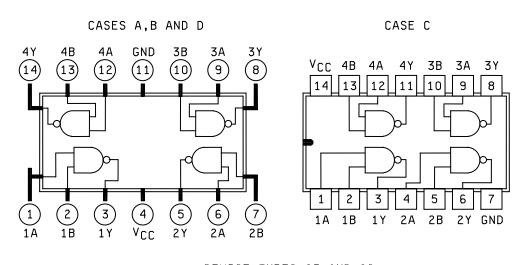


FIGURE 1. Terminal connections and logic diagrams.

DEVICE TYPE 04



DEVICE TYPES 05 AND 08

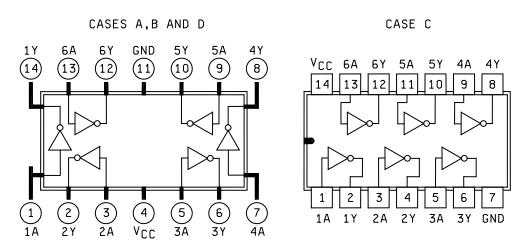
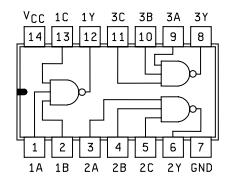


FIGURE 1. Terminal connections and logic diagrams - Continued.

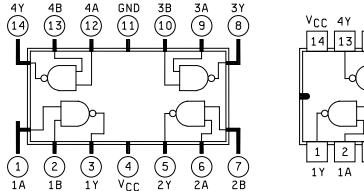
DEVICE TYPE 06 CASES A,B,C AND D

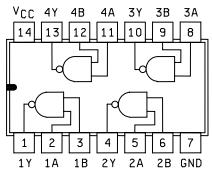


DEVICE TYPE 07

CASES A,B AND D

CASE C





DEVICE TYPE 09 CASE C

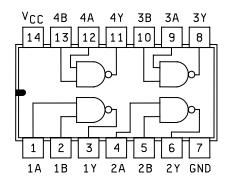


FIGURE 1. Terminal connections and logic diagrams - Continued.

Device type 01

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

Positive logic Y = ABCDEFGH

Device types 03 and 06

Truth table									
	Input	Output							
Α	В	C	Υ						
L	L	L	Н						
Н	L	Н							
L	Н	L	Н						
Н	Н	L	Н						
L	L	Н	Н						
Н	L	Н	Н						
L	Η	Н	Н						
Н	Н	Ι	L						

Positive logic Y = ABC

Device type 02

Device type 02											
Truth table											
	Inp	Output									
Α	В	С	D	Υ							
L	L	L	L	Н							
Н	L	L	L	Н							
L	Н	L	L	Н							
Н	Н	L	L	Н							
L	L	Н	L	Н							
Н	L	Н	L	Н							
L	Н	Н	L	Н							
Н	Н	Н	L	Н							
L	L	L	Н	Н							
Н	L	L	Н	Н							
L	Н	L	Н	Н							
Н	Н	L	Н	Н							
L	L	Н	Н	Н							
Н	L	Н	Н	Н							
L	Н	Н	Н	Н							
Н	Н	Н	Н	L							

Positive logic Y = ABCD

Device types 04, 07, and 09

Truth table each gate							
Inp	out	Output					
Α	В	Y					
L	L	Н					
Н	L	Н					
L	Н	Н					
Н	Н	L					

Positive logic Y = AB

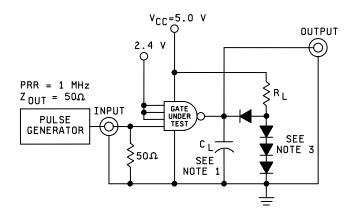
Device types 05 and 08

_ 0 0 type 00 a 00							
Truth table each gate							
Input	Input						
Α	Υ						
L	Н						
Н	L						

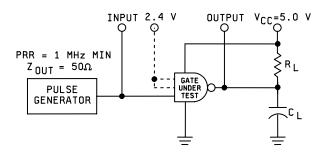
Positive logic Y = A

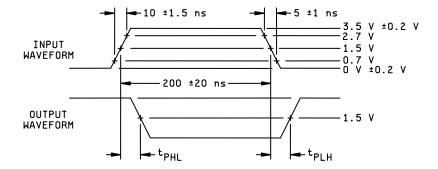
FIGURE 2. Truth tables and logic equations.

TEST CIRCUITS EXCEPT FOR OPEN COLLECTOR CIRCUITS



FOR OPEN COLLECTOR CIRCUITS





NOTES:

- 1. $C_L = 50$ pF minimum, including scope probe, wiring and stray capacitance, without package in test fixture.
- 2. Voltage measurements are to be made with respect to network ground terminal.
- 3. All diode are 1N3064 or equivalent.
- 4. $R_L = 390 \text{ ohm } \pm 5\%$.

FIGURE 3. Test circuit and switching waveforms.

TABLE III. Group A inspection for device type 01. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

						I ermina	l conditio	ns (pins	not desi	gnated n	າay be hi	gh ≥ 2.0	V, low ≤	0.8 V or	open)						
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	13	1	2	14	3	4	5	6	11	12	7	8	9	10	Measured	Lim	its	Unit
		method	Test no.	NC	Α	В	V _{cc}	С	D	Е	F	G	Н	GND	Υ	NC	NC	terminal	Min	Max	l
1	V _{OL}	3007	1		2.0 V	2.0 V	4.5 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	2.0 V	GND	16mA			Y		0.4	V
Tc = 25°C	V _{OH}	3006	2		0.8 V	5.5 V	4.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	4mA			Y	2.4		V
	0		3		5.5 V	0.8 V		"		"	"	"	"	"	"			Υ			
			4		"	5.5 V		0.8 V		"	"			"	"			Y			
			5		"			5.5 V	0.8 V	"				"	"			Y			. "
			6						5.5 V	0.8 V								Y			
			/							5.5 V	0.8 V	0.01/						Y			
			8 9		"						5.5 V	0.8 V 5.5 V	0.8 V					Ý			
	Ios	3011	10		GND	GND	5.5 V	GND	GND	GND	GND	GND	GND	GND	GND			Ÿ	-20	-55	mA
	I _{IH1}	3010	11		2.4 V	GND	5.5 V	GND	GND	GND	GND	GND	GND	GND	GIVE			Ä	-20	40	μА
	101	0010	12		GND	2.4 V	0.0 1	UI II	UIVD	"	UND "	"	UNID II	UIVD				В		"	μ
			13		"	GND		2.4 V		"				"				Č			
			14		"			GND	2.4 V	"	"			"				D			
			15		"	"		"	GND	2.4 V	"	"	"	"				E			. "
			16							GND	2.4 V							F			
			17								GND	2.4 V	0.41/					G			
		3010	18 19		5.5 V	GND	5.5 V	GND	GND	GND	GND	GND GND	2.4 V GND	GND				H		100	
	I _{IH2}	3010	20		GND	5.5 V	3.5 V	GIND	GIND	GIND "	GND	GIND "	GIND "	GIND "				A B		100	μA "
			21		GIND "	GND		5.5 V		"								Č			
			22		"	UI I		GND	5.5 V	"	"			"				D			
			23		"	"		"	GND	5.5 V	"	"		"				E			
			24		"				"	GND	5.5 V			"				F		"	. "
			25		"	"		"	"	"	GND	5.5 V	"	"				G		"	
			26		"							GND	5.5 V	"				H			— <u> </u>
	I _{IL}	3009	27		0.4 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	GND				A	-0.7	-1.6	mA
			28 29		5.5 V	0.4 V 5.5 V		0.4 V		,,								B C			
			30		"	3.5 V		5.5 V	0.4 V	"				"				D			
			31		"			0.0 v	5.5 V	0.4 V				"				Ē			
			32		"	"		"	"	5.5 V	0.4 V		"	"				F			
			33		"			"	"	"	5.5 V	0.4 V		"				G			
			34		"	"		"	"	"		5.5 V	0.4 V	"				Н	"	"	- "
	I _{CCL}	3005	35		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	GND				V _{CC}		5.0	mA
	I _{CCH}	3005	36		GND	GND	5.5 V	GND	GND	GND	GND	GND	GND	GND				V _{CC}		1.65	mA
	VIC		37		-12 mA	40 4	4.5 V							GND				A		-1.5	· ·
			38 39			-12 mA		-12 mA										B C			
			40					-12 IIIA	-12 mA					"				D			
			41						12 110 1	-12 mA				"				Ē			
			42								-12 mA			"				F			. "
			43									-12 mA		"				G			. "
			44				"						-12 mA	"				Н		"	
2			conditions and																		
3			conditions and	limits as fo																	
9	t _{PHL}	3003	45		IN	2.4 V	5.0 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	GND	OUT			A to Y	3	20	ns
Tc = 25°C	t _{PLH}	(Fig. 3)	46										"					A to Y	3	25	ns
10	t _{PHL}	3003	47		IN	2.4 V	5.0 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	2.4 V	GND	OUT			A to Y	3	24	ns
Tc = 125°C		(Fig. 3)	48	<u> </u>	L"				"	l							l	A to Y	3	27	ns
11	Same tes	ts, terminal	conditions and	I Iimits as fo	r subgroup	10, except	$Ic = -55^{\circ}C$.														

