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IN REPLY
REFER TO DSCC-VAS

DATE 12 October 2004

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of MIL-M-38510/129, Revision B; Project Number 5962-2081

The initial draft for this subject document, dated 12 October 2004, is now available for viewing and downloading from the DSCC-VA Web site:

<http://www.dscc.dla.mil/Programs/MilSpec/DocSearch.asp>

Major changes to this document include reactivation of the document and references to MIL-M-38510 have been changed to MIL-PRF-38535. Paragraphs have been changed to meet current requirements of MIL-STD-961. Burn-in circuits have been deleted and replaced by a statement requiring the circuits to be maintained by the manufacturer under document control. The slash sheet is being updated to reflect current requirements.

Concurrence or comments are required at this Center within 45 days from the date of this letter. Late comments will be held for the next coordination of the document. Comments from military departments must be identified as either "Essential" or "Suggested". Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians of this office, as applicable, in sufficient time to allow for consolidating the department reply.

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NOTE: This draft, dated 12 October 2004 prepared by Defense Supply Center Columbus (DSCC-VAS) has not been approved and is subject to modification.

DO NOT USE PRIOR TO APPROVAL
(Project 5962-2081)

INCH-POUND
MIL-M-38510/129B
DRAFT
SUPERSEDING
MIL-M-38510/129A
06 December 1985

MILITARY SPECIFICATION

MICROCIRCUITS, MONOLITHIC SILICON INTERFACE, DUAL PERIPHERAL DRIVERS

Reactivated after XX XXXXX 2004 and may be used for either new or existing design acquisition.

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

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

1. SCOPE

1.1 Scope. This specification covers the detail requirements for bipolar, monolithic silicon, dual peripheral drivers. 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3)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 or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as follows:

<u>Device types</u>	<u>Circuit</u>
01	Dual NAND/AND gate and transistor (separate), high speed switching
02	Dual AND gate and transistor (connected), high speed switching
03	Dual NAND gate and transistor (connected), high speed switching
04	Dual OR gate and transistor (connected), high speed switching
05	Dual NOR gate and transistor (connected), high speed switching
06	High voltage dual NAND/AND gate and transistor (separate), medium speed switching
07	High voltage dual AND gate and transistor (connected), medium speed switching
08	High voltage dual NAND gate and transistor (connected), medium speed switching
09	High voltage dual OR gate and transistor (connected), medium speed switching
10	High voltage dual NOR gate and transistor (connected), medium speed switching

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

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
C	GDIP1-T14 or CDIP2-T14	14	Dual in line
P	GDIP1-T8 or CDIP2-T8	8	Dual in line

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 43218-3990, or email linear@dsc.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.

1.3 Absolute maximum ratings.

Supply voltage (V _{CC})	7 V dc
Input voltage (V _{IN})	5.5 V dc
Interemitter voltage (V _{EM})	5.5 V dc
V _{CC} to substrate voltage (V _{CCS}):	
Device type 01	35 V dc
Device type 06	40 V dc
Collector to substrate voltage (V _{CS}):	
Device type 01	35 V dc
Device type 06	40 V dc
Collector to base voltage (V _{EB}):	
Device type 01	35 V dc
Device type 06	40 V dc
Collector to emitter voltage (V _{CER}):	
Device type 01	30 V dc
Device type 06	40 V dc
Collector to emitter voltage (V _{C EO}):	
Device type 06	25 V dc
Emitter to base voltage (V _{BE}):	
Device types 01 and 06	5 V dc
Offstate output voltage (V _{OO}):	
Device types 02 through 05	30 V dc
Device types 07 through 10	35 V dc
Continuous collector current (I _{CC}):	
Device types 01 and 06	300 mA
Continuous output current (I _{OC}):	
Device types 02 through 05 and 07 through 10	300 mA <u>1/</u>
Peak collector current (I _{CP}):	
Device types 01 and 06	500 mA
Peak output current (I _{OP}):	
Device types 02 through 05 and 07 through 10	500 mA
Continuous total dissipation at 25°C ambient:	
Device types 01 and 06	1375 mW
Device types 02 through 05 and 07 through 10	1050 mW
Ambient operating temperature range	-55°C to +125°C
Storage temperature range	-65°C to +150°C
Junction temperature (T _J)	+150°C
Lead temperature 1/16 inch from case, (soldering, 60 seconds)	300°C

1.4 Recommended operating conditions.

Supply voltage range	+4.5 V to +5.5 V <u>2/</u>
Ambient operating temperature range (T _A)	-55°C to +125°C

1/ Both halves of these dual circuits may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous power dissipation ratings.
2/ For device types 01 and 06 only, the substrate (pin 8) must always be at the most negative device voltage for proper operation.

1.5 Power and thermal characteristics.

Package	Case outline	Maximum allowable power dissipation	Maximum θ_{JC}	Maximum θ_{JA}
14 lead dual in line	C	275 mW at $T_A = +125^\circ\text{C}$	29°C/W	91°C/W
8 lead dual in line	P	210 mW at $T_A = +125^\circ\text{C}$	26°C/W	119°C/W

2. APPLICABLE DOCUMENTS

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

2.2 Government documents.

2.2.1 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

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

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

2.3 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 diagrams 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 upon request.

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

3.3.5 Package and sealing material. Package and sealing material shall be in accordance with MIL-PRF-38535.

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 $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Input clamp voltage	V_{IC}	$V_{CC} = 4.5\text{ V}$, $I_{IN} = -12\text{ mA}$	All		-1.5	V
High level input currents into A or B	I_{IH1}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 2.4\text{ V}$	All		40	μA
	I_{IH2}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$			1	mA
High level input current into G	I_{IH3}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 2.4\text{ V}$	01,06		80	μA
	I_{IH4}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$			2	mA
Low level input currents into A or B	I_{IL1}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0.4\text{ V}$ or 5.5 V	All		-1.6	mA
Low level input current into G	I_{IL2}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0.4\text{ V}$ or 5.5 V	01,06		-3.2	mA
High level supply current	I_{CCH1}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	01,06		4	mA
	I_{CCH2}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	02,04, 07,09		11	
	I_{CCH3}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	05,08		17	
	I_{CCH4}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	03		14	
	I_{CCH5}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	10		10	
Low level supply current	I_{CCL1}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	01,06		11	mA
	I_{CCL2}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	02		65	
	I_{CCL3}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	04		63	
	I_{CCL4}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	03		71	
	I_{CCL5}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 0\text{ V}$	07,09		76	
	I_{CCL6}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	08		76	
	I_{CCL7}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	05		79	
	I_{CCL8}	$V_{CC} = 5.5\text{ V}$, $V_{IN} = 5.5\text{ V}$	10		85	

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Low level output voltage	V _{O1}	V _{CC} = 4.5 V, V _{IN} = 0.8 V or 4.5 V; I _{OL} = 100 mA	02, 07		0.5	V
	V _{O2}	V _{CC} = 4.5 V, V _{IN} = 2 V, I _{OL} = 100 mA	03, 08		0.5	
	V _{O3}	V _{CC} = 4.5 V, V _{IN} = 0.8 V, I _{OL} = 100 mA	04, 09		0.5	
	V _{O4}	V _{CC} = 4.5 V, V _{IN} = 2 V or 0 V, I _{OL} = 100 mA	05, 10		0.5	
	V _{O5}	V _{CC} = 4.5 V, V _{IN} = 0.8 V or 4.5 V, I _{OL} = 300 mA	02, 07		0.8	
	V _{O6}	V _{CC} = 4.5 V, V _{IN} = 2 V, I _{OL} = 300 mA	03, 08		0.8	
	V _{O7}	V _{CC} = 4.5 V, V _{IN} = 0.8 V, I _{OL} = 300 mA	04, 09		0.8	
	V _{O8}	V _{CC} = 4.5 V, V _{IN} = 2 V or 0 V, I _{OL} = 300 mA	05, 10		0.8	
Low level output voltage, TTL gate	V _{O9}	V _{CC} = 4.5 V, V _{IN} = 2 V, I _O = 16 mA	01, 06		0.5	V
High level output current	I _{OH1}	V _{CC} = 4.5 V, V _{OH} = 30 V, V _{IN} = 2 V	02,07		300	μA
	I _{OH2}	V _{CC} = 4.5 V, V _{OH} = 30 V, V _{IN} = 0.8 V or 4.5 V	03,08		300	
	I _{OH3}	V _{CC} = 4.5 V, V _{OH} = 30 V, V _{IN} = 2 V or 0 V	04,09		300	
	I _{OH4}	V _{CC} = 4.5 V, V _{OH} = 30 V, V _{IN} = 0.8 V	05,10		300	
High level output voltage, TTL gate	V _{OH}	V _{CC} = 4.5 V, V _{IN} = 0.8 V, I _{OL} = -400 μA	01,06	2.4		V
Short circuit output current, TTL gate	I _{OS1}	V _{CC} = 5.5 V	01,06		-55	mA
	I _{OS2}	V _{CC} = 4.5 V			-18	
Collector base breakdown voltage	V _{CB01}	I _C = 100 μA, I _E = 0	01	35		V
	V _{CB02}	I _C = 100 μA, I _E = 0	06	40		
Collector emitter breakdown voltage	V _{CER1}	I _C = 100 μA, R _{BE} = 500 Ω	01	35		V
	V _{CER2}	I _C = 100 μA, R _{BE} = 500 Ω	06	40		

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Collector emitter breakdown voltage	V_{CE01}	$I_C = 10 \text{ mA}$	06	25		V
Emitter base breakdown voltage	V_{EBO}	$I_E = 100 \mu\text{A}, I_C = 0$	01,06	5		V
Static forward current transfer ratio	h_{FE1}	$V_{CE} = 3 \text{ V}, I_C = 100 \text{ mA}, V_S = 4 \text{ V},$ $T_A = +25^{\circ}\text{C}, +125^{\circ}\text{C}$	01,06	25		
	h_{FE2}	$V_{CE} = 3 \text{ V}, I_C = 300 \text{ mA}, V_S = 6 \text{ V},$ $T_A = +25^{\circ}\text{C}, +125^{\circ}\text{C}$		30		
	h_{FE3}	$V_{CE} = 3 \text{ V}, I_C = 100 \text{ mA}, V_S = 4 \text{ V},$ $T_A = -55^{\circ}\text{C}$		10		
	h_{FE4}	$V_{CE} = 3 \text{ V}, I_C = 300 \text{ mA}, V_S = 6 \text{ V},$ $T_A = -55^{\circ}\text{C}$		15		
Base emitter voltage	V_{BE1}	$I_B = 10 \text{ mA}, I_C = 100 \text{ mA}$	01,06		1.2	V
	V_{BE2}	$I_B = 30 \text{ mA}, I_C = 300 \text{ mA}$			1.4	
Collector emitter saturation voltage	V_{CESAT1}	$I_B = 10 \text{ mA}, I_C = 100 \text{ mA}$	01,06		0.5	V
	V_{CESAT2}	$I_B = 30 \text{ mA}, I_C = 300 \text{ mA}$			0.8	
Delay time	t_D	$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, T_A = +25^{\circ}\text{C}$	01,06		15	ns
		$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA},$ $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			22.5	
Rise time	t_R	$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, T_A = +25^{\circ}\text{C}$	01,06		20	ns
		$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA},$ $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			30	
Storage time	t_S	$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, T_A = +25^{\circ}\text{C}$	01		15	ns
		$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF},$ $V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA},$ $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			22.5	

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Storage time	t_S	$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF}, V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, T_A = +25^{\circ}\text{C}$	06		23	ns
		$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF}, V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			34.5	
Fall time	t_F	$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF}, V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, T_A = +25^{\circ}\text{C}$	01,06		15	ns
		$I_C = 200 \text{ mA}, R_L = 50 \Omega, C_L = 100 \text{ pF}, V_{BE} = -1 \text{ V}, I_B = 20 \text{ mA}, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			22.5	
Propagation delay time (low to high level output) TTL gate	t_{PLH1}	$C_L = 100 \text{ pF}, R_L = 400 \Omega, V_{CC} = 4.5 \text{ V}, T_A = +25^{\circ}\text{C}$	01,06		30	ns
		$C_L = 100 \text{ pF}, R_L = 400 \Omega, V_{CC} = 4.5 \text{ V}, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			45	
Propagation delay time (low to high level output)	t_{PLH2}	$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, V_{CC} = 4.5 \text{ V}, T_A = +25^{\circ}\text{C}$	01		30	ns
		$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, V_{CC} = 4.5 \text{ V}, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			45	
	t_{PLH3}	$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, V_{CC} = 4.5 \text{ V}, T_A = +25^{\circ}\text{C}$	06		65	
		$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, V_{CC} = 4.5 \text{ V}, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			90	
Propagation delay time (high to low level output) TTL gate	t_{PHL1}	$C_L = 100 \text{ pF}, R_L = 400 \Omega, T_A = +25^{\circ}\text{C}$	01,06		15	ns
		$C_L = 100 \text{ pF}, R_L = 400 \Omega, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			22.5	
Propagation delay time (high to low level output)	t_{PHL2}	$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, T_A = +25^{\circ}\text{C}$	01		30	ns
		$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			45	
	t_{PHL3}	$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, T_A = +25^{\circ}\text{C}$	01		50	
		$I_C = 200 \text{ mA}, C_L = 100 \text{ pF}, R_L = 50 \Omega, -55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			75	

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Transition time (low to high level output)	t _{TLH1}	I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	01		15	ns
		I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			22.5	
	t _{TLH2}	I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	06		20	
		I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			30	
Transition time (high to low level output)	t _{THL1}	I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	01		15	ns
		I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			22.5	
	t _{THL2}	I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	06		20	
		I _C = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			30	
Propagation delay time (low to high level output)	t _{PLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	02,04		30	ns
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			45	
	t _{PLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	03		35	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			45	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	03		55	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C	05		75	
	t _{PLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	07,09		55	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C	07		65	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C	09		70	

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Propagation delay time (low to high level output)	t _{PLH}	$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $T_A = +25^{\circ}\text{C}$	08,10		65	ns
		$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$	08		95	
			10		90	
Propagation delay time (high to low level output)	t _{PHL}	$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $T_A = +25^{\circ}\text{C}$	02,04		30	ns
		$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			45	
	t _{PHL}	$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $T_A = +25^{\circ}\text{C}$	03,05		35	
		$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			55	
	t _{PHL}	$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $T_A = +25^{\circ}\text{C}$	07,09		40	
		$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			60	
	t _{PHL}	$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $T_A = +25^{\circ}\text{C}$	08,10		50	
		$V_{CC} = 4.5 \text{ V}$, $I_O = 200 \text{ mA}$, $C_L = 100 \text{ pF}$, $R_L = 50 \Omega$, $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$			75	

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55^{\circ}\text{C} \leq T_A \leq +125^{\circ}\text{C}$ unless otherwise specified	Device type	Limits		Units
				Min	Max	
Transition time (low to high level output)	t _{TLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	02,03, 04,05		14	ns
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			18.5	
	t _{TLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	07,10		20	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			26.5	
	t _{TLH}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	08,09		25	ns
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			33.5	
Transition time (high to low level output)	t _{THL}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	02,03, 04,05		20	ns
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C			25	
	t _{THL}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	07,08,10		20	
		V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, -55°C ≤ T _A ≤ +125°C		07,10	25	
				08	35	
	t _{THL}	V _{CC} = 4.5 V, I _O = 200 mA, C _L = 100 pF, R _L = 50 Ω, T _A = +25°C	09		25	

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, 10, 11
Group B electrical test parameters when using the method 5005 QCI option	1, 2, 3, and table IV delta limits	N/A
Group C end-point electrical parameters	1, 2, 3, and table IV delta limits	1 and table IV delta limits
Group D end-point electrical parameters	1, 2, 3	1

*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 described herein.

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

- a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
- b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.
- c. Additional screening for space level product shall be as specified in MIL-PRF-38535.

