INCH-POUND
MIL-M-38510/104C
18 September 2003
SUPERSEDING
MIL-M-38510/104B
29 May 1987

MILITARY SPECIFICATION

MICROCIRCUITS, LINEAR, LINE DRIVERS AND RECEIVERS, MONOLITHIC SILICON

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

Reactivated for new design as of 18 September 2003. May be used for either new or existing design acquisition.

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon line drivers and receivers for use as voltage comparators and in balanced or unbalanced differential transmission systems which may include party-line transmission systems. Two product assurance classes and a choice of case outlines and lead finishes are provided and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3)

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

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

Device type	Circuit
01	Dual line receiver
02	Dual line receiver (open collector output)
03	Dual differential line driver (two-state output)
04	Dual differential line receiver
05	Dual differential line driver (three-state output with high-impedance off-state)
06	Dual differential line driver (three-state output with high-impedance off-state) with output diode clamping
07	Dual differential line driver (three-state output with high-impedance off-state)

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

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

Outline letter	Descriptive designator	Terminals	Package style
A 1/	GDFP5-F14 or CDFP6-F14	14	Flat pack
B 1/	GDFP4-F14	14	Flat pack
C	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
2	CQCC1-N20	20	Square leadless chip carrier

1/ Inactive package case outline.

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, 3990 East Broad St., Columbus, OH 43216-5000, or email bipolar@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 www.dodssp.daps.mil.

AMSC N/A FSC 5962

1.3 Absolute maximum ratings.

1.3.1 Device types 01 and 02:

Maximum power dissipation (P_D) ..... 550 mW
Positive supply voltage ($+V_{CC}$)..... +7.0 V dc
Negative supply voltage ($-V_{CC}$) ..... -7.0 V dc
Differential input voltage ..... -6.0 V dc to +6.0 V dc
Common-mode input voltage ..... -5.0 V dc to +5.0 V dc
Strobe input voltage ..... +5.5 V dc
Lead temperature (soldering, 10 seconds) ..... +300°C
Junction temperature (T_J) ..... +175°C
Storage temperature range ..... -65°C to +150°C
Thermal resistance, junction-to-case (θ_{JC}):
  Cases C and E ..... 28°C/W
  Cases A, B, D, and F ..... 22°C/W
  Case 2 ..... 20°C/W
Thermal resistance, junction-to-ambient (θ_{JA}):
  Cases C and E ..... 91°C/W
  Cases A, B, D, and F ..... 119°C/W
  Case 2 ..... 125°C/W

1.3.2 Device types 03 and 05:

Supply voltage range ..... -0.5 V dc to +7.0 V dc
Input data voltage range ..... -1.5 V dc at -12 mA to +5.5 V dc
Open collector output voltage range ..... -1.5 V dc at -40 mA to V dc
Maximum power dissipation (P_D) ..... 400 mW
Lead temperature, (soldering, 10 seconds) ..... +300°C
Junction temperature (T_J) ..... +175°C
Storage temperature range ..... -65°C to +150°C
Thermal resistance, junction-to-case (θ_{JC}):
  Cases C and E ..... 28°C/W
  Cases A, B, D, and F ..... 22°C/W
  Case 2 ..... 20°C/W
Thermal resistance, junction-to-ambient (θ_{JA}):
  Cases C and E ..... 91°C/W
  Cases A, B, D, and F ..... 119°C/W
  Case 2 ..... 125°C/W

1.3.3 Device type 04:

Supply voltage range ..... -0.5 V dc to +7.0 V dc
Input data voltage range ..... -20 V dc to +20 V dc
Input strobe voltage range ..... -0.5 V dc to +5.5 V dc
Maximum power dissipation (P_D) ..... 400 mW
Lead temperature (soldering, 10 seconds) ..... +300°C
Junction temperature (T_J) ..... +175°C
Storage temperature range ..... -65°C to +150°C
Thermal resistance, junction-to-case (θ_{JC}):
  Cases C and E ..... 28°C/W
  Cases A, B, D, and F ..... 22°C/W
  Case 2 ..... 20°C/W
Thermal resistance, junction-to-ambient (θ_{JA}):
  Cases C and E ..... 91°C/W
  Cases A, B, D, and F ..... 119°C/W
  Case 2 ..... 125°C/W

1.3.4 Device types 06 and 07:

Supply voltage range	-0.5 V dc to +7.0 V dc
Input voltage range	-1.5 V dc at –12 mA to +5.5 V dc
Input strobe voltage range	-0.5 V dc to +5.5 V dc
Maximum power dissipation (P_D)	220 mW
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J)	+175°C
Storage temperature range	-65°C to +150°C
Thermal resistance, junction-to-case (θ_{JC}):	
Cases C and E	28°C/W
Cases A, B, D, and F	22°C/W
Case 2	20°C/W
Thermal resistance, junction-to-ambient (θ_{JA}):	
Cases C and E	91°C/W
Cases A, B, D, and F	119°C/W
Case 2	125°C/W

1.4 Recommended operating conditions.

1.4.1 Device types 01 and 02:

Supply voltage ($+V_{CC}$)	+4.5 V dc minimum to +5.5 V dc maximum
Supply voltage ($-V_{CC}$)	-4.5 V dc minimum to -5.5 V dc maximum
Output sink current	-16 mA maximum
Differential input voltage	-5 V dc minimum to +5 V dc maximum
Common-mode input voltage	-3 V dc minimum to +3 V dc maximum
Input voltage range	-5 V dc minimum to +3 V dc maximum
Ambient operating temperature range (T_A)	$-55°C \le T_A \le +125°C$

1.4.2 Device types 03 and 05:

Supply voltage	4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage	2.0 V dc
Maximum low level input voltage	0.8 V dc
Ambient operating temperature range (T_A)	$-55°C \le T_A \le +125°C$

1.4.3 Device type 04:

Supply voltage	4.5 V dc minimum to 5.5 V dc maximum
Common mode input voltage (data inputs)	-15 V dc to +15 V dc
Minimum high level input voltage (strobe input)	2.0 V dc
Maximum low level input voltage (strobe input)	0.8 V dc
Ambient operating temperature range (T_A)	$-55°C \le T_A \le +125°C$

1.4.4 Device types 06 and 07:

Supply voltage	4.5 V dc minimum to 5.5 V dc maximum
Minimum high level input voltage	2.0 V dc
Maximum low level input voltage	0.8 V dc
Ambient operating temperature range (T_A)	$-55°C \le T_A \le +125°C$

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

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 from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein the text of this document shall 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 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

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

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

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

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

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

3.4 Lead material and finish. The lead material and finish shall be in accordance with MIL-PRF-38535 (see 6.6).

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

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

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

3.8 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 53 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions	Device type	Limits		Unit
				Min	Max	
High level input current into 1A or 2A	I_{IH1}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{ID} = 0.5 V; V_{IC} = -3 V to +3 V	01, 02		75	µA
High level input current into S	I_{IH2}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 2.4 V	01, 02		80	µA
	I_{IH3}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 5.5 V			2	mA
High level input current into 1G or 2G	I_{IH4}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 2.4 V	01, 02		40	µA
	I_{IH5}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 5.5 V			100	
Low level input current into 1A or 2A	I_{IL1}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{ID} = -2 V; V_{IC} = -3 V to +3 V	01, 02		-10	µA
Low level input current into 1G or 2G	I_{IL2}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 0.4 V	01, 02	-0.7	-1.6	mA
Low level input current into S	I_{IL3}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{IN} = 0.4 V	01, 02	-1.4	-3.2	mA
High level output voltage	V_{OH}	$+V_{CC}$ = +4.5 V; $-V_{CC}$ = -4.5 V; I_{OH} = -400 µA; V_{IC} = -3 V to +3 V	01	2.4		V
Low level output voltage	V_{OL}	$+V_{CC}$ = +4.5 V; $-V_{CC}$ = -4.5 V; I_{OL} = 16 mA; V_{IC} = -3 V to +3 V	01, 02		0.4	V
Short-circuit output current	I_{OS}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V 1/	01	-18	-70	mA
High level output current	I_{OH}	$+V_{CC}$ = +4.5 V; $-V_{CC}$ = -4.5 V; V_{OH} = 5.5 V	02		250	µA
High level supply current from $+V_{CC}$	I_{CCH+}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{ID} = 25 mV	01, 02		30	mA
High level supply current from $-V_{CC}$	I_{CCH-}	$+V_{CC}$ = +5.5 V; $-V_{CC}$ = -5.5 V; V_{ID} = 25 mV	01, 02		-15	mA
Propagation delay to high level (inputs A and B to output)	t_{PLH1}	$+V_{CC}$ = +5.0 V; $-V_{CC}$ = -5.0 V; R_L = 390 Ω; C_L = 50 pF	01		40	ns
			02		45	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions	Device type	Limits		Unit
				Min	Max	
Propagation delay to low level (inputs A and B to output)	t_{PHL1}	$+V_{CC}$ = +5.0 V; $-V_{CC}$ = -5.0 V; R_L = 390 Ω; C_L = 50 pF	01, 02		35	ns
Propagation delay to high level (strobe inputs G or S to output)	t_{PLH2}	$+V_{CC}$ = +5.0 V; $-V_{CC}$ = -5.0 V; R_L = 390 Ω; C_L = 50 pF	01		30	ns
			02		40	
Propagation delay to low level (strobe inputs G or S to output)	t_{PHL2}	$+V_{CC}$ = +5.0 V; $-V_{CC}$ = -5.0 V; R_L = 390 Ω; C_L = 50 pF	01, 02		25	ns
High level output voltage	V_{OH1}	V_{CC} = 4.5 V; V_{IN} = 0.8 V or 2.0 V; I_{OH} = -10 mA	03	2.4		V
	V_{OH2}	V_{CC} = 4.5 V; V_{IN} = 0.8 V or 2.0 V; I_{OH} = -20 mA		2.4 2/		
Low level output voltage	V_{OL}	V_{CC} = 4.5 V; V_{IN} = 0.8 V or 2.0 V; I_{OL} = 40 mA	03		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V; I_{IC} = -12 mA; T_A = +25°C	03		-1.5	V
Output clamp voltage	V_{OC}	V_{CC} = 5.5 V; I_{OLC} = -40 mA; T_A = +25°C	03		-1.5	V
Low level input current	I_{IL}	V_{CC} = 5.5 V; V_{IN} = 0.4 V	03	-0.7	-1.6	mA
High level input current (inputs A, B, and C)	I_{IH1}	V_{CC} = 5.5 V; V_{IN} = 2.4 V	03		40	µA
	I_{IH2}	V_{CC} = 5.5 V; V_{IN} = 5.5 V			100	
High level input breakdown voltage	BV_{IN}	V_{CC} = 5.5 V; I_{IN} = 1 mA	03	5.5		V
Short-circuit output current	I_{OS}	V_{CC} – 5.5 V, V_{OUT} = 0 V 1/, T_A = +25°C, T_A = +125°C	03	-40	-130	mA
		V_{CC} – 5.5 V, V_{OUT} = 0 V 1/, T_A = -55°C		-40	-155	
Output leakage current	I_{CEX}	V_{CC} = 5.5 V; V_{CEX} = 12 V	03		200	µA
Power supply current	I_{CC}	V_{CC} = 5.5 V	03		50	mA
Propagation delay to high level (input to 1Z or 2Z)	t_{PLH1}	V_{CC} = 5.0 V; C_L = 50 pF	03		32	ns
Propagation delay to low level (input to 1Z or 2Z)	t_{PHL1}	V_{CC} = 5.0 V; C_L = 50 pF	03		30	ns
Propagation delay to high level (input to 1Y or 2Y)	t_{PLH2}	V_{CC} = 5.0 V; C_L = 50 pF	03		30	ns
Propagation delay to low level (input to 1Y or 2Y)	t_{PHL2}	V_{CC} = 5.0 V; C_L = 50 pF	03		32	ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions	Device type	Limits		Unit
				Min	Max	
High level output voltage	V_{OH}	V_{CC} = 4.5 V; I_{OH} = -5 mA	04	2.4		V
Low level output voltage	V_{OL}	V_{CC} = 4.5 V; I_{OL} = 16 mA	04		0.4	V
Supply current (both receivers)	I_{CC}	V_{CC} = 5.5 V; V_{IC} = 0; V_{DIFF} = 0.5 V	04		50	mA
Input clamp voltage (strobe)	V_{IC}	V_{CC} = 4.5 V; I_{IC} = -12 mA; T_A = +25°C	04		-1.5	V
High level input breakdown voltage (strobe)	B_{VIN}	V_{CC} = 5.5 V; I_{IN} = 1 mA	04	5.5		V
Low level input current (data input)	I_{IL1}	V_{CC} = 5.5 V; V_{IN} = 0.4 V; other input = 5.5 V	04	-0.2	-0.9	mA
Low level input current (strobe)	I_{IL2}	V_{CC} = 5.5 V; V_{IN} = 0.4 V; V_{DIFF} = 0.5 V	04	-1.0	-2.4	mA
Low level input current (response control)	I_{IL3}	V_{CC} = 5.5 V; V_{IN} = 0.4 V; V_{DIFF} = 0.5 V	04	-1.2	-4.1	mA
High level input current (strobe)	I_{IH}	V_{CC} = 5.5 V; V_{IN} = 4.5 V; V_{DIFF} = -0.5 V	04		5.0	µA
Input resistor	R_{IN}	T_A = +25°C; V_{CC} = 5.0 V; V_{IN} = 1.0 V	04	77	167	Ω
Output leakage current	I_{CEX}	V_{CC} = 4.5 V; V_{OUT} = 12 V	04		200	µA
Output short circuit current	I_{OS}	V_{CC} = 5.5 V 1/	04	-15	-80	mA
Differential input threshold voltage	V_{TH}	V_{CM} = 0 V	04		500	mV
		V_{CM} = ±15 V			2.0	V
Propagation delay to low level (inputs A and B to output)	t_{PHL1}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 390 Ω for t_{PHL}; R_L = 3,900 Ω for t_{PLH}	04		60	ns
Propagation delay to high level (inputs A and B to output)	t_{PLH1}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 390 Ω for t_{PHL}; R_L = 3,900 Ω for t_{PLH}	04		60	ns
Propagation delay to low level (strobe to output)	t_{PHL2}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 390 Ω for t_{PHL}; R_L = 3,900 Ω for t_{PLH}	04		25	ns
Propagation delay to high level (strobe to output)	t_{PLH2}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 390 Ω for t_{PHL}; R_L = 3,900 Ω for t_{PLH}	04		25	ns
High level output voltage	V_{OH1}	V_{CC} = 4.5 V; I_{OH} = -10 mA	05	2.4		V
	V_{OH2}	V_{CC} = 4.5 V; I_{OH} = -40 mA; T_A = +25°C		2.0		
Low level output voltage	V_{OL}	V_{CC} = 4.5 V; I_{OL} = 40 mA	05		0.4	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V; I_{IC} = -12 mA; T_A = +25°C	05		-1.5	V