TABLE III. Group A inspection for device type 02. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

$\begin{tabular}{l l} Subgroup & Symbol \\ \hline 1 & V_{OL} \\ \hline V_{OH} \\ \hline \hline I_{OS} & \hline I_{IH1} \\ \hline \hline I_{IH2} & \hline I_{ICL} & \hline I_{CCL} & \hline I_{CCL} & \hline I_{CCL} & \hline I_{CCH} & \hline $V_{1 C}$ & \hline $V_{1 $	3007 3006 3011 3010 3009	Cases A, B, E Case C 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 25 26 27 28 29 30	1 1A 2.0 V 5.5 V 0.8 V 5.5 V " " " " " " " " " " " " " " " " " "	2 6 1Y 16 mA 4 mA "	3 NC	4 14 V _{CC} 4.5 V 4.5 V 5.5 V 5.5 V 5.5 V 5.5 V 5.5 V	5 11 NC	6 9 2A 5.5 V 2.0 V 5.5 V " 0.8 V 5.5 V " GND GND " 2.4 V GND " " GND " "	7 10 2B 5.5 V 2.0 V 5.5 V	8 12 2C 5.5 V 2.0 V 5.5 V 0.8 V 5.5 V GND GND 	9 13 2D 5.5 V 2.0 V 5.5 V 0.8 V GND GND 	10 8 2Y 16 mA	111 7 GND	12 2 1B 2.0 V 5.5 V 5.5 V 5.5 V 6ND GND 2.4 V GND	13 4 1C 2.0 V 5.5 V 0.8 V 5.5 V " " GND GND " 2.4 V GND " " GND " " GND " " " GND " " " GND " " " "	14 5 1D 2.0 V 5.5 V 0.8 V 5.5 V GND GND GND GND GND	Measured terminal 1Y 2Y 1Y 1Y 1Y 1Y 2Y 2Y 2Y 2Y 2Y 2Y 2Y 2D 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	Lim Min 2.4 " " " " " " " " " " " " " " " " " " "	its Max 0.4 "	Unit V V mA mA mA pA pA pA
1	method 3007 3006 3011 3010 3010	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 25 26 27 28	1A 2.0 V 5.5 V 0.8 V 5.5 V	1Y 16 mA 4 mA		V _{CC} 4.5 V 4.5 V 5.5 V 5.5 V		2A 5.5 V 2.0 V 5.5 V " 0.8 V 5.5 V " " GND GND " 2.4 V GND " " GND " "	2B 5.5 V 2.0 V 5.5 V " 0.8 V 5.5 V GND GND GND GND GND GND GND GND GND GN	2C 5.5 V 2.0 V 5.5 V 0.8 V 5.5 V GND GND	2D 5.5 V 2.0 V 5.5 V 0.8 V GND GND 2.4 V	2Y 16 mA 4 mA	GND GND GND GND GND GND	1B 2.0 V 5.5 V 5.5 V 0.8 V 5.5 V " GND GND 2.4 V GND GND GND 5.5 V	1C 2.0 V 5.5 V 5.5 V 0.8 V 5.5 V " " GND GND GND " 2.4 V GND " " GND " GND " " GND " " GND "	1D 2.0 V 5.5 V 5.5 V 0.8 V 5.5 V " " GND GND GND " 2.4 V GND	terminal 1Y 2Y 1Y 1Y 1Y 1Y 1Y 1Y 1Y 2Y 2Y 2Y 2Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	Min 2.4	-55 40 "	V
Тс = 25°С	3007 3006 3011 3010	1 2 3 4 5 6 6 7 8 9 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	2.0 V 5.5 V 0.8 V 5.5 V " " " GND 2.4 V GND " " " " " " " " " " " " " " " " " " "	16 mA	NC	4.5 V	NC	5.5 V 2.0 V 5.5 V " 0.8 V 5.5 V " " GND GND " 2.4 V GND "	5.5 V 2.0 V 5.5 V 0.8 V 5.5 V GND GND 	5.5 V 2.0 V 5.5 V 0.8 V 5.5 V GND GND 	5.5 V 2.0 V 5.5 V 0.8 V GND GND GND 	4 mA	GND GND GND GND	2.0 V 5.5 V 0.8 V 5.5 V 5.5 V " " GND 2.4 V GND " "	2.0 V 5.5 V 5.5 V 0.8 V 5.5 V " " GND GND " 2.4 V GND " "	2.0 V 5.5 V 5.5 V 0.8 V 5.5 V " " GND GND GND " "	1Y 2Y 1Y 1Y 1Y 1Y 1Y 2Y 2Y 2Y 2Y 11 1C 1D 2A 2B 2C 2D 1A 1B	2.4	-55 -40	mA
Тс = 25°С	3006 3011 3010	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	5.5 V 0.8 V 5.5 V " " " GND 2.4 V GND " " " " " " " " " " " " " " " " " " "	4 mA "		4.5 V		2.0 V 5.5 V " 0.8 V 5.5 V " " GND GND " 2.4 V GND " " GND " "	2.0 V 5.5 V " 0.8 V 5.5 V " GND " 2.4 V GND	2.0 V 5.5 V 0.8 V 5.5 V GND GND 	2.0 V 5.5 V 0.8 V GND GND 	4 mA " "	GND	5.5 V 5.5 V 0.8 V 5.5 V 5.5 V " " GND GND 2.4 V GND " " GND 5.5 V	5.5 V 5.5 V 0.8 V 5.5 V " GND GND 2.4 V GND " GND " GND " GND " GND "	5.5 V 5.5 V " 0.8 V 5.5 V " " GND GND " 2.4 V GND " "	2Y 11Y 11Y 11Y 12Y 22Y 22Y 11Y 22Y 11D 22A 2B 2C 2D 1A 1B		-55	mA
Ios I _{IH1} I _{IH2} I _{IL}	3011	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	0.8 V 5.5 V "" "" "" "" "" "" "" "" "" ""	"		5.5 V		5.5 V " " 0.8 V 5.5 V " " GND GND " 2.4 V GND " GND " GND "	5.5 V	5.5 V 0.8 V 5.5 V GND GND 2.4 V GND	5.5 V	4 mA " "	GND	5.5 V 0.8 V 5.5 V	5.5 V 0.8 V 5.5 V 7.5 V	5.5 V 0.8 V 5.5 V	1Y 1Y 1Y 1Y 2Y 2Y 2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D		40	mA " μΑ "
I _{OS} I _{IH1} I _{IH2} I _{IL} I _{CCL} I _{CCH}	3011	4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	5.5 V	"		5.5 V		0.8 V 5.5 V " " GND GND " 2.4 V GND "	0.8 V 5.5 V GND GND " 2.4 V GND "	0.8 V 5.5 V GND GND **	0.8 V GND GND 	" "	GND	0.8 V 5.5 V " " " " " " " " " " " " " " " " " "	0.8 V 5.5 V " " " " " " " " " " " " " " " " " "	" 0.8 V 5.5 V " " " " " GND GND " " " 2.4 V GND " " " " " " "	1Y 1Y 1Y 2Y 2Y 2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D		40	mA " μΑ "
I _{IH1} I _{IH2} I _{IL}	3010	5 6 7 8 9 10 111 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	GND 2.4 V GND "" "" 5.5 V GND "" "" "" "" "" "" "" "" ""	GND		5.5 V		5.5 V " GND GND " " 2.4 V GND " " GND " "	GND GND " " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "	" "	GND " " "	5.5 V	5.5 V " " GND GND GND " 2.4 V GND " " " GND "	0.8 V 5.5 V " " GND GND " 2.4 V GND	1Y 1Y 2Y 2Y 2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		5.5 V " GND GND " " 2.4 V GND " " GND " "	GND GND " " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "	" "	GND " " "	GND GND 2.4 V GND "	5.5 V " " GND GND GND " 2.4 V GND " " " GND "	0.8 V 5.5 V " " GND GND " 2.4 V GND	1Y 2Y 2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		5.5 V " GND GND " " 2.4 V GND " " GND " "	GND GND " " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "	" "	GND " " "	GND 2.4 V GND " " " GND 5.5 V	GND GND 3.4 V GND " " GND " GND " " GND "	5.5 V " " GND GND " 2.4 V GND "	2Y 2Y 2Y 2Y 1Y 1A 1B 1C 1D 2A 2B 2C 2D	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		