

MILITARY SPECIFICATION
MICROCIRCUITS, LINEAR, CMOS, HIGH LEVEL
ANALOG SWITCH WITH DRIVER,
MONOLITHIC SILICON

This amendment forms a part of MIL-M-38510/105, dated 23 December 1980, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGE 1

1.1, line 2: Delete "Three" and substitute "Two".

PAGE 2

1.4, line 5: Delete "case operating temperature range" and substitute "ambient operating temperature range".

1.5, Maximum allowable power dissipation: Delete " T_C " and substitute " T_A ", 3 places; also note 2, delete " T_C " and substitute " T_A ".

3.4, line 2: Delete "case ambient" and substitute "ambient".

PAGE 3

TABLE I, temperature column (wherever it appears): Delete " T_C " and substitute " T_A ". Make this same change in table I on page 4.

PAGE 4

* TABLE I, Turn off time (t_{off}), temperature $T_A = -55^\circ\text{C}$, Max limit column: Delete "190" and substitute "250". Make this change in table III on the following pages: Page 28, test number 30; page 30, test numbers 50 and 51; page 32, test numbers 47 and 48; page 34, test numbers 85, 86, 87, and 88; and page 37, test numbers 82, 83, 84, and 85.

TABLE I, Driver input capacitance (C_A), Max limits column: Delete "5" and substitute "30". Make this same change in table III on the following pages: Page 28, test number 31; page 30, test numbers 52 and 53; page 32, test number 49; page 34, test numbers 89 and 90; and page 37, test number 86.

TABLE I, Switch input capacitance (C_{IS}), Max limits column: Delete "10" and substitute "20". Make this same change in table III on the following pages: Page 28, test number 32; page 30, test numbers 54 and 55; page 32, test numbers 50 and 51; page 34, test numbers 91 through 94; and page 37, test numbers 87 through 90.

TABLE I, Switch output capacitance (C_{OS}), Max limits column: Delete "10" and substitute "20". Make this same change in table III on the following pages: Page 28, test number 33; page 30, test numbers 56 and 57; page 32, test numbers 52 and 53; page 34, test numbers 95 through 98; and page 37, test numbers 91 through 94.

PAGE 5

3.5, delete and substitute the following:

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

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* TABLE II, delete as substituted by amendment 1 and substitute the following:

"TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (see table III) <u>1/</u> <u>3/</u> <u>4/</u>	
	Class S devices <u>2/</u>	Class B devices <u>5/</u>
Interim electrical parameters (pre burn-in) (method 5004)	1	1
Final electrical test parameters (method 5004)	1, 2, 3, 9	1, 2, 3, 9
Group A test requirements (method 5005)	1, 2, 3, 4, 7, 9, 10, 11, 12, 13, 14	1, 2, 3, 4, 7, 9, 10, 11, 12, 13, 14
Group C end-point and group B class S, electrical parameters (method 5005)	1, 2, 3, and table IV delta limits	1 and table IV delta limits
Additional electrical subgroups for group C periodic inspections	Not applicable	4, 7
Group D end-point electrical parameters (method 5005)	1, 2, 3	1
Additional electrical subgroups for group D periodic inspections	4, 7	None

- 1/ PDA applies to subgroup 1 (see 4.2d).
2/ See 4.4.4b.
3/ See 4.4.1d.
4/ See 4.4.1e.
5/ See 4.4.3d."

PAGE 5

3.7, line 2: Delete "57" and substitute "82".

4.2a, delete "(test condition A)", and substitute "(test condition C)".

4.2a, add the following: "Note: Burn-in circuit resistor tolerances for figures 14, 15, and 16 shall be ±10%."

4.2b, delete and substitute the following: "b, Reverse bias burn-in (method 1015 of MIL-STD-883) required for class S devices only, using the circuit shown on figure 14. However, regardless of device class, for devices 03, 04, and 07 an additional burn-in shall be performed with the logic level of the switch drivers opposite that used in the first burn-in. Ambient temperature (T_A) shall be 125°C minimum. Duration for the reverse bias test (class S devices) shall be 24 hours minimum. Duration for additional burn-in (class B devices) shall be 160 hours minimum."

* 4.2e, delete and substitute the following:

"4.2e. The percent defective allowable (PDA) for class S and class B devices shall be as specified in MIL-M-38510."

PAGE 7

- * FIGURE 1: Delete and substitute new figure 1 as printed on pages 5 and 6 of this amendment.

PAGE 14

- * FIGURE 9, input-output waveforms for time delay tests: Delete $C_L = 100 \text{ pF} \pm 5\%$ and substitute " $C_L = 95 \text{ pF min to } 200 \text{ pF max}$ ".

