

INCH-POUND
MIL-M-38510/111A
10 December 2003
SUPERSEDING
MIL-M-38510/111
3 January 1979

MILITARY SPECIFICATION

MICROCIRCUITS, ANALOG SWITCH WITH DRIVER, MONOLITHIC AND MULTI-CHIP SILICON

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

Reactivated for new design as of 10 December 2003. May be used for either new or existing design acquisition

1. SCOPE

1.1 Scope. This specification covers the detail requirements for silicon, break-before-make, monolithic and multi-chip analog switches with 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 For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3)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 number. The part number should be in accordance with MIL-PRF-38535, and as specified herein.

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

<u>Device type</u>	<u>Circuit</u>
01	Dual channel, 30 Ω, SPST switches
02	Dual channel, 75 Ω, SPST switches
03	Dual channel, 30 Ω, DPST switches
04	Dual channel, 75 Ω, DPST switches
05	Single channel, 30 Ω, SPDT switch
06	Single channel, 75 Ω, SPDT switch
07	Dual channel, 30 Ω, SPDT switches
08	Dual channel, 75 Ω, SPDT switches

NOTE: A channel is defined as a driver with associated switches.

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

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
A <u>1/</u>	GDFP5-F14 or CDFP6-F14	14	Flat pack
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
I	MACY1-X10	10	Can
X	CDFP3-F14	14	Flat pack

1/ Inactive package case outline.

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

Voltage, negative supply to positive supply [(+V _{CC}) - (-V _{CC})]	36 V dc
Voltage, drain to positive supply (+V _{CC} - V _D)	33 V dc
Voltage, negative supply to drain [V _D - (-V _{CC})]	33 V dc
Voltage, source to drain (V _D - V _S)	±22 V dc
Voltage, negative supply to logic supply [V _L - (-V _{CC})]	36 V dc
Voltage, input to logic supply (V _L - V _{IN})	8 V dc
Voltage, reference supply to logic supply (V _L - V _R)	8 V dc
Voltage, reference supply to input (V _{IN} - V _R)	8 V dc
Voltage, negative supply to reference supply [V _R - (-V _{CC})]	27 V dc
Voltage, input to reference supply (V _R - V _{IN})	2 V dc
Current, any terminal	30 mA
Lead temperature (soldering, 60 seconds)	+300°C
Junction temperature	+175°C
Storage temperature	-65°C to +150°C

1.4 Recommended operating conditions.

Positive supply voltage (+V _{CC})	+15 V dc
Negative supply voltage (-V _{CC})	- 15 V dc
Reference supply voltage (V _R)	GND
Logic supply voltage (V _L)	+5 V dc
Ambient operating temperature range (T _A)	-55°C ≤ T _A ≤ +125°C

1.5 Power and thermal characteristics.

<u>Case outline</u>	<u>Maximum allowable power dissipation</u>	<u>Maximum θ_{JC}</u>	<u>Maximum θ_{JA}</u>
C, E	400 mW @ T _A = 125°C	35°C/W	120°C/W
D, A	350 mW @ T _A = 125°C	60°C/W	140°C/W
I	350 mW @ T _A = 125°C	40°C/W	140°C/W
X	300 mW @ T _A = 125°C	30°C/W	166°C/W

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Departments of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
 MIL-STD-1835 - Interface Standard Electronic Component Case Outlines.

(Copies of these documents are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein the text of this document shall takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).

3.2 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

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

3.3.1 Terminal connections. The terminal connections shall be as specified on figure 1. Switch positions shown are for a high level input logic.

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

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

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

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

3.5.1 Switch operation. The analog switches shall turn "on" with either a low input ($V_R \leq V_{IL} \leq 0.8 \text{ V}$) or a high input ($2 \text{ V} \leq V_{IH} \leq V_L$) as follows:

<u>Device type</u>	V_{IN}	<u>Switch ON</u>	<u>Switch OFF</u>
01, 02	0.8 V dc	1,2	----
	2.0 V dc	----	1,2
03, 04	0.8 V dc	----	1,2,3,4
	2.0 V dc	1,2,3,4	----
05, 06	0.8 V dc	2	1
	2.0 V dc	1	2
07, 08	0.8 V dc	3,4	1,2
	2.0 V dc	1,2	3,4

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.

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

3.9 Microcircuit group assignment. The devices covered by this specification shall be in microcircuit group number 94 (see MIL-PRF-38535, appendix A).

TABLE I. Electrical performance characteristics.

Characteristic	Symbol	Conditions <u>1/</u> (unless otherwise specified, $V_L = +5\text{ V}$, $V_R = \text{GND}$ and $\pm V_{CC} = \pm 15\text{ V}$)	Temperature range	Device type	Limits		Unit
					Min	Max	
Resistance drain-to-source (on)	R_{DS}	$V_{IN} = (\text{see } 3.5.1),$ $V_D = -7.5\text{ V}, I_S = -10\text{ mA}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	01, 03, 05, 07		60	Ω
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = -10\text{ V}, I_S = -10\text{ mA}$		02, 04, 06, 08		150	
Source leakage current (off)	$I_{S(OFF)}$	$V_{IN} = (\text{see } 3.5.1),$ $V_D = -10\text{ V}, V_S = 10\text{ V},$ $+V_{CC} = 10\text{ V}, -V_{CC} = -20\text{ V}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	All	-100	100	nA
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = -7.5\text{ V}, V_S = +7.5\text{ V}$		01, 03, 05, 07	-100	100	
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = -10\text{ V}, V_S = 10\text{ V}$		02, 04, 06, 08	-100	100	
Drain leakage current (off)	$I_{D(OFF)}$	$V_{IN} = (\text{see } 3.5.1),$ $V_D = 10\text{ V}, V_S = -10\text{ V},$ $+V_{CC} = 10\text{ V}, -V_{CC} = -20\text{ V}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	All	-100	100	nA
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = 7.5\text{ V}, V_S = -7.5\text{ V}$		01, 03, 05, 07	-100	100	
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = 10\text{ V}, V_S = -10\text{ V}$		02, 04, 06, 08	-100	100	
Channel leakage current (on)	$I_{D(ON)+}$ $I_{S(ON)}$	$V_{IN} = (\text{see } 3.5.1),$ $V_D = V_S = -7.5\text{ V}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	01, 03, 05, 07	-200	200	nA
		$V_{IN} = (\text{see } 3.5.1),$ $V_D = V_S = -10\text{ V}$		02, 04, 06, 08	-200	200	
Low level input current	I_{IL}	$V_{IN} = \text{GND}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	All	-250	-0.1	μA
High level input current	I_{IH}	$V_{IN} = 5\text{ V}$	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	All	-2	20	μA
Time to turn on	t_{ON}	See figure 5	$T_A = -55^\circ\text{C}$	01, 03, 05, 07		150	ns
			$T_A = 25^\circ\text{C}$			150	
			$T_A = 125^\circ\text{C}$			300	
Time to turn on	t_{ON}	See figure 5	$T_A = -55^\circ\text{C}$	02, 04, 06, 08		250	ns
			$T_A = 25^\circ\text{C}$			250	
			$T_A = 125^\circ\text{C}$			350	

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Characteristic	Symbol	Conditions <u>1/</u> (unless otherwise specified, $V_L = +5\text{ V}$, $V_R = \text{GND}$ and $\pm V_{CC} = \pm 15\text{ V}$)	Temperature range	Device type	Limits		Unit
					Min	Max	
Time to turn off	t_{OFF}	See figure 5	$T_A = -55^\circ\text{C}$	All		130	ns
			$T_A = 25^\circ\text{C}$			130	
			$T_A = 125^\circ\text{C}$			200	
Positive supply current	$+I_{CC}$	$V_{\text{IN}} = \text{GND}$ and 5 V	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	01, 02, 07, 08		2.5	mA
		$V_{\text{IN}} = \text{GND}$		05, 06		1.4	
		$V_{\text{IN}} = 5\text{ V}$		03, 04		5	
						1.7	
Negative supply current	$-I_{CC}$	$V_{\text{IN}} = \text{GND}$ and 5 V	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	01, 02, 07, 08	-8		mA
		$V_{\text{IN}} = \text{GND}$		05, 06	-4.8		
		$V_{\text{IN}} = 5\text{ V}$		03, 04	-8.8		
					-6.4		
Logic supply current	I_L	$V_{\text{IN}} = \text{GND}$ and 5 V	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	01, 02, 03, 04, 07, 08		7	mA
				05, 06		5	
Reference supply current	I_R	$V_{\text{IN}} = \text{GND}$ and 5 V	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	All	-2.2		mA
Charge transfer error	V_{CTE}	$V_S = \text{GND}$ (See table III footnote <u>3/</u>)	$T_A = 25^\circ\text{C}$	All		20	mV
Crosstalk between channels	V_{CT} <u>2/</u>	$f = 10\text{ MHz}$, $V_{\text{gen}} = 1\text{ V}_{\text{P-P}}$	$T_A = 25^\circ\text{C}$	All	60		dB
Single channel isolation	V_{ISO}	$f = 10\text{ MHz}$, $V_{\text{gen}} = 1\text{ V}_{\text{P-P}}$	$T_A = 25^\circ\text{C}$	All	50		dB
Break-before-make time delay	t_D	See figure 6	$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$	05, 06, 07, 08	5		ns

1/ Test conditions are specified in table III and figures 2, 3, 4, and 5.

2/ For monolithic devices only.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 9	1*, 2, 3, 9
Group A test requirements	1,2,3,(4,7)**, 9,10,11, (12)***	1,2,3,(4,7)**, 9,10,11, (12)***
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
Additional electrical subgroups for group C periodic inspections	N/A	(4, 7)****
Group D end-point electrical parameters	1,2,3	1
Additional electrical subgroups for group D periodic inspections	(4,7)*****	None

* PDA applies to subgroup 1.

** See 4.4.1d

*** See 4.4.1c

**** See 4.4.3c

***** See 4.4.4

4. VERIFICATION.

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

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

- a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.
- b. Reverse bias burn-in (method 1015 of MIL-STD-883). This screen shall apply to class S only. However, regardless of device class, for device types 05, 06, 07, and 08, an additional burn-in will be performed following an interim electrical test (see table II, PDA applies). The additional burn-in will be performed with the logic level of the switch drivers opposite to that used in the first burn-in.

- c. 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.
- d. Additional screening for space level product shall be as specified in MIL-PRF-38535.
- e. Internal visual inspection (method 2010 and method 2017 multichip criteria of MIL-STD-883). For multichip devices, internal visual inspection shall be performed for each chip within the package.

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

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 5, 6, and 8 shall be omitted.
- c. Subgroup 12 (device types 05, 06, 07, and 08) shall be added to group A inspection as specified in table III herein. The sample size series number shall be 7 for all classes (accept on 0).
- d. Subgroups 4 and 7 shall be performed for initial qualification only using a sample of 5 devices for each device type submitted to group A inspection, with no failure allowed. If not more than 1 failure is found in the first sample of 5, a second sample of 5 is permitted with no further failures allowed.

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.
- c. A special subgroup shall be added to group C inspection for class B devices only, and it shall consist of the group A subgroups 4 and 7 as specified in table III herein. This special subgroup shall be performed on each device type that is qualified from those listed in 1.2.1 herein. After initial qualification, the special subgroup shall be performed periodically on a single device type selected from those device types previously qualified. A sample of 5 devices (of the device type to be inspected) shall be chosen and submitted to test with no failures allowed. If not more than 1 failure is found in the first sample of 5, a second sample of 5 is permitted with no further failures allowed. When more than one device type is qualified, the single device type selected shall be different device type for each subsequent periodic inspection until all qualified device types have been inspected. The sequence of single device types shall be repeated to fulfill the periodic inspection requirement.