5.5 V " GND GND " " 2.4 V GND " " GND " "	GND GND " " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "	" "	GND " " "	GND 2.4 V GND " " " GND 5.5 V	GND " 2.4 V GND " " " GND "	GND GND " 2.4 V GND	2Y 2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		GND GND " " 2.4 V GND " "	GND GND " " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "		GND " " "	GND 2.4 V GND " " " GND 5.5 V	GND " 2.4 V GND " " " GND "	GND " " 2.4 V GND " "	2Y 2Y 1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		GND GND " " 2.4 V GND " "	GND GND " " 2.4 V GND "	GND GND " " " 2.4 V GND	GND GND "		GND " " "	GND 2.4 V GND " " " GND 5.5 V	GND " 2.4 V GND " " " GND "	GND " " 2.4 V GND " "	1Y 2Y 1A 1B 1C 1D 2A 2B 2C 2D	-20	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	2.4 V GND " " " 5.5 V GND	GND		5.5 V		GND " 2.4 V GND " " GND " "	GND " " 2.4 V GND " GND "	GND " " " 2.4 V GND	GND " " " " 2.4 V	GND	GND " " "	GND 2.4 V GND " " " " " " GND 5.5 V	GND " 2.4 V GND " " " GND "	GND " " 2.4 V GND "	2Y 1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	-20 "	40	μA " " "
I _{IH1} I _{IH2} I _{IL}	3010	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	GND " " " " 5.5 V GND " " " "					GND " 2.4 V GND " " GND " "	GND " " 2.4 V GND " GND "	GND " " " 2.4 V GND	GND " " " " 2.4 V	GND	" " " " " " " " " " " " " " " " " " " "	2.4 V GND " " " " GND 5.5 V	2.4 V GND " " " " GND	2.4 V GND	1A 1B 1C 1D 2A 2B 2C 2D 1A 1B	•		
I _{IH2} I _{IL}	3010	14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	GND " " " " 5.5 V GND " " " "					2.4 V GND "	2.4 V GND "	" " " 2.4 V GND	" " " 2.4 V		" " " " " " " " " " " " " " " " " " " "	2.4 V GND " " " " GND 5.5 V	2.4 V GND " " " " GND	2.4 V GND	1B 1C 1D 2A 2B 2C 2D 1A 1B			
I _{IL}		15 16 17 18 19 20 21 22 23 24 25 26 27 28	5.5 V GND			5.5 V		GND " " GND "	GND " GND "	GND			"" "" "" GND	GND " " " " GND 5.5 V	GND " " " " GND "	2.4 V GND "	1C 1D 2A 2B 2C 2D 1A 1B		100	 μΑ
I _{IL}		16 17 18 19 20 21 22 23 24 25 26 27 28	GND " " "			5.5 V		GND " " GND "	GND " GND "	GND			GND	" " " GND 5.5 V	GND " " " " GND "	2.4 V GND "	1D 2A 2B 2C 2D 1A 1B		100	" " " μΑ
I _{IL}		17 18 19 20 21 22 23 24 25 26 27 28	GND " " "			5.5 V		GND " " GND "	GND " GND "	GND			GND	5.5 V	GND	GND "	2A 2B 2C 2D 1A 1B		100	 μΑ
I _{IL}		18 19 20 21 22 23 24 25 26 27 28	GND " " "			5.5 V		GND " " GND "	GND " GND "	GND			GND	5.5 V			2B 2C 2D 1A 1B		100	" " μΑ
I _{IL}		19 20 21 22 23 24 25 26 27 28	GND " " "			5.5 V		GND	GND " GND "	GND			GND	5.5 V		" GND	2C 2D 1A 1B		100	" μΑ "
I _{IL}		20 21 22 23 24 25 26 27 28	GND " " "			5.5 V			GND "	GND			GND "	5.5 V		GND	2D 1A 1B		100	<u>"</u> μΑ "
I _{IL}		21 22 23 24 25 26 27 28	GND " " "			5.5 V			"				GND "	5.5 V		GND	1A 1B		100	μ A
I _{IL}		22 23 24 25 26 27 28	GND " " "			"			"	"	"		"	5.5 V		"	1B		"	μ,
I _{CCL} I _{CCH}	3009	23 24 25 26 27 28	" " " " " " " " " " " " " " " " " " " "					" " 55V												
I _{CCL} I _{CCH}	3009	24 25 26 27 28 29	" " " "					55 V	"				"	GND	5.5 V		1C			
I _{CCL}	3009	26 27 28 29	" "					55 V					"		GND	5.5 V	1D			
I _{CCL}	3009	27 28 29	"			"			"				"			GND	2A			
I _{CCL} I _{CCH}	3009	28 29	"					GND	5.5 V					"			2B		"	
I _{CCL} I _{CCH}	3009	29	. "						GND	5.5 V	_ "						2C			
I _{CCL} I _{CCH}	3009		0 4 1 /							GND	5.5 V		0110	5 5 1 /			2D			
I _{CCH}			0.4 V 5.5 V			5.5 V		5.5 V	5.5 V	5.5 V	5.5 V		GND	5.5 V 0.4 V	5.5 V	5.5 V	1A 1B	-0.7	-1.6	mA "
I _{CCH}		31	5.5 V					"						5.5 V	0.4 V		1C			
I _{CCH}		32											"	3.5 V	5.5 V	0.4 V	1D			
I _{CCH}		33						0.4 V					"		0.0 v	5.5 V	2A			
I _{CCH}		34	"					5.5 V	0.4 V	"			"	"	"	"	2B			
I _{CCH}		35						"	5.5 V	0.4 V			"				2C			
I _{CCH}		36	"					"	=	5.5 V	0.4 V				"		2D	-	"	
	3005	37	5.5 V			5.5 V		5.5 V	5.5 V	5.5 V	5.5 V		GND	5.5 V	5.5 V	5.5 V	V _{CC}		10	mA
Vic	3005	38	GND			5.5 V		GND	GND	GND	GND		GND	GND	GND	GND	V _{CC}		3.3	mΑ
		39	-12 mA			4.5 V							GND				1A		-1.5	٧
	1	40												-12 mA	40. 4		1B			
	1	41													-12 mA	10 1	1C			
		42 43						-12 mA					,,			-12 mA	1D 2A			
1 1		43 44						-12 mA	-12 mA				"				2A 2B			
	1	45							-121117	-12 mA			"				2C			
	1	46									-12 mA		"				2D			
2 Same tests	sts, terminal	conditions and	limits as fo	r subgroup '	1, except Tc	= 125°C a	nd V _{IC} tests	s are omitte	d.				•	•			- 1			
		conditions and																	-	
9 t _{PHL}	3003	47	IN	OUT	,	5.0 V	1 10 12010						GND	2.4 V	2.4 V	2.4 V	1A to 1Y	3	20	ns
Tc = 25°C t _{PHL}	(Fig. 3)	48						IN	2.4 V	2.4 V	2.4 V	OUT	"				2A to 2Y			
t _{PLH}		49	IN	OUT		5.0 V		Ì					GND	2.4 V	2.4 V	2.4 V	1A to 1Y	3	25	ns
t _{PLH}	3003	50					<u> </u>	IN	2.4 V	2.4 V	2.4 V	OUT	"				2A to 2Y			
10 t _{PHL}	3003 (Fig. 3)	30				5.0 V							GND	2.4 V	2.4 V	2.4 V	1A to 1Y	3	24	ns
Tc = 125°C t _{PHL}		51	IN	OUT				IN	2.4 V	2.4 V	2.4 V	OUT	"				2A to 2Y		"	
t _{PLH}	(Fig. 3)	51 52	IN	OUT		"		IIN					01:5	2 / 1/				3	27	ns
t _{PLH}	(Fig. 3) 3003 (Fig. 3) 3003	51 52 53	IN IN	OUT		5.0 V							GND	2.4 V	2.4 V	2.4 V	1A to 1Y	•		
11 Same test	(Fig. 3) 3003 (Fig. 3) 3003 (Fig. 3)	51 52 53 54	IN	OUT		5.0 V		IN	2.4 V	2.4 V	2.4 V	OUT	GND "	∠.4 V	2.4 V	2.4 V	1A to 1Y 2A to 2Y	"	_ "	

MIL-M-38510/1F

TABLE III. Group A inspection for device type 03. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

