REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Inactivate case outline 3 for new design. Reduce supply voltage tolerance to 5 percent. Editorial changes throughout.	88 DEC 24	

CURRENT CAGE CODE 67268

REV																									
SHEET																									
REV																									
SHEET																									
REV STATUS OF SHEETS	REV	A	A	A	A	A	A	A	A	A	A	A	A	A	A										
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14										

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

PREPARED BY: Todd Creek

CHECKED BY: Ray Monnin

APPROVED BY:

DRAWING APPROVAL DATE: 18 DECEMBER 1986

REVISION LEVEL: A

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUITS, DIGITAL, BIPOLAR, OCTAL BUS TRANSCEIVERS, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	14933	5962-86868

SHEET 1 OF 14

DESC FORM 193-1
SEP 87

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5962-E1174

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:

5962-86868	01	R	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
01	8286	Octal bus transceiver, non-inverting
02	8287	Octal bus transceiver, inverting

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

Outline letter	Case outline
R	D-8 (20-lead, 1.060" x .310" x .200"), dual-in-line package
3	C-4 (28 terminal .460" x .460" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Junction temperature (T_J)	+200°C
Storage temperature range	-65°C to +150°C
Output voltage	-0.5 V dc to +5.5 V dc
Supply voltage range	-0.5 V dc to +7.0 V dc
Input voltage	-1.0 V dc to +5.5 V dc
Maximum power dissipation (P_D)	1.0 W
Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction-to-case (θ_{JC}):	
Cases R and 3	See MIL-M-38510, appendix C

1.4 Recommended operating conditions.

Case operating temperature range (T_C)	-55°C to +125°C
Supply voltage (V_{CC})	+4.75 V dc to +5.25 V dc
Minimum high level input voltage (V_{IH})	2.0 V dc
Maximum low level input voltage (V_{IL}):	
A port	0.8 V dc
B port	0.9 V dc

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 Truth table. The truth table shall be as specified on figure 2.

3.2.3 Logic diagram. The logic diagrams shall be as specified on figure 3.

3.2.4 Case outlines. The case outlines 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 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 $-55°C \le T_C \le +125°C$ $4.75\ V \le V_{CC} \le 5.25\ V$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Input clamp voltage	V_{IC}	I_{IN} = -5 mA	1,2,3		-1	V
Power supply current	I_{CC}	Device type 01, V_{CC} = 5.25 V	1,2,3		160	mA
		Device type 02, V_{CC} = 5.25 V	1,2,3		130	mA
Forward input current	I_F	V_F = 0.45 V, V_{CC} = 5.25 V	1,2,3		-0.2	mA
Reverse input current	I_R	V_R = 5.25 V, V_{CC} = 5.25 V	1,2,3		50	µA
Low level output voltage	V_{OL}	B outputs, I_{OL} = 20 mA, V_{CC} = 4.75 V	1,2,3		0.45	V
		A outputs, I_{OL} = 10 mA, V_{CC} = 4.75 V	1,2,3		0.45	V
High level output voltage	V_{OH}	B outputs, I_{OH} = -5 mA, V_{CC} = 4.75 V	1,2,3	2.4		V
		A outputs, I_{OH} = -1 mA, V_{CC} = 4.75 V	1,2,3	2.4		V
Output off current	I_{OFF}	V_{OFF} = 0.45 V, V_{CC} = 5.25 V	1,2,3		-0.2	mA
		V_{OFF} = 5.25 V, V_{CC} = 5.25 V	1,2,3		50	µA
High level input voltage 1/	V_{IH}		1,2,3	2.0		V
Low level input voltage 1/	V_{IL}	A port	1,2,3		0.8	V
		B port	1,2,3		0.9	V

See footnote at end of table.