Device type 01 and 02

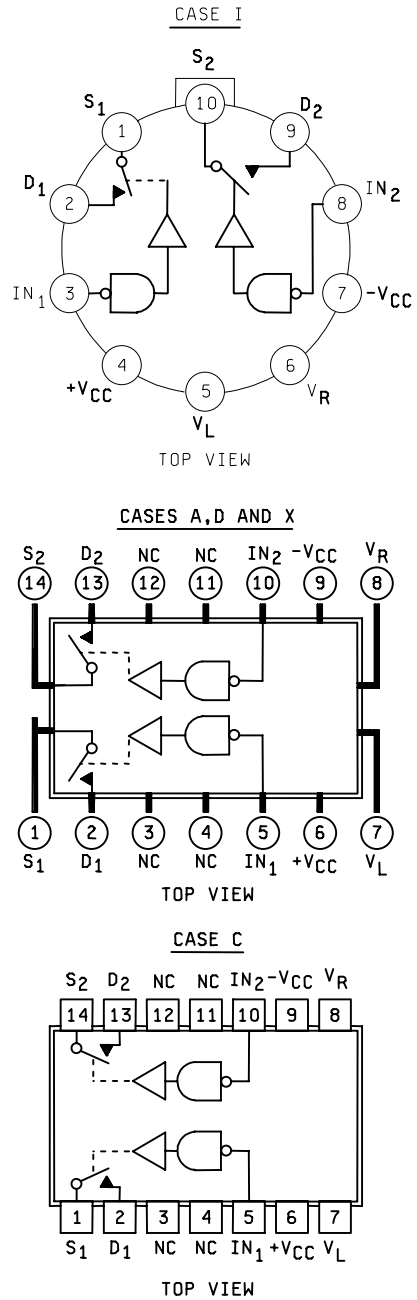
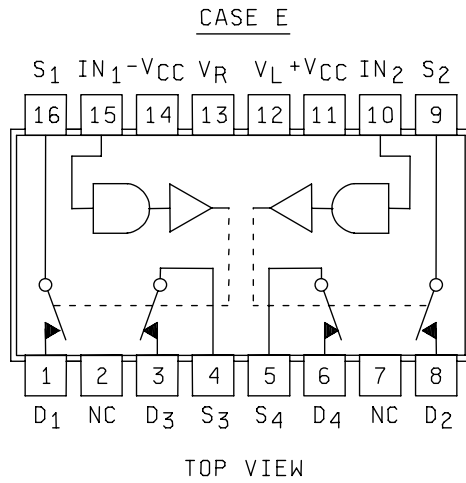
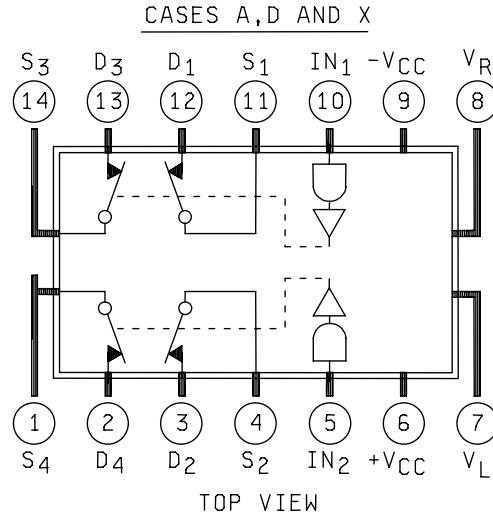


Figure 1. Terminal connections.

Device type 03 and 04

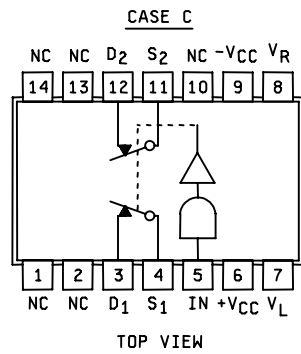
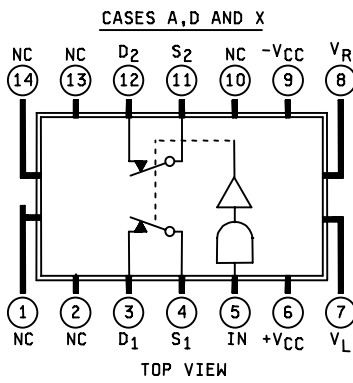
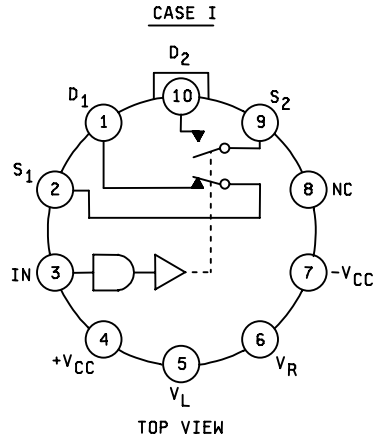


NOTES:

1. Switch positions are shown for the high logic level input condition.
2. -V_{CC} may be connected to the base of metal packages (case I).

Figure 1. Terminal connections – Continued.

Device type 05 and 06

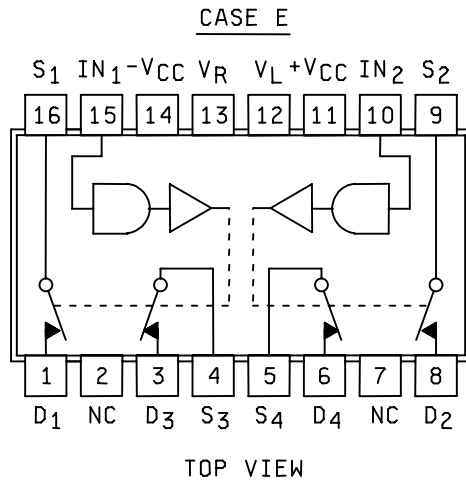
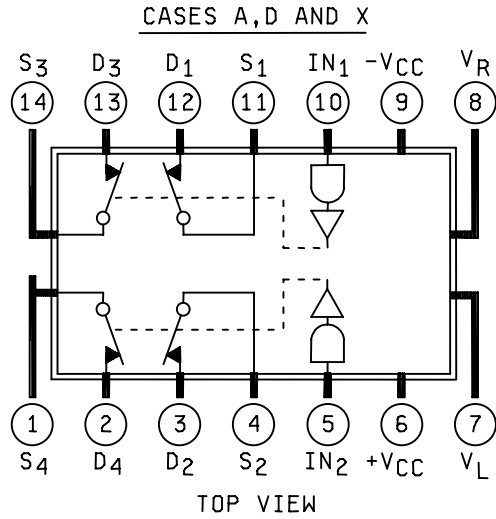


NOTES:

1. Switch positions are shown for the high logic level input condition.
2. $-V_{CC}$ may be connected to the base of metal packages (case I).

Figure 1. Terminal connections – Continued.

Device type 07 and 08



NOTES:

1. Switch positions are shown for the high logic level input condition.
2. -V_{CC} may be connected to the base of metal packages (case I).

Figure 1. Terminal connections – Continued.

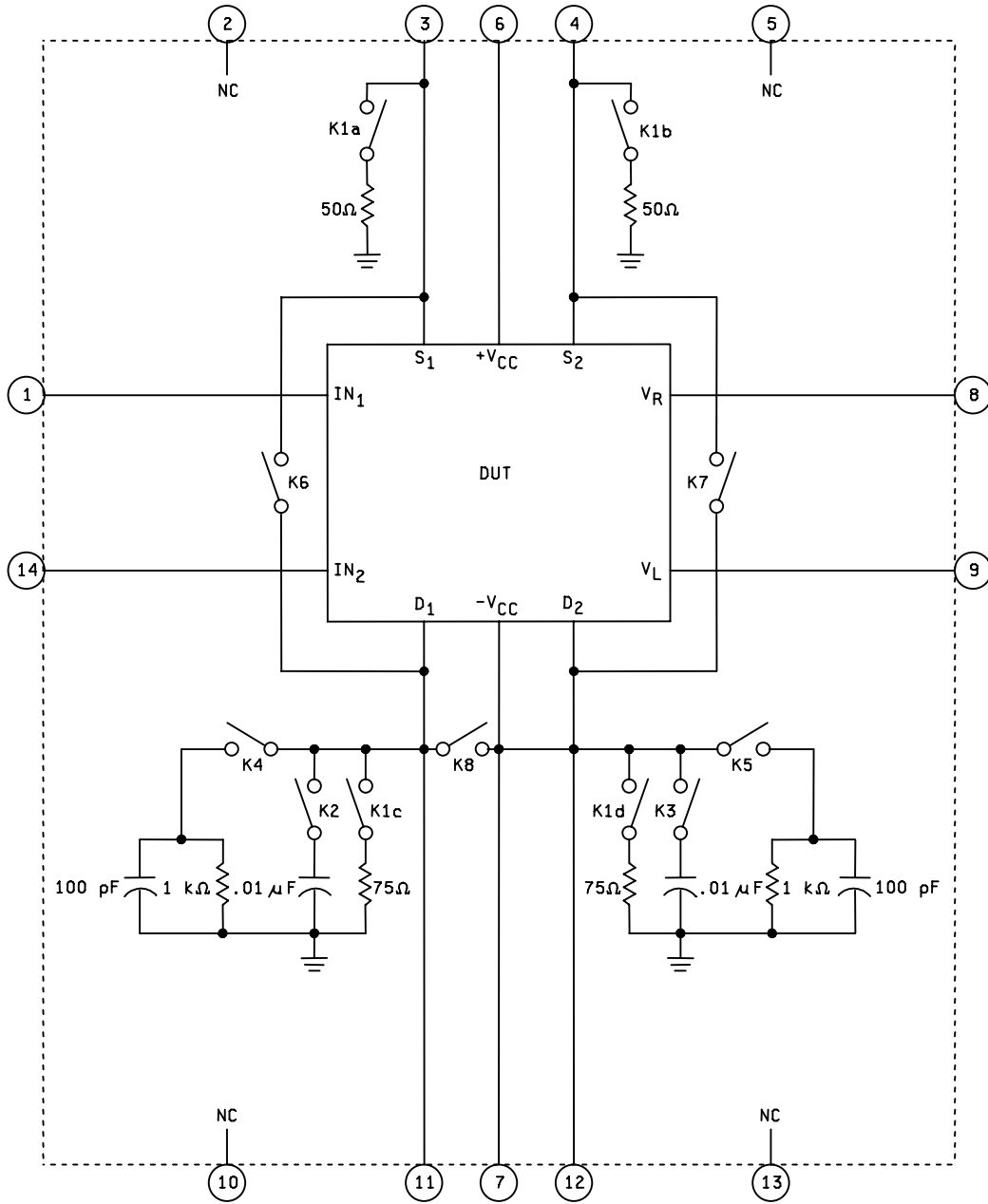


FIGURE 2. Test circuit (static and dynamic tests) for device types 01 and 02.

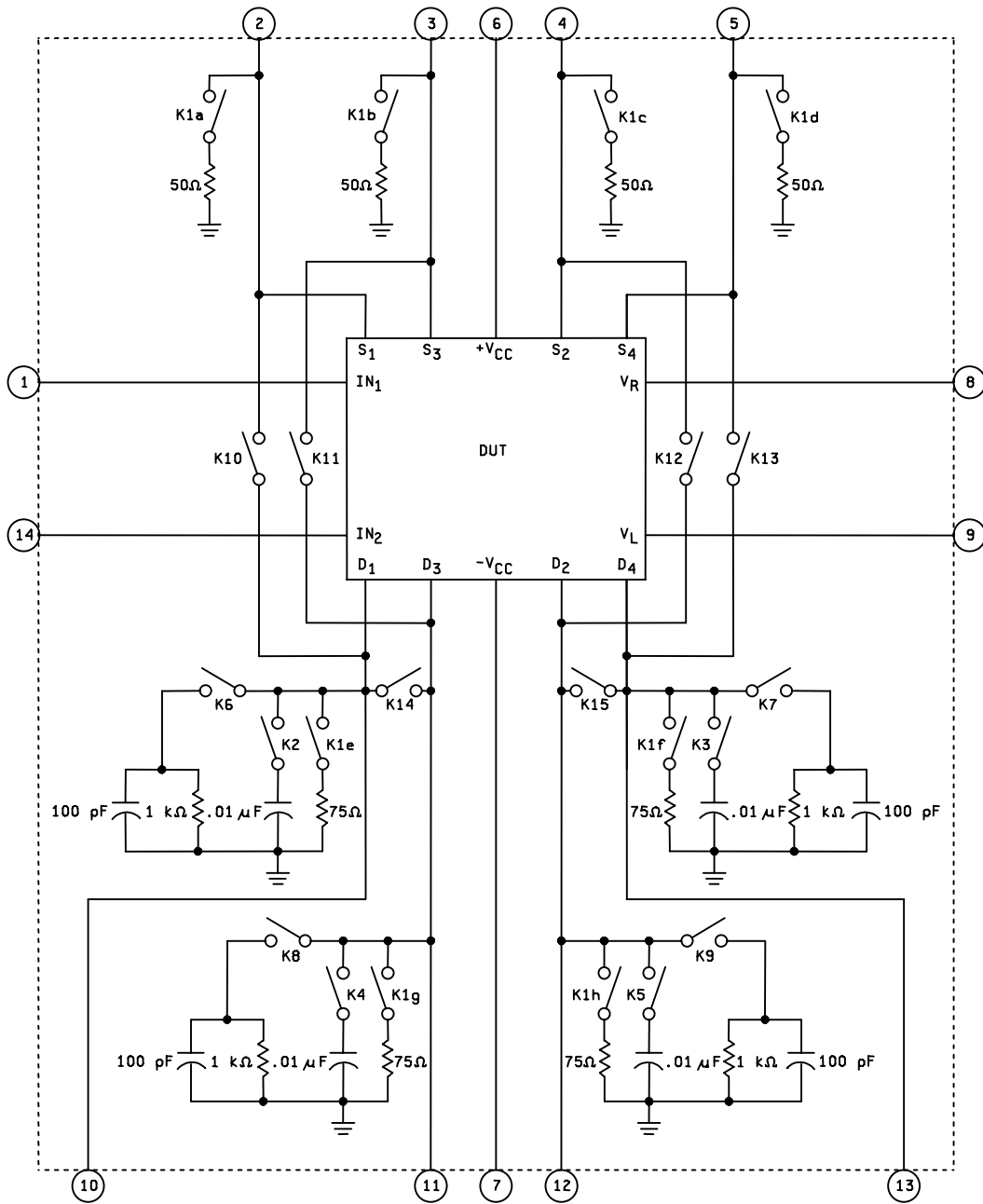


FIGURE 3. Test circuit (static and dynamic tests) for device types 03, 04, 07, and 08.