		MIL-STD-	Cases A, B, D	1 1	2	3	4	5 5	6	7	nay be ni	9 9	10	11	12	13	14		1		
Subgroup	Symbol	883	Cases A, B, D	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lim	ito	Unit
Subgroup	Symbol	method	Test no.	1A	1B	12 1Y	V _{CC}	2Y	2A	2B	2C	3A	3B	GND	3C	3Y	1C	terminal	Min	Max	Unit
								21								31			IVIIII		
Tc = 25°C	V _{OL}	3007	1 2	2.0 V 5.5 V	2.0 V 5.5 V	16 mA	4.5 V	16 mA	5.5 V 2.0 V	5.5 V 2.0 V	5.5 V 2.0 V	5.5 V	5.5 V	GND	5.5 V		2.0 V 5.5 V	1Y 2Y		0.4	V
10 = 25 C			3	3.3 V	3.5 V			TOTILA	5.5 V	5.5 V	5.5 V	2.0 V	2.0 V	"	2.0 V	16 mA	3.3 V	3Y			
	V _{OH}	3006	4	0.8 V	5.5 V	4 mA	4.5 V		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V	1011111	5.5 V	1Y	2.4		V
	OII		5	5.5 V	0.8 V	"				"	"			"	"			1Y			
			6	"	5.5 V	"			"	"		"	"	"			0.8 V	1Y			
			7					4 mA	0.8 V	"							5.5 V	2Y			
			8 9						5.5 V	0.8 V 5.5 V	0.8 V							2Y 2Y			
			10		"				"	3.3 V	5.5 V	0.8 V		"		4 mA		3Y			
			11	"	"				"	"	"	5.5 V	0.8 V	"	"	"	"	3Y			
			12	"	"		-		"		"	"	5.5 V	"	0.8 V	"	"	3Y	"		
	Ios	3011	13	GND	GND	GND	5.5 V							GND			GND	1Y	-20	-55	mA
			14				:	GND	GND	GND	GND	GND	GND		GND	OND		2Y			
		3010	15 16	2.4 V	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND	GND	GND	3Y 1A		40	
	I _{IH1}	3010	17	GND	2.4 V		0.0 V		UND "	UND "	GIND "	GIND "	UND "	"	"		GIND "	1B		40	μ A "
	1		18	"	GND	1		1		"				"		1	2.4 V	1C	1		
			19	"	"				2.4 V	"		"		"			GND	2A			
			20	"	"				GND	2.4 V	"	"	"	"	"		"	2B		"	
			21 22							GND	2.4 V GND	2.4 V						2C 3A			
			23	"	"				"	"	GND "	GND	2.4 V					3A 3B			
			24	"	"				"	"		UND.	GND	"	2.4 V			3C			
	I _{IH2}	3010	25	5.5 V	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND		GND	1A		100	μΑ
			26	GND	5.5 V					"	"	"		"	"		"	1B		"	. "
			27		GND				\	"							5.5 V	1C			
			28 29		,				5.5 V GND	5.5 V							GND "	2A 2B			
			30		"				GND "	GND	5.5 V			"				2B 2C			
			31	"	"				"	UIVD	GND	5.5 V		"	"			3A			
			32	"	"				"	"		GND	5.5 V	"	"			3B			
			33	"	"				"	"	"	"	GND	"	5.5 V		"	3C		"	
	I _{IL}	3009	34 35	0.4 V 5.5 V	5.5 V 0.4 V				5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V		5.5 V	1A 1B	-0.7	-1.6	mA "
			35 36	5.5 V	5.5 V					"							0.4 V	1D 1C			
			37	"	3.5 V				0.4 V	"				"			5.5 V	2A			
			38	"	"				5.5 V	0.4 V	"			"	"			2B			
			39	"	"				"	5.5 V	0.4 V		"	"	"		"	2C		"	
			40				:				5.5 V	0.4 V	0.41/					3A			
			41 42		"				"			5.5 V	0.4 V 5.5 V		0.4 V			3B 3C			
	I _{CCH}	3005	43	GND	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND		GND	V _{CC}		4.95	mA
	I _{CCL}	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	GND	5.5 V		5.5 V	V _{CC}		15	mA
	V _{IC}		45	-12 mA			4.5 V							GND				1A		-1.5	V
			46		-12mA													1B		"	
			47 48						-12 mA					"			-12 mA	1C 2A			
			48 49						-12 MA	-12 mA				"				2A 2B			
			50							12 111/1	-12 mA			"				2C			
			51									-12 mA		"				3A		"	
			52										-12 mA	"				3B		"	
			53		L.	<u> </u>		L	L					"	-12 mA			3C		"	"
2			conditions and																		
3	oame tes	ts, terminal	conditions and	iimits as for	subgroup	i, except I	: = -55°C ar	na v _{i c} tests	are omitted	1.											

MIL-M-38510/1F

TABLE III. Group A inspection for device type 03 - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

								(gnatoan	,	9 — —	-,								
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				ı I
Subgroup	Symbol	883	Case C	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lim	its	Unit
		method	Test no.	1A	1B	1Y	V _{cc}	2Y	2A	2B	2C	3A	3B	GND	3C	3Y	1C	terminal	Min	Max	i
9	t _{PHL}	3003	54	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	20	ns
Tc = 25°C		(Fig. 3)	55					OUT	IN	2.4 V	2.4 V			"				2A to 2Y			
			56									IN	2.4 V	"	2.4 V	OUT		3A to 3Y			. "
	t _{PLH}	3003	57	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	25	ns
		(Fig. 3)	58					OUT	IN	2.4 V	2.4 V			"				2A to 2Y			. "
			59									IN	2.4 V	"	2.4 V	OUT		3A to 3Y	"	"	. "
10	t _{PHL}	3003	60	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	24	ns
Tc = 125°C		(Fig. 3)	61					OUT	IN	2.4 V	2.4 V							2A to 2Y	"	"	, "I
			62									IN	2.4 V	"	2.4 V	OUT		3A to 3Y	"		. "
	t _{PLH}	3003	63	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	27	ns
		(Fig. 3)	64					OUT	IN	2.4 V	2.4 V							2A to 2Y	"	"	, " l
			65									IN	2.4 V	"	2.4 V	OUT		3A to 3Y	"		
11	Same tes	ts, terminal	conditions and	limits as fo	r subgroup	10, except	$Tc = -55^{\circ}C.$														

TABLE III. Group A inspection for device type 04. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	1	2	3	14	6	4	5	8	9	10	7	12	13	11	Measured	Lin	nits	Unit
	-,	method	Test no.	1A	1B	1Y	V _{cc}	2Y	2A	2B	3Y	3A	3B	GND	4A	4B	4Y	terminal	Min	Max	1
1	V _{OL}	3007	1	2.0 V	2.0 V	16 mA	4.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1Y		0.4	V
гс = 25°С	VOL	0001	2	5.5 V	5.5 V	101117	4.0 0	16 mA	2.0 V	2.0 V		0.0 0	0.0 *	"	0.0 v	0.0 V		2Y		"	i
			3	"	"				5.5 V	5.5 V	16 mA	2.0 V	2.0 V	"	"	"		3Y			
			4	"	"		"		"	"		5.5 V	5.5 V	"	2.0 V	2.0 V	16 mA	4Y		"	
	V _{OH}	3006	5	V 8.0	5.5 V	4 mA	4.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1Y	2.4		V
			6	5.5 V	0.8 V	"		4 4	001/									1Y			
			7 8	"	5.5 V			4 mA	0.8 V 5.5 V	0.8 V				,,	,			2Y 2Y			
			9	"					3.5 V	5.5 V	4 mA	0.8 V		"				3Y			
			10	"	"				"	"	"	5.5 V	0.8 V	"				3Y			
			11	"	"		"		"	"		"	5.5 V	"	0.8 V	"	4 mA	4Y			
			12	"	=		"		"	"		-	"	"	5.5 V	0.8 V	"	4Y			
	Ios	3011	13	GND	GND	GND	5.5 V							GND				1Y	-20	-55	mA
			14					GND	GND	GND	OND	OND	OND	"				2Y			
			15 16								GND	GND	GND		GND	GND	GND	3Y 4Y			
	I _{IH1}	3010	17	2.4 V	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND	GND	1A		40	<u> </u>
	'IH1	3010	18	GND	2.4 V		3.3 V		UND "	UND "		UND "	UND "	UND "	UND "	UIVD		1B		"	μ A
			19	"	GND				2.4 V	"				"				2A			
			20	"	"				GND	2.4 V				"	"			2B			
			21	"	"				"	GND		2.4 V		"	"	"		3A			
			22									GND	2.4 V					3B			
			23 24	"					"				GND		2.4 V GND	2.4 V		4A 4B			
	Luci	3010	25	5.5 V	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND		1A		100	μА
	I _{IH2}	3010	26	GND	5.5 V		3.3 V		GIVD "	GND "		GIND	GIVD "	GND "	GIVD	GIND "		1B		"	μΑ
			27	"	GND				5.5 V	"				"				2A			
			28	"	"				GND	5.5 V				"	"			2B			
			29	"	"		"		"	GND		5.5 V		"	"	"		3A		"	
			30	"								GND	5.5 V		_ "			3B			
			31 32	,,					"	,			GND		5.5 V GND	5.5 V		4A 4B			
	III	3009	33	0.4 V	5.5 V		5.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1A	-0.7	-1.6	mA
	'IL	3003	34	5.5 V	0.4 V		3.5 V		3.5 V	3.5 V		3.5 V	J.J V	UND "	3.5 V	0.5 V		1B	-0.7	-1.0	"
			35	"	5.5 V		"		0.4 V	"				"	"	"		2A			
			36	"	"				5.5 V	0.4 V				"	"	"		2B			
			37							5.5 V		0.4 V						3A			
			38 39	,,					"	,		5.5 V	0.4 V 5.5 V		0.4 V			3B 4A			
			40	"	"				"				3.5 V		5.5 V	0.4 V		4A 4B			
	I _{CCH}	3005	41	GND	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND		V _{CC}		6.6	mA
	I _{CCL}	3005	42	5.5 V	5.5 V		5.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		V _{CC}		20	mA
	V _{IC}		43	-12 mA			4.5 V							GND				1A		-1.5	V
			44		-12mA		"							"				1B		"	"
			45						-12 mA					"				2A			
			46							-12 mA		10 ^						2B			
			47 48									-12 mA	-12 mA					3A 3B			
			48 49										-12 IIIA	"	-12 mA			3B 4A			
			50											"	12 11/1	-12 mA		4B			
					subgroup		10500								•			•		•	