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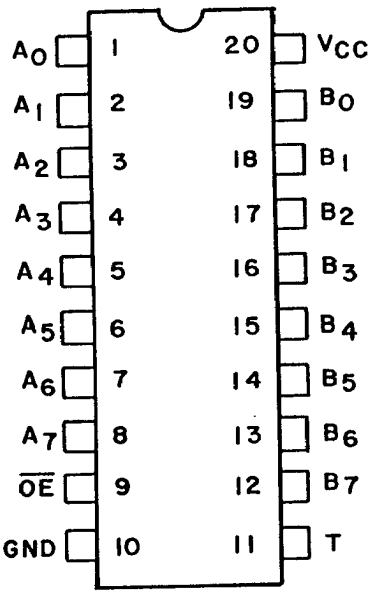
TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ $4.75\ V \le V_{CC} \le 5.25\ V$ unless otherwise specified		Group A subgroups	Limits		Unit
					Min	Max	
Input capacitance	C_{IN}	V_{CC} = 5.0 V, V_{BIAS} = 2.5 V T_C = +25°C; f = 1 MHz See 4.3.1c	$\overline{OE}$, T	4		12	pF
			All others			25	pF
Functional tests		See 4.3.1d		7,8			
Input to output delay 1/	t_{PLH}, t_{PHL}	B outputs, I_{OL} = 20 mA, I_{OH} = -5 mA, C_L = 300 pF	Device type 01	9,10,11		25	ns
			Device type 02	9,10,11		35	ns
Output disable time 1/	t_{PLZ}, t_{PHZ}	A outputs, I_{OL} = 10 mA, I_{OH} = -1 mA, C_L = 100 pF (see figure 4), V_{CC} = 5.0 V		9,10,11		25	ns
Output enable time	t_{PZL}, t_{PZH}			9,10,11		50	ns
Output rise time	t_r	0.8 V to 2.0 V (see figure 4), V_{CC} = 5.0 V		9,10,11		20	ns
Output fall time	t_f	2.0 V to 0.8 V (see figure 4), V_{CC} = 5.0 V		9,10,11		12	ns
Transmit/receive setup time 1/	t_s			9,10,11	30		ns
Transmit/receive hold time 1/	t_h			9,10,11	25		ns

1/ Due to test equipment limitations, actual tested values may differ from those specified, but the specified limits are guaranteed.

Device type 01

Case outline R



Device type 02

Case outline R

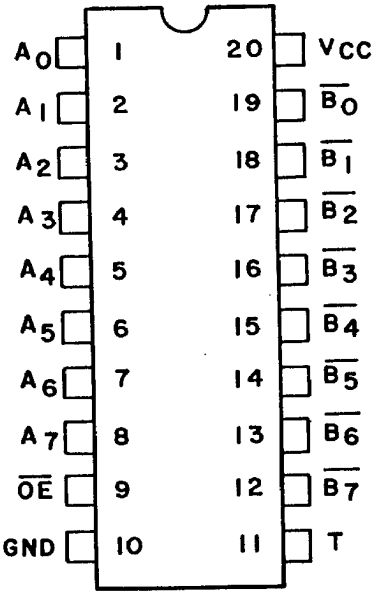
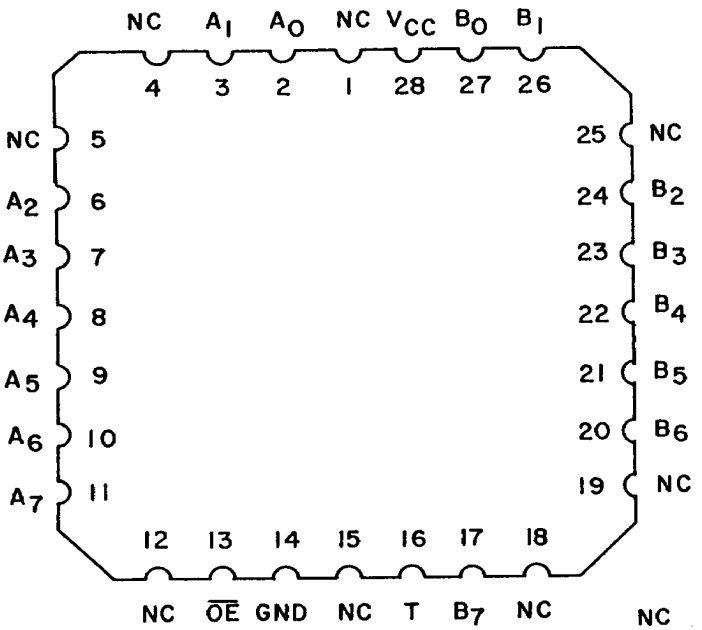


FIGURE 1. Terminal connectons (top view).