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

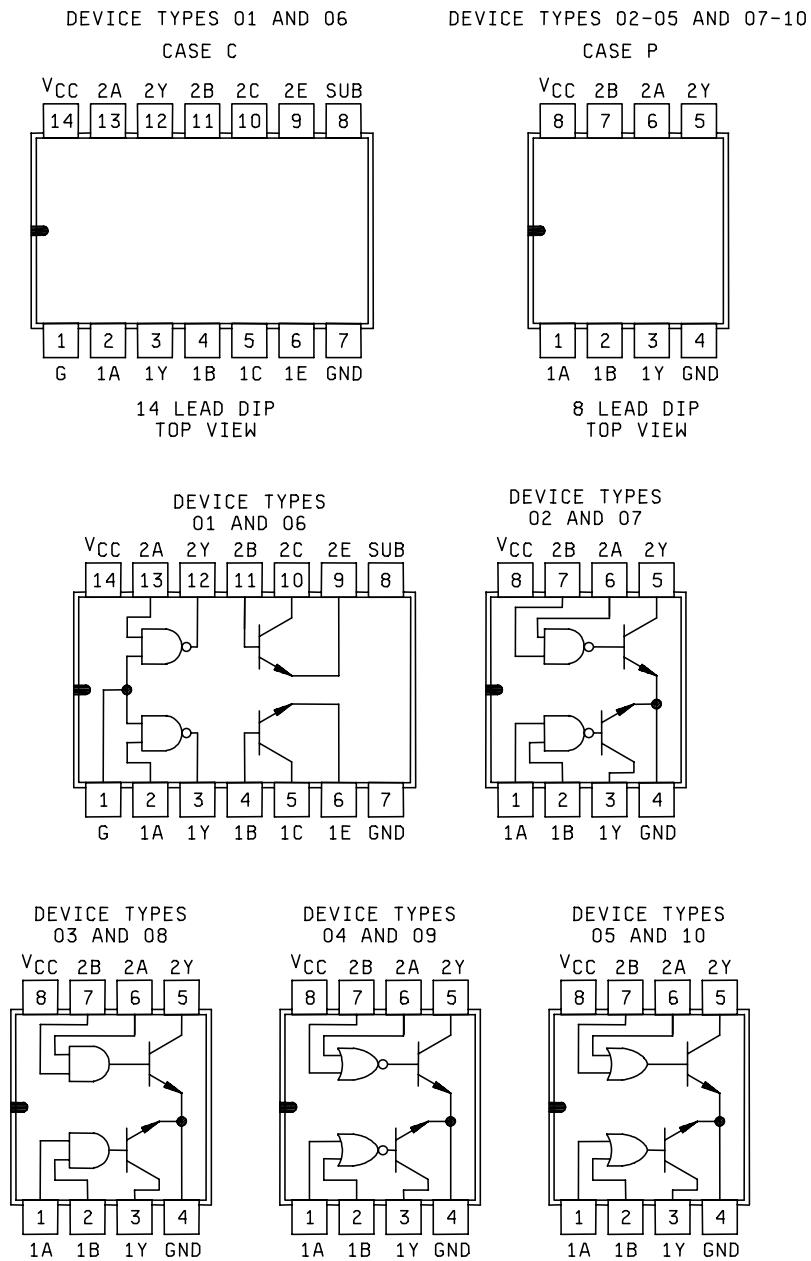


Figure 1. Logic diagrams and terminal connections.

Device types
01, 06

A	G	Y	Y'
0	0	1	0
0	1	1	0
1	0	1	0
1	1	0	1

Y is output at the gate.
Y' is output at the transistor with the
gate connected to the base of the transistor.

Device types
02, 07

A	B	Y	OUTPUT
0	0	0	ON
0	1	0	ON
1	0	0	ON
1	1	1	OFF

Device types
03, 08

A	B	Y	OUTPUT
0	0	1	OFF
0	1	1	OFF
1	0	1	OFF
1	1	0	ON

Device types
04, 09

A	B	Y	OUTPUT
0	0	0	ON
0	1	1	OFF
1	0	1	OFF
1	1	1	OFF

Device types
05, 10

A	B	Y	OUTPUT
0	0	1	OFF
0	1	0	ON
1	0	0	ON
1	1	0	ON

Figure 2. Truth tables.

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FIGURE X. Functional schematic circuits.

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FIGURE X. Test circuit, burn-in and operating life test.

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FIGURE X. Test circuit, burn-in (steady state power and reserve bias) and operating life test.

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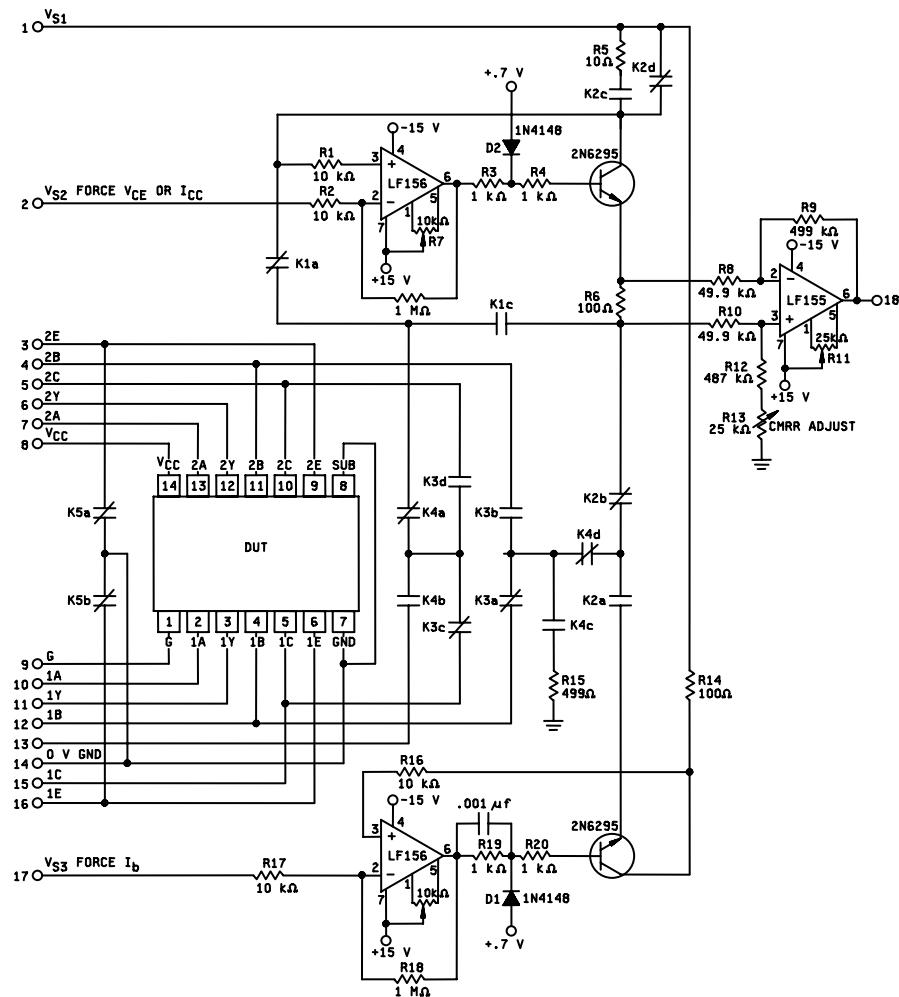
FIGURE X. Accelerated burn-in and operating life test circuit.

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FIGURE 7. Truth table for figure 6 burn-in test circuit.

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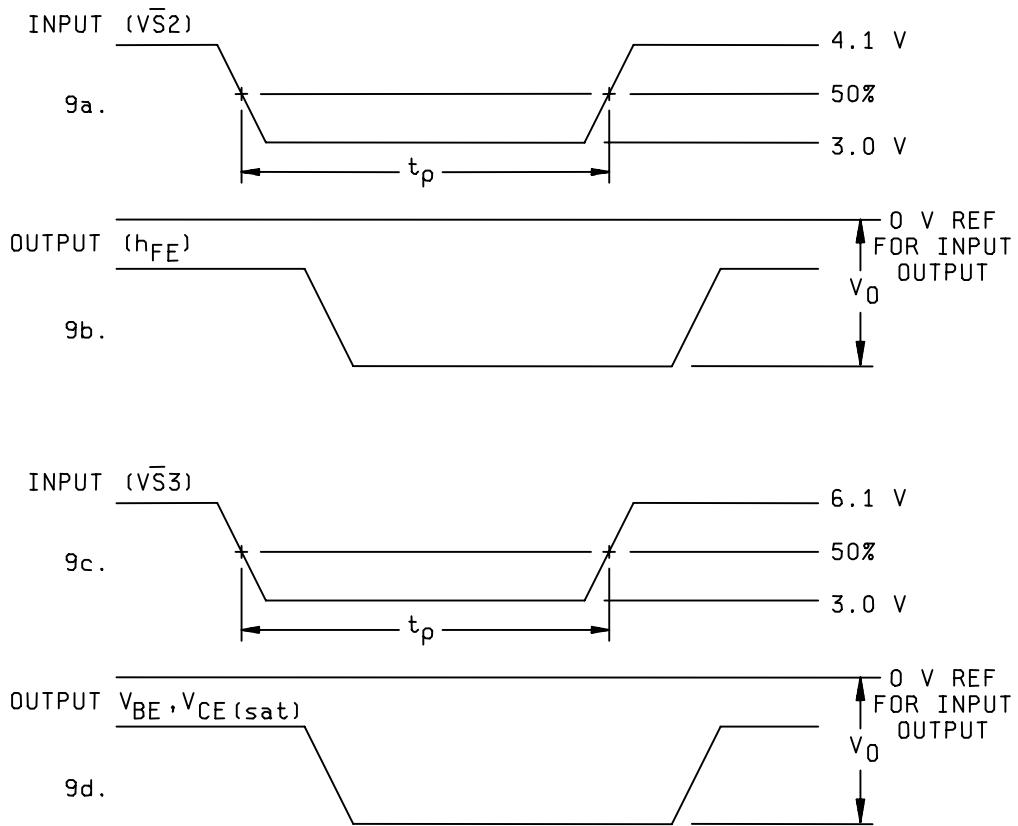
FIGURE X. Truth table for figure 5 burn-in test circuit.



NOTES:

1. The output offset voltage shall be adjusted to zero volts with the device under test (DUT) removed. The operational amplifier stabilization networks may vary with test adapter construction. Alternative drive circuits for the 2N6295 may be used to develop the proper forcing currents and input voltage pulses. These circuits shall require the approval of the qualifying activity.
2. Relay switch positions are defined in table III.
3. Resistors R5, R6, R14 shall have a tolerance $\leq 0.1\%$ for device types 01, 06.
4. Reference figure 4 for input and output waveforms for device types 01, 06.

FIGURE 3. Test circuit for static tests, device types 01 and 06.



NOTES:

1. The pulse generator shall have the following characteristics:
PRR = 1 kHz, t_p = 20 μ s, $Z_{out} \cong 50 \Omega$, t_r, t_f = 10 ns.
2. All V_O measurements are referenced to 0 V GND.
3. Use figures 4a and 4b for tests 23 – 26 and figures 4a, 4c, and 4d for tests 27 – 34.

FIGURE 4. h_{FE} , V_{BE} , $V_{CE(sat)}$ waveforms for table III, device types 01 and 06.

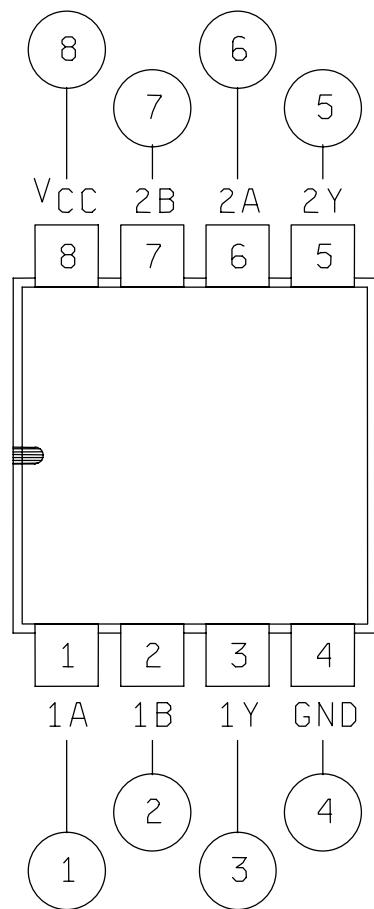
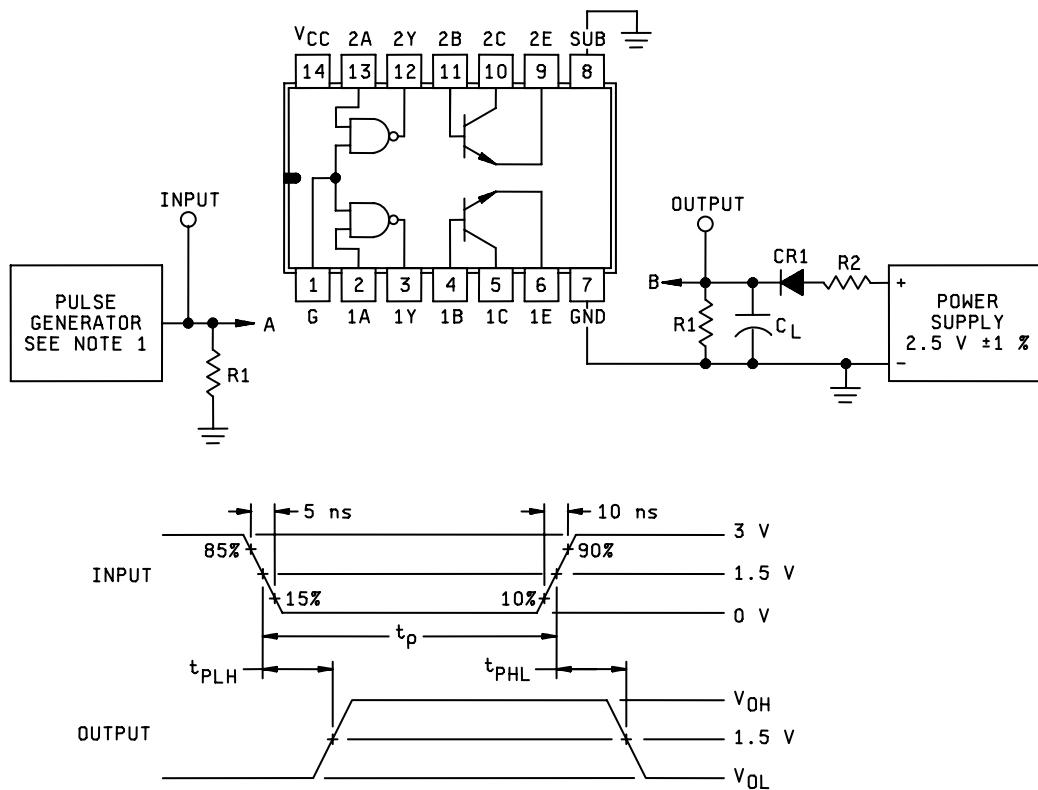


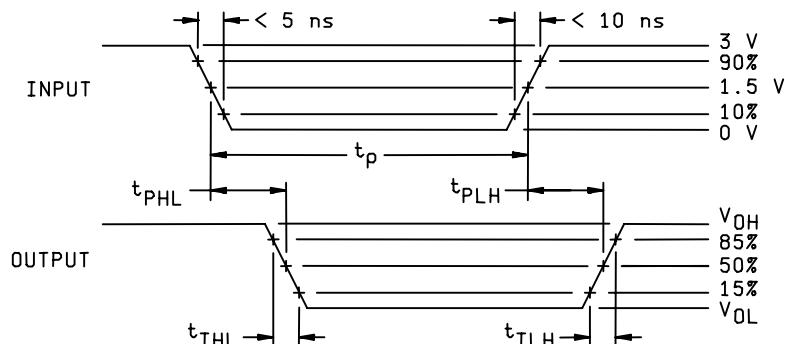
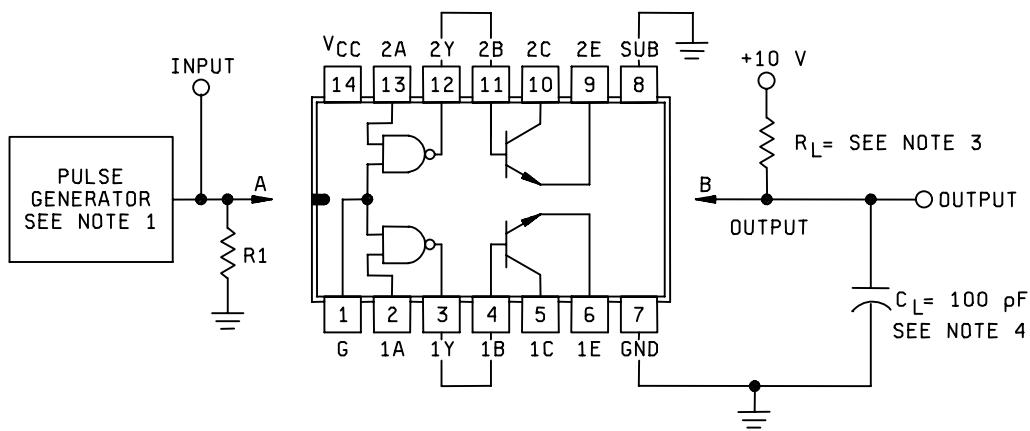
Figure 5. Test circuit for static tests, device types 02 through 05 and 07 through 10.