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions	Device type	Limits		Unit
				Min	Max	
Output clamp voltage	V_{OC}	V_{CC} = 5.5 V; I_O = -40 mA	05		-1.5	V
Low level input current (inputs A, B, and C)	I_{IL1}	V_{CC} = 5.5 V; V_{IN} = 0.4 V	05	-0.7	-1.6	mA
Low level input current (input D)	I_{IL2}	V_{CC} = 5.5 V; V_{IN} = 0.4 V	05	-1.4	-3.2	mA
High level input current (inputs A, B, and C)	I_{IH1}	V_{CC} = 5.5 V; V_{IN} = 2.4 V	05		40	µA
	I_{IH2}	V_{CC} = 5.5 V; V_{IN} = 5.5 V			100	
High level input current (input D)	I_{IH3}	V_{CC} = 5.5 V; V_{IN} = 2.4 V	05		80	µA
	I_{IH4}	V_{CC} = 5.5 V; V_{IN} = 5.5 V			200	
Off-state open collector output leakage current (outputs YP and ZP)	I_{O1}	V_{CC} = 5.5 V; V_O = 12 V	05		200	µA
Inhibited-state output leakage current (sink tied to pull-up)	I_{O2}	V_{CC} = 5.5 V; V_O = 0.0 V T_A = -55°C, +25°C	05		-120	µA
		T_A = +125°C			-175	
	I_{O3}	V_{CC} = 5.5 V; V_O = 0.4 V T_A = -55°C, +25°C			±80	
		T_A = +125°C			±125	
	I_{O4}	V_{CC} = 5.5 V; V_O = 2.4 V			±80	
	I_{O5}	V_{CC} = 5.5 V; V_O = 5.0 V			200	
Short-circuit output current	I_{OS}	V_{CC} = 5.5 V; V_O = 0.0 V	05	-40	-120	mA
Supply current (both drivers)	I_{CC1}	V_{CC} = 5.5 V; V_{IN} = 0.0 V; T_A = +25°C	05		65	mA
	I_{CC2}	V_{CC} = 7.0 V; V_{IN} = 0.0 V; T_A = +25°C			85	
Propagation delay time (low-to-high level output)	t_{PLH} (1 and 2)	V_{CC} = 5.0 V; C_L = 50 pF	05		30	ns
Propagation delay time (high-to-low level output)	t_{PHL} (1 and 2)	V_{CC} = 5.0 V; C_L = 50 pF	05		30	ns
Propagation delay time (disabled to high level output)	t_{PZH}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 180 Ω; V_L = 0.0 V	05		25	ns
Propagation delay time (high level to disabled output)	t_{PHZ}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 180 Ω; V_L = 0.0 V	05		35	ns
Propagation delay time (disabled to low level output)	t_{PZL}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 250 Ω; V_L = 5.0 V	05		35	ns
Propagation delay time (low level to disabled output)	t_{PLZ}	V_{CC} = 5.0 V; C_L = 50 pF; R_L = 250 Ω; V_L = 5.0 V	05		45	ns
High level output voltage	V_{OH}	V_{CC} = 4.5 V; V_{IL} = 0.8 V; V_{IH} = 2.0 V; I_{OH} = -2 mA; V_{IL} = 0.7 V at +125°C	06, 07	2.4		V

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions	Device type	Limits		Unit
				Min	Max	
Low level output voltage	V_{OL}	V_{CC} = 4.5 V; V_{IL} = 0.8 V; V_{IH} = 2.0 V; I_{OL} = 40 mA; V_{IL} = 0.7 V at +125°C	06, 07		0.5	V
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V; I_{IC} = -12 mA; T_A = +25°C	06, 07		-1.5	V
Output clamp voltage	V_{OC}	V_{CC} = 4.5 V; I_{OC} = -12 mA; T_A = +25°C 3/	06, 07		-1.5	V
Low level input current	I_{IL}	V_{CC} = 5.5 V; V_{IN} = 0.4 V	06, 07	-0.7	-1.6	mA
High level input current	I_{IH1}	V_{CC} = 5.5 V; V_{IH} = 2.4 V	06, 07		40	µA
	I_{IH2}	V_{CC} = 5.5 V; V_{IH} = 5.5 V			100	
Output short circuit current	I_{OS}	V_{CC} = 5.5 V 1/	06, 07	-40	-120	mA
Supply current	I_{CC}	V_{CC} = 5.5 V	06, 07		90	mA
Inhibited-state output leakage current	I_{O1}	V_{CC} = 5.5 V; V_{OUT} = 2.4 V	06, 07	-160	1.0	µA
	I_{O2}	V_{CC} = 5.5 V; V_{OUT} = 0.4 V		-160	1.0	
Propagation delay time (low-to-high level output)	t_{PLH}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	28	ns
Propagation delay time (high-to-low level output)	t_{PHL}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	28	ns
Propagation delay time (disabled to high level output)	t_{PZH}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	32	ns
Propagation delay time (high level to disabled output)	t_{PHZ}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	34	ns
Propagation delay time (disabled to low level output)	t_{PZL}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	32	ns
Propagation delay time (low level to disabled output)	t_{PLZ}	V_{CC} = 5.0 V; C_L = 50 pF	06, 07	2	36	ns

1/ Not more than one output should be shorted at a time.
2/ 2.2 V at -55°C.
3/ Type 06 only.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 9	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	N/A
Group C end-point electrical parameters	1, 2, 3	1, 2, 3
Additional electrical subgroups for group C periodic inspections	N/A	10, 11
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

*PDA applies to subgroup 1.

4. VERIFICATION.

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

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

a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

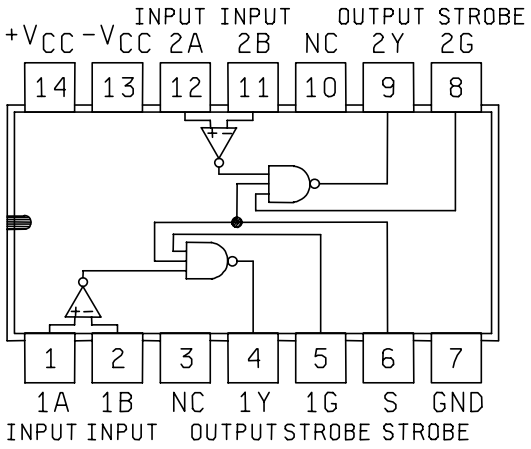
b. Reverse bias burn-in (method 1015 of MIL-STD-883). This screen shall apply to class S only.

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.

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

DEVICE TYPES 01 AND 02
CASES A,B,C, AND D



DEVICE TYPE 03
CASES E AND F

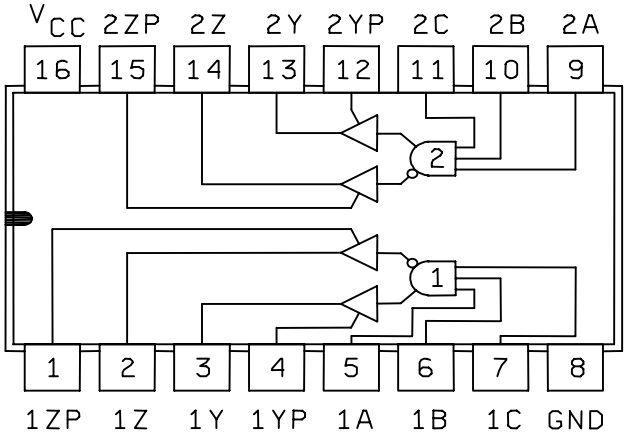
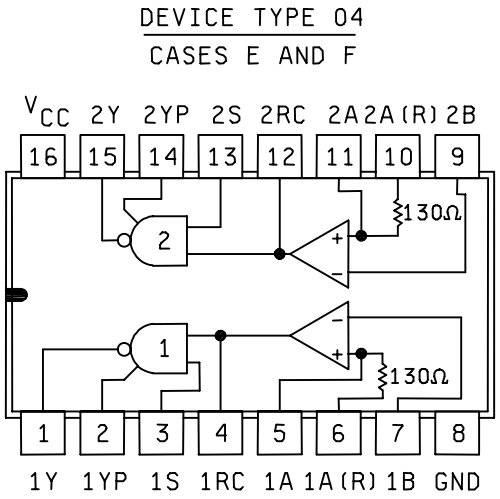


Figure 1. Logic diagrams and terminal connections.



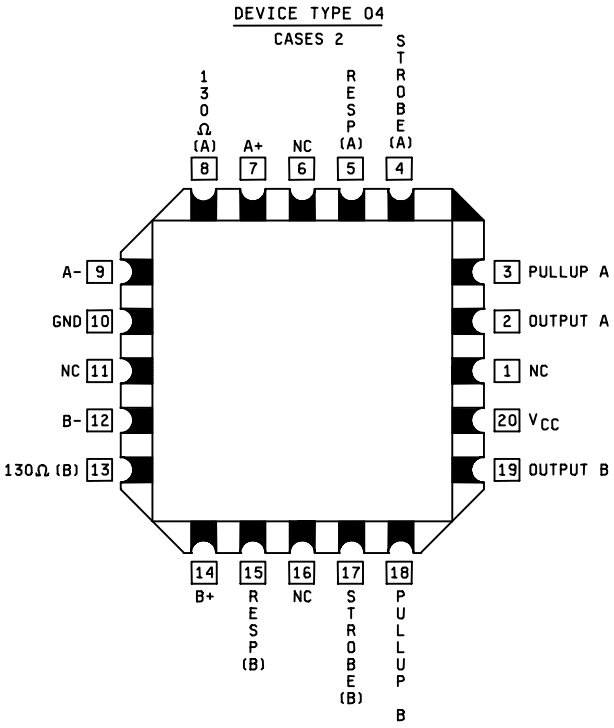
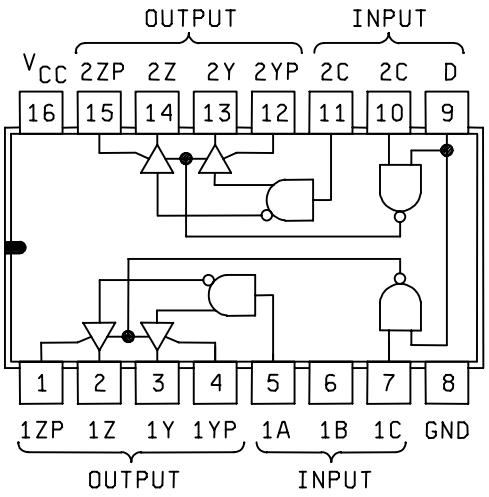


Figure 1. Logic diagrams and terminal connections – Continued.

DEVICE TYPE 05
CASES E AND F



DEVICE TYPES 06 AND 07
CASES E AND F

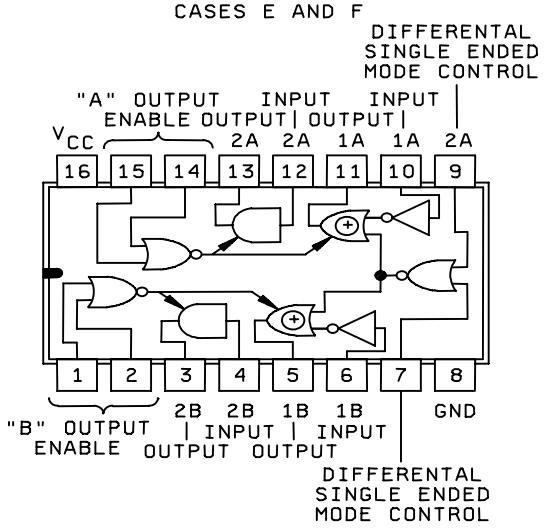


Figure 1. Logic diagrams and terminal connections – Continued.

Device types 01 and 02

Differential inputs A-B	Strobes		Output Y
	G	S	
$V_{ID} \geq 25$ mV	L or H	L or H	H
-25 mV < V_{ID} < 25 mV	L or H	L	H
	L	L or H	H
	H	H	Indeterminate
$V_{ID} \leq$ -25 mV	L or H	L	H
	L	L or H	H
	H	H	L

Device type 03

Inputs (1 or 2)			OUTPUTS	
A	B	C	1Z and 1ZP or 2Z and 2ZP	1Y and 1YP or 2Y and 2YP
L	L	L	H	L
H	L	L	H	L
L	H	L	H	L
H	H	L	H	L
L	L	H	H	L
H	L	H	H	L
L	H	H	H	L
H	H	H	L	H

FIGURE 2. Truth tables.

Device type 04

Inputs			Outputs
Differential inputs		Strobe	
A (1 or 2)	B (1 or 2)	S (1 or 2)	YP/Y (1 or 2) 1/
X 2/	X 2/	L	H
GND	GND	H	Indeterminate
GND	0.5 V	H	H
0.5 V	GND	H	L
0.5 V	0.5 V	H	Indeterminate

1/ Y and YP connected.
2/ X = don't care.

Device type 05

Inputs				Outputs			
A 1 or 2	B 1 (only)	C 1 or 2	D	ZP	Z	Y	YP
L	L or H	H	H	H	Hi Z	L	Hi Z
L or H	L	H	H	H	Hi Z	L	Hi Z
H	H	H	H	Hi Z	L	Hi Z	H
L or H	L or H	L	L or H	Hi Z	Hi Z	Hi Z	Hi Z
L or H	L or H	L or H	L	Hi Z	Hi Z	Hi Z	Hi Z

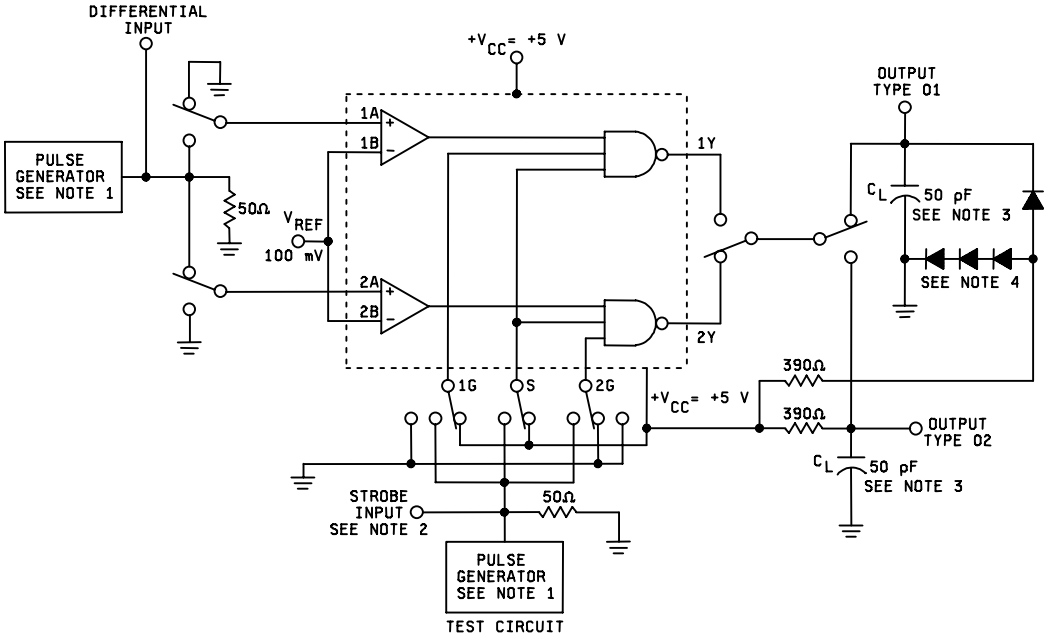
Device types 06 and 07

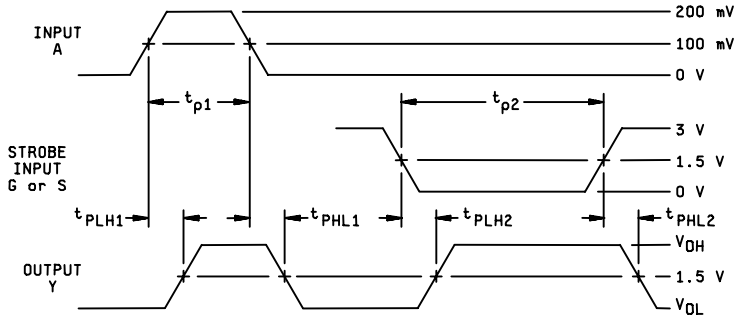
Inputs						Outputs	
Enable		D SE MC		1	2	1	2
L	L	L	L	L	L	L	L
L	L	L	L	H	H	H	H
L	L	X 1/	H	H	H	L	H
L	L	X	H	L	L	H	L
L	L	H	X	H	H	L	H
L	L	H	X	L	L	H	L
H	X	X	X	X	X	Hi Z	Hi Z
X	H	X	X	X	X	Hi Z	Hi Z

1/ X = don't care.