Device type 01

Case outline 3



Device type 02

Case outline 3

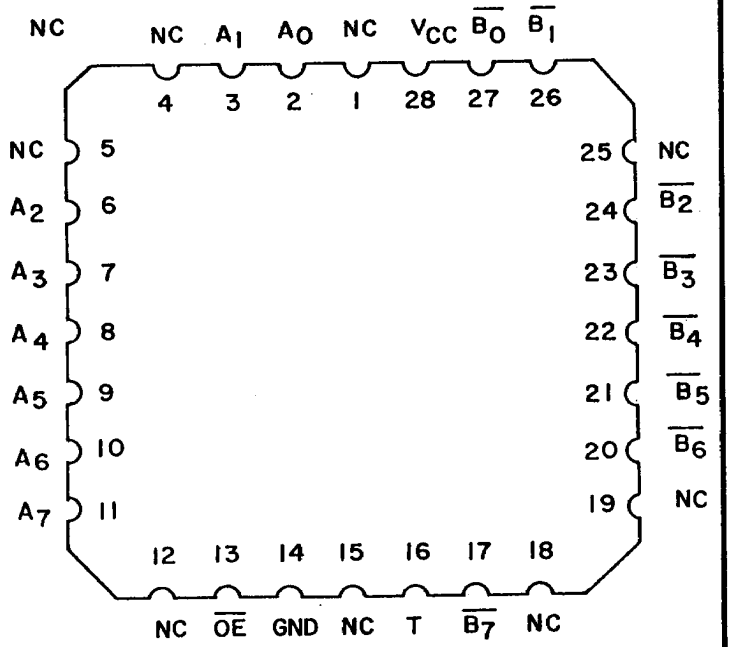


FIGURE 1. Terminal connections (top view) - Continued.

Inputs	Conditions		
Chip disable	0	0	1
Transmit/$\overline{\text{Receive}}$	0	1	X
A Port	Out	In	Hi-Z
B Port	In	Out	Hi-Z

FIGURE 2. Truth table.