NOTES:

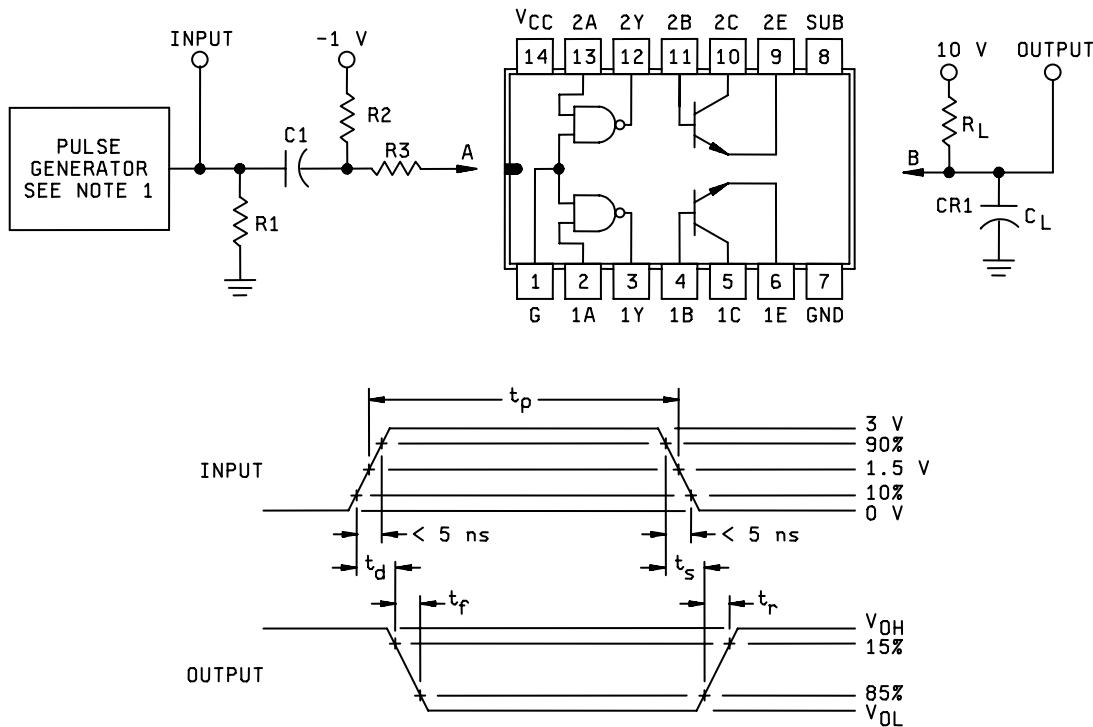
1. The pulse generator shall have the following characteristics: PRR = 1 MHz, $t_p = 0.5 \mu\text{s}$, $Z_{out} \leq 50 \Omega$.
2. $R_1 = 6.04 \text{ k}\Omega \pm 1\%$ percent, 1/8 watt.
3. $C_L = 100 \text{ pF}, \pm 5\%$ (including probe and parasitic capacitance).
4. Select R_2 for a current flow of $16 \text{ mA} \pm 1\%$ out of Point B with Point L held at 0.5 volts.
5. $CR_1 = 1N4150$ or equivalent.
6. $R_1 = 51 \Omega \pm 5\%$ carbon.

Figure 6. Propagation delay time waveforms (TTL gates only), for device types 01 and 06.

**NOTES:**

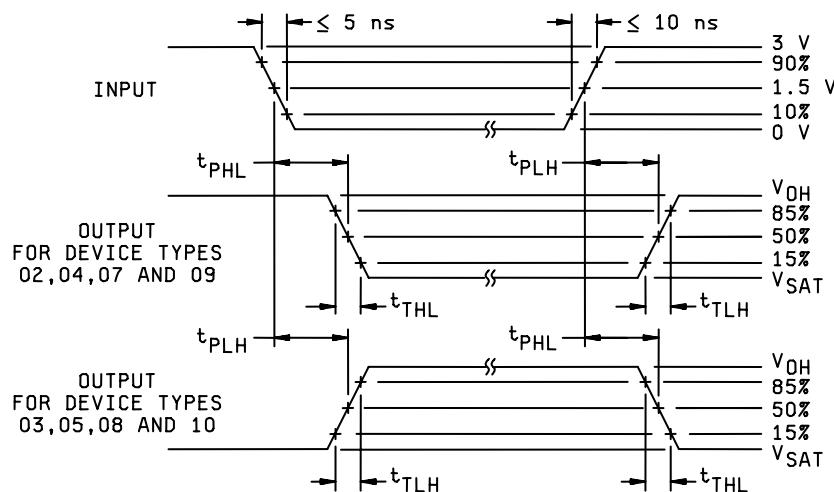
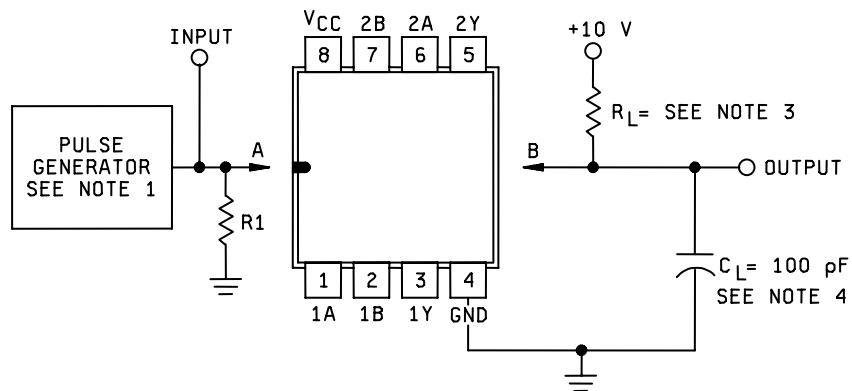
1. The pulse generator shall have the following characteristics: PRR = 1 MHz, t_p = 0.5 μs, Z_{out} ≈ 50 Ω.
2. When testing device 01 or 06, connect output Y to transistor base and ground the substrate terminal.
3. R_L = 47 Ω ±5% carbon.
4. C_L = 100 pF minimum, including probe and jig capacitance.
5. R₁ = 51 Ω ±5% carbon.

FIGURE 7. Switching time waveforms (TTL gates and transistors combined) for device types 01 and 06.

**NOTES:**

1. The pulse generator shall have the following characteristics: PRR = 1 MHz, $t_p = 0.3 \mu\text{s}$, $Z_{\text{out}} \approx 50 \Omega$.
2. $C_L = 100 \text{ pF}$ minimum, including probe and jig capacitance.
3. $R1 = 62 \Omega \pm 5\%$ carbon.
4. $R2 = 1 \text{ k}\Omega \pm 5\%$ carbon.
5. $C1 = 0.1 \mu\text{F} \pm 5\%$.
6. $R_L = 47 \Omega \pm 5\%$ carbon.
7. $R3 = 51\Omega \pm 5\%$ carbon.
8. All voltages have a tolerance of $\pm 1\%$ of nominal.

FIGURE 8. Switching times (transistors only) for device types 01 and 06.



NOTES:

1. Pulse generator shall have the following characteristics: PRR \leq 1 MHz, $Z_{out} \cong 50 \Omega$, $t_r \leq 10$ ns, $t_f \leq 5$ ns.
2. $R_1 = 51 \Omega \pm 5\%$.
3. $R_L = 47 \Omega \pm 5\%$.
4. $C_L = 100 \text{ pF} \pm 10\%$, including probe and jig capacitance.

FIGURE 9. Switching time waveforms for device types 02 through 05 and 07 through 10.

TABLE III. Group A inspection for device type 01.

Subgroup	Symbol	Test no.	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit	
			VS1	VS2	VS3	1B	1C	1E	2B	2E	2C	VCC	G	1A	1Y	2A	2Y		No.	Value	Unit	Min	Max				
1 TA = +25°C	V _{IC}	1										4.5 V	-12 mA	4.5 V		4.5 V		None	9	E1	V	V _{IC} = E1	See figure 3 for test circuit		-1.5	V	
	V _{IC}	2										4.5 V	4.5 V	-12 mA		4.5 V		"	10	E2	V	V _{IC} = E2			-1.5	V	
	V _{IC}	3										4.5 V	4.5 V	4.5 V		-12 mA		"	7	E3	V	V _{IC} = E3			-1.5	V	
	I _{IH1}	4										5.5 V	GND	2.4 V		GND		"	10	I1	A	I _{IH1} = I ₁		40	μA		
	I _{IH1}	5										"	"	GND	2.4 V			"	7	I2	"	I _{IH1} = I ₂		40	μA		
	I _{IH2}	6										"	"	5.5 V	GND	5.5 V		"	10	I3	"	I _{IH2} = I ₃		1	mA		
	I _{IH2}	7										"	"	GND	5.5 V			"	7	I4	"	I _{IH2} = I ₄		1	mA		
	I _{IH3}	8										"	2.4 V	GND	GND			"	9	I5	"	I _{IH3} = I ₅		80	μA		
	I _{IH4}	9										"	5.5 V	GND	GND			"	9	I6	"	I _{IH4} = I ₆		2	mA		
	I _{IL1}	10										"	5.5 V	0.4 V		5.5 V		"	10	I7	"	I _{IL1} = I ₇		-1.6	mA		
	I _{IL1}	11										"	5.5 V	5.5 V		0.4 V		"	7	I8	"	I _{IL1} = I ₈		-1.6	"		
	I _{IL2}	12										"	0.4 V	5.5 V		5.5 V		"	9	I9	"	I _{IL2} = I ₉		-3.2	"		
	I _{CCH1}	13										"	GND	GND		GND		"	8	I10	"	I _{CCH1} = I ₁₀		4	"		
	I _{CCL1}	14										"	5.5 V	5.5 V		5.5 V		"	8	I11	"	I _{CCL1} = I ₁₁		11	"		
	V _{OL9}	15										4.5 V	2 V	2 V	I _{OL} = 16 mA			"	11	E4	V	V _{OL9} = E4			0.5	V	
	V _{OL9}	16										"	2 V			2 V	I _{OL} = 16 mA		"	6	E5	"	V _{OL9} = E5			0.5	"
	V _{OH}	17										"	4.5 V	0.8 V	I _{OH} = -400 μA			"	11	E6	"	V _{OH} = E6			2.4	"	
	V _{OH}	18										"	4.5 V		0.8 V	I _{OH} = -400 μA		"	6	E7	"	V _{OH} = E7			2.4	"	
	I _{OS1}	19										5.5 V	GND	GND	GND			"	11	I12	A	I _{OS1} = I ₁₂			-55	mA	
	I _{OS1}	20										"	"		GND			"	6	I13	"	I _{OS1} = I ₁₃			-55	mA	
	I _{OS2}	21										4.5 V	GND	GND	GND			"	11	I14	"	I _{OS2} = I ₁₄			-18	"	
	I _{OS2}	22										"	"	GND	GND			"	6	I15	"	I _{OS2} = I ₁₅			-18	"	
	h _{FE1}	23	4 V	V _S 2														"	18 to 14	E8	V	h _{FE1} = E8/1000	See figures 3 and 4 for test circuit and waveforms	25			
	h _{FE1}	24	4 V	"														"	E9	"	"	h _{FE1} = E9/1000		25			
	h _{FE2}	25	6 V	"														"	E10	"	"	h _{FE2} = E10/3000		30			
	h _{FE2}	26	6 V	"														"	E11	"	"	h _{FE2} = E11/3000		30			
	V _{BE1}	27	4 V	"	V _S 3													1,2	12 to 16	E12	"	V _{BE1} = E12			1.2	V	
	V _{BE1}	28	4 V	"	V _S 3													1,2,3	11 to 10	E13	"	V _{BE1} = E13			1.2	V	

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit
			VS1	VS2	VS3	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y		No.	Value	Unit	Min	Max			
1 $T_A = +25^\circ C$	V_{BE2}	29	6 V	V_S^-	V_S^-													1,2	12 to 16	E14	V	$V_{BE2} = E14$	See figures 3 and 4 for test circuit and waveforms	1.4	V	
	V_{BE2}	30	6 V	"	"													1,2,3	11 to 10	E15	"	$V_{BE2} = E15$		1.4	V	
	V_{CESAT1}	31	4 V	"	"													1,2	5 to 6	E16	"	$V_{CESAT1} = E16$		0.5	"	
	V_{CESAT1}	32	4 V	"	"													1,2,3	10 to 9	E17	"	$V_{CESAT1} = E17$		0.5	"	
	V_{CESAT2}	33	6 V	"	"													1,2	5 to 6	E18	"	$V_{CESAT2} = E18$		0.8	"	
	V_{CESAT2}	34	6 V	"	"													1,2,3	10 to 9	E19	"	$V_{CESAT2} = E19$		0.8	"	
	V_{CB01}	35				GND	100 μA											3	15 to 12	E20	"	$V_{CB01} = E20$	See figure 3 for test circuit	35	"	
	V_{CB01}	36						GND		100 μA								4	5 to 3	E21	"	$V_{CB01} = E21$		35	"	
	V_{CER1}	37					100 μA	GND										4	15 to 16	E22	"	$V_{CER1} = E22$		35	"	
	V_{CER1}	38						GND		100 μA								3,4	5 to 3	E23	"	$V_{CER1} = E23$		35	"	
	V_{EBO}	39				GND	100 μA	GND		100 μA								3,4	16 to 12	E24	"	$V_{EBO} = E24$		5	"	
	V_{EBO}	40																4	3 to 4	E25	"	$V_{EBO} = E25$		5	"	
2 $T_A = +125^\circ C$	V_{IC}	41								4.5 V	-12 mA	4.5 V						None	9	E1	V	$V_{IC} = E1$	See figure 3 for test circuit	-1.5	V	
	V_{IC}	42								4.5 V	4.5 V	-12 mA						"	10	E2	V	$V_{IC} = E2$		-1.5	V	
	V_{IC}	43								4.5 V	4.5 V	4.5 V						"	7	E3	V	$V_{IC} = E3$		-1.5	V	
	I_{IH1}	44								5.5 V	GND	2.4 V						"	10	I1	A	$I_{IH1} = I1$		40	μA	
	I_{IH1}	45								"	"	GND	2.4 V					"	7	I2	"	$I_{IH1} = I2$		40	μA	
	I_{IH2}	46								"	"	5.5 V	GND					"	10	I3	"	$I_{IH2} = I3$		1	mA	
	I_{IH2}	47								"	"	GND	5.5 V					"	7	I4	"	$I_{IH2} = I4$		1	mA	
	I_{IH3}	48								"	2.4 V	GND	5.5 V					"	9	I5	"	$I_{IH3} = I5$		80	μA	
	I_{IH4}	49								"	5.5 V	GND	GND					"	9	I6	"	$I_{IH4} = I6$		2	mA	
	I_{IL1}	50								"	5.5 V	0.4 V						"	10	I7	"	$I_{IL1} = I7$	"	-1.6	mA	
	I_{IL1}	51								"	5.5 V	5.5 V						"	7	I8	"	$I_{IL1} = I8$		-1.6	"	
	I_{IL2}	52								"	0.4 V	5.5 V						"	9	I9	"	$I_{IL2} = I9$		-3.2	"	
	I_{CCH1}	53								"	GND	GND						"	8	I10	"	$I_{CCH1} = I10$		4	"	
	I_{CCL1}	54								"	5.5 V	5.5 V						"	8	I11	"	$I_{CCL1} = I11$		11	"	