FIGURE 2. Truth tables – Continued.

Device types 01 and 02



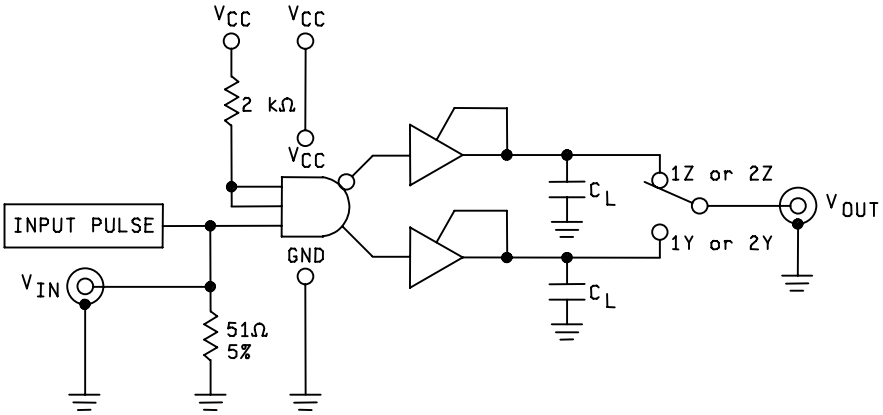


Notes:

1. The pulse generators have the following characteristics: Z_{OUT} = 50 Ω, $t_{TLH} = t_{THL} \leq 5$ ns, t_{pl} = 500 ns, PRR = 1 MHz, t_{p2} = 1 µs, PRR = 500 kHz.
2. All strobe inputs are tested according to table III.
3. C_L includes probe and jig capacitance.
4. All diodes are 1N916, or equivalent.

FIGURE 3. Switching time test circuit.

DEVICE TYPE 03



Notes:
1. Input pulse: Frequency = 500 kHz, amplitude = 3 ± 0.1 V, pulse width = 110 ± 10 ns, $t_r = t_f \leq 5$ ns.
2. C_L = 50 pF including probe and jig capacitance.
3. V_{CC} = 5 V

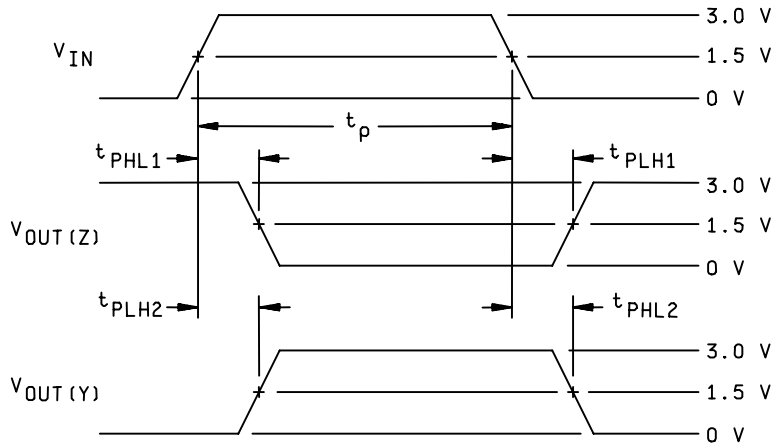
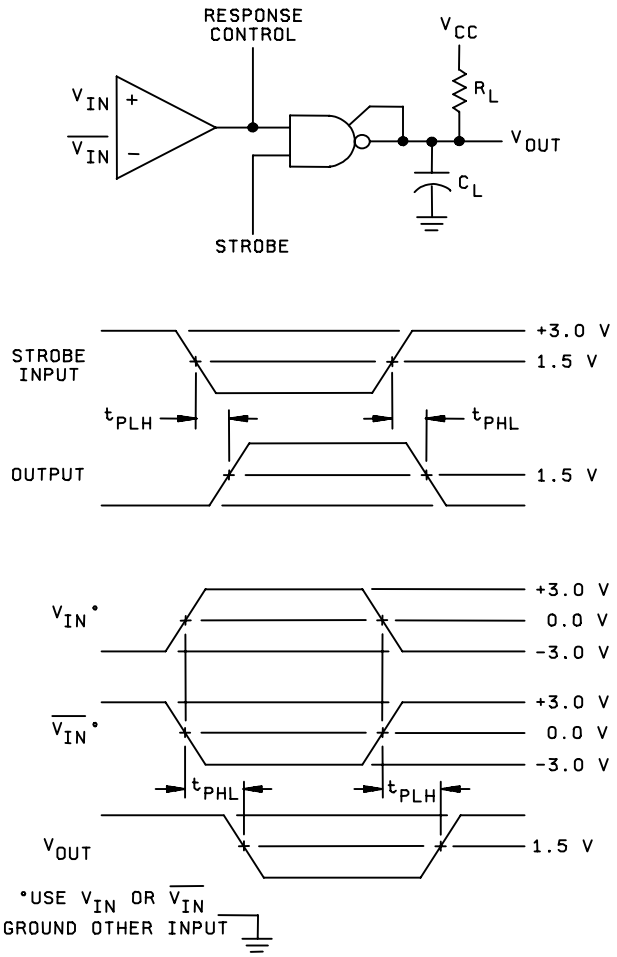


FIGURE 3. Switching time test circuit – Continued.

DEVICE TYPE 04

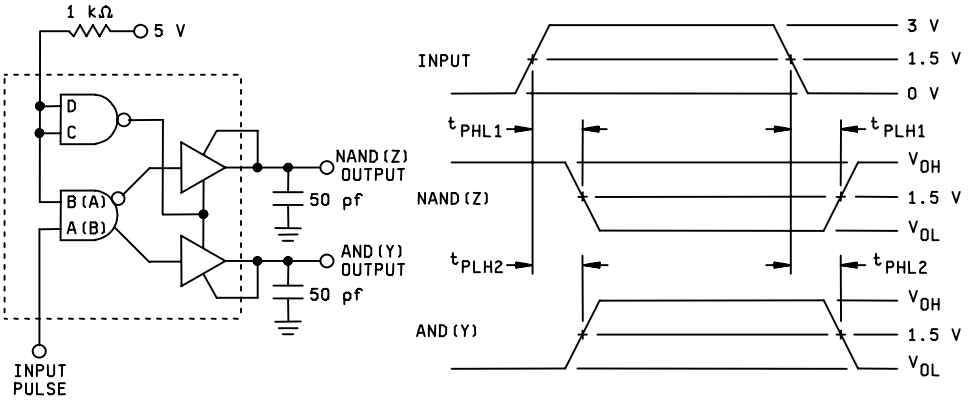


Notes:

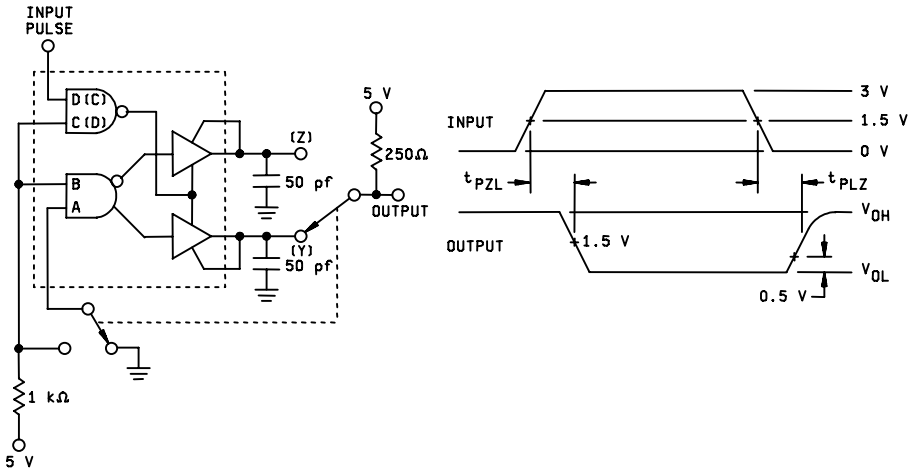
1. For t_{PHL} measurement, R_L = 390 Ω.
2. For t_{PLH} measurement, R_L = 3.9 kΩ
3. Input pulse: Pulse width 100 ns ± 10 ns, $t_r = t_f \leq 5$ ns, PRR = 500 kHz.
4. C_L = 50 pF including probe and jig capacitance.
5. Response control open, maximum socket capacitance = 5 pF.

FIGURE 3. Switching time test circuit – Continued.

DEVICE TYPE 05



t_{PLH} and t_{PHL} (see notes 1 and 2)

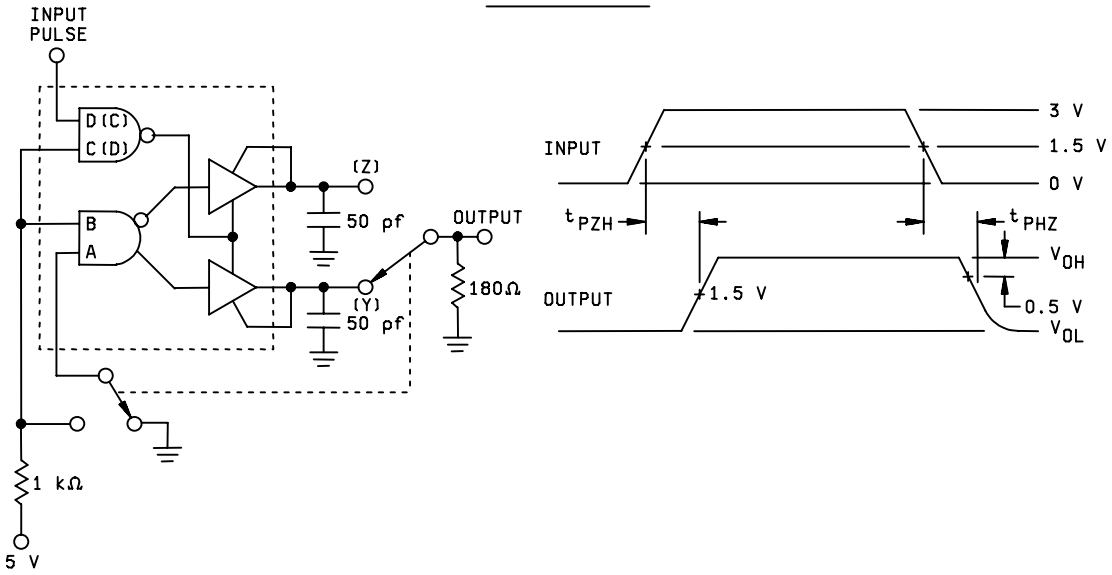


t_{PZL} and t_{PLZ} (see notes 1 and 2)

See notes at end of device type 05.

FIGURE 3. Switching time test circuit – Continued.

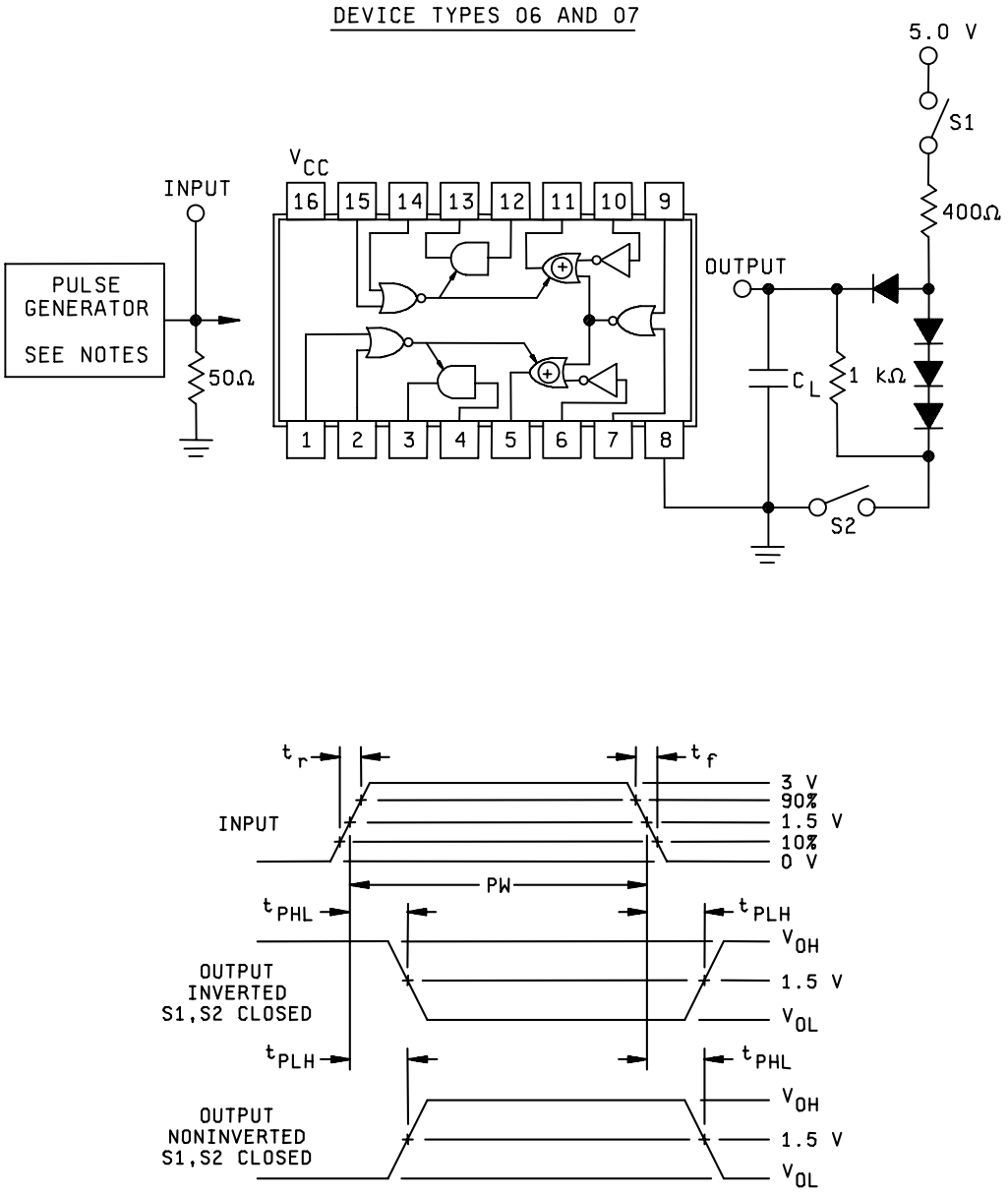
DEVICE TYPE 05



t_{PZH} and t_{PHZ} (see notes 1 and 2)

Notes:
1. The input pulse has the following characteristics: $t_r \leq 5$ ns, $t_f \leq 5$ ns, $t_p \leq 100$ ns, PRR = 500 kHz.
2. C_L includes probe and test fixture capacitance.