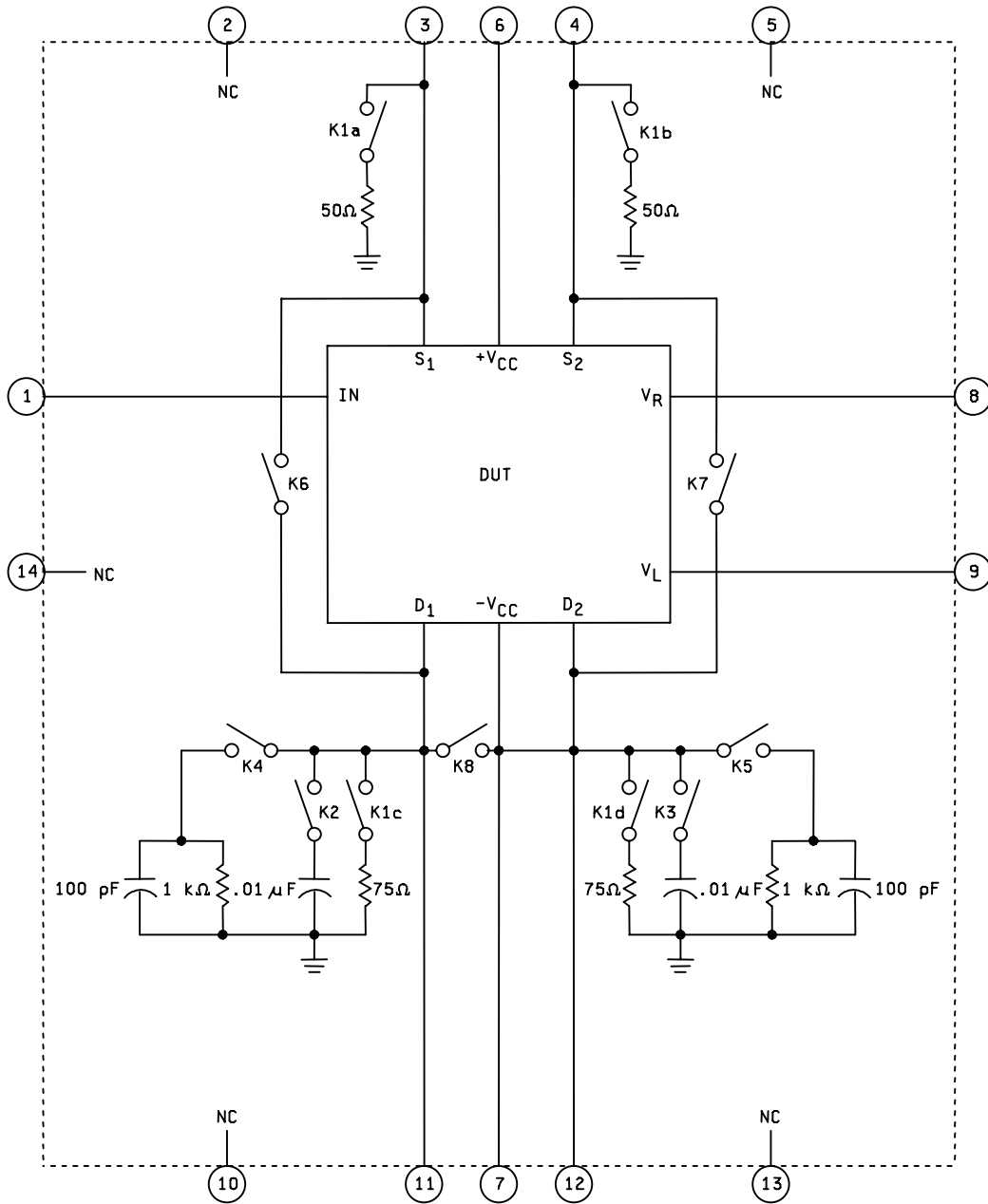
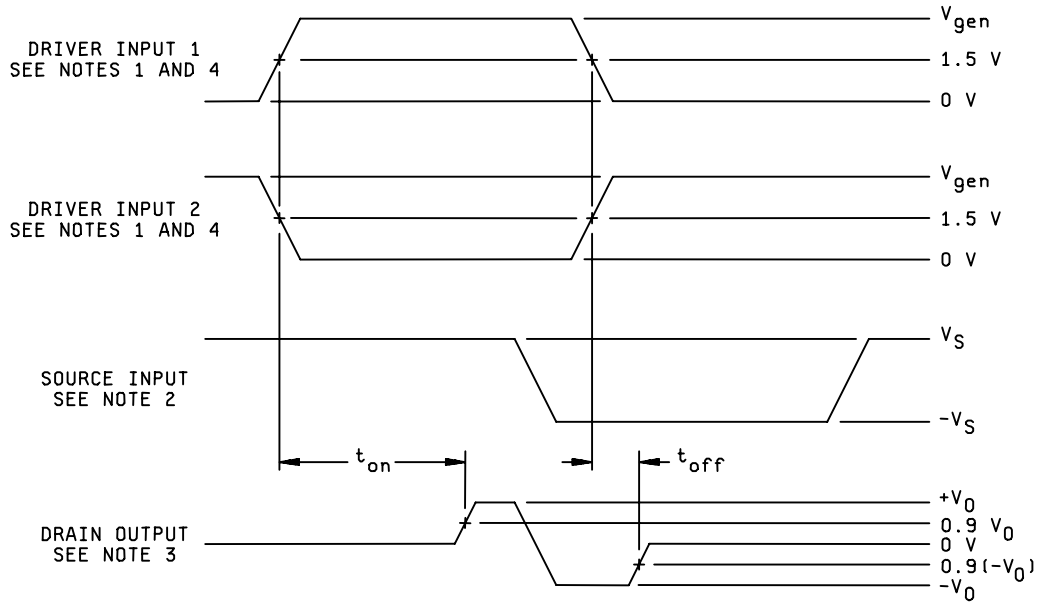


FIGURE 4. Test circuit (static and dynamic tests) for device types 05 and 06.



NOTES:

1. The driver pulse generator shall have the following characteristics:
 - a. $V_{gen} = 0 \text{ V to } 3.0 \text{ V}$.
 - b. Rise time (0.3 V to 2.7 V) $\leq 10 \text{ ns}$
 - c. Fall time (2.7 V to 0.3 V) $\leq 10 \text{ ns}$
2. The source pulse generator shall have the following characteristics:
 - a. $V_{gen} = -7.5 \text{ V to } +7.5 \text{ V}$ square wave (device types 01, 03, 05, and 07).
 - b. $V_{gen} = -10 \text{ V to } +10 \text{ V}$ square wave (device types 02, 04, 06, and 08).

FIGURE 5. Input-output waveforms for time delay tests.

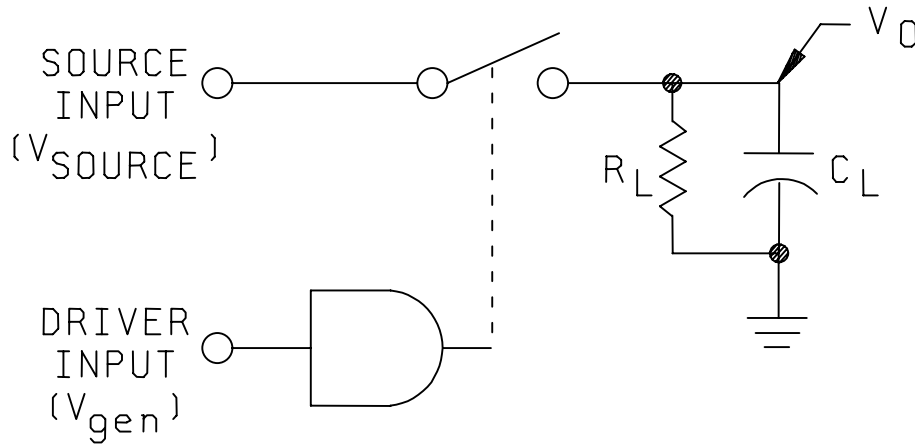
3. For device types 01, 03, 05, and 07:

- a. $V_{\text{source}} = +7.5 \text{ V}$ for T_{on} .
- b. $V_{\text{source}} = -7.5 \text{ V}$ for T_{off} .

For device types 02, 04, 06, and 08:

- a. $V_{\text{source}} = +10.0 \text{ V}$ for T_{on} .
- b. $V_{\text{source}} = -10.0 \text{ V}$ for T_{off} .

4. Driver input 1 shall be used to test all switches for device types 03 and 04, switch 1 for device types 05 and 06 and switches 1 and 2 for device types 07 and 08. Driver input 2 shall be used to test all switches for device types 01 and 02, switch 2 for device types 05 and 06 and switches 3 and 4 for device types 07 and 08.



$$R_L = 1 \text{ k}\Omega \pm 5\%$$

$$C_L = 95\text{--}200 \text{ p}f \pm 5\%$$

(C_L INCLUDES ASSOCIATED
TEST SYSTEM CAPACITANCE)

FIGURE 5. Input-output waveforms for time delay tests – Continued.

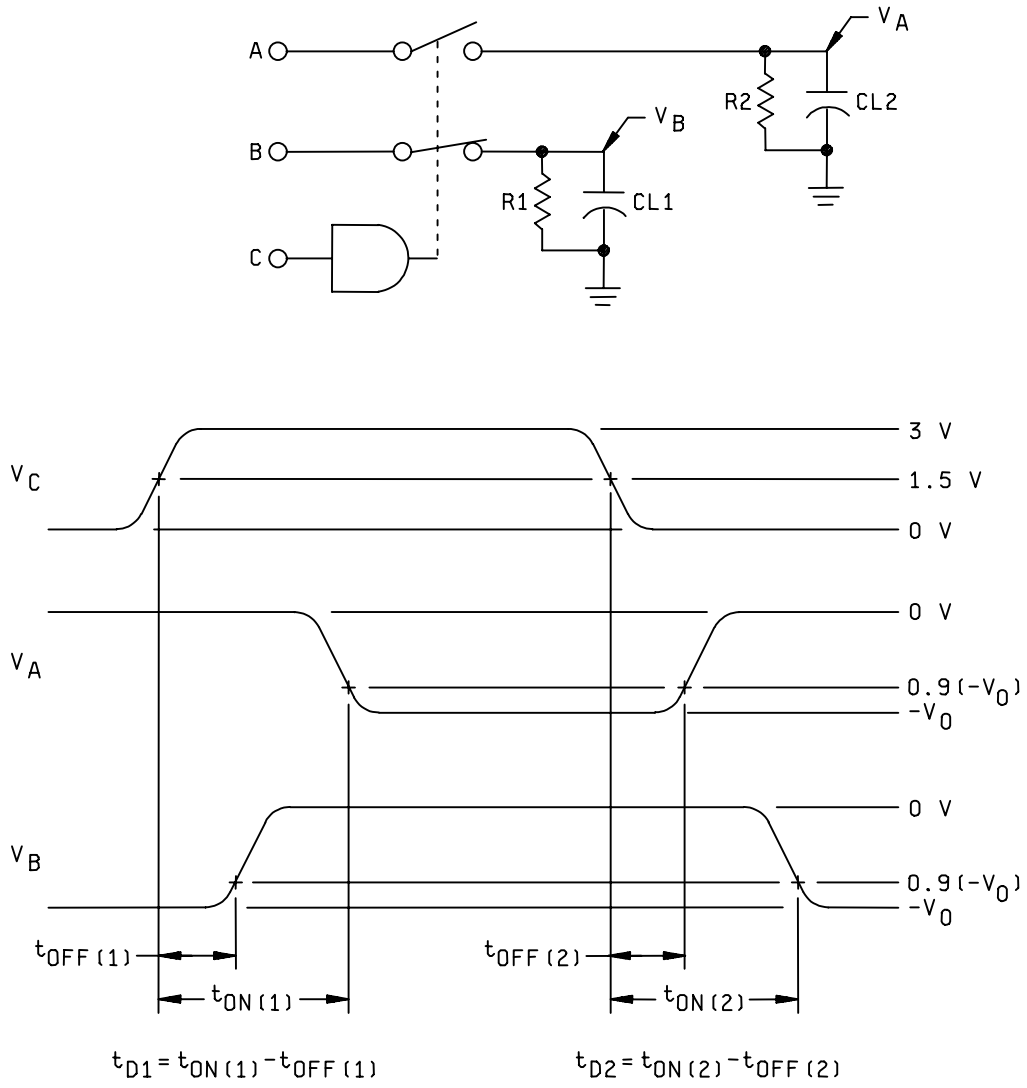


FIGURE 6. Break-before-make test.

NOTES:

1. $R_1 = R_2 = 1 \text{ k}\Omega \pm 5\%$. $C_{L1} = C_{L2} = (95-200) \text{ pF} \pm 5\%$, to include test and fixture capacitance.
2. Both TD1 and TD2 shall be measured. These measurements shall apply only to device types 05, 06, 07, and 08. See 3.5.1 for switch conditions.
3. $V_{\text{source}} = -7.5 \text{ V}$ (for T_{on} and T_{off} – Device types 05 and 07).
 $V_{\text{source}} = -10.0 \text{ V}$ (for T_{on} and T_{off} – Device types 06 and 08).
4. $V_O = -7.2 \text{ V}$ (device types 05 and 07).
 $V_O = -9.2 \text{ V}$ (device types 06 and 08).
5. The driver pulse generator shall have the following characteristics:
 - a. $V_{\text{gen}} = 0 \text{ V}$ to 3.0 V .
 - b. Rise time (0.3 V to 2.7 V) $\leq 10 \text{ ns}$.
 - c. Fall time (2.7 V to 0.3 V) $\leq 10 \text{ ns}$.
6. Break-before-make performance: The device types 05, 06, 07 and 08 all operate in the break-before-make mode at room temperature ($25^\circ \pm 3^\circ\text{C}$) and higher (to $125^\circ \pm 3^\circ\text{C}$). Break-before-make performance is defined as a difference between T_{on} and T_{off} of $\geq 5 \text{ ns}$ when two switches driven by a common driver are switching a common analog signal. T_{on} and T_{off} are measured as shown in figure 6. Below room temperature, it is possible that under negative analog voltage conditions, break-before-make action may not occur.