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit
			V _{S1}	V _{S2}	V _{S3}	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y		No.	Value	Unit			Min	Max	
2 TA = +125°C	V _{OL9}	55										4.5 V	2 V	2 V	I _{OL} = 16 mA			None	11	E4	V	V _{OL9} = E4	See figure 3 for test circuit	0.5	V	
	V _{OL9}	56										"	2 V			2 V	I _{OL} = 16 mA		"	6	E5	"	V _{OL9} = E5	0.5	"	
	V _{OH}	57										"	4.5 V	0.8 V	I _{OH} = -400 μA			"	11	E6	"	V _{OH} = E6	2.4	"		
	V _{OH}	58										"	4.5 V		0.8 V	I _{OH} = -400 μA		"	6	E7	"	V _{OH} = E7	2.4	"		
	I _{OS1}	59										5.5 V	GND	GND	GND			"	11	I12	A	I _{OS1} = I ₁₂	"	-55	mA	
	I _{OS1}	60										5.5 V	"	GND	GND			"	6	I13	"	I _{OS1} = I ₁₃		-55	"	
	I _{OS2}	61										4.5 V	"	GND	GND			"	11	I14	"	I _{OS2} = I ₁₄		-18	"	
	I _{OS2}	62										4.5 V	"	GND	GND			"	6	I15	"	I _{OS2} = I ₁₅		-18	"	
	hFE1	63	4 V	V _S 2														"	18 to 14	E8	V	hFE1 = E8/1000	See figures 3 and 4 for test circuit and waveforms	25		
	hFE1	64	4 V	"														3	"	E9	"	hFE1 = E9/1000		25		
	hFE2	65	6 V	"														None	"	E10	"	hFE2 = E10/3000		30		
	hFE2	66	6 V	"														3	"	E11	"	hFE2 = E11/3000		30		
	V _{BE1}	67	4 V	"	V _S 3													1,2	12 to 16	E12	"	V _{BE1} = E12		1.2	V	
	V _{BE1}	68	4 V	"	V _S 3													1,2,3	11 to 10	E13	"	V _{BE1} = E13		1.2	V	
	V _{BE2}	69	6 V	"	V _S 3													1,2	12 to 16	E14	V	V _{BE2} = E14	See figures 3 and 4 for test circuit	1.4	V	
	V _{BE2}	70	6 V	"	"													1,2,3	11 to 10	E15	"	V _{BE2} = E15		1.4	V	
	V _{CESAT} 1	71	4 V	"	"													1,2	5 to 6	E16	"	V _{CESAT1} = E16		0.5	"	
	V _{CESAT} 1	72	4 V	"	"													1,2,3	10 to 9	E17	"	V _{CESAT1} = E17	See figures 3 and 4 for test circuit and waveforms	0.5	"	
	V _{CESAT} 2	73	6 V	"	"													1,2	5 to 6	E18	"	V _{CESAT2} = E18		0.8	"	
	V _{CESAT} 2	74	6 V	"	"													1,2,3	10 to 9	E19	"	V _{CESAT2} = E19		0.8	"	
	V _{CB01}	75				GND	100 μA			GND		100 μA						3	15 to 12	E20	"	V _{CB01} = E20		35		"
	V _{CB01}	76								GND								4	5 to 3	E21	"	V _{CB01} = E21	See figure 3 for test circuit	35		"
	V _{CER1}	77								100 μA	GND		GND	100 μA				4	15 to 16	E22	"	V _{CER1} = E22		35		"
	V _{CER1}	78																3,4	5 to 3	E23	"	V _{CER1} = E23		35		"

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit
			VS1	VS2	VS3	1B	1C	1E	2B	2E	2C	VCC	G	1A	1Y	2A	2Y		No.	Value	Unit			Min	Max	
3 TA = -55°C	V _{BE2}	109	6 V	V _S 2	V _S 3													1,2	12 to 16	E14	V	V _{BE2} = E14	See figures 3 and 4 for test circuit and waveforms	1.4	V	
	V _{BE2}	110	6 V	"	"													1,2,3	11 to 10	E15	"	V _{BE2} = E15		1.4	V	
	V _{CESAT} ₁	111	4 V	"	"													1,2	5 to 6	E16	"	V _{CESAT1} = E16		0.5	"	
	V _{CESAT} ₁	112	4 V	"	"													1,2,3	10 to 9	E17	"	V _{CESAT1} = E17		0.5	"	
	V _{CESAT} ₂	113	6 V	"	"													1,2	5 to 6	E18	"	V _{CESAT2} = E18	"	0.8	"	
	V _{CESAT} ₂	114	6 V	"	"													1,2,3	10 to 9	E19	"	V _{CESAT2} = E19		0.8	"	
	V _{CB01}	115				GND	100 μA			GND		100 μA						3	15 to 12	E20	"	V _{CB01} = E20	See figure 3 for test circuit	35	"	
	V _{CB01}	116							GND									4	5 to 3	E21	"	V _{CB01} = E21		35	"	
	V _{CER1}	117						100 μA	GND		GND	100 μA						4	15 to 16	E22	"	V _{CER1} = E22	"	35	"	
	V _{CER1}	118									GND							3,4	5 to 3	E23	"	V _{CER1} = E23		35	"	
	V _{EBO}	119				GND		100 μA	GND									3,4	16 to 12	E24	"	V _{EBO} = E24	"	5	"	
	V _{EBO}	120							GND		100 μA							4	3 to 4	E25	"	V _{EBO} = E25		5	"	

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max	
9 TA = +25°C	tD	121				A	B	GND		GND		B	A				See figure 8 for test circuit and waveforms	5	15	"	ns
	tD	122				A	B	GND		GND		B	A					10	"	"	"
	ts	123				A	B	GND		GND		B	A					5	"	"	"
	ts	124				A	B	GND		GND		B	A					10	"	"	"
	tR	125				A	B	GND		GND		B	A					5	20	"	"
	tR	126				A	B	GND		GND		B	A					10	20	"	"
	tF	127				A	B	GND		GND		B	A					5	15	"	"
	tF	128				A	B	GND		GND		B	A					10	15	"	"
	tPLH1	129	3 V	IN	3 V	OUT	OUT										4.5 V	See figure 6 for test circuit and waveforms	2 to 3	30	"
	"	130	IN	3 V														1 to 3	"	"	"
tPHL1	"	131	3 V	IN														13 to 12	"	"	"
	"	132	IN															1 to 12	"	"	"
	tPHL1	133	3 V	IN	3 V	OUT	OUT										4.5 V	See figure 6 for test circuit and waveforms	2 to 3	15	"
	"	134	IN	3 V														1 to 3	"	"	"
	"	135	3 V	IN														13 to 12	"	"	"
	"	136	IN															1 to 12	"	"	"
	tPLH2	137	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT								4.5 V	See figure 7 for test circuit and waveforms	2 to 5	30	"
	"	138	IN	3 V					OUT									1 to 5	"	"	"
	"	139	3 V	IN														13 to 10	"	"	"
	"	140	IN															1 to 10	"	"	"
	tPHL2	141	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT								4.5 V	See figure 7 for test circuit and waveforms	2 to 5	30	"
tTLH1	"	142	IN	3 V														1 to 5	"	"	"
	"	143	3 V	IN														13 to 10	"	"	"
	"	144	IN															1 to 10	"	"	"
	tTLH1	145	3 V	IN	Connect to 1B				OUT									"	5	15	"
	tTLH1	146	3 V	IN														"	10	"	"
	tTHL1	147	3 V	IN	Connect to 1B				OUT									"	5	"	"
	tTHL1	148	3 V	IN														"	10	"	"

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit	
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max		
10 TA = +125°C	tD	149				A	B	GND		GND		B	A				See figure 8 for test circuit and waveforms	5	22.5	"	ns	
	tD	150				A	B	GND		GND		B	A					10	"	"	"	
	ts	151				A	B	GND		GND		B	A					5	"	"	"	
	ts	152				A	B	GND		GND		B	A					10	"	"	"	
	tR	153				A	B	GND		GND		B	A					"	5	30	"	
	tR	154				A	B	GND		GND		B	A					"	10	30	"	
	tF	155				A	B	GND		GND		B	A					"	5	22.5	"	
	tF	156				A	B	GND		GND		B	A					"	10	22.5	"	
	tPLH1	157	3 V	IN 3 V	OUT OUT				"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	45	"	"	
	"	158	IN	3 V	OUT OUT				"							"		1 to 3	"	"	"	
	"	159	3 V	IN	OUT OUT				"							"		13 to 12	"	"	"	
	"	160	IN						"							"		1 to 12	"	"	"	
	tPHL1	161	3 V	IN 3 V	OUT OUT				"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	22.5	"	"	
	"	162	IN	3 V	OUT OUT				"							"		1 to 3	"	"	"	
	"	163	3 V	IN	OUT OUT				"							"		13 to 12	"	"	"	
	"	164	IN						"							"		1 to 12	"	"	"	
	tPLH2	165	3 V	IN 3 V	Connect to 1B Connect to 1B		OUT OUT		"							4.5 V	See figure 7 for test circuit and waveforms	2 to 5	45	"	"	
	"	166	IN	3 V	Connect to 1B Connect to 1B		OUT OUT		"							"		1 to 5	"	"	"	
	"	167	3 V	IN	Connect to 1B Connect to 1B		OUT OUT		"							Connect to 2B Connect to 2B	IN 3 V	"	13 to 10	"	"	"
	"	168	IN						"							"		1 to 10	"	"	"	
	tPHL2	169	3 V	IN 3 V	Connect to 1B Connect to 1B		OUT OUT		"							4.5 V	"	2 to 5	"	"	"	
	"	170	IN	3 V	Connect to 1B Connect to 1B		OUT OUT		"							"		1 to 5	"	"	"	
	"	171	3 V	IN	Connect to 1B Connect to 1B		OUT OUT		"							Connect to 2B Connect to 2B		"	13 to 10	"	"	"
	"	172	IN						"							"		1 to 10	"	"	"	
	tTLH1	173	3 V	IN	Connect to 1B		OUT OUT		"							Connect to 2B	IN	"	5	22.5	"	"
	tTLH1	174	3 V	IN	Connect to 1B		OUT OUT		"							Connect to 2B	IN	"	10	"	"	"
	tTHL1	175	3 V	IN	Connect to 1B		OUT OUT		"							Connect to 2B	IN	"	5	"	"	"
	tTHL1	176	3 V	IN	Connect to 1B		OUT OUT		"							Connect to 2B	IN	"	10	"	"	"

TABLE III. Group A inspection for device type 01 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit	
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max		
11 TA = -55°C	tD	177				A	B	GND		GND	B	A					See figure 8 for test circuit and waveforms	5	22.5	"	ns	
	tD	178				A	B	GND		GND	B	A						10	"	"	"	
	ts	179				A	B	GND		GND	B	A						5	"	"	"	
	ts	180				A	B	GND		GND	B	A						10	"	"	"	
	tR	181				A	B	GND		GND	B	A						"	5	30	"	
	tR	182				A	B	GND		GND	B	A						"	10	30	"	
	tF	183				A	B	GND		GND	B	A						"	5	22.5	"	
	tF	184				A	B	GND		GND	B	A						"	10	22.5	"	
	tPLH1	185	3 V	IN 3 V	OUT OUT				"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	45	"	"	
	"	186	IN	3 V	OUT OUT				"							"		1 to 3	"	"	"	
tPHL1	"	187	3 V	IN	OUT OUT				"							"		13 to 12	"	"	"	
	"	188	IN						"							"		1 to 12	"	"	"	
	tPLH1	189	3 V	IN 3 V	OUT OUT				"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	22.5	"	"	
	"	190	IN	3 V	OUT OUT				"							"		1 to 3	"	"	"	
tPLH2	"	191	3 V	IN	OUT OUT				"							OUT OUT	IN 3 V	"	13 to 12	"	"	"
	"	192	IN						"							"		1 to 12	"	"	"	
	tPLH2	193	3 V	IN	Connect to 1B		OUT		"							4.5 V	See figure 7 for test circuit and waveforms	2 to 5	45	"	"	
	"	194	IN	3 V	Connect to 1B		OUT		"							"		1 to 5	"	"	"	
tPHL2	"	195	3 V	IN	OUT OUT				"							Connect to 2B	IN 3 V	"	13 to 10	"	"	"
	"	196	IN						"							Connect to 2B		"	1 to 10	"	"	"
	tPHL2	197	3 V	IN	Connect to 1B		OUT		"							4.5 V	"	2 to 5	"	"	"	"
	"	198	IN	3 V	Connect to 1B		OUT		"							"		1 to 5	"	"	"	"
tTLH1	"	199	3 V	IN	OUT OUT				"							Connect to 2B		"	13 to 10	"	"	"
	"	200	IN						"							Connect to 2B		"	1 to 10	"	"	"
	tTLH1	201	3 V	IN	Connect to 1B		OUT		"							Connect to 2B	IN	"	5	22.5	"	"
	"	202	3 V	IN	Connect to 1B		OUT		"							Connect to 2B		"	10	"	"	"
tTHL1	203	3 V	IN	Connect to 1B		OUT		"								Connect to 2B	IN	"	5	"	"	"
	204	3 V	IN	Connect to 1B		OUT		"								Connect to 2B	IN	"	10	"	"	"

TABLE III. Group A inspection for device type 02.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"	"	1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		14	5.5 V	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	5.5 V	"		6 to 4		"	"
		16				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH2}	17	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CLL2}	18	GND	GND		"		GND	GND	"		8		65	"
	V _{OL1}	19	0.8 V	0.8 V	100 mA	"				4.5 V		3 to 4		0.5	V
		20				"	100 mA	0.8 V	0.8 V	"		5 to 4		0.5	"
	V _{OL5}	21	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		22				"	300 mA	0.8 V	0.8 V	"		5 to 4		0.8	"
	I _{OH1}	23	2 V	2 V	30 V	"				"	"	3		300	μA
	I _{OH1}	24				"	30 V	2 V	2 V	"		5		300	"

TABLE III. Group A inspection for device type 02 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27			"		-12 mA	4.5 V	"			6 to 4		"	"
		28			"		4.5 V	-12 mA	"			7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31			"		2.4 V	GND	"			6 to 4		"	"
		32			"		GND	2.4 V	"			7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35			"		5.5 V	GND	"			6 to 4		"	"
		36			"		GND	5.5 V	"			7 to 4		"	"
	I _{IL1}	37	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		38	5.5 V	0.4 V		"				"		2 to 4		"	"
		39			"		0.4 V	5.5 V	"			6 to 4		"	"
		40			"		5.5 V	0.4 V	"			7 to 4		"	"
	I _{CCH2}	41	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL2}	42	GND	GND		"		GND	GND	"		8		65	"
	V _{OL1}	43	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
	V _{OL1}	44			"	100 mA	0.8 V	0.8 V	"			5 to 4		0.5	"
	V _{OL5}	45	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
	V _{OL5}	46			"	300 mA	0.8 V	0.8 V	"			5 to 4		0.8	"
	I _{OH1}	47	2 V	2 V	30 V	"				"	"	3		300	μA
	I _{OH1}	48			"	30 V	2 V	2 V	"			5		300	"

TABLE III. Group A inspection for device type 02 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	"
		51			"		-12 mA	4.5 V	"			6 to 4		"	"
		52			"		4.5 V	-12 mA	"			7 to 4		"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	"
		55			"		2.4 V	GND	"			6 to 4		"	"
		56			"		GND	2.4 V	"			7 to 4		"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	"
		59			"		5.5 V	GND	"			6 to 4		"	"
		60			"		GND	5.5 V	"			7 to 4		"	"
	I _{IL1}	61	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		62	5.5 V	0.4 V		"				"		2 to 4		"	"
		63			"		0.4 V	5.5 V	"			6 to 4		"	"
		64			"		5.5 V	0.4 V	"			7 to 4		"	"
	I _{CCH2}	65	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CLL2}	66	GND	GND		"		GND	GND	"		8		65	"
V _{OL1}	V _{OL1}	67	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68			"	100 mA	0.8 V	0.8 V	"			5 to 4		0.5	"
V _{OL5}	V _{OL5}	69	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		70			"	300 mA	0.8 V	0.8 V	"			5 to 4		0.8	"
I _{OH1}	I _{OH1}	71	2 V	2 V	30 V	"				"	"	3		300	μA
		72			"	30 V	2 V	2 V	"			5		300	"

TABLE III. Group A inspection for device type 02 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
9 T _A = +25°C	tPLH	73	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		30	ns
		74	3 V	IN	OUT	"				"		2 to 3		"	"
		75				"	OUT	IN	3 V	"		6 to 5		"	"
		76				"	OUT	3 V	IN	"		7 to 5		"	"
	tPHL	77	IN	3 V	OUT	"				4.5 V		1 to 3		30	"
		78	3 V	IN	OUT	"				"		2 to 3		"	"
		79				"	OUT	IN	3 V	"		6 to 5		"	"
		80				"	OUT	3 V	IN	"		7 to 5		"	"
	tTLH	81	IN	IN	OUT	"				"		3		14	"
		82				"	OUT	IN	IN	"		5		14	"
		83	IN	IN	OUT	"				"		3		20	"
		84				"	OUT	IN	IN	"		5		20	"
10 T _A = +125°C	tPLH	85	IN	3 V	OUT	GND				4.5 V	"	1 to 3		45	ns
		86	3 V	IN	OUT	"				"		2 to 3		"	"
		87				"	OUT	IN	3 V	"		6 to 5		"	"
		88				"	OUT	3 V	IN	"		7 to 5		"	"
	tPHL	89	IN	3 V	OUT	"				4.5 V		1 to 3		"	"
		90	3 V	IN	OUT	"				"		2 to 3		"	"
		91				"	OUT	IN	3 V	"		6 to 5		"	"
		92				"	OUT	3 V	IN	"		7 to 5		"	"
	tTLH	93	IN	IN	OUT	"				"		3		18.5	"
		94				"	OUT	IN	IN	"		5		18.5	"
		95	IN	IN	OUT	"				"		3		25	"
		96				"	OUT	IN	IN	"		5		25	"

