REVISIONS

| LTR | DESCRIPTION | DATE (YR-MO-DA) | APPROVED |
|---|---|---|---|
| F | Change to military drawing format. Add device type 03. Device 01, case E, inactive for new design. Table I (device 01) change test condition for $I_{IL}$. Table I (device 02): Delete test $R_{DS2}$ and $V_{CT}$; add test $\Delta R_{DS1}$; change test conditions and limits for: $R_{DS1}$, $C_{IS}$, $V_{ISO}$, $t_D$, $t_{ON(A)} - t_{OFF(A)}$ and $t_{ON(EN)} - t_{OFF(EN)}$. | 87-01-30 | M.A. Frye |
| G | Add case outline 2. Electrical changes in table I, 1.3, and 1.4. Editorial changes throughout. Change vendor CAGE 34371 vendor PINs and add vendor CAGE 24355. Delete vendor CAGE 32293 and add vendor CAGE 1ES66. | 94-03-24 | M.A. Frye |

The original first page of this drawing has been replaced.

**CURRENT CAGE CODE 67268**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REV | | | | | | | | | | | | | | | | | | |
| SHEET | | | | | | | | | | | | | | | | | | |
| REV | G | G | G | G | G | | | | | | | | | | | | | |
| SHEET | 14 | 15 | 16 | 17 | 18 | | | | | | | | | | | | | |

| REV STATUS OF SHEETS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REV | G | G | G | G | G | G | G | G | G | G | G | G | G |
| SHEET | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

PMIC N/A

**STANDARDIZED MILITARY DRAWING**

THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE

AMSC N/A

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DRAWING APPROVAL DATE
77-10-26

REVISION LEVEL
G

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUIT, CMOS, POSITIVE LOGIC 8-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS, MONOLITHIC SILICON

| SIZE | CAGE CODE | |
|---|---|---|
| A | 14933 | 77052 |

SHEET 1 OF 18

DESC FORM 193-1
JUL 91

5962-E372-93

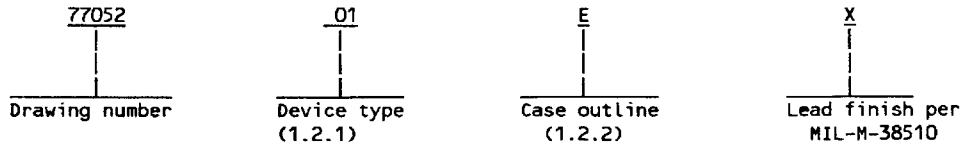
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

9004708 0000755 T95

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

1.2 Part or Identifying Number (PIN). The complete PIN shall be as shown in the following example:




1.2.1 Device type(s). The device type(s) shall identify the circuit function as follows:

| Device type | Generic number | Circuit function |
|---|---|---|
| 01 | DG508A, HI-508, ADG508A | CMOS, positive logic, 8-channel analog MUX/DEMUX |
| 02 | HI-508A, HI-548 | CMOS, positive logic, 8-channel analog MUX/DEMUX with overvoltage protection |
| 03 | MAX358 | CMOS, positive logic, 8-channel analog MUX/DEMUX with overvoltage protection |

1.2.2 Case outline(s). The case outline(s) shall be as designated in MIL-STD-1835 and as follows:

| Outline letter | Descriptive designator | Terminals | Package style |
|---|---|---|---|
| E | GDIP1-T16 or CDIP2-T16 | 16 | Dual-in-line |
| F | GDFP2-F16 or CDFP3-F16 | 16 | Flat pack |
| 2 | CQCC1-N20 | 20 | Square leadless chip carrier |

1.2.3 Lead finish. The lead finish shall be as specified in MIL-STD-883 (see 3.1 herein). Finish letter "X" shall not be marked on the microcircuit or its packaging. The "X" designation is for use in specifications when lead finishes A, B, and C are considered acceptable and interchangeable without preference.

1.3 Absolute maximum ratings.

| | |
|---|---|
| Supply voltage between V+ and V-: | |
| Device type 01 | +44 V dc |
| Device types 02 and 03 | +40 V dc |
| V+ to ground: | |
| Device type 01 | +22 V dc |
| Device types 02 and 03 | +20 V dc |
| V- to ground: | |
| Device type 01 | -22 V dc |
| Device types 02 and 03 | -20 V dc |
| Digital input overvoltage range | |
| Device types 02 and 03 | (V-) - 4.0 V dc to (V+) + 4.0 V dc |
| Analog input overvoltage range | |
| Device type 01 | (V-) - 3.0 V dc to (V+) |
| Analog input voltage ($V_S$): | |
| Device type 01 | (V-) - 2 V dc to (V+) + 2 V dc |
| Device types 02 and 03 | (V-) - 20 V dc to (V+) + 20 V dc |
| Storage temperature range | -65°C to +150°C |
| Power dissipation ($P_D$): | |
| Case E | 470 mW at $T_A$ = +75°C |
| Case F | 725 mW at $T_A$ = +75°C |
| Case 2 | 1.23 W at $T_A$ = +75°C |
| Derating factor: | |
| Case E | 12.0 mW/°C above $T_A$ = +75°C |
| Case F | 8.0 mW/°C above $T_A$ = +25°C |
| Case 2 | 12.3 mW/°C above $T_A$ = +75°C |
| Thermal resistance, junction-to-case ($\theta_{JC}$) | See MIL-STD-1835 |
| Lead temperature (soldering, 10 seconds) | +300°C |
| Junction temperature ($T_J$) | +175°C |