FIGURE 6. Break-before-make test – Continued.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max			
2 T _A = +125°C	I _{S(OFF)}	27	IN ₁ 2.0 V	NC	10 V	S ₂ 10 V	NC	+V _{CC} 10 V	-V _{CC} -20 V	V _R GND	V _L 5.0 V	NC	D ₁ -10 V	D ₂ -10 V	NC	IN ₂ 2.0 V	3	None	-100	100	nA		
		28	2.0 V		7.5 V	7.5 V		15 V	-15 V	"	"			7.5 V	7.5 V	2.0 V	4	"	"	"	"	"	
		29	2.0 V			7.5 V		15 V	-15 V	"	"					2.0 V	4	"	"	"	"	"	"
	I	D(OFF)	31	2.0 V		-10 V	-10 V		10 V	-20 V	"	"		10 V	10 V		2.0 V	11	"	"	"	"	"
			32	2.0 V		-7.5 V	-7.5 V		15 V	-15 V	"	"		7.5 V	7.5 V		2.0 V	12	"	"	"	"	"
			33	2.0 V			-7.5 V		15 V	-15 V	"	"					2.0 V	11	"	"	"	"	"
			34	2.0 V		-7.5 V	-7.5 V		15 V	-15 V	"	"		7.5 V	7.5 V		2.0 V	12	"	"	"	"	"
	I +I	D(O) S(O) IL	35	0.8 V		-7.5 V	-7.5 V		15 V	-15 V	"	"		7.5 V	-7.5 V		0.8 V	3	K6	-200	200	"	
			36	GND			-7.5 V		"	"	"	"					GND	4	K7	-200	200	"	
		I +I	IL	37	GND			-7.5 V		"	"	"					GND	1	None	-250	-0.1	μA	
38				5.0 V					"	"	"	"					GND	14	"	-250	-0.1	μA	
I +I		I +I	39	5.0 V					"	"	"	"					5.0 V	1	"	-2	20	μA	
			40	GND					"	"	"	"					GND	14	"	-2	20	μA	
			41	GND					"	"	"	"					GND	6	"			1.5	mA
			42	5.0 V					"	"	"	"					5.0 V	6	"			1.5	mA
	43		GND					"	"	"	"					GND	7	"	-5	-5	mA		
	44		5.0 V					"	"	"	"					5.0 V	7	"	-5	-5	mA		
I +I	L	45	GND				"	"	"	"					GND	9	"				4.5	mA	
		46	5.0 V					"	"	"	"				5.0 V	9	"					4.5	mA
3 T _A = -55°C	R _{DS}	47	GND					"	"	"	"				GND	8	"	"	-2.2	-2.2	mA		
		48	5.0 V					"	"	"	"				5.0 V	8	"	"	-2.2	-2.2	mA		
	R _{DS}	49	0.8 V		-10 mA	-10 mA		15 V	-15 V	"	"		-7.5 V	-7.5 V		0.8 V	3	"	-7.8	-7.8	V _{2/}		
		50	0.8 V			-10 mA		15 V	-15 V	"	"					0.8 V	4	"	-7.8	-7.8	V _{2/}		
	I	S(OFF)	51	2.0 V		10 V	10 V		10 V	-20 V	"	"		-10 V	-10 V		2.0 V	3	"	-100	100	nA	
			52	2.0 V		7.5 V	7.5 V		15 V	-15 V	"	"		-7.5 V	-7.5 V		2.0 V	4	"	"	"	"	"
53			2.0 V			7.5 V		15 V	-15 V	"	"					2.0 V	3	"	"	"	"	"	"
54			2.0 V			7.5 V		15 V	-15 V	"	"		-7.5 V	-7.5 V		2.0 V	4	"	"	"	"	"	"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max		
3 T _A = -55°C	I _{0(OFF)}	55	IN ₁ 2.0 V	NC	-10 V	S ₂	NC	+V _{CC} 10 V	-V _{CC} -20 V	V _R GND	V _L 5.0 V	NC	D ₁ 10 V	D ₂ 10 V	NC	IN ₂ 2.0 V	None	11	-100	100	nA	
		56	2.0 V		-7.5 V			10 V	-20 V	"	"		7.5 V	10 V		2.0 V	"	12	-100	100	"	
		57	2.0 V		-7.5 V			15 V	-15 V	"	"		7.5 V	7.5 V		2.0 V	"	11	-100	100	"	
		58	2.0 V		-7.5 V			15 V	-15 V	"	"		7.5 V	7.5 V		2.0 V	"	12	-100	100	"	
I +I	D _{1(OH)}	59	0.8 V		-7.5 V			15 V	-15 V	"	"		7.5 V	-7.5 V		0.8 V	K6	3	-200	200	"	
	S _{1(OH)}	60	GND				15 V	-15 V	"	"							K7	4	-200	200	"	
	IL	61							"	"						GND	None	1	-250	-0.1	µA	
	I _H	62	5.0 V						"	"							"	14	-250	-0.1	µA	
	I _H	63							"	"						5.0 V	"	1	-1	10	µA	
	I _H	64							"	"						5.0 V	"	14	-1	10	µA	
	I	CC	65	GND					"	"						GND	"	6		2.5	2.5	mA
	I	CC	66	5.0 V					"	"						5.0 V	"	6				"
	I	CC	67	GND					"	"						GND	"	7		-8		"
	I	CC	68	5.0 V					"	"						5.0 V	"	7		-8		"
	I	L	69	GND					"	"						GND	"	9		7		"
	+I	L	70	5.0 V					"	"						5.0 V	"	9		7		"
	+I	L	71	GND					"	"						GND	"	8		-2		"
	-I	R	72	5.0 V					"	"						5.0 V	"	8		-2		"
	4 T _A = 25°C	V _{CTE}	74	IN 3/					"	"								K2	11		20	mV _{pp}
		V _{CTE}	74	IN 3/					"	"								K3	12		20	mV _{pp}
7 T _A = 25°C	V _{CT Z/}	75	0.8				GND	15 V	-15 V	GND	5.0 V					2.0 V	K1	12	60	1.0	mV _{pp}	
	ISO	75	2.0 V				IN 4/	15 V	-15 V	GND	5.0 V					2.0 V	K1	12			3.16	
9 T _A = 25°C	t _{ON}	76					IN 4/	15 V	-15 V	GND	5.0 V					2.0 V	K1	12			3.16	
	t _{ON 77}	78	IN				IN 4/	15 V	-15 V	GND	5.0 V						K4	1 to 11			150	
	OFF	79	IN				IN 4/	15 V	-15 V	GND	5.0 V						K5	14 to 12			150	
	OFF	80	IN				IN	"	"	"	"						K4	1 to 11			130	
10 T _A = +125°C	OFF	81	IN				IN	"	"	"	"						K5	14 to 12			130	
	t _{ON}	82	IN				IN	"	"	"	"						K4	1 to 11			300	
	t _{ON}	83	IN				IN	"	"	"	"						K5	14 to 12			300	
	OFF	84	IN				IN	"	"	"	"						K4	1 to 11			200	
	OFF	85	IN				IN	"	"	"	"						K5	14 to 12			200	
11 T _A = -55°C	t _{ON}	86	IN				IN	"	"	"	"						K4	1 to 11			150	
	t _{ON}	87	IN				IN	"	"	"	"						K5	14 to 12			150	
	OFF	88	IN				IN	"	"	"	"						K4	1 to 11			130	
	OFF	89	IN				IN	"	"	"	"						K5	14 to 12			130	

See footnotes at end of table.

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TABLE III. Group A inspection for device type 02.

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max	
1 T _A = +25°C	R _{DS}	1	IN ₁	NC	S ₁	S ₂	NC	+V _{CC}	-V _{CC}	V _R	V _L	NC	D ₁	D ₂	NC	IN ₂	None	3	-10.75		V $\frac{2}{2}$
	R _{DS}	2	0.8 V		-10 mA	-10 mA		15 V	-15 V	GND	5.0 V		-10 V	-10 V		0.8 V		4	-10.75		V $\frac{2}{2}$
	S(OFF)	3	2.0 V		10 V	10 V		10 V	-20 V	"	"	"	-10 V	-10 V		2.0 V		3	-1	1	nA
	"	4	2.0 V		10 V	10 V		10 V	-20 V	"	"	"	-10 V	-10 V		2.0 V		4	-1	1	"
	"	5	2.0 V		10 V	10 V		15 V	-15 V	"	"	"	-10 V	-10 V		2.0 V		3	-1	1	"
	"	6	2.0 V		10 V	10 V		15 V	-15 V	"	"	"	-10 V	-10 V		2.0 V		4	-1	1	"
I	D(OFF)	7	2.0 V		-10 V	-10 V		10 V	-20 V	"	"		10 V	10 V		2.0 V		11	-1	1	"
	"	8	2.0 V		-10 V	-10 V		10 V	-20 V	"	"		10 V	10 V		2.0 V		12	-1	1	"
	"	9	2.0 V		-10 V	-10 V		15 V	-15 V	"	"		10 V	10 V		2.0 V		11	-1	1	"
	"	10	2.0 V		-10 V	-10 V		15 V	-15 V	"	"		10 V	10 V		2.0 V		12	-1	1	"
	D(OH) ⁺	11	0.8 V		-10 V	-10 V		15 V	-15 V	"	"		-10 V	-10 V		0.8 V		3	-2	2	"
	S(OH)	12				-10 V		"	"	"	"					0.8 V		4	-2	2	"
I	IL	13	GND					"	"	"	"					GND		1	-250	-0.1	μA
	IL	14						"	"	"	"					GND		14	-250	-0.1	μA
	IH	15	5.0 V					"	"	"	"					5.0 V		1	-1	10	μA
	IH	16						"	"	"	"					5.0 V		14	-1	10	μA
	CC	17						"	"	"	"					GND		6			mA
	CC	18						"	"	"	"					GND		6			mA
	CC	19						"	"	"	"					5.0 V		6			mA
	CC	20						"	"	"	"					GND		7	-5	-5	"
	L	21						"	"	"	"					5.0 V		7	-5	-5	"
	L	22						"	"	"	"					5.0 V		9			"
	R	23						"	"	"	"					5.0 V		9			"
	R	24						"	"	"	"					5.0 V		8	-2.2	-2.2	"
2 T _A = +25°C	R _{DS}	25	0.8 V		-10 mA	-10 mA		15 V	-15 V	"	"		-10 V	-10 V		0.8 V		3	-11.50		V $\frac{2}{2}$
	R _{DS}	26						15 V	-15 V	"	"					0.8 V		4	-11.50		V $\frac{2}{2}$
	S(OFF)	27	2.0 V		10 V	10 V		10 V	-20 V	GND	5.0 V		-10 V	-10 V		2.0 V		3	-100	100	nA
	"	28	2.0 V		10 V	10 V		10 V	-20 V	"	"		-10 V	-10 V		2.0 V		4	-100	100	nA
	"	29	2.0 V		10 V	10 V		15 V	-15 V	"	"		-10 V	-10 V		2.0 V		3	-100	100	nA