PAGE 17

- * FIGURE 13, note 1: Delete " $C_L = 100 \text{ pF} \pm 5\%$ " and substitute " $C_L = 95\text{-}200 \text{ pF}$ ".

PAGE 19

FIGURE 14, NOTE: Delete "See 4.3b for" and substitute "See 4.4.3b for".

FIGURE 14, add the following at the end of figure 14.

1/ The pulse generator shall have the following characteristics:

$V_{GEN} = 0 \text{ V to } 5 \text{ V.}$
Rise time $\leq 10 \text{ ns.}$
Fall time $\leq 10 \text{ ns.}$
PRR = 1 kHz at 50% duty cycle."

PAGE 21

FIGURE 15, NOTE: Delete "NOTE:" and substitute "1/" so as to read "1/ The pulse generator shall have the following characteristics:".

PAGE 23

- * FIGURE 17: Change all "100 pF" capacitors to read "95-200 pF". Make this same change to figures 18, 19, 20, and 21.

PAGE 39

4.4.1c, delete and substitute:

"c. Special subgroups shall be added to group A inspection and shall consist of group A subgroups 12, 13, and 14 as specified in table III herein. Subgroup 12 shall be performed using a sample of 5 devices with no failures allowed. The LTPD for subgroup 13 shall be 7 for all classes. The LTPD for subgroup 14 shall be 10 for all classes."

4.4.1, add new subparagraph "e" as follows:

"e. 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 failures allowed. If no more than 1 failure is found in the first sample of 5, a second sample of 5 is permitted with no further failures allowed."

- * 4.4.2b, add the following sentence: "For device types 03, 04, and 07, life test duration shall be divided equally between forward bias and reverse bias."
- * 4.4.3b, add the following sentence: "For device types 03, 04, and 07, life test duration shall be divided equally between forward bias and reverse bias."

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4.4.3, delete in their entireties subparagraphs "c" and "d" (as added in amendment 1) and substitute new subparagraph "c" as follows:

"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 5, a second sample of 5 is permitted with no further failures allowed. When more than one device is qualified, the single device type selected shall be a 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."

4.4.3a, line 3: Delete "classes B and C devices." and substitute "class B devices."

4.4.3b, line 1: Delete "classes B and C" and substitute "class B".

4.4.4b, delete and substitute:

"b. 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 a 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 requirements."

TABLE IV, below the title: Delete " $T_C = 25^\circ\text{C}$ " and substitute " $T_A = 25^\circ\text{C}$ ".

4.5.3, delete in its entirety and the associated figure and table V in their entireties.

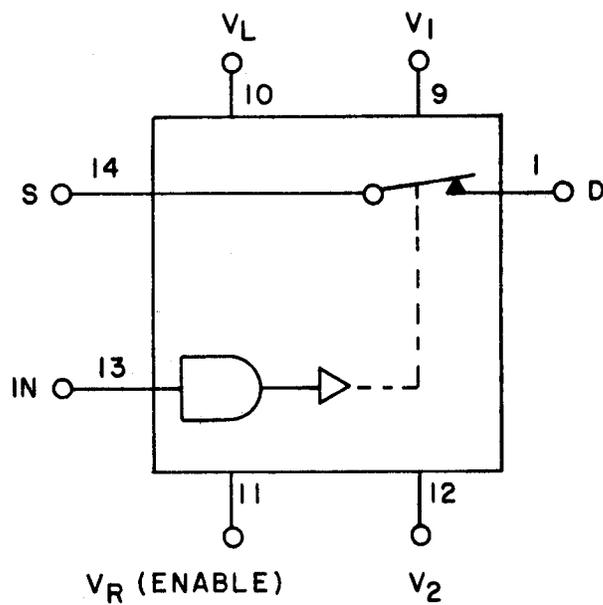
PAGE 40

* 4.5.2, delete and substitute:

"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 within 10°C of their power stable condition prior to removal of bias."

Device type 01

Case A



Case E

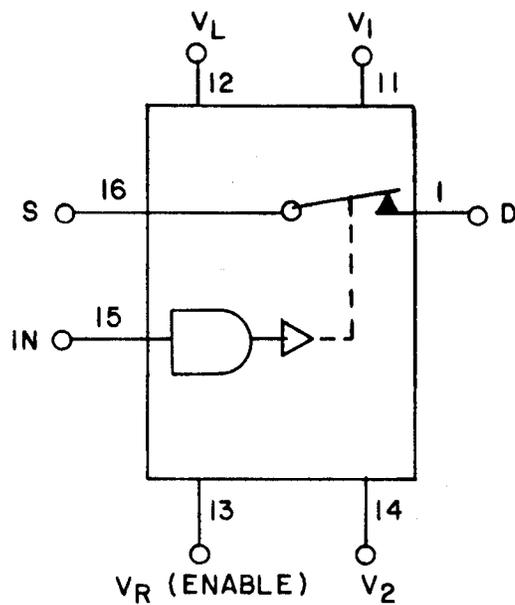


FIGURE 1. Terminal connections (see 3.4.1).