1.4 Recommended operating conditions.

| | |
|---|---|
| Positive supply voltage (V+) | +15 V dc |
| Negative supply voltage (V-) | -15 V dc |
| Logic low level address input voltage ($V_{IL}$) | 0 V dc to 0.8 V dc |
| Logic high level address input voltage ($V_{IH}$): | |
| Device types 01 and 03 | 2.4 V dc to (V+) - 0.7 V dc |
| Device type 02 | 4.0 V dc to V+ |
| Enable voltage ($V_{EN}$): | |
| Device type 01 | 4.5 V dc to (V+) - 0.7 V dc |
| Device type 02 | 4.0 V dc to (V+) - 0.7 V dc |
| Device type 03 | 2.4 V dc to (V+) - 0.7 V dc |
| Ambient operating temperature range ($T_A$) | -55°C to +125°C |

2. APPLICABLE DOCUMENTS

2.1 Government specification, standard, and bulletin. Unless otherwise specified, the following specification, standards, and bulletin of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARDS

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.
MIL-STD-1835 - Microcircuit Case Outlines.

BULLETIN

MILITARY

MIL-BUL-103 - List of Standardized Military Drawings (SMD's).

(Copies of the specification, standards, and bulletin required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein. Product built to this drawing that is produced by a Qualified Manufacturer Listing (QML) certified and qualified manufacturer or a manufacturer who has been granted transitional certification to MIL-I-38535 may be processed as QML product in accordance with the manufacturers approved program plan and qualifying activity approval in accordance with MIL-I-38535. This QML flow as documented in the Quality Management (QM) plan may make modifications to the requirements herein. These modifications shall not affect form, fit, or function of the device. These modifications shall not affect the PIN as described herein. A "Q" or "QML" certification mark in accordance with MIL-I-38535 is required to identify when the QML flow option is used.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-STD-883 (see 3.1 herein) and herein.

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.2 herein.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.3 Truth table(s). The truth table(s) shall be as specified on figure 2.

3.3 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in table I and shall apply over the full ambient operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table II. The electrical tests for each subgroup are described in table I.

3.5 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in MIL-BUL-103 (see 6.6 herein).

3.6 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in MIL-BUL-103 (see 6.6 herein). The certificate of compliance submitted to DESC-EC prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.7 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change. Notification of change to DESC-EC shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.9 Verification and review. DESC, DESC's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-STD-883 (see 3.1 herein).