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max		
2 T _A = +125°C	I _{S(OFF)}	30	IN ₁	NC	S ₁	S ₂	NC	+V _{CC}	-V _{CC}	V _R	V _L	NC	D ₁	D ₂	NC	IN ₂	None	4	-100	100	nA	
	D(OFF)	31	2.0 V		-10 V	-10 V	10 V	10 V	-15 V				10 V	10 V		2.0 V		"	11	"	"	"
		32	2.0 V		-10 V	-10 V	10 V	10 V	-15 V				10 V	10 V		2.0 V		"	12	"	"	"
		33	2.0 V		-10 V	-10 V	10 V	10 V	-15 V				10 V	10 V		2.0 V		"	11	"	"	"
I	D(OH)+ S(OH)	34	0.8 V		-10 V	-10 V	15 V	15 V	-15 V				-10 V	-10 V		2.0 V		"	12	"	"	"
		35	0.8 V		-10 V	-10 V	15 V	15 V	-15 V				-10 V	-10 V		2.0 V		"	3	-200	200	"
I	IL	36	GND													0.8 V		K6	4	-200	200	"
		37	GND													GND		K7	4	-200	200	"
I	IH	38	5.0 V															None	1	-250	-0.1	µA
		39	5.0 V															"	14	-250	-0.1	µA
I	CC	40																"	1	-2	20	µA
		41																"	14	-2	20	µA
I	CC	42	GND															"	6		1.5	mA
		43	5.0 V															"	6		1.5	mA
I	-I _{CC}	44	GND															"	7	-5		mA
		45	5.0 V															"	7	-5		mA
+I	L	46	GND															"	9		4.5	mA
		47	5.0 V															"	9		4.5	mA
+I	R	48	GND															"	8	-2.2		mA
		49	5.0 V															"	8	-2.2		mA
I	R _{DS}	49	0.8 V		-10 mA	-10 mA	15 V	15 V	-15 V				-10 V	-10 V		0.8 V		"	3	-10.75		V $\frac{2}{2}$
		50	0.8 V		-10 mA	-10 mA	15 V	15 V	-15 V				-10 V	-10 V		0.8 V		"	4	-10.75		V $\frac{2}{2}$
3 T _A = -55°C	S(OFF)	51	2.0 V		10 V	10 V	10 V	10 V	-20 V				-10 V	-10 V		2.0 V		"	3	-100	100	nA
		52	2.0 V		10 V	10 V	10 V	10 V	-20 V				-10 V	-10 V		2.0 V		"	4	"	"	"
		53	2.0 V		10 V	10 V	10 V	10 V	-20 V				-10 V	-10 V		2.0 V		"	3	"	"	"
		54	2.0 V		10 V	10 V	10 V	10 V	-20 V				-10 V	-10 V		2.0 V		"	4	"	"	"
I	D(OFF)	55	2.0 V		-10 V	-10 V	10 V	10 V	-20 V	GND	5.0 V		10 V	10 V		2.0 V		"	11	"	"	"
		56	2.0 V		-10 V	-10 V	10 V	10 V	-20 V				10 V	10 V		2.0 V		"	12	"	"	"
		57	2.0 V		-10 V	-10 V	10 V	10 V	-20 V				10 V	10 V		2.0 V		"	11	"	"	"
		58	2.0 V		-10 V	-10 V	10 V	10 V	-20 V				10 V	10 V		2.0 V		"	12	"	"	"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Min	Max	
3	I _{ON} +	59	IN ₁	NC	S ₂	+V _{CC}	-V _{CC}	V _B	V _L	NC	D ₁	D ₂	NC	IN ₂	K6	-200	200	nA	
	I _{ON} +	60	0.8 V	-10 V	15 V	15 V	-15 V	GND	5.0 V	0.8 V	-10 V	-10 V		0.8 V	K7	-200	200	nA	
I	IL	61	GND											GND	None	-250	-0.1	μA	
	IH	62	5.0 V													-250	-0.1	μA	
	IH	63	5.0 V													-1	10	μA	
	IH	64	5.0 V													-1	10	μA	
	CC	65	GND											GND		2.5	2.5	mA	
	CC	66	5.0 V											5.0 V					
	CC	67	GND											GND		-8	-8		
	CC	68	5.0 V											5.0 V					
	+H	69	GND											GND		9	7		
	+H	70	5.0 V											5.0 V		9	7		
4	R	71	GND											GND		-2			
	R	72	5.0 V											5.0 V		-2			
T _A = 25°C	V _{CTE}	74	IN 3/		GND									IN 3/	K2		20	mV _{pp}	
	V _{CTE}	75	0.8											IN 3/	K3		20	mV _{pp}	
T _A = 25°C	Z ₃	76	2.0 V		IN 4/									2.0 V	K1	60	1.0	mV _{pp}	
	ISO	77			IN 4/	15 V	-15 V	GND	5.0 V					2.0 V	K1			3.16	
9	ISO	78	2.0 V		IN 4/	15 V	-15 V	GND	5.0 V					2.0 V	K1			3.16	
	ISO	79			IN 4/	15 V	-15 V	GND	5.0 V					2.0 V	K1			3.16	
T _A = 25°C	t _{ON}	80	IN		IN	15 V	-15 V	GND	5.0 V		OUT	OUT		IN	K4	250	250	ns	
	t _{OFF}	81	IN		IN						OUT	OUT		IN	K5	130	130	ns	
10	t _{OFF}	82	IN		IN						OUT	OUT		IN	K4	130	130	ns	
	t _{ON}	83	IN		IN						OUT	OUT		IN	K5	130	130	ns	
T _A = +125°C	t _{ON}	84	IN		IN						OUT	OUT		IN	K4	350	350	ns	
	t _{OFF}	85	IN		IN						OUT	OUT		IN	K5	350	350	ns	
T _A = -55°C	t _{ON}	86	IN		IN						OUT	OUT		IN	K4	200	200	ns	
	t _{OFF}	87	IN		IN						OUT	OUT		IN	K5	250	250	ns	
t	t _{ON}	88	IN		IN						OUT	OUT		IN	K4	130	130	ns	
	t _{OFF}	89	IN		IN						OUT	OUT		IN	K5	130	130	ns	

See footnotes at end of table.

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TABLE III. Group A inspection for device type 03.

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit		
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂	Relays energized	Measured pin no.		Min	Max
1 T _A ⇒ +25°C	R _{DS}	1	2.0 V	-10 mA	-10 mA	-10 mA	15 V	-15 V	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	2.0 V	2.0 V	None	2	-7.8		V 2/
		2	2.0 V				"	"	"	"	"	"	"	"			"	3	-7.8		V 2/
		3					"	"	"	"	"	"	"	"			"	4	-7.8		V 2/
		4					"	"	"	"	"	"	"	"			"	5	-7.8		V 2/
I	S(OFF)	5	0.8 V	10 V	10 V	10 V	10 V	-20 V	"	"	-10 V	-10 V	-10 V	-10 V	0.8 V	0.8 V	"	2	-1	1	nA
		6	0.8 V				"	"	"	"	"	"	"	"			"	3	"	"	"
		7					"	"	"	"	"	"	"	"			"	4	"	"	"
		8	0.8 V	7.5 V	7.5 V	10 V	15 V	-15 V	"	"	-7.5 V	-7.5 V	-10 V	-10 V	0.8 V	0.8 V	"	5	"	"	"
		9	0.8 V				"	"	"	"	"	"	"	"			"	2	"	"	"
		10	0.8 V				"	"	"	"	"	"	"	"			"	3	"	"	"
		11					"	"	"	"	"	"	"	"			"	4	"	"	"
		12					"	"	"	"	"	"	"	"			"	5	"	"	"
I	D(OFF)	13	0.8 V	-10 V	-10 V	-10 V	10 V	-20 V	"	"	10 V	10 V	10 V	10 V	0.8 V	0.8 V	"	10	"	"	"
		14	0.8 V				"	"	"	"	"	"	"	"			"	11	"	"	"
		15					"	"	"	"	"	"	"	"			"	12	"	"	"
		16					"	"	"	"	"	"	"	"			"	13	"	"	"
		17	0.8 V	-7.5 V	-7.5 V	-7.5 V	15 V	-15 V	"	"	7.5 V	7.5 V	7.5 V	7.5 V	0.8 V	0.8 V	"	10	"	"	"
		18	0.8 V				"	"	"	"	"	"	"	"			"	11	"	"	"
		19					"	"	"	"	"	"	"	"			"	12	"	"	"
		20					"	"	"	"	"	"	"	"			"	13	"	"	"
I	D(OH) S(OH)	21	2.0 V	-7.5 V	-7.5 V	-7.5 V	"	"	"	"	-7.5 V	-7.5 V	-7.5 V	0.8 V	0.8 V	K10	2	-2	2	"	
		22	2.0 V				"	"	"	"	"	"	"	"			K11	3	-2	2	"
		23					"	"	"	"	"	"	"	"			K12	4	-2	2	"
		24					"	"	"	"	"	"	"	"			K13	5	-2	2	"
I	I _L	25	GND				"	"	"	"	"	"	"			None	1	-250	-0.1	μA	
		26					"	"	"	"	"	"	"			"	14	-250	-0.1	μA	

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1 ₁														Relays energized		Measured pin no.		Limits		Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Min	Max					
1 T _A = +25°C	I _H	27	IN ₁ 5.0 V	S ₁	S ₃	S ₂	S ₄	+V _{CC} 15 V	-V _{CC} -15 V	V _R GND	V _L 5.0 V	D ₁	D ₃	D ₂	D ₄	IN ₂	None	1	-1	10	μA		
	I _H	28	GND														5.0 V	"	14	-1	10	μA	
	CC	29	5.0 V														GND	"	6			3	mA
	CC	30	GND														5.0 V	"	6			0.1	
	CC	31	5.0 V														GND	"	7	-5.5			
	CC	32	5.0 V														5.0 V	"	7	-4			
+I	L	33	GND													GND	"	9				4.5	
	L	34	5.0 V													5.0 V	"	9				4.5	
	R	35	GND													GND	"	8	-2.2				
	R	36	5.0 V													5.0 V	"	8	-2.2				
2 T _A = +125°C	R _{DS}	37	2.0 V	-10 mA	-10 mA	-10 mA						-7.5 V	-7.5 V	-7.5 V		2.0 V	"	2	-8.1			V 2/	
		38	2.0 V													2.0 V	"	3	-8.1			V 2/	
		39														2.0 V	"	4	-8.1			V 2/	
		40														2.0 V	"	5	-8.1			V 2/	
I	S(OFF)	41	0.8 V	10 V	10 V	10 V	-10 mA	10 V	-20 V			-10 V	-10 V	-10 V			"	2	-100			100	nA
		42	0.8 V														0.8 V	"	3				"
		43															0.8 V	"	4				"
		44															0.8 V	"	5				"
		45	0.8 V	7.5 V	7.5 V	7.5 V	10 V	15 V	-15 V			-7.5 V	-7.5 V	-7.5 V			0.8 V	"	2				"
		46	0.8 V														0.8 V	"	3				"
		47															0.8 V	"	4				"
		48															0.8 V	"	5				"
I	D(OFF)	49	0.8 V	-10 V	-10 V	-10 V	10 V	10 V	-20 V			10 V	10 V	10 V			0.8 V	"	10				"
		50	0.8 V														0.8 V	"	11				"
		51															0.8 V	"	12				"
		52															0.8 V	"	13				"
		53	0.8 V	-7.5 V	-7.5 V	-7.5 V	15 V	15 V	-15 V			7.5 V	7.5 V	7.5 V			0.8 V	"	10				"
		54	0.8 V														0.8 V	"	11				"
	55															0.8 V	"	12				"	
	56															0.8 V	"	13				"	

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Min	Max	
2 T _A = +125°C	I _{b(ON)} +	57	2.0 V	-7.5 V	-7.5 V	-7.5 V	-15 V	-V _{CC}	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	-200	200	nA	
	I _{s(ON)}	58	2.0 V		-7.5 V	-7.5 V										-200	200	nA	
		59														-200	200	nA	
		60				-7.5 V										-200	200	nA	
		61		GND												-250	-0.1	µA	
		62														-250	-0.1	µA	
I	I _H	63	5.0 V												-2	20	µA		
	I _H	64													-2	20	µA		
	I _{CC}	65	GND														3	mA	
	I _{CC}	66	5.0 V														0.1	mA	
	I _{CC}	67	GND													-5.5		mA	
	I _{CC}	68	5.0 V													-4		mA	
	I _L	69	GND															4.5	mA
	I _L	70	5.0 V															4.5	mA
	I _R	71	GND													-2.2		mA	
	I _R	72	5.0 V													-2.2		mA	
3 T _A = -55°C	R _{DS}	73	2.0 V	-10 mA	-10 mA	-10 mA	15 V	-15 V	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	-7.8			V 2/	
		74	2.0 V												-7.8			V 2/	
		75				-10 mA									-7.8			V 2/	
		76													-7.8			V 2/	
I	s(OFF)	77	0.8 V	10 V	10 V	10 V	10 V	-20 V			-10 V	-10 V	-10 V	-10 V	-100	100		nA	
		78	0.8 V																µA
		79				10 V													µA
		80																	µA
		81	0.8 V	7.5 V	7.5 V	7.5 V	15 V	-15 V			-7.5 V	-7.5 V	-7.5 V	-7.5 V					µA
		82	0.8 V																
	83				7.5 V														µA
	84									7.5 V	7.5 V	7.5 V	7.5 V	7.5 V					µA

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max					
3 T _A = -55°C	I _b (OFF)	85	IN ₁ 0.8 V	S ₁ -10 V	S ₃ -10 V	S ₂ -10 V	S ₄ -10 V	+V _{CC} 10 V	-V _{CC} -20 V	V _R GND	V _L 5.0 V	D ₁ 10 V	D ₃ 10 V	D ₂ 10 V	D ₄ 10 V	IN ₂ 0.8 V	None	10	-100	100	nA				
		86	0.8 V													0.8 V		11	"	"	"	"			
		87														0.8 V		12	"	"	"	"			
		88														0.8 V		13	"	"	"	"			
		89	0.8 V	-7.5 V	-7.5 V	-7.5 V	-10 V	15 V	-15 V	"	"	7.5 V	7.5 V	7.5 V	7.5 V			10	"	"	"	"			
		90	0.8 V															11	"	"	"	"			
		91																12	"	"	"	"			
		92																13	"	"	"	"			
		4 T _A = +25°C	D _(ON) + S _(ON) " " " " " "	93	2.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V					-7.5 V	-7.5 V	-7.5 V			K10	2	-200	200	"		
				94	2.0 V														K11	3	"	"	"	"	
				95															K12	4	"	"	"	"	
				96															K13	5	"	"	"	"	
I	IL			97	GND														None	1	-250	-0.1	μA		
				98																14	-250	-0.1	μA		
				IH	99	5.0 V															1	-1	10	μA	
					100																14	-1	10	μA	
				I	CC	101	GND															6		5	mA
						102	5.0 V															6		1.7	
				I	-I _{CC}	103	GND															7			
						104	5.0 V															7	-8.8		
		I	CC	105	GND															9					
				106	5.0 V															9	-6.4				
		+I	L	107	GND															8					
				108	5.0 V															8	-2				
I	V _{CTE}	109	IN ₃ /	GND	GND	GND	GND										K2	10			20				
		110	IN ₃ /														K4	11				20			
		111	IN ₃ /														K5	12				20			
		112															K3	13				20			