MIL-M-38510/1F

MIL-M-38510/1F

TABLE III. <u>Group A inspection for device type 04</u> - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

								- (1 -		9	,			0.0 . 0.	- 1 - /						
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lim	nits	Unit
		method	Test no.	1A	1B	1Y	V _{CC}	2Y	2A	2B	3Y	3A	3B	GND	4A	4B	4Y	terminal	Min	Max	
9	t _{PHI}	3003	51	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	20	ns
Tc = 25°C		(Fig. 3)	52					OUT	IN	2.4 V				"				2A to 2Y			
		, , ,	53								OUT	IN	2.4 V	"				3A to 3Y	"		
			54				-							"	IN	2.4 V	OUT	4A to 4Y	-		
	t _{PLH}	3003	55	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	25	ns
		(Fig. 3)	56					OUT	IN	2.4 V				"				2A to 2Y			
			57								OUT	IN	2.4 V	"				3A to 3Y	"		"
			58											"	IN	2.4 V	OUT	4A to 4Y			"
10	t _{PHL}	3003	59	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	24	ns
Tc = 125°C		(Fig. 3)	60					OUT	IN	2.4 V				"				2A to 2Y	"		"
			61								OUT	IN	2.4 V	"				3A to 3Y			"
			62											"	IN	2.4 V	OUT	4A to 4Y			"
	t _{PLH}	3003	63	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	27	ns
		(Fig. 3)	64					OUT	IN	2.4 V				"				2A to 2Y	"	"	"
			65								OUT	IN	2.4 V	"				3A to 3Y			"
			66											"	IN	2.4 V	OUT	4A to 4Y	"	"	"
11	Same tes	ts, terminal	conditions and	limits as fo	r subgroup	10, except	Γc = -55°C.														

3

TABLE III. <u>Group A inspection for device type 05</u>. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

		I a=-								gnated m								1			
l	l		Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14		ļ		
Subgroup	Symbol	883	Case C	11	4	3	14	5	6	9	8	11	10	7	12	13	2	Measured	Lin		Unit
		method	Test no.	1A	2Y	2A	V _{cc}	3A	3Y	4A	4Y	5A	5Y	GND	6Y	6Y	6A	terminal	Min	Max	
1	V _{OL}	3007	1	2.0 V		5.5 V	4.5 V	5.5 V		5.5 V		5.5 V		GND		5.5 V	16mA	1Y		0.4	V
Tc = 25°C			2	5.5 V	16 mA	2.0 V		001/	40. 4									2Y			1 :
			3			5.5 V		2.0 V	16mA	201/	16mA							3Y 4Y			
			4 5	"				5.5 V		2.0 V 5.5 V	IOIIIA	2.0 V	16mA	"				4 Y 5 Y			
			6	"						3.5 V		5.5 V	TOTAL	"	16mA	2.0 V		6Y			
	V _{OH}	3006	7	0.8 V		5.5 V	4.5 V	5.5 V		5.5 V		5.5 V		GND	1011111	5.5 V	4mA	1Y	2.4		V
	0		8	5.5 V	4 mA	0.8 V				"				"				2Y 3Y			
			9	"		5.5 V	"	0.8 V	4 mA	"				"							
			10	" "				5.5 V		0.8 V	4 mA							4Y			"
			11 12							5.5 V		0.8 V 5.5 V	4 mA	"	1 m 1	0.8 V		5Y 6Y			1 .
		3011	13	GND			5.5 V					5.5 V		GND	4 mA	0.8 V	GND	1Y	-20	-55	mA
	Ios	3011	14	GIND	GND	GND	3.5 V							GIND "			GIND	2Y	-20	-33	IIIA
			15		OND	OND		GND	GND					"				3Y			
			16					-	-	GND	GND			"				4Y			
			17				"					GND	GND	"				5Y			"
			18											"	GND	GND		6Y	"	"	
	I _{IH1}	3010	19	2.4 V		GND	5.5 V	GND		GND		GND		GND		GND		1A		40	μA
			20	GND		2.4 V GND		2.4 V		i i				"				2A 3A			1 .
			21 22	"		GND		GND		2.4				"				3A 4A			
			23	"				UND "		GND		2.4 V		"				5A			
			24	"		"				"		GND		"		2.4 V		6A			
	I _{IH2}	3010	25	5.5 V		GND	5.5 V	GND		GND		GND		GND		GND		1A		100	μΑ
			26	GND		5.5 V	"	"		"				"				2A		"	"
			27			GND		5.5 V		- "		:						3A			1 .
			28 29					GND		5.5 V GND		5.5 V						4A 5A			
			30	"						GND "		GND		"		5.5 V		6A			
	IIL	3009	31	0.4 V		5.5 V	5.5 V	5.5 V		5.5 V		5.5 V		GND		5.5 V		1A	-0.7	-1.6	mA
	112	0000	32	5.5 V		0.4 V	"	0.0 1		0.0 1		0.0 .		"		0.0 .		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			1
	<u> </u>	2005	36 37	5.5 V								5.5 V		" GND		0.4 V		6A	-	20	
	I _{CCL}	3005 3005	38	GND		5.5 V GND	5.5 V 5.5 V	5.5 V GND		5.5 V GND		5.5 V GND		GND		5.5 V GND		V _{CC}	-	30 9.9	mA mA
	V _{I C}	3000	39	-12 mA		GIND	4.5 V	GND		GIND		GIND		GND		GND		V _{CC}		-1.5	IIIA V
	VIC		40	-12 IIIA		-12 mA	4.5 V							GIVD				2A		-1.5	ı Ÿ
			41					-12 mA						"				3A			
			42							-12 mA				"				4A			
			43				"					-12 mA		"				5A		"	ı "
			44	<u> </u>	<u> </u>	l								"	<u> </u>	-12 mA		6A		"	
			conditions and																		
3	Same tes	ts, terminal	conditions and	limits as for	r subgroup [.]	1, except To	c = -55°C ar	nd V _{IC} tests	are omitted	i.											

MIL-M-38510/1F

TABLE III. Group A inspection for device type 05 - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

								(p	not door	gnatoan	iay be in	9.1 = 2.0	v, 10 11 =	0.0 1 0.	00011)						
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lim	its	Unit
		method	Test no.	1A	1B	1Y	V _{cc}	2Y	2A	2B	3Y	3A	3B	GND	4A	4B	4Y	terminal	Min	Max	
9	t _{PHL}	3003	45	IN			5.0 V							GND			OUT	1A to 1Y	3	20	ns
Tc = 25°C		(Fig. 3)	46		OUT	IN								"				2A to 2Y			
			47					IN	OUT					"				3A to 3Y			
			48							IN	OUT			"				4A to 4Y	"		
			49									IN	OUT	"				5A to 5Y			
			50				"							"	OUT	IN		6A to 6Y	-		
	t _{PLH}	3003	51	IN			5.0 V							GND			OUT	1A to 1Y	3	25	ns
		(Fig. 3)	52		OUT	IN	"							"				2A to 2Y			
			53					IN	OUT					"				3A to 3Y	"	"	
			54							IN	OUT			"				4A to 4Y	"	"	
			55 56									IN	OUT	"				5A to 5Y			
														"	OUT	IN		6A to 6Y			
10	t _{PHL}	3003	57	IN			5.0 V							GND			OUT	1A to 1Y	3	24	ns
Tc = 125°C		(Fig. 3)	58		OUT	IN								"				2A to 2Y			
			59					IN	OUT					"				3A to 3Y			
			60							IN	OUT							4A to 4Y			
			61									IN	OUT					5A to 5Y			:
			62												OUT	IN		6A to 6Y			
	t _{PLH}	3003	63	IN	a		5.0 V							GND			OUT	1A to 1Y	3	27	ns
		(Fig. 3)	64		OUT	IN												2A to 2Y			:
			65					IN	OUT		O. I.T.							3A to 3Y			- :
			66				l			IN	OUT	18.1	OUT					4A to 4Y			
1			67						İ			IN	OUT		OUT	INI		5A to 5Y			
44		<u> </u>	68		<u> </u>	10								"	OUT	IN		6A to 6Y			-
11	Same tes	ts, terminal	conditions and	limits as fo	r subgroup	10, except	$Ic = -55^{\circ}C$.														

