INCH-POUND MIL-M-38510/55G 22 February 2005

SUPERSEDING MIL-M-38510/55F 30 April 1984

MILITARY SPECIFICATION MICROCIRCUITS, DIGITAL, CMOS, BUFFER/CONVERTER, TRUE/COMPLIMENT BUFFER, MONOLITHIC SILICON

Reactivated after 22 February 2005 and may be used for new and existing designs and acquisitions.

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

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

- 1. SCOPE
- 1.1 <u>Scope.</u> This specification covers the detail requirements for monolithic silicon, CMOS, logic microcircuits. Two product assurance classes and a choice of case outlines, lead finishes, and radiation hardness assurance (RHA) are provided and are reflected in the complete Part or Identifying Number (PIN). For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535 (see 6.3).
 - 1.2 Part or identifying number (PIN). The PIN is in accordance with MIL-PRF-38535 and as specified herein.
 - 1.2.1 <u>Device types.</u> The device types are as follows:

Device type	<u>Circuit</u>
01 and 03	Inverting hex buffer
02 and 04	Noninverting hex buffer
05	Quad true/compliment buffer
51 and 53	Inverting hex buffer
52 and 54	Noninverting hex buffer
55	Quad true/compliment buffer

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

Outline letter	Descriptive designator	<u>Terminals</u>	Package style
Α	GDFP5-F14 or CDFP6-F14	14	Flat pack
С	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat pack
N	CDFP4-F16	16	Flat pack
T	CDFP3-F14	14	Flat pack
X <u>1</u> / <u>2</u> /	GDFP5-F14 or CDFP6-F14	14	Flat pack, except A dimension
			equals 0.100" (2.54 mm) max
Y <u>1</u> / <u>2</u> /	GDFP1-F14 or CDFP2-F14	14	Flat pack, except A dimension
			equals 0.100" (2.54 mm) max
Z <u>1</u> / <u>2</u> /	GDFP2-F16 or CDFP3-F16	16	Flat pack, except A dimension equals 0.100" (2.54 mm) max

^{1/} As an exception to nickel plate or undercoating paragraphs of MIL-PRF-38535, appendix A, for case outlines X, Y, and Z only, the leads of bottom brazed ceramic packages (i.e., configuration 2 of case outlines A, D, or F) may have electroless nickel undercoating which is 50 to 200 microinches (1.27 to 5.08 μm) thick provided the lead finish is hot solder dip (i.e., finish letter A) and provided that, after any lead forming, an additional hot solder dip coating is applied which extends from the outer tip of the lead to no more than 0.015 inch (0.38 mm) from the package edge.

2/ For bottom or side brazed packages, case outlines X, Y, and Z only, the S₁ dimension may go to .000 inch (.00 mm) minimum.

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

AMSC N/A FSC 5962

1.3 Absolute maximum ratings. Device types 01 and 02	
Supply voltage range (V_{DD} - V_{SS}): $V_{CC} \le V_{DD}$ Output load capacitance (each output) Input voltage range Device types 51 and 52	200 pF when $V_{CC} > 10 \text{ V dc}$
$\label{eq:Supply voltage range (VDD - VSS):} $V_{CC} \le V_{DD}.$$ Output load capacitance (each output) Input voltage range DC output source or sink current per pin DC supply current, per pin (I_{DD}, I_{CC}) DC ground current, per pin (I_{GND})$	200 pF when V_{CC} > 10 V dc (V_{SS} - 0.5 V) \leq V _I \leq (V_{DD} + 0.5 V) I_{OH} = -0.4 mA I_{OL} = +12.0 mA -25.0 mA
Device types 03 and 04 Supply voltage range (V _{CC} - V _{SS}) Input voltage range	
Device types 53 and 54 Supply voltage range (V _{DD} - V _{SS})	$(V_{SS}$ - 0.5 V) \leq V _I \leq (V _{DD} + 0.5 V) I _{OH} or I _{OL} = \pm 12.0 mA
Device type 05	
Supply voltage range (V _{DD} - V _{SS})	
Supply voltage range (V _{DD} - V _{SS})	$(V_{SS} - 0.5 \text{ V}) \leq V_I \leq (V_{DD} + 0.5 \text{ V})$ $I_{OH} \text{ or } I_{OL} = \pm 12.0 \text{ mA}$ $I_{OH} \text{ or } I_{OL} = \pm 6.0 \text{ mA}$
All device types	
Input current (each input)	-65° to +175°C

1.4 Recommended operating conditions.

Supply voltage range (V _{CC} or V _{DD} - V _{SS}):	
Device types 01, 02, 03, 04, and 05	4.5 V dc to 12.5 V dc
Device types 51, 52, 53, 54, and 55	4.5 V dc to 15.0 V dc
Input low voltage range (V _{IL}):	
Device types 01, 02, 03, 04, and 05	0.0 V to 0.85 V dc @ V_{CC} or $V_{DD} = 5.0 \text{ V dc}$
	0.0 V to 2.1 V dc @ V_{CC} or $V_{DD} = 12.5 \text{ V dc}$
Device types 51, 52, 53, 54, and 55	$V_{OL} = 10\% V_{CC}$ or V_{DD} , $V_{OH} = 90\% V_{CC}$ or V_{DD}
•	$0.0 \text{ V to } 1.5 \text{ V dc } @ \text{ V}_{\text{CC}} \text{ or } \text{V}_{\text{DD}} = 5.0 \text{ V dc}$
	$0.0 \text{ V to } 2.0 \text{ V dc } @ \text{ V}_{\text{CC}} \text{ or } \text{V}_{\text{DD}} = 10.0 \text{ V dc}$
	$0.0 \text{ V to } 4.0 \text{ V dc} @ V_{CC} \text{ or } V_{DD} = 15.0 \text{ V dc}$
Input high voltage range (V _{IH}): 1/	
Device types 01, 02, 03, 04, and 05	3.95 V to 5.0 V dc @ V_{CC} or $V_{DD} = 5.0$ V dc
	10 V to 12.5 V dc @ V_{CC} or V_{DD} = 12.5 V dc
Device types 51, 52, 53, 54, and 55	$V_{OL} = 10\% V_{CC}$ or V_{DD} , $V_{OH} = 90\% V_{CC}$ or V_{DD}
	$3.5 \text{ V to } 5.0 \text{ V dc} @ V_{CC} \text{ or } V_{DD} = 5.0 \text{ V dc}$
	8.0 V to 10.0 V dc @ V_{CC} or $V_{DD} = 10.0 \text{ V dc}$
	11.0 V to 15.0 V dc @ V_{CC} or $V_{DD} = 15.0 \text{ V dc}$
Load capacitance	50 pF maximum
Case operating temperature range (T _C)	55°C to +125°C

2. APPLICABLE DOCUMENTS

2.1 <u>General</u>. 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 SPECIFICATION

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard Microcircuits.

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

(Copies of these documents are available online at http://assist.daps.dla.mil/quicksearch/ or 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 document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

^{1/} The input high voltage (V_{IH}) can exceed the power supply voltage (V_{CC}) up to the maximum rating when device types 03, 04, 53, and 54 are used for logic level conversion.

3. REQUIREMENTS

- 3.1 <u>Qualification</u>. 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. Although eutectic die bonding is preferred, epoxy die bonding may be performed. However, the resin used shall be Dupont 5504 Conductive Silver Paste, or equivalent, which is cured at 200°C ±10°C for a minimum of 2 hours. The use of equivalent epoxies or cure cycles shall be approved by the qualifying activity. Equivalency shall be demonstrated in data submitted to the qualifying activity for verification.
- 3.3.1 <u>Logic diagram and terminal connections.</u> The logic diagram and terminal connections shall be as specified on figure 1.
 - 3.3.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.
- 3.3.3 <u>Switching time test circuit and waveforms</u>. The switching time test circuit and waveforms shall be as specified on figure 3.
- 3.3.4 <u>Schematic circuits</u>. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity or preparing activity upon request.
 - 3.3.5 Case outlines. The case outlines shall be as specified in 1.2.3.
 - 3.4 Lead material and finish. The lead material and finish shall be in accordance with MIL-PRF-38535 (see 6.6).
- 3.5 <u>Electrical performance characteristics</u>. Unless otherwise specified, the electrical performance characteristics are as specified in table I, and apply over the full recommended case operating temperature range.
- 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.
 - 3.7 Marking. Marking shall be in accordance with MIL-PRF-38535.
- 3.7.1 Radiation hardness assurance identifier. The radiation hardness assurance identifier shall be in accordance with MIL-PRF-38535 and 4.5.4 herein.
- 3.8 <u>Microcircuit group assignment.</u> The devices covered by this specification shall be in microcircuit group number 37 (see MIL-PRF-38535, appendix A).

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

Test	Symbol	Conditions	Device	Lir	nits	Unit
		-55°C ≤ T _C ≤ +125°C, V _{SS} = 0 V Unless otherwise specified	type <u>1</u> /	Min	Max	
Positive clamping input to V _{DD} or V _{CC}	V _{IC(POS)}	$T_C = 25^{\circ}C$, V_{DD} and $V_{CC} = GND$, $V_{SS} = Open$, $Output = Open$, $I_I = 1$ mA	01, 02, 05, 51, 52, 55		+1.5	V dc
Negative clamping input to V _{SS}	V _{IC(NEG)}	$T_C = 25^{\circ}C$, V_{DD} and $V_{CC} = Open$, $V_{SS} = GND$, Output = Open, $I_I = -1$ mA	All		-6.0	V dc
Quiescent supply current	I _{SS}	V_{DD} and $V_{CC} = 15 \text{ V dc}$, any combination of inputs	01-05		-750	nA dc
		V _{DD} and V _{CC} = 18 V dc, any combination of inputs	51-55		-750	
High level output voltage	V _{OH1}	V_{DD} and V_{CC} = 4.5 V dc, I_{OH} = -0.1 mA (see table III)	01-05	2.50		V dc
	V _{OH2}	V_{DD} and V_{CC} = 5 V dc, I_{OH} = -0.35 mA (see table III)	01-05	4.5		
	V _{OH3}	V_{DD} and V_{CC} = 5 V dc, I_{OH} = 0.0 mA (see table III)	01-05	4.95		
	V _{OH4}	V_{DD} and V_{CC} = 12.5 V dc, I_{OH} = 0.0 mA (see table III)	01-05	11.25		
	V _{OH5}	V_{DD} and V_{CC} = 15 V dc, I_{OH} = 0.0 mA (see table III)	51-55	14.95		
Low level output voltage	V _{OL1}	V_{DD} and V_{CC} = 5.5 V dc, I_{OL} = 0.23 mA (see table III)	01-05		0.5	V dc
	V _{OL2}	V_{DD} and $V_{CC} = 5 \text{ V dc}$, $I_{OL} = 2.1 \text{ mA}$ (see table III)	01-05		0.5	
	V _{OL3}	V_{DD} and $V_{CC} = 5 \text{ V dc}$, $I_{OL} = 0.0 \text{ mA}$ (see table III)	01-05		0.05	
	V _{OL4}	V_{DD} and V_{CC} = 12.5 V dc, I_{OL} = 0.0 mA (see table III)	01-05		1.25	
	V _{OL5}	V_{DD} and V_{CC} = 15 V dc, I_{OL} = 0.0 mA (see table III)	51-55		0.05	
Input high voltage	V _{IH1}	V_{DD} and V_{CC} = 5 V dc V_{O} = (See table III), $\left I_{O} \right \leq 1 \mu A$	51, 53	4.0		V dc
			52, 54, 55	3.5		
	V _{IH2}	V_{DD} and V_{CC} = 10 V dc V_{O} = (See table III), $\left I_{O} \right \leq 1 \mu A$	51, 53	8.0		V dc
		V and V 45 V da	52, 54, 55	7.0		\/ da
	V _{IH3}	V_{DD} and V_{CC} = 15 V dc V_{O} = (See table III), $\left \ I_{O} \right \leq 1 \mu A$	51, 53	12.0		V dc
			52, 54, 55	11.0		

See footnote at end of the table.

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

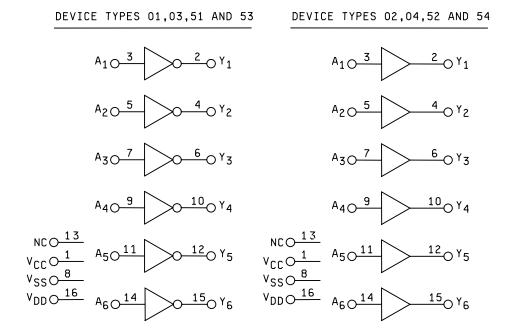
Test	Symbol		nditions	Device type <u>1</u> /	Lin	nits	Unit
			-55°C ≤ T _C ≤ +125°C, V _{SS} = 0 V Unless otherwise specified		Min	Max	
Input low voltage	V _{IL1}	V_{DD} and $V_{CC} = V_{O} = (See table)$	5 V dc e III),	51, 53		1.0	V dc
				52, 54, 55		1.5	
	V _{IL2}	V_{DD} and $V_{CC} = V_{O} = (See table)$	10 V dc e III),	51, 53		2.0	V dc
				52, 54, 55		3.0	
	V _{IL3}	V_{DD} and $V_{CC} = V_{O} = (See table)$	15 V dc e III),	51, 53		2.5	V dc
				52, 54, 55		4.0	
Output low (sink) current	I _{OL1}	V_{DD} and $V_{CC} = 5$ $V_{IN} = $ (See table	$V dc$ III), $V_{OL} = 0.4 V dc$	51-54	2.2		mA dc
			True output	55	1.2		
			Compliment output		0.55		
	I _{OL2}	V_{DD} and V_{CC} = 1 V_{IN} = (See table V_{OL} = 1.5 V dc		51-54	17.0		mA dc
			True output	55	8.0		
			Compliment output	55	3.0		
Output high (source) current	I _{OH1}	V_{DD} and $V_{CC} = 5$ $V_{IN} = (See table)$ $V_{OH} = 4.6 \text{ V dc}$		51-54	-0.36		mA dc
			True output	55	-1.0		
			Compliment output	00	-0.4		
	I _{OH2}	V_{DD} and V_{CC} = 1 V_{IN} = (See table V_{OH} = 13.5 V dc	III)	51-54	-2.4		mA dc
			True output	55	-6.0		
			Compliment output	33	-2.7		
Input leakage current, high	I _{IH}	V_{DD} and $V_{CC} = 1$	5 V dc	01-05		100.0	nA
		V_{DD} and $V_{CC} = 1$	8 V dc	51-55		100.0	
Input leakage current, low	I _{IL}	V_{DD} and $V_{CC} = 1$	5 V dc	01-05		-100.0	nA
		V_{DD} and $V_{CC} = 1$	8 V dc	51-55		-100.0	
Input capacitance	Ci	V_{DD} and $V_{CC} = 0$ f = 1 MHz) V dc	01, 03, 05, 51, 53, 55		20	pF
		$T_C = 25^{\circ}C$		02, 04, 52, 54		12	

See footnote end of table.

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

Test	Symbol	Conditions	Device	Lin	nits	Unit
		$ -55^{\circ}C \leq T_{C} \leq +125^{\circ}C, \ V_{SS} = 0 \ V $ Unless otherwise specified	type <u>1</u> /	Min	Max	
Propagation delay time, high to low level	t _{PHL}	V_{DD} and $V_{CC} = 5 \text{ V dc}$ $C_L = 50 \text{ pF}$ (See figure 3)	01, 02, 51, 52	6.0	150	ns
		(See figure 3)	03, 04, 53, 54	6.0	225	
			05, 55	6.0	172	
Propagation delay time, low to high level	t _{PLH}	V_{DD} and $V_{CC} = 5 \text{ V dc}$ $C_L = 50 \text{ pF}$	01, 02, 51, 52	6.0	210	ns
		(See figure 3)	03, 04, 53, 54	6.0	345	
			05, 55	6.0	188	
Transition time,	t _{THL}	V_{DD} and $V_{CC} = 5 \text{ V dc}$ $C_L = 50 \text{ pF}$	01, 02,	6.0	90	ns
high to low level		(See figure 3)	51, 52			
			03, 04	6.0	105	
			53, 54			
			05, 55	6.0	165	
Transition time,	t _{TLH}	V_{DD} and $V_{CC} = 5 \text{ V dc}$	01, 02,	6.0	405	ns
low to high level		$C_L = 50 \text{ pF}$ (See figure 3)	03, 04,			
		(Oce ligule 3)	51, 52,			
			53, 54			
			05, 55	6.0	180	

 $[\]underline{1}'$ Device types 01, 02, 51, and 52 have both V_{CC} and V_{DD} terminals. Device types 03, 04, 53, and 54 have only a V_{CC} terminal. Device types 05 and 55 have only a V_{DD} terminal.



NOTE: Terminal 16 is not connected for device types 03, 04, 53, and 54.

FIGURE 1. Logic diagrams and terminal connections.

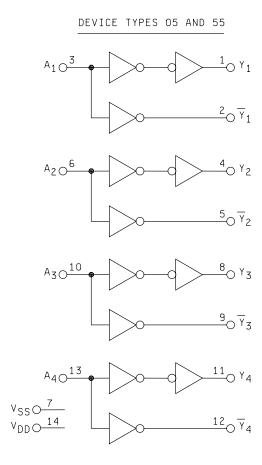


FIGURE 1. Logic diagrams and terminal connections – Continued.

Device types 01, 03, 51, and 53

Input	Output
Α	Υ
L	Н
Н	L

Positive logic: $Y = \overline{A}$

Device types 02, 04, 52, and 54

Input	Output
Α	Υ
L	L
Н	Н

Positive logic: Y = A

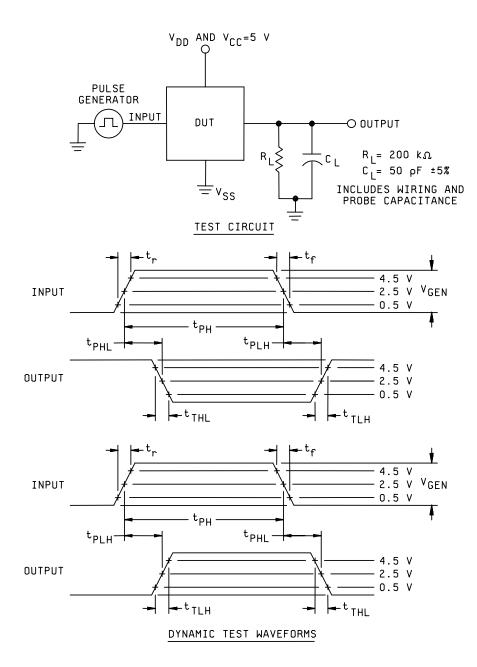
Device types 05 and 55

Input	Out	tput
Α	Υ	Y
L	L	Н
Н	Н	L

Positive logic: Y = A

H = High level voltage L = Low level voltage

FIGURE 2. Truth tables and logic equations.



NOTES:

- 1. The pulse generator has the following characteristics: $V_{GEN} = V_{DD} \pm 1\%$, $t_{PH} = 1.0 \pm 0.1 \ \mu s$, $t_r = t_f = 10 \pm 2 \ ns$, and PRR = 200 kHz.
- 2. See table III for complete terminal conditions.

FIGURE 3. Switching time test circuit and waveforms.

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. Delete the sequence specified as interim (pre-burn-in) electrical parameters through interim (post-burn-in) electrical parameters of table IA of MIL-PRF-38535 and substitute lines 1 through 7 of table II herein.
 - c. Burn-in (method 1015 of MIL-STD-883).
 - (1) Unless otherwise specified in the manufacturers QM plan for static tests (test condition A), ambient temperature (T_A) shall be +125°C minimum. Test duration for each static test shall be 24 hours minimum for class S devices and in accordance with table I of method 1015 for class B devices.
 - i. For static burn-in I, all inputs shall be connected to 0.0 V.
 - ii. For static burn-in II, all inputs shall be connected to V_{DD}.
 - iii. Except for V_{DD} and V_{SS} , the terminal shall be connected through resistors whose value is 2 k Ω to 47 k Ω . The actual measured value of the resistor selected shall not exceed $\pm 20\%$ of its branded value due to use, heat or age.
 - iv. Output may be open or connected to $V_{\text{DD}}/2$.
 - v. V_{DD} = 12.5 V minimum, 15 V maximum for device types 01, 02, 03, 04, and 05. V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, 54, and 55. $V_{DD}/2$ = $V_{DD}/2 \pm 1.0$ V for all devices. V_{SS} = 0.0 V.
 - (2) Unless otherwise specified in the manufacturers QM plan for dynamic test (test condition D), ambient temperature shall be +125°C minimum. Test duration shall be in accordance with table I of method 1015.
 - i. Except for V_{DD} and V_{SS} , the terminals shall be connected through resistors whose value is 2 k Ω to 47 k Ω . The actual measured value of the resistor selected shall not exceed $\pm 20\%$ of its branded value due to use, heat or age.
 - i. Input signal requirements: Square wave, 50% duty cycle; 25 kHz < PRR < 1 MHz; t_{TLH} and t_{THL} < 1 μ s. Voltage level: Minimum = V_{SS} 0.5 V, +10% V_{DD} ; Maximum = V_{DD} + 0.5 V, -10% V_{DD} .
 - iii. V_{DD} = 12.5 V minimum, 15 V maximum for device types 01, 02, 03, 04, and 05. V_{DD} = 15 V minimum, 18 V maximum for device types 51, 52, 53, 54, and 55. $V_{DD}/2$ = $V_{DD}/2 \pm 1.0$ V for all devices. V_{SS} = 0.0 V.

- d. Interim and final electrical test parameters shall be as specified in table II.
- e. For class S devices, post dynamic burn-in, or class B devices, post static burn-in, electrical parameter measurements may, at the manufacturer's option, be performed separately or included in the final electrical parameter requirements.

TABLE II. Electrical test requirements.

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Line	MIL-PRF-38535		Class S device	1/		Class B device	<u>1</u> /
2	no.	test requirements	Ref.		Table IV	Ref.	Table III	Table IV
1			par.	• .		par.	• .	delta
1 Interim electrical parameters 2 Static burn-in I (method 1015) 4.5.2 3 Same as line 1 1 Δ 4.2c (method 1015) 4.5.2 5 Same as line 1 4.2e 1* Δ 4.2e 1* Δ 6 Dynamic burn-in (method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1 Interim electrical 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				<u>2</u> /			<u>2</u> /	limits
parameters					<u>3</u> /			<u>3</u> /
2 Static burn-in I (method 1015) 4.5.2 3 Same as line 1 1 Δ 4 Static burn-in II 4.2c 4.5.2 5 Same as line 1 4.2e 1* Δ 4.2e 1* Δ 6 Dynamic burn-in 4.2c (method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9 1*, 2, 3, 9	1	Interim electrical		1			1	
(method 1015) 4.5.2 3 Same as line 1 1 Δ 4 Static burn-in II (method 1015) 4.5.2 4.5.2 5 Same as line 1 4.2e 1* Δ 4.2e 1* Δ 6 Dynamic burn-in (method 1015) 4.5.2		parameters						
3 Same as line 1 1 Δ	2							
4 Static burn-in II 4.2c 4.5.2 4.5.2 5 Same as line 1 4.2e 1* Δ 4.2e 1* Δ 6 Dynamic burn-in (method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9			4.5.2					
(method 1015) 4.5.2 5 Same as line 1 4.2e 6 Dynamic burn-in (method 1015) 4.5.2 7 Same as line 1 4.2e 8 Final electrical parameters (method 5004) 1*, 2, 3, 9 1*, 2, 3, 9 1*, 2, 3, 9		Same as line 1		1	Δ			
5 Same as line 1 4.2e 1* Δ 4.2e 1* Δ 6 Dynamic burn-in (method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9	4	Static burn-in II				4.2c	<u>4</u> /	
6 Dynamic burn-in (method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9			4.5.2			4.5.2		
(method 1015) 4.5.2 7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9 1*, 2, 3, 9	5		4.2e	1*	Δ	4.2e	1*	Δ
7 Same as line 1 4.2e 1* Δ 8 Final electrical parameters (method 5004) 1*, 2, 3, 9 1*, 2, 3, 9	6							
8 Final electrical parameters (method 5004) 1*, 2, 3, 9 1*, 2, 3, 9		(method 1015)	4.5.2					
parameters (method 5004)		Same as line 1	4.2e	•	Δ			
(method 5004)	8	Final electrical		1*, 2, 3, 9			1*, 2, 3, 9	
1 0 Group A toot 441 1 2 2 4 0 444 1 2 2 4 0		,						
	9	Group A test	4.4.1	1, 2, 3, 4, 9,		4.4.1	1, 2, 3, 4, 9,	
requirements 10, 11 10, 11				10, 11			10, 11	
(method 5005)								
10 Group B test 4.4.2 1, 2, 3, 9, 10, Δ	10		4.4.2		Δ			
when using 11				11				
method 5005								
QCI option	4.4					4.4.0	4 0 0	
11 Group C end-	11	•				4.4.3	1, 2, 3	Δ
point electrical		-						
parameters (method 5005)								
12 Group D end- 4.4.4 1, 2, 3 4.4.4 1, 2, 3	12		111	1 2 3		111	1 2 2	
point electrical 1, 2, 3 4.4.4 1, 2, 3	14		4.4.4	1, 4, 3		4.4.4	1, 2, 3	
parameters								
(method 5005)								

- 1/ Blank spaces indicate tests are not applicable.
- 2/ * indicates PDA applies to subgroup 1 (see 4.2.1).
- 3/ Δ indicates delta limits shall be required only on table III subgroup 1, where specified, and the delta values shall be computed with reference to the previous interim electrical parameters.
- 4/ The device manufacturer may at his option either perform delta measurements or within 24 hours after burn-in (or removal of bias) perform the final electrical parameter measurements.

4.2.1 Percent defective allowable (PDA).

- a. The PDA for class S devices shall be 5 percent for static burn-in and 5 percent for dynamic burn-in, based on the exact number of devices submitted to each separate burn-in.
- b. Static burn-in I and II failure shall be cumulative for determining the PDA.
- c. The PDA for class B devices shall be in accordance with MIL-PRF-38535 for static burn-in. Dynamic burn-in is not required.
- d. Those devices whose measured characteristics, after burn-in, exceed the specified delta (Δ) limits or electrical parameter limits specified in table III, subgroup 1, are defective and shall be removed from the lot. The verified failures divided by the total number of devices in the lot initially submitted to burn-in shall be used to determine the percent defective for the lot and the lot shall be accepted or rejected based on the specified PDA.
- 4.3 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-38535.
- 4.3.1 <u>Qualification extension</u>. When authorized by the qualifying activity, if a manufacturer qualifies to a 51-55, which is manufactured identically to a 01 05 device type on this specification, then the 01- 05 device type may be part I qualified by conducting only group A electrical tests and any electrical tests specified as additional group C subgroups and submitting data 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, D, and E inspections (see 4.4.1 through 4.4.5).
- 4.4.1 <u>Group A inspection.</u> Group A inspection shall be in accordance with table III of MIL-PRF-38535 and as follows:
 - a. Tests shall be performed in accordance with table II herein.
 - b. Subgroups 5, 6, 7, and 8 of table I of method 5005 of MIL-STD-883 shall be omitted.
 - c. Subgroup 4 (C_I measurement) shall be measured only for initial qualification and after process or design changes that may affect input capacitance. Capacitance shall be measured between the designated terminal and V_{SS} at a frequency of 1 MHz.
 - d. Subgroups 9 and 11 shall be measured only for initial qualification and after process or design changes which may affect dynamic performance.
 - e. When device types 01 through 05 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 55, respectively.
 - 4.4.2 Group B inspection. Group B inspection shall be in accordance with table II of MIL-PRF-38535.
- 4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:
 - a. End-point electrical parameters shall be as specified in table II herein. Delta limits shall apply only to subgroup 1 of group C inspection and shall consist of tests specified in table IV herein.
 - b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.
 - c. When device types 01 through 05 are qualified by extension (see 4.3.1), these device types will be inspected (QCI) according to the requirements for device types 51 through 55, respectively.

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TABLE III. Group A inspection for device types 01 and 03.

Unit			D		4 4	0				
П			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		절절	>				
		Max								0.5
	Subg T _c =	Min				2.5	4.5	4.95	11.25	
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Мах			-750 -750					
Test	Subgroup 2 $T_C = 125^{\circ}C$	Min				2.5	4.5	4.95	11.25	
	Subgroup 1 $T_{\rm C} = 25^{\circ}{\rm C}$	_	1.5	φ,,,,,	-75 -75					
	Subgroup 1 $T_{\rm C} = 25^{\circ}{\rm C}$	Min				2.5	4.5	4.95	11.25	
Measured	terminal		A1 A2 A3 A5 A6	A1 A2 A3 A4 A5	Vss Vss	7	7 7 7 7 7 4 4 4 5 4 4 4 5 4 4 6 4 6 4 6 4 6 6 6 6	Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	7 7 7 7 7 4 4 4 5 4 4 4 5 4 4 6 4 6 4 6 4 6 6 6 6	Y1 Y2 Y4 Y5
	16 <u>3</u> /	V _{DD}	GND , , , ,		15.0V 15.0V	V3.4 V3.4	5.0V		12.5V	5.5V
	15	9.k				Fig.	<u></u>			lou
	14	A6	1mA	-1mA	15.0V GND	\ \ 	\ 	\ \ 	\ \ \	V _{IH1}
	13	NC								
_	12	Y5				Гонл	Гонг			l _{or1}
/ and <u>2</u>	11	A5	1mA	-1mA	15.0V GND	V _{IL1}	V _{L1}	V _{IC1}	V _{IL2}	V _{IH1}
s, see 1	10	γ4				Гонл	Гонг			l _{or1}
and limit	6	A4	1mA	-1mA	15.0V GND	V _{L1}	V _{IL1}	V _{L1}	V _{IL2}	V _{IH1}
ditions a	8	Vss		QN3	3 3					
For terminal conditions and limits, see 1/ and 2/	7	A3	1mA	-1mA	15.0V GND	V _{IL1}	V L1	V _{L1}	\ \ \	VIH1
or termi	9	У3				Юни	Онг			Юсл
	2	A2	1mA	-1mA	15.0V GND	V _{L1}	\ 	\ 	\ 	V _{IH1}
	4	Y2				Гон	10н2			l _{OL1}
	3	A1	1mA	-1mA	15.0V GND	VILI	\ -1	\ -1	V _{IL2}	VIHI
	2	۲۱				Юн1	Юн2			lorı
	-	Vcc	ON		15.0V 15.0V	¥.5V	2.00		12.5V	5.5
Sases	E,F,N, Z	Test no.	− 0 € 4 € 0	× 8 6 0 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2		15 16 17 19 20		27 28 29 30 31		39 44 43 44
MIL- (STD- 883		See <u>4</u> /		3005 see <u>5</u> /	3006				3007
Symbol		_	VIC(POS)	Vic(NEG)	lss Iss		V _O V2	VOH3	VO44 " " " " " " " " " " " " " " " " " " "	Vol.1 "

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 01 and 03 - Continued.

Unit			Vdc "	3	3 :	= =	3 3	3	3 3		3 3	3	ı,		nA		3 3	'n	3 3		u u			3	3	3 3				pF "	: 3	3 3	3
Ь.	ლ ტ			3	3 :		35	3			.25				_												+			Ĺ			\dashv
	Subgroup 3 $T_c = -55^{\circ}C$	Max	9.0	3	3 :		0.05	3	3 3	= =	1.2	3	3	3 3																			
Test limits	Subgroup 2 $T_c = 125$ °C	Мах	9.0	3	3 :	: :	0.05	3	а :		1.25	3	3	3 3			100.0	3	3 3				-100.0	3	3	3 3	:						
Test	Subgroup 2 $T_c = 125^{\circ}C$	Min																															
	oup 1 5°C	Мах	9.0	3	3	: :	0.05	ä	3 3		1.25	ä	n	3 3	009		100.0	'n	3 3		009-		-100.0	3	3	3 3	:	5°C	Мах	20	: 3	3 3	3
	Subgroup 1 $T_{\rm c} = 25^{\circ}{\rm C}$	Min																									-	Subgroup 4 $T_c = 25^{\circ}C$	Min				
nred			- 0	1 W	4	ഗധ	- 0	ı	4	ഗ ഗ	- 0	v c	4	യവ	_	uts ther	- 2	<u>س</u>	41	ဂ (ဝ	= =	ther	- 0	νω	4	LO C	0			- (Nω	4 ro	(O
Measured	terminal		> >	· >	<u>></u> :	√5 √6	> >	- >-	> ;	Σ Σ	Υ ?	X3 - X	· >	Y5 Y6	₩.	inputs together	A1 A2	<	∢ <	₹₹	IIA i	together	A1	(₹	Þ	₹ <	Ā			Α,	₹ ₹	A 4	Ā
	16 <u>3</u> /	V _{DD}	2.07	3	3 :	: :	3 3	3	3 3	= =	12.5V	3	×	3 3	15.0V		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3	3 3	×	n		3 3	3	3	3 3	:			GND "	: 3	3 3	n
	15	У6				ما																											
	41	A6				Σ				× E				× E	15.0V		GND "	3	3 3	15.0V	GND		3 3	3	3	3 3							/ <u>7</u>
	13	NC													-		0				0												
		Y5 N				lo _{L2}																											
_														2	^(Q			2 0												/2	
e 1/ an	1	A5				\ ∃			:	> =				VIHZ	15.0V		GND	3	, r	15.0V GND	3		3 3	3	3	3 3						A	
nits, se	10	Υ4			lorz										_				_														
and lir	6	A4			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				> Ē				$V_{\mathbb{H}^2}$		15.0V		GND	GNB	15.0\	ב פ פ	"		3 3	3	3	3 3	:					A <u>7</u> /	
ditions	8	Vss	GND	3	3 :	: :	3 3	3	3 3	= =	3 3	3	ä	3 3	n		3 3	3	3 3	3	n		3 3	3	3	3 3	:			GND "	: 3	3 3	n
terminal conditions and limits, see $1/$ and $2/$	7	A3		V H				V				N N	7		15.0V		GND	15.0V	GND #		n		3 3	,,	3	3 3					A 7/		
r termi	9	ү 3		70																													
For	2	A2	Λ	<u> </u>			;;;	Ī			,	Z E			15.0V		GND 15,0V	S.			ņ		3 3	3	3	3 3	:			í	/ 		
	4	Y2	-												1		0 2																
				-			ī				VIH2				15.0V		15.0V GND	!	3 3						_					/7			
	8		2 V _{IH1}				VIH				>				15.		15. GN							•	•					/ <u>7</u>			
	2	Υ	/ lo _{L2}								>				>																		
Ш	-		2.00	3	3 :	: :	3 3	3	3 3	: :	12.5V	3	n	3 3	15.0V		3 3	3	3 3	n	3		3 3	3	3	" "				GND 3	: 3	3 3	3
Cases		Test no.	45	47	48	49 50	51	53	54	55 56	57	200	09	61 62	63		64 65	99	67	69	20		71	73	74	75	9/			77	8 62	80	82
MIL-	STD- 883	method	3007	ä	з :	: :	3	ı	3 3	: :	n n	3	3	3 3	3010		" "	3	3 3	3	3009		3 3	×	3	3 3	-			30,12	: 3	3 3	n
Symbol			Vou	z	з :	: :	Vol.3	ä	8 3	3 3	Vol4	ä	ä	3 3	I _{IH1} <u>6</u> /		., пнг	3	: :		/⊡ 1 <u>6</u> /		ال2 "	ä	n	3 3				ű	: 3	3 3	n

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device types 01 and 03 - Continued.

Unit					su	3	3	3	3	3	n	3	3	3	3	3	"	3	3	3	3	3	n	3	3	3	3	3
	oup 11	-55°C	Мах	8/	100/	150	3	я	ä	3	140/	230	3	3	3	3	02/09	3	n	3	ä	з	270	3	n	3	"	3
	Subgroup 1	$T_{\rm C} = -55^{\circ}{\rm C}$	Min		9	3	3	3	3	3	9	3	3	3	3	3	9	3	3	3	3	3	9	3	3	3	3	3
Test limits	onb 10	$T_{c} = 125^{\circ}C$	Max	8/	150/	225	n	n	n	,,	210/	345	n	3	n	,,	/06	105	"	3	n	n	405	3	n	n	"	3
Test	Subgroup 10	$T_{\rm c} = 1$	Min		6	"	ä	n	n	n	6	"	ä	ä	ä	n	6	ä	n	ä	n	ä	6	ä	n	ä	"	3
	Subgroup 9	$T_{\rm C} = 25^{\circ}{\rm C}$	Max	8/	100/	150	n	n	n	,,,	140/	230	n	n	n	,,,	02/09	ij	n	n	n	n	270	n	n	n	"	ä
	Subg	$T_c =$	Min		9	3	ä	n	3	11	9	3	ä	3	ä	11	9	ä	77	3	3	n	9	3	и	ä	3	3
Measured	terminal				A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	٨1	Y2	Υ3	Υ4	Υ5	У6	٨1	Y2	Υ3	Υ4	Υ5	, Ve
	16 <u>3</u> /		V_{DD}		5.0V	3	3	3	3	3	"	3	3	3	3	3	n	3	3	3	3	3	n	3	3	3	3	3
	15		У6							OUT						OUT						OUT						DO
	14		9V							Z						Z						Z						Z
	13		NC																									
,	12		Υ5						OUT						OUT						OUT						OUT	
/ and <u>2</u>	11		A5						Z						Z						Z						Z	
For terminal conditions and limits, see $1/$ and $2/$	10		Υ4					OUT						OUT						OUT						DO T		
ınd limit	6		A 4					Z						Z						Z						Z		
ditions a	8		Vss		GND	3	3	3	3	3	"	3	3	3	3	3	"	3	3	3	3	a.	"	3	3	3	3	3
nal cond	2		A3				Z						Z						Z						Z			
or termi	9		У3				OUT						OUT						OUT						OUT			
Ŀ	2		A2			Z						Z						Z						Z				
	4		Y2			OUT						OUT						OUT						OUT				
	3		A1		Z						Z						Z						Z					
	2		۲1		OUT						OUT						OUT						OUT					
	-		Vcc		2.07	3	ä	ä	3	3	"	3	ä	ä	ä	3	n	3	3	ä	3	ä	n	ä	3	z	3	3
Sases	E,F,N,	Z	Test	no.			82	98	87	88	89	06	91	95	93	94	92	96	26	86	66	100	101	102	103	104	105	106
MIL- (STD- F	883	method		3003	Fig. 3	. =	3	3	3	"	3	3	3	3	3	3004	Fig. 3	3	3	3	3	n	3	3	3	3	3
Symbol	STD- E		_		t _{PHL}	3	3	ä	3	3	t _{PLH}	3	3	3	3	3	t _{TH} L	3	я	3	3	3	tт	3	3	3	3	3

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device types 02 and 04.

Unit			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	: :		A A	\dc , "	2 2 2		ä			
	35°C	Мах											0.5
	Subgroup 3 $T_c = -55^{\circ}C$	Min					2.5	2 2 2	4.5	n	4.95	11.25	
limits	oup 2 25°C	Мах				-750 -750							0.5
Test limits	Subgroup 2 $T_c = 125$ °C	Min					2.5	2 2 2	4.5	n	4.95	11.25	
	Subgroup 1 $T_c = 25^{\circ}C$	Мах	t;	: :	9	-75 -75							0.5
-	Subgi $T_c =$	Min					2.5	2 2 2	4.5 3.3	ä	4.95	11.25	
Measured	terminal		A1 A2 A4	A5 A6	A1 A2 A4 A5	S N	3 Z Z	4	Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	, S	77 72 74 74 74 75 74 75 76 76 76 76 76 76 76 76 76 76 76 76 76	7 7 7 7 7 7 4 7 7 7 7 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9	7
	16 <u>3</u> /	V _{DD}	GND	: 3		15.0V 15.0V	4.5V		5.00	IJ		12.5V	5.5V
	15	У6						OH THO		Юнг			lou
	14	A6		1mA	7 w y	15.0V GND		> E		VIH1	VIH	VITS	VIL1
	13	NC											
7	12	γ2						l _{OH1}	sno.	ZHO:			l _{or1}
1/ and 2	11	A5	,	1mA	-1mA	15.0V GND		VIH1	\ \ 		VIH1	V_{IH2}	VIL1
ts, see	10	Υ4						l _{OH}	Онг				l _{or1}
and limi	6	A4	1mA		-1mA	15.0V GND		VIH1	V _{IH1}		VIH1	V_{iH2}	V _{IE1}
ditions	8	Vss			GND GND	2 2	2 2 2	2 2 2		ä			
terminal conditions and limits, see 1/ and 2	2	A3	1mA		-1mA	15.0V GND	V		VIH1		VIH1	V_{iH2}	V _{IL1}
For term	9	ХЗ							аној				Ю
	2	A2	1mA		-1mA	15.0V GND	V _{E1}		V _{H1}		V _{IH1}	V_{IH2}	V _{IL1}
	4	Y2					Іон		Гонг				l _{OL1}
	3	A1	1mA		-1mA	15.0V GND	VIET		VIHI		V _{IH1}	V _{IH2}	V _{IL1}
	2	Σ					Гон		Іон2				lor1
	~	Vcc	GND	: :		15.0V 15.0V	4.5V	2 2 2	5.0V	n		12.5V	5.5
Cases	E,F,N, Z		- 0 E 4	5 6	7 8 9 10 11	13	15 16 17	18 19 20	21 22 23 24 25	26	27 28 29 30 31 32	33 34 35 37 38	39 4 4 4 4 4 4 4 4 4 4 4 4 3 4 4 3 4 4 3 4 4 4 4
MIL-		_	See 4/			3005 see 5/	9008	3 3 3		n			3007
Symbol			VIC(POS)	: :	Vic(Neg)	SS	, "OHI		Vohz "	ä	V _{ОНЗ}	VOH4 " "	Vol11

See footnotes at end of device type 05.

TABLE III. Group A inspection for device types 02 and 04 - Continued.

<u>:</u> =			U																		1						1						٦
Unit		1	^qc	ä	u :	= =	я :	: :	3	3	3	" "	n	3	3 3	ΡU	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3	n	3 3	3		9	: 3	3	,	=			д.	" "	3 3	
	Subgroup 3 $T_C = -55^{\circ}C$	Max	0.5	3	3	3 3	0.05	: :	3	3	77	1.25	3	3	3 3																		
	Subg T _c =	Min																															
Test limits	oup 2 25°C	Max	9.0	n	з :	3 3	0.05	: :	3	3	n	1.25	×	3	3 3		100.0	ä	ņ	3 3			-100.0	: 3	3	3 3	:						
Test	Subgroup 2 $T_c = 125$ °C	Min																															
	Subgroup 1 $T_c = 25^{\circ}C$	Мах	0.5	3	ч :	3 3	0.05		3	3	n	1.25	3	3	3 3	009	100.0	3	3	= =	0	-000	-100.0	: :	3	3 3		Subgroup 4	Max	12	3 3	3 3	
	Subgroup 1 $T_C = 25^{\circ}C$	Min																										Subgroup 4	Min I				
Measured	terminal		7.4	: £	Υ :	× ×	\ \ ! \	2 5	5 X	χ2	Y6	Y1 V2	χ 2 Σ	Υ4	√2 √	All inputs together	A1	¥ 5	¥	A5	AD Include	All inputs together	A1	A A	\$	A5	A6			A1 A2	. A3	A5 4	AD
	16 <u>3</u> /	V _{DD}	2.07	3	з :	3 3	3 3	: :	3	3	n	12.5V	×	3	3 3	15.0V	3 3	3	ä	3 3	3		y 2	: 3	3	3 3	:			GND "	= =	3 3	
	15	У6				2	2																										
	14	A6				>					VIL1				Š	15.0V	GND "	3	3	, č	20.02	סווס	31 3	: 3	3	3 3	:					1	A [/
	13	NC														`																	
	12	λ2				lorz																											
/ and <u>2/</u>	11	A5				ار ار				V -1					VIL2	15.0V	GND "	3	3	15.00	פואם מאם		31 3	: :	3	3 3	:					A <u>7</u> /	
s, see 1,	10	Υ4			lorz											`				•													
For terminal conditions and limits, see $1/$ and $2/$	6	44			V _{IL1}				>	-				VIL2		15.0V	GND		15.07	GND "	,,		3 1 3	: 3	3	3 3	:				1	>ı ∢	
ditions a	8	Vss	GND	3	ч :	3 3	а :	: :	3	3	11	3 3	3	3	3 3	з	3 3	,	n	= =	'n		31 3	: :	ä	3 3	:			GND	3 3	3 3	
nal cond	7	A3		\ -				>	^				VIL2			15.0V	GND	15.0	GND	3 3	я		33	: :	ä	3 3	:				/ <u>7</u> A		
or termi	9	Х3		10L2																													
Н	2	A2	\ 				:	\ ∟1				νν	\ \ \			15.0V	GND	200	<u>;</u>	3 3	3		3 3	: :	3	3 3	:			/2 A	il :		
	4	Y2	<u>.</u>	2																													
	3	A1	V _{IL1}				VIL1					VIL2				15.0V	15.0V	֓֞֟֝֟֟֝֟֝֟֟֝֟֝֟֓֓֓֟֟֓֓֓֓֟֟֓֓֓֓֓֓֓֓֓֟֓֓֓֟	n	= =	n		,,	: 3	u	3 3	:			/ <u>Z</u>			
	2	۲۱	lorz																														
	-	Vcc	2.07	2	я :	3 3	я :	: :	3	3	n	12.5V	n	¥	3 3	15.0V	3 3	n	n	3 3	n		y "	: 3	¥	3 3	:			gng B	3 3	3 3	
Cases	E,F,N,	Test no.	45 46	47	48	49 50	51	52	5.4	55	26	57	59	09	61	63	64	99	67	89	90	7.0	71	7.7	74	75	76			77	26	8 2	20
MIL-	STD- 883	method	3007	3	а :	3 3	3 3	: :	3	3	"	3 3	3	3	3 3	3010	3 3	"	n	3 3	0000	ദവാട	3	: 3	¥	3 3	:			30,12	3 3	3 3	
Symbol			Vouz	3	ч :	3 3	Vous		3	3	"	Vol4	з	3	3 3	I _{IH1} <u>6</u> /	I _{IH2} "	3	я		/ 0	IL1 <u>0</u> /	ارء "	: 3	3	3 3	:			ت ت	3 3	3 3	

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device types 02 and 04 - Continued.