TABLE III. Group A inspection for device type 02 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
11 TA = -55°C	tPLH	97	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		45	ns
			3 V	IN	OUT	"				"				"	
		99				"	OUT	IN	3 V	"		6 to 5		"	"
						"	OUT	3 V	IN	"				"	
	tPHL	101	IN	3 V	OUT	"				4.5 V		1 to 3		"	"
			3 V	IN	OUT	"				"				"	
		103				"	OUT	IN	3 V	"		6 to 5		"	"
						"	OUT	3 V	IN	"				"	
	tTLH	105	IN	IN	OUT	"				"		"	3	18.5	"
						"	OUT	IN	IN	"			5	18.5	
		107	IN	IN	OUT	"				"			3	25	
						"	OUT	IN	IN	"			5	25	

TABLE III. Group A inspection for device type 03.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	μA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	5.5 V		"				"		1 to 4		-1.6	mA
		14	5.5 V	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	5.5 V	"		6 to 4		"	"
		16				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH4}	17	GND	GND		"		GND	GND	"	"	8		14	"
	I _{CLL4}	18	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		71	"
	V _{OL2}	19	2 V	2 V	100 mA	"				4.5 V		3 to 4		0.5	V
	V _{OL2}	20				"	100 mA	2 V	2 V	"	"	5 to 4		0.5	"
	V _{OL6}	21	2 V	2 V	300 mA	"				"		3 to 4		0.8	"
	V _{OL6}	22				"	300 mA	2 V	2 V	"	"	5 to 4		0.8	"
	I _{OH2}	23	0.8 V	4.5 V	30 V	"				"		3		300	μA
	I _{OH2}	24				"	30 V	0.8 V	4.5 V	"		5		300	"

TABLE III. Group A inspection for device type 03 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27				"		-12 mA	4.5 V	"		6 to 4		"	"
		28				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31				"		2.4 V	GND	"		6 to 4		"	"
		32				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35				"		5.5 V	GND	"		6 to 4		"	"
		36				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	37	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		38	5.5 V	0.4 V		"				"		2 to 4		"	"
		39				"		0.4 V	5.5 V	"		6 to 4		"	"
		40				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH4}	41	GND	GND		"		GND	GND	"	"	8		14	"
	I _{CC4}	42	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		71	"
V _{OL2}	43	2 V	2 V	100 mA	"					4.5 V	"	3 to 4		0.5	V
	44				"	100 mA	2 V	2 V	"			5 to 4		0.5	"
V _{OL6}	45	2 V	2 V	300 mA	"					"	"	3 to 4		0.8	"
	46				"	300 mA	2 V	2 V	"			5 to 4		0.8	"
I _{OH2}	47	0.8 V	4.5 V	30 V	"					"	"	3		300	μA
	48				"	30 V	0.8 V	4.5 V	"			5		300	"

TABLE III. Group A inspection for device type 03 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	
		51				"		-12 mA	4.5 V	"		6 to 4		"	
		52				"		4.5 V	-12 mA	"		7 to 4		"	
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	
		55				"		2.4 V	GND	"		6 to 4		"	
		56				"		GND	2.4 V	"		7 to 4		"	
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	
		59				"		5.5 V	GND	"		6 to 4		"	
		60				"		GND	5.5 V	"		7 to 4		"	
	I _{IL1}	61	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		62	5.5 V	0.4 V		"				"		2 to 4		"	
		63				"		0.4 V	5.5 V	"		6 to 4		"	
		64				"		5.5 V	0.4 V	"		7 to 4		"	
	I _{CCH4}	65	GND	GND		"		GND	GND	"	"	8		14	"
	I _{CC4L}	66	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		71	
	V _{OL2}	67	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68				"	100 mA	2 V	2 V	"		5 to 4		0.5	
	V _{OL6}	69	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		70				"	300 mA	2 V	2 V	"		5 to 4		0.8	
	I _{OH2}	71	0.8 V	4.5 V	30 V	"				"	"	3		300	μA
		72				"	30 V	0.8 V	4.5 V	"		5		300	

TABLE III. Group A inspection for device type 03 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		35	ns
			3 V	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	3 V	"			6 to 5		"	
					"	OUT	3 V	IN	"			7 to 5		"	
	tPHL	77	IN	3 V	OUT	"				4.5 V		1 to 3		35	"
			3 V	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	3 V	"			6 to 5		"	
					"	OUT	3 V	IN	"			7 to 5		"	
	tTLH	81	IN	IN	OUT	"				"		3		14	"
					"	OUT	IN	IN	"			5		14	
			IN	IN	OUT	"				"		3		20	
					"	OUT	IN	IN	"			5		20	
10 TA = +125°C	tPLH	85	IN	3 V	OUT	GND				4.5 V	"	1 to 3		55	ns
			3 V	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	3 V	"			6 to 5		"	
					"	OUT	3 V	IN	"			7 to 5		"	
	tPHL	89	IN	3 V	OUT	"				4.5 V		1 to 3		55	"
			3 V	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	3 V	"			6 to 5		"	
					"	OUT	3 V	IN	"			7 to 5		"	
	tTLH	93	IN	IN	OUT	"				"		3		18.5	"
					"	OUT	IN	IN	"			5		18.5	
			IN	IN	OUT	"				"		3		25	
					"	OUT	IN	IN	"			5		25	

TABLE III. Group A inspection for device type 03 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit	
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max		
11 TA = -55°C	tPLH	97	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		55	ns	
			3 V	IN	OUT	"				"				"		
		99			"	OUT	IN	3 V	"			6 to 5		"		
					"	OUT	3 V	IN	"					"		
	tPHL	101	IN	3 V	OUT	"				4.5 V		7 to 5		"	"	
			3 V	IN	OUT	"				"				"		
		103			"	OUT	IN	3 V	"			6 to 5		"		
					"	OUT	3 V	IN	"					"		
	tTLH	105	IN	IN	OUT	"				"		"	3		18.5	"
					"	OUT	IN	IN	"				5		18.5	
		107	IN	IN	OUT	"				"			3		25	
					"	OUT	IN	IN	"				5		25	

TABLE III. Group A inspection for device type 04.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4	-1.5	"	V
		2	4.5 V	-12 mA		"				"		2 to 4	"	"	"
		3			"		-12 mA	4.5 V	"			6 to 4	"	"	"
		4			"		4.5 V	-12 mA	"			7 to 4	"	"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V	"	1 to 4	40	"	µA
		6	GND	2.4 V		"				"		2 to 4	"	"	"
		7			"		2.4 V	GND	"			6 to 4	"	"	"
		8			"		GND	2.4 V	"			7 to 4	"	"	"
	I _{IH2}	9	5.5 V	GND		"				"	"	1 to 4	1	"	mA
		10	GND	5.5 V		"				"		2 to 4	"	"	"
		11			"		5.5 V	GND	"			6 to 4	"	"	"
		12			"		GND	5.5 V	"			7 to 4	"	"	"
	I _{IL1}	13	0.4 V	GND		"				"	"	1 to 4	-1.6	"	mA
		14	GND	0.4 V		"				"		2 to 4	"	"	"
		15			"		0.4 V	GND	"			6 to 4	"	"	"
		16			"		GND	0.4 V	"			7 to 4	"	"	"
	I _{CCH2}	17	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8	11	"	"
	I _{CCL3}	18	GND	GND		"		GND	GND	"		8	68	"	"
	V _{OL3}	19	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4	0.5	"	V
		20			"	100 mA	0.8 V	0.8 V	"			5 to 4	0.5	"	"
	V _{OL7}	21	0.8 V	0.8 V	300 mA	"				"	"	3 to 4	0.8	"	"
		22			"	300 mA	0.8 V	0.8 V	"			5 to 4	0.8	"	"
	I _{OH3}	23	2 V	GND	30 V	"				"	"	3	300	"	µA
		24			"	30 V	2 V	GND	"			5	300	"	"

TABLE III. Group A inspection for device type 04 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4 2 to 4 6 to 4 7 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"				"	"
		27				"		-12 mA	4.5 V	"				"	"
		28				"		4.5 V	-12 mA	"				"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4 2 to 4 6 to 4 7 to 4		40	μA
		30	GND	2.4 V		"				"				"	"
		31				"		2.4 V	GND	"				"	"
		32				"		GND	2.4 V	"				"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4 2 to 4 6 to 4 7 to 4		1	mA
		34	GND	5.5 V		"				"				"	"
		35				"		5.5 V	GND	"				"	"
		36				"		GND	5.5 V	"				"	"
	I _{IL1}	37	0.4 V	GND		"				"	"	1 to 4 2 to 4 6 to 4 7 to 4		-1.6	mA
		38	GND	0.4 V		"				"				"	"
		39				"		0.4 V	GND	"				"	"
		40				"		GND	0.4 V	"				"	"
	I _{CCH2}	41	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CLL3}	42	GND	GND		"		GND	GND	"				65	
	V _{OL3}	43	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4 5 to 4		0.5	V
	V _{OL3}	44				"	100 mA	0.8 V	0.8 V	"				0.5	"
	V _{OL7}	45	0.8 V	0.8 V	300 mA	"				"	"	3 to 4 5 to 4		0.8	"
		46				"	300 mA	0.8 V	0.8 V	"				0.8	
	I _{OH3}	47	2 V	GND	30 V	"				"	"	3 5		300	μA
	I _{OH3}	48				"	30 V	2 V	GND	"				300	"

TABLE III. Group A inspection for device type 04 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4	-1.5	"	V
		50	4.5 V	-12 mA		"				"		2 to 4	"	"	"
		51				"		-12 mA	4.5 V	"		6 to 4	"	"	"
		52				"		4.5 V	-12 mA	"		7 to 4	"	"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V		1 to 4	40	"	µA
		54	GND	2.4 V		"				"		2 to 4	"	"	"
		55				"		2.4 V	GND	"		6 to 4	"	"	"
		56				"		GND	2.4 V	"		7 to 4	"	"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4	1	"	mA
		58	GND	5.5 V		"				"		2 to 4	"	"	"
		59				"		5.5 V	GND	"		6 to 4	"	"	"
		60				"		GND	5.5 V	"		7 to 4	"	"	"
	I _{IL1}	61	0.4 V	GND		"				"	"	1 to 4	-1.6	"	mA
		62	GND	0.4 V		"				"		2 to 4	"	"	"
		63				"		0.4 V	GND	"		6 to 4	"	"	"
		64				"		GND	0.4 V	"		7 to 4	"	"	"
	I _{CCH2}	65	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8	11	"	"
	I _{CCCL3}	66	GND	GND		"		GND	GND	"		8	65	"	"
	V _{OL3}	67	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4	0.5	"	V
	V _{OL3}	68				"	100 mA	0.8 V	0.8 V	"		5 to 4	0.5	"	"
	V _{OL7}	69	0.8 V	0.8 V	300 mA	"				"	"	3 to 4	0.8	"	"
		70				"	300 mA	0.8 V	0.8 V	"		5 to 4	0.8	"	"
	I _{OH3}	71	2 V	GND	30 V	"				"	"	3	300	"	µA
		72				"	30 V	2 V	GND	"		5	300	"	"

TABLE III. Group A inspection for device type 04 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit	
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max		
9 TA = +25°C	t _{PLH}	73	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		30	ns	
			GND	IN	OUT	"				"		2 to 3		"	"	
						"	OUT	IN	GND	"		6 to 5		"	"	
						"	OUT	GND	IN	"		7 to 5		"	"	
	t _{PHL}	77	IN	GND	OUT	"				4.5 V			1 to 3		"	
			GND	IN	OUT	"				"		2 to 3		"	"	
						"	OUT	IN	GND	"		6 to 5		"	"	
						"	OUT	GND	IN	"		7 to 5		"	"	
	t _{TLH}	81	IN	IN	OUT	"				"	"	3		14	"	
						"	OUT	IN	IN	"		5		14	"	
			IN	IN	OUT	"				"		3		20	"	
						"	OUT	IN	IN	"		5		20	"	
10 TA = +125°C	t _{PLH}	85	IN	GND	OUT	GND				4.5 V	"	1 to 3		45	ns	
			GND	IN	OUT	"				"		2 to 3		"	"	
						"	OUT	IN	GND	"		6 to 5		"	"	
						"	OUT	GND	IN	"		7 to 5		"	"	
	t _{PHL}	89	IN	GND	OUT	"				4.5 V		"	1 to 3		45	"
			GND	IN	OUT	"				"		2 to 3		"	"	
						"	OUT	IN	GND	"		6 to 5		"	"	
						"	OUT	GND	IN	"		7 to 5		"	"	
	t _{TLH}	93	IN	IN	OUT	"				"	"	3		18.5	"	
						"	OUT	IN	IN	"		5		18.5	"	
			IN	IN	OUT	"				"		3		25	"	
						"	OUT	IN	IN	"		5		25	"	

TABLE III. Group A inspection for device type 04 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
11 TA = -55°C	tPLH	97	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		45	ns
			GND	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	GND	"			6 to 5		"	
					"	OUT	GND	IN	"			7 to 5		"	
	tPHL	101	IN	GND	OUT	"				4.5 V		1 to 3		"	"
			GND	IN	OUT	"				"		2 to 3		"	
					"	OUT	IN	GND	"			6 to 5		"	
					"	OUT	GND	IN	"			7 to 5		"	
	tTLH	105	IN	IN	OUT	"				"		"	3	18.5	"
					"	OUT	IN	IN	"			"	5	18.5	
			IN	IN	OUT	"				"		"	3	25	
					"	OUT	IN	IN	"			"	5	25	

TABLE III. Group A inspection for device type 05.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	μA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	GND		"				"		1 to 4		-1.6	mA
		14	GND	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	GND	"		6 to 4		"	"
		16				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH3}	17	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CL7}	18	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		79	"
	V _{OL4}	19	2 V	2 V	100 mA	"				4.5 V		3 to 4		0.5	V
	V _{OL4}	20				"	100 mA	2 V	2 V	"	"	5 to 4		0.5	"
	V _{OL8}	21	2 V	2 V	300 mA	"				"		3 to 4		0.8	"
	V _{OL8}	22				"	300 mA	2 V	2 V	"	"	5 to 4		0.8	"
	I _{OH4}	23	0.8 V	0.8 V	30 V	"				"		3		300	μA
	I _{OH4}	24				"	30 V	0.8 V	0.8 V	"		5		300	"

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	Vcc			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27				"		-12 mA	4.5 V	"		6 to 4		"	"
		28				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31				"		2.4 V	GND	"		6 to 4		"	"
		32				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35				"		5.5 V	GND	"		6 to 4		"	"
		36				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	37	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		38	GND	0.4 V		"				"		2 to 4		"	"
		39				"		0.4 V	GND	"		6 to 4		"	"
		40				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH3}	41	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CL7}	42	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		79	"
	V _{OL4}	43	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
	V _{OL4}	44				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
	V _{OL8}	45	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
	V _{OL8}	46				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
	I _{OH4}	47	0.8 V	0.8 V	30 V	"				"	"	3		300	μA
	I _{OH4}	48				"	30 V	0.8 V	0.8 V	"		5		300	"

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	
		51				"		-12 mA	4.5 V	"		6 to 4		"	
		52				"		4.5 V	-12 mA	"		7 to 4		"	
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	
		55				"		2.4 V	GND	"		6 to 4		"	
		56				"		GND	2.4 V	"		7 to 4		"	
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	
		59				"		5.5 V	GND	"		6 to 4		"	
		60				"		GND	5.5 V	"		7 to 4		"	
	I _{IL1}	61	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		62	GND	0.4 V		"				"		2 to 4		"	
		63				"		0.4 V	GND	"		6 to 4		"	
		64				"		GND	0.4 V	"		7 to 4		"	
	I _{CCH3}	65	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CCCL7}	66	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		79	
	V _{OL4}	67	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
	V _{OL4}	68				"	100 mA	2 V	2 V	"		5 to 4		0.5	
	V _{OL8}	69	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
	V _{OL8}	70				"	300 mA	2 V	2 V	"		5 to 4		0.8	
	I _{OH4}	71	0.8 V	0.8 V	30 V	"				"	"	3		300	μA
	I _{OH4}	72				"	30 V	0.8 V	0.8 V	"		5		300	

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		45	ns
			GND	IN	OUT	"				"				"	
						"	OUT	IN	GND	"				"	
						"	OUT	GND	IN	"				"	
	tPHL	77	IN	GND	OUT	"				4.5 V		1 to 3		35	"
			GND	IN	OUT	"				"				"	
						"	OUT	IN	GND	"				"	
						"	OUT	GND	IN	"				"	
	tTLH	81	IN	IN	OUT	"				"		3		14	"
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				20	
						"	OUT	IN	IN	"				20	
	tTTLH	82				"	OUT	IN	IN	"		5		14	"
						"				"				"	
			IN	IN	OUT	"				"				20	
						"	OUT	IN	IN	"				20	
	tTTHL	83				"	OUT	IN	IN	"		3		20	"
						"				"				"	
			IN	IN	OUT	"				"				20	
						"	OUT	IN	IN	"				20	
10 TA = +125°C	tPLH	85	IN	GND	OUT	GND				4.5 V	"	1 to 3		75	ns
			GND	IN	OUT	"				"				"	
						"	OUT	IN	GND	"				"	
						"	OUT	GND	IN	"				"	
	tPHL	89	IN	GND	OUT	"				4.5 V		1 to 3		55	"
			GND	IN	OUT	"				"				"	
						"	OUT	IN	GND	"				"	
						"	OUT	GND	IN	"				"	
	tTLH	93	IN	IN	OUT	"				"		3		18.5	"
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				25	"
						"	OUT	IN	IN	"				25	
	tTTLH	94				"	OUT	IN	IN	"		5		18.5	"
						"				"				"	
			IN	IN	OUT	"				"				25	
						"	OUT	IN	IN	"				25	
	tTTHL	95				"	OUT	IN	IN	"		3		25	"
						"				"				"	
			IN	IN	OUT	"				"				25	
						"	OUT	IN	IN	"				25	

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
11 $T_A = -55^\circ C$	t _{PLH}	97	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		75	ns
			GND	IN	OUT	"				"				"	"
						"	OUT	IN	GND	"				"	"
						"	OUT	GND	IN	"				"	"
	t _{PHL}	101	IN	GND	OUT	"				4.5 V				55	"
			GND	IN	OUT	"				"				"	"
						"	OUT	IN	GND	"				"	"
						"	OUT	GND	IN	"				"	"
	t _{TLH}	105	IN	IN	OUT	"				"		"	3	18.5	"
						"	OUT	IN	IN	"			5	18.5	"
			IN	IN	OUT	"				"			3	25	"
						"	OUT	IN	IN	"			5	25	"

TABLE III. Group A inspection for device type 06.