FIGURE 3. Switching time test circuit – Continued.

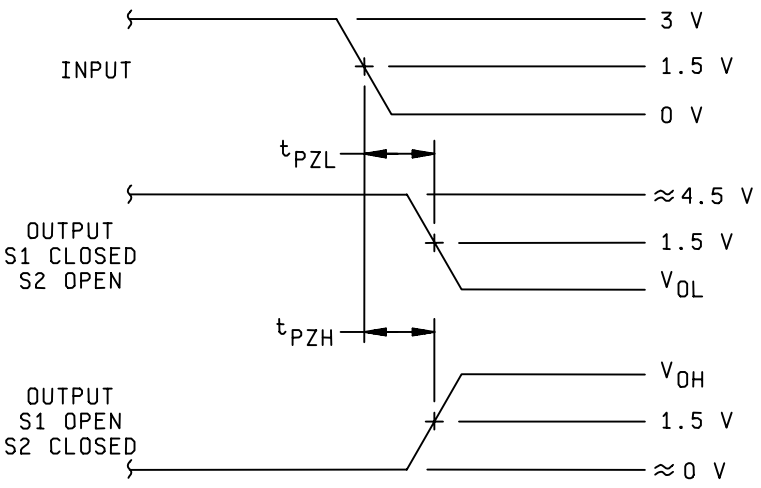


Waveform for t_{PLH} and t_{PHL}

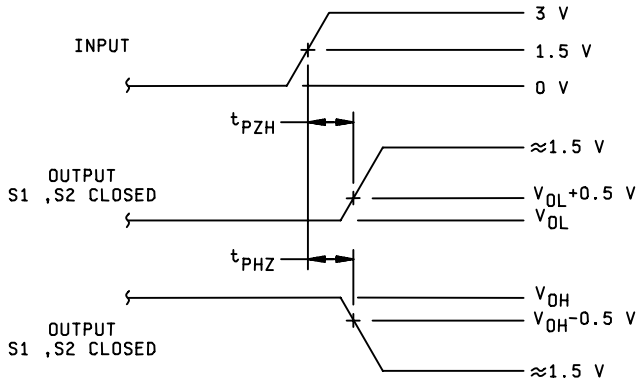
See notes at end of device types 06 and 07.

FIGURE 3. Switching time test circuit – Continued.

DEVICE TYPES 06 AND 07



Waveform for t_{PZL} and t_{PZH}



Waveform for t_{PLZ} and t_{PHZ}

Notes:
1. C_L = includes probe and jig capacitance = 50 pF ± 10%
2. Input characteristics: $t_r = t_f \leq 5$ ns, PW = 500 µs, PRR ≤ 500 kHz.
3. All resistors are ±5%.

FIGURE 3. Switching time test circuit – Continued.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	
			Test no.	1A	1B	NC	1Y	1G	S	GND	2G	2Y	NC	2B	2A	$-V_{CC}$	$+V_{CC}$				
1	V_{OH}	3006	1	1/	+3.0 V		-400 µA	2.0 V	2.0 V	GND	GND			GND	GND	-4.5 V	+4.5 V	1Y	2.4		V
T_A =+25°C		"	2	1/	-3.0 V		"	2.0 V	"	"	"			"	"	"	"	"	"		"
		"	3	2/	+3.0 V		"	0.8 V	"	"	"			"	"	"	"	"	"		"
		"	4	"	-3.0 V		"	0.8 V	"	"	"			"	"	"	"	"	"		"
		"	5	"	+3.0 V		"	2.0 V	0.8 V	"	"			"	"	"	"	"	"		"
		"	6	"	-3.0 V		"	2.0 V	0.8 V	"	"			"	"	"	"	"	"		"
		"	7	GND	GND			GND	2.0 V	"	2.0 V	-400 µA		+3.0 V	1/	"	"	2Y	"		"
		"	8	"	"			"	"	"	2.0 V	"		-3.0 V	1/	"	"	"	"		"
		"	9	"	"			"	"	"	0.8 V	"		+3.0 V	2/	"	"	"	"		"
		"	10	"	"			"	"	"	0.8 V	"		-3.0 V	"	"	"	"	"		"
		"	11	"	"			"	0.8 V	"	2.0 V	"		+3.0 V	"	"	"	"	"		"
		"	12	"	"			"	0.8 V	"	2.0 V	"		-3.0 V	"	"	"	"	"		"
	V_{OL}	3007	13	2/	+3.0 V		16 mA	2.0 V	2.0 V	"	GND			GND	GND	"	"	1Y		0.4	"
			14	2/	-3.0 V		16 mA	2.0 V	"	"	GND			GND	GND	"	"	1Y		"	"
			15	GND	GND			GND	"	"	2.0 V	16 mA		+3.0 V	2/	"	"	2Y		"	"
			16	GND	GND			GND	"	"	2.0 V	16 mA		-3.0 V	2/	"	"	2Y		0.4	"
	I_{IH1}	3010	17	3/	+3.0 V				GND	"				GND	GND	-5.5 V	+5.5 V	1A		75	µA
			18	3/	-3.0 V				"	"				GND	GND	"	"	1A		"	"
			19	GND	GND				"	"				+3.0 V	3/	"	"	2A		"	"
			20	GND	"				"	"				-3.0 V	3/	"	"	2A		"	"
	I_{IH2}		21	25 mV	"			GND	2.4 V	"	GND			GND	25 mV	"	"	S		80	"
	I_{IH3}		22	"	"			GND	5.5 V	"	"			"	25 mV	"	"	S		2	mA
	I_{IH4}		23	"	"			2.4 V	GND	"	"			"	GND	"	"	1G		40	µA
	I_{IH4}		24	GND	"			GND	"	"	2.4 V			"	25 mV	"	"	2G		40	"
	I_{IH5}		25	25 mV	"			5.5 V	"	"	GND			"	GND	"	"	1G		100	"
	I_{IH5}		26	GND	"			GND	"	"	5.5 V			"	25 mV	"	"	2G		100	"
	I_{IL1}	3009	27	4/	+3.0 V					"				GND	GND	"	"	1A		-10	"
			28	4/	-3.0 V					"				GND	GND	"	"	1A		"	"
			29	GND	GND					"				+3.0 V	4/	"	"	2A		"	"
			30	GND	"					"				-3.0 V	4/	"	"	2A		"	"
	I_{IL2}		31	-25 mV	"			0.4 V	4.5 V	"	GND			GND	GND	"	"	1G	-0.7	-1.6	mA
	I_{IL2}		32	GND	"			GND	4.5 V	"	0.4 V			"	-25 mV	"	"	2G	-0.7	-1.6	"
	I_{IL3}		33	-25 mV	"			4.5 V	0.4 V	"	4.5 V			"	-25 mV	"	"	S	-1.4	-3.2	"
	I_{OS}	3011	34	25 mV	"		GND	GND	GND	"	GND			"	+25 mV	"	"	1Y	-18	-70	"
	I_{OS}		35	"	"			GND	GND	"	GND	GND		"	"	"	"	2Y	-18	-70	"
	I_{CCH+}	3005	36	"	"			5.0 V	5.0 V	"	5.0 V			"	"	"	"	$+V_{CC}$		+30	"
	I_{CCH-}	3005	37	"	"			5.0 V	5.0 V	"	5.0 V			"	"	"	"	$-V_{CC}$		-15	"
2	Same tests, terminal conditions, and limits as subgroup 1, except T_A = +125°C.																				
3	Same tests, terminal conditions, and limits as subgroup 1, except T_A = -55°C.																				

See footnotes at end of device type 01.

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

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	
			Test no.	1A	1B	NC	1Y	1G	S	GND	2G	2Y	NC	2B	2A	$-V_{CC}$	$+V_{CC}$				
9	t_{PLH1}	3003	38	IN	100 mV		OUT	5.0 V	5.0 V	GND	GND			100 mV	GND	-5.0 V	+5.0 V	1A to 1Y		25	ns
T_A = +25°C	t_{PLH1}	(Fig. 3)	39	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		"	"
	t_{PHL1}		40	IN	"		OUT	5.0 V	"	"	GND			"	GND	"	"	1A to 1Y		"	"
	t_{PHL1}		41	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		"	"
	t_{PLH2}		42	"	"		OUT	IN	"	"	GND			"	GND	"	"	1G to 1Y		20	"
	t_{PLH2}		43	"	"			GND	"	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PLH2}		44	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PLH2}		45	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
	t_{PHL2}		46	"	"		OUT	IN	5.0 V	"	GND			"	"	"	"	1G to 1Y		15	"
	t_{PHL2}		47	"	"			GND	5.0 V	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PHL2}		48	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PHL2}		49	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
10	t_{PLH1}		50	IN	"		OUT	5.0 V	5.0 V	"	GND			"	GND	"	"	1A to 1Y		40	"
T_A = +125°C	t_{PLH1}		51	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		40	"
	t_{PHL1}		52	IN	"		OUT	5.0 V	"	"	GND			"	GND	"	"	1A to 1Y		35	"
	t_{PHL1}		53	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		35	"
	t_{PLH2}		54	"	"		OUT	IN	"	"	GND			"	GND	"	"	1G to 1Y		30	"
	t_{PLH2}		55	"	"			GND	"	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PLH2}		56	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PLH2}		57	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
	t_{PHL2}		58	"	"		OUT	IN	5.0 V	"	GND			"	"	"	"	1G to 1Y		25	"
	t_{PHL2}		59	"	"			GND	5.0 V	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PHL2}		60	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PHL2}		61	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
11	Same tests, terminal conditions, and limits as for subgroup 10, except T_A = -55°C.																				

1/ +25 mV applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
2/ -25 mV applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
3/ 0.5 V applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
4/ -2.0 V applied from positive input to negative input.

TABLE III. Group A inspection for device type 02.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	
			Test no.	1A	1B	NC	1Y	1G	S	GND	2G	2Y	NC	2B	2A	$-V_{CC}$	$+V_{CC}$				
1 T_A =+25°C	I_{OH}		1	1/	+3.0 V		5.5 V	2.0 V	2.0 V	GND	GND			GND	GND	-4.5 V	+4.5 V	1Y		250	µA
			2	1/	-3.0 V		"	2.0 V	"	"	"			"	"	"	"	"		"	"
			3	2/	+3.0 V		"	0.8 V	"	"	"			"	"	"	"	"		"	"
			4	"	-3.0 V		"	0.8 V	"	"	"			"	"	"	"	"		"	"
			5	"	+3.0 V		"	2.0 V	0.8 V	"	"			"	"	"	"	"		"	"
			6	"	-3.0 V		"	2.0 V	0.8 V	"	"			"	"	"	"	"		"	"
			7	GND	GND			GND	2.0 V	"	2.0 V	5.5 V		+3.0 V	1/	"	"	2Y		"	"
			8	"	"			"	"	"	2.0 V	"		-3.0 V	1/	"	"	"		"	"
			9	"	"			"	"	"	0.8 V	"		+3.0 V	2/	"	"	"		"	"
			10	"	"			"	"	"	0.8 V	"		-3.0 V	"	"	"	"		"	"
			11	"	"			"	0.8 V	"	2.0 V	"		+3.0 V	"	"	"	"		"	"
			12	"	"			"	0.8 V	"	2.0 V	"		-3.0 V	"	"	"	"		"	"
	V_{OL}	3007	13	2/	+3.0 V		16 mA	2.0 V	2.0 V	"	GND			GND	GND	"	"	1Y		0.4	V
			14	2/	-3.0 V		16 mA	2.0 V	"	"	GND			GND	GND	"	"	1Y		"	"
			15	GND	GND			GND	"	"	2.0 V	16 mA		+3.0 V	2/	"	"	2Y		"	"
			16	GND	GND			GND	"	"	2.0 V	16 mA		-3.0 V	2/	"	"	2Y		"	"
	I_{IH1}	3010	17	3/	+3.0 V				GND	"				GND	GND	-5.5 V	+5.5 V	1A		75	µA
			18	3/	-3.0 V				"	"				GND	GND	"	"	1A		"	"
			19	GND	GND				"	"				+3.0 V	3/	"	"	2A		"	"
			20	GND	"				"	"				-3.0 V	3/	"	"	2A		"	"
	I_{IH2}		21	25 mV	"			GND	2.4 V	"	GND			GND	25 mV	"	"	S		80	"
	I_{IH3}		22	"	"			GND	5.5 V	"	"			"	25 mV	"	"	S		2	mA
	I_{IH4}		23	"	"			2.4 V	GND	"	"			"	GND	"	"	1G		40	µA
	I_{IH4}		24	GND	"			GND	"	"	2.4 V			"	25 mV	"	"	2G		40	"
	I_{IH5}		25	25 mV	"			5.5 V	"	"	GND			"	GND	"	"	1G		100	"
	I_{IH5}		26	GND	"			GND	"	"	5.5 V			"	25 mV	"	"	2G		100	"
	I_{IL1}	3009	27	4/	+3.0 V					"				GND	GND	"	"	1A		-10	"
			28	4/	-3.0 V					"				GND	GND	"	"	1A		"	"
			29	GND	GND					"				+3.0 V	4/	"	"	2A		"	"
			30	GND	"					"				-3.0 V	4/	"	"	2A		"	"
	I_{IL2}		31	-25 mV	"			0.4 V	4.5 V	"	GND			GND	GND	"	"	1G	-0.7	-1.6	mA
	I_{IL2}		32	GND	"			GND	4.5 V	"	0.4 V			"	-25 mV	"	"	2G	-0.7	-1.6	"
	I_{IL3}		33	-25 mV	"			4.5 V	0.4 V	"	4.5 V			"	-25 mV	"	"	S	-1.4	-3.2	"
	I_{CCH+}	3005	34	+25 mV	"			5.0 V	5.0 V	"	5.0 V			"	+25 mV	"	"	$+V_{CC}$		+30	"
	I_{CCH-}		35	+25 mV	"			5.0 V	5.0 V	"	5.0 V			"	+25 mV	"	"	$-V_{CC}$		-15	"
2	Same tests, terminal conditions, and limits as subgroup 1, except T_A = +125°C.																				
3	Same tests, terminal conditions, and limits as subgroup 1, except T_A = -55°C.																				

See footnotes ate end of device type 02.

TABLE III. Group A inspection for device type 02 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases A,B,D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured terminal	Limits		Unit
			Case C	1	2	3	4	5	6	7	8	9	10	11	12	13	14		Min	Max	
			Test no.	1A	1B	NC	1Y	1G	S	GND	2G	2Y	NC	2B	2A	$-V_{CC}$	$+V_{CC}$				
9	t_{PLH1}	3003	36	IN	100 mV		OUT	5.0 V	5.0 V	GND	GND			100 mV	GND	-5.0 V	+5.0 V	1A to 1Y		25	ns
T_A = +25°C	t_{PLH1}	(Fig. 3)	37	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		"	"
	t_{PHL1}		38	IN	"		OUT	5.0 V	"	"	GND			"	GND	"	"	1A to 1Y		"	"
	t_{PHL1}		39	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		"	"
	t_{PLH2}		40	"	"		OUT	IN	"	"	GND			"	GND	"	"	1G to 1Y		"	"
	t_{PLH2}		41	"	"			GND	"	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PLH2}		42	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PLH2}		43	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
	t_{PHL2}		44	"	"		OUT	IN	5.0 V	"	GND			"	"	"	"	1G to 1Y		20	"
	t_{PHL2}		45	"	"			GND	5.0 V	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PHL2}		46	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PHL2}		47	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
10	t_{PLH1}		48	IN	"		OUT	5.0 V	5.0 V	"	GND			"	GND	"	"	1A to 1Y		45	"
T_A = +125°C	t_{PLH1}		49	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		45	"
	t_{PHL1}		50	IN	"		OUT	5.0 V	"	"	GND			"	GND	"	"	1A to 1Y		35	"
	t_{PHL1}		51	GND	"			GND	"	"	5.0 V	OUT		"	IN	"	"	2A to 2Y		35	"
	t_{PLH2}		52	"	"		OUT	IN	"	"	GND			"	GND	"	"	1G to 1Y		40	"
	t_{PLH2}		53	"	"			GND	"	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PLH2}		54	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PLH2}		55	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
	t_{PHL2}		56	"	"		OUT	IN	5.0 V	"	GND			"	"	"	"	1G to 1Y		25	"
	t_{PHL2}		57	"	"			GND	5.0 V	"	IN	OUT		"	"	"	"	2G to 2Y		"	"
	t_{PHL2}		58	"	"		OUT	5.0 V	IN	"	GND			"	"	"	"	S to 1Y		"	"
	t_{PHL2}		59	"	"			GND	IN	"	5.0 V	OUT		"	"	"	"	S to 2Y		"	"
11	Same tests, terminal conditions, and limits as for subgroup 10, except T_A = -55°C.																				

1/ +25 mV applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
2/ -25 mV applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
3/ 0.5 V applied from input 1A to input 1B or from input 2A to input 2B, as applicable.
4/ -2.0 V applied from positive input to negative input.

TABLE III. Group A inspection for device type 03.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	2A	2B	2C	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
1 T_A = +25°C	V_{OL}	3007	1	1Z	40 mA			2.0 V	2.0 V	2.0 V	GND								4.5 V	1Z		0.4	V
			2								"	2.0 V	2.0 V	2.0 V			40 mA	2Z	"	2Z		"	"
			3			40 mA	1Y	0.8 V	2.0 V	2.0 V	"								"	1Y		"	"
			4			"	"	2.0 V	0.8 V	2.0 V	"								"	"		"	"
			5			"	"	2.0 V	2.0 V	0.8 V	"								"	"		"	"
			6								"	0.8 V	2.0 V	2.0 V	2Y	40 mA			"	2Y		"	"
			7								"	2.0 V	0.8 V	2.0 V	"	"			"	"		"	"
			8								"	2.0 V	2.0 V	0.8 V	"	"			"	"		"	"
	V_{OH1}	3006	9			1YP	-10 mA	2.0 V	2.0 V	2.0 V	"	GND	GND	GND					"	1YP	2.4		"
			10					GND	GND	GND	"	2.0 V	2.0 V	2.0 V	-10 mA	2YP			"	2YP	"		"
			11	-10 mA	1ZP			0.8 V	2.0 V	2.0 V	"	GND	GND	GND					"	1ZP	"		"
			12	"	"			2.0 V	0.8 V	2.0 V	"	"	"	"					"	"	"		"
			13	"	"			2.0 V	2.0 V	0.8 V	"	"	"	"					"	"	"		"
			14					GND	GND	GND	"	0.8 V	2.0 V	2.0 V			2ZP	-10 mA	"	2ZP	"		"
			15					"	"	"	"	2.0 V	0.8 V	2.0 V			"	"	"	"	"		"
			16				"	"	"	"	"	2.0 V	2.0 V	0.8 V			"	"	"	"	"		"
	V_{OH2}	3006	17			1YP	-20 mA	2.0 V	2.0 V	2.0 V	"	GND	GND	GND					"	1YP	"		"
			18					GND	GND	GND	"	2.0 V	2.0 V	2.0 V	-20 mA	2YP			"	2YP	"		"
			19	-20 mA	1ZP			0.8 V	2.0 V	2.0 V	"	GND	GND	GND					"	1ZP	"		"
			20	"	"			2.0 V	0.8 V	2.0 V	"	"	"	"					"	"	"		"
			21	"	"			2.0 V	2.0 V	0.8 V	"	"	"	"					"	"	"		"
			22					GND	GND	GND	"	0.8 V	2.0 V	2.0 V			2ZP	-20 mA	"	2ZP	"		"
			23					"	"	"	"	2.0 V	0.8 V	2.0 V			"	"	"	"	"		"
			24					"	"	"	"	2.0 V	2.0 V	0.8 V			"	"	"	"	"		"
	I_{OS}	3011	25	GND	1ZP			0.8 V	0.8 V	0.8 V	"								5.5 V	1ZP	-40	-130	mA
			26								"	0.8 V	0.8 V	0.8 V			2ZP	GND	"	2ZP	"	"	"
			27			1YP	GND	2.0 V	2.0 V	2.0 V	"								"	1YP	"	"	"
			28								"	2.0 V	2.0 V	2.0 V	GND	2YP			"	2YP	"	"	"
	I_{CC}	3005	29					GND	GND	GND	"	GND	GND	GND					"	V_{CC}		50	mA
	I_{CEX}		30		12 V			0.8 V	0.8 V	0.8 V	"								"	1Z		100	µA
			31								"	0.8 V	0.8 V	0.8 V			12 V		"	2Z		"	"
			32			12 V		2.0 V	2.0 V	2.0 V	"								"	1Y		"	"
			33								"	2.0 V	2.0 V	2.0 V		12 V			"	2Y		"	"
	I_{IL}	3009	34					0.4 V	5.5 V	5.5 V	"	5.5 V	5.5 V	5.5 V					"	1A	-0.7	-1.6	mA
			35					5.5 V	0.4 V	5.5 V	"	"	"	"					"	1B	"	"	"
			36					"	5.5 V	0.4 V	"	"	"	"					"	1C	"	"	"
			37					"	"	5.5 V	"	0.4 V	"	"					"	2A	"	"	"
			38					"	"	"	"	5.5 V	0.4 V	"					"	2B	"	"	"
			39					"	"	"	"	5.5 V	5.5 V	0.4 V					"	2C	"	"	"
	I_{IH1}	3010	40					2.4 V	GND	GND	"	GND	GND	GND					"	1A		40	µA
			41					GND	2.4 V	GND	"	"	"	"					"	1B		"	"
			42					"	GND	2.4 V	"	"	"	"					"	1C		"	"
			43					"	"	GND	"	2.4 V	"	"					"	2A		"	"
			44					"	"	"	"	GND	2.4 V	"					"	2B		"	"
			45					"	"	"	"	GND	GND	2.4 V					"	2C		"	"
	I_{IH2}	3010	46					5.5 V	GND	GND	"	GND	GND	GND					"	1A		100	"
			47					GND	5.5 V	GND	"	"	"	"					"	1B		"	"
			48					"	GND	5.5 V	"	"	"	"					"	1C		"	"
			49					"	"	GND	"	5.5 V	"	"					"	2A		"	"
			50					"	"	"	"	GND	5.5 V	"					"	2B		"	"
			51					"	"	"	"	GND	GND	5.5 V					"	2C		"	"

See footnotes at end of device type 03

TABLE III. Group A inspection for device type 03 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	2A	2B	2C	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
1 T_A = +25°C	BV_{IN}		52					1 mA			GND								5.5 V	1A	5.5		V
			53						1 mA		"								"	1B	"		"
			54							1 mA	"								"	1C	"		"
			55								"	1 mA							"	2A	"		"
			56								"		1 mA						"	2B	"		"
			57								"			1 mA					"	2C	"		"
	V_{IC}		58					-12 mA			"								4.5 V	1A		-1.5	"
			59						-12 mA		"								"	1B		"	"
			60							-12 mA	"								"	1C		"	"
			61								"	-12 mA							"	2A		"	"
			62								"		-12 mA						"	2B		"	"
			63								"			-12 mA					"	2C		"	"
	V_{OC}		64		-40 mA						"								5.5 V	1Z		"	"
			65								"						-40 mA		"	2Z		"	"
			66			-40 mA		GND	GND	GND	"								"	1Y		"	"
			67								"	GND	GND	GND		-40 mA			"	2Y		"	"
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_A = +125°C and V_{IC} and V_{OC} tests are omitted and maximum limits for I_{CEX} is 200 µA.																						
3	Same tests, terminal conditions, and limits as for subgroup 2, except T_A = -55°C and minimum limits for V_{OH2} is 2.2 V, and maximum limits for I_{OS} is -155 mA.																						
9 T_A = +25°C	t_{PHL1}	3003 (Fig. 3)	68	1Z	OUT			IN	1/	1/	GND								5.0 V	1Z		25	ns
	t_{PLH1}		69	"	"			IN	1/	"	"								"	"		"	"
	t_{PHL1}		70	"	"			1/	IN	"	"								"	"		"	"
	t_{PLH1}		71	"	"			"	IN	"	"								"	"		"	"
	t_{PHL1}		72	"	"			"	1/	IN	"								"	"		"	"
	t_{PLH1}		73	"	"			"	1/	IN	"								"	"		"	"
	t_{PHL1}		74								"	IN	1/	1/			OUT	2Z	"	2Z		"	"
	t_{PLH1}		75								"	IN	1/	"			"	"	"	"		"	"
	t_{PHL1}		76								"	1/	IN	"			"	"	"	"		"	"
	t_{PLH1}		77								"	"	IN	"			"	"	"	"		"	"
	t_{PHL1}		78								"	"	1/	IN			"	"	"	"		"	"
	t_{PLH1}		79								"	"	1/	IN			"	"	"	"		"	"
	t_{PHL2}	3003 (Fig. 3)	80			OUT	1Y	IN	1/	1/	"								"	1Y		"	"
	t_{PLH2}		81			"	"	IN	1/	"	"								"	"		"	"
	t_{PHL2}		82			"	"	1/	IN	"	"								"	"		"	"
	t_{PLH2}		83			"	"	"	IN	"	"								"	"		"	"
	t_{PHL2}		84			"	"	"	1/	IN	"								"	"		"	"
	t_{PLH2}		85			"	"	"	1/	IN	"								"	"		"	"
	t_{PHL2}		86								"	IN	1/	1/	2Y	OUT			"	2Y		"	"
	t_{PLH2}		87								"	IN	1/	"	"	"			"	"		"	"
	t_{PHL2}		88								"	1/	IN	"	"	"			"	"		"	"
	t_{PLH2}		89								"	"	IN	"	"	"			"	"		"	"
	t_{PHL2}		90								"	"	1/	IN	"	"			"	"		"	"
	t_{PLH2}		91								"	"	1/	IN	"	"			"	"		"	"
10	Same tests, terminal conditions, and limits as for subgroup 9, except T_A = +125°C and the limits for t_{PLH1} and t_{PHL2} are 32 ns maximum, and for t_{PHL1} and t_{PLH2} are 30 ns maximum.																						
11	Same tests, terminal conditions, and limits as for subgroup 10, except T_A = -55°C.																						

1/ Indicates pins are connected together and to a 2 kΩ resistor to 5.0 V.

TABLE III. Group A inspection for device type 04.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured terminal	Limits		Unit
			Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	
			Test no.	1Y	1YP	1S	1RC	1A	1A(R)	1B	GND	2B	2A(R)	2A	2RC	2S	3YP	2Y	V_{CC}				
1 T_A = +25°C	V_{OH}	3006	1	1YP	-5 mA			GND		0.5 V	GND	0.5 V		GND					4.5 V	1YP	2.4		V
			2					GND		0.5 V	"	0.5 V		GND			-5 mA	2YP	"	2YP	"		"
			3	1YP	-5 mA	0.5 V		0.5 V		GND	"	GND		0.5 V					"	1YP	"		"
			4					0.5 V		GND	"	GND		0.5 V		0.5 V	-5 mA	2YP	"	2YP	"		"
			5	1YP	-5 mA			15 V		17 V	"								"	1YP	"		"
			6								"	17 V		15 V			-5 mA	2YP	"	2YP	"		"
			7	1YP	-5 mA			-17 V		-15 V	"								"	1YP	"		"
			8								"	-15 V		-17 V			-5 mA	2YP	"	2YP	"		"
	V_{OL}	3007	9	16 mA	1Y			0.5 V		GND	"	GND		0.5 V					"	1Y		0.4	"
			10					0.5 V		GND	"	GND		0.5 V			3Y	16 mA	"	3Y		"	"
			11	16 mA	1Y			17 V		15 V	"								"	1Y		"	"
			12								"	15 V		17 V			3Y	16 mA	"	3Y		"	"
			13	16 mA	1Y			-15 V		-17 V	"								"	1Y		"	"
			14								"	-17 V		-15 V			3Y	16 mA	"	3Y		"	"
	I_{CC}	3005	15					0.5 V		GND	"	GND		0.5 V					5.5 V	V_{CC}		50	mA
	B_{VIN}	3006	16			1 mA		"		"	"	"		"					"	1S	5.5		V
	B_{VIN}	3006	17					"		"	"	"		"		1 mA			"	2S	5.5		"
	V_{IC}		18			-12 mA		"		"	"	"		"					4.5 V	1S		-1.5	"
	V_{IC}		19					"		"	"	"		"		-12 mA			4.5 V	2S		-1.5	"
	I_{IL1}	3009	20					0.4 V		5.5 V	"								5.5 V	1A	-0.2	-0.9	mA
			21					5.5 V		0.4 V	"								"	1B	"	"	"
			22								"	0.4 V		5.5 V					"	2B	"	"	"
			23								"	5.5 V		0.4 V					"	2A	"	"	"
	I_{IL2}	3009	24			0.4 V		0.5 V		GND	"								"	1S	-1.0	-2.4	"
	I_{IL2}		25								"	GND		0.5 V		0.4 V			"	2S	-1.0	-2.4	"
	I_{IL3}	3009	26				0.4 V	0.5 V		GND	"								"	1RC	-1.2	-4.1	"
	I_{IL3}		27								"	GND		0.5 V	0.4 V				"	1RC	-1.2	-4.1	"
	I_{IH}	3010	28			4.5 V		0.5 V		GND	"								"	1S		5.0	µA
	I_{IH}	3010	29								"	GND		-0.5		4.5 V			"	2S		5.0	"
	I_{CEX}		30	12 V				GND		4.5 V	"								4.5 V	1Y		100	"
	I_{CEX}		31								"	4.5 V		GND				12 V	4.5 V	2Y		100	"
	I_{OS}	3011	32	GND	GND			GND		0.5 V	"								5.5 V	1YP	-15	-80	mA
	I_{OS}	3011	33								"	0.5 V		GND			GND	GND	5.5 V	2YP	-15	-80	mA
	R_{IN}		34					GND	1.0 V		"								5.0 V	1A(R)	77	167	Ω
	R_{IN}		35								"		1.0 V	GND					5.0 V	2A(R)	77	167	Ω
2	Same tests, terminal conditions, and limits as for subgroup 1, except T_A = +125°C, V_{IC} and R_{IN} tests omitted, and maximum limits for I_{CEX} is 200 µA.																						
3	Same tests, terminal conditions, and limits as for subgroup 2, except T_A = -55°C, V_{IC} and R_{IN} tests omitted.																						