Device type 02

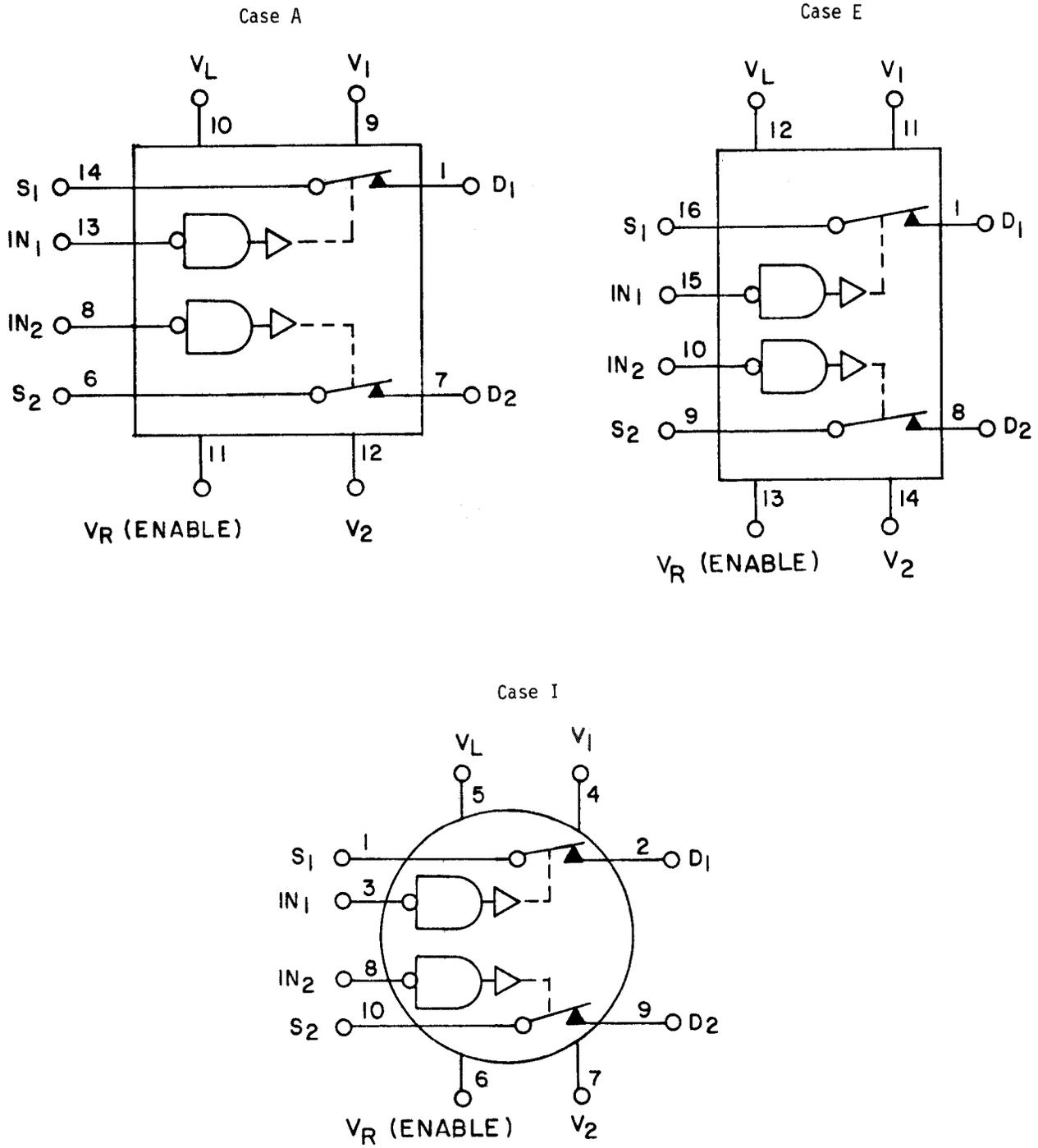


FIGURE 1. Terminal connections (see 3.4.1.) - Continued.

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Custodians:

Army - ER
Navy - EC
Air Force - 17
NASA - NA

Review activities:

Army - AR, MI
Navy - OS, SH
Air Force - 11, 19, 85, 99
DLA - ES

User activities:

Army - SM
Navy - AS, CG, MC

Preparing activity:
Air Force - 17

Agent:
DLA - ES

(Project 5962-0819)