																	1											
Unit					su	3	3	3	ä	3	"	3	3	ä	ä	3	"	ä	3	ä	3	3	"	3	ij	3	ı	ä
	oup 11	-55°C	Мах	<u></u> δι	100/	150	"	ı	"	3	140/	230	u	"	"	n	02/09	ı	n	"	×	ä	270	ä	'n	"	y	n
	Subgroup 11	$T_{c} = -55^{\circ}C$	Min		9	я	n	n	ä	я	9	"	з	ä	ä	n	9	ä	я	n	z	ä	9	ä	n	u	u	ш
imits	on dno	25°C	Max	⊗ I	150/	225	3	3	u u	3	210/	345	ä	u u	u u	3	/06	105	3	z	z	3	405	ı,	3	3	3	ш
Test limits	Subgroup 10	$T_{c} = 125^{\circ}C$	Min		6	n	"	"	ä	3	6	3	з	ä	ä	ä	6	ä	n	"	ä	ä	6	z	"	"	3	u
	Subgroup 9	25°C	Max	<u></u> δι	100/	150	"	3	n	3	140/	230	n	ņ	n	я	02/09	3	n	'n	n	n n	270	"	n	n	3	ш
	Subgr	$T_{c} = 3$	Min		9	n	n	"	n	n	9	"	n	n	n	n	9	n	n	n	n	'n	9	n	n	"	"	u
Measure	q	terminal			A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	٨.	Y2	Υ3	Υ4	Υ5	У6	٨.	Y2	Υ3	Υ4	γ2	У6
	/ <u>8</u> 91		V_{DD}		2.07	3	3	u	3	3	"	3	3	3	3	3	n	3	3	3	3	3	n	3	u	3	3	n
	15		9.							OUT						OUT						OUT						OUT
	14		9V							Z						Z						Z						N
	13		NC																									
	12		75						OUT						OUT						DO						DUT	
/ and <u>2</u> /	11		A5						Z						Z						Z						Z	
For terminal conditions and limits, see $\underline{1}/$ and $\underline{2}/$	10		Υ4					OUT						OUT						OUT						OUT		
nd limits	6		A 4					z						z						Z						z		
ditions a	8		Vss		GND	3	3	3	3	3	"	3	3	3	3	ä	n	3	3	3	3	ä	n	3	u	3	3	ü
nal cond	7		A3				Z						Z						Z						Z			
or termin	9		У3				DUT						DO						DUT						OUT			
Ę	2		A2			Z						Z						Z						Z				
	4		Y2			OUT						OUT						OUT						OUT				
	3		A1		Z						Z						Z						Z					
	2		۲1		OUT						OUT						OUT						OUT					
	-		Vcc		5.0V	3	3	3	ä	3	"	3	3	3	ä	3	n	3	3	3	3	ä	n	3	3	3	3	n
Cases	E,F,N,	7	Test	0	83	84	82	86	87	88	89	06	91	95	93	94	92	96	97	86	66	100	101	102	103	104	105	106
MIL-	STD-	883	method			Fig. 3		3	3	3	n	3	3	3	3		3004			ä	3	3	n	3	3	3	3	n
Symbol					t _{PHL}	n	ı	n	n	3	tp∟H	3	n	n	n	n	t⊤HL	3	3	3	3	3	t⊤LH	×	"	ä	3	n

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device type 05.

Unit			g,		3 3		, <	۲ ح	Vdc "	3		,							,										
			> ,			_	٠ ،	ב ב	γ,	_		•	• •	-					_				_						
	Subgroup 3 $T_{c} = -55^{\circ}C$	Мах																											
	Subc T _c =	Min							2.5	3	= =	=		4.5	3 3	: :	з :	= =	3	4.95	3	: :		: :	11.25	a :	: :	3 3	3 3
mits	up 2 25°C	Мах					750	-750 -750																					
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Min							2.5	3		3	: :	4.5	3 3	: :	3 :		3	4.95	3			3 3	1.25	3 3	: :	3 3	3 3
		Max	1.5	3 3	φ "		" L	-75																	_				
	Subgroup 1 $T_C = 25^{\circ}C$	Min	`						2.5	_	3 3	3	= =	5.		: :	3 3		3	4.95	"			3 3	11.25	3 3			
		Σ							2,		-			4				_		4.					11				
Measured	terminal		A1 A2	A3	¥ 5 5	¥ &	A4 /	Vss	Y1 Y2	Х3	≯ >	72	¦ ∑ }	¥ ¥	ζ ς	Υ Υ Σ 4	IЯ:	\$ \$	김추	∑ Ş	X3 <u>-</u> X	취>	78	SIS	γ Υ	. X	Υ Υ 44	X S	1212
	14	V_{DD}	GND "	3 3			15.07	15.0V	4.5V	я	3 3	3	3 3	5.00	3 3		ч :	= =	я	3 3	3	3 3	: 3	3 3	12.5V	3 3	: 3	3 3	3 3
	13	A4		4	<u> </u>		-1mA	GND			\ E		;	V IL1		>	Ē		V _{IL1}			V H		>	V IL1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	¥ =	>
	12	7 4											_	된					1 0H2										
	11	Y4									Г ОН					5	Ş												
nd <u>2</u> /	10	A3		1mA		-1mA	2	GND		V _{IH}			V _{IL1}			Ξ >			۷ ارا		\ E V			V _{IL1}			ZH/		VILZ
rminal conditions and limits, see $1/$ and $2/$	6	<u> </u>		_		``	+	2 ()		_			lo _H						OHZ					_					
limits, s	8	Y3 _								Юни						ОН2		_											
ons and					Q										_														
condition	7	Vss	4		GND *		" "	" ^ O	3 3	-	3 3	-		3	-	: 3	3 :		3	3 3		3 3	-	-	3	- 2		3 3	2 3
erminal	9	A2	1mA			F .	4	GND	>			>			\ E			>		>	>		>	-		V _{IH2}		>	VIL2
For te	2	<u>Y2</u>										į	2					ОНД											
	4	Y2							Ē	5					l _{OH2}														
	3	A1	1mA		-1mA		15.07	GND	VIH1		>	^ IL1		VIH			V _{IL1}			V _{IH1}		>	۸ ار		VIH2			VILL2	
	2	<u>Y</u> 1									_	<u>0</u>					ЮН2												
	1	۲1							Юн1					ОН2															
Cases	A,C,D X,Y	Test no.	- 2	m <	1 20 4	٥ ٢	ω σ	10	11	13	4 4	9	2 1 2	9 6	2 20	2 2	23	24	7 7 7 8	27	762	33	3 8	8 8	35	36	37	8 8	5 4 6
_	STD- 883	method					3008	See <u>5</u> /	9008	3	3 3	з	3 3	n	3 3	: :	з :	: :	3	3 3	ä	3 3	3	3 3	n	3 3	: :	3 3	3 3
Symbol		<u>-</u>	V _{IC(Pos)}	3 3	Vic(NEG)	: 3	3	ISS ISS	£ "	ä	3 3	я	3 3	V _{OH2}	3 3	: :	3 :	3 3	3	V _{ОН3}	3	3 3	: 3	3 3	V _{OH4}		: 3	3 3	3 3

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device type 05 - Continued.

Unit			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	3 3 3 3			3 3	3 3	3 3	3 3	ä	3 3	3 3	3 3		νγ		3 3	3 3	3	
	2°C 5°C	Мах	0.5	2 2 2 2	0.5		0.05) = =	3 3	3 3	3	1.25	3 3	3 3	: 3 3						
	grc : -{	Min																			
its		Мах	0.5		0.5		05) = =	3 3	3 3	4	1.25	3 3	3 3				0 ;	3 3		
Test limits	12	Min						,										`			
		~	0.5	* * * *	0.5) = =	2 2	2 2	3	1.25	3 3	3 3		400		100	3 3	-400	
	Subgroup 1 $T_C = 25^{\circ}C$	Min			0		C					_				4				7-	
Measured	terminal	_	7 X X X X X X X X X X X X X X X X X X X	 - 	, , , , , , , , , , , , , , , , , , , 	4121216	14 5	. 0. 6	715	1215	14	Y1 Y2	√ 73 74	1519	N N N	A Single	together	A 4	A A 3 i	All	together
Mea	tern		××××		×××,	444x	1> >		- >- >	1>1>	-1>-			> >	<u> </u>		toge	4 4	. 4 4	ن ا	toge
	14	V _{DD}	5.5V		2.00		3 3	3 3	3 3	3 3	3	12.5V	3 3	3 3		15.0V		3 3	3 3	ä	
	13	44	>	<u> </u>	;	V IL1	V _{IH1}		V _{IL1}		>==		>	1	\ \ \	15.0V		GND GND	GND 15.0V	GND	
	12	\		lor1			l _{OL4}														
_	11	Υ4		į	-	lora															
see 1/ and 2/	10	A3	V Fig.	VIH	VILI	>		>	-	>	Ē		VIL2		VIHZ	15.0V		ON D	15.0V GND	GND	
ts, see	6	۲ <u>۶</u>		l _{OL1}		2	5														
and lim	8	У3	lou		ETO _I																
nditions	7	Vss	GND " " "		3 3 3 3		3 3	3 3	3 3	3 3	3	3 3	= =	3 3		3		3 3	3 3	ä	
minal conditions and limits,	9	A2	VIL1	V H	VIL1	V H		VIL1		VIH		VILZ		2	VIH2	15.0V		GND 15 0V	GND	GND	
For ter	2	72		lorı		lo _L 4															
	4	Y2	lou		ലഠി																
	3	A1	V _{E1}	> =	V _{L1}	V H	Λ",		>	<u> </u>		VIL2		VIH2		15.0V		15.0V] = =	я	
	2	ΙΣ		lor1		l _{OL4}															
	1	7	lou		Elol3																
Cases	A,C,D X,Y	Test no.	8 4 4 4	47 48 49 50	52 53 53	55 25	59	90 60	3 63	28 68	99	67 89	69	7 5	2 2 2	75		92	8 62	80	
MIL-	STD- 883	method	3007		3 3 3 3		3 3	3 3	3 3	2 2	ä	3 3	3 3		: 3 3	3010		3 3	3 3	3009	
Symbol			, , , , , , , , , , , , , , , , , , ,		Vol2		"	3 3	3 3	3 3	3	V _{OL4}	3 3	3 3		/ 0 1⊬1		, _"	3 3	I _{I∟1} <u>5</u> /	

See footnotes at end of device type 05.

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TABLE III. Group A inspection for device type 05 - Continued.

Unit			۲. " ۱	: 3			년.	3 3			Su "	з	3 3	3	3 3	3 3	3	: :	ä	3 3	3 3	3 3		3 3	: 3	3 3		: 3	
	55°C	Мах							up 11	Max	172	3	3 3	3	3 3	188	3	: U	2 3	3 3	."	3 3	165		: 3	105	3 3	180	3 3 3
	Subgroup 3 $T_c = -55$ °C	Min							Subgroup 11 $T_c = -55^{\circ}C$	Min	9 =	я	3 3	я	3 3	9 =	а :	3 3	3	3 3	9 =	3 3	: 3	3 3	: 3	9 =	3 3	: 3	
Test limits	oup 2 25°C	Мах	-100	: 3					Subgroup 10 $T_c = 125^{\circ}C$	Max	172	з	3 3	з	3 3	188	3	. Y	G 3	3 3	3,2	3 3	165		: 3	105	3 3	180	
Test	Subgroup 2 $T_C = 125^{\circ}C$	Min							Subgroup 10 $T_c = 125^{\circ}C$	Min	6 *	u	3 3	n	3 3	6 "	n		n	3 3	6 "	3 3		31 3	. 11	o :	3 3	: 3	
	Subgroup 1 $T_c = 25^{\circ}C$	Мах	-100	: 3	Subgroup 4 T _C = 25°C	Max	50	3 3	Subgroup 9	Max	115	u	3 3	n	3 3	125	,		2 ;	3 3	20	3 3	110		. 3	0,"	3 3	120	
-	Subg T _c =	Min			Subg T _c =	Min			Subg	M E	9 =	n	3 3	n	3 3	9 =	n	: :	n	3 3	9 =	3 3		3 3		9 =	3 3	: :	
Measured	terminal		A1 A2	A4 44			A 4	A3 A4			A1 to Y1	A3 to Y3	A4 to <u>Y</u> 4	A2 to <u>Y</u> 2	A3 to <u>Y3</u> A4 to <u>Y4</u>	A1 to Y1 A2 to Y2	A3 to Y3	A4 to Y4	A2 to <u>Y</u> 2	A3 to <u>Y</u> 3 A4 to <u>Y</u> 4	Y2 72	χ χ	‡I≿	121	∑I\.	Y X	: £ \$	\$1\ <u>\</u>	χI <mark>ζ</mark> Ιζ
	14	V _{DD}	15.0V	: 3			GND "	3 3			2.00	3	3 3	3	3 3	3 3	3		3	3 3	3 3	3 3		3 3	: 3	3 3	3 3	: ::	
	13	A4	GND	: 3				A 7/	İ				Z		Z			Z		Z		2	Ξ		Z		3	Z	Z
	12	7 4													TUO					TUO					DOT				OUT
	11	Υ4											OUT					OUT				Ę	3				Ē	9	
and <u>2</u> /	10	A3	GND	: 3				A <u>7</u> /				Z			Z		Z			Z		Z			Ξ		Z		Z
, see 1/	6	Υ3													OUT					OUT				ŀ	100				OUT
nd limits	8	۲3				•						OUT					OUT					OUT					OUT		
ditions a	7	Vss	GND "	: 3			GND "	3 3			GND "	3	3 3	n	3 3	3 3	3	: :	ä	3 3	3 3	3 3		3 3		" "	3 3	: ::	
For terminal conditions and limits, see $1/$ and $2/$	9	A2	GND	: 3		•	A 7/	I			2	-		Z		Z	:		Z		Z			z		Z	:		Z
For ter	5	<u></u>												TUO					OUT					OUT					OUT
	4	Y2									Ę	5				TIO	-))				TUO					Ę			
	ε	A1	gnb	: 3			A <u>7</u> /				Z		Ζ	=		Z		Ζ	₹		Z		Z			Z		Z	
	7	사											Ę	3				E	3				OUT					OUT	
	1	71									OUT					OUT				_	OUT					OUT			
Cases	A,C,D X,≺	Test no.	81 82	83 4 4			85 86	88			88	91	92	94	95 96	97	66	9 5	102	£ 4 5 4	105	107	8 6	110	112	113	115	116	118 120
MIL-	STD- 883	method	3009	: 3		ŀ	3012	3 3			3003 Fig. 3)	3 3	я	2 2	3 3	3 :		3	3 3	3004 Fig. 3) = =	. 3	3 3	: 3	3 3	3 3	: 3	3 3 3
Symbol			, z _{II} I	: 3		•	٠ ت	a a			фыг."	u	3 3	я	2 2	фын "	3		ä	3 3	тн."	3 3		3 3	: 3	т∟н "	3 3	: 3	3

See footnotes on next sheet.