See footnote at end of device type 04.

TABLE III. Group A inspection for device type 04. – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20	Measured terminal	Limits		Unit
			Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Min	Max	
			Test no.	1Y	1YP	1S	1RC	1A	1A(R)	1B	GND	2B	2A(R)	2A	2RC	2S	3YP	2Y	V_{CC}				
9	t_{PLH1}	3003	36	OUT	1Y	4.5 V		IN		GND	GND								5.0 V	1Y		50	ns
T_A =	t_{PHL1}	(Fig. 3)	37	"	"	"		IN		GND	"								"	"		"	"
+25°C	t_{PLH1}		38	"	"	"		GND		IN	"								"	"		"	"
1/	t_{PHL1}		39	"	"	"		GND		IN	"								"	"		"	"
	t_{PLH1}		40								"	GND		IN		4.5 V	2Y	OUT	"	2Y		"	"
	t_{PHL1}		41								"	GND		IN		"	"	"	"	"		"	"
	t_{PLH1}		42								"	IN		GND		"	"	"	"	"		"	"
	t_{PHL1}		43								"	IN		GND		"	"	"	"	"		"	"
	t_{PLH2}		44	OUT	1Y	IN		4.5 V		GND	"					"			"	1Y		15	"
	t_{PHL2}		45	OUT	1Y	IN		4.5 V		GND	"					"			"	1Y		"	"
	t_{PLH2}		46								"	GND		4.5 V		IN	2Y	OUT	"	2Y		"	"
	t_{PHL2}		47								"	GND		4.5 V		IN	2Y	OUT	"	2Y		"	"
10	t_{PLH1}	3003	48	OUT	1Y	4.5 V		IN		GND	"								"	1Y		60	ns
T_A =	t_{PHL1}	(Fig. 3)	49	"	"	"		IN		GND	"								"	"		"	"
+125°C	t_{PLH1}		50	"	"	"		GND		IN	"								"	"		"	"
1/	t_{PHL1}		51	"	"	"		GND		IN	"								"	"		"	"
	t_{PLH1}		52								"	GND		IN		4.5 V	2Y	OUT	"	2Y		"	"
	t_{PHL1}		53								"	GND		IN		"	"	"	"	"		"	"
	t_{PLH1}		54								"	IN		GND		"	"	"	"	"		"	"
	t_{PHL1}		55								"	IN		GND		"	"	"	"	"		"	"
	t_{PLH2}		56	OUT	1Y	IN		4.5 V		GND	"					"			"	1Y		25	"
	t_{PHL2}		57	OUT	1Y	IN		4.5 V		GND	"					"			"	1Y		"	"
	t_{PLH2}		58								"	GND		4.5 V		IN	2Y	OUT	"	2Y		"	"
	t_{PHL2}		59								"	GND		4.5 V		IN	2Y	OUT	"	2Y		"	"
11 1/	Same tests, terminal conditions, and limits as for subgroup 10, except T_A = -55°C.																						

1/ For subgroups 9, 10, and 11, the unused output terminals may be open or loaded to facilitate equipment setup and minimize switching of loads as long as there is no effect on the measured parameter.

TABLE III. Group A inspection for device type 05.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	D	2C	2A	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
1 T_A = +25°C	V_{OH1}	3006	1	-10 mA	1ZP			0.8 V	2.0 V	2.0 V	GND	2.0 V	2.0 V	2.0 V					4.5 V	1ZP	2.4		V
			2	-10 mA	1ZP			2.0 V	0.8 V	“	“	“	“	2.0 V					“	1ZP	“		“
			3					“	2.0 V	“	“	“	“	0.8 V			2ZP	-10 mA	“	2ZP	“		“
			4			1YP	-10 mA	“	“	“	“	“	“	2.0 V					“	1YP	“		“
			5					“	“	“	“	“	“	“	-10 mA	2YP			“	2YP	“		“
	V_{OH2}	3006	6	-40 mA	1ZP			0.8 V	“	“	“	“	“	“					“	1ZP	2.0		“
			7	-40 mA	1ZP			2.0 V	0.8 V	“	“	“	“	“					“	1ZP	“		“
			8					“	2.0 V	“	“	“	“	0.8 V			2ZP	-40 mA	“	2ZP	“		“
			9			1YP	-40 mA	“	“	“	“	“	“	2.0 V					“	1YP	“		“
			10					“	“	“	“	“	“	“	-40 mA	2YP			“	2YP	“		“
	V_{OL}	3007	11			40 mA	1Y	0.8 V	“	“	“	“	“	“					“	1Y		0.4	“
			12			40 mA	1Y	2.0 V	0.8 V	“	“	“	“	“					“	1Y		“	“
			13					“	2.0 V	“	“	“	“	0.8 V	2Y	40 mA			“	2Y		“	“
			14	1Z	40 mA			“	“	“	“	“	“	2.0 V					“	1Z		“	“
			15					“	“	“	“	“	“	2.0 V			40 mA	2Z	“	2Z		“	“
	V_{IC}		16					-12 mA			“								“	1A		-1.5	“
			17						-12 mA		“								“	1B		“	“
			18							-12 mA	“								“	1C		“	“
			19								“	-12 mA							“	D		“	“
			20								“		-12 mA						“	2C		“	“
			21								“			-12 mA					“	2A		“	“
	V_{OC}		22		-40 mA						“	0.8 V							5.5 V	1Z		“	“
			23								“	“					-40 mA		“	2Z		“	“
			24			-40 mA					“	“							“	1Y		“	“
			25								“	“				-40 mA			“	2Y		“	“
	I_{IL1}	3009	26					0.4 V	5.5 V	5.5 V	“		5.5 V	5.5 V					“	1A	-0.7	-1.6	mA
			27					5.5 V	0.4 V	5.5 V	“		“	“					“	1B	“	“	“
			28					“	5.5 V	0.4 V	“		“	“					“	1C	“	“	“
			29					“	“	5.5 V	“		0.4 V	“					“	2C	“	“	“
			30					“	“	“	“		5.5 V	0.4 V					“	2A	“	“	“
	I_{IL2}	3009	31							“	“	0.4 V	5.5 V						“	D	-1.4	-3.2	“
	I_{IH1}	3010	32					2.4 V	GND	GND	“		GND	GND					“	1A		40	µA
			33					GND	2.4 V	GND	“		“	“					“	1B		“	“
			34					“	GND	2.4 V	“		“	“					“	1C		“	“
			35					“	“	GND	“		2.4 V	“					“	2C		“	“
			36					“	“	“	“		GND	2.4 V					“	2A		“	“
	I_{IH2}	3010	37					5.5 V	“	“	“		“	GND					“	1A		100	“
			38					GND	5.5 V	“	“		“	“					“	1B		“	“
			39					“	GND	5.5 V	“		“	“					“	1C		“	“
			40					“	“	GND	“		5.5 V	“					“	2C		“	“
			41					“	“	GND	“		GND	5.5 V					“	2A		“	“
	I_{IH3}	3010	42								“	2.4 V							“	D		80	“
	I_{IH4}	3010	43								“	5.5 V							“	D		200	“
	I_{O1}		44		12 V			0.8 V	2.0 V	2.0 V	“	2.0 V	2.0 V						“	1Z		100	“
			45		12 V			2.0 V	0.8 V	“	“	“	“						“	1Z		“	“
			46			12 V		“	2.0 V	“	“	“	“						“	1Y		“	“
			47					“	“	“	“	“	“	0.8 V			12 V		“	2Z		“	“
			48					“	“	“	“	“	“	2.0 V		12 V			“	2Y		“	“

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	D	2C	2A	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
1 T_A = +25°C	I_{O2}		49	1Z	0.0 V					0.8 V	GND	2.0 V							5.5 V	1Z		-60	µA
			50			0.0 V	1Y			0.8 V	"	2.0 V							"	1Y		"	"
			51	1Z	0.0 V					2.0 V	"	0.8 V							"	1Z		"	"
			52			0.0 V	1Y			2.0 V	"	0.8 V							"	1Y		"	"
			53								"	2.0 V	0.8 V				0.0 V	2Z	"	2Z		"	"
			54								"	2.0 V	0.8 V		2Y	0.0 V			"	2Y		"	"
			55								"	0.8 V	0.8 V				0.0 V	2Z	"	2Z		"	"
			56								"	0.8 V	0.8 V		2Y	0.0 V			"	2Y		"	"
	I_{O3}		57	1Z	0.4 V					0.8 V	"	2.0 V							"	1Z		±40	"
			58			0.4 V	1Y			0.8 V	"	2.0 V							"	1Y		"	"
			59	1Z	0.4 V					2.0 V	"	0.8 V							"	1Z		"	"
			60			0.4 V	1Y			2.0 V	"	0.8 V							"	1Y		"	"
			61								"	2.0 V	0.8 V				0.4 V	2Z	"	2Z		"	"
			62								"	2.0 V	0.8 V		2Y	0.4 V			"	2Y		"	"
			63								"	0.8 V	2.0 V				0.4 V	2Z	"	2Z		"	"
			64								"	0.8 V	2.0 V		2Y	0.4 V			"	2Y		"	"
	I_{O4}		65	1Z	2.4 V					0.8 V	"	2.0 V							"	1Z		"	"
			66			2.4 V	1Y			0.8 V	"	2.0 V							"	1Y		"	"
			67	1Z	2.4 V					2.0 V	"	0.8 V							"	1Z		"	"
			68			2.4 V	1Y			2.0 V	"	0.8 V							"	1Y		"	"
			69								"	2.0 V	0.8 V				2.4 V	2Z	"	2Z		"	"
			70								"	2.0 V	0.8 V		2Y	2.4 V			"	2Y		"	"
			71								"	0.8 V	2.0 V				2.4 V	2Z	"	2Z		"	"
			72								"	0.8 V	2.0 V		2Y	2.4 V			"	2Y		"	"
	I_{O5}		73	1Z	5.0 V					0.8 V	"	2.0 V							"	1Z		100	"
			74			5.0 V	1Y			0.8 V	"	2.0 V							"	1Y		"	"
			75	1Z	5.0 V					2.0 V	"	0.8 V							"	1Z		"	"
			76			5.0 V	1Y			2.0 V	"	0.8 V							"	1Y		"	"
			77								"	2.0 V	0.8 V				5.0 V	2Z	"	2Z		"	"
			78								"	2.0 V	0.8 V		2Y	5.0 V			"	2Y		"	"
			79								"	0.8 V	2.0 V				5.0 V	2Z	"	2Z		"	"
			80								"	0.8 V	2.0 V		2Y	5.0 V			"	2Y		"	"
	I_{OS}	3011	81	0.0 V	1ZP			0.8 V	2.0 V	2.0 V	"	2.0 V							"	1ZP	-40	-120	mA
			82	0.0 V	1ZP			2.0 V	0.8 V	"	"	"							"	1ZP	"	"	"
			83			1YP	0.0 V	2.0 V	2.0 V	"	"	"							"	1YP	"	"	"
			84								"	"	2.0 V	0.8 V			2ZP	0.0 V	"	2ZP	"	"	"
			85								"	"	2.0 V	2.0 V	0.0 V	2YP			"	2YP	"	"	"
	I_{CC1}	3005	86					0.0 V	0.0 V	0.0 V	"	0.0 V	0.0 V	0.0 V					"	V_{CC}		65	"
	I_{CC2}	3005	87					0.0 V	0.0 V	0.0 V	"	0.0 V	0.0 V	0.0 V					7.0 V	V_{CC}		85	"
2 T_A = +125°C	V_{OH1}	3006	88	-10 mA	1ZP			0.8 V	2.0 V	2.0 V	"	2.0 V	2.0 V	2.0 V					4.5 V	1ZP	2.4		V
			89	-10 mA	1ZP			2.0 V	0.8 V	"	"	"	"	2.0 V					"	1ZP	"		
			90					"	2.0 V	"	"	"	"	0.8 V			2ZP	-10 mA	"	2ZP	"		
			91			1YP	-10 mA	"	"	"	"	"	"	2.0 V					"	1YP	"		
			92					"	"	"	"	"	"	"	-10 mA	2YP			"	2YP	"		
	V_{OL}	3007	93			40 mA	1Y	0.8 V	"	"	"	"	"	"					"	1Y		0.4	"
			94			40 mA	1Y	2.0 V	0.8 V	"	"	"	"	"					"	1Y		"	"
			95					"	2.0 V	"	"	"	"	0.8 V	2Y	40 mA			"	2Y		"	"
			96	1Z	40 mA			"	"	"	"	"	"	2.0 V					"	1Z		"	"
			97					"	"	"	"	"	"	2.0 V			40 mA	2Z	"	2Z		"	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	D	2C	2A	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
2 T_A = +125°C	V_{OC}		98 99 100 101		-40 mA	 -40 mA					GND “ “ “	0.8 V “ “ “				 -40 mA		 -40 mA		5.5 V “ “ “	1Z 2Z 1Y 2Y		-1.5 “ “ “	V “ “ “
	I_{IL1}	3009	102 103 104 105 106					0.4 V	0.4 V	0.4 V	“ “ “ “ “		0.4 V	0.4 V					“ “ “ “ “	1A 1B 1C 2C 2A	-0.7 “ “ “ “	-1.6 “ “ “ “	mA “ “ “ “
	I_{IL2}	3009	107								“	0.4 V							“	D	-1.4	-3.2	“
	I_{IH1}	3010	108 109 110 111 112					2.4 V	2.4 V	2.4 V	“ “ “ “ “		2.4 V	2.4 V					“ “ “ “ “	1A 1B 1C 2C 2A		40 “ “ “ “	µA “ “ “ “
	I_{IH2}	3010	113 114 115 116 117					5.5 V	5.5 V	5.5 V	“ “ “ “ “		5.5 V	5.5 V					“ “ “ “ “	1A 1B 1C 2C 2A		100 “ “ “ “	“ “ “ “ “
	I_{IH3}	3010	118								“	2.4 V							“	D		80	“
	I_{IH4}	3010	119								“	5.5 V							“	D		200	“
	I_{O1}		120 121 122 123 124		12 V 12 V	 12 V		0.8 V 2.0 V “ “ “	2.0 V 0.8 V 2.0 V “ “	2.0 V “ “ “ “	“ “ “ “ “	2.0 V “ “ “ “	2.0 V “ “ “ “	 0.8 V 2.0 V		 12 V	 12 V		“ “ “ “ “	1Z 1Z 1Y 2Z 2Y		“ “ “ “ “	“ “ “ “ “
	I_{O2}		125 126 127 128 129 130 131 132	1Z 1Z 	0.0 V 0.0 V 	 0.0 V 0.0 V 	 1Y 1Y 			0.8 V 0.8 V 2.0 V 2.0 V 	“ “ “ “ “ “ “ “	“ “ 0.8 V 0.8 V 2.0 V 2.0 V 0.8 V 0.8 V	 0.8 V 0.8 V 2.0 V 2.0 V		 2Y 2Y	 0.0 V 0.0 V 	 2Z 2Z 	“ “ “ “ “ “ “ “	1Z 1Y 1Z 1Y 2Z 2Y 2Z 2Y		-175 “ “ “ “ “ “ “	“ “ “ “ “ “ “ “
	I_{O3}		133 134 135 136 137 138 139 140	1Z 1Z 	0.4 V 0.4 V 	 0.4 V 0.4 V 	 1Y 1Y 			0.8 V 0.8 V 2.0 V 2.0 V 	“ “ “ “ “ “ “ “	2.0 V 2.0 V 0.8 V 0.8 V 2.0 V 2.0 V 0.8 V 0.8 V	 0.8 V 0.8 V 2.0 V 2.0 V		 2Y 2Y	 0.4 V 0.4 V 	 2Z 2Z 	“ “ “ “ “ “ “ “	1Z 1Y 1Z 1Y 2Z 2Y 2Z 2Y		±125 “ “ “ “ “ “ “	“ “ “ “ “ “ “ “
	I_{O4}		141 142 143 144 145 146 147 148	1Z 1Z 	2.4 V 2.4 V 	 2.4 V 2.4 V 	 1Y 1Y 			0.8 V 0.8 V 2.0 V 2.0 V 	“ “ “ “ “ “ “ “	2.0 V 2.0 V 0.8 V 0.8 V 2.0 V 2.0 V 0.8 V 0.8 V	 0.8 V 0.8 V 2.0 V 2.0 V		 2Y 2Y	 2.4 V 2.4 V 	 2Z 2Z 	“ “ “ “ “ “ “ “	1Z 1Y 1Z 1Y 2Z 2Y 2Z 2Y		±80 “ “ “ “ “ “ “	“ “ “ “ “ “ “ “

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	D	2C	2A	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
2	I_{O5}		149	1Z	5.0 V					0.8 V	GND	2.0 V							5.5 V	1Z		200	µA
T_A =			150			5.0 V	1Y			0.8 V	"	2.0 V							"	1Y		"	"
+125°C			151	1Z	5.0 V					2.0 V	"	0.8 V							"	1Z		"	"
			152			5.0 V	1Y			2.0 V	"	0.8 V							"	1Y		"	"
			153								"	2.0 V	0.8 V				5.0 V	2Z	"	2Z		"	"
			154								"	2.0 V	0.8 V		2Y	5.0 V			"	2Y		"	"
			155								"	0.8 V	2.0 V				5.0 V	2Z	"	2Z		"	"
			156								"	0.8 V	2.0 V		2Y	5.0 V			"	2Y		"	"
3	Same tests, terminal conditions, and limits as for subgroup 2, except T_A = -55°C.																						
9	t_{PLH1}	3003	157	OUT	1ZP			IN	1/	1/	GND	1/							5.0 V	1ZP		25	ns
T_A =	t_{PHL1}	(Fig. 3)	158	"	"			IN	1/	"	"	"							"	1ZP		"	"
+25°C	t_{PLH1}		159	"	"			1/	IN	"	"	"							"	1ZP		"	"
2/ 3/	t_{PHL1}		160	"	"			1/	IN	"	"	"							"	1ZP		"	"
	t_{PLH1}		161								"	"							"	2ZP		"	"
	t_{PHL1}		162								"	"	1/	IN			2ZP	OUT	"	2ZP		"	"
	t_{PLH2}		163			1YP	OUT	IN	1/	1/	"	"	1/	IN			2ZP	OUT	"	1YP		"	"
	t_{PHL2}		164			"	"	IN	1/	"	"	"							"	1YP		"	"
	t_{PLH2}		165			"	"	1/	IN	"	"	"							"	1YP		"	"
	t_{PHL2}		166			"	"	1/	IN	"	"	"							"	1YP		"	"
	t_{PLH2}		167								"	"	1/	IN	OUT	2YP			"	2YP		"	"
	t_{PHL2}		168								"	"	1/	IN	OUT	2YP			"	2YP		"	"
	t_{PZH}		169	OUT	1ZP			GND	1/	IN	"	"							"	1ZP		20	"
	t_{PHZ}		170	"	"			"	"	IN	"	"							"	1ZP		30	"
	t_{PZH}		171	"	"			"	"	1/	"	IN							"	1ZP		20	"
	t_{PHZ}		172	"	"			"	"	1/	"	IN							"	1ZP		30	"
	t_{PZH}		173			1YP	OUT	1/	"	IN	"	1/							"	1YP		20	"
	t_{PHZ}		174			"	"	"	"	IN	"	1/							"	1YP		30	"
	t_{PZH}		175			"	"	"	"	1/	"	IN							"	1YP		20	"
	t_{PHZ}		176			"	"	"	"	1/	"	IN							"	1YP		30	"
	t_{PZH}		177								"	1/	IN	GND			2ZP	OUT	"	2ZP		20	"
	t_{PHZ}		178								"	1/	IN	"			"	"	"	2ZP		30	"
	t_{PZH}		179								"	IN	1/	"			"	"	"	2ZP		20	"
	t_{PHZ}		180								"	IN	1/	"			"	"	"	2ZP		30	"
	t_{PZH}		181								"	1/	IN	1/	OUT	2YP			"	2YP		20	"
	t_{PHZ}		182								"	1/	IN	"	"	"			"	2YP		30	"
	t_{PZH}		183								"	IN	1/	"	"	"			"	2YP		20	"
	t_{PHZ}		184								"	IN	1/	"	"	"			"	2YP		30	"
	t_{PZL}		185	OUT	1ZP			1/	1/	IN	"	1/							"	1ZP		30	"
	t_{PLZ}		186	"	"			"	"	IN	"	1/							"	1ZP		35	"
	t_{PZL}		187	"	"			"	"	1/	"	IN							"	1ZP		30	"
	t_{PLZ}		188	"	"			"	"	1/	"	IN							"	1ZP		35	"
	t_{PZL}		189			1YP	OUT	GND	"	IN	"	1/							"	1YP		30	"
	t_{PLZ}		190			"	"	"	"	IN	"	1/							"	1YP		35	"
	t_{PZL}		191			"	"	"	"	1/	"	IN							"	1YP		30	"
	t_{PLZ}		192			"	"	"	"	1/	"	IN							"	1YP		35	"
	t_{PZL}		193								"	1/	IN	1/			2ZP	OUT	"	2ZP		30	"
	t_{PLZ}		194								"	1/	IN	"			"	"	"	2ZP		35	"
	t_{PZL}		195								"	IN	1/	"			"	"	"	2ZP		30	"
	t_{PLZ}		196								"	IN	1/	"			"	"	"	2ZP		35	"
	t_{PZL}		197								"	1/	IN	GND	OUT	2YP			"	2YP		30	"
	t_{PLZ}		198								"	1/	IN	"	"	"			"	2YP		35	"
	t_{PZL}		199								"	IN	1/	"	"	"			"	2YP		30	"
	t_{PLZ}		200								"	IN	1/	"	"	"			"	2YP		35	"

See footnotes at end of device type 05.

TABLE III. Group A inspection for device type 05 – Continued.
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	1ZP	1Z	1Y	1YP	1A	1B	1C	GND	D	2C	2A	2YP	2Y	2Z	2ZP	V_{CC}		Min	Max	
10 2/ 3/	Same tests and terminal conditions as subgroup 9 with T_A = +125°C and the limits changed to: t_{PLH} and t_{PHL} now 30 ns maximum, t_{PZH} now 25 ns maximum, t_{PHZ} now 35 ns maximum, t_{PZL} now 35 ns maximum, t_{PLZ} now 45 ns maximum.																						
11 2/ 3/	Same tests, terminal conditions, and limits as subgroup 10, except T_A = -55°C.																						

1/ Indicated inputs are connected together to a 1 kΩ resistor to 5.0 V dc.
2/ For subgroups 9, 10, and 11, the unused output terminals may be open or loaded to facilitate equipment setup and minimize switching of loads as long as there is no effect on the measured parameter.
3/ For subgroups 9, 10, and 11, all the unused input terminals may be open or grounded at the supplier's option.

TABLE III. Group A inspection for device types 06 and 07. 1/
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	E_{B1}	E_{B2}	B2 OUT	B2 IN	B1 OUT	B1 IN	D/SE 1	GND	D/SE 2	A1 IN	A1 OUT	A2 IN	A2 OUT	EA_1	EA_2	V_{CC}		Min	Max	
1	V_{OH}	3006	1							0.8 V	GND	0.8 V	2.0 V	-2 mA			0.8 V	0.8 V	4.5 V	11	2.4		V
T_A =			2							"	"	0.8 V			2.0 V	-2 mA	"	"	"	13	"		"
+25°C			3							"	"	2.0 V	0.8 V	-2 mA			"	"	"	11	"		"
			4							"	"	2.0 V			2.0 V	-2 mA	"	"	"	13	"		"
			5							2.0 V	"	0.8 V	0.8 V	-2 mA			"	"	"	11	"		"
			6							"	"	0.8 V			2.0 V	-2 mA	"	"	"	13	"		"
			7							"	"	2.0 V	0.8 V	-2 mA			"	"	"	11	"		"
			8							"	"	2.0 V			2.0 V	-2 mA	"	"	"	13	"		"
			9	0.8 V	0.8 V			-2 mA	2.0 V	0.8 V	"	0.8 V							"	5	"		"
			10	"	"	-2 mA	2.0 V			"	"	0.8 V							"	3	"		"
			11	"	"			-2 mA	2.0 V	"	"	2.0 V							"	5	"		"
			12	"	"	-2 mA	2.0 V			"	"	2.0 V							"	3	"		"
			13	"	"			-2 mA	2.0 V	2.0 V	"	0.8 V							"	5	"		"
			14	"	"	-2 mA	2.0 V			"	"	0.8 V							"	3	"		"
			15	"	"			-2 mA	2.0 V	"	"	2.0 V							"	5	"		"
			16	"	"	-2 mA	2.0 V			"	"	2.0 V							"	3	"		"
	V_{OL}	3007	17							0.8 V	GND	0.8 V	0.8 V	40 mA			0.8 V	0.8 V	4.5 V	11		0.5	"
			18							"	"	0.8 V			0.8 V	40 mA	"	"	"	13		"	"
			19							"	"	2.0 V	2.0 V	40 mA			"	"	"	11		"	"
			20							"	"	2.0 V			0.8 V	40 mA	"	"	"	13		"	"
			21							2.0 V	"	0.8 V	2.0 V	40 mA			"	"	"	11		"	"
			22							"	"	0.8 V			0.8 V	40 mA	"	"	"	13		"	"
			23							"	"	2.0 V	2.0 V	40 mA			"	"	"	11		"	"
			24							"	"	2.0 V			0.8 V	40 mA	"	"	"	13		"	"
			25	0.8 V	0.8 V			-2 mA	0.8 V	0.8 V	"	0.8 V							"	5		"	"
			26	"	"	40 mA	0.8 V			"	"	0.8 V							"	3		"	"
			27	"	"			-2 mA	2.0 V	"	"	2.0 V							"	5		"	"
			28	"	"	40 mA	0.8 V			"	"	2.0 V							"	3		"	"
			29	"	"			-2 mA	2.0 V	2.0 V	"	0.8 V							"	5		"	"
			30	"	"	40 mA	0.8 V			"	"	0.8 V							"	3		"	"
			31	"	"			-2 mA	2.0 V	"	"	2.0 V							"	5		"	"
			32	"	"	40 mA	0.8 V			"	"	2.0 V							"	3		"	"
	V_{IC}		33	-12 mA							"								"	1		-1.5	"
			34		-12 mA						"								"	2		"	"
			35				-12 mA				"								"	4		"	"
			36						-12 mA		"								"	6		"	"
			37							-12 mA	"								"	7		"	"
			38								"	-12 mA							"	9		"	"
			39								"		-12 mA						"	10		"	"
			40								"				-12 mA				"	12		"	"
			41								"						-12 mA		"	14		"	"
			42								"							-12 mA	"	15		"	"
	I_{IL}	3009	43	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	5.5 V	5.5 V	1	-0.7	-1.6	mA
			44	5.5 V	0.4 V		5.5 V		"	"	"	"	"		"		"	"	"	2	"	"	"
			45	"	5.5 V		0.4 V		"	"	"	"	"		"		"	"	"	4	"	"	"
			46	"	"		5.5 V		0.4 V	"	"	"	"		"		"	"	"	6	"	"	"
			47	"	"		"		5.5 V	0.4 V	"	"	"		"		"	"	"	7	"	"	"
			48	"	"		"		"	5.5 V	"	0.4 V	"		"		"	"	"	9	"	"	"
			49	"	"		"		"	"	"	5.5 V	0.4 V		"		"	"	"	10	"	"	"
			50	"	"		"		"	"	"	"	5.5 V		0.4 V		"	"	"	12	"	"	"
			51	"	"		"		"	"	"	"	"		5.5 V		0.4 V	"	"	14	"	"	"
			52	"	"		"		"	"	"	"	"		5.5 V		5.5 V	0.4 V	"	15	"	"	"

See footnotes at end of device types 06 and 07.