TABLE I. Electrical performance characteristics.
(Device type 01)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 4.5 V) $-55°C \le T_A \le +125°C$ unless otherwise specified | Group A subgroups | Limits | | Unit |
|---|---|---|---|---|---|---|
| | | | | Min | Max | |
| Input leakage current 2/ | $I_{IH}$ | Measure address inputs sequentially, connect all unused address inputs to 5.0 V | 1, 2 | | +0.8 | µA |
| | $I_{IL}$ | Measure address inputs sequentially, connect all unused address inputs to 5.0 V | | | -0.8 | |
| Leakage current into the source terminal of an "OFF" switch | $+I_{S(OFF)}$ | $V_S$ = +10 V, $V_{EN}$ = 0.8 V<br>All unused inputs = -10 V | 1, 2, 3 | -50 | +50 | nA |
| | $-I_{S(OFF)}$ | $V_S$ = -10 V, $V_{EN}$ = 0.8 V<br>All unused sources = +10 V | | | | |
| Leakage current into the drain terminal of an "OFF" switch | $+I_{D(OFF)}$ | $V_D$ = 10 V, $V_{EN}$ = 0.8 V<br>All unused inputs = -10 V | 1, 2, 3 | -250 | +250 | nA |
| | $-I_{D(OFF)}$ | $V_D$ = -10 V, $V_{EN}$ = 0.8 V<br>All unused inputs = +10 V | | | | |
| Leakage current from an "ON" driver into the switch (drain) | $+I_{D(ON)}$ | $V_D$ = 10 V, $V_S$ = -10 V<br>All unused inputs = -10 V | 1, 2, 3 | -250 | +250 | nA |
| | $-I_{D(ON)}$ | $V_D$ = -10 V, $V_S$ = 10 V<br>All unused inputs = +10 V | | | | |
| Positive supply current | I(+) | $V_A$ = 0 V, $V_{EN}$ = 5 V | 1, 2, 3 | | 12 | mA |
| Negative supply current | I(-) | $V_A$ = 0 V, $V_{EN}$ = 5 V | 1, 2, 3 | -12 | | |
| Standby positive supply current | $+I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0 V | 1, 2, 3 | | 3.5 | mA |
| Standby negative supply current | $-I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0 V | | -3.5 | | mA |
| Switch "ON" resistance | $R_{DS1}$ | $V_S$ = +10 V<br>$I_D$ = +1 mA | 1, 3 | | 400 | Ω |
| | | | 2 | | 500 | |
| | | $V_S$ = -10 V<br>$I_D$ = -1 mA | 1, 3 | | 400 | |
| | | | 2 | | 500 | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 01)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 4.5 V) -55°C ≤ $T_A$ ≤ +125°C unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Switch "ON" resistance | $R_{DS2}$ | V+ = +10 V, V- = -10 V, $V_S$ = +7.5 V<br>$I_D$ = -1 mA | 1, 2, 3 | | 1000 | Ω |
| | | V+ = +10 V, V- = +10 V, $V_S$ = -7.5 V<br>$I_D$ = -1 mA | | | 1000 | |
| Capacitance: Address | $C_A$ | V+ = V- = 0 V 3/<br>f = 1 MHz<br>$T_A$ = +25°C | 4 | | 10 | pF |
| Capacitance: Output switch | $C_{OS}$ | V+ = V- = 0 V 3/<br>f = 1 MHz<br>$T_A$ = +25°C | 4 | | 45 | pF |
| Capacitance: Input switch | $C_{IS}$ | V+ = V- = 0 V 3/<br>f = 1 MHz<br>$T_A$ = +25°C | 4 | | 10 | pF |
| Charge transfer error | $V_{CTE}$ | $V_S$ = GND 3/<br>$V_{GEN}$ = 0 V to 5 V, f = 500 kHz<br>$T_A$ = +25°C, $C_L$ = 100 pF | 4 | | 10 | mV |
| Single channel isolation | $V_{ISO}$ | $V_{GEN}$ = 1 $V_{p-p}$, f = 200 kHz 3/<br>$T_A$ = +25°C | 4 | 50 | | dB |
| Crosstalk between channels | $V_{CT}$ | $V_{GEN}$ = 1 $V_{p-p}$, f = 200 kHz 3/<br>$T_A$ = +25°C | | 50 | | |
| Break-before-make time delay | $t_D$ | $T_A$ = +25°C<br>See figure 3 | 9 | 5 | | ns |
| Propagation delay times: Address inputs to I/O channels | $t_{ON(A)}$ | $R_L$ = 1kΩ, $C_L$ = 100pF<br>See figures 4 and 5 | 9, 11 | | 1000 | ns |
| | $t_{OFF(A)}$ | | 10 | | 1500 | |
| Enable to I/O | $t_{ON(EN)}$ | $R_L$ = 1 kΩ, $C_L$ = 100 pF<br>See figures 4 and 5 | 9, 11 | | 1000 | |
| | $t_{OFF(EN)}$ | | 10 | | 1500 | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 02)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 4.0 V) $-55°C \le T_A \le +125°C$ unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Positive input clamping voltage | $V_{IC(POS)}$ | $I_{IN}$ = 1 mA, V+ = V- = 0 V 3/ $T_A$ = +25°C | 1 | | +1.5 | V |
| Negative input clamping voltage | $V_{IC(NEG)}$ | $I_{IN}$ = -1 mA, V+ = V- = 0 V 3/ $T_A$ = +25°C | 1 | -1.5 | | V |
| Input leakage current 2/ | $I_{IH}$ | Measure inputs sequentially, connect all unused inputs to GND | 1, 2 | -1.0 | +1.0 | µA |
| | $I_{IL}$ | Measure inputs sequentially, connect all unused inputs to GND | 1, 2 | +1.0 | -1.0 | |
| Leakage current into the source terminal of an "OFF" switch | $+I_{S(OFF)}$ | $V_S$ = 10 V, $V_{EN}$ = 0.8 V, $V_D$ = -10 V All unused inputs = -10 V | 1, 2 | -50 | +50 | nA |
| | $-I_{S(OFF)}$ | $V_S$ = -10 V, $V_{EN}$ = 0.8 V, $V_D$ = +10 V All unused inputs = +10 V | | | | |
| Leakage current into the drain terminal of an "OFF" switch | $+I_{D(OFF)}$ | $V_D$ = +10 V, $V_{EN}$ = 0.8 V All unused inputs = -10 V | 1, 2 | -250 | +250 | nA |
| | $-I_{D(OFF)}$ | $V_D$ = -10 V, $V_{EN}$ = 0.8 V All unused inputs = +10 V | | | | |
| Leakage current from an "ON" driver the switch (drain) | $+I_{D(ON)}$ | $V_S$ = +10 V, $V_D$ = +10 V All unused inputs = -10 V | 1, 2, 3 | -250 | +250 | nA |
| | $-I_{D(ON)}$ | $V_S$ = - 10 V, $V_D$ = - 10 V All unused inputs = +10 V | | | | |
| Overvoltage protected, leakage current into the drain terminal of an "OFF" switch | $+I_{D(OFF)}$ over-voltage | $V_S$ = 33 V, $V_D$ = 0 V, $V_{EN}$ = 0.8 V | 1, 2, 3 | -2.0 | +2.0 | µA |