- Input pins not designated may be tied to Vod (or Vod) or GND or may be left open provided they do not influence the outcome of the measurement. Output pins not designated may be tied to the loads or may be left open provided they do not influence the outcome of the measurement. \rightleftharpoons
- 7

Symbol	^	VIH1	[™] N	1.1	VIHZ	2	N	VIL2	Юн	lo _{L1}	ЮН2	lorz	lora	lo _L 4
Device type	10	02	10	02	10	02	10	02	ΙΗ	ΙΙΥ	ΙΙΥ	All	90	90
	03	40	03	04	03	40	03	04				_		
	90		90		90		02							
Temperature	3.95 V	3.8 V	Λ 6.0	1.1 V	10.25 V	9.5 V	9.5 V 2.15 V 2.8 V	2.8 V	1 mA	.23 mA	1 mA .23 mA 45 mA 3.0 mA 1.6 mA 0.8 mA	3.0 mA	1.6 mA	0.8 mA
$T_C = 25^{\circ}C$												_		
$T_C = 125$ °C	3.85 V	3.6 V	3.6 V 0.65 V 0.85 V	0.85 V	10.0 V	9.25 V	1.95 V	2.55 V	1 mA	.23 mA	9.25 V 1.95 V 2.55 V 1 mA .23 mA 35 mA 2.1 mA 1.2 mA 0.55 mA	2.1 mA	1.2 mA	0.55 mA
$T_{\rm C} = -55^{\circ}{\rm C}$	4.05 V	3.95 V 0.95 V 1.35 V	0.95 V	1.35 V	10.5 V	9.75 V	2.24 V	3.05 V	1 mA	.23 mA	65 mA	3.7 mA	2.1 mA	1.0 mA

- $\overline{3}$ Terminal 16 is not connected for device types 03 and 04.
- $\underline{4}/$ Test parameter $V_{IC(pos)}$ does not apply to device types 03 and 04.
- When performing quiescent supply current measurements (Iss), the meter shall be placed so that all currents flow through the meter. 2/
- The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together. 9
- $\overline{2}$ (A) Capacitance bridge between measured terminal and V_{SS}; frequency = 1 MHz.

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Test limits tph., tpl., tph., and tph for device types 01/03 and 02/04 consists of two sets of values and are expressed XXX/XXX in the limits columns. The digits preceding the slash apply to the first device in a set. 8

TABLE III. Group A inspection for device types 51 and 53.

			T		1		0.0									1				1									
Unit			Vdc	3 3		3 3 3	nAdc nAdc	Vdc	3 3	3 3	y	: ::	3	3 3	3	3	3 3	ä	3 3	n	ä	3	3	: :	3	ä	3 3	: 3	з
	Subgroup 3 $T_C = -55^{\circ}C$	Max									1	0.05	3	3 3	3	0.5	3 3	3		0	2 =	3	3	: :	1.5	3	: :		з
	Subgr $T_c = -$	Min						14.95	3 3	3 3																			
		Max					-750 -750				i.		3	3 3	ä	0.5	3 3	3	3 3	10	2 3	3	з :	: :	1.5	3	3 3	: :	ä
Test limits	Subgroup 2 $T_c = 125^{\circ}C$	Min						14.95	3 3	3 3																			
		Max	7.5	3 3			-75 -75				100		3	3 3	,	0.5	3 3	3	3 3	10	2 =	n	4		1.5	"	3 3	. :	3
	Subgroup 1 $T_c = 25^{\circ}C$	Min						14.95	3 3	3 3																			
7	terminal	I	A A A 4	A5 A6	A2 A2	8 8 8 8 8 8 9 8	ss N	72 X	, , 3	4 . 5 .	o S	- Z	Y3	≯	c 9 ×	X .	2 5	5 \	, Y5	2 >	χ2	Υ3	X	× ×	× = = = = = = = = = = = = = = = = = = =	Y2	₹3	≻	, S
	16 <u>2</u> /	V _{DD}	QN	3 3			18 V 18 V	15 V	3 3	2 2	"	: ::	3	3 3	3	2 \	3 3	3	3 3	10 \	,	3	3	: :	15 V	,	3 3	: :	3
	15	У6																											
	14	A6		1mA		Δm	18 V GND			2	JNE				15 V	GND	3 3	3	* 0	7.0.4 GND] =	3	3	. ×	GND	3	3 3	: :	12.5 V
	13	S				<u>'</u>					+									1									
	12	λ2																											
/	11	A5		1mA		-1mA	18 V GND			GND					>	QN	3 3	3	7.0 \	ם ז	ä	ä	n n	8.0 V	2 =	3	3 3	. v	GND
, see 1	. 10	Y4 /					2 0			<u>o</u>				-	_	g			4. (פ				∞ ୯)			- 2	iΩ
terminal conditions and limits, see 1			4			<u>ح</u>	> □							>		Ω		> ב	· <u> </u>				>	<u> </u>				> ⊆	Ω Ω
tions ar	6	, A4	1mA		0	-1mA	18 V GND		2	5				15 \		S	<u>5</u> 6	2 4	GND	n	ä	3	8.0	GND CND	"	,	3 I	12.5 V	5 6
ıl condi	8	Vss			GND B		3 3	3 3	3 3	3 3	ü	: 3	3	3 3	3	"	3 3	3	= =	n	n	3	3	: :	n	3	,	. 4	3
termina	7	A3	1mA		- T		18 V GND		GND				15 V			GND	GND	0.4 GND	, ,	"	n	8.0 V	GND	: :	IJ	u	12.5 \	OND CND	GND
For	9	χ.																											
	2	A2	1mA		-1mA		18 V GND	GND				15 V				GND	4.0 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	֓֞֞֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝	3 3	n	8.0 V	GND	3	: :	n	12.5 V	GND	: :	я
	4	Y2																											
	3	A1	1mA		-1mA		18 V GND	GND			7	75.				4.0 V	GND #	¥	= =	708	GND	n	3	: :	12.5 V	GND	3 3	: :	ä
	2	۲٦																											
	-	Vcc	QND " " "	3 3			18 V 18 V	15 V	3 3	3 3	7 2 7	72.	3	3 3	3	2 \	3 3	3	3 3	10 \	,	3	3	: :	15 V	3	3 3	: :	3
ases	E,F,N,	Test no.		ပ ပ	۲ 8	9 2 2 5		15	17	2 0 c		22	23	24	72 70	27	28	30	33.	33	34	35	36	37 38	36	40	4 :	7 4 2	4 4
11- C	STD- 883		્રે (સે				3005 <u>4/</u> 3005 <u>4/</u>	9008	3 3	3 3	707	7005	3	3 3	,					\dagger									
-	o ∞	me m			(Seg)						+					±				9	7				53	:			
Symbol			V _{IC(POS)}	3 3	Vic(NEG)	3 3 3	lss Iss	V _{OH5}	3 3	3 3	7	Vols	3	3 3	"	>	3 3	3	3 3	>	<u> </u>	"	3	: :	>	: 3	3 3	: 3	n

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 51 and 53 - Continued.

Unit			Vdc .		3	3	3	3			3	-	3		3	3	3	m,	: :		3	3		: :	: 3			3	3	3	a :	, ,	: :	3	3	3 3	υĄ
	ო ი	×	>				_				_				_	_		<u>_</u>				_					+	_				1		_			<u></u>
		Max											.0														_										
-		Min	4.5	. 3	ä	3	"	9.0	4	3 3	3	ä	13.5	3 3	n	ä	ä	4.0	: 3	. 3	×	3	30.0	: :	: 3	3	. 9	5 4	3	3	3 :	; ·	4.2	3	3	3 3	
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Max																																			
Test	Subgr $T_c = 1$	Min	4.5	. "	ņ	"	"	9.0	3	3 3	ä	n	13.5	3 3	"	n	n	2.2	: :	, ,,	"	'n	17.0	: :	: 3	n	38.0	5. "	n	ŋ	"	,	-2.4	"	'n	3 3	
	up 1 5°C	Max																																			009
		Min	4.5		n	3	ņ	0.6	:	3 3	3	3	13.5	3 3	3	3	n	3.2	: 3	. 3	n	3	24.0	: :	: :	3	. 0.	5 4	3	ä	3	;	-3.4	n	3	3 3	
\vdash																																					uts
Measured	terminal		Σ \$	> 5	5 >	- >	2 ×	Υ.	72	⊱ ?	4 ×	7 Y	7	? ?	2 >	- >	2 9X	Σ;	× 5	ჯ ≻ გ	- \	λ.	Σ:	25	Σ \	Υ2	γ	72	Υ3	Υ4	Υ2	Ye	∑ Ş	7 5	. ↑	Y5	All inputs together
	16 <u>2</u> /	V _{DD}	2,7	: 3	3	3	ä	10 V	3	3 3	3	4	15 V	3 3	3	3	3	2,7	: :		3	3	۱۶ ۸		: 3	я :	. >	2 3	3	a a	з :	;	15.	3	3	3 3	\ 81
	15	, 9,																				0.4 V					2 \					4.6 V				2	>
			Q				V 0.I	Q				>	Q				>	Q					Q				5 \	<u>.</u>				4				2	
	4	A6	GND 3	. 3	3	3	1.0	GND		3 3	3	2.0	GND	3 3	3	"	2.5 V	GND GND	. 3		3	2 \	GND			3	15 V	5 *	3	3	3	*	: 3	3	3	3 3	18 V
	13	S																																			
	12	Υ5																			0.4 V					1.5 V					4.6 V					13.5 V	
/	=======================================	A5	GND	: 3	3	7 0 7	GND	"	3	3 3	7	S.O.V GND	31	3 3	3	7 2 7	GND	3 3	: :	. 3	2 \	GND	3 3	: :	: ::	15 V	GND "	ä	3	3	3 :	3 :	: :	3	3	3 3	18 V
limits, see	10	Υ4																		7 7 0					75.					4.6 V					13.5 V		
d limit			9		>	ON C	<u> </u>			;	> <u>c</u>	<u> </u>	n		>	> _	<u> </u>	,,			GND GND	!								4							8 \
or terminal conditions and	<u>ი</u>	s A4	D GND		-	2 6	5	3	4	* 0	, (3 3 9	3	3 3	C	V C.2	5	3 3	: 3	Ĺ	o 6	, "	3 3		15	GND	3 3	3	3	3	4	3 :		3	3	3 3	18
condi	00	Vss	GND (,	3	ä	"	4		-	ä	u		3		3	,,	: :	, ,		3	3 3			3	3 3	"	3	3	3 :	3 3	: :	3	3	3 3	3
erminal	7	A3	GND	2 5		֓֞֞֜֝֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֟֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓	ņ	"	3	2.0 <	ב פרק פרק	3	3	÷ (V C.2	בול בולים בולים	ä	"	: `	א כ מיני	5	3	n :	: ;	SND GND	3	3 3	ä	3	3	a :	3 :	: :	3	3	3 3	18 V
For to	9	Х3																	3	V.4 V					7.5 \				4.6 V					13.5 \)		
-	2	A2	GND	> 0) " 	"	3	n	2.0 V	GND "	,	з	n	2.5 V	פואס מיי	n	3	; ;	٧ ر	בוא פוא	ä	3	, i	15 V	ON "	3	3 3	3	ņ	n	3 :	,	: :	3	"	3 3	18 V
-	4	Y2																;	0.4 \				;	1.5 \				4.6 V					12 5 7	>			
-	ဗ	A1	7.0.1	<u> </u>		=		۸(9	3 3		-	>	GND "	-	3		5 \			3	=	15.V			4		4				3 3					\ 8
			` ;	5 -	_	_		5.(ত		_		2.5	<u>ਰ</u> ੇ	_	_	_		<u></u> 5	_	_			<u></u>			-	>	_	_		;	>	_	_		131
	2	Σ																0.4 V					7.1.5 V				7 8 7	9				-+	13.5 V				
	-	V _{oc}	2 \	: 3	ä	3	'n	10 V	3	3 3	ä	3	15 V	3 3	3	3	ä	2, 3	: :	. 3	'n	3	15 V	: :	: ::	3	, 'Y	.	ä	n	3	,	15.	8	3	3 3	18 V
Cases	E,F,N, N	Test no.	45	9 5 7	4 4	t 4	20 9	51	25	23	9 1	26 23	22	28	n (9 6	65	63	4 6	ဂ္ဂ ဗ	67	89	69	2 3	22	73	74	92	1	78	62	80	£ 6	8 8	8 8	82	87
	STD- 883	nethod																																			3010
Symbol			V _{IL1}					VIL2					V _{IL3}					l _{OL1}					louz					Ę					ОН2				-
Syn			>					>					>					_0					<u>_</u>					2				-	0				I _{H1} <u>5</u> /

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 51 and 53 - Continued.

Unit			ν	3	3	3	3	3	33		"	3	3	3	3	3				bΕ	3	3	3	3	n
	300 3 55°C	Max																							
	Subgroup 3 $T_c = -55^{\circ}C$	Min																							
mits	Subgroup 2 $T_C = 125^{\circ}C$	Max	100.0	3	ä	3	y	ä			-100.0	ä	3	ä	ä	×									
Test limits	Subgr $T_c = 1$	Min																							
	Subgroup 1 $T_c = 25^{\circ}C$	Max	100.0	3	"	3	3	3	009-		-100.0	"	3	"	ä	я	Subgroup 4	$T_c = 25^{\circ}C$	Max	20	ä	3	z	31	ш
	Subg T _c =	Min															ogns	္ <u>၂</u>	Min						
Measured	terminal		A1	A 2	A3	A4	A5	A6	All inputs	together	A1	A2	A3	A4	A5	A6				A1	A 2	A3	44	A5	A6
_	16 <u>2</u> /	V _{DD}	18 V	"	,,	3	3	3	3		n	,,	"	,,	3	3				GND	ä	3	=	y	я
	15	У6																							
	14	A6	GND	n	n	3	ı	18 \	GND		18 V	n	n	n	n	GND									A 6/
	13	NC																							
	12	Y5																							
1/	11	A5	GND	n	n	3	18 V	GND	GND		18 V	n	n	n	GND	18 V								/9 Y	I
nits, see	10	Υ4																							
s and lin	6	A4	GND	3	3	18 \	GND	GND	GND		18 V	18 \	18 \	GND	18 \	18 \							/9 Y	ı	
ondition	8	Vss	GND	3	"	3	3	3	ņ		,,,	"	3	"	ä	=				GND	3	3	3	3	n
terminal conditions and limits, see 1/	7	A3	GND	GND	18 V	GND	n	3	n		18 V	18 V	GND	18 V	3	3						A 6/			
For te	9	۲3																							
	9	A2	GND	18 V	GND	3	n	з	n		18 V	GND	18 V	n	3	3					A <u>6</u> /				
	4	Y2																							
	3	A1	18 V	GND	3	3	u	я	n		n	18 V	3	3	3	3				/ <u>9</u> V					
	2	71																							
		V _{oc}	18 V	3	,,	3	3	3	31		n	,,	3	,,	n n	3				GND	3	3	3	3	и
Cases	E,F,N, Z	Test no.	88	83	06	91	95	93	94		92	96	26	86	66	100				101	102	103	104	105	106
	STD- 883		3010	3	3	3	3	з	3009		n	3	3	3	3	3				3012	3	3	3	3	n
Symbol			I _{H2}	n	n	3	"	n	I _{IL1} 5/		2 ا	, n	n	n	'n	3				ن	3	3	n	"	u

See footnotes at end of device type 55.