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Device type 01

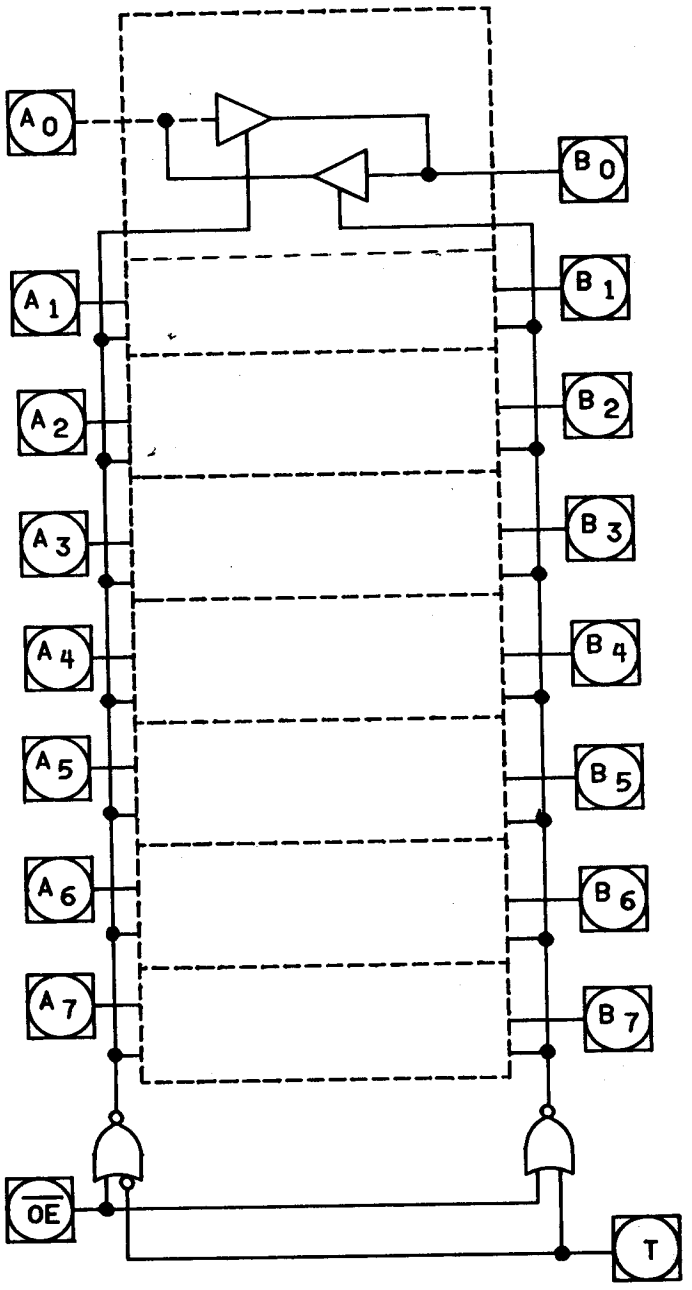

FIGURE 3. Logic diagrams.

Device type 02

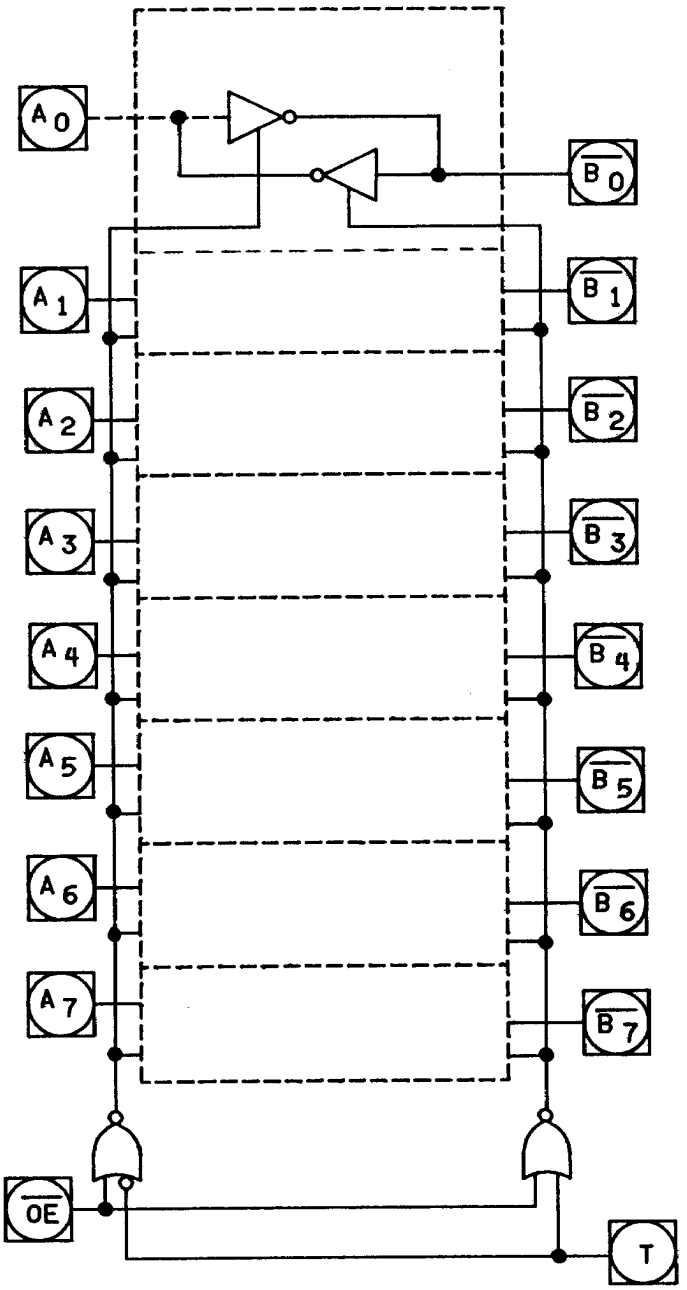

FIGURE 3. Logic diagrams - Continued.