| | $-I_{D(OFF)}$ over-voltage | $V_S$ = -33 V, $V_D$ = 0 V, $V_{EN}$ = 0.8 V | | | | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 02)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 4.0 V) -55°C ≤ $T_A$ ≤ +125°C unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Positive supply current | I(+) | $V_A$ = 0 V, $V_{EN}$ = 4 V | 1, 2, 3 | | +2.0 | mA |
| Negative supply current | I(-) | $V_A$ = 0 V, $V_{EN}$ = 4 V | 1, 2, 3 | -1.0 | | mA |
| Standby positive supply current | $+I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0 V | 1, 2, 3 | | +2.0 | mA |
| Standby negative supply current | $-I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0 V | 1, 2, 3 | -1.0 | | mA |
| Switch "ON" resistance | $+R_{DS1}$ | $V_S$ = +10 V, $I_D$ = -100 µA | 1 | | 1500 | Ω |
| | | | 2, 3 | | 1800 | |
| | $-R_{DS1}$ | $V_S$ = -10 V, $I_D$ = -100 µA | 1 | | 1500 | Ω |
| | | | 2, 3 | | 1800 | |
| Difference in switch "ON" resistance between channels | $+\Delta R_{DS1}$ | $(+R_{DS1}$ max) - $(+R_{DS1}$ min) X 100/$+R_{DS1}$ AVE, $T_A$ = +25°C | 1 | | 7 | % |
| | $-\Delta R_{DS1}$ | $(-R_{DS1}$ max) - $(-R_{DS1}$ min) X 100/$-R_{DS1}$ AVE, $T_A$ = +25°C | 1 | | 7 | |
| Capacitance: Address | $C_A$ | V+ = V- = 0 V, f = 1 MHz, $T_A$ = +25°C 3/ | 4 | | 10 | pF |
| Capacitance: Output switch | $C_{OS}$ | V+ = V- = 0 V, f = 1 MHz, $T_A$ = +25°C 3/ | | | 45 | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 02)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 4.0 V) -55°C ≤ $T_A$ ≤ +125°C unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Capacitance: Input switch | $C_{IS}$ | V+ = V- = 0 V 3/ f = 1 MHz, $T_A$ = +25°C | 4 | | 15 | pF |
| Charge transfer error | $V_{CTE}$ | $V_S$ = GND, 3/ $V_{GEN}$ = 0 V to 5 V, $T_A$ = +25°C | | | 10 | mV |
| Off isolation | $V_{ISO}$ | $V_{GEN}$ = 0.8 $V_{p-p}$, f = 100 kHz 3/ $T_A$ = +25°C, $V_S$ = 7 V rms $R_L$ = 1 kΩ, $C_L$ = 15 pF | 4 | 50 | | dB |
| Break-before-make time delay | $t_D$ | $T_A$ = +25°C, See figure 3 3/ $R_L$ = 1 kΩ, $C_L$ = 12.5 pF | 9 | 5 | | ns |
| Propagation delay times: | $t_{ON(A)}$ | $R_L$ = 10 MΩ 3/ $C_L$ = 14 pF | 9 | | 500 | |
| Address inputs to I/O channels | $t_{OFF(A)}$ | See figures 4 and 5 | 10, 11 | | 1000 | |
| Enable to I/O | $t_{ON(EN)}$ | $R_L$ = 1 kΩ 3/ $C_L$ = 12.5 pF | 9 | | 500 | |
| | $t_{OFF(EN)}$ | See figures 4 and 5 | 10, 11 | | 1000 | |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 03)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 2.4 V) $-55°C \le T_A \le +125°C$ unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Input leakage current 2/ | $I_{IH}$ | Measure inputs sequentially, connect all unused inputs to ground | 1 | -1.0 | 1.0 | µA |
| | | | 2 | | 10 | |
| | $I_{IL}$ | | 1 | -1.0 | 1.0 | µA |
| | | | 2 | | 10 | |
| Leakage current into the source terminal of an "OFF" switch | $I_{S(OFF)}$ | $V_S$ = 10 V, $V_{EN}$ = 0.8 V, All unused inputs = -10 V, $V_D$ = -10 V | 1, 2 | -50 | 50 | nA |
| | | $V_S$ = -10 V, $V_{EN}$ = 0.8 V, All unused inputs = +10 V, $V_D$ = +10 V | | | | |
| Leakage current into the drain terminal of an "OFF" switch | $I_{D(OFF)}$ | $V_D$ = +10 V, $V_{EN}$ = 0.8 V, All unused inputs = -10 V | 1, 2 | -250 | 250 | nA |
| | $-I_{D(OFF)}$ | $V_D$ = -10 V, $V_{EN}$ = 0.8 V, All unused inputs = +10 V | | | | |
| Leakage current from an "ON" driver into the switch (drain) | $I_{D(ON)}$ | $V_S$ = +10 V, $V_D$ = +10 V, All unused inputs = -10 V | 1, 2, 3 | -250 | 250 | nA |
| | | $V_S$ = -10 V, $V_D$ = -10 V, All unused inputs = +10 V | | | | |
| Overvoltage protected, leakage current into the drain terminal of an "OFF" switch | $I_{D(OFF)}$ (over-voltage) | $V_S$ = +25 V, $V_D$ = 0 V, $V_{EN}$ = 0.8 V | 1, 3 | -2.0 | 2.0 | µA |
| | | | 2 | -5.0 | 5.0 | |
| | | $V_S$ = -25 V, $V_D$ = 0 V, $V_{EN}$ = 0.8 V | 1, 3 | -2.0 | 2.0 | |
| | | | 2 | -5.0 | 5.0 | |
| Positive supply current | I(+) | $V_A$ = 5.0 V | 1, 2, 3 | | 2.0 | mA |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 03)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 2.4 V) $-55°C \le T_A \le +125°C$ unless otherwise specified | Group A subgroups | Limits Min | Limits Max | Unit |
|---|---|---|---|---|---|---|
| Negative supply current | I(-) | $V_A$ = 5.0 V | 1, 2, 3 | | -1.4 | mA |
| Standby positive supply current | $+I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0.8 V | 1, 2, 3 | | 2.0 | mA |
| Standby negative supply current | $-I_{SBY}$ | $V_A$ = 0 V, $V_{EN}$ = 0.8 V | 1, 2, 3 | | -1.0 | mA |
| Switch "ON" resistance | $R_{DS1}$ | $V_S$ = +10 V, $I_D$ = 100 µA | 1, 3 | | 1500 | Ω |
| | | | 2 | | 1800 | |
| | | $V_S$ = -10 V, $I_D$ = -100 µA | 1, 3 | | 1500 | Ω |
| | | | 2 | | 1800 | |
| Switch "ON" resistance | $R_{DS2}$ | V+ = +10 V, V- = -10 V, $V_S$ = +5 V, $I_D$ = 100 µA | 1, 2, 3 | | 2200 | Ω |
| | | V+ = +10 V, V- = -10 V, $V_S$ = -5 V, $I_D$ = -100 µA | | | | |
| Capacitance: Address | $C_A$ | V+ = V- = 0 V, f = 1 MHz, $T_A$ = +25°C 3/ | 4 | | 10 | pF |
| Capacitance: Output switch | $C_{OS}$ | V+ = V- = 0 V, f = 1 MHz, $T_A$ = +25°C 3/ | | | 45 | |
| Capacitance: Input switch | $C_{IS}$ | V+ = V- = 0 V, f = 1 MHz, $T_A$ = +25°C 3/ | 4 | | 10 | pF |
| Charge transfer error | $V_{CTE}$ | $V_S$ = GND, $V_{GEN}$ = 0 V to 5 V, $T_A$ = +25°C 3/ | 4 | | 10 | mV |

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.
(Device type 03)

| Test | Symbol | Conditions 1/ (V- = -15 V, V+ = +15 V, $V_{EN}$ = 2.4 V) -55°C ≤ $T_A$ ≤ +125°C unless otherwise specified | Group A subgroups | Limits | | Unit |
|---|---|---|---|---|---|---|
| | | | | Min | Max | |
| Single channel isolation | $V_{ISO}$ | $V_{GEN}$ = 1 $V_{p-p}$, f = 200 kHz, 3/ $T_A$ = +25°C | 4 | 50 | | dB |
| Crosstalk between channels | $V_{CT}$ | $V_{GEN}$ = 1 $V_{p-p}$, f = 200 kHz, 3/ $T_A$ = +25°C | | 50 | | |
| Break-before-make time delay | $t_D$ | $T_A$ = +25°C 3/ See figure 3 | 9 | 5 | | ns |
| Propagation delay times: | $t_{ON(A)}$ | $R_L$ = 10 kΩ, 3/ $C_L$ = 100 pF, | 9 | | 1000 | ns |
| Address inputs to I/O channels | $t_{OFF(A)}$ | See figures 4 and 5 | 10, 11 | | 1500 | |
| Enable to I/O | $t_{ON(EN)}$ | $R_L$ = 1 kΩ, 3/ $C_L$ = 100 pF, | 9 | | 1000 | |
| | $t_{OFF(EN)}$ | See figures 4 and 5 | 10, 11 | | 1500 | |

1/ Unless otherwise specified, V+ = +15 V and V- = -15 V.
2/ Input current of one input node.
3/ Guaranteed, if not tested, to the limits specified.