Subgroup	Symbol	Test no.	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit	
			V _{S1}	V _{S2}	V _{S3}	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y		No.	Value	Unit			Min	Max		
1 T _A = +25°C	V _{IC}	1										4.5 V	-12 mA	4.5 V		4.5 V		None	9	E1	V	V _{IC} = E1	See figure 3 for test circuit		-1.5	V	
	V _{IC}	2										4.5 V	4.5 V	-12 mA		4.5 V		"	10	E2	V	V _{IC} = E2			-1.5	V	
	V _{IC}	3										4.5 V	4.5 V	4.5 V		-12 mA		"	7	E3	V	V _{IC} = E3			-1.5	V	
	I _{IH1}	4										5.5 V	GND	2.4 V		GND		"	10	I1	A	I _{IH1} = I ₁		40	μA		
	I _{IH1}	5										"	"	GND	2.4 V		"	7	I2	"	I _{IH1} = I ₂		40	μA			
	I _{IH2}	6										"	"	5.5 V	GND		"	10	I3	"	I _{IH2} = I ₃		1	mA			
	I _{IH2}	7										"	"	GND	5.5 V		"	7	I4	"	I _{IH2} = I ₄		1	mA			
	I _{IH3}	8										2.4 V	GND		GND		"	9	I5	"	I _{IH3} = I ₅		80	μA			
	I _{IH4}	9										5.5 V	GND		GND		"	9	I6	"	I _{IH4} = I ₆		2	mA			
	I _{IL1}	10										"	5.5 V	0.4 V		5.5 V		"	10	I7	"	I _{IL1} = I ₇		-1.6	mA		
	I _{IL1}	11										"	5.5 V	5.5 V		0.4 V		"	7	I8	"	I _{IL1} = I ₈		-1.6	mA		
	I _{IL2}	12										"	0.4 V	5.5 V			5.5 V		"	9	I9	"	I _{IL2} = I ₉		-3.2	mA	
	I _{CCH1}	13										"	GND	GND		GND		"	8	I10	"	I _{CCH1} = I ₁₀		4	"		
	I _{CCL1}	14										"	5.5 V	5.5 V		5.5 V		"	8	I11	"	I _{CCL1} = I ₁₁		11	"		
	V _{OL9}	15										4.5 V	2 V	2 V	I _{OL} = 16 mA		"	11	E4	V	V _{OL9} = E4			0.5	V		
	V _{OL9}	16										"	2 V		I _{OL} = 16 mA	2 V	"	6	E5	"	V _{OL9} = E5			0.5	"		
	V _{OH}	17										"	4.5 V	0.8 V	I _{OH} = -400 μA		"	11	E6	"	V _{OH} = E6			2.4	"		
	V _{OH}	18										"	4.5 V	0.8 V	I _{OH} = -400 μA	0.8 V	"	6	E7	"	V _{OH} = E7			2.4	"		
	I _{OS1}	19										5.5 V	GND	GND		GND		"	11	I12	A	I _{OS1} = I ₁₂			-55	mA	
	I _{OS1}	20										"			GND	GND	"	6	I13	"	I _{OS1} = I ₁₃			-55	mA		
	I _{OS2}	21										4.5 V	GND			GND		"	11	I14	"	I _{OS2} = I ₁₄			"	"	
	I _{OS2}	22										"			GND	GND	"	6	I15	"	I _{OS2} = I ₁₅			-18	"		
	h _{FE1}	23	4 V	V _S 2														"	18 to 14	E8	V	h _{FE1} = E8/1000	See figures 3 and 4 for test circuit and waveforms	25			
	h _{FE1}	24	4 V	"														"	E9	"	h _{FE1} = E9/1000	25					
	h _{FE2}	25	6 V	"														"	E10	"	h _{FE2} = E10/3000	30					
	h _{FE2}	26	6 V	"														"	E11	"	h _{FE2} = E11/3000	30					
	V _{BE1}	27	4 V	"	V _S 3													1,2	12 to 16	E12	"	V _{BE1} = E12			1.2	V	
	V _{BE1}	28	4 V	"	V _S 3													1,2,3	4 to 3	E13	"	V _{BE1} = E13			1.2	V	

Subgroup	Symbol	Test no.	Measured terminal																	Equations	Note	Test limits		Unit				
			1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	No.	Value	Unit	Min	Max					
1 TA = +25°C	V _{BE2}	29	6 V	V _{S2}	V _{S3}	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y	1,2	12 to 16	E14	V	V _{BE2} = E14	See figures 3 and 4 for test circuit	1.4	V			
	V _{BE2}	30	6 V	“	“														4 to 3	E15	“	V _{BE2} = E15		1.4	V			
	V _{CESAT1}	31	4 V	“	“													1,2	15 to 16	E16	“	V _{CESAT1} = E16	“	0.5	“			
	V _{CESAT1}	32	4 V	“	“														5 to 3	E17	“	V _{CESAT1} = E17		0.5	“			
	V _{CESAT2}	33	6 V	“	“													1,2	15 to 16	E18	“	V _{CESAT2} = E18	“	0.8	“			
	V _{CESAT2}	34	6 V	“	“														5 to 3	E19	“	V _{CESAT2} = E19		0.8	“			
	V _{CB02}	35				GND	100 µA											3	15 to 12	E20	“	V _{CB02} = E20	“	40	“			
	V _{CB02}	36						GND			100 µA								5 to 4	E21	“	V _{CB02} = E21		40	“			
	V _{CER2}	37						100 µA	GND									4	15 to 16	E22	“	V _{CER2} = E22	“	40	“			
	V _{CER2}	38								GND	100 µA								5 to 3	E23	“	V _{CER2} = E23		40	“			
	V _{CEO1}	39							10 mA	GND								3	15 to 16	E24	“	V _{CEO1} = E24	“	25	“			
	V _{CEO1}	40									GND	10 mA							5 to 3	E25	“	V _{CEO1} = E25		25	“			
	V _{EBO}	41				GND			100 µA									3,4	16 to 12	E26	“	V _{EBO} = E26	“	5	“			
	V _{EBO}	42							GND		100 µA								3 to 4	E27	“	V _{EBO} = E27		5	“			
2 TA = +125°C	V _{IC}	43									4.5 V	-12 mA	4.5 V		4.5 V			None	9	E1	V	V _{IC} = E1	See figure 3 for test circuit	-1.5	V			
	V _{IC}	44									4.5 V	4.5 V	-12 mA		4.5 V				10	E2	V	V _{IC} = E2		-1.5	V			
	V _{IC}	45									4.5 V	4.5 V	4.5 V		-12 mA				7	E3	V	V _{IC} = E3		-1.5	V			
	I _{IH1}	46										5.5 V	GND	2.4 V		GND			“	10	I1	A	I _{IH1} = I1	“	40	µA		
	I _{IH1}	47										“	GND	2.4 V		2.4 V			“	7	I2	“	I _{IH1} = I2		40	µA		
	I _{IH2}	48										“	5.5 V	GND	5.5 V		GND			“	10	I3	“	I _{IH2} = I3	1	mA		
	I _{IH2}	49										“	GND	5.5 V	5.5 V		GND			“	7	I4	“	I _{IH2} = I4	1	mA		
	I _{IH3}	50										“	2.4 V	GND	9	I5	“	GND			“	9	I5	“	I _{IH3} = I5	“	80	µA
	I _{IH4}	51										“	5.5 V	GND	“	GND			“	9	I6	“	I _{IH4} = I6	2	mA			
	I _{IL1}	52										“	4.5 V	0.4 V	4.5 V		0.4 V			“	10	I7	“	I _{IL1} = I7	-1.6	mA		
	I _{IL1}	53										“	4.5 V	4.5 V	“		4.5 V			“	7	I8	“	I _{IL1} = I8	-1.6	“		
	I _{IL2}	54										“	0.4 V	4.5 V	“	4.5 V				“	9	I9	“	I _{IL2} = I9	-3.2	“		

TABLE III. Group A inspection for device type 06 – Continued.

Subgroup	Symbol	Test no	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays energized	Measured terminal			Equations	Note	Test limits		Unit	
			V _{S1}	V _{S2}	V _{S3}	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y		No.	Value	Unit			Min	Max		
2 TA = +125°C	I _{CCH1}	55										5.5 V	GND	GND				None	8	I10	"	I _{CCH1} = I ₁₀	See figure 3 for test		4	mA	
	I _{CCL1}	56										"	5.5 V	5.5 V					8	I11	"	I _{CCL1} = I ₁₁			11	"	
	V _{OL9}	57										4.5 V	2 V	2 V	I _{OL} = 16 mA				11	E4	V	V _{OL9} = E4			0.5	V	
	V _{OL9}	58										"	2 V		I _{OL} = 16 mA	2 V			6	E5	"	V _{OL9} = E5	circuit		0.5	"	
	V _{OH}	59										"	4.5 V	0.8 V	I _{OH} = -400 μA				11	E6	"	V _{OH} = E6			2.4	"	
	V _{OH}	60										"	4.5 V		I _{OH} = -400 μA	0.8 V			6	E7	"	V _{OH} = E7			2.4	"	
	I _{OS1}	61										5.5 V	GND	GND					11	I12	A	I _{OS1} = I ₁₂	"		-55	mA	
	I _{OS1}	62										5.5 V	"		GND	GND			6	I13	"	I _{OS1} = I ₁₃			-55	"	
	I _{OS2}	63										4.5 V	"		GND	GND			11	I14	"	I _{OS2} = I ₁₄			-18	"	
	I _{OS2}	64										4.5 V	"		GND	GND			6	I15	"	I _{OS2} = I ₁₅			-18	"	
	h _{FE1}	65	4 V	V _S 2															18 to 14	E8	V	h _{FE1} = E8/1000	See figures 3 and 4 for test	25			
	h _{FE1}	66	4 V	"															"	E9	"	h _{FE1} = E9/1000		25			
	h _{FE2}	67	6 V	"															None	"	E10	"	h _{FE2} = E10/3000	30			
	h _{FE2}	68	6 V	"															3	"	E11	"	h _{FE2} = E11/3000	30			
	V _{BE1}	69	4 V	"	V _S 3														1,2	12 to 16	E12	"	V _{BE1} = E12	"		1.2	V
	V _{BE1}	70	4 V	"	V _S 3														1,2,3	4 to 3	E13	"	V _{BE1} = E13			1.2	V
	V _{BE2}	71	6 V	"	V _S 3														1,2	12 to 16	E14	V	V _{BE2} = E14			1.4	V
	V _{BE2}	72	6 V	"	"														1,2,3	4 to 3	E15	"	V _{BE2} = E15			1.4	V
	V _{CESAT} 1	73	4 V	"	"														1,2	15 to 16	E16	"	V _{CESAT1} = E16	"		0.5	"
	V _{CESAT} 1	74	4 V	"	"														1,2,3	5 to 3	E17	"	V _{CESAT1} = E17			0.5	"
	V _{CESAT} 2	75	6 V	"	"														1,2	15 to 16	E18	"	V _{CESAT2} = E18			0.8	"
	V _{CESAT} 2	76	6 V	"	"														1,2,3	5 to 3	E19	"	V _{CESAT2} = E19			0.8	"

TABLE III. Group A inspection for device type 06 – Continued.

Subgroup	Symbol	Test. no	1	2	17	12	15	16	4	3	5	8	9	10	11	7	6	Relays ener- gized	Measured terminal			Equations	Note	Test limits		Unit		
			V _{S1}	V _{S2}	V _{S3}	1B	1C	1E	2B	2E	2C	V _{CC}	G	1A	1Y	2A	2Y		No.	Value	Unit			Min	Max			
2 TA = +125°C	V _{CB02}	77				GND	100 μA											3	15 to 12	E20	"	V _{CB02} = E20	See figure	40		V		
	V _{CB02}	78							GND			100 μA						4	5 to 4	E21	"	V _{CB02} = E21	3 for test	40		"		
	VCER2	79				100 μA	GND			GND	100 μA							4	15 to 16	E22	"	VCER2 = E22	circuit	40		"		
	VCER2	80								GND	100 μA							3,4	5 to 3	E23	"	VCER2 = E23	"	40		"		
	VCEO1	81				10 mA	GND			GND	10 mA							3	15 to 16	E24	"	V _{CEO1} = E24	"	25		"		
	VCEO1	82								GND	10 mA							3,4	5 to 3	E25	"	V _{CEO1} = E25	"	25		"		
	VEBO	83				GND		100 μA		GND		100 μA						3,4	16 to 12	E26	"	V _{EBO} = E26	"	5		"		
	VEBO	84																4	3 to 4	E27	"	V _{EBO} = E27	"	5		"		
3 TA = -55°C	VIC	85										4.5 V	-12 mA	4.5 V		4.5 V		None	9	E1	V	V _{IC} = E1	See figure	-1.5	V			
	VIC	86										4.5 V	4.5 V	-12 mA		4.5 V			10	E2	V	V _{IC} = E2	3 for test	-1.5	V			
	VIC	87										4.5 V	4.5 V	4.5 V		-12 mA			7	E3	V	V _{IC} = E3	circuit	-1.5	V			
	I _{IH1}	88										5.5 V	GND	2.4 V		GND			10	I1	A	I _{IH1} = I1	"	40	μA			
	I _{IH1}	89										"	"	GND		2.4 V			7	I2	"	I _{IH1} = I2	"	40	μA			
	I _{IH2}	90										"	"	5.5 V		GND			10	I3	"	I _{IH2} = I3	"	1	mA			
	I _{IH2}	91										"	"	GND		5.5 V			7	I4	"	I _{IH2} = I4	"	1	mA			
	I _{IH3}	92										"	2.4 V	GND		GND			9	I5	"	I _{IH3} = I5	"	80	μA			
	I _{IH4}	93										"	5.5 V	GND		GND			9	I6	"	I _{IH4} = I6	"	2	mA			
	I _{IL1}	94										"	4.5 V	0.4 V		4.5 V			10	I7	"	I _{IL1} = I7	"		-1.6	mA		
	I _{IL1}	95										"	4.5 V	4.5 V		0.4 V			7	I8	"	I _{IL1} = I8	"		-1.6	"		
	I _{IL2}	96										"	0.4 V	4.5 V		4.5 V			9	I9	"	I _{IL2} = I9	"		-3.2	"		
	I _{CCH1}	97										"	GND	GND		GND			8	I10	"	I _{CCH1} = I ₁₀	"		4	ns		
	I _{CCL1}	98										"	5.5 V	5.5 V		5.5 V			8	I11	"	I _{CCL1} = I ₁₁	"		11	"		
	V _{OL9}	99										4.5 V	2 V	2 V	I _{OL} = 16 mA			11	E4	V	V _{OL9} = E4	"		0.5	V			
	V _{OL9}	100										"	2 V		I _{OL} = 16 mA	2 V		6	E5	"	V _{OL9} = E5	"		0.5	"			
	V _{OH}	101										"	4.5 V	0.8 V	I _{OH} = -400 μA		0.8 V	I _{OH} = -400 μA		"	11	E6	"	V _{OH} = E6	"		2.4	"
	V _{OH}	102										"	4.5 V				0.8 V	I _{OH} = -400 μA		"	6	E7	"	V _{OH} = E7	"		2.4	"