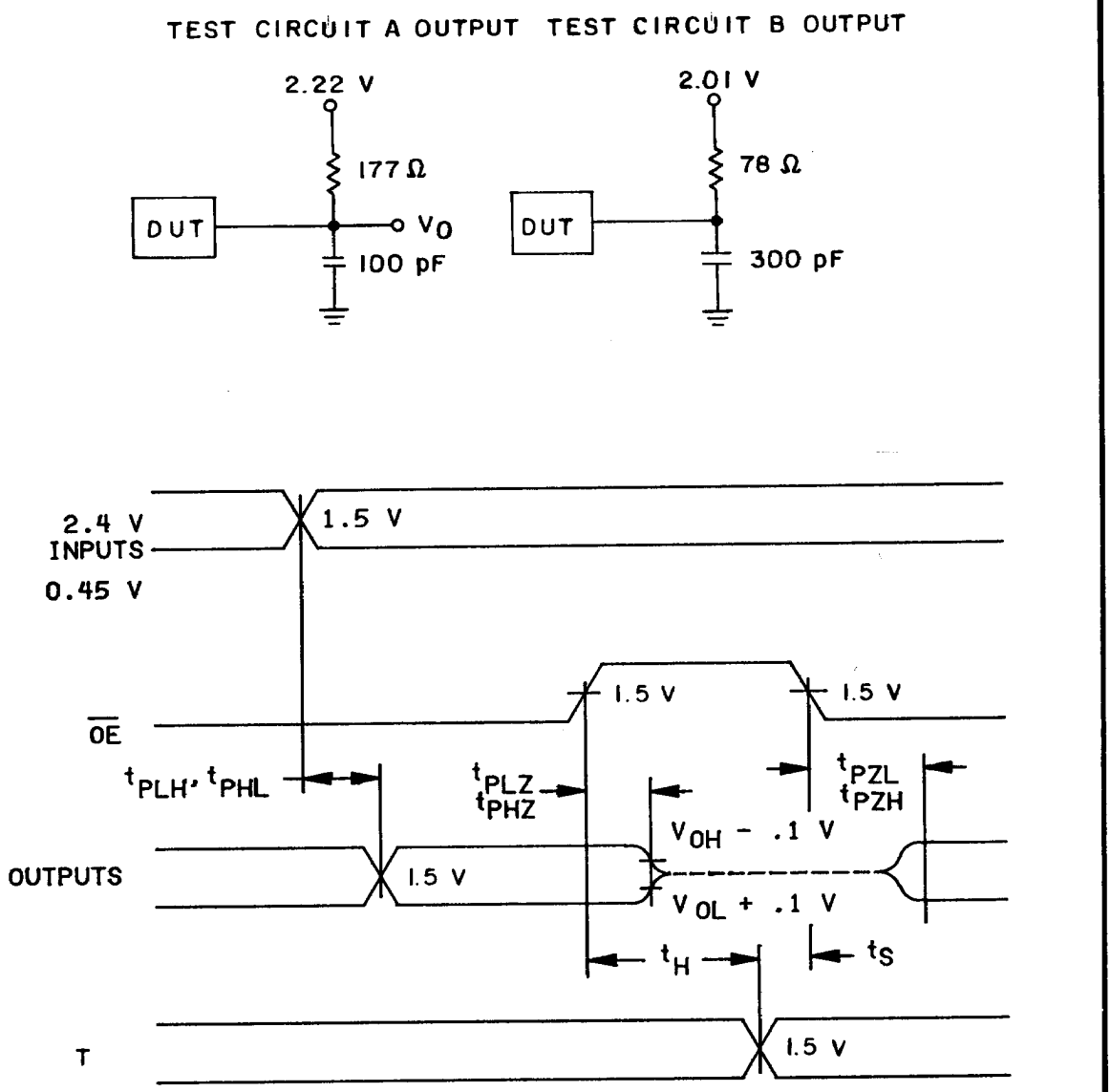

FIGURE 4. Switching time waveforms and test circuits.

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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 input capacitance. A minimum sample size of 5 devices with zero rejects shall be required.

d. Subgroups 7 and 8 tests shall verify the truth table.

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 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 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)	1,2,3,4,7,8,9, 10,11
Groups C and D end-point electrical parameters (method 5005)	2, 8A, 10

* PDA applies to subgroup 1.

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/
5962-8686801RX	34649	MD8286/B
5962-86868013X 2/		MR8286/B
5962-8686802RX	34649	MD8287/B
5962-86868023X 2/		MR8287/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.
2/ Inactive for new design. Not available from an approved source.

Vendor CAGE number	Vendor name and address
34649	Intel Corporation 3065 Bowers Avenue Santa Clara, CA 95051

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