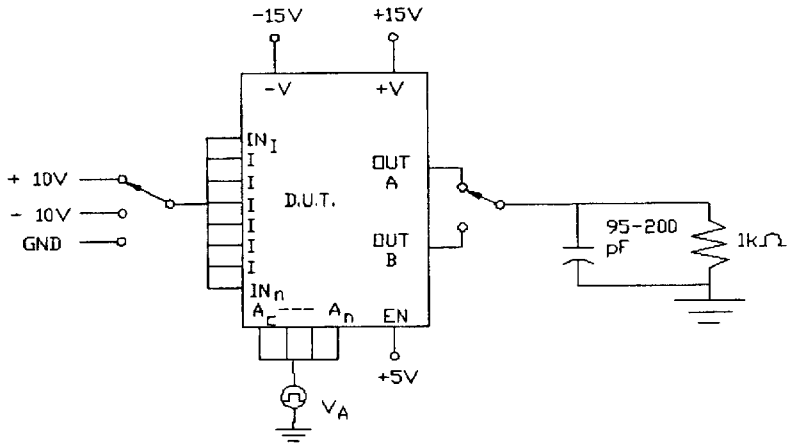
| Case outline | E | F | 2 |
|---|---|---|---|
| Device type | 01,02,03,04 | 01,04 | 01,02,03 |
| Terminal number | Terminal symbol | | |
| 1 | AO | AO | NC |
| 2 | ENABLE | ENABLE | AO |
| 3 | V- | V- | ENABLE |
| 4 | IN 1 | IN 1 | V- |
| 5 | IN 2 | IN 2 | IN 1 |
| 6 | IN 3 | IN 3 | NC |
| 7 | IN 4 | IN 4 | IN 2 |
| 8 | OUT | OUT | IN 3 |
| 9 | IN 8 | IN 8 | IN 4 |
| 10 | IN 7 | IN 7 | OUT |
| 11 | IN 6 | IN 6 | NC |
| 12 | IN 5 | IN 5 | IN 8 |
| 13 | V+ | V+ | IN 7 |
| 14 | GND | GND | IN 6 |
| 15 | A2 | A2 | IN 5 |
| 16 | A1 | A1 | NC |
| 17 | --- | --- | V+ |
| 18 | --- | --- | GND |
| 19 | --- | --- | A2 |
| 20 | --- | --- | A1 |

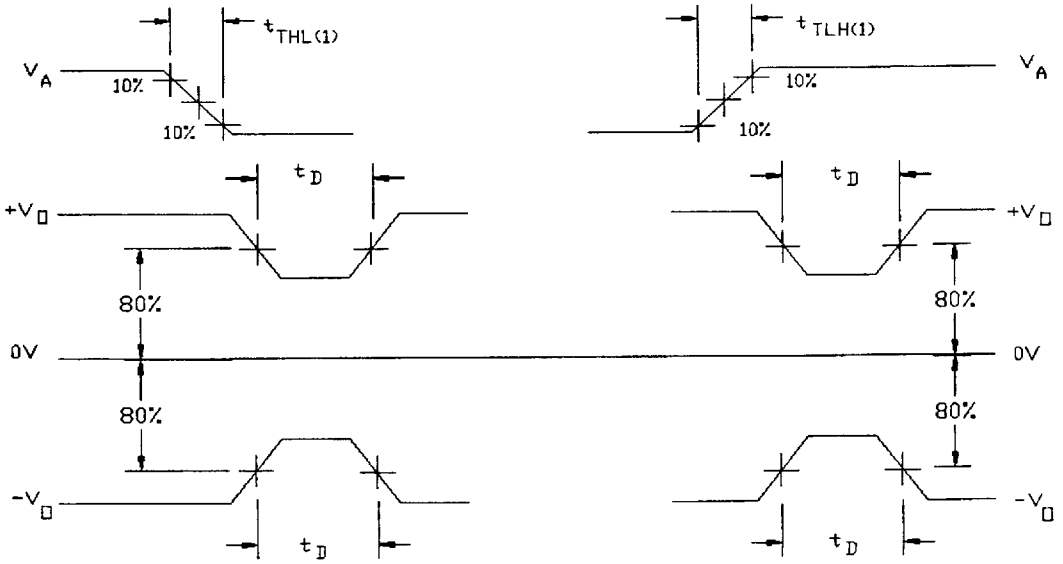
FIGURE 1. Terminal connections.