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1 ^t														Limits		Unit				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured pin no.	Relays energized		Min	Max		
7 T _A = +25°C	V _{CT} Z/	113	IN ₁	S ₁	S ₃	S ₂	S ₄	+V _{CC}	-V _{CC}	V _R	V _L	D ₁	D ₃	D ₂	D ₄	IN ₂	K1	12 or 13	1.0	mV _{pp}			
	V _{CT} Z/	114	2.0 V	S ₁	S ₃	S ₂	S ₄	15 V	-15 V	GND	5.0 V	D ₁	D ₃	D ₂	D ₄	2.0 V	K1	10 or 11	1.0	mV _{pp}			
	iso	115	0.8 V	IN 4/	IN 4/	IN 4/	IN 4/	15 V	-15 V	GND	5.0 V							K1	10	3.16	dB		
		116	0.8 V	IN 4/	IN 4/	IN 4/	IN 4/	"	"	"	"	"						K1	11	3.16	"		
9 T _A = +25°C	t _{ON}	117															K1	12	3.16	"			
		118															K1	13	3.16	"			
	OFF	119	IN	IN	IN	IN	"	15 V	-15 V	GND	5.0 V	OUT	OUT	OUT				K6	2 to 10	150	ns		
		120	IN	IN	IN	IN	"	"	"	"	"	"	OUT	OUT	OUT				K8	3 to 11	150	"	
		121	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT	OUT				K9	4 to 12	150	"
		122	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT	OUT				K7	5 to 13	150	"
t _{ON}	123	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K6	2 to 10	130	ns		
	124	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K8	3 to 11	130	"		
	125	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K9	4 to 12	130	"		
	126	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K7	5 to 13	130	"		
10 T _A = +125°C	t _{ON}	127	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K6	2 to 10	300	"		
		128	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K8	3 to 11	300	"		
	OFF	129	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K9	4 to 12	300	"	
		130	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K7	5 to 13	300	"	
11 T _A = -55°C	t _{ON}	131	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K6	2 to 10	200	"		
		132	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K8	3 to 11	200	"		
	OFF	133	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K9	4 to 12	200	"	
		134	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K7	5 to 13	200	"	
14 T _A = -55°C	t _{ON}	135	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K6	2 to 10	150	"		
		136	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K8	3 to 11	150	"		
	OFF	137	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K9	4 to 12	150	"	
		138	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K7	5 to 13	150	"	
		139	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K6	2 to 10	130	"		
		140	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K8	3 to 11	130	"		
141	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K9	4 to 12	130	"			
142	IN	IN	IN	IN	IN	IN	IN	IN	IN	IN	OUT	OUT	OUT				K7	5 to 13	130	"			

^t See footnotes at end of table.

TABLE III. Group A inspection for device type 04

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂			Min	Max	
1 T _A = +25°C	R _{DS}	1	2.0 V	-10 mA	-10 mA	-10 mA	15 V	-15 V	GND	5.0 V	-10 V	-10 V	-10 V	-10 V	2.0 V	-10.75		2	None	V $\frac{\Delta}{\Delta}$	
		2	2.0 V				"	"	"	"	"	-10 V	-10 V	-10 V	2.0 V	-10.75		3	"	V $\frac{\Delta}{\Delta}$	
		3					"	"	"	"	"				2.0 V	-10.75		4	"	V $\frac{\Delta}{\Delta}$	
		4													2.0 V	-10.75		5	"	V $\frac{\Delta}{\Delta}$	
I	S(OFF)	5	0.8 V	10 V	10 V	10 V	10 V	-20 V	"	"	-10 V	-10 V	-10 V	-10 V		-1	1	"	nA		
		6	0.8 V			10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	3	"	"	
		7				10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	4	"	"	
		8	0.8 V	10 V	10 V	10 V	15 V	-15 V	"	"	-10 V	-10 V	-10 V	-10 V	0.8 V	"	"	5	"	"	
		9	0.8 V			10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	2	"	"	
		10	0.8 V			10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	3	"	"	
		11	0.8 V			10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	4	"	"	
		12				10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	5	"	"	
I	D(OFF)	13	0.8 V	-10 V	-10 V	-10 V	10 V	-20 V	"	"	10 V	10 V	10 V	10 V	0.8 V	"	"	10	"	"	
		14	0.8 V			-10 V	"	"	"	"	"	10 V	10 V	10 V	0.8 V	"	"	11	"	"	
		15				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	12	"	"	
		16				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	13	"	"	
		17	0.8 V	-10 V	-10 V	-10 V	15 V	-15 V	"	"	10 V	10 V	10 V	10 V	0.8 V	"	"	10	"	"	
		18	0.8 V			-10 V	"	"	"	"	"	10 V	10 V	10 V	0.8 V	"	"	11	"	"	
		19				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	12	"	"	
		20				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	0.8 V	"	"	13	"	"	
I	D(OH) S(OH)	21	2.0 V	-10 V	-10 V	-10 V	"	"	"	"	-10 V	-10 V	-10 V	-10 V	2.0 V	-2	2	2	K10	"	
		22	2.0 V			-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	2.0 V	-2	2	3	K11	"	
		23				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	2.0 V	-2	2	4	K12	"	
		24				-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	2.0 V	-2	2	5	K13	"	
I	IL IH	25	GND				"	"	"	"				GND	-250	-0.1	1	None	μ A		
		26					"	"	"	"					-250	-0.1	14	"	μ A		
		27	5.0 V				"	"	"	"					-1	-1	1	"	μ A		
		28					"	"	"	"					-1	-1	14	"	μ A		

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max		
1 T _A = +25°C	+I _{CC}	29	IN ₁ GND	S ₁	S ₃	S ₂	S ₄	+V _{CC}	-V _{CC}	V _R	V _L	D ₁	D ₃	D ₂	D ₄	IN ₂	None	6	3	mA		
	+I _{CC}	30	GND					15 V	-15 V	GND	5.0 V					GND		6	0.1			
	CC	31	GND													GND		7	-5.5			
	CC	32	5.0 V													5.0 V		7	-4			
	L	33	GND													GND		9	4.5			
-I 2	L	34	5.0 V												5.0 V		9	4.5				
	R	35	GND												GND		8	-2.2				
	R	36	5.0 V												5.0 V		8	-2.2				
	R _{DS}	37	2.0 V	-10 mA	-10 mA	-10 mA	-10 mA					-10 V	-10 V	-10 V	-10 V		2	-11.50		V 2/		
	R _{DS}	38	2.0 V														3	-11.50		V 2/		
I T _A = +125°C	S(OFF)	39																4	-11.50		V 2/	
	S(OFF)	40																5	-11.50		V 2/	
	S(OFF)	41	0.8 V	10 V	10 V	10 V	10 V	10 V	-20 V			-10 V	-10 V	-10 V	-10 V		2	-100	100	nA		
	S(OFF)	42	0.8 V														3					
	S(OFF)	43															4					
	S(OFF)	44															5					
	S(OFF)	45	0.8 V	10 V	10 V	10 V	10 V	15 V	-15 V			-10 V	-10 V	-10 V	-10 V		2					
	S(OFF)	46	0.8 V														3					
	S(OFF)	47															4					
	S(OFF)	48															5					
I D(OFF)	D(OFF)	49	0.8 V	-10 V	-10 V	-10 V	10 V	10 V	-20 V			10 V	10 V	10 V	10 V		10					
	D(OFF)	50	0.8 V														11					
	D(OFF)	51															12					
	D(OFF)	52															13					
	D(OFF)	53	0.8 V	-10 V	-10 V	-10 V	-10 V	15 V	-15 V			10 V	10 V	10 V	10 V		10					
I	D(OFF)	54	0.8 V														11					
	D(OFF)	55	0.8 V														12					
	D(OFF)	56															13					

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit											
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂			Min	Max												
2 T _A = +125°C	I _{D(ON)+}	57	2.0 V	-10 V	-10 V	-10 V	-10 V	GND	5.0 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	2	K10	-200	200	nA		
	I _{S(ON)}	58	2.0 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	3	K11	-200	200	nA		
		59																								4	K12	-200	200	nA		
		60																								5	K13	-200	200	nA		
		IL	61	GND																						1	None	-250	-0.1	µA		
		IL	62																							14	"	-250	-0.1	µA		
		I _H	63	5.0 V																						1	"	-2	20	µA		
		I _H	64																							14	"	-2	20	µA		
		I _{CC}	65	GND																						6	"				3	mA
		I _{CC}	66	5.0 V																						6	"				0.1	mA
	I _{CC}	67	GND																						7	"	-5.5			mA		
	I _{CC}	68	5.0 V																						7	"	-4			mA		
	I _L	69	GND																						9	"				4.5	mA	
	I _L	70	5.0 V																						9	"				4.5	mA	
	I _R	71	GND																						8	"	-2.2			mA		
	I _R	72	5.0 V																						8	"	-2.2			mA		
	R _{DS}	73	2.0 V	-10 mA	-10 mA	-10 mA	-10 mA	GND	5.0 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	2	"	-10.75			V 2/		
		74	2.0 V																						3	"	-10.75			V 2/		
		75																							4	"	-10.75			V 2/		
		76																							5	"	-10.75			V 2/		
	S(OFF)	77	0.8 V	10 V	10 V	10 V	10 V	-20 V		-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	2	"	-100	100		nA		
		78	0.8 V																						3	"					"	
		79																							4	"						"
		80																							5	"						"
		81	0.8 V	10 V	10 V	10 V	10 V	-15 V		-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	-10 V	2	"					"	
		82	0.8 V																						3	"						"
		83																							4	"						"
		84																							5	"						"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit	
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂			Min	Max		
3 T _A = -55°C	I _{b(OFF)}	85	0.8 V	-10 V	-10 V	-10 V	-10 V	GND	5.0 V	10 V	10 V	10 V	10 V	10 V	0.8 V	10	None	-100	100	nA		
		86	0.8 V												0.8 V	11	"	"	"	"	"	
		87													10 V	12	"	"	"	"	"	"
		88													10 V	13	"	"	"	"	"	"
		89	0.8 V	-10 V	-10 V	-10 V	-10 V	-15 V			10 V	10 V	10 V	10 V		10	"	"	"	"	"	"
		90	0.8 V													11	"	"	"	"	"	"
		91												0.8 V	12	"	"	"	"	"	"	
		92												0.8 V	13	"	"	"	"	"	"	
	D(OH)+	93	2.0 V	-10 V	-10 V	-10 V				-10 V	-10 V	-10 V			2	K10	-200	200	"	"		
	S(OH)	94	2.0 V												3	K11	"	"	"	"		
	"	95													4	K12	"	"	"	"		
	"	96													5	K13	"	"	"	"		
I	IL	97	GND												1	None	-250	-0.1	μA	"		
I	IL	98													14	"	-250	-0.1	μA	"		
	IH	99													1	"	-1	10	μA	"		
	IH	100													14	"	-1	10	μA	"		
I	CC	101	GND												6	"		5	mA	"		
I	CC	102	5.0 V												6	"		1.7	mA	"		
I	-I _{CC}	103	GND												7	"	-8.8		mA	"		
I	CC	104	5.0 V												7	"	-6.4		mA	"		
I +I	L	105	GND												9	"		7	mA	"		
I +I	L	106	5.0 V												9	"		7	mA	"		
	R	107	GND												8	"	-2		mA	"		
	R	108	5.0 V												8	"	-2		mA	"		

See footnotes at end of table.

TABLE III. Group A inspection for device type 0Z.