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TABLE III. Group A inspection for device types 51 and 53 - Continued.

Unit			us	3	3	3	3	3	n	3	3	3	3	"	"	3	3	3	3	"	"	3	3	3	3	n
	oup 11 55°C	Max 7/	9/09	3	n	n	n	ņ	140/	120	"	3	ņ	и	/0/	09	3	3	3	и	320/	160	3	n	n	n
	Subgroup 1: $T_c = -55^{\circ}C$	Min	9	3	3	3	33	3	9	3	3	3	3	ш	9	3	3	3	3	ш	9	3	3	n	3	ш
imits	Subgroup 10 Subgroup 1 $T_c = 125^{\circ}C$	Max 7/	150/	225	ä	3	3	3	210/	345	ä	3	ä	11	/06	105	3	3	3	и	405	3	3	3	ä	ш
Test limits	Subground $T_c = 1$	Min	6	n	"	n	,,	n	6	n	n	n	n	11	6	n	3	3	3	ш	6	3	n	"	"	ш
	Subgroup 9 $T_c = 25^{\circ}C$	Max 7/	99/09	ä	"	×	"	n	140/	120	*	ä	n n	11	09/02	n	3	3	3	п	320/	160	ä	"	"	ш
	Subgroup $T_c = 2$	Min	9	ä	"	×	"	n	9	n	*	ä	n n	11	9	n	3	3	3	п	9	3	ä	"	,	п
Measured	terminal		A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	۲1	Υ2	۲3	Υ4	Υ5	У6	۲1	Y2	Υ3	Υ4	Υ5	Y6
	16 <u>2</u> /	V _{DD}	5.0 V	ä	3	ä	"	ä	"	n	ä	ä	ä	11	"	ä	ä	3	ä	11	n	3	ä	r.	3	n
	15	76 Y						OUT						OUT						OUT						OUT
	14	A6						Z						Z						Z						Z
	13	2																								
	12	Υ5					DO						DOL						DO						DO	
1/	11	A5					Z						Z						Z						Z	
terminal conditions and limits, see $1/$	10	Υ4				DO						5						D0						OUT		
and lin	6	A4				Z						Z						Z						Z		
nditions	8	Vss	GND	3	3	'n	,,	n n	"	n n	"	3	3	11	"	3	3	3	3	ш	,,	3	3	'n	3	ш
minal cc	7	A3			Z						Z						Z						Z			
For ter	9	Х3			100						DQ.						DQ.						D0			
	2	A2		Z						Z						Z						Z				
	4	Y2		DO						DO						OUT						OUT				
	3	A	Z						Z						Z						Z					
	2	Σ	OUT						OUT						OUT						OUT					
	-	Vcc	2.0 V	n	"	n	,,	3	"	n	"	n	,,	n	"	n	3	3	3	n	,,	3	n	n	"	n
Sases	, N, N	Test no.	_			110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
MIL-	method Z	<u> </u>	3003					3		×	ä	,		11						ш	,,	n n	,	3	"	я
Symbol	<i>,,,</i> –		t _{PH}	з	3	3	3	n	t _{PLH}	з	3	з	3	11	t _{⊤HL}	3	3	3	3	и	t⊤⊔	3	з	3	3	n

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54.

ξ			유	_					පු පු	ဍ							,-	_							L			Ţ
Unit			» Ndc	3 3	3 3	3 3	3		nAdc nAdc	, Vd	3	3 3	: 3	3 3	3 3	= =	n	3 3	3	3 3	3 3	3	3	3 3	3 3	3	3 3	ä
	Subgroup 3 $T_c = -55^{\circ}C$	Max												0.05	3 3	3 3												
	Subg T _c =	Min								14.95	3	3 3					4.5	3 3	×	3 3	0.6	з	з	3 3	13.5	3	3 3	з
imits	oup 2 25°C	Max							-750 -750					0.05	3 3	3 3												
Test limits	Subgroup 2 $T_c = 125^{\circ}C$	Min								14.95	n	" "					4.5	3 3	n	3 3	0.6	n	¥	3 3	13.5	3	3 3	3
	oup 1 5°C	Max	1.5	3 3	3 3	-6.0	3		-75 -75					0.05	3 3													
		Min								14.95	×	3 3	: 3				4.5	3 3	3	3 3	0.6	2	ä	3 3	13.5	3	3 3	3
Measured	terminal		A1 A2	A3	A A 4	A1	A3 K	A4 A65	Vss	Σ\$	<u> </u>	Υ ;	γ ₅	72 72	Υ ₃	Y5 Y6	Y	2 5	5 ¥	Y5 Y6	7.	Z £	Υ4	Y5 Y6	: X	X3 - X	7 /	Y6
	16 <u>2</u> /	V _{DD}	GND "	3 3	3 3				18 V 18 V	15 V	3	3 3	: :	3 3	3 3	3 3	2 N	= =	3	3 3	10 V	3	3	3 3	15 V	3	= =	3
	15	У6														GND												
	14	A6			8	<u> </u>		-1mA	18 V GND				15 V				GND	3 3	ä	3.5 \	GND "	3	ä	, >	GND	з	= =	11 \
	13	NC																										
	12	75																										
7	11	A5			1mA			-1mA	18 V GND			;	15 \			GND	GNE	3 3	з	3.5 V GND	3 3	3	3	> \C	3 3	3	. 7	GND
its, see	10	74																		., 0								
For terminal conditions and limits, see 1/	6	A4		<u> </u>	<u> </u>			-1mA	18 V GND			15 V			GND		GND	OND CND	3.5 V	GND "	3 3	3	7 \	GND "	3 3	3	11 V GND	GND
ndition	8	Vss				GND	3		3 3	3 3	3	3 3	: ::	3 3	3 3	3 3	n	3 3	я	3 3	3 3	3	3	3 3	3 3	3		3
ninal co	7	А3		1mA			-1mA		18 V GND		15 V				GND		GNE	SND SND	OND OND	3 3	3 3	> _	GND	3 3	3 3	> 11	OND CND	SND
For terr	9	У3																	, 0				_					Ĭ
	2	A2	1mA			£ 5	<u> </u>		18 V GND	۱۶ /	>			GND			SND	.5 V	Ž :	3 3	, , ,	N.	3	3 3	ONS 2 Y	ND ON	3 3	3
	4	Y2	`						- 0	,								e) C										_
	8		1mA			-1mA			18 V GND	15 V				GND			3.5 V	OND "	3	3 3	> CN	<u> </u>	3	3 3	71 \	5 3	3 3	3
	2	۲,															(1)											\exists
	-		GND "	3 3	3 3				18 V 18 V	15 V	ä	3 3	: 3	15 V		3 3	5 V	3 3	3	3 3	10 \	3	3	3 3	15 V	3	3 3	3
ases	E,F,N,		1 2	ი -	4 rv a	0 ~ 0	၀ ၈	2 7 9			2	8 9	20 2	21 22	23	25 26				32			36	37	33	5 4	4 4 5 8	4
	STD- 883		3/						3005 <u>4/</u> 3005 <u>4/</u>		3	3 3	: 3	20	3 3	2 2												\dashv
Symbol	ω ^ω	Ě	(SO	3 3	3 3	V _{IC(NEG)}	я	3 3 3	lss 300		¥	3 3	: 3	V _{OL5} 30	3 3	2 2	V _{H1}	3 3	3	3 3	V _{IH2}	3	ä	3 3	V _{IH3}	3	3 3	ä

See footnotes at the end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 - Continued.

Unit			Vdc "				,	L						_					.	۳¥	,	,	_							, .			_	_						νγ
-	<u>е</u>	×		•	•	•	-	-	_	•	3	3	,						•	E ³	-	-	-	-	3	-		-	-	3		-	-	-	3	-	-			٢
	Subgroup 3 $T_C = -55^{\circ}C$	Max	0.5	3	3	"	n	1.0		"	3	3	11	1.5	: :	"	: :	: :	:																					
	Subg T _c =	Min																		4.0	з	з	ä	3	30.0	3 3	: :	: 3	3	-0.64	: 3	з	3	3	-4.2	3	3	:	3 3	
limits	oup 2	Мах	0.5	3	3	"	3	1.0	2 =	3	3	3	"	1.5	: :	"	: :	: :	:																					
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Min																		2.2	ä	n	n	n	17.0	3 3	: :	: 3	n	98.0-	: 3	n	u	"	-2.4	ä	я :	4	= =	
	oup 1 25°C	Мах	0.5	"	3	n	ä	1.0	2 =	и	3	ä	11	1.5	: :	33	: :	: :	:																					600
	Subgroup 1 $T_C = 25^{\circ}C$	Min																		3.2	ä	ä	ä	"	24.0	,	: :	. 3	n	-0.51	: 3	ä	"	"	-3.4	ä	3	:	3 3	
Measured	terminal		7 5	7 5	2 >	- > + 4	S >	λ1	- X	3 :	Υ4	γ2	У6	۲1	72	2 }	۲ ۲	Υ2	У6	-	7 %	5 4	Υ5	λ6	۲1	Υ2	× ×	≻ > 4 ፕ	9 - Y	Υ.	Z <	2 >	- >	2- A	۲1	Υ2	χ3	74	√2 √6	All inputs together
Σ	16 <u>2</u> /	V _{DD}	2,7	3	3	3	3	Λ 0	, ,	3	3	3	11	15 V		,	: :	: :	:	2 .	3	3	ä	3	15 V	3 3			3	\ 0.	: 3	3	3	3	2 \	3	a :	:		18 V A
	15 1	76 V	4,					_	_					1						4,				0.4 V	1				1.5 V	5.				4.6 V	_				13.5 V	
	4	A6 ,	GND "		3	3	75.	GND	<u> </u>	,	3	3	3 V	GND	: :	,	. :	. :	4 \	GND "		,	,,	.0	3	3 3	: :	: 3	<u>.</u>	3 3		u u	"	5 V 4.	_				15 \ 13	
	13	NC A	Ŋ				_	Ö)				3	9					4	<u>ග</u>														2	g				7	18
	12	75 N																					0.4 V					7 2 /	<u> </u>				7 9 7	>					13.5 V	
		A5 Y	9		3	>	OND OND				3	>	GND				. :	> !	Q				ò					-	<u>:</u>					GND					15 V 13. GND	18 V
, see 1/			GND GND	-	_	7	? G	i -	3	n	-	3 \	g	3			_	4 (> ;	GND		_	>		-	3	-		>	-	,		>		· ල්		_	-		5 5 6	18
For terminal conditions and limits, see 1	10	Υ4	0.0			> (_	_						_				0.4 V	5					.5 V				767						13.5 V	0.0	
ions an	თ	A4	GND	5 0	2 2 4		5	n	3	n	3 <	GND	11	3	: :		4 (> i	ON S	=	3 3	3	n	"	"	3	3 3	3 3	: 3	3	3 3	: 3	2		5	3	3	3	15		18 V
conditi	∞	Vss	GND "	3	3	3	ä	3	3	n	3	ä	11	ŋ	: 3	n	: :	: :	=	3 3	ä	ä	ä	3	n	3 3	: :		"	3 3	: 3	ä	3	3	n	ä	3		= =	a a
rminal	7	A3	GND	2 2 2		֓֞֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝	3	3	3	3 <	GND	3	11	я :	: ?	⁴ (ONE GNE	: :	:	3 3	ä	ä	ä	3	3	3 3	: :	: 3	3	3 3	: 0	א כו היים בו	֓֞֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟	3	3		15 \	GND	GND	18 V
For te	9	У3																			0.4.0						1.5 \				7 9 7	4.0 V					13.5 V			
	2	A2	GND		בוא פוא	3	,,	n	3 <	GND	3	ņ	11	n	> {	בוא פוא	: :	: :	:	3 3	3	ņ	"	3	"	3 3	: :	. 3	n	: (> 0.6	בוא פוא	"	31	"	15 V	GND	:	3 3	18 V
	4	Y2																		>	; ;					1.5 V					V 9.4					13.5 V				
•	က	H4	1.5 V	ָבֵּיאַ פֿוּאַ	3	3	3	3 \	OND		3	3	ш	4 \	GND "	,	: :	: :	:	3 3	3	3	3	3	"	= :	: :	: 3	3	5.0 V		3	3	3	-	GND	3	:	= =	18 V
	7	7													_					0.4 V					1.5 V					4.6 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_				13.5 V	_				
	_	V _{oc}	5.0 V	3	3	3	ņ	٥ ۸	> > =	,	3	ņ	u.	15 V	: :	,		: :		2 \	3	ņ	ņ	3	15 V	3 3	: :		n	5.0 V 4	: :	n	3	3	5 V 13	3	=	=	= =	18 V
ases	п, N Х	od Test			, t t	δ é	20	_	•	53	54	22	26	`	28	200	9 :	61			t 7.	99	29	89	_		7 7	2 2	24		19	۵۲	2 0	8 6	_	82	83	8	86 85	1 1
Č -	STD- 883	thod 7																																						3010
M	ώ _∞	ше	1.					c	7					е.						- :					2					1					12					
Symbol			, L1,	3	3	3	"	>		n	"	3	"	V		"	: :	: :	=	lo _{L1}	"	"	"	"	lo _L	"	= =		n	l _{OH1}	. 3	"	3	3	_ H	3	"		3 3	l _∓ 5⁄

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 - Continued.