Device types 01, 02, and 03

| A2 | A1 | AO | EN | Channel selected |
|---|---|---|---|---|
| X | X | X | L | None |
| L | L | L | H | 1 |
| L | L | H | H | 2 |
| L | H | L | H | 3 |
| L | H | H | H | 4 |
| H | L | L | H | 5 |
| H | L | H | H | 6 |
| H | H | L | H | 7 |
| H | H | H | H | 8 |

FIGURE 2. Truth table.




NOTE:

Input pulse requirements:

$V_{GEN}$ = 3 V

$t_{THL(1)} = t_{TLH(1)} \leq 20$ ns.

FIGURE 3. Break before make test circuit and waveforms.

| | | | |
|---|---|---|---|
| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | | 77052 |
| | | REVISION LEVEL G | SHEET 14 |

DESC FORM 193A
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9004708 0000768 643

Address inputs to I/O

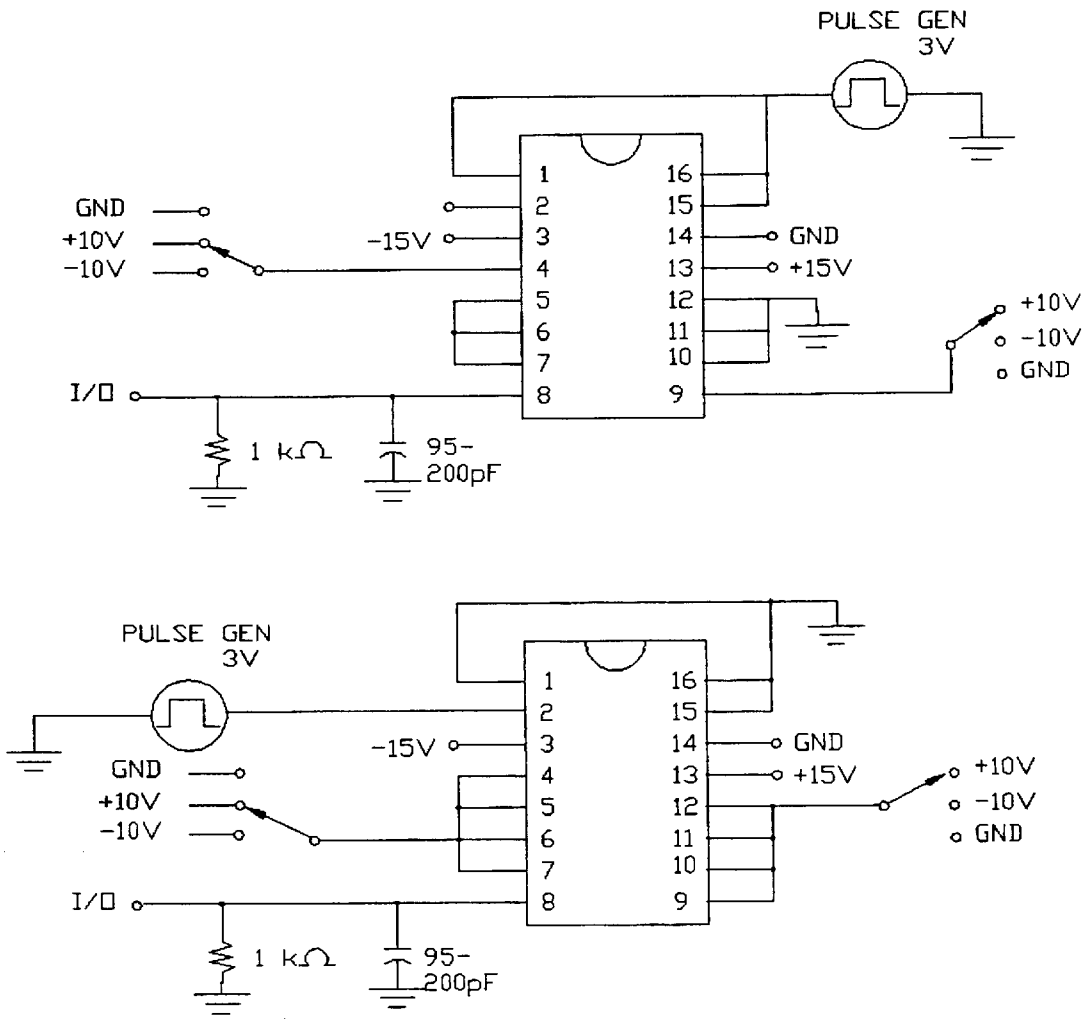
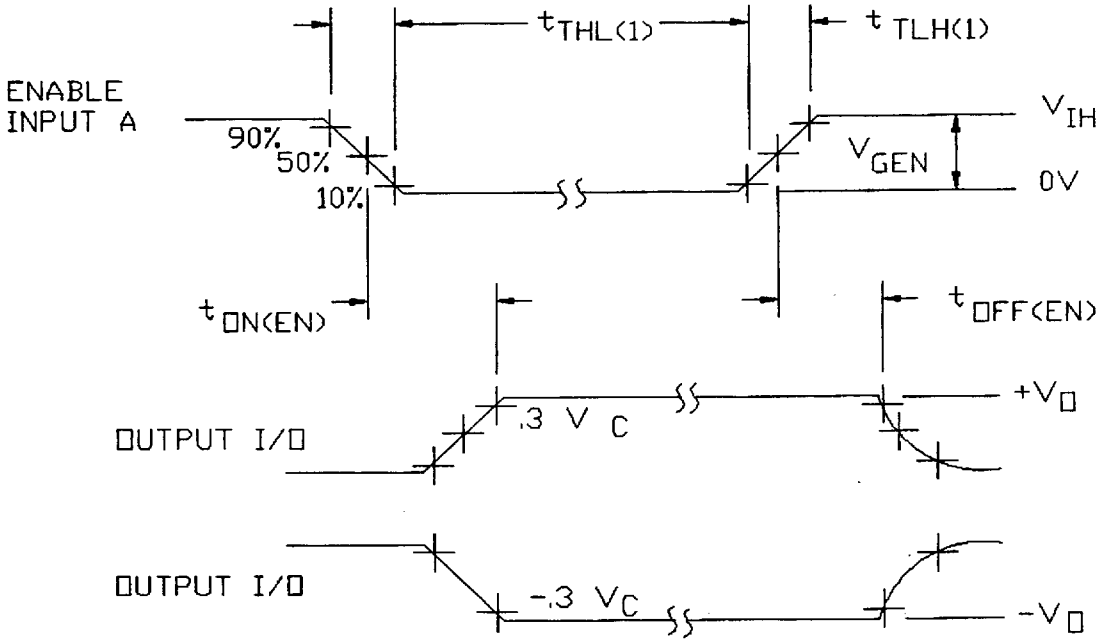



