

NOTICE OF REVISION (NOR)				1. DATE (YYMMDD) 95-05-09		Form Approved OMB No. 0704-0188	
This revision described below has been authorized for the document listed.							
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						3. DODAAC	
4. ORIGINATOR		b. ADDRESS (Street, City, State, Zip Code) Defense Electronics Supply Center 1507 Wilmington Pike Dayton, OH 45444-5270		5. CAGE CODE 67268		6. NOR NO. 5962-R135-95	
a. TYPED NAME (First, Middle Initial, Last)				7. CAGE CODE 67268		8. DOCUMENT NO. 77052	
9. TITLE OF DOCUMENT Microcircuits, CMOS, Positive Logic 8-Channel Analog Multiplexers/Demultiplexers, Monolithic Silicon				10. REVISION LETTER		11. ECP NO. 77052ECP-1	
		a. CURRENT G		b. NEW H			
12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES ALL							
13. DESCRIPTION OF REVISION Sheet 1: Revisions ltr column; add "H". Revisions description column; add "Changes in accordance with NOR 5962-R135-95". Revisions date column; add "95-05-09". Revision level block; add "H". Rev status above sheet number 1, 2, 3, and 13, add "H". Sheet 2: 1.2.2, add under case outline letter "X", add under descriptive designator "CDFP4-F16", add under terminals "16", add under package style "flat pack". Revision level block; add "H". Sheet 3: 1.3, Power dissipation, delete "Case F" and substitute "Case F and X". Derating factor, delete "Case F" and substitute "Case F and X". Revision level block; add "H". Sheet 13: Figure 1, Terminal connections, case outline section, delete "Case F" and substitute "Case F and X". Figure 1, Terminal connections, device type section, delete "01,02,03,04" and substitute "01, 02, 03". Figure 1, Terminal connections, device type section, delete "01,04" and substitute "01". Revision level block; add "H".							
14. THIS SECTION FOR GOVERNMENT USE ONLY							
a. (X one)		☒ (1) Existing document supplemented by the NOR may be used in manufacture. ☐ (2) Revised document must be received before manufacturer may incorporate this change. ☐ (3) Custodian of master document shall make above revision and furnish revised document.					
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT DESC-ELDS				c. TYPED NAME (First, Middle Initial, Last) Michael A. Frye			
d. TITLE Chief, Microelectronics Branch		e. SIGNATURE Michael A. Frye			f. DATE SIGNED (YYMMDD) 95-05-09		
15a. ACTIVITY ACCOMPLISHING REVISION DESC-ELDS		b. REVISION COMPLETED (Signature) Marcia B. Kelleher			c. DATE SIGNED (YYMMDD) 95-05-09		

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 ΔR_{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	G
				SHEET		1	2	3	4	5	6	7	8	9	10	11	12	13	
PMIC N/A				PREPARED BY Donald R. Osborne				DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444											
STANDARDIZED MILITARY DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE AMSC N/A				CHECKED BY D.A. DiCenzo				MICROCIRCUIT, CMOS, POSITIVE LOGIC 8-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS, MONOLITHIC SILICON											
				APPROVED BY N.A. Hauck															
				DRAWING APPROVAL DATE 77-10-26				SIZE A			CAGE CODE 14933			77052					
				REVISION LEVEL G				SHEET 1			OF			18					

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:

<u>77052</u>	<u>01</u>	<u>E</u>	<u>X</u>
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>
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:

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
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.

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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 (θ_{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.

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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).

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

Test	Symbol	Conditions ^{1/} ($V_- = -15$ V, $V_+ = +15$ V, $V_{EN} = 4.5$ V) $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$ 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 All unused inputs = -10 V	1, 2, 3	-50	+50	nA
	$-I_{S(OFF)}$	$V_S = -10$ V, $V_{EN} = 0.8$ V 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 All unused inputs = -10 V	1, 2, 3	-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)	$+I_{D(ON)}$	$V_D = 10$ V, $V_S = -10$ V All unused inputs = -10 V	1, 2, 3	-250	+250	nA
	$-I_{D(ON)}$	$V_D = -10$ V, $V_S = 10$ V 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		
Switch "ON" resistance	R_{DS1}	$V_S = +10$ V $I_D = +1$ mA	1, 3		400	Ω
			2		500	
		$V_S = -10$ V $I_D = -1$ mA	1, 3		400	
			2		500	

See footnotes at end of table.

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

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

See footnotes at end of table.

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

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

See footnotes at end of table.

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

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

See footnotes at end of table.

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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		Unit
				Min	Max	
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 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.