TABLE III. Group A inspection for device type 06 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max	
9 TA = +25°C	tD	127				A	B	GND		GND	GND	B	A				See figure 8 for test circuit and waveforms	5	15	"	
	tD	128				A	B	GND		"	GND	B	A					10	15	"	
	ts	129				A	B	GND		"	GND	B	A					5	23	"	
	ts	130				A	B	GND		"	GND	B	A					10	23	"	
	tR	131				A	B	GND		"	GND	B	A					5	20	"	
	tR	132				A	B	GND		"	GND	B	A					10	20	"	
	tF	133				A	B	GND		"	GND	B	A					5	15	"	
	tF	134				A	B	GND		"	GND	B	A					10	15	"	
	tPLH1	135	3 V	IN	3 V	OUT	OUT			"						4.5 V	See figure 6 for test circuit and waveforms	2 to 3	30	"	
	"	136	IN	3 V	IN	OUT	OUT			"						"		"	"	"	
10 TA = -55°C	"	137	3 V	IN	IN				"							"		1 to 3	"	"	
	"	138	IN	IN	IN				"							"		13 to 12	"	"	
	tPHL1	139	3 V	IN	3 V	OUT	OUT			"						4.5 V	See figure 6 for test circuit and waveforms	1 to 12	15	"	
	"	140	IN	3 V	IN	OUT	OUT			"						"		2 to 3	"	"	
	"	141	3 V	IN	IN				"							"		1 to 3	"	"	
	"	142	IN	IN	IN				"							"		13 to 12	"	"	
	tPLH3	143	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT			"				4.5 V	See figure 7 for test circuit and waveforms	1 to 12	65	"	
	"	144	IN	3 V	IN	Connect to 1B	Connect to 1B		OUT			"				"		2 to 5	"	"	
	"	145	3 V	IN	IN				OUT			"				"		1 to 5	"	"	
	"	146	IN	IN	IN				OUT			"				"		13 to 10	"	"	
	tPHL3	147	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT			"				4.5 V	See figure 7 for test circuit and waveforms	1 to 10	50	"	
	"	148	IN	3 V	IN	Connect to 1B	Connect to 1B		OUT			"				"		2 to 5	"	"	
	"	149	3 V	IN	IN				OUT			"				"		1 to 5	"	"	
	"	150	IN	IN	IN				OUT			"				"		13 to 10	"	"	
	tTLH2	151	3 V	IN	IN	Connect to 1B	Connect to 1B		OUT			"				IN	Connect to 2B	"	5	20	"
	tTLH2	152	3 V	IN	IN				OUT			"				IN	Connect to 2B	"	10	"	"
	tTHL2	153	3 V	IN	IN				OUT			"				IN	Connect to 2B	"	5	"	"
	tTHL2	154	3 V	IN	IN				OUT			"				IN	Connect to 2B	"	10	"	"

TABLE III. Group A inspection for device type 06 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit	
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max		
10 TA = +125°C	tD	155				A	B	GND		GND	GND	B	A				See figure 8 for test circuit and waveforms	5	22.5	ns		
	tD	156				A	B	GND		"	GND	B	A					10	22.5	"		
	ts	157				A	B	GND		"	GND	B	A					5	34.5	"		
	ts	158				A	B	GND		"	GND	B	A					10	34.5	"		
	tR	159				A	B	GND		"	GND	B	A					"	5	30	"	
	tR	160				A	B	GND		"	GND	B	A					"	10	30	"	
	tF	161				A	B	GND		"	GND	B	A					"	5	22.5	"	
	tF	162				A	B	GND		"	GND	B	A					"	10	22.5	"	
	tPLH1	163	3 V	IN	3 V	OUT	OUT			"						4.5 V	See figure 6 for test circuit and waveforms	2 to 3	45	"		
	"	164	IN	3 V	IN	OUT	OUT			"						"		"	"	"	"	
	"	165	3 V	IN	IN	OUT	OUT			"						"		1 to 3	"	"	"	
	"	166	IN	IN	IN	OUT	OUT			"						"		13 to 12	"	"	"	
	tPHL1	167	3 V	IN	3 V	OUT	OUT			"						4.5 V	See figure 6 for test circuit and waveforms	1 to 12	22.5	"		
	"	168	IN	3 V	IN	OUT	OUT			"						"		2 to 3	"	"	"	
	"	169	3 V	IN	IN	OUT	OUT			"						"		1 to 3	"	"	"	
	"	170	IN	IN	IN	OUT	OUT			"						"		13 to 12	"	"	"	
	tPLH3	171	3 V	IN	3 V	Connect to 1B Connect to 1B			OUT			"				4.5 V	See figure 7 for test circuit and waveforms	2 to 5	90	"		
	"	172	IN	3 V	IN	OUT	OUT			"						"		1 to 5	"	"	"	
	"	173	3 V	IN	IN	OUT	OUT			"						"		13 to 10	"	"	"	
	"	174	IN	IN	IN	OUT	OUT			"						"		1 to 10	"	"	"	
	tPHL3	175	3 V	IN	3 V	Connect to 1B Connect to 1B			OUT			"				4.5 V	See figure 7 for test circuit and waveforms	2 to 5	75	"		
	"	176	IN	3 V	IN	OUT	OUT			"						"		1 to 5	"	"	"	
	"	177	3 V	IN	IN	OUT	OUT			"						"		13 to 10	"	"	"	
	"	178	IN	IN	IN	OUT	OUT			"						"		1 to 10	"	"	"	
	tTLH2	179	3 V	IN	IN	Connect to 1B			OUT			"				IN	Connect to 2B Connect to 2B	"	5	30	"	
	tTLH2	180	3 V	IN	IN	Connect to 1B			OUT			"				IN		"	10	"	"	"
	tTHL2	181	3 V	IN	IN	Connect to 1B			OUT			"				IN		"	5	"	"	"
	tTHL2	182	3 V	IN	IN	Connect to 1B			OUT			"				IN		"	10	"	"	"

TABLE III. Group A inspection for device type 06 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Notes	Measured terminal	Test limits		Unit	
			G	1A	1Y	1B	1C	1E	GND	Sub	2E	2C	2B	2Y	2A	Vcc			Min	Max		
11 TA = -55°C	tD	183				A	B	GND		GND	GND	B	A				See figure 8 for test circuit and waveforms	5	22.5	"	ns	
	tD	184				A	B	GND		"	GND	B	A					10	22.5	"		
	ts	185				A	B	GND		"	GND	B	A					5	34.5	"		
	ts	186				A	B	GND		"	GND	B	A					10	34.5	"		
	tR	187				A	B	GND		"	GND	B	A					"	5	30	"	
	tR	188				A	B	GND		"	GND	B	A					"	10	30	"	
	tF	189				A	B	GND		"	GND	B	A					"	5	22.5	"	
	tF	190				A	B	GND		"	GND	B	A					"	10	22.5	"	
	tPLH1	191	3 V	IN	3 V	OUT	OUT			"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	45	"	
	"	192	IN	3 V	IN	OUT	OUT			"							"		"	"	"	
12 TA = 25°C	"	193	3 V	IN	3 V	OUT	OUT			"							"		13 to 12	"	"	
	"	194	IN	3 V	IN	OUT	OUT			"							"		1 to 12	"	"	
	tPLH1	195	3 V	IN	3 V	OUT	OUT			"							4.5 V	See figure 6 for test circuit and waveforms	2 to 3	22.5	"	
	"	196	IN	3 V	IN	OUT	OUT			"							"		1 to 3	"	"	
	"	197	3 V	IN	3 V	OUT	OUT			"							"		13 to 12	"	"	
	"	198	IN	3 V	IN	OUT	OUT			"							"		1 to 12	"	"	
	tPLH3	199	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT								4.5 V	See figure 7 for test circuit and waveforms	2 to 5	90	"	
	"	200	IN	3 V	IN	OUT	OUT			"							"		1 to 5	"	"	
	"	201	3 V	IN	3 V	OUT	OUT			"							"		13 to 10	"	"	
	"	202	IN	3 V	IN	Connect to 2B	Connect to 2B		OUT								"		1 to 10	"	"	
13 TA = 125°C	tPHL3	203	3 V	IN	3 V	Connect to 1B	Connect to 1B		OUT								4.5 V	See figure 7 for test circuit and waveforms	2 to 5	75	"	
	"	204	IN	3 V	IN	OUT	OUT			"							"		1 to 5	"	"	
	"	205	3 V	IN	3 V	OUT	OUT			"							"		13 to 10	"	"	
	"	206	IN	3 V	IN	Connect to 2B	Connect to 2B		OUT								"		1 to 10	"	"	
	tTLH2	207	3 V	IN	IN	Connect to 1B	Connect to 1B		OUT								"		5	30	"	
	tTLH2	208	3 V	IN	IN	OUT	OUT			"							"		10	"	"	
	tTHL2	209	3 V	IN	IN	OUT	OUT			"							"		5	"	"	
	tTHL2	210	3 V	IN	IN	OUT	OUT			"							"		10	"	"	

TABLE III. Group A inspection for device type 07.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	
		3				"		-12 mA	4.5 V	"		6 to 4		"	
		4				"		4.5 V	-12 mA	"		7 to 4		"	
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	μA
		6	GND	2.4 V		"				"		2 to 4		"	
		7				"		2.4 V	GND	"		6 to 4		"	
		8				"		GND	2.4 V	"		7 to 4		"	
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	
		11				"		5.5 V	GND	"		6 to 4		"	
		12				"		GND	5.5 V	"		7 to 4		"	
	I _{IL1}	13	0.4 V	5.5 V		"				"		1 to 4		-1.6	mA
		14	5.5 V	0.4 V		"				"		2 to 4		"	
		15				"		0.4 V	5.5 V	"		6 to 4		"	
		16				"		5.5 V	0.4 V	"		7 to 4		"	
	I _{CCH2}	17	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		11	"
		18	GND	GND		"		GND	GND	"		8		76	
	V _{OL1}	19	0.8 V	0.8 V	100 mA	"				4.5 V		3 to 4		0.5	V
		20				"	100 mA	0.8 V	0.8 V	"		5 to 4		0.5	
	V _{OL5}	21	0.8 V	0.8 V	300 mA	"				"		3 to 4		0.8	"
		22				"	300 mA	0.8 V	0.8 V	"		5 to 4		0.8	
	I _{OH1}	23	2 V	2 V	30 V	"				"		3		300	μA
		24				"	30 V	2 V	2 V	"		5		300	

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27			"		-12 mA	4.5 V	"			6 to 4		"	"
		28			"		4.5 V	-12 mA	"			7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31			"		2.4 V	GND	"			6 to 4		"	"
		32			"		GND	2.4 V	"			7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35			"		5.5 V	GND	"			6 to 4		"	"
		36			"		GND	5.5 V	"			7 to 4		"	"
	I _{IL1}	37	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		38	5.5 V	0.4 V		"				"		2 to 4		"	"
		39			"		0.4 V	5.5 V	"			6 to 4		"	"
		40			"		5.5 V	0.4 V	"			7 to 4		"	"
	I _{CCH2}	41	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL5}	42	GND	GND		"		GND	GND	"		8		76	"
	V _{OL1}	43	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		44			"	100 mA	0.8 V	0.8 V	"			5 to 4		0.5	"
	V _{OL5}	45	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		46			"	300 mA	0.8 V	0.8 V	"			5 to 4		0.8	"
	I _{OH1}	47	2 V	2 V	30 V	"				"	"	3		300	μA
		48			"	30 V	2 V	2 V	"			5		300	"

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	"
		51			"		-12 mA	4.5 V	"			6 to 4		"	"
		52			"		4.5 V	-12 mA	"			7 to 4		"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	"
		55			"		2.4 V	GND	"			6 to 4		"	"
		56			"		GND	2.4 V	"			7 to 4		"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	"
		59			"		5.5 V	GND	"			6 to 4		"	"
		60			"		GND	5.5 V	"			7 to 4		"	"
	I _{IL1}	61	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		62	5.5 V	0.4 V		"				"		2 to 4		"	"
		63			"		0.4 V	5.5 V	"			6 to 4		"	"
		64			"		5.5 V	0.4 V	"			7 to 4		"	"
	I _{CCH2}	65	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL5}	66	GND	GND		"		GND	GND	"		8		76	"
	V _{OL1}	67	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68			"	100 mA	0.8 V	0.8 V	"			5 to 4		0.5	"
	V _{OL5}	69	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		70			"	300 mA	0.8 V	0.8 V	"			5 to 4		0.8	"
	I _{OH1}	71	2 V	2 V	30 V	"				"	"	3		300	μA
		72			"	30 V	2 V	2 V	"			5		300	"

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		55	ns
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tPHL	77	IN	3 V	OUT	"				4.5 V		1 to 3		40	"
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tTLH	81	IN	IN	OUT	"				"		3		20	"
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				"	
						"	OUT	IN	IN	"				"	
	tTLL	82				"	OUT	IN	IN	"		5		"	"
						"	OUT	IN	IN	"				"	
						"	OUT	IN	IN	"				"	
						"	OUT	IN	IN	"				"	
10 TA = +125°C	tTLL	83	IN	IN	OUT	"				"	"	3		20	"
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				"	
						"	OUT	IN	IN	"				"	
	tTHL	84				"	OUT	IN	IN	"	"	5		"	"
						"	OUT	IN	IN	"				"	
						"	OUT	IN	IN	"				"	
						"	OUT	IN	IN	"				"	
	tPLH	85	IN	3 V	OUT	"				4.5 V	"	1 to 3		65	ns
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tPHL	89	IN	3 V	OUT	"				4.5 V	"	1 to 3		60	"
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tTLL	93	IN	IN	OUT	"				"	"	3		26.5	"
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				"	
						"	OUT	IN	IN	"				"	
	tTHL	95				"	OUT	IN	IN	"	"	3		25	"
						"	OUT	3 V	IN	"				"	
						"	OUT	IN	IN	"				"	
						"	OUT	IN	IN	"				"	

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

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
11 TA = -55°C	tPLH	97	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3	65	ns	
			3 V	IN	OUT	"				"			"	"	
		99				"	OUT	IN	3 V	"		6 to 5	"	"	
						"	OUT	3 V	IN	"			"	"	
	tPHL	101	IN	3 V	OUT	"				4.5 V		1 to 3	60	"	
			3 V	IN	OUT	"				"			"	"	
		103				"	OUT	IN	3 V	"		6 to 5	"	"	
						"	OUT	3 V	IN	"			"	"	
	tTLH	105	IN	IN	OUT	"				"		3	26.5	"	
						"	OUT	IN	IN	"			5	26.5	"
		107	IN	IN	OUT	"				"		3	25	"	
						"	OUT	IN	IN	"			5	25	"

TABLE III. Group A inspection for device type 08.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	µA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	5.5 V		"				"		1 to 4		-1.6	mA
		14	5.5 V	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	5.5 V	"		6 to 4		"	"
		16				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH3}	17	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CCL6}	18	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		76	"
	V _{OL2}	19	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		20				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
	V _{OL6}	21	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		22				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
	I _{OH2}	23	0.8 V	4.5 V	30 V	"				"	"	3		300	µA
		24				"	30 V	0.8 V	4.5 V	"		5		300	"

TABLE III. Group A inspection for device type 08 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27				"		-12 mA	4.5 V	"		6 to 4		"	"
		28				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31				"		2.4 V	GND	"		6 to 4		"	"
		32				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35				"		5.5 V	GND	"		6 to 4		"	"
		36				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	37	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		38	5.5 V	0.4 V		"				"		2 to 4		"	"
		39				"		0.4 V	5.5 V	"		6 to 4		"	"
		40				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH3}	41	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CCL6}	42	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		76	"
	V _{OL2}	43	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		44				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
	V _{OL6}	45	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		46				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
	I _{OH2}	47	0.8 V	4.5 V	30 V	"				"	"	3		300	μA
		48				"	30 V	0.8 V	4.5 V	"		5		300	"