FIGURE 4. Switching time and test circuit.

| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | | 77052 |
|---|---|---|---|
| | | REVISION LEVEL G | SHEET 15 |




NOTE:
Input pulse requirements:
$V_{GEN}$ = 3 V
$t_{THL(1)} = t_{TLH(1)} \leq 20$ ns.

FIGURE 5. Switching time and waveforms.

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

a. Burn-in test, method 1015 of MIL-STD-883.

(1) Test condition A, B, C, or D. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring 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.

(2) $T_A$ = +125°C, minimum.

b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

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

b. Subgroups 5, 6, 7, and 8 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroup 4 (capacitance measurements) shall be measured only for the initial test and after process or design changes which may affect capacitance.

4.3.2 Groups C and D inspections.

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

b. Steady-state life test conditions, method 1005 of MIL-STD-883:

(1) Test condition A, B, C, or D. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring 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.

(2) $T_A$ = +125°C, minimum.

(3) Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

TABLE II. Electrical test requirements.

| MIL-STD-883 test requirements | Subgroups (in accordance with method 5005, table I) |
|---|---|
| Interim electrical parameters (method 5004) | 1 |
| Final electrical test parameters (method 5004) | 1*, 2, 3, 4, 9 |
| Group A test requirements (method 5005) | 1, 2, 3, 4, 9, 10**, 11** |
| Groups C and D end-point electrical parameters (method 5005) | 1 |

* PDA applies to subgroup 1.
** Subgroups 10 and 11, if not tested, shall be guaranteed to the specified limits in table I.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-STD-883 (see 3.1 herein).

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use for Government microcircuit applications (original equipment), design applications, and logistics purposes.

6.2 Replaceability. Replaceability is determined as follows:

a. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.

b. When a QPL source is established, the part numbered device specified in this drawing will be replaced by the microcircuit identified as part number M38510/19000XB*X.

6.3 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished in accordance with MIL-STD-973 using DD Form 1692, Engineering Change Proposal.

6.4 Record of users. Military and industrial users shall inform Defense Electronics Supply Center when a system application requires configuration control and the applicable SMD. DESC will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronics devices (FSC 5962) should contact DESC-EC, telephone (513) 296-6047.

6.5 Comments. Comments on this drawing should be directed to DESC-EC, Dayton, OH 45444, or telephone (513) 296-5377.

6.6 Approved sources of supply. Approved sources of supply are listed in MIL-BUL-103. The vendors listed in MIL-BUL-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-EC.