TABLE III. Group A inspection for device type 06. Terminal conditions (pins not designated may be high $\ge 2.0 \text{ V}$, low $\le 0.8 \text{ V}$ or open)

		MIL-STD-	Cases A, B,																		<u> </u>
ogroup	Symbol	883	C, and D	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lin		L
		method	Test no.	1A	1B	1Y	V _{CC}	2Y	2A	2B	2C	3A	3B	GND	3C	3Y	1C	terminal	Min	Max	
1	V_{OL}	3007	1	2.0 V	2.0 V	16 mA	4.5 V		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V		2.0 V	1Y		0.4	
25°C			2	5.5 V	5.5 V			16 mA	2.0 V	2.0 V	2.0 V			"			5.5 V	2Y			
			3	"					5.5 V	5.5 V	5.5 V	2.0 V	2.0 V		2.0 V	16 mA		3Y			<u> </u>
	I _{CEX}		4	0.8 V	5.5 V	5.5 V	4.5 V		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V		5.5 V	1Y		250	
			5 6	5.5 V	0.8 V 5.5 V					,,							0.8 V	1Y 1Y			
			7	"	3.3 V			5.5 V	0.8 V	"	"						5.5 V	2Y			
			8	"	"			3.5 V	5.5 V	0.8 V	"			"			3.5 V	2Y			
			9	"	"			"	"	5.5 V	0.8 V		"	"	"		"	2Y			
			10	"	"				"	"	5.5 V	0.8 V		"		5.5 V		3Y			
			11	"	"				"	"	"	5.5 V	0.8 V	"	"	"	"	3Y			
			12	"	"		-		"	"	-	-	5.5 V	"	0.8 V	"	"	3Y		"	<u> </u>
	V _{IC}		13	-12 mA			4.5 V							GND				1A		-1.5	
			14		-12 mA												40 4	1B 1C			
			15 16						-12 mA					,,			-12 mA	1C 2A			
			17						-12 IIIA	-12 mA				"				2B			
			18							12 110 (-12 mA			"				2C			
			19								.=	-12 mA		"				3A			
			20				"						-12 mA	"				3B			
			21				"							"	-12 mA			3C		"	
	I _{IH1}	3010	22	2.4 V	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND		GND	1A		40	
			23	GND	2.4 V												. "	1B			
			24		GND				0.41/								2.4 V	1C			
			20 26	,,					2.4 V GND	2.4 V	,,						GND "	2A 2B			
			27	"	"				UND "	GND	2.4 V			"	"			2C			
			28	"	"				"	"	GND	2.4 V		"				3A			
			29	"	"				"	"		GND	2.4 V	"				3B			
			30	"	=		-		"		-	-	GND	"	2.4 V		"	3C			
	I _{IH2}	3010	31	5.5 V	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND		GND	1A		100	
			32	GND	5.5 V				"		"			"	"		"	1B			
			33		GND					"							5.5 V	1C			
			34 35						5.5 V GND	5.5 V							GND	2A 2B			
			36						GND "	GND	5.5 V							2B 2C			
			37						"	GIND	GND	5.5 V		"				3A			
			38	"	"				"	"	UI I	GND	5.5 V	"				3B			
			39	"	"				"	"			GND	"	5.5 V			3C			
	I _{I L}	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	GND	5.5 V		5.5 V	1A	-0.7	-1.6	
			41	5.5 V	0.4 V		"				"			"	"			1B		"	
			42		5.5 V					"							0.4 V	1C			
			43	"				1	0.4 V					"		1	5.5 V	2A	"		1
			44 45						5.5 V	0.4 V 5.5 V	0.4 V							2B 2C			
			46	"					"	J.J V	5.5 V	0.4 V		"	"			3A			
			47	"	"				"	"	3.5 v	5.5 V	0.4 V	"	"			3B			
			48	"	"				"	"		"	5.5 V	"	0.4 V			3C			
	I _{CCL}	3005	49	5.5 V	5.5 V		5.5 V		5.5 V	5.5 V	5.5 V	5.5 V	5.5 V	GND	5.5 V		5.5 V	V _{cc}		15	
	I _{CCH}	3005	50	GND	GND		5.5 V		GND	GND	GND	GND	GND	GND	GND	İ	GND	V _{CC}		4.95	

20

TABLE III. <u>Group A inspection for device type 06</u> - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

								- (1		,					-1 - /						
		MIL-STD-	Cases A, B,																		
Subgroup	Symbol	883	C, and D	1	2	12	14	6	3	4	5	9	10	7	11	8	13	Measured	Lim	its	Unit
		method	Test no.	1A	1B	1Y	V _{cc}	2Y	2A	2B	2C	3A	3B	GND	3C	3Y	1C	terminal	Min	Max	ł l
9	t _{PHL}	3003	51	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	23	ns
Tc = 25°C		(Fig. 3)	52					OUT	IN	2.4 V	2.4 V							2A to 2Y		"	
			53									IN	2.4 V	=	2.4 V	OUT		3A to 3Y			
	t _{PLH}	3003	54	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	28	ns
		(Fig. 3)	55					OUT	IN	2.4 V	2.4 V			"				2A to 2Y			
			56									IN	2.4 V		2.4 V	OUT		3A to 3Y	-	"	
10	t _{PHL}	3003	57	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	29	ns
Tc = 125°C		(Fig. 3)	58					OUT	IN	2.4 V	2.4 V							2A to 2Y		"	. "
			59									IN	2.4 V	=	2.4 V	OUT		3A to 3Y	-		
	t _{PLH}	3003	60	IN	2.4 V	OUT	5.0 V							GND			2.4 V	1A to 1Y	3	35	ns
		(Fig. 3)	61					OUT	IN	2.4 V	2.4 V			"				2A to 2Y			"
			62									IN	2.4 V	=	2.4 V	OUT		3A to 3Y			
11	Same tes	ts, terminal	conditions and	limits as fo	r subgroup	10, except	Гс = -55°С.		•		•		•			•	•	<u> </u>			

TABLE III. Group A inspection for device type 07. Terminal conditions (pins not designated may be high $\ge 2.0 \text{ V}$, low $\le 0.8 \text{ V}$ or open)

			Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
ubgroup	Symbol	883	Case C	2	3	1	14	4	5	6	10	8	9	7	11	12	13	Measured	Lim	nits	Uni
		method	Test no.	1A	1B	1Y	V _{cc}	2Y	2A	2B	3Y	3A	3B	GND	4A	4B	4Y	terminal	Min	Max	1
1	V _{OL}	3007	1	2.0 V	2.0 V	16 mA	4.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1Y		0.4	\
= 25°C			2	5.5 V	5.5 V		"	16 mA	2.0 V	2.0 V		"	"	"	"			2Y			'
			3	"	"				5.5 V	5.5 V	16 mA	2.0 V	2.0 V	"				3Y			'
			4	"								5.5 V	5.5 V	"	2.0 V	2.0 V	16 mA	4Y			↓ —'
	I _{CEX}		5	0.8 V	4.5 V	5.5 V	4.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1Y		250	μ
			6 7	4.5 V 5.5 V	0.8 V 5.5 V			5.5 V	0.8 V	4.5 V								1Y 2Y			
			8	3.5 V	3.5 V			3.5 V	4.5 V	0.8 V								2 Y			
			9	"	"				5.5 V	5.5 V	5.5 V	0.8 V	4.5 V		"			3Y			
			10	"	"				"	"		4.5 V	0.8 V	"	"			3Y			
			11	"	"				"	"		5.5 V	5.5 V	"	0.8 V	4.5 V	5.5 V	4Y			
			12	"	"				"	"			"	"	4.5 V	0.8 V		4Y			
	I _{IH1}	3010	13	2.4 V	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND		1A		40	μ
			14	GND	2.4 V													1B			
			15		GND				2.4 V				i i					2A			
			16 17	,,	"				GND "	2.4 V GND		2.4 V		,,	"			2B 3A			
			18	,,	"					GND		GND	2.4 V	,,	"			3B			
			19	"	"							GIND "	GND	"	2.4 V			4A			
			20	"	"		"		"	"			"	"	GND	2.4 V		4B			
	I _{IH2}	3010	21	5.5 V	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND		1A		100	ļ
			22	GND	5.5 V					"				"	"			1B			
			23	"	GND		"		5.5 V	"		"	"	"	"			2A			
			24	"	"				GND	5.5 V				"	"			2B			
			25							GND		5.5 V	551/					3A			
			26 27									GND "	5.5 V GND		5.5 V			3B 4A			
			28	"	"				"				GND	"	GND	5.5 V		4A 4B			
	IL	3009	29	0.4 V	5.5 V		5.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V	5.5 V		1A	-0.7	-1.6	n
	-112	0000	30	5.5 V	0.4 V		"		"	"		"	0.0 1	"	"	0.0 .		1B	"	"	
			31	"	5.5 V				0.4 V	"				"	"			2A			
			32	"	"		"		5.5 V	0.4 V			"	"	"			2B	"		
			33	"	"				"	5.5 V		0.4 V		"	"	:		3A	"		
			34		"							5.5 V	0.4 V		0.41/			3B			
			35 36						,				5.5 V		0.4 V 5.5 V	0.4 V		4A 4B			
	I _{CCL}	3005	37	5.5 V	5.5 V		5.5 V		5.5 V	5.5 V		5.5 V	5.5 V	GND	5.5 V 5.5 V	5.5 V		V _{CC}		20	n
	I _{CCH}	3005	38	GND	GND		5.5 V		GND	GND		GND	GND	GND	GND	GND		V _{CC}		6.6	n
	V _{I C}	3003	39	-12mA	GIVD		4.5 V		GIVD	OND		OND	OND	GND	OND	OND		1A		-1.5	 "
	*10		40	12111/1	-12mA		7.5 *							0.10				1B		"	
			41				"		-12mA					"				2A			
			42				"			-12mA				"				2B			
			43				"					-12mA		"				3A			
			44										-12mA		l			3B			
			45												-12mA	404		4A			
	l		46 conditions and	L		<u> </u>		L							1	-12mA	l	4B	l		Щ.

22

MIL-M-38510/1F

TABLE III. Group A inspection for device type 07 - Continued.

Terminal conditions (pins not designated may be high ≥ 2.0 V, low ≤ 0.8 V or open)

								(gnatoa n		g									
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	2	3	1	14	4	5	6	10	8	9	7	11	12	13	Measured	Lim	its	Unit
		method	Test no.	1A	1B	1Y	V _{CC}	2Y	2A	2B	3Y	3A	3B	GND	4A	4B	4Y	terminal	Min	Max	
9	t _{PHL}	3003	47	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	23	ns
Tc = 25°C		(Fig. 3)	48					OUT	IN	2.4 V				"				2A to 2Y			
		, , ,	49								OUT	IN	2.4 V	"				3A to 3Y			
			50												IN	2.4 V	OUT	4A to 4Y			
	t _{PLH}	3003	51	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	28	ns
		(Fig. 3)	52					OUT	IN	2.4 V				"				2A to 2Y			
			53								OUT	IN	2.4 V	"				3A to 3Y	"	"	
			54												IN	2.4 V	OUT	4A to 4Y			
10	t _{PHL}	3003	55	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	29	ns
Tc = 125°C		(Fig. 3)	56					OUT	IN	2.4 V				"				2A to 2Y	"		
			57								OUT	IN	2.4 V	"				3A to 3Y	"	"	
			58												IN	2.4 V	OUT	4A to 4Y			
	t _{PLH}	3003	59	IN	2.4 V	OUT	5.0 V							GND				1A to 1Y	3	35	ns
		(Fig. 3)	60					OUT	IN	2.4 V				"				2A to 2Y			
			61								OUT	IN	2.4 V	"				3A to 3Y			
			62			l									IN	2.4 V	OUT	4A to 4Y			
11	Same tes	ts, terminal	conditions and	limits as fo	r subgroup	10, except	$\Gamma c = -55^{\circ}C.$														

24

MIL-M-38510/1F

TABLE III. Group A inspection for device type 08. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

	1	LUL OTO	0 4 5 5		_					gnated m						40					
			Cases A, B, D		2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	1	4	3	14	5	6	9	8	11	10	7	12	13	2	Measured	Lim		Unit
		method	Test no.	1A	2Y	2A	V _{cc}	3A	3Y	4A	4Y	5A	5Y	GND	6Y	6A	1Y	terminal	Min	Max	l
1	V _{OL}	3007	1	2.0 V		5.5 V	4.5 V	5.5 V		5.5 V		5.5 V		GND		5.5 V	16 mA	1Y		0.4	V
c = 25°C			2	5.5 V	16 mA	2.0 V				"				"				2Y			
			3	"		5.5 V		2.0 V	16 mA	"				"				3Y			
			4	"				5.5 V		2.0 V	16 mA			"		"		4Y		"	
			5	"						5.5 V		2.0 V	16 mA	"				5Y			
			6					"		"		5.5 V		"	16 mA	2.0 V		6Y			
	I _{CEX}		7	0.8 V		5.5 V	4.5 V	5.5 V		5.5 V		5.5 V		GND		5.5 V	5.5 V	1Y		250	μΑ
			8	5.5 V	5.5 V	0.8 V		001/		"		:						2Y			I :
			9			5.5 V		0.8 V	5.5 V									3Y			l :
			10					5.5 V		0.8 V 5.5 V	5.5 V	0.8 V	5.5 V					4Y 5Y			
			11 12							5.5 V		5.5 V	5.5 V	"	5.5 V	0.8 V		6Y			
	V _{IC}		13	-12mA			4.5 V					3.5 V		GND	3.5 V	0.6 V		1A		-1.5	V
	VIC		14	-12111A		-12mA	4.5 V							GND "				2A		-1.5	
			15			-1211174		-12mA						"				3A			
			16					12		-12mA				"				4A			
			17									-12mA		"				5A			
			18											"		-12mA		6A			
	I _{IH1}	3010	19	2.4 V		GND	5.5 V	GND		GND		GND		GND		GND		1A		40	μА
			20	GND		2.4 V		"		"				"		"		2A		"	
			21	"		GND		2.4 V		"				"				3A			
			22	"				GND		2.4 V				"		"		4A		"	
			23	"			:			GND		2.4 V		"				5A			
			24	"			-					GND		"		2.4 V		6A			
	I _{IH2}	3010	25	5.5 V		GND	5.5 V	GND		GND "		GND		GND		GND		1A		100	μА
			26	GND		5.5 V		_ "		"								2A			
			27			GND		5.5 V										3A			l :
			28 29					GND "		5.5 V GND		5.5 V						4A 5A			
			30	"						GND		GND		"		5.5 V		6A			
	I _{II}	3009	31	0.4 V		5.5 V	5.5 V	5.5 V		5.5 V		5.5 V		"		5.5 V		1A	-0.7	-1.6	mA
	'IL	3003	32	5.5 V		0.4 V	3.5 V	J.J V		3.5 V		3.5 V		"		3.5 V		2A	-0.7	-1.0	"
			33	"		5.5 V		0.4 V		"				"				3A			
			34	"	İ			5.5 V	İ	0.4 V				"				4A		"	
			35	"		"				5.5 V		0.4 V		"				5A			
			36	"		"	-			"		5.5 V		"		0.4 V		6A			
	I _{CCL}	3005	37	5.5 V		5.5 V	5.5 V	5.5 V		5.5 V		5.5 V		GND		5.5 V		V _{cc}		30	mA
	I _{CCH}	3005	38	GND		GND	5.5 V	GND		GND		GND		GND		GND		V _{cc}		9.9	mA
2	Same test	s, terminal	conditions and	limits as fo	r subgroup	1, except To	= 125°C a	nd V _{IC} tests	s are omitte	d.											
3	Same test	s, terminal	conditions and	limits as for	r subgroup	1, except To	= -55°C ar	nd V _{LC} tests	are omitted	d.	•		_	_	•		•				

TABLE III. Group A inspection for device type 08 - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