TABLE III. Group A inspection for device types 06 and 07 – Continued. 1/
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	E_{B1}	E_{B2}	B2 OUT	B2 IN	B1 OUT	B1 IN	D/SE 1	GND	D/SE 2	A1 IN	A1 OUT	A2 IN	A2 OUT	EA_1	EA_2	V_{CC}		Min	Max	
1 T_A = +25°C	I_{IH1}	3010	53	2.4 V	GND		GND		GND	GND	GND	GND	GND		GND		GND	GND	5.5 V	1		40	µA
			54	GND	2.4 V		GND		"	"	"	"	"		"		"	"	"	2		"	"
			55	"	GND		2.4 V		"	"	"	"	"		"		"	"	"	4		"	"
			56	"	"		GND		2.4 V	"	"	"	"		"		"	"	"	6		"	"
			57	"	"		"		GND	2.4 V	"	"	"		"		"	"	"	7		"	"
			58	"	"		"		"	GND	"	2.4 V	"		"		"	"	"	9		"	"
			59	"	"		"		"	"	"	GND	2.4 V		"		"	"	"	10		"	"
			60	"	"		"		"	"	"	"	GND		2.4 V		"	"	"	12		"	"
			61	"	"		"		"	"	"	"	"		GND		2.4 V	"	"	14		"	"
			62	"	"		"		"	"	"	"	"		GND		GND	2.4 V	"	15		"	"
	I_{IH2}	3010	63	5.5 V	GND		GND		GND	GND	"	GND	GND		GND		GND	GND	"	1		100	"
			64	GND	5.5 V		GND		"	"	"	"	"		"		"	"	"	2		"	"
			65	"	GND		5.5 V		"	"	"	"	"		"		"	"	"	4		"	"
			66	"	"		GND		5.5 V	"	"	"	"		"		"	"	"	6		"	"
			67	"	"		"		GND	5.5 V	"	"	"		"		"	"	"	7		"	"
			68	"	"		"		"	GND	"	5.5 V	"		"		"	"	"	9		"	"
			69	"	"		"		"	"	"	GND	5.5 V		"		"	"	"	10		"	"
			70	"	"		"		"	"	"	"	GND		5.5 V		"	"	"	12		"	"
			71	"	"		"		"	"	"	"	"		GND		5.5 V	"	"	14		"	"
			72	"	"		"		"	"	"	"	"		GND		GND	5.5 V	"	15		"	"
	I_{OS}	3011	73	0.8 V	0.8 V	GND	4.5 V			0.8 V	"	0.8 V					0.8 V	0.8 V	"	3	-40	-120	mA
			74	"	"			GND	4.5 V	"	"	"					"	"	"	5	"	"	"
			75	"	"					"	"	"	4.5 V	GND			"	"	"	11	"	"	"
			76	"	"					"	"	"			4.5 V	GND	"	"	"	13	"	"	"
	I_{CC}	3005	77	GND	GND		GND		GND	GND	"	GND	GND		GND		GND	GND	"	16		90	"
	V_{OC}		78			-12 mA					"								"	3		-1.5	V
			79					-12 mA			"								"	5		"	"
			80								"			-12 mA					"	11		"	"
			81								"				-12 mA				"	13		"	"
	I_{O1}		82							0.8 V	"	0.8 V	2.0 V	2.4 V			2.0 V	0.8 V	"	11	-120	40	µA
			83							"	"	"			2.0 V	2.4 V	2.0 V	0.8 V	"	13	"	"	"
			84							"	"	"	2.0 V	2.4 V			0.8 V	2.0 V	"	11	"	"	"
			85							"	"	"			2.0 V	2.4 V	0.8 V	2.0 V	"	13	"	"	"
			86							2.0 V	"	2.0 V	0.8 V	2.4 V			2.0 V	0.8 V	"	11	"	"	"
			87							"	"	"			2.0 V	2.4 V	2.0 V	0.8 V	"	13	"	"	"
			88							"	"	"	0.8 V	2.4 V			0.8 V	2.0 V	"	11	"	"	"
			89							"	"	"			2.0 V	2.4 V	0.8 V	2.0 V	"	13	"	"	"
			90	2.0 V	0.8 V			2.4 V	2.0 V	0.8 V	"	0.8 V							"	5	"	"	"
			91	2.0 V	0.8 V	2.4 V	2.0 V			"	"	"							"	3	"	"	"
			92	0.8 V	2.0 V			2.4 V	2.0 V	"	"	"							"	5	"	"	"
			93	0.8 V	2.0 V	2.4 V	2.0 V			"	"	"							"	3	"	"	"
			94	2.0 V	0.8 V			2.4 V	0.8 V	2.0 V	"	2.0 V							"	5	"	"	"
			95	2.0 V	0.8 V	2.4 V	2.0 V			"	"	"							"	3	"	"	"
			96	0.8 V	2.0 V			2.4 V	0.8 V	"	"	"							"	5	"	"	"
			97	0.8 V	2.0 V	2.4 V	2.0 V			"	"	"							"	3	"	"	"

See footnotes at end of device types 06 and 07.

TABLE III. Group A inspection for device types 06 and 07 – Continued. 1/
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	E_{B1}	E_{B2}	B2 OUT	B2 IN	B1 OUT	B1 IN	D/SE 1	GND	D/SE 2	A1 IN	A1 OUT	A2 IN	A2 OUT	EA_1	EA_2	V_{CC}		Min	Max	
1	I_{O2}		98							0.8 V	GND	0.8 V	0.8 V	0.4 V			2.0 V	0.8 V	5.5 V	11	-160	40	µA
T_A =			99							"	"	"			0.8 V	0.4 V	2.0 V	0.8 V	"	13	"	"	"
+25°C			100							"	"	"	0.8 V	0.4 V			0.8 V	2.0 V	"	11	"	"	"
			101							"	"	"			0.8 V	0.4 V	0.8 V	2.0 V	"	13	"	"	"
			102							2.0 V	"	2.0 V	2.0 V	0.4 V			2.0 V	0.8 V	"	11	"	"	"
			103							"	"	"			0.8 V	0.4 V	2.0 V	0.8 V	"	13	"	"	"
			104							"	"	"	2.0 V	0.4 V			0.8 V	2.0 V	"	11	"	"	"
			105							"	"	"			0.8 V	0.4 V	0.8 V	2.0 V	"	13	"	"	"
			106	2.0 V	0.8 V			0.4 V	0.8 V	0.8 V	"	0.8 V							"	5	"	"	"
			107	2.0 V	0.8 V	0.4 V	0.8 V			"	"	"							"	3	"	"	"
			108	0.8 V	2.0 V			0.4 V	0.8 V	"	"	"							"	5	"	"	"
			109	0.8 V	2.0 V	0.4 V	0.8 V			"	"	"							"	3	"	"	"
			110	2.0 V	0.8 V			0.4 V	2.0 V	2.0 V	"	2.0 V							"	5	"	"	"
			111	2.0 V	0.8 V	0.4 V	0.8 V			"	"	"							"	3	"	"	"
			112	0.8 V	2.0 V			0.4 V	2.0 V	"	"	"							"	5	"	"	"
			113	0.8 V	2.0 V	0.4 V	0.8 V			"	"	"							"	3	"	"	"
2	Same tests, terminal conditions, and limits as subgroup 1, except T_A = +125°C, V_{IC} = and V_{OC} are omitted. V_{IL} = 0.7 V.																						
3	Same tests, terminal conditions, and limits as subgroup 2, except T_A = -55°C, V_{IC} = and V_{OC} are omitted.																						
9	t_{PLH}	3003	114							5.0 V	GND	GND	IN	OUT			GND	GND	5.0 V	11	2	25	ns
T_A =		(Fig. 3)	115							"	"	"			IN	OUT	GND	GND	"	13	"	"	"
+25°C			116	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
			117	GND	GND	OUT	IN			"	"	"							"	3	"	"	"
	t_{PLH}		118							"	"	"	IN	OUT			GND	GND	"	11	"	"	"
			119							"	"	"			IN	OUT	GND	GND	"	13	"	"	"
			120	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
			121	GND	GND	OUT	IN			"	"	"							"	3	"	"	"
	t_{PLH}		122							GND	"	"	IN	OUT			GND	GND	"	11	"	"	"
	t_{PLH}		123	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
	t_{PHL}		124							"	"	"	IN	OUT			GND	GND	"	11	"	"	"
	t_{PHL}		125	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
	t_{PZH}		126							5.0 V	"	"	GND	OUT			IN	GND	"	11	"	22	"
			127							"	"	"			5.0 V	OUT	IN	GND	"	13	"	"	"
			128	IN	GND			OUT	GND	"	"	"							"	5	"	"	"
			129	IN	GND	OUT	5.0 V			"	"	"							"	3	"	"	"
	t_{PZL}		130							"	"	"	5.0 V	OUT			IN	GND	"	11	"	25	"
			131							"	"	"			GND	OUT	IN	GND	"	13	"	"	"
			132	IN	GND			OUT	5.0 V	"	"	"							"	5	"	"	"
			133	IN	GND	OUT	GND			"	"	"							"	3	"	"	"
	t_{PHZ}		134							"	"	"	GND	OUT			IN	GND	"	11	"	32	"
			135							"	"	"			5.0 V	OUT	IN	GND	"	13	"	"	"
			136	IN	GND			OUT	GND	"	"	"							"	5	"	"	"
			137	IN	GND	OUT	5.0 V			"	"	"							"	3	"	"	"
	t_{PLZ}		138							"	"	"	5.0 V	OUT			IN	GND	"	11	"	27	"
			139							"	"	"			GND	OUT	IN	GND	"	13	"	"	"
			140	IN	GND			OUT	5.0 V	"	"	"							"	5	"	"	"
			141	IN	GND	OUT	GND			"	"	"							"	3	"	"	"

See footnotes at end of device types 06 and 07.

TABLE III. Group A inspection for device types 06 and 07 – Continued. 1/
Terminal conditions (pins not designated are open)

Subgroup	Symbol	MIL-STD-883 method	Cases E and F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Test no.	E_{B1}	E_{B2}	B2 OUT	B2 IN	B1 OUT	B1 IN	D/SE 1	GND	D/SE 2	A1 IN	A1 OUT	A2 IN	A2 OUT	EA_1	EA_2	V_{CC}		Min	Max	
10 T_A = +125°C	t_{PLH}	3003 (Fig. 3)	142							5.0 V	GND	GND	IN	OUT			GND	GND	5.0 V	11	2	28	ns
			143							"	"	"			IN	OUT	GND	GND	"	13	"	"	"
			144	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
			145	GND	GND	OUT	IN			"	"	"							"	3	"	"	"
	t_{PHL}		146							"	"	"	IN	OUT			GND	GND	"	11	"	"	"
			147							"	"	"			IN	OUT	GND	GND	"	13	"	"	"
			148	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
			149	GND	GND	OUT	IN			"	"	"							"	3	"	"	"
	t_{PLH}		150							GND	"	"	IN	OUT			GND	GND	"	11	"	"	"
	t_{PLH}		151	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
	t_{PHL}		152							"	"	"	IN	OUT			GND	GND	"	11	"	"	"
	t_{PHL}		153	GND	GND			OUT	IN	"	"	"							"	5	"	"	"
	t_{PZH}		154							5.0 V	"	"	GND	OUT			IN	GND	"	11	"	32	"
			155							"	"	"			5.0 V	OUT	IN	GND	"	13	"	"	"
			156	IN	GND			OUT	GND	"	"	"							"	5	"	"	"
			157	IN	GND	OUT	5.0 V			"	"	"							"	3	"	"	"
	t_{PZL}		158							"	"	"	5.0 V	OUT			IN	GND	"	11	"	"	"
			159							"	"	"			GND	OUT	IN	GND	"	13	"	"	"
			160	IN	GND			OUT	5.0 V	"	"	"							"	5	"	"	"
			161	IN	GND	OUT	GND			"	"	"							"	3	"	"	"
	t_{PHZ}		162							"	"	"	GND	OUT			IN	GND	"	11	"	34	"
			163							"	"	"			5.0 V	OUT	IN	GND	"	13	"	"	"
			164	IN	GND			OUT	GND	"	"	"							"	5	"	"	"
			165	IN	GND	OUT	5.0 V			"	"	"							"	3	"	"	"
	t_{PLZ}		166							"	"	"	5.0 V	OUT			IN	GND	"	11	"	36	"
			167							"	"	"			GND	OUT	IN	GND	"	13	"	"	"
			168	IN	GND			OUT	5.0 V	"	"	"							"	5	"	"	"
			169	IN	GND	OUT	GND			"	"	"							"	3	"	"	"
11	Same tests, terminal conditions as subgroup 10, except T_A = -55°C.																						

1/ IN = input inpulse, OUT = pin under test.

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

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

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, 6, 7, and 8 shall be omitted.

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

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

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

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

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

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

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

5. PACKAGING

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

6. NOTES

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. Complete part number (see 1.2).

c. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

d. Requirements for certificate of compliance, if applicable.

e. Requirements for notification of change of product or process to acquiring activity in addition to notification of the qualifying activity, if applicable.

f. Requirements for failure analysis (including required test condition of MIL-STD-883, method 5003), 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, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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

GND	Electrical ground (common terminal)
V_{IN}	Voltage level at an input terminal
I_{IN}	Current flowing into an input terminal
BV_{IN}	High level input breakdown voltage
I_{CEX}	Output leakage current
V_{IC}	Input clamp voltage
V_{OC}	Output clamp voltage
V_{TH}	Differential input threshold voltage
V_{CM}	Common-mode input voltage
t_{PHZ}	Output disable time (of a three-state output) from high level. The time between the specified reference points on the input and output voltage waveforms with the three state output changing from the defined high level to a high impedance (off) state.

t_{PLZ} ..... Output disable time (of a three-state output) from low level. The time between the specified reference points on the input and output voltage waveforms with the three state output changing from the defined low level to a high impedance (off) state.

t_{PZH} ..... Output enable time (of a three-state output) to high level. The time between the specified reference points on the input and output voltage waveforms with the three state output changing from a high-impedance (off) state to the defined high level.

t_{PZL} ..... Output enable time (of a three-state output) to low level. The time between the specified reference points on the input and output voltage waveforms with the three state output changing from a high-impedance (off) state to the defined low level.

6.6 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.4). Longer length leads and lead forming should not affect the part number.

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-38510 device types and may have slight physical variations in relation to case size. The presence of this information 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 type	Generic-industry type
01	55107
02	55108
03	9614, 55114
04	9615, 55115
05	55113
06	7831
07	7832

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

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

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

Preparing activity:
DLA - CC

Project 5962-1979

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

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

2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.

3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-M-38510/104C	2. DOCUMENT DATE *(YYYYMMDD)*

3. DOCUMENT TITLE

MICROCIRCUITS, LINEAR, LINE DRIVERS AND RECEIVERS, MONOLITHIC SILICON

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

5. REASON FOR RECOMMENDATION

6. SUBMITTER

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

8. PREPARING ACTIVITY

a. NAME Raj Pithadia	b. TELEPHONE *(Include Area Code* (1) Commercial 614-692-0527	(2) DSN 850-0527
c. ADDRESS *(Include Zip Code)* DSCC-VAS 3990 East Broad Street Columbus, Ohio 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC-LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6221 Telephone (703)767-6888 DSN 427-6888	