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _B	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂	Min	Max	
1 T _A = 25°C	R _{DS}	1	2.0 V	-10 mA	-10 mA	-10 mA	15 V	-15 V	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	2.0 V		-7.8		V 2/	
	"	2	0.8 V				"	"	"	"	"	"	2.0 V		-7.8		V 2/		
	"	3					"	"	"	"	"	"	0.8 V		-7.8		V 2/		
	"	4		-10 mA			"	"	"	"	"	"	0.8 V		-7.8		V 2/		
I	S(OFF)	5	0.8 V	10 V	10 V	10 V	10 V	-20 V	"	-10 V	-10 V	-10 V			-1	1	nA		
	"	6	2.0 V				"	"	"	"	"	"	0.8 V		"	"	"		
	"	7		10 V	10 V	10 V	"	"	"	"	"	-10 V			"	"	"		
	"	8	0.8 V	7.5 V	7.5 V	7.5 V	15 V	-15 V	"	-7.5 V	-7.5 V	-7.5 V			"	"	"		
	"	9	2.0 V				"	"	"	"	"	"	0.8 V		"	"	"		
	"	10					"	"	"	"	"	"	2.0 V		"	"	"		
	"	11					"	"	"	"	"	"	0.8 V		"	"	"		
	"	12					"	"	"	"	"	"	2.0 V		"	"	"		
	"	13	0.8 V	-10 V	-10 V	-10 V	10 V	-20 V	"	10 V	10 V	10 V			"	"	"		
	"	14	2.0 V				"	"	"	"	"	"	0.8 V		"	"	"		
	"	15					"	"	"	"	"	"	2.0 V		"	"	"		
	I	"	16	0.8 V	-7.5 V	-7.5 V	-7.5 V	15 V	-15 V	"	7.5 V	7.5 V	10 V			"	"	"	
"		17	2.0 V				"	"	"	"	"	"	10 V		"	"	"		
"		18					"	"	"	"	"	"	7.5 V		"	"	"		
"		19					"	"	"	"	"	"	0.8 V		"	"	"		
I	"	20					"	"	"	"	"	"	2.0 V		"	"	"		
	"	21	2.0 V	-7.5 V	-7.5 V	-7.5 V	"	"	"	-7.5 V	-7.5 V	7.5 V			"	"	"		
	"	22	0.8 V				"	"	"	"	"	"	10 V		"	"	"		
	"	23					"	"	"	"	"	"	10 V		"	"	"		
	"	24					"	"	"	"	"	"	7.5 V		"	"	"		
I	IL	25	GND				"	"	"	"	"	"	2.0 V		-2	2	"		
	IL	26					"	"	"	"	"	"	0.8 V		-2	2	"		
I							"	"	"	"	"	"	GND		-250	-0.1	μA		
							"	"	"	"	"	"			-250	-0.1	μA		

See footnotes at end of table.

TABLE III. Group A inspection for device type 0Z –Continued.

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Measured pin no.	Limits		Unit			
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂		Min	Max				
1 T _A = +25°C	I _H	27	5.0 V						15 V	-15 V	GND	5.0 V						1	None	-1	10	μA	
	I _H	28																14		-1	10	μA	
	CC	29	GND															6			1.5	mA	
	CC	30	5.0 V															6			1.5	mA	
	CC	31	GND															7		-5			
	CC	32	5.0 V															7		-5			
+I	L	33	GND															9			4.5		
	L	34	5.0 V															9			4.5		
	R	35	GND															8		-2.2			
	R	36	5.0 V															8		-2.2			
2 T _A = 125°C	R _{DS}	37	2.0 V	-10 mA	-10 mA													2		-8.1			V 2/
	"	38	0.8 V			-10 mA												3		-8.1			V 2/
	"	39																4		-8.1			V 2/
	"	40																5		-8.1			V 2/
I	S(OFF)	41	0.8 V	10 V	10 V				10 V	-20 V								2		-100	100	nA	
	"	42	2.0 V															3					"
	"	43		10 V	10 V													4					"
	"	44							10 V									5					"
	"	45	0.8 V	7.5 V	7.5 V					-15 V								2					"
	"	46	2.0 V															3					"
	"	47																4					"
	"	48							7.5 V									5					"
I	D(OFF)	49	0.8 V	-10 V	-10 V				10 V	-20 V								10					"
	"	50	2.0 V															11					"
	"	51																12					"
	"	52		-7.5 V	-7.5 V				-10 V									13					"
	"	53	0.8 V						15 V	-15 V								10					"
	"	54	2.0 V															11					"
I	"	55																12					"
	"	56							-7.5 V									13					"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _B	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂	Min	Max	
2 T _A = 125°C	I _{b(ON)} +	57	2.0 V	-7.5 V	-7.5 V	-7.5 V	15 V	-15 V	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	2.0 V	-200	200	nA	
	I _{S(ON)}	58	0.8 V												0.8 V			"	
	"	59																"	
	"	60																"	
	IL	61	GND												GND	-250	-0.1	μA	
	IL	62														-250	-0.1	μA	
	IH	63	5.0 V													-2	20	μA	
	IH	64													5.0 V	-2	20	μA	
	OC	65	GND												GND			1.5	mA
	OC	66	5.0 V												5.0 V			1.5	mA
	CC	67	GND												GND			-5	"
	CC	68	5.0 V												5.0 V			-5	"
	L	69	GND												GND				"
	L	70	5.0 V												5.0 V			4.5	"
R	71	GND												GND				"	
R	72	5.0 V												5.0 V			4.5	"	
3 T _A = -55°C	R _{DS}	73	2.0 V	-10 mA	-10 mA	-10 mA					-7.5 V	-7.5 V	-7.5 V					V ₂ /	
	"	74	0.8 V												2.0 V			V ₂ /	
	"	75													0.8 V			V ₂ /	
	"	76																V ₂ /	
	S(OFF)	77	0.8 V	10 V	10 V	10 V	10 V	-20 V			-10 V	-10 V	-10 V	-7.5 V	0.8 V	-100	100	nA	
	"	78	2.0 V																"
I	"	79													0.8 V			"	
	"	80													2.0 V			"	
	"	81	0.8 V	7.5 V	7.5 V	7.5 V	15 V	-15 V			-7.5 V	-7.5 V	-7.5 V	-7.5 V				"	
	"	82	2.0 V															"	
	"	83																"	
	"	84																"	

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit
			1 IN ₁	2 S ₁	3 S ₃	4 S ₂	5 S ₄	6 +V _{CC}	7 -V _{CC}	8 V _R	9 V _L	10 D ₁	11 D ₃	12 D ₂	13 D ₄	14 IN ₂	Min	Max	
3 T _A = -55°C	I _{b(OFF)}	85	0.8 V	-10 V	-10 V	-10 V	10 V	GND	5.0 V	10 V	10 V	10 V	10 V	10 V	0.8 V	100	-100	nA	
	"	86	2.0 V					"	"	"	"	10 V			2.0 V	"	"	"	
	"	87						"	"	"						"	"	"	
	"	88						"	"							"	"	"	
	"	89	0.8 V	-7.5 V	-7.5 V	-7.5 V	-15 V	"	"	7.5 V	7.5 V	7.5 V	7.5 V	7.5 V	0.8 V	"	"	"	
	"	90	2.0 V				"	"	"	"						"	"	"	
	"	91					"	"	"	"						"	"	"	
	"	92					"	"	"	"						"	"	"	
	I I I I I I +I +I -I -I	D(OH) S(OH)	93 94	2.0 V 0.8 V	-7.5 V	-7.5 V	-7.5 V	15 V	GND	5.0 V	-7.5 V	-7.5 V	-7.5 V	-7.5 V	2.0 V	200	-200	"	
		"	95					"	"	"					0.8 V	"	"	"	
		"	96													"	"	"	
		IL	97	GND					"	"	"						-250	-0.1	μA
IL		98						"	"	"						-250	-0.1	μA	
IH		99	5.0 V					"	"	"						-1	10	μA	
IH		100						"	"	"						-1	10	μA	
CC		101	GND					"	"	"								2.5	mA
CC		102	5.0 V					"	"	"									2.5
CC		103	GND					"	"	"									
CC		104	5.0 V					"	"	"									
L L R R		L	105	GND				"	"	"									
	L	106	5.0 V				"	"	"										
	R	107	GND				"	"	"										
	R	108	5.0 V				"	"	"										
4 T _A = +25°C	V _{CTE}	109	IN 3/ IN 3/	GND	GND	GND												20	mV _{r,pp}
	"	110																20	"
	"	111																20	"
	"	112																20	"

See footnotes at end of table.

TABLE III. Group A inspection for device type 0Z -Continued.

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Min	Max		
7 T _A =+25°C	V _{CT} Z/	113	IN ₁ 2.0 V	IN 4/	IN 4/	IN 4/	IN 4/	5.0 V	GND	5.0 V	D ₁							1.0	mV _{r-p-p}	
		114	0.8 V											2.0 V				"	"	
		115																	"	"
		116																	"	"
V	ISO	117	0.8 V	IN 4/	IN 4/	IN 4/	15 V	-15 V	GND	5.0 V									3.16	mV _{r-p-p}
		118	2.0 V											0.8 V					3.16	"
		119																		"
		120																		3.16
9 T _A =+25°C	t _{ON}	121	IN	IN	IN	IN	15 V	-15 V	GND	5.0 V	OUT	OUT	OUT						150	ns
		122	IN										OUT							"
		123												OUT						"
		124													OUT					"
10 T _A =+125°C	OFF	125	IN	IN	IN	IN					OUT								130	"
		126	IN										OUT							"
		127	IN											OUT						"
		128	IN												OUT					"
11 T _A =-55°C	t _{ON}	129	IN	IN	IN	IN	15 V	-15 V	GND	5.0 V	OUT	OUT	OUT						300	"
		130	IN											OUT					"	
		131													OUT				"	
		132														OUT				"
14 T _A =-55°C	OFF	133	IN	IN	IN	IN					OUT								200	"
		134	IN												OUT				"	
		135	IN													OUT			"	
		136	IN														OUT		"	
12 T _A =25°C	t _{ON}	137	IN	IN	IN	IN	15 V	-15 V	GND	5.0 V	OUT	OUT	OUT						150	"
		138	IN												OUT				"	
		139	IN													OUT			"	
		140	IN														OUT		"	
12 T _A =25°C	OFF	141	IN	IN	IN	IN					OUT								130	"
		142	IN													OUT			"	
		143	IN														OUT		"	
		144	IN															OUT	"	
12 T _A =25°C	t _{D1} t _{D2} D1 D2	145	IN	IN	IN	IN													5	"
		146	IN	IN	IN	IN													5	"
		147																	5	"
		148																	5	"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Limits		Unit		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Min	Max			
1 T _A = 25°C	I _{IH}	27	IN ₁ 5.0 V	S ₁	S ₃	S ₂	S ₄	+V _{CC} 15 V	-V _{CC} -15 V	V _R GND	V _L 5.0 V	D ₁	D ₃	D ₂	D ₄	IN ₂ 5.0 V	1	-1	10	μA	
	I _{IH}	28	GND													GND	14	-1	10	μA	
	CC	29	5.0 V													5.0 V	6			1.5	mA
	CC	30	5.0 V													5.0 V	6			1.5	mA
	CC	31	GND													GND	7				
	CC	32	5.0 V													5.0 V	7	-5	-5		
	L	33	GND													GND	9				4.5
	L	34	5.0 V													5.0 V	9				4.5
2 T _A = 125°C	R	35	GND													GND	8	-2.2	-2.2		
	R	36	5.0 V													5.0 V	8	-2.2	-2.2		
	R _{DS}	37	2.0 V	-10 mA	-10 mA	-10 mA	-10 mA		-15 V	GND	5.0 V	-10 V	-10 V	-10 V	-10 V	2.0 V	2	-11.50			V $\frac{2}{\mu}$
	"	38	0.8 V													0.8 V	3	"	"		
	"	39														0.8 V	4	"	"		
	"	40														0.8 V	5	"	"		
	S(OFF)	41	0.8 V	10 V	10 V	10 V	10 V	-10 mA	-20 V			-10 V	-10 V	-10 V	-10 V	10 V	2	-100	100		nA
	"	42	2.0 V														0.8 V	3	"	"	
I	"	43														2.0 V	4	"	"		
	"	44														10 V	5	"	"		
	"	45	0.8 V	10 V	10 V	10 V	10 V	15 V	-15 V			-10 V	-10 V	-10 V	-10 V	0.8 V	2	"	"		
	"	46	2.0 V													2.0 V	3	"	"		
	"	47														0.8 V	4	"	"		
	"	48														2.0 V	5	"	"		
	D(OFF)	49	0.8 V	-10 V	-10 V	-10 V	-10 V	10 V	-20 V			10 V	10 V	10 V	10 V	0.8 V	10	"	"		
	"	50	2.0 V													0.8 V	11	"	"		
I	"	51														2.0 V	12	"	"		
	"	52														2.0 V	13	"	"		
	"	53	0.8 V	-10 V	-10 V	-10 V	-10 V	15 V	-15 V			10 V	10 V	10 V	10 V	0.8 V	10	"	"		

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1 ₁														Limits		Unit		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured pin no.	Min		Max	
2 T _A = 125°C	I _B (OFF)	54	IN ₁ 2.0 V	S ₁	-10 V	S ₂ -10 V	S ₄ -10 V	+V _{CC} 15 V	-V _{CC} -15 V	V _R GND	V _L 5.0 V	D ₁	D ₂ 10 V	D ₃ 10 V	D ₄ 10 V	IN ₂ 0.8 V	11	-100	100	nA	
	I _B (OFF)	55														2.0 V	12	-100	100	"	
	D ₃ (OFF)	56														2.0 V	13	-100	100	"	
	D ₁ (ON)+	57		-10 V														2	-200	200	"
	S ₁ (ON)	58			-10 V													3	-200	200	"
	"	59				-10 V												4	-200	200	"
3 T _A = 45°C	"	60															5	-200	200	"	
	I _L	61	GND														1	-250	-0.1	μA	
	I _L	62															14	-250	-0.1	μA	
	I _H	63	5.0 V														1	-2	20	μA	
	I _H	64															14	-2	20	μA	
	CC	65	GND														6		1.5	mA	
	CC	66	5.0 V														6		1.5	mA	
	CC	67	GND														7	-5		"	
	CC	68	5.0 V														7	-5		"	
	L	69	GND														9		4.5	"	
	L	70	5.0 V														9		4.5	"	
	R	71	GND														8	-2.2		"	
	R	72	5.0 V														8	-2.2		"	
R _{DS}	73	2.0 V	-10 mA													2	-10.75		V 2/		
"	74	0.8 V		-10 mA												3	"		"		
"	75				-10 mA											4	"		"		
"	76					-10 mA										5	"		"		
S ₁ (OFF)	77	0.8 V	10 V	10 V				10 V	-20 V							2	-100	100	nA		
"	78	2.0 V			10 V											3	"	"	"		
"	79															4	"	"	"		