										1															
Unit			ν	u	"	ï	n	3	n		3	ı	ä	3	ä	3				Jd	3	n	ä	n	u
	oup 3 55°C	Мах																							
	Subgroup 3 $T_C = -55^{\circ}C$	Min Max																							
its	Subgroup 2 $T_C = 125^{\circ}C$	Max	100.0	3	3	,,	n	ņ			-100.0	3	3	n	ņ	ņ									
Test limits	Subgro $c_c = 12$	Min	1								`,														
			100.0	_	3	3	_		009-		-100.0	_	3	_		,,	4 (ပ	×	12	_	_	_	_	_
	Subgroup 1 $T_c = 25^{\circ}C$	Min Mi	100	•	•	•	,	•	9-		-10	,	•	•	•	_	Subgroup 4	$T_C = 25^{\circ}C$	n Max	1	_	,	•	,	,
р	٥,	≅							s :								Su	Ĕ	Min						
Measured	terminal		A1	A2	A3	A4	A5	A6	All inputs	together	Α1	A2	A3	A 4	A5	A6				14	A 2	A3	A4	A5	A6
	16 <u>2</u> /	V_{DD}	18 V	"	77	3	11	ä	n		3	11	31	n	3	3				GND	3	11	"	77	44
	15	У6																							
	14	A6	GND	"	3	n	"	18 V	GND		18 \	"	3	3	×	GND									A <u>6</u> /
	13	SC																							
	12	75																							_
1/	7	A5	GND	3	3	3	18 V	GND	GND		18 \	3	3	ä	GND	18 V								/9 Y	 I
its, see	10	Υ4																							
terminal conditions and limits, see 1/	6	A 4	GND	GND	GND	18 V	GND	GND	GND		18 <	18 \	18 \	GND	18 V	18 V							/9 Y	1	_
nditions	∞	Vss	GND	3	3	"	n	,,	n		3	3	ä	n	ä					GND	3	3	ä	u	n
ninal co	7	A3	_	GND	18 \	GND	n	ä	ä		18 \	18 \	GND	18 \	3	ä						/9 V			
For terr	9	У3																							
	2	A2	GND	18 \	GND	3	3	ä	n		18 \	GND	18 \	3	3	ä					√ <u>0</u>				
	4	Y2																							
	е	H4	18 V	GND	3	¥	n	ņ	n		3	18 \	ä	n	×	n				/9 A					
	2	۲1																							
	_	V _{oc}	18 V	3	3	3	33	3	ŋ		3	3	3	3	=	3				GND	3	3	3	3	ä
Cases	E,F,N,		88	88	06	91	92	93	94		92	96	26	86	66	100									106
	STD- 883					3			3009		3	3	3	3	3	3				3012	3	3	3	3	n
Symbol			레	3	3	3	3	3	111	ار	<u> </u>	3	3	я	3	*				Ü	3	3	3	3	и

See footnotes at end of device type 55.

TABLE III. Group A inspection for device types 52 and 54 - Continued.

Unit			ns	3	3	3	3	3	n	3	3	3	3	3	"	3	3	3	3	11	"	3	3	3	3	11
	oup 11 55°C	Max 7/	9/09	n	n	n	n	ä	140/	120	n	n	n	n	09/02	3	3	3	'n	и	320/	160	3	n	"	щ
	Subgroup 1' $T_C = -55^{\circ}C$	Min	9	3	ä	z.	3	3	9	3	3	3	3	3	9	3	3	3	ä	11	9	3	3	3	3	11
mits		Max 7/	150/	225	,,	ņ	3	3	210/	345	n	n	n	3	/06	105	3	n	n	m.	405	n	3	n	n	m.
Test limits	Subgroup 10 $T_C = 125^{\circ}C$	Min	6	n	,,	ņ	n	ä	6	n	n	n	n	n	6	3	3	n	"	ш	6	n	3	n	3	n
		Max 7/	9/09	3	33	3	3	3	140/	120	3	3	3	3	09/02	3	3	3	3	n	320/	160	3	3	3	n
	Subgroup 9 $T_{c} = 25^{\circ}C$	Min	9	n	n	ņ	n	ä	9	n	n	n	n	n	9	3	3	n	"	ш	9	n	3	n	"	11
Measured	terminal		A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A5 to Y5	A6 to Y6	۲۱	Υ2	γ3	Υ4	Υ5	У6	۲۱	Υ2	Υ3	Υ4	Υ5	У6
_	16 <u>2</u> /	V _{DD}	5.0 V		"	ņ	3	я	n	u	n	n	n	я	n	3	3	u	n	n	n	u	3	n	n	п
	15	У6						OUT						OUT						OUT						OUT
	14	A6						Z						z						Z						Z
	13	NC																								
	12	Υ5					DUT						OUT						DO						OUT	
1/	7	A5					Z						Z						Z						z	
terminal conditions and limits, see 1	10	Υ4				OUT						DUT						OUT						DUT		
and lim	6	A4				Z						Z						Z						Z		
litions a	8		Q	3		_						_						_						_		
al cond		3 V _{SS}	GND	•	_	•	•	•	,	•	_	•	•	•	,	•	_	•	•	,	,	•	_	•	•	,
	7	A3			Z						Z						Z						Z			
For	9	\3			50						50						50						5			
	2	A2		Z						Z						Z						Z				
	4	Y2		DO												OUT										
	3	A1	Z						Z						Z						Z					
	2	۲1	OUT						OUT						OUT						OUT					
	-	Vcc	5.0 V	ä	"	,	ņ	3	"	ä	3	ä	3	ä	ņ	3	3	ä	z	n	ņ	ä	3	3	3	n,
Cases	E,F,N,	Test no.			109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130
MIL-		method	3003	Fig. 3) =	3	3	3	'n	3	3	3	3	3	3004	Fig. 3	3	3	=	n	"	3	3	3	n	я
Symbol		_	tpHL		"	n n	3	ä	t _{PUH}	n	n	n	ņ	3	t _{THL}		3	n	'n	11	tт	n	×	n	'n	u

See footnotes at end of device type 55.

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TABLE III. Group A inspection for device type 55.

ij			S		l	3 3	4 4	- B	3																		_				
Unit	I	ı	Vdc ,	= =	3 3	3 3	2 2	Ndc	3	3	3 3	3	3	3 3	3	3 3	. 3	3 3	"	3	3	: :	"	3	3 3	. 3	3	3 3	: 3	3 1	:
	Subgroup 3 $T_C = -55^{\circ}C$	Max												9.05	n	3 3	: 3	3 3				0	5 4	з :	:				0."	3	=
	Subç T _c =	Min						14.95	n	u	3 3	¥	u						4.5	3	3	:			d	o.,	ä	ä			
imits	Subgroup 2 $T_C = 125^{\circ}C$	Max					-750	2						90.0	3	3 3	: ::	3 3				0		3	=				0. "	з:	=
Test limits	Subgr $T_c = 1$	Min						14.95	3	3	3 3	3	3						4.5	3	а :	:			0	O. "	3	я			
	oup 1 5°C	Мах	1.5	3 3	-6.0	3 3	-75	2						90.0	ä	3 3	: 3	3 3				4		я :	:				0. "	3	=
	Subgroup 1 $T_c = 25^{\circ}C$	Min						14.95	ä	3	3 3	3	3						4.5	3	3	:			0	0.,	3	3			
Measured	terminal	I	A1 A2	დ 4	- S	N W Z	s s		ν რ	. 4I	न १	า ต	4	7 0	1 က -	কাঃ	- 1 S	1 2012	t -	Ŋ.	က္	412	18	101	4 ;	- ç	ı က	41:	-18	યાદ્યા	4
Mea	tern	1	4 4	۷ ۷	4 4	. 4 4	->>	, > >	- >-	· >-	71 /	11	<i>-</i>	٠,		71/	η <i>≻</i>	> >			<i>></i>	712	1>	1>1	,	- >	- >	≻ .	≻ı>	<u>-</u> ≻	>
	14	V _{DD}	GND				15 V	, ,	3	n	3 3	3	n	,,	3	3 3	: 3	3 3	Λ9	, ₃	з :	: :	3	3	= 0)))	3	3 :	: :	з :	=
	13	A4		1mA		-1 mA	15 V GND	5		15 V			GND			GND		15.7	GND	GND	GND	3.5 V	GND	GND	3.5 V		GND	> 2	O C	GND	7 \
	12	Υ																													
	1	Υ4																													
e <u>1</u> /	10	A3		1mA		-1mA	15 V GND	5	15 V			GND	!		GND			15 V	GND	GND	3.5 V	OND CND	GND	3.5 V	GND		> >	GND) 	GND
mits, se	6	γ3																													_
ıs and li	80	۲3																													
erminal conditions and limits, see 1/	7	Vss			GND "	3 3	3 3	, ,	ä	3	3 3	ä	3	n n	ä	3 3	: 3	3 3	,,,	з	з :	: :	ä	3		: :	ä	3 3	: :	3 :	:
erminal o	9	A2	1mA		-1m	<u> </u>	15 V GND	5 7	>		2	פואס		GND	<u>;</u>		15 V		GND	3.5 V	GND	O C	3.5 V	GND	GND	0 / 2 / 2 /	GND	GND	GND 4 × ×	GND GND	GND
For t		Y2																													_
	4	Y2																	l												
	е	A1	1mA		-1mA		15 V GND	15 V			GND			GND		,	7 %		3.5 V	GND	GND	GND	GND	GND	GND	> CN	GND	GND	> 2	GND	GND
	2	17																													$\left \cdot \right $
	-	7																	1						1						
ases	A,C,D, T,X,≺	Test no.	- 2	ω 4	20	o Γ α	0 0 5	2 - 5	<u>ν</u> (5	4	15	0 1	18	19	21	22	23	25	27	28	59	30	32	33	34	36	37	38	33	5 4	42
_	STD- 883						3005 4/	3006	3	3	3 3	ä	3	3007	я	3 3	: :	3 3													
Symbol			V _{IC(POS)}	3 3	V _{IC(NEG)}	2 2	SS	V _{OH5}	n	3	3 3	n	n	Nors	n	3 3	: :	3 3	\		n :	: :	n	n	= ;	V _{IH2}	ä	3 3	: :	я :	=

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 - Continued.

Unit			Vdc "	: ::	3 3	3	ä	3 3	. 3	3	3 3	3 3	: "	3 3	: :	3	3	3 3	3 3	: :	×	3 :	: :	ä	m,		3	3 3	3	3 3	ä	3 3	3	= =	3
Н	3 55°C	Мах			7: "	3	ä	0.5	. 3	3			10		: :				1.5	: :	3														
	Subgroup 3 $T_C = -55^{\circ}C$	Min	13.5	: :							4 5. [‡]	3 3	:			9.0	3	3 3				13.5	: :	4	2.1	: 3	3	1.0	3	# ?	5.	3 3	5.5	3 3 3	=
imits	oup 2 25°C	Мах			7. "	я	я	0.5	: 3	3			10		: :				1.5	: :	ä														
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Min	13.5	: ::							4.5	3 3	:			9.0	3	3 3				13.5	: :	ä	1.2	. 3	ä	0.55	3	3 0	0.0	3 3	3.0	3 3 :	3
	Subgroup 1 $T_c = 25^{\circ}C$	Мах			7.5	я	я	0.5	. 3	я			1.0		: :				1.5	: :	33														
ш	Subgi $T_c =$	Min	13.5								4.5	3 3				9.0	3	3 3				13.5		ä	1.6		3	8.0	8	± 0	12.0	3 3	4.5	3 3	:
Measured	terminal		Y1 Y2	Υ3 Υ4	<u> </u>	2 2	74	∑ \$	X X	7	zI\$	12l	γ4 Υ1	. 7 2	€ ₹	킨도	2	\$ \$	۲۲	2 5	ς Υ	<u> </u>	2 5	<u> </u>	۲۲	7 %	<u> </u>	۶lج	<u> </u>	γ4	- X	ξ Χ	171	기기	λ4
	14	V _{DD}	15 V	: 3	3 3	'n	щ	2 ,	: 3	и :	3 3	3 3	 10 V		: :	n	3	3 3	15 V	: 3	n	я :	: :	ä	2,7	: 3	ä	3 3	я :		<u>0</u> "	3 3	ä		4
	13	A4	GND	11 V	GND	GNG GNG	11 V	GND GND	ON O	1.5 \		GND GND	V C.T	GND GND	GND	gND GND	GND	gND % <	GND	OND COND	2 4 5 >	GND		2 4 5 >	GND "		ä	3 3	3	2 \	פואס פואס	3 3	¥	3 3	15 V
	12																													0.4 V					1.5 V
	11	У4																									0.4 V					7	ပ		
1/	10	A3	GND	CND	GND GND	2 2 2 2 2	GND	GND	1.5 V	GND	ON CO	7.5 \	GND	GND	» ر ا	G G G G G	GND	3 V GND	GND	GND	GND	GND	GND 4 \	GND	3 3	: 3	ä	3 3	2 <	GND "	n	3 3	ä	15 <	GND
nits, see	6	<u></u> 3																											0.4 V					1.5 V	
or terminal conditions and limits, see 1,	80	У3																								V 4.0						1.5 V			_
condition	7	Vss	QND "	: ::	3 3	з	ä	3 3	. 3	з :	3 3	3 3	: 3	3 3		3	3	3 3	3 5		3	3 3	: :	3	3 3	: 3	3	3 3	3	3 3	n	3 3	3	3 3 :	=
erminal o	9	A2	GND 11 V	O O	GND	dND	GND	GND	OND	GND	GND 15 V	GND	GND	3 ? ?	GND GND	GND GND	3 <	GND GND	GND	4 (> 5	GND GND	GND	4 G > C	<u>;</u>	3 3	: 3	3	, ×	GND	3 3	3	3 3	3	15 V GND	GND
For te	2																											7 7 0	> †					1.5 \	
	4	Y2																							7	V.9 V					1.5 V				
	3	A1	11 V GND		> 2	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	GND	7.5 \		GND	1.5 V GND	Q 9 9	3 \ C	GND	GND	ا ا ا ا	GND	Q Q O O O O O	> 4 > ;	GND		> 5	ON 3	3	3 3		3	ک در کاری	<u></u>	3 3	n	3 3	15 V	GND	GND
	2	Υ ₁																										0.4 V					1.5 V		
	-	71											1												0.4 V					7 4	ဂ				
Sases	A,C,D, T,X,≺	Test no.	£ 4 ;	t 4 5	47	6 6	20	51	23 25	24	22	57	22	00	61	63 6	64	65	29	89 6	8 0	71	2 2	7 4		9 12	78	6 6	8 8	85	S &	82	87	8 8	06
_	STD- 883	nethod											\dagger																	1					
Symbol			V _{IH3}	: 3	3 3	3	я	VIL1		я :	: :	3 3	: \\	<u>.</u>		3	3	3 3	V _{IL3}	: 3	я	3 :	: :	u	lo _{L1}	: 3	3	3 3	3	3	IOL2 "	3 3	ä	3 3 3	3

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 - Continued.