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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	
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.

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TABLE I. Electrical performance characteristics - Continued.
(Device type D3)

Test	Symbol	Conditions ($V_- = -15$ V, $V_+ = +15$ V, $V_{EN} = 2.4$ V) $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
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, $I_D = 100$ μ A	1, 3		1500	Ω
			2		1800	
		$V_S = -10$ V, $I_D = -100$ μ A	1, 3		1500	Ω
			2		1800	
Switch "ON" resistance	R_{DS2}	$V_+ = +10$ V, $V_- = -10$ V, $V_S = +5$ V, $I_D = 100$ μ A	1, 2, 3		2200	Ω
		$V_+ = +10$ V, $V_- = -10$ V, $V_S = -5$ V, $I_D = -100$ μ A				
Capacitance: Address	C_A	$V_+ = V_- = 0$ V, $\overline{3/}$ $f = 1$ MHz, $T_A = +25^\circ\text{C}$	4		10	pF
Capacitance: Output switch	C_{OS}	$V_+ = V_- = 0$ V, $\overline{3/}$ $f = 1$ MHz, $T_A = +25^\circ\text{C}$			45	
Capacitance: Input switch	C_{IS}	$V_+ = V_- = 0$ V, $\overline{3/}$ $f = 1$ MHz, $T_A = +25^\circ\text{C}$	4		10	pF
Charge transfer error	V_{CTE}	$V_S = \text{GND}$, $\overline{3/}$ $V_{GEN} = 0$ V to 5 V, $T_A = +25^\circ\text{C}$	4		10	mV

See footnotes at end of table.

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TABLE 1. Electrical performance characteristics - Continued.
(Device type 03)

Test	Symbol	Conditions (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 T _A = +25°C ^{1/} f = 200 kHz, ^{3/}	4	50		dB
Crosstalk between channels	V _{CT}	V _{GEN} = 1 V T _A = +25°C ^{1/} f = 200 kHz, ^{3/}		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.

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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.

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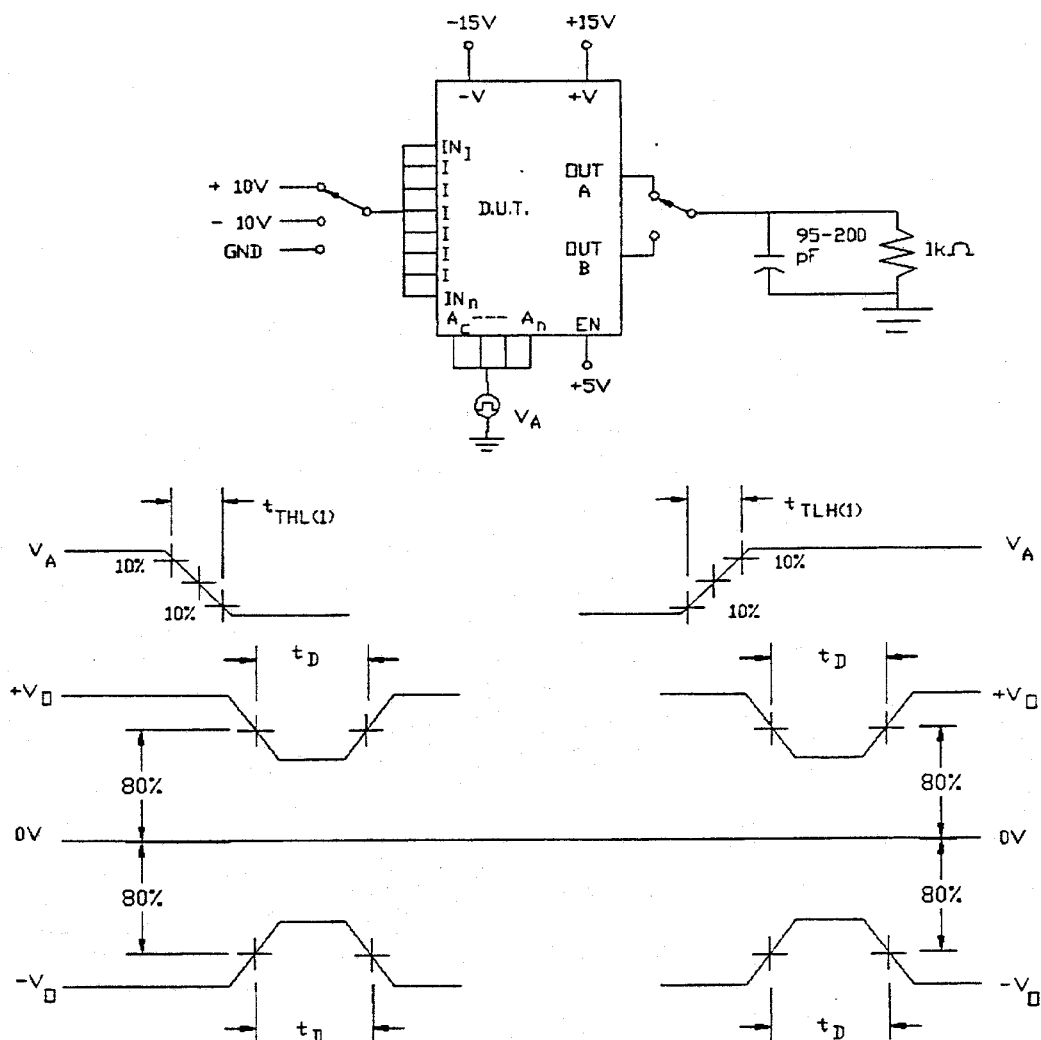


FIGURE 3. Break before make test circuit and waveforms.

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Address inputs to I/O

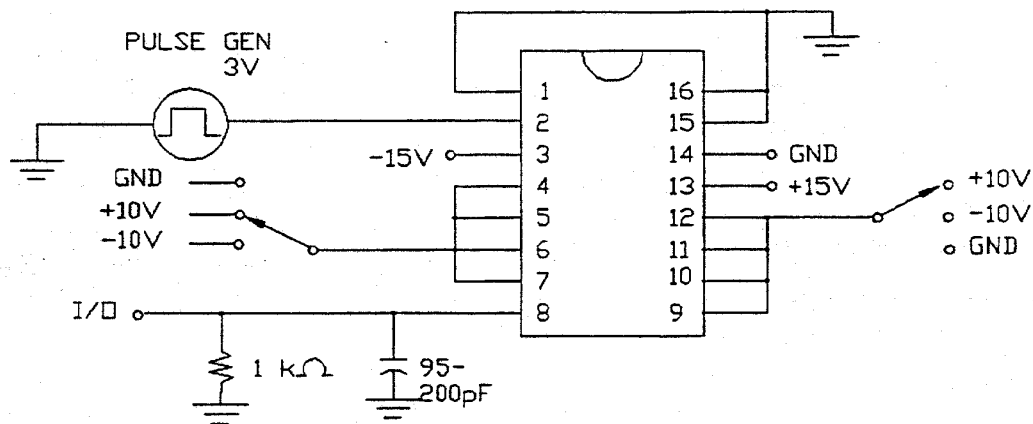
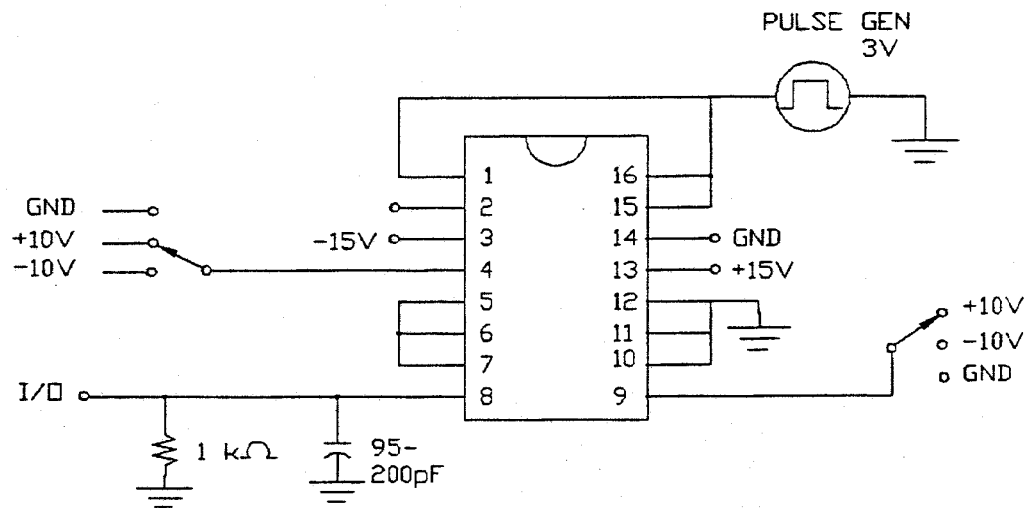


FIGURE 4. Switching time and test circuit.

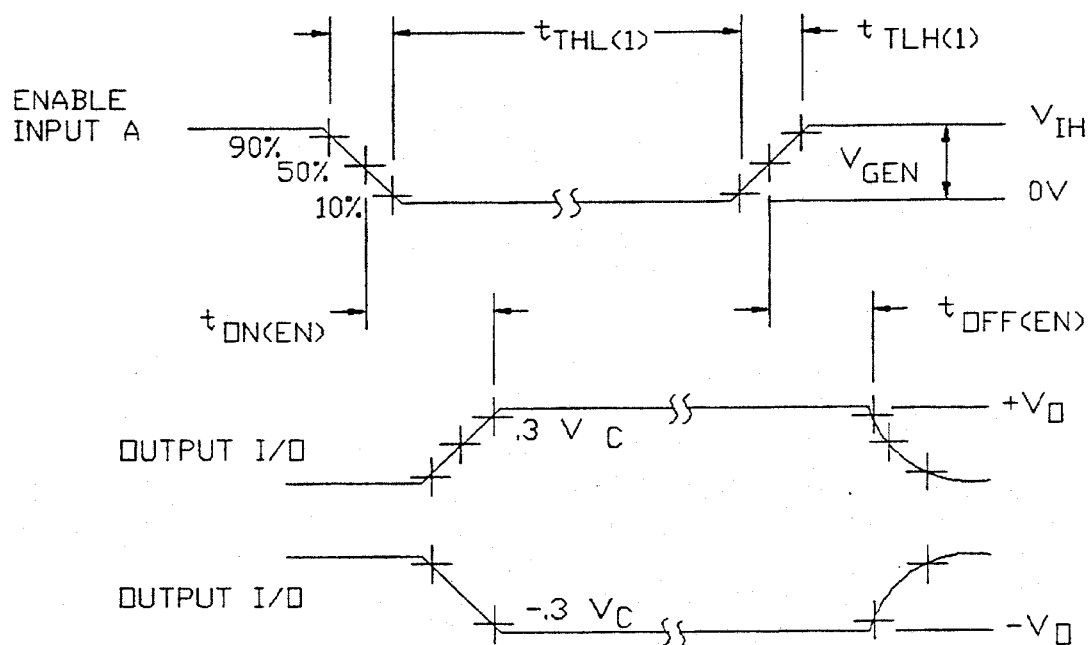
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NOTE:
 Input pulse requirements:
 $V_{GEN} = 3\text{ V}$
 $t_{THL(1)} = t_{TLH(1)} \leq 20\text{ ns.}$

FIGURE 5. Switching time and waveforms.

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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) $T_A = +125^\circ\text{C}$, 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) $T_A = +125^\circ\text{C}$, 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.

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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 M38510/1900XB*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.

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STANDARDIZED MILITARY DRAWING SOURCE APPROVAL BULLETIN

DATE: 94-03-24

Approved sources of supply for SMD 77052 are listed below for immediate acquisition only and shall be added to MIL-BUL-103 during the next revision. MIL-BUL-103 will be revised to include the addition or deletion of sources. The vendors listed below have agreed to this drawing and a certificate of compliance has been submitted to and accepted by DESC-EC. This bulletin is superseded by the next dated revision of MIL-BUL-103.

Standardized military drawing PIN	Vendor CAGE number	Vendor similar PIN 1/	Replacement military specification PIN
7705201EX 2/	17856 34371 24355 1ES66	DG508AAP/883 HI1-508/883 ADG508ATQ/883B DG508AAK/883B	M38510/19007BEX
77052012X	24355 34371 17856 1ES66	ADG508ATE/883B HI4-508/883 DG508AAZ/883 DG508AAZ/883B	
7705201FX	17856 1ES66	DG508AAL/883 DG508AAL/883B	
7705202EX 2/	34371	HI1-548/883	M38510/19005BEX
77052022X	34371	HI4-548/883	
7705203EX 2/	1ES66	MAX358MJE/883B	M38510/19005BEX
77052032X	1ES66	MAX358MLP/883B	

1/ Caution. Do not use this number for item acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

2/ Inactive for new design. Use applicable M38510 device.

Vendor CAGE
number

1ES66

17856

24533

34371

Vendor name
and address

Maxim Integrated Products
120 San Gabriel Drive
Sunnyvale, CA 94086

Siliconix, Incorporated
2201 Laurelwood Road
Santa Clara, CA 95054

Analog Devices
Rt 1 Industrial Park
PO Box 9106
Norwood, MA 02062
Point of contact: 804 Woburn Street
Wilmington, MA 01887

Harris Semiconductor
200 Palm Bay Boulevard
P.O. Box 883
Melbourne, FL 32901

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