REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED

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

PMIC N/A

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DRAWING APPROVAL DATE
93-08-23

REVISION LEVEL

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

MICROCIRCUIT, LINEAR, IF/RF VIDEO AMPLIFIER, MONOLITHIC SILICON

SIZE	CAGE CODE	5962-90520
A	67268	

SHEET 1 OF 10

DESC FORM 193
JUL 91

5962-E331-93

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

5962-90520	01	X	X
Drawing number	Device type (see 1.2.1)	Case outline (see 1.2.2)	Lead finish (see 1.2.3)

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

Device type	Generic number	Circuit function
01	SL560AC	300 MHz low noise amplifier

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
X	See figure 1	8	Can

1.2.3 Lead finish. The lead finish shall be as specified in MIL-M-38510. 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. 1/

Supply voltage range (V+) . . . . . +15.0 V dc
Power dissipation (P_D) . . . . . 200 mW
Junction temperature (T_J) . . . . . +175°C
Lead temperature (soldering, 10 seconds) . . . . . +300°C
Storage temperature range . . . . . -65°C to +150°C
Thermal resistance, junction-to-case (Θ_{JC}) . . . . . 60°C/W
Thermal resistance, junction-to-ambient (Θ_{JA}) . . . . . 220°C/W

1.4 Recommended operating conditions.

Supply voltage (V+) . . . . . +6.0 V dc
Ambient operating temperature range (T_A) . . . . . -55°C to +125°C

2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, 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.

1/ Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.

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.

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 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 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.

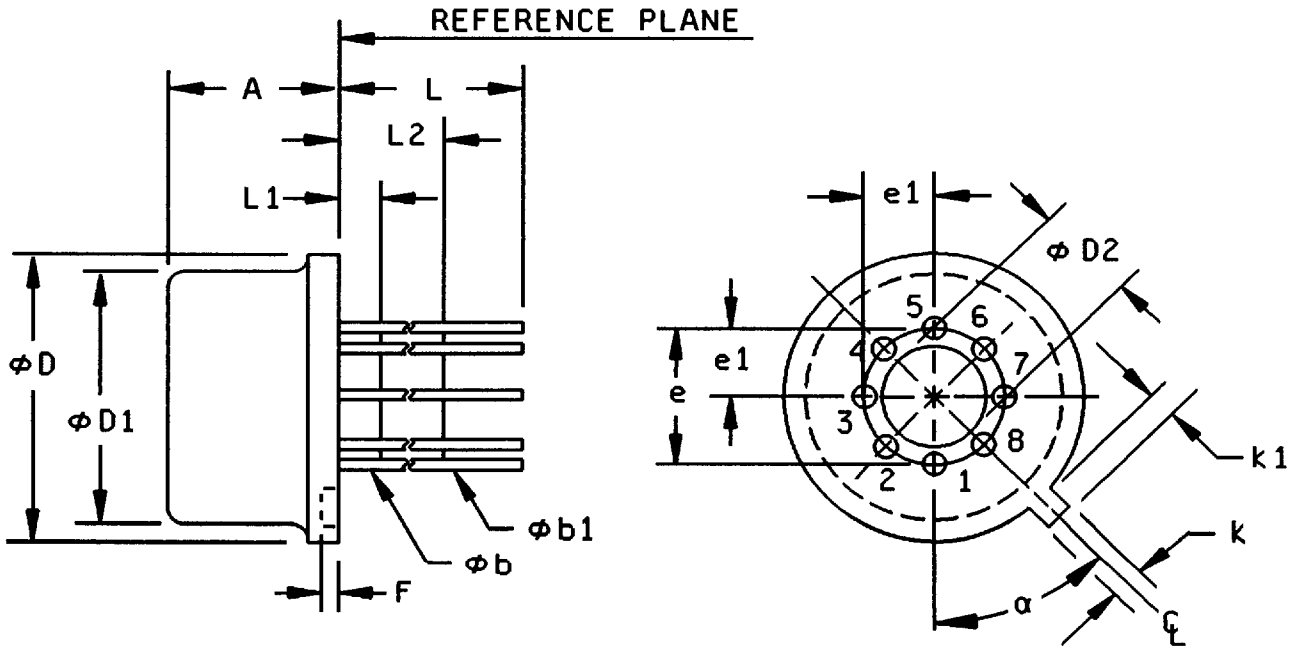
TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits 2/		Unit
					Min	Max	
Supply current	I+		1,2,3	01		30	mA
Output swing		$T_A = +25°C$	4	01	+5		dBm
Noise figure (common emitter)	N	f = 60 MHz, $R_S = 200\Omega$, $T_A = +25°C$	4	01		3	dB
Small signal voltage gain	A_{VS}		4	01	11	17	dB
			5,6		8	20	
Upper cut-off frequency	f_{CU}		4	01	175		MHz
			5,6		150		

1/ Unless otherwise specified, V+ = +6.0 V dc, V_{IN} = 4 mV rms, load resistance (R_L) = source resistance (R_S) = 50Ω, and f = 30 MHz. See figure 3.

2/ The algebraic convention, whereby the most negative value is a minimum and the most positive is a maximum, is used in this table. Negative current shall be defined as conventional current flow out of a device terminal.

Case X



NOTES:

1. The case outline X was originally designed using inch-pound units of measurement, in the event of conflