

| REVISIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|-------------|-----------------|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| LTR | DESCRIPTION | DATE (YR-MO-DA) | APPROVED | | | | | | | | | | | | | | | | | | | | | | | | |
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| REV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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

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|--|---|--|------------------|---------------------------|-------------------|-------|--|---|
| 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 <i>Joseph A. Kerby</i> CHECKED BY <i>Charles E. Berger</i> APPROVED BY <i>[Signature]</i> DRAWING APPROVAL DATE 18 AUGUST 1989 REVISION LEVEL | DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 MICROCIRCUIT, LINEAR, POSITIVE, 6-VOLT REGULATOR, FIXED, MONOLITHIC SILICON <table style="width: 100%;"> <tr> <td style="width: 33%;">SIZE A</td> <td style="width: 33%;">CAGE CODE 67268</td> <td style="width: 33%;">5962-89626</td> </tr> <tr> <td colspan="2">SHEET</td> <td style="text-align: center;">1</td> </tr> </table> | SIZE A | CAGE CODE 67268 | 5962-89626 | SHEET | | 1 |
| SIZE A | CAGE CODE 67268 | 5962-89626 | | | | | | |
| SHEET | | 1 | | | | | | |

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SEP 87

• U.S. GOVERNMENT PRINTING OFFICE: 1987 — 748-129/60911

5962-E1341

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

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:

| | | | |
|----------------|------------------------|-------------------------|--------------------------------|
| 5962-89626 | 01 | X | X |
| Drawing number | Device type (1.2.1) | Case outline (1.2.2) | Lead finish per MIL-M-38510 |

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

| Device type | Generic number | Circuit function |
|-------------|----------------|--|
| 01 | 7806A | 1.0 A positive regulator, fixed 6-volt |

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 |
|----------------|----------------------------------|
| X | See figure 1, TO-39 (3-lead can) |
| Y | See figure 1, TO-3 (2-lead can) |
| Z | See figure 1, TO-66 (2-lead can) |

1.3 Absolute maximum ratings.

| | |
|---|-----------------------|
| Input voltage: | |
| Operating or output shorted to ground - - - - - | 35 V dc |
| Transient - - - - - | 43 V dc ^{1/} |
| Storage temperature range - - - - - | -65°C to +150°C |
| Lead temperature (soldering, 10 seconds) - - - - - | +300°C |
| Power dissipation (P_D): | |
| $T_C = +25^\circ\text{C}$: | |
| Case X- - - - - | 2 W |
| Case Y- - - - - | 20 W |
| Case Z- - - - - | 15 W |
| $T_A = +25^\circ\text{C}$: | |
| Case X- - - - - | 1.0 W |
| Case Y- - - - - | 4.3 W |
| Case Z- - - - - | 3.0 W |
| Thermal resistance, junction-to-case (θ_{JC}): | |
| Case X- - - - - | 15°C/W |
| Case Y- - - - - | 3.6°C/W |
| Case Z- - - - - | 3°C/W |

^{1/} The 43-volt input rating refers to the ability of the regulator to withstand high line or transient condition without damage. Since the regulator's maximum current capability is reduced, the output may fall out of regulation at high input voltages under nominal loading.

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| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | 5962-89626 | |
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Junction-to-ambient (θ_{JA}):
Case X- - - - - 120°C/W
Case Y- - - - - 35°C/W
Case Z- - - - - 42°C/W
Junction temperature (T_J) - - - - - +150°C 2/

1.4 Recommended operating conditions.

Ambient operating temperature range (T_A) - - - - - -55°C to +125°C
Input voltage range - - - - - +11.0 V dc to +25 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 2.

3.2.2 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 ambient operating temperature range.

2/ The device is protected by a thermal shutdown circuit which is designed to turn off the output transistor whenever the device junction temperature is in excess of +150°C.

| | | | |
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| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | 5962-89626 | |
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TABLE 1. Electrical performance characteristics.

| Test | Symbol | Conditions 1/ -55°C ≤ T _A ≤ +125°C unless otherwise specified | Group A subgroups | Limits | | Unit |
|---|-------------------------------------|--|----------------------|--------|------|------|
| | | | | Min | Max | |
| Output voltage | V _{OUT} | T _A = +25°C | 1 | 5.9 | 6.1 | V |
| | | V _{IN} = 11.5 V to 23 V 2/ | 1, 2, 3 | 5.75 | 6.25 | |
| Line regulation 3/ 4/ | V _{RLINE} | V _{IN} = 8.5 V to 25 V | 1 | | 30 | mV |
| | | | 2, 3 | | 60 | |
| | | V _{IN} = 9 V to 13 V | 1 | | 15 | |
| | | | 2, 3 | | 30 | |
| Load regulation 3/ | V _{RLOAD} | I _O = 5.0 mA to 1.5 A 5/ | 1 | | 60 | mV |
| | | | 2, 3 | | 120 | |
| | | I _O = 250 mA to 750 mA 5/ | 1 | | 30 | |
| | | | 2, 3 | | 60 | |
| | | I _O = 5 mA to 500 mA 6/ | 1 | | 30 | |
| | | | 2, 3 | | 60 | |
| Standby current drain | I _{SCD} | | 1 | | 6.0 | mA |
| | | | 2, 3 | | 7.0 | |
| Standby current drain change with line | delta I _{SCD} (line) | V _{IN} = 8 V to 25 V | 1, 2, 3 | | 1.0 | mA |
| Standby current drain change with load | delta I _{SCD} (load) | I _O = 5.0 mA to 1000 mA 6/ | 1, 2, 3 | | 0.5 | mA |
| | | I _O = 5.0 mA to 500 mA 5/ | | | 0.5 | |

See footnotes at end of table.

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* U. S. GOVERNMENT PRINTING OFFICE: 1988-550-547

TABLE I. Electrical performance characteristics - Continued.

| Test | Symbol | Conditions 1/ -55°C ≤ T _A ≤ +125°C unless otherwise specified | | Group A subgroups | Limits | | Unit |
|--------------------------|---|--|---|----------------------|--------|-----|-------------|
| | | | | | Min | Max | |
| Dropout voltage | V _{DO} | delta V _{OUT} = 100 mV | I _O = 1.0 A 5/ I _O = 500 mA 6/ | 1, 2, 3 | | 2.5 | V |
| Peak output current | I _{O(pk)} | T _A = +25°C | 5/ | 1 | 1.5 | 3.3 | A |
| | | | 6/ | | 0.5 | 1.7 | |
| Short circuit current 7/ | I _{OS} | V _{IN} = 35 V | 5/ | 1 | | 1.2 | A |
| | | | | 2, 3 | | 2.8 | |
| | | | 6/ | 1 | | 0.7 | |
| | | | | 2, 3 | | 2.0 | |
| Ripple rejection 3/ | delta V _{IN} / delta V _{OUT} | f = 120 Hz, delta V _{IN} = 10 V | | 4 | 62 | | dB |
| | | | | 5, 6 8/ | 60 | | |
| Output noise voltage 8/ | N _O | T _A = +25°C, f = 10 Hz to 100 kHz | | 7 | | 40 | μV/V rms |
| Long term stability 8/ | delta V _{OUT} / delta t | T _A = +25°C, t = 1,000 hrs | | 7 | | 24 | mV |

1/ Unless otherwise specified, V_{IN} = 10 V and I_O = 500 mA for cases Y and Z, V_{IN} = 10 V and I_O = 100 mA for case X. Maximum test current for case X is 500 mA.

2/ For case X: I_O = 5 mA to 500 mA, P ≤ 2 W. For case Y: I_O = 5 mA to 1.0 A, P ≤ 20 W. For case Z: I_O = 5 mA to 1.0 A, P ≤ 15 W.

3/ All measurements except noise voltage and ripple rejection are made at constant junction temperature and with low duty cycle.

4/ Minimum load current for full line regulation is 5.0 mA.

5/ For cases Y and Z only.

6/ For case X only.

7/ Short circuit protection is only assured up to V_{IN} = 35 V.

8/ Guaranteed if not tested to the limits specified.

**STANDARDIZED
MILITARY DRAWING**

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

**SIZE
A**

5962-89626

REVISION LEVEL

SHEET 5

Case outline X

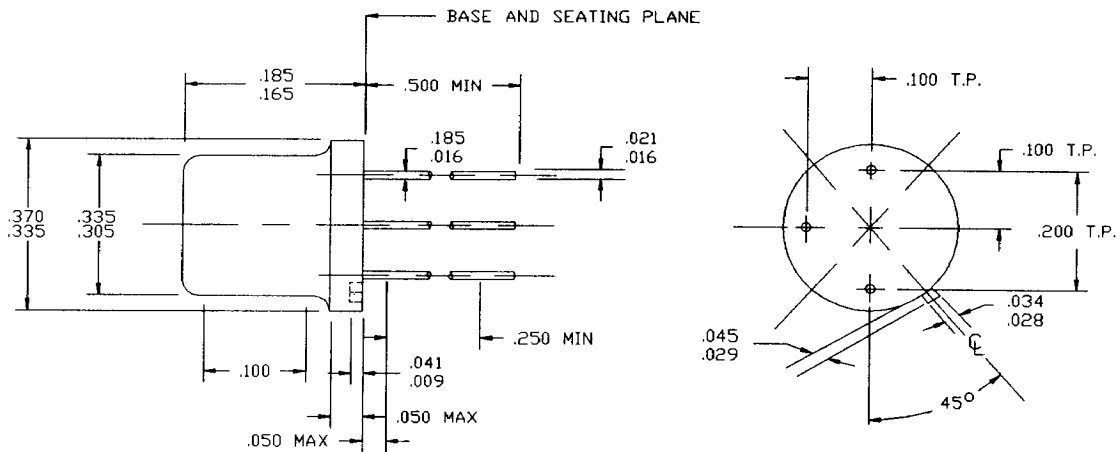


FIGURE 1. Case outlines.

| | | | |
|---|-------------------|-----------------------|----------------|
| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | | 5962-89626 |
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Case outline Y