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1														Relays energized	Measured pin no.	Limits		Unit		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max			
3 T _A = 55°C	I _S (OFF)	80	IN ₁	S ₁	S ₃	S ₂	S ₄	+V _{CC}	-V _{CC}	V _R	V _L	D ₁	D ₃	D ₂	D ₄	IN ₂	None	5	-100	100	nA		
	"	81	0.8 V	10 V	10 V	10 V	10 V	15 V	-20 V	GND	5.0 V	-10 V	-10 V	-10 V	-10 V	2.0 V	"	2	"	"	"	"	
	"	82	2.0 V					"	"	"	"	"						"	3	"	"	"	"
	"	83						"	"	"	"	"						"	4	"	"	"	"
I	"	84																"	5	"	"	"	"
	D(OFF)	85	0.8 V	-10 V	-10 V	-10 V	10 V	-20 V	"	"	"	10 V	10 V	10 V	10 V	0.8 V	"	10	"	"	"	"	"
	"	86	2.0 V					"	"	"	"	"	"	10 V	10 V	0.8 V	"	11	"	"	"	"	"
	"	87						"	"	"	"	"	"	"	10 V	2.0 V	"	12	"	"	"	"	"
	"	88																"	13	"	"	"	"
	"	89	0.8 V	-10 V	-10 V	-10 V	15 V	-15 V	"	"	"	10 V	10 V	10 V	10 V	0.8 V	"	10	"	"	"	"	"
	"	90	2.0 V					"	"	"	"	"	"	"	"	"	"	"	11	"	"	"	"
	"	91						"	"	"	"	"	"	"	"	"	"	"	12	"	"	"	"
I	"	92																"	13	"	"	"	"
	D(OFF)+	93	2.0 V	-10 V	-10 V	-10 V	"	"	"	"	"	-10 V	-10 V	-10 V	-10 V	2.0 V	K10	2	-200	200	"	"	
	S(OFF)	94	0.8 V					"	"	"	"	"	"	"	"	0.8 V	K11	3	"	"	"	"	"
	"	95						"	"	"	"	"	"	"	"	"	"	K12	4	"	"	"	"
	"	96																K13	5	"	"	"	"
	"	97																None	1	-250	-0.1	-0.1	μA
I	IL	98	GND					"	"	"	"	"	"	"	"	"	"	"	14	-250	-0.1	-0.1	μA
	IL	99	5.0 V					"	"	"	"	"	"	"	"	"	"	"	1	-1	10	10	μA
	IH	100						"	"	"	"	"	"	"	"	"	"	"	14	-1	10	10	μA
	CC	101	GND					"	"	"	"	"	"	"	"	"	"	"	6			2.5	mA
	CC	102	5.0 V					"	"	"	"	"	"	"	"	"	"	"	6			2.5	mA
	CC	103	GND					"	"	"	"	"	"	"	"	"	"	"	7	-8	-8		"
	CC	104	5.0 V					"	"	"	"	"	"	"	"	"	"	"	7	-8	-8		"
	L	105	GND					"	"	"	"	"	"	"	"	"	"	"	9			7	"
	L	106	5.0 V					"	"	"	"	"	"	"	"	"	"	"	9			7	"
	R	107	GND					"	"	"	"	"	"	"	"	"	"	"	8	-2	-2		"
R	108	5.0 V					"	"	"	"	"	"	"	"	"	"	"	8	-2	-2		"	

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1														Limits		Unit	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	Measured pin no.	Min		Max
4 T _A = +25°C	V _{CTE}	109	IN 3/ IN 3/	GND	GND	S ₄	+V _{CC} 15V	-V _{CC} -15V	V _R GND	V _L 5.0V	D ₁	D ₂	D ₃	D ₄	IN ₂	K2	10	20	mV _{pp}	
	"	110	IN 3/ IN 3/	GND	GND	"	"	"	"	"	"	"	"	"	IN 3/ IN 3/	K4	11	20	"	
	"	111	IN 3/ IN 3/	GND	GND	"	"	"	"	"	"	"	"	"	"	"	K5	12	20	"
	"	112	IN 3/ IN 3/	GND	GND	"	"	"	"	"	"	"	"	"	"	"	K1	13	20	"
7 T _A = +25°C	V _{CT Z}	113	2.0V	IN 4/	IN 4/	"	"	"	"	"	"	"	"	"	"	K3	11	1.0	"	"
	"	114	0.8V	IN 4/	IN 4/	"	"	"	"	"	"	"	"	"	2.0V	K1	10	"	"	"
	"	115	0.8V	IN 4/	IN 4/	IN 4/ dB _{ECT} = -20 log (V _{OUT} /V _{IN})	"	"	"	"	"	"	"	"	0.8V	K1	13	"	"	"
V	ISO	117	0.8V	IN 4/	IN 4/	IN 4/ dB _{ISO} = -20 log (V _{OUT} /V _{IN})	15V	-15V	GND	5.0V	"	"	"	"	0.8V	K1	10	0	3.16	mV _{pp}
	"	118	2.0V	IN 4/	IN 4/	IN 4/	"	"	"	"	"	"	"	"	2.0V	K1	11	0	3.16	"
	"	120	2.0V	IN 4/	IN 4/	IN 4/	"	"	"	"	"	"	"	"	2.0V	K1	12	0	3.16	"
	"	120	2.0V	IN 4/	IN 4/	IN 4/	"	"	"	"	"	"	"	"	2.0V	K1	13	0	3.16	"
9 T _A = +25°C	t _{ON}	121	IN	IN	IN	IN	15V	-15V	GND	5.0V	OUT	OUT	OUT	OUT	"	K6	2 to 10	250	"	ns
	"	122	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K8	3 to 11	"	"	"
	"	123	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K9	4 to 12	"	"	"
	"	124	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K7	5 to 13	"	"	"
	"	125	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K6	2 to 10	130	"	"
	"	126	IN	IN	IN	IN	"	"	"	"	"	"	OUT	OUT	"	K8	3 to 11	"	"	"
	"	127	IN	IN	IN	IN	"	"	"	"	"	"	OUT	OUT	"	K9	4 to 12	"	"	"
	"	128	IN	IN	IN	IN	"	"	"	"	"	"	OUT	OUT	"	K7	5 to 13	"	"	"
1b T _A = +125°C	t _{ON}	129	IN	IN	IN	IN	"	"	"	"	OUT	OUT	OUT	OUT	"	K6	2 to 10	350	"	"
	"	130	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K8	3 to 11	"	"	"
	"	131	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K9	4 to 12	"	"	"
	"	132	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	"	K7	5 to 13	"	"	"

See footnotes at end of table.

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

Subgroup	Symbol	Test no.	Adapter pin number 1-14														Relays energized	Measured pin no.	Limits		Unit					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14			Min	Max						
10 T _A = +125°C	t _{OFF}	133	IN	IN	IN	S ₁	S ₂	S ₃	S ₄	+V _{CC}	-V _{CC}	V _R	V _L	5.0 V	OUT	OUT	OUT	IN	IN	K6	2 to 10			200	ns	
		134	IN	IN	IN	IN	IN	IN	IN	IN	15 V	-15 V	GND	"	"	"	"	OUT	OUT	K8	3 to 11			"	"	
		135	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K9	4 to 12			"	"
		136	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K7	5 to 13			"	"
11 T _A = -55°C	t _{ON}	137	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	IN	IN	K6	2 to 10			250	"	
		138	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K8	3 to 11			"	"	
		139	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K9	4 to 12			"	"
		140	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K7	5 to 13			"	"
12 T _A = 25°C	OFF	141	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	OUT	OUT	OUT	IN	IN	K6	2 to 10			130	"	
		142	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K8	3 to 11			"	"	
		143	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K9	4 to 12			"	"
		144	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	OUT	OUT	K7	5 to 13			"	"
12 T _A = 25°C	t _{D1} t _{D2} D1 D2	145	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	IN	IN	K6, K14	11			5	"	
		146	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	"	IN	IN	K6, K14	11			5	"	
		147	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	IN	IN	K7, K15	12			5	"	
		148	IN	IN	IN	IN	IN	IN	IN	IN	"	"	"	"	"	"	"	IN	IN	K7, K15	12			5	"	

NOTES:

- 1- The test circuits used with table III are shown in figures 2, 3, and 4. The waveforms on figure 5 apply to all device types as specified within table III (see tests for t_{ON} and t_{OFF}). The waveforms in figure 6 apply to device types 05, 06, 07, and 08 as specified within table III.
- 2- R_{DS} (in Ω) = -100 (measured value +7.5) for device types 01, 03, 05, and 07. R_{DS} (in Ω) = -100 (measured value +10) for device types 02, 04, 06, and 08. D_S may be measured differentially with respect to V_A. In case of differentially measured voltages, the table III limits representing voltage drop across the tested switch must be maintained.
- 3- The input pulse generator shall have the following characteristics: (a) V_{gen} = 3.0 V (b) Rise time ≤ 10 ns (c) Fall time ≤ 10 ns and (d) PRR = 100 kHz at 50% duty cycle.
- 4- The input generator shall have the following characteristics: V_{gen} = 1 V_{P-P} at 10 MHz. V_{CT} is measured on monolithic devices only.
- 5- Input (IN 3) shall be applied to either S₁ or S₃.
- 6- Input (IN 3) shall be applied to either S₂ or S₄.
- 7- V_{CT} applies only to monolithic devices.

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. A special subgroup shall be added to group D inspection for class S devices only, and it shall consist of the group A subgroups 4 and 7 as specified in table III herein. This special subgroup shall be performed on each device type that is qualified from those listed in 1.2.1 herein. After initial qualification, the special subgroup shall be performed periodically on a single device type selected from those device types previously qualified. When more than one device type is qualified, the single device type selected shall be different device type for each subsequent periodic inspection until all qualified device types have been inspected. The sequence of single device types shall be repeated to fulfill the periodic inspection requirement.

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

4.5.1 Voltage and current. All voltage values given, except differential voltages, are referenced to the external zero reference level of the supply voltage. Currents given are conventional current and positive when flowing into the referenced terminal.

4.5.2 Life test cooldown procedure. When devices are measured at 25°C following application of the operating life or burn-in test condition, they shall be cooled to room temperature prior to removal of the bias.

Table IV. Groups C end point electrical parameters ($T_A = 25^\circ\text{C}$, $\pm V_{CC} = \pm 15\text{ V}$).

Test	Device types					
	01, 03, 05, 07			02, 04, 06, 08		
	Limits		Delta	Limits		Delta
	Min	Max		Min	Max	
R_{DS}	-7.8 V	----	$\pm 30\text{ mV}$	-10.75 V	----	75 mV
$I_{S(OFF)}$	-1 nA	1 nA	$\pm 0.5\text{ nA}$	-1 nA	1 nA	$\pm 0.5\text{ nA}$
$I_{D(OFF)}$	-1 nA	1 nA	$\pm 0.5\text{ nA}$	-1 nA	1 nA	$\pm 0.5\text{ nA}$

5. PACKAGING

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

6. NOTES

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

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. Complete part number (see 1.2).
- c. Requirements for delivery of one copy of the quality conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.
- d. Requirements for certificate of compliance, if applicable.
- e. Requirements for notification of change of product or process to acquiring activity in addition to notification of the qualifying activity, if applicable.

- f. Requirements for failure analysis (including required test condition of MIL-STD-883, method 5003), corrective action and reporting of results, if applicable.
- g. Requirements for product assurance options.
- h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.
- i. Requirements for "JAN" marking.
- j. Packaging requirements (see 5.1).

6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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

+V _{CC}	.....	Positive supply voltage
-V _{CC}	.....	Negative supply voltage
+I _{CC}	.....	Positive supply current
-I _{CC}	.....	Negative supply current
V _L	.....	Logic supply voltage
I _L	.....	Logic supply current
R _{DS}	.....	Resistance of an "ON" switch
V _D	.....	Drain voltage
V _S	.....	Source voltage
I _D	.....	Drain current
I _S	.....	Source current
I _{D(ON)}	.....	Leakage current from an "ON" driver into the switch
I _{D(OFF)}	.....	Leakage current into the drain terminal of an "OFF" switch
I _{S(OFF)}	.....	Leakage current into the source terminal of an "OFF" switch
t _{ON}	.....	Switching time as defined in figure 5
t _{OFF}	.....	Switching time as defined in figure 5
V _A	.....	Analog signal voltage
I _R	.....	Reference current
V _R	.....	Reference voltage
V _{CTE}	.....	Charge transfer error
V _{CT}	.....	Crosstalk between switches
V _{ISO}	.....	Isolation from source to drain of a closed switch

6.6 Logistic support. Lead materials and finishes (see 3.4) 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.

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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.

<u>Military device type</u>	<u>Generic-industry type</u>
01	181A
02	182A
03	184A
04	185A
05	187A
06	188A
07	190A
08	191A

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

Custodians:	Preparing activity:
Army – CR	DLA - CC
Navy - EC	
Air Force - 11	Project 5962-1994
NASA – NA	
DLA – CC	

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