TABLE III. Group A inspection for device type 08 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	"
		51				"		-12 mA	4.5 V	"		6 to 4		"	"
		52				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	µA
		54	GND	2.4 V		"				"		2 to 4		"	"
		55				"		2.4 V	GND	"		6 to 4		"	"
		56				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	"
		59				"		5.5 V	GND	"		6 to 4		"	"
		60				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	61	0.4 V	5.5 V		"				"	"	1 to 4		-1.6	mA
		62	5.5 V	0.4 V		"				"		2 to 4		"	"
		63				"		0.4 V	5.5 V	"		6 to 4		"	"
		64				"		5.5 V	0.4 V	"		7 to 4		"	"
	I _{CCH3}	65	GND	GND		"		GND	GND	"	"	8		17	"
	I _{CCL6}	66	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		76	"
	V _{OL2}	67	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
	V _{OL6}	69	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		70				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
	I _{OH2}	71	0.8 V	4.5 V	30 V	"				"	"	3		300	µA
		72				"	30 V	0.8 V	4.5 V	"		5		300	"

TABLE III. Group A inspection for device type 08 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		65	ns
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tPHL	77	IN	3 V	OUT	"				4.5 V		1 to 3		50	"
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tTLH	81	IN	IN	OUT	"				"		3		25	"
						"	OUT	IN	IN	"				25	
			IN	IN	OUT	"				"				20	
						"	OUT	IN	IN	"				20	
	tTLL	82	IN	3 V	OUT	"				"		5		95	ns
						"	OUT	IN	IN	"				"	
			IN	IN	OUT	"				"				20	
						"	OUT	IN	IN	"				20	
	tTHL	83	IN	IN	OUT	"				"		3		33.5	"
						"	OUT	IN	IN	"				33.5	
			IN	IN	OUT	"				"				35	
						"	OUT	IN	IN	"				35	
10 TA = +125°C	tPLH	85	IN	3 V	OUT	GND				4.5 V	"	1 to 3		95	ns
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tPHL	89	IN	3 V	OUT	"				4.5 V		1 to 3		75	"
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tTLH	93	IN	IN	OUT	"				"		3		33.5	"
						"	OUT	IN	IN	"				33.5	
			IN	IN	OUT	"				"				35	
						"	OUT	IN	IN	"				35	

TABLE III. Group A inspection for device type 08 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
11 TA = -55°C	tPLH	97	IN	3 V	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		95	ns
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tPHL	101	IN	3 V	OUT	"				4.5 V		1 to 3		75	"
			3 V	IN	OUT	"				"				"	
						"	OUT	IN	3 V	"				"	
						"	OUT	3 V	IN	"				"	
	tTLH	105	IN	IN	OUT	"				"		"	3	33.5	"
						"	OUT	IN	IN	"			5	33.5	
			IN	IN	OUT	"				"			3	35	
						"	OUT	IN	IN	"			5	35	

TABLE III. Group A inspection for device type 09.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	μA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	GND		"				"		1 to 4		-1.6	mA
		14	GND	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	GND	"		6 to 4		"	"
		16				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH2}	17	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL5}	18	GND	GND		"		GND	GND	"		8		76	"
	V _{OL3}	19	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		20				"	100 mA	0.8 V	0.8 V	"		5 to 4		0.5	"
	V _{OL7}	21	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		22				"	300 mA	0.8 V	0.8 V	"		5 to 4		0.8	"
	I _{OH3}	23	2 V	GND	30 V	"				"	"	3		300	μA
		24				"	30 V	2 V	GND	"		5		300	"

TABLE III. Group A inspection for device type 09 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27				"		-12 mA	4.5 V	"		6 to 4		"	"
		28				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31				"		2.4 V	GND	"		6 to 4		"	"
		32				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35				"		5.5 V	GND	"		6 to 4		"	"
		36				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	37	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		38	GND	0.4 V		"				"		2 to 4		"	"
		39				"		0.4 V	GND	"		6 to 4		"	"
		40				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH2}	41	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL5}	42	GND	GND		"		GND	GND	"		8		76	"
V _{OL3}	43	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V	
	44				"	100 mA	0.8 V	0.8 V	"		5 to 4		0.5	"	
V _{OL7}	45	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"	
	46				"	300 mA	0.8 V	0.8 V	"		5 to 4		0.8	"	
I _{OH3}	47	2 V	GND	30 V	"				"	"	3		300	μA	
	48				"	30 V	2 V	GND	"		5		300	"	

TABLE III. Group A inspection for device type 09 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	"
		51				"		-12 mA	4.5 V	"		6 to 4		"	"
		52				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	"
		55				"		2.4 V	GND	"		6 to 4		"	"
		56				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	"
		59				"		5.5 V	GND	"		6 to 4		"	"
		60				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	61	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		62	GND	0.4 V		"				"		2 to 4		"	"
		63				"		0.4 V	GND	"		6 to 4		"	"
		64				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH2}	65	5.5 V	5.5 V		"		5.5 V	5.5 V	"	"	8		11	"
	I _{CCL5}	66	GND	GND		"		GND	GND	"		8		76	"
V _{OL3}	V _{OL3}	67	0.8 V	0.8 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68				"	100 mA	0.8 V	0.8 V	"		5 to 4		0.5	"
V _{OL7}	V _{OL7}	69	0.8 V	0.8 V	300 mA	"				"	"	3 to 4		0.8	"
		70				"	300 mA	0.8 V	0.8 V	"		5 to 4		0.8	"
I _{OH3}	I _{OH3}	71	2 V	GND	30 V	"				"	"	3		300	μA
		72				"	30 V	2 V	GND	"		5		300	"

TABLE III. Group A inspection for device type 09 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3	55	ns	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tPHL	77	IN	GND	OUT	"				4.5 V		1 to 3	40	"	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tTLH	81	IN	IN	OUT	"				"		3	25	"	
						"	OUT	IN	IN	"			"	"	
			IN	IN	OUT	"				"			"	"	
						"	OUT	IN	IN	"			"	"	
	tTTLH	82				"	OUT	IN	IN	"		5	"	"	
						"	OUT	IN	IN	"			"	"	
						"	OUT	GND	IN	"			"	"	
						"	OUT	GND	IN	"			"	"	
10 TA = +125°C	tTHL	85	IN	GND	OUT	GND				4.5 V	" See figure 9 for test circuit and waveforms	1 to 3	70	ns	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tTTLH	89	IN	GND	OUT	"				4.5 V		1 to 3	60	"	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tTTHL	93	IN	IN	OUT	"				"		3	33.5	"	
						"	OUT	IN	IN	"			"	"	
			IN	IN	OUT	"				"			"	"	
						"	OUT	IN	IN	"			"	"	

TABLE III. Group A inspection for device type 09 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit		
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max			
11 $T_A = -55^\circ C$	tPLH	97	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		70	ns		
			GND	IN	OUT	"				"				"			
						"	OUT	IN	GND	"				"			
						"	OUT	GND	IN	"				"			
	tPHL	101	IN	GND	OUT	"				4.5 V		"	1 to 3		60	"	
			GND	IN	OUT	"				"				"			
						"	OUT	IN	GND	"			"	6 to 5		"	
						"	OUT	GND	IN	"							
	tTLH	105	IN	IN	OUT	"				"		"	7 to 5		"	"	
						"	OUT	IN	IN	"							
			IN	IN	OUT	"				"			"	3		33.5	"
						"	OUT	IN	IN	"							
	tTHL	106				"				"		"	5		33.5	"	
			IN	IN	OUT	"				"							
	tTHL	107				"				"		"	3		25	"	
			IN	IN	OUT	"				"							
	tTHL	108				"	OUT	IN	IN	"		"	5		25	"	
			IN	IN	OUT	"				"							

TABLE III. Group A inspection for device type 10.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
1 TA = +25°C	V _{IC}	1	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		2	4.5 V	-12 mA		"				"		2 to 4		"	"
		3				"		-12 mA	4.5 V	"		6 to 4		"	"
		4				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	5	2.4 V	GND		"				5.5 V		1 to 4		40	µA
		6	GND	2.4 V		"				"		2 to 4		"	"
		7				"		2.4 V	GND	"		6 to 4		"	"
		8				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	9	5.5 V	GND		"				"		1 to 4		1	mA
		10	GND	5.5 V		"				"		2 to 4		"	"
		11				"		5.5 V	GND	"		6 to 4		"	"
		12				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	13	0.4 V	GND		"				"		1 to 4		-1.6	mA
		14	GND	0.4 V		"				"		2 to 4		"	"
		15				"		0.4 V	GND	"		6 to 4		"	"
		16				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH5}	17	GND	GND		"		GND	GND	"	"	8		19	"
	I _{CCL8}	18	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		85	"
	V _{OL4}	19	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		20				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
	V _{OL8}	21	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		22				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
	I _{OH4}	23	0.8 V	0.8 V	30 V	"				"	"	3		300	µA
		24				"	30 V	0.8 V	0.8 V	"		5		300	"

TABLE III. Group A inspection for device type 10 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
2 TA = +125°C	V _{IC}	25	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		26	4.5 V	-12 mA		"				"		2 to 4		"	"
		27				"		-12 mA	4.5 V	"		6 to 4		"	"
		28				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	29	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		30	GND	2.4 V		"				"		2 to 4		"	"
		31				"		2.4 V	GND	"		6 to 4		"	"
		32				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	33	5.5 V	GND		"				"	"	1 to 4		1	mA
		34	GND	5.5 V		"				"		2 to 4		"	"
		35				"		5.5 V	GND	"		6 to 4		"	"
		36				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	37	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		38	GND	0.4 V		"				"		2 to 4		"	"
		39				"		0.4 V	GND	"		6 to 4		"	"
		40				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH5}	41	GND	GND		"		GND	GND	"	"	8		19	"
	I _{CCL8}	42	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		85	"
V _{OL4}	43	2 V	2 V	100 mA	"					4.5 V	"	3 to 4		0.5	V
	44				"	100 mA	2 V	2 V	"			5 to 4		0.5	"
V _{OL8}	45	2 V	2 V	300 mA	"					"	"	3 to 4		0.8	"
	46				"	300 mA	2 V	2 V	"			5 to 4		0.8	"
I _{OH4}	47	0.8 V	0.8 V	30 V	"					"	"	3		300	μA
	48				"	30 V	0.8 V	0.8 V	"			5		300	"

TABLE III. Group A inspection for device type 10 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	V _{CC}			Min	Max	
3 TA = -55°C	V _{IC}	49	-12 mA	4.5 V		GND				4.5 V	See figure 5 for test circuit	1 to 4		-1.5	V
		50	4.5 V	-12 mA		"				"		2 to 4		"	"
		51				"		-12 mA	4.5 V	"		6 to 4		"	"
		52				"		4.5 V	-12 mA	"		7 to 4		"	"
	I _{IH1}	53	2.4 V	GND		"				5.5 V	"	1 to 4		40	μA
		54	GND	2.4 V		"				"		2 to 4		"	"
		55				"		2.4 V	GND	"		6 to 4		"	"
		56				"		GND	2.4 V	"		7 to 4		"	"
	I _{IH2}	57	5.5 V	GND		"				"	"	1 to 4		1	mA
		58	GND	5.5 V		"				"		2 to 4		"	"
		59				"		5.5 V	GND	"		6 to 4		"	"
		60				"		GND	5.5 V	"		7 to 4		"	"
	I _{IL1}	61	0.4 V	GND		"				"	"	1 to 4		-1.6	mA
		62	GND	0.4 V		"				"		2 to 4		"	"
		63				"		0.4 V	GND	"		6 to 4		"	"
		64				"		GND	0.4 V	"		7 to 4		"	"
	I _{CCH5}	65	GND	GND		"		GND	GND	"	"	8		19	"
	I _{CCL8}	66	5.5 V	5.5 V		"		5.5 V	5.5 V	"		8		85	"
V _{OL4}	V _{OL4}	67	2 V	2 V	100 mA	"				4.5 V	"	3 to 4		0.5	V
		68				"	100 mA	2 V	2 V	"		5 to 4		0.5	"
V _{OL8}	V _{OL8}	69	2 V	2 V	300 mA	"				"	"	3 to 4		0.8	"
		70				"	300 mA	2 V	2 V	"		5 to 4		0.8	"
I _{OH4}	I _{OH4}	71	0.8 V	0.8 V	30 V	"				"	"	3		300	μA
		72				"	30 V	0.8 V	0.8 V	"		5		300	"

TABLE III. Group A inspection for device type 10 – Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
9 TA = +25°C	tPLH	73	IN	GND	OUT	GND				4.5 V	See figure 9 for test circuit and waveforms	1 to 3		65	ns
			GND	IN	OUT	"				"				"	
		75				"	OUT	IN	GND	"		6 to 5		"	
						"	OUT	GND	IN	"				"	
	tPHL	77	IN	GND	OUT	"				4.5 V		1 to 3		50	"
			GND	IN	OUT	"				"				"	
		79				"	OUT	IN	GND	"		6 to 5		"	
						"	OUT	GND	IN	"				"	
	tTLH	81	IN	IN	OUT	"				"	"	3		20	"
						"	OUT	IN	IN	"				"	
		83	IN	IN	OUT	"				"		3		"	
						"	OUT	IN	IN	"				"	
	tTHL	82				"	OUT	IN	IN	"	"	5		"	"
						"	OUT	GND	IN	"				"	
		84				"	OUT	IN	IN	"		5		"	
						"	OUT	GND	IN	"				"	
10 TA = +125°C	tPLH	85	IN	GND	OUT	GND				4.5 V	"	1 to 3		90	ns
			GND	IN	OUT	"				"				"	
		87				"	OUT	IN	GND	"		6 to 5		"	
						"	OUT	GND	IN	"				"	
	tPHL	89	IN	GND	OUT	"				4.5 V		1 to 3		75	"
			GND	IN	OUT	"				"				"	
		91				"	OUT	IN	GND	"		6 to 5		"	
						"	OUT	GND	IN	"				"	
	tTLH	93	IN	IN	OUT	"				"	"	3		26.5	"
						"	OUT	IN	IN	"				"	
		95	IN	IN	OUT	"				"		3		25	"
						"	OUT	IN	IN	"				"	
	tTHL	94				"	OUT	IN	IN	"		5		26.5	"
						"	OUT	GND	IN	"				"	
		96				"	OUT	IN	IN	"		5		25	

TABLE III. Group A inspection for device type 10 - Continued.

Subgroup	Symbol	Test no.	1	2	3	4	5	6	7	8	Notes	Measured terminal	Test limits		Unit
			1A	1B	1Y	GND	2Y	2A	2B	VCC			Min	Max	
11 TA = -55°C	tPLH	97	IN	GND	OUT	GND				4.5 V	See figure9 for test circuit and waveforms	1 to 3	90	ns	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tPHL	101	IN	GND	OUT	"				4.5 V		1 to 3	75	"	
			GND	IN	OUT	"				"			"	"	
						"	OUT	IN	GND	"			"	"	
						"	OUT	GND	IN	"			"	"	
	tTLH	105	IN	IN	OUT	"				"		3	26.5	"	
						"	OUT	IN	IN	"			5	26.5	"
			IN	IN	OUT	"				"			3	25	"
						"	OUT	IN	IN	"			5	25	"

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 in table I 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 ground terminal of the device under test (DUT). Currents values given are for conventional current and are 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.

TABLE IV. Group C end-point electrical parameters. $\pm V_{CC} = \pm 4.5$ V, $T_A = +25^\circ\text{C}$

(Device types 01 through 10)

Test	Limits		Delta	Unit
	Min	Max		
I _{OH}	---	300	± 50	μA

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. Pin and compliance identifier, if applicable (see 1.2).
- c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- d. Requirements for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to 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 43218-3990.

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

V _{IC}	Input clamp voltage.
I _{IH}	High level input current (V _{IN} = 2.4 or 5.5 V).
I _{IL}	Low level input current (with V _{IN} = 0.4).
I _{CH}	High level supply current. This is the supply current with the output high.
I _{CL}	Low level supply current. This is the supply current with the output low.
V _{OL}	Low level output voltage. This at rated load for the TTL gates.
I _{OH}	High level output current.
V _{OH}	High level output voltage, TTL gate.
I _{OS}	Short circuit output current TTL gate.
V _{CB0}	Collector base breakdown voltage, separate transistor.
V _{CER}	Collector base breakdown voltage with R _{BE} = 500 ohms.
V _{C EO}	Collector emitter breakdown voltage.
V _{B EO}	Emitter base breakdown voltage.
h _{FE}	Static forward current transfer ratio.
V _{BE}	Base emitter voltage.
V _{CE(SAT)}	Collector emitter saturation voltage.
t _D	Delay time.
t _R	Rise time.
t _S	Storage time.
t _F	Fall time.
t _{PLH}	Propagation delay time (low to high level output transition).
t _{PHL}	Propagation delay time (high to low level output transition).
t _{T LH}	Transition time (low to high level output transition).
t _{T HL}	Transition time (high to low level output transition).

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	55450
02	55451
03	55452
04	55453
05	55454
06	55460
07	55461
08	55462
09	55463
10	55464

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

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

Preparing activity:
DLA - CC
Project 5962-2081

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

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