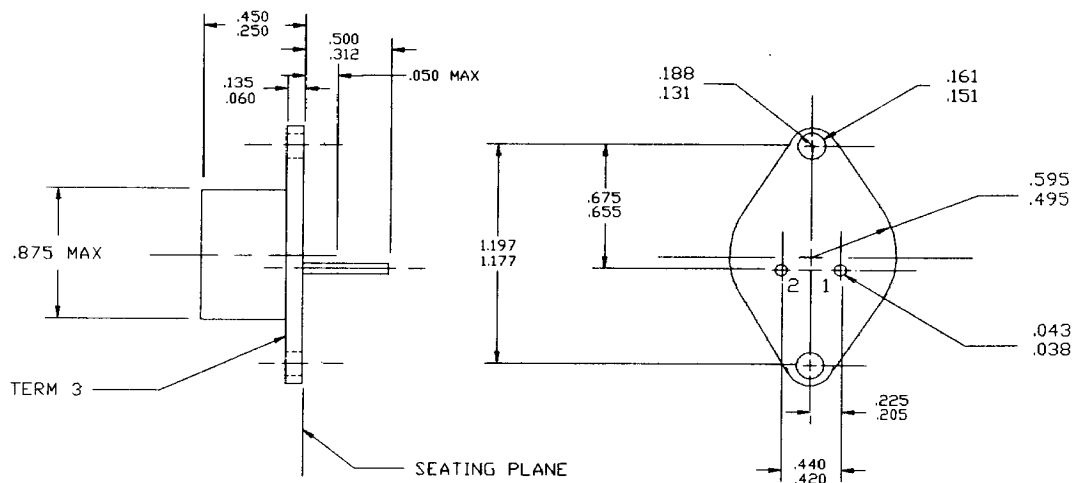


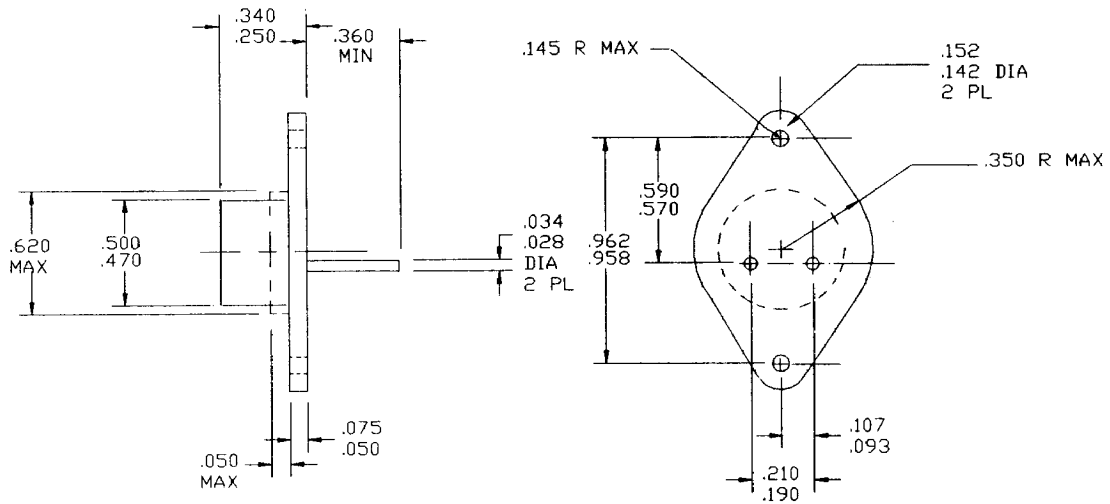
FIGURE 1. Case outlines - Continued.

| | | | |
|---|-------------------|-----------------------|----------------|
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Case outline Z



| Inches | mm | Inches | mm |
|--------|------|--------|-------|
| .028 | 0.71 | .250 | 6.35 |
| .034 | 0.86 | .340 | 8.64 |
| .050 | 1.27 | .350 | 8.89 |
| .075 | 1.91 | .360 | 9.14 |
| .093 | 2.36 | .470 | 11.94 |
| .107 | 2.72 | .500 | 12.70 |
| .142 | 3.61 | .570 | 14.48 |
| .145 | 3.68 | .590 | 14.99 |
| .152 | 3.86 | .620 | 15.75 |
| .190 | 4.83 | .958 | 24.33 |
| .210 | 5.33 | .962 | 24.43 |

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Case outlines - Continued.

| | | | |
|---|-------------------|------------|---------|
| STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444 | SIZE A | 5962-89626 | |
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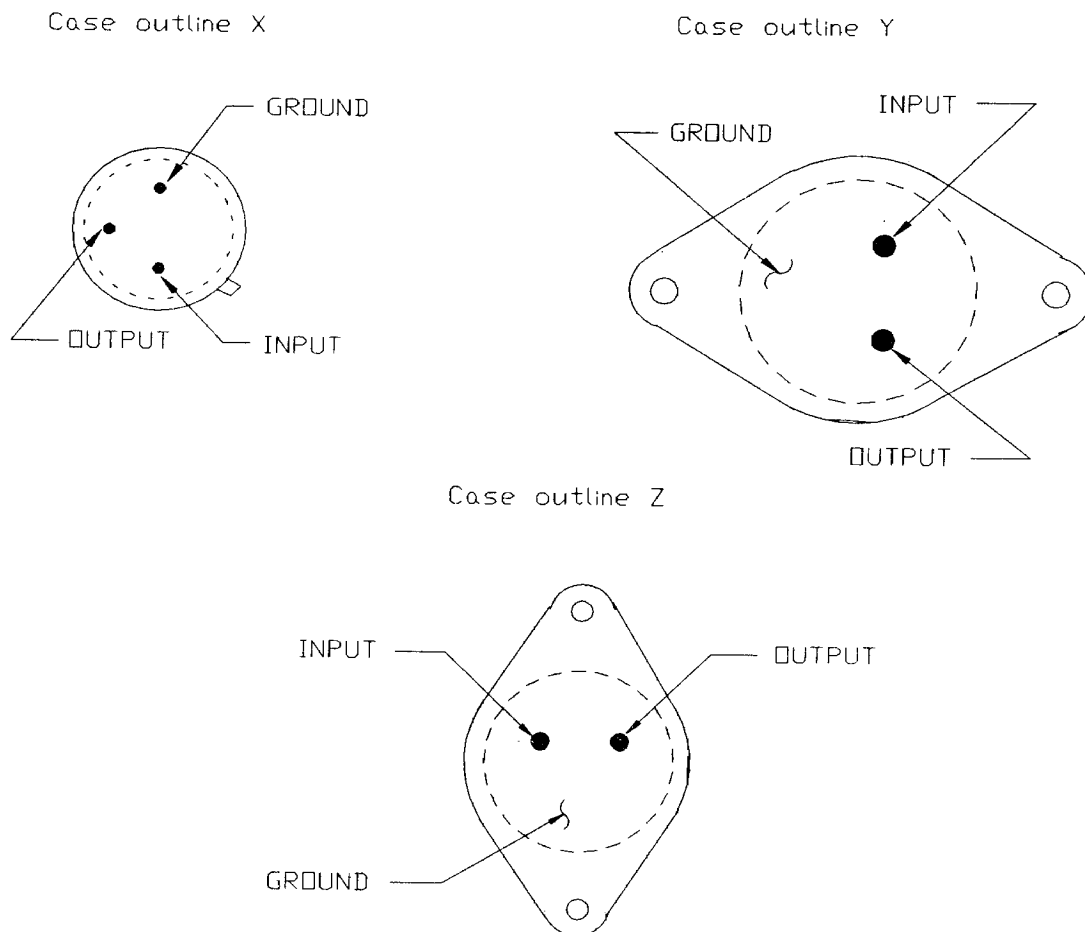


FIGURE 2. Terminal connections.

| | | | |
|---|------------------|----------------|---------|
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3.4 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.

3.5 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.

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

3.7 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 3.4 herein).

(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 8, 9, 10, and 11 in table I, method 5005 of MIL-STD-883 shall be omitted.

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 3.4 herein).

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

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

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TABLE II. Electrical test requirements.

| MIL-STD-883 test requirements | Subgroups (per method 5005, table 1) |
|--|--|
| Interim electrical parameters (method 5004) | 1 |
| Final electrical test parameters (method 5004) | 1*, 2, 3, 4 |
| Group A test requirements (method 5005) | 1, 2, 3, 4, 5, 6, 7** |
| Groups C and D end-point electrical parameters (method 5005) | 1 |

* PDA applies to subgroup 1.

** Subgroups 5, 6, and 7 if not tested shall be
guaranteed to the limits specified in table I.

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.

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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 3.4 herein) has been submitted to DESC-ECS.

| Military drawing part number | Vendor CAGE number | Vendor similar part number 1/ |
|------------------------------|--------------------|-------------------------------|
| 5962-8962601XX | 34333 | SG7806AT/883B |
| 5962-8962601YX | 34333 | SG7806AK/883B |
| 5962-8962601ZX | 34333 | SG7806AR/883B |

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

Vendor CAGE number

34333

Vendor name and address

Silicon General, Incorporated
11861 Western Avenue
Garden Grove, CA 92641

| | | | |
|---|-------------------|-----------------------|-----------------|
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