Unit			m¥ "	3	3	3				3	_	_	3	3	=	nA		3	3	3 3		=	3	3	3				L	L =	3	
H	e ()	×	' ⊒			_								_	_	۲													•	<u>. </u>		_
	Subgroup 3 $T_C = -55^{\circ}C$	Ma	10			10			0																							_
	Sub T _c	Min	-1.75	3	3	-0.7	3	3 3	-11.0	3	3	-4.8		3	3																	
Test limits	Subgroup 2 $T_C = 125^{\circ}C$	Max																100	3	3 3			-100	ä	3	n						
Test	Subgr $T_c = 1$	Min	-1.0	3	ä	-0.4	3		-6.0	3	=	-2.7	3	3	z																	
	oup 1 5°C	Мах														400		100	3	u :	:	-400	-100	×	3	n,	up 4	S°C May	400	7.	3	3
	Subgroup 1 $T_c = 25^{\circ}C$	Min	4.1-	"	ä	9.0-	=		0.6-	×	3	4.0		3	3												Subgroup 4	$T_{\rm C} = 25^{\circ}{\rm C}$				
Measured	terminal		<u></u>	1 E	X	<u> </u>	2	\$ \$.	- > 4 °	5 4	5	Z	_∑	Υ4	All inputs	together	H4	A 2	A3	A4	All inputs together	A1	A2	A3	A4					A3	44 -
_	14	V _{DD}	2,7	3	3	3	а :		15 V	3	×	3	3	3	y y	18 V		"	3	3 3	:	,	,,,	3	3	u				֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟֝֟	3	3
	13		GND			GND	з :	3 3	3 3		15 V	GND	3	3	3	18 \		GND	GND	GND	18 /	GND	18 V	18 \	18 \	GND						/ <u>9</u> ∀
	12	γ4						4.6 V							13.5 V																	
	11	Υ4			4.6 V						13.5 V																					
1/	10	А3	GND	2 S	GND	n	3	3 3	3 3	7 7	OND OND		з	3	3	18 V		GND	GND	18 <	GND	GND	18 V	18 \	GND	18 V					/ <u>0</u>	
nits, see	6	<u></u>						4.6 V						13.5 V																		
terminal conditions and limits, see 1	80	Х3		4.6 V						12 5 7	5																					
conditio	7	Vss	GND "	"	ä	3	3	3 3	3 3	ä	n	n	ä	3	3	n		"	3	3 3	:	я	"	ä	3	и				ָם פֿוּאַם פֿוּאַם	3	n
erminal	9	A2	GND 5 V	GND	3	3	GND	3 3	GND	2 0	֓֞֞֟֝֟֝֟֝֟֝֟֟֝֟֝֟֟֝֟֟֝֟֟֝֟֟֝֟֝֟֓֟֓֟֓֟֟֓֓֟֟֓֓֟֟֓֓֟֟֓֓֟֟֓֓֟֟֓֓	n	GND	3	ņ	18 V		GND	18 \	GND	GIND	GND	18 V	GND	18 \	18 V				A 6/	1	
Fort	2	<u>Y2</u>					4.6 V						13.5 V																			
	4	Y2	4 6 V	·					1357	2																						
	3	A1	2 V	<u></u>	3	ä	3	3 3	15 V CINE	֓֞֞֞֝֞֝֟֝֞֟֝֞֝֟֝֞֓֓֓֓֞֟֝֞֓֓֓֞֟֞֓֓֓֓֞֟֞֓֓֓֞֞֞֓֞֡֞֞֓֓֞֡֞֡֞֡֡֡֝	ä	77	3	3	3	18 V		18 V	GND	3 :		ä	GND	18 V	18 V	18 V			/3 4	ÒI (
	2	<u>۱</u> ۸				4.6 V				_		13.5 V												_								
	1	۲۱	4.6 V						13.5 V																							
Cases	A,C,D, T,X,Y	Test no.	93	9 8	8	92	96	92	96	3 5	102	131	40	105	106	107		108	109	110		112	113	114	115	116			117	19 -	119	120
	STD- 883	method														3010		n	3	u :		3009	n	×	3	n			2040	30.3	3	n
Symbol			Іон1 "	n	я	n	з :	3 3	10н2	я	я	3	3	3	3	I _{IH1} <u>5</u> /		I _{IH2}	3	3 3		I _{I∟1} <u>5</u> /	11.2	z	3	n n			C	; 5	n	3

See footnotes at end of device type 55.

TABLE III. Group A inspection for device type 55 - Continued.

<u>:=</u>																																	
Unit			su "	"	y	3	y	3	3	"	3	"	"	"	"	"	3	"	"	"	3	"	"	"	y	n	"	y	"	"	"	3	3
	Subgroup 11 $T_C = -55^{\circ}C$	Max	115	n	3	я	3	ä	3	125	3	3	"	110	3	n	3	90	u	u	3	110	"	"	ä	20	u	3	u	120	3	ı	n
	Subgr $T_c =$	Min	0.9	n	3	n	3	3	n	n	3	,,,	"	n	"	n	n	n	"	n	3	"	n	"	n	n	"	3	"	"	3	"	"
imits	oup 10 25°C	Max	172	n	3	n	ä	3	ı	188	3	n	n	165	"	n	r	22	"	n	3	165	"	"	"	105	"	ä	"	180	3	"	"
Test limits	Subgroup 10 $T_{\rm C} = 125^{\circ}{\rm C}$	Min	0.6	"	3	n	ä	3	ä	"	3	3	"	n	ä	n	ä	"	"	u	3	33	"	n,	"	n	"	ä	"	n	3	3	n
	onb 9	Max	115	3	3	3	3	3	3	125	3	3	3	110	3	"	3	20	3	3	3	110	3	31	3	20	3	3	3	120	3	"	n
	Subgroup 9 $T_{\rm C} = 25^{\circ}{\rm C}$	Min	0.9	3	3	3	3	3	3	n	3	3	3	,,	3	,,	3	n	3	3	3	3	3	3	3	"	3	3	3	3	3	,	n
Measured	terminal		A1 to Y1 A2 to Y2	A3 to Y3	A4 to Y4	A1 to ₹1	A2 to $\overline{Y2}$	A3 to <u>Y3</u>	A4 to Y4	A1 to Y1	A2 to Y2	A3 to Y3	A4 to Y4	A1 to <u>Y</u> 1	A2 to <u>Y</u> 2	A3 to <u>Y</u> 3	A4 to <u>Y</u> 4	۲۱	Υ2	χ3	Υ4	ıΣ	ΥΣ	-ΣΙ	\ \ \ \	7.1	Υ2	χ3	Υ4	1≻	121	 \ 	<u>¥</u> 4
	14	V _{DD}	5.0 V	n	3	3	3	=	×	n	3	u	3	"	ä	"	3	"	3	n	3	3	3	y y	y	n	3	3	3	3	3	3	n
	13	A4			Z				Z				Z				Z				Z				Z				Z				Z
	12								OUT								OUT								OUT								OUT
	11	74			OUT								OUT								DUT								OUT				
1/	10	А3		Z				Z				Z				Z				z				Z				Z				Z	
ts, see	6	<u> </u>						OUT								DUT								DUT								OUT	
r terminal conditions and limits, see 1/	8	. ×3		OUT				_												TUO								OUT				_	
nditions	7	Vss	GND "	,	,	=	3		ņ	n	3	<u>"</u>	,,	n	"	n	3	"	,,	,	3	,	,,	,,	3	,,	,,	<u>"</u>	,,	3	3	,,	"
inal cor	9	A2 \	ڻ ع				Z				z				z				z				Z				z				Z		
For term				_							_								_	'			_				_						
	2	<u>Y2</u>					DO								DO								100 1								OUT		
	4	Y2	TIO	-))							OUT								OUT								OUT						
	3	A1	롣			Z				Z				Z				Z				Z				Z				Z			
	2	<u>Υ</u> 1				OUT								OUT								OUT								OUT			
	1	71	OUT							OUT								OUT								OUT							
Cases	A,C,D, T,X,Y	Test no.	121	121	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152
MIL-	STD- /	method	3003 Fig. 3) -	3	,	¥	=	3	n	n n	n,	3	3	ı	¥	n	3004	Fig. 3) =	3	:	3	3	y	3	3	¥	3	n	y	=	n
Symbol			"Hd	n	3	я	3	3	3	фгн	3	3	3	n	n	n	ä	t _{THL}	3	я	3	3	y	n	n	t⊤∟H	3	3	3	3	3	3	n

Input pins not designated may be tied to V_{DD} (or V_{CC}) or GND or may be left open provided they do not influence the outcome of the measurement. Output pins not designated may be tied to the loads or may be left open provided they do not influence the outcome of the measurement. 7

2/ Terminal 16 is not connected for device types 53 and 54.

3/ Test parameter V_{IC(pos)} does not apply to device types 53 and 54.

When performing quiescent supply current measurements (Iss), the meter shall be placed so that all currents flow through the meter. 4

The device manufacturer may, at his option, measure I_{IL} and I_{IH} at 25°C for each individual input or measure all inputs together. 2

 $\underline{6}$ / (A) Capacitance bridge between measured terminal and V_{SS}; frequency = 1 MHz.

Test limits tph., tph., tph., and tth for device types 51/53 and 52/54 consists of two sets of values and are expressed XXX/XXXX in the limits column. The digits preceding the slash apply to the first device in a set. /

- 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.
- 4.4.5 <u>Group E inspection</u>. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.7 herein). RHA levels for device classes B and S shall be as specified in MIL-PRF-38535 and 4.5.4 herein.
 - 4.5 Methods of inspection. Methods of inspection shall be specified and as follows:
- 4.5.1 <u>Voltage and current.</u> Unless otherwise specified, all voltages given are referenced to the microcircuit V_{SS} terminal. Currents given are conventional current and positive when flowing into the referenced terminal.
- 4.5.2 <u>Burn-in and life test cool down procedures</u>. When the burn-in and life tests are completed and prior to removal of bias voltages, the devices under test (DUT) shall be cooled to a temperature of 25° C $\pm 3^{\circ}$ C; then, electrical parameter endpoint measurements shall be performed.

Parameter 1/	Device	e types
	01-05	51-55
I _{SS}	±20 nA	±20 nA
V_{OL1}	±0.04 V	
V_{OH1}	±0.08 V	
I _{OL1}		±15%
I _{OH1}		±15%

TABLE IV. Delta limits at 25°C.

<u>1</u>/ Each of the above parameters shall be recorded before and after the required burn-in and life tests to determine delta (Δ).

- 4.5.3 Quiescent supply current (I_{SS} test). When performing quiescent supply current measurements (I_{SS}), the meter shall be placed so that all currents flow through the meter.
- 4.5.4 <u>Radiation hardness assurance (RHA) testing</u>. The RHA testing shall be performed in accordance with test procedures and sampling specified in MIL-PRF-38535 and herein.
 - a. Before irradiation, selected samples shall be assembled in qualified packages and pass the governing electrical parameters (group A subgroup 1 at 25°C) and also be subjected to the threshold-voltage test in table VII in order to calculate the delta threshold (ΔV_T) after irradiation.
 - b. The devices shall be subjected to a total radiation dose as specified in MIL-PRF-38535 for the radiation hardness assurance level being tested, and meet the end-point electrical parameters as defined in table V at 25°C, after exposure. The start and completion of the end-point electrical parameter measurements shall not exceed 2 hours following irradiation.
 - c. Threshold-voltage test circuit conditions shall be as specified in table VII and on figure 4. In situ and remote testing, the tests shall be performed with the devices biased in accordance with table VI and the bias may be interrupted for up to 1 minute to remove devices to the remote bias fixture.
 - d. After irradiation, the devices shall pass the truth table test as specified in subgroup 7 in table III or if subgroup 7 is not required, then an equivalent truth table test shall be performed.

TABLE V. Radiation hardened end-point electrical parameters at 25°C.

Parameter	All device types	\	/ _{DD}
		Devic	e types
		01-05	51-55
V_{TN}	0.3 V min	10 V	10 V
V_{TP}	2.8 V max	10 V	10 V
ΔV_{T}	1.4 V max	10 V	10 V
I _{SS}	100 x max limit	15 V	18 V
t _{PLH}	1.35 x max limit	5 V	5 V
t _{PHL}	1.35 x max limit	5 V	5 V

TABLE VI. Bias during exposure to radiation.

Device type	Pin connect	tions <u>1</u> /	
	V_{DD} = 10 V dc (through a 30 kΩ to 60 kΩ resistor)	V _{SS} = GND	V_{CC} and $V_{DD} = 10 \text{ V dc}$
01, 51	3, 5, 7, 9, 11, 14	8	1, 16
02, 52	3, 5, 7, 9, 11, 14	8	1, 16
03, 53	3, 5, 7, 9, 11, 14	8	1
04, 54	3, 5, 7, 9, 11, 14	8	1
05, 55	3, 6, 10, 13	7	14

^{1/} Pins not designated are open, or tied to 10 V dc through a 30 k Ω to 60 k Ω resistor.

5. PACKAGING

5.1 <u>Packaging</u>. For acquisition purposes, the packaging requirements are as specified in the contract or order (see 6.2). When 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 commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

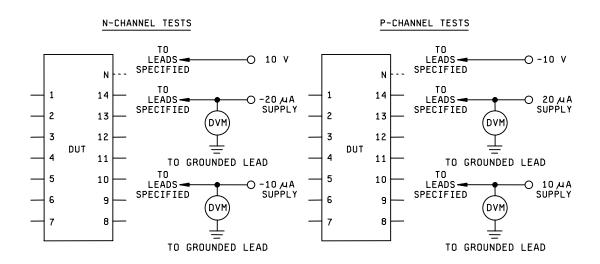


FIGURE 4. Threshold-voltage test circuit.

TABLE VII. Threshold-voltage test circuit conditions.

Device	GND	10 V	V _{TN} measured at		GND	-10 V	V _{TP} measured at	
			-20 μA	-10 μA supply			20 μA supply	10 μA supply
			supply					
01, 51	3	1, 16		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1, 16
02, 52	3	1, 16		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1, 16
03, 53	3	1		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1
04, 54	3	1		5, 7, 8, 9, 11, 14	3	5, 7, 8, 9, 11, 14		1
05, 55	3	14		6, 7, 10, 13	3	6, 7, 10, 13		14

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:
 - Title, number, and date of the specification.
 - PIN and compliance identifier, if applicable (see 1.2).
 - c. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
 - d. Requirements for certificate of compliance, if applicable.
 - e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.
 - f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.
 - g. Requirements for product assurance and radiation hardness assurance options.
 - h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
 - i. Requirements for "JAN" marking.
 - j. Packaging requirements. (see 5.1)
- 6.3 <u>Superseding information</u>. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractors parts lists.
- 6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, P.O. Box 3990, Columbus, Ohio 43218-3990.
- 6.5 <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:

C ₁	Input terminal-to-GND capacitance.
GND	Ground zero voltage potential.
T _A	Free air temperature.
I _{DD} and I _{CC}	DC supply current.
I _{GND}	DC ground current.
I _{SS}	Quiescent supply current.
V _{DD}	Positive supply voltage.
V _{IC} (pos)	Positive clamping input to V _{DD} .
V _{IC} (neg)	Negative clamping input to V _{SS} .
V _{SS}	Negative supply voltage.

- 6.6 <u>Logistic support.</u> Lead materials and finishes (see 3.4) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class S for National Aeronautics and Space Administration or class B for Department of Defense (see 1.2.2), lead material and finish A (see 3.4). Longer length leads and lead forming will not affect the part number.
- 6.7 <u>Data reporting</u>. When specified in the purchase order or contract, a copy of the following data, as applicable, will be supplied.
 - a. Attributes data for all screening tests (see 4.2) and variables data for all static burn-in, dynamic burn-in, and steady-state life tests (see 3.6).
 - b. A copy of each radiograph.
 - c. The technology conformance inspection (TCI) data (see 4.4).
 - d. Parameter distribution data on parameters evaluated during burn-in (see 3.6).
 - e. Final electrical parameters data (see 4.2d).
 - f. RHA delta limits.

6.8 <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, post irradiation performance or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device	Generic-industry
type	type
01	4009A
02	4010A
03	4049A
04	4050A
05	4041A
51	4009UB
52	4010B
53	4049UB
54	4050B
55	4041UB

6.9 <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 extent of the changes.

Custodians:

Army - CR

Navy - EC

Air Force - 11

DLA - CC

Preparing activity:

DLA - CC

(Project 5962-2066)

Review activities:

Army - MI, SM

Navy - AS, CG, MC, SH, TD

Air Force - 03, 19, 99

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