							· oomanio	(թ		gnatoa n	iay be m	911 = 2.0		0.0 1 01							
		MIL-STD-	Cases A, B, D	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883	Case C	1	4	3	14	5	6	9	8	11	10	7	12	13	2	Measured	Lim	its	Unit
		method	Test no.	1A	2Y	2A	V _{CC}	3A	3Y	4A	4Y	5A	5Y	GND	6Y	6A	1Y	terminal	Min	Max	
9	t _{PHL}	3003	39	IN			5.0 V							GND			OUT	1A to 1Y	3	23	ns
Tc = 25°C		(Fig. 3)	40		OUT	IN								"				2A to 2Y			
			41					IN	OUT					"				3A to 3Y			
			42							IN	OUT			"				4A to 4Y	"		
			43									IN	OUT	"				5A to 5Y			"
			44											"	OUT	IN		6A to 6Y	-		"
	t _{PLH}	3003	45	IN			5.0 V							GND			OUT	1A to 1Y	3	28	ns
		(Fig. 3)	46		OUT	IN								"				2A to 2Y	"	"	
			47					IN	OUT					"				3A to 3Y			"
			48							IN	OUT			"				4A to 4Y			"
			49									IN	OUT					5A to 5Y			
			50											. "	OUT	IN		6A to 6Y			
10	t _{PHL}	3003	51	IN			5.0 V							GND			OUT	1A to 1Y	3	29	ns
Tc = 125°C		(Fig. 3)	52		OUT	IN												2A to 2Y			
			53					IN	OUT									3A to 3Y			
			54				:			IN	OUT		~					4A to 4Y			
			55									IN	OUT		O. I.T.			5A to 5Y			
		0000	56				501/							OND.	OUT	IN	OUT	6A to 6Y			
	t _{PLH}	3003	57	IN	OUT		5.0 V							GND			OUT	1A to 1Y	3	35	ns
		(Fig. 3)	58		OUT	IN		18.1	OUT					ä.				2A to 2Y			
			59					IN	OUT	IN	OUT							3A to 3Y			
			60 61							IIN	001	IN	OUT					4A to 4Y			
1			62									IIN	OUT		OUT	IN		5A to 5Y 6A to 6Y			
11	Cama taa	to tornoinal		limita aa fa		10 avaant	Fe FE0C		l	ı			l .	1	001	IIN	1	UA 10 0 1			
	Same tests, terminal conditions and limits as for subgroup 10, except Tc = -55°C.																				

26

MIL-M-38510/1F

TABLE III. Group A inspection for device type 09. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

		MIL-STD-	Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Subgroup	Symbol	883																Measured	Lim	nits	Unit
		method	Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{cc}	terminal	Min	Max	ĺ
1	V _{OL}	3007	1	2.0 V	2.0 V	16 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
$Tc = 25^{\circ}C$			2	5.5 V	5.5 V		2.0 V	2.0 V	16 mA	"		"	"			"		2Y		"	
			3				5.5 V	5.5 V		" "	16 mA	2.0 V	2.0 V					3Y			I
			4			5.5.1	551/	551/				5.5 V	5.5 V	16 mA	2.0 V	2.0 V		4Y			-
	I _{CEX}		5 6	0.8 V	4.5 V 0.8 V	5.5 V	5.5 V	5.5 V		GND "		5.5 V	5.5 V		5.5 V	5.5 V	4.5 V	1Y 1Y		250	μA "
			7	4.5 V 5.5 V	5.5 V		0.8 V	4.5 V	5.5 V						"			2Y			
			8	3.5 V	J.J V		4.5 V	0.8 V	3.5 V	"					"			2Y			
			9	"	"		5.5 V	5.5 V		"	5.5 V	0.8 V	4.5 V		"	"	"	3Y			
			10	"	"					"		4.5 V	0.8 V		"			3Y			
			11	"	"		"	"		"		5.5 V	5.5 V	5.5 V	0.8 V	4.5 V		4Y			"
			12	"	"					"		"	"	"	4.5 V	0.8 V	"	4Y		"	"
	V _{IC}		13	-12mA						GND							4.5 V	1A		-1.5	V
			14 15		-12mA		-12mA											1B			
			16				-12IIIA	-12mA										2A 2B			
			17					-12111/4		"		-12mA						3A			
			18							"			-12mA					3B			
			19							"					-12mA			4A			
			20							"						-12mA		4B			"
	I _{IH1}	3010	21	2.4 V	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	1A		40	μΑ
			22	GND	2.4 V			:							"			1B			
			23		GND		2.4 V	-		"								2A			I
			24 25		,,		GND "	2.4 V GND		,,		2.4 V			"			2B 3A			
			25 26		"			GND		"		GND	2.4 V		"			3A 3B			
			27	"	"					"		UND "	GND		2.4 V			4A			
			28	"	"					"		"	"		GND	2.4 V	"	4B			
	I _{IH2}	3010	29	5.5 V	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	1A		100	μА
			30	GND	5.5 V			"		"		"	"		"	"	"	1B			"
			31	"	GND		5.5 V	"		"		"	"		"	"	"	2A		"	
			32				GND	5.5 V										2B			I
			33 34					GND				5.5 V						3A 3B			1 .
			3 4 35		,,					,,		GND "	5.5 V GND		5.5 V			3B 4A			
			36	"	"					"			UND "		GND	5.5 V		4B			
	IIL	3009	37	0.4 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	1A	-0.7	-1.6	mA
			38	5.5 V	0.4 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	l ".	l ".	ı :
			42									5.5 V	0.4 V		0.4.\/			3B			
			43 44										5.5 V		0.4 V 5.5 V	0.4 V		4A 4B			
	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}		20	mA
	ICCL	3005	46	GND	GND		GND	GND		GND		GND	GND		GND	GND	5.5 V	V _{CC}		6.6	mA
2			conditions and			1 ovcont To			aro omitto			GIND	GIND	l	GIND	GIND	J.J V	v CC	l	0.0	IIIA
3			conditions and																		

MIL-M-38510/1F

TABLE III. Group A inspection for device type 09 - Continued. Terminal conditions (pins not designated may be high \geq 2.0 V, low \leq 0.8 V or open)

						TOTTIMI	oonand	rio (pirio	HOL GOOD	gnatea n	lay be m	911 2 2.0	v, iow s	0.0 V OI							
		MIL-STD-	Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14				1
Subgroup	Symbol	883																Measured	Lim	its	Unit
		method	Test no.	1A	1B	1Y	2A	2B	2Y	GND	3Y	3A	3B	4Y	4A	4B	V _{cc}	terminal	Min	Max	
9	t _{PHL}	3003	47	IN	2.4 V	OUT				GND							5.0 V	1A to 1Y	3	23	ns
Tc = 25°C		(Fig. 3)	48				IN	2.4 V	OUT	"								2A to 2Y			
			49							"	OUT	IN	2.4 V				"	3A to 3Y			"
			50							"				OUT	IN	2.4 V	"	4A to 4Y			
	t _{PLH}	3003	51	IN	2.4 V	OUT				GND							5.0 V	1A to 1Y	3	28	ns
		(Fig. 3)	52				IN	2.4 V	OUT	"								2A to 2Y	"		
			53							"	OUT	IN	2.4 V					3A to 3Y		"	"
			54							"				OUT	IN	2.4 V	"	4A to 4Y			
10	t _{PHL}	3003	55	IN	2.4 V	OUT				GND							5.0 V	1A to 1Y	3	29	ns
Tc = 125°C		(Fig. 3)	56				IN	2.4 V	OUT	"								2A to 2Y		"	"
			57							"	OUT	IN	2.4 V					3A to 3Y	"		
			58							"				OUT	IN	2.4 V		4A to 4Y			
	t _{PLH}	3003	59	IN	2.4 V	OUT				GND							5.0 V	1A to 1Y	3	35	ns
		(Fig. 3)	60				IN	2.4 V	OUT	"								2A to 2Y		"	"
			61							"	OUT	IN	2.4 V					3A to 3Y	"		
			62							"				OUT	IN	2.4 V	"	4A to 4Y			
11	Same tes	ts, terminal	conditions and	l limits as fo	r subgroup	10, except	Γc = -55°C.														

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 or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

- 6.1 <u>Intended use.</u> Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.
 - 6.2 Acquisition requirements. Acquisition documents should specify the following:
 - a. Title, number, and date of the specification.
 - b. PIN and compliance identifier, if applicable (see 1.2).
 - c. Requirements for delivery of one copy of the 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.
 - 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 should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
 - i. Requirements for "JAN" marking.
 - J. Packaging requirements (see 5.1).
- 6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and 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. P.O. Box 3990. Columbus. Ohio 43218-3990.

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

GND	Ground zero voltage potential
V _{IN}	Voltage level at an input terminal
V _{IC} I	Input clamp voltage
	Current flowing into an input terminal

- 6.6 <u>Logistic support.</u> 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), lead material and finish A (see 3.3). Longer length leads and lead forming should not affect the part number.
- 6.7 <u>Substitutability.</u> 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-35810 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device	Generic-industry
type	type
01	5430
02	5420
03	5410
04	5400
05	5404
06	5412
07	5401
08	5405
09	5403

6.8 <u>Changes from previous issue.</u> Marginal notations 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 5962-2072)

Review activities:

Army - MI, SM

Navy - AS, CG, MC, SH, TD

Air Force - 03, 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://assist.daps.dla.mil.