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Defense Electronics Supply Center Dayton, Ohio	PREPARED BY Ray Monnin	**MILITARY DRAWING** This drawing is available for use by all Departments and Agencies of the Department of Defense
	CHECKED BY D A DiCenzo	
Original date of drawing: 23 September 1987	APPROVED BY M C Sincerbox	TITLE: MICROCIRCUITS, DIGITAL, CLOCK GENERATOR AND RESET INTERFACE, MONOLITHIC SILICON
	SIZE A / CODE IDENT. NO. 67268	DWG NO. 5962-87669
AMSC N/A	REV	PAGE 1 OF 12

5962-E511

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

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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 number. The complete part number shall be as shown in the following example:

5962-87669	01	V	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

1.2.1 Device types. The device types shall identify the circuit function as follows:

Device type	Generic number	Circuit function	Frequency
01	82384-16	Clock generator and reset interface	16 MHz
02	82384-12	Clock generator and reset interface	12.5 MHz

1.2.2 Case outline. The case outline shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
V	D-6 (18-lead, 1/4" x 15/16") dual-in-line package

1.3 Absolute maximum ratings.

Storage temperature range	-65°C to +150°C
Supply voltage with respect to V_{SS}	-0.5 V dc to +6.5 V dc
Voltage on other pins	-0.5 V dc to V_{CC} +0.5 V dc
Lead temperature (soldering, 10 seconds)	+275°C
Thermal resistance, junction-to-case (θ_{JC})	25°C/W
Junction temperature (T_J)	+138.8°C
Maximum power dissipation (P_D)	.55 W

1.4 Recommended operating conditions.

Case operating temperature range	-55°C to +125°C
Supply voltage (V_{CC})	5.0 V dc ±5%

2. APPLICABLE DOCUMENTS

2.1 Government specification and standard. Unless otherwise specified, the following specification and standard, 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.

STANDARD

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.

(Copies of the specification and standard 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.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

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

3.2.2 Logic diagram. The logic diagram shall be as specified on figure 2.

3.2.3 Case outline. The case outline shall be in accordance with 1.2.2 herein.

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

3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein.

3.5 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 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.6 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.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$, $V_{CC} = 5\ V \pm 5\%$, output trip level = 1.50 V	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Input low voltage	V_{IL}		1, 2, 3	All		0.8	V
Input high voltage	V_{IH}		1, 2, 3	All	2.4		V
EFI input low voltage	V_{ILE}		1, 2, 3	All		0.6	V
$\overline{RES}$ input high voltage	V_{IHR}		1, 2, 3	All	2.6		V
$\overline{RES}$ hysteresis voltage	V_{YHS} 2/		1, 2, 3	All	0.15		V
Output low voltage	V_{OL}	$I_{OL} = 5$ mA	1, 2, 3	All		0.45	V
Output high voltage	V_{OH}	$I_{OH} = -1$ mA	1, 2, 3	All	2.4		V
CLK2 output low voltage	V_{OLC2}	$I_{OL} = 8$ mA	1, 2, 3	All		0.45	V
CLK2 output high voltage	V_{OHC2}	$I_{OH} = -1$ mA	1, 2, 3	All	V_{CC} -0.6		V
CLK output low voltage	V_{OLC}	$I_{OL} = 5$ mA	1, 2, 3	All		0.45	V
CLK output high voltage	V_{OHC}	$I_{OH} = -1$ mA	1, 2, 3	All	4.0		V
Input leakage current	I_{LI}	$0\ V \le V_{IN} \le V_{CC}$	1, 2, 3	All		±10	µA
Supply current	I_{CC}		1, 2, 3	All		105	mA

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ $V_{CC} = 5\ V \pm 5\%$ output trip level = 1.50 V	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Input capacitance	C_I 2/	Fc = 1 MHz	4	All		10	pF
CLK2 period	t_1 2/		9, 10, 11	01 02	31 40		ns
CLK2 high time	t_{2a}	32 MHz 25 MHz 2/ at 2 V; C_L = 160 pF	9, 10, 11	01 02	9 11		ns
CLK2 high time	t_{2b}	32 MHz 25 MHz 2/ At (V_{CC} - 0.8 V); C_L = 160 pF	9, 10, 11	01 02	5 7		ns
CLK2 low time	t_{3a}	32 MHz 25 MHz 2/ At 2.0 V; C_L = 160 pF	9, 10, 11	01 02	9 11		ns
CLK2 low time	t_{3b}	32 MHz 25 MHz 2/ At 0.8 V; C_L = 160 pF	9, 10, 11	01 02	7 9		ns
CLK2 fall time	t_4	From (V_{CC} - 0.8 V) to 0.8 V C_L = 160 pF	9, 10, 11	All		8	ns
CLK2 rise time	t_5	From 0.8 V to (V_{CC} - 0.8 V) C_L = 160 pF	9, 10, 11	All		8	ns
CLK delay from CLK2	t_6	3/	9, 10, 11	All	1	15	ns
CLK fall time	t_7	From 3.5 V to 1 V	9, 10, 11	All		10	ns
CLK rise time	t_8	From 1 V to 3.5 V	9, 10, 11	All		10	ns
CLK low time	t_9	16 MHz 12.5 MHz 2/ At 0.6 V; C_L = 160 pF	9, 10, 11	01 02	15 15		ns

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ $V_{CC} = 5\ V \pm 5\%$ output trip level = 1.50 V	Group A subgroups	Device type	Limits		Unit
					Min	Max	
CLK high time	t_{10}	16 MHz 12.5 MHz 2/ At 3.8 V; C_L = 160 pF	9, 10, 11	01 02	20 20		ns
EF1 to CLK2 delay	t_{11}	C_L = 160 pF	9, 10, 11	All		30	ns
EF1 fall time	t_{12} 2/	From 2.4 V to 0.6 V	9, 10, 11	All		3	ns
EF1 rise time	t_{13} 2/	From 0.6 V to 2.4 V	9, 10, 11	All		3	ns
EF1 low time	t_{14}	32 MHz 25 MHz 2/ At 0.6 V	9, 10, 11	01 02	17 24		ns
EF1 high time	t_{15}	32 MHz 25 MHz 2/ At 2.4 V	9, 10, 11	01 02	15 22		ns
$\overline{RES}$ setup time to CLK2	t_{16}		9, 10, 11	All	17		ns
$\overline{RES}$ hold time from CLK2	t_{17}		9, 10, 11	All	0		ns
RESET delay from CLK2	t_{18}	C_L = 125 pF	9, 10, 11	All	4	18	ns
$\overline{ADS}$ input delay	t_{19}		9, 10, 11	01 02	5 5	34 46	ns
$\overline{ADSO}$ setup to CLK	t_{20}	C_L = 125 pF	9, 10, 11	All	16		ns
$\overline{ADSO}$ hold from CLK	t_{21} 2/		9, 10, 11	All	16		ns

1/ See figures 3 and 4.
2/ Guaranteed if not tested.
3/ Capacitive loads on CLK2 and CLK should each be between 80 pF and 160 pF.

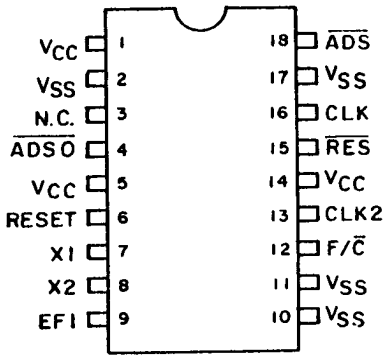


FIGURE 1. Terminal connections.

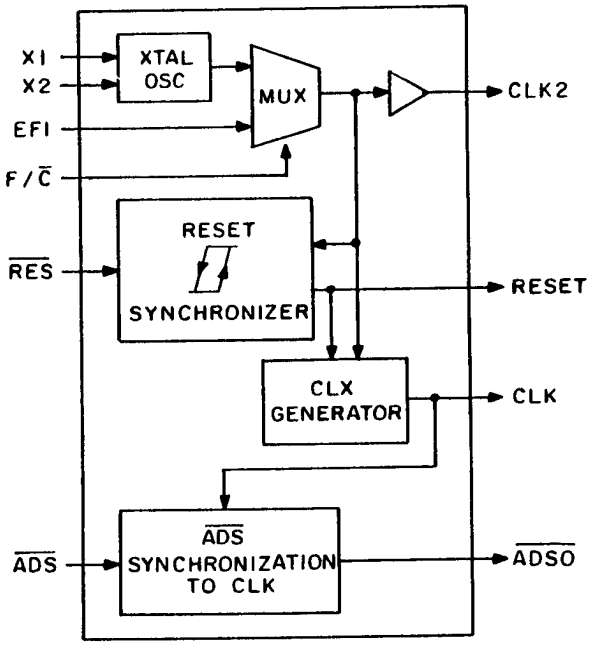


FIGURE 2. Logic diagram.

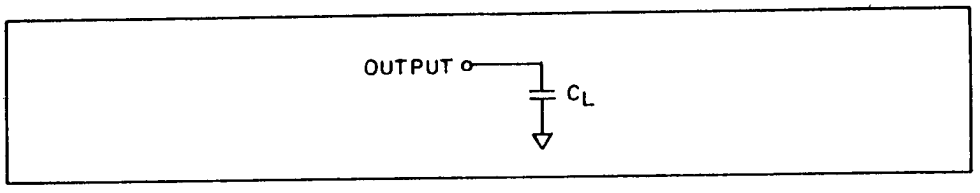
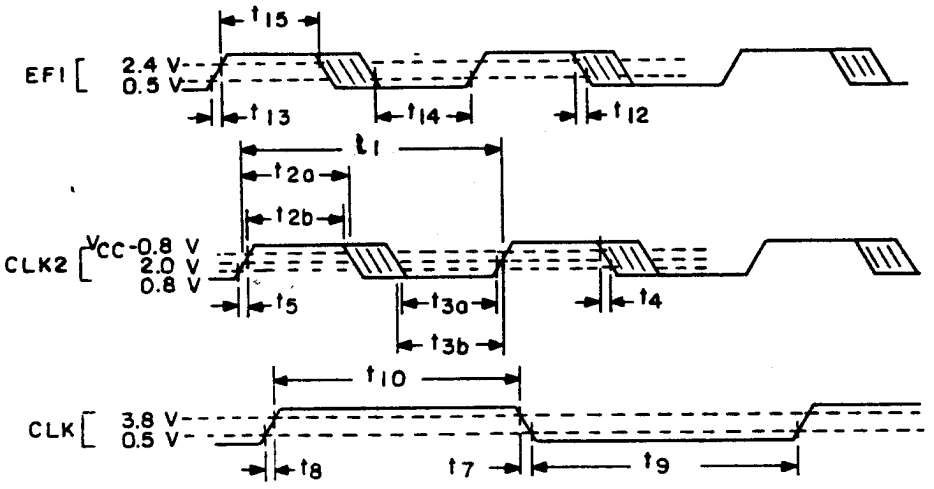
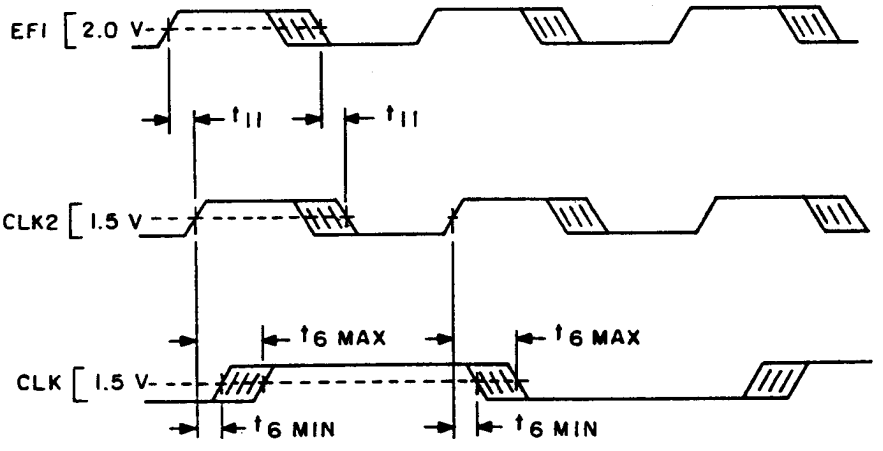


FIGURE 3. Output load.



EF1, CLK2, and CLK timing



EF1, CLK2, and CLK delay timing (skew)

FIGURE 4. Waveforms.

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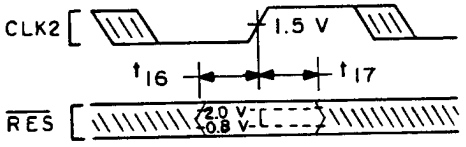
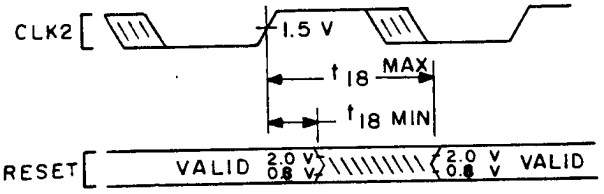
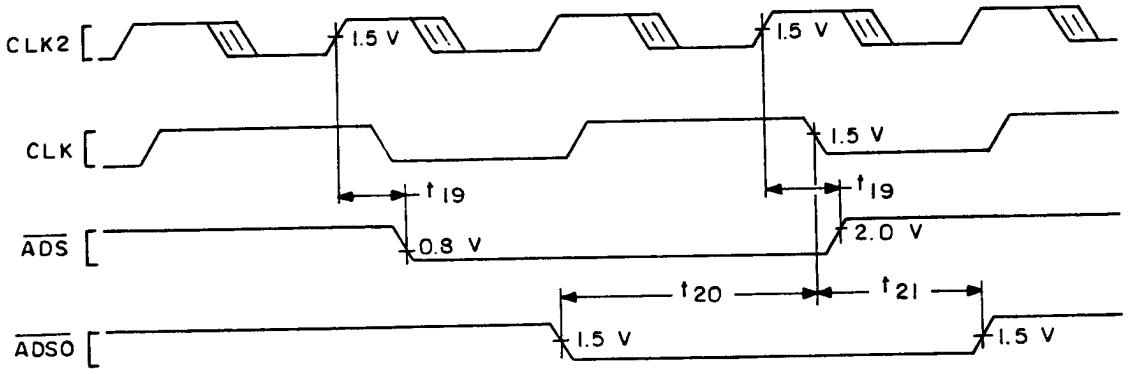


RES input setup and hold timing



RESET output valid delay timing



ADS input delay and ADSO setup and hold timing

FIGURE 4. Waveforms - Continued.

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

3.8 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 section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

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 using the circuit submitted with the certificate of compliance (see 3.5 herein).

(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 and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Subgroup 4 (C_{IN} measurement) 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 (method 1005 of MIL-STD-883) conditions:

(1) Test condition A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

(2) T_A = +125°C, minimum.

(3) Test duration: 1,000 hours, except as permitted by appendix B of MIL-M-38510 and method 1005 of MIL-STD-883.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 7*, 8, 9, 10, 11
Group A test requirements (method 5005)	1, 2, 3, 7, 8, 9, 10, 11
Groups C and D end-point electrical parameters (method 5005)	2, 8(+125°C), 10
Additional electrical subgroups for group C periodic inspections	---

*PDA applies to subgroups 1 and 7.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

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

6.3 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone 513-296-5375.

6.4 Approved source of supply. An approved source of supply is listed herein. Additional sources will be added as they become available. The vendor listed herein has agreed to this drawing and a certificate of compliance (see 3.5 herein) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number 1/	Replacement military specification part number
5962-8766901VX	34649	MD82384-16/B	---
5962-8766902VX	34649	MD82384-12/B	---

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

Vendor CAGE number	Vendor name and address
34649	Intel Corporation 5000 W. Williams Field Road Chandler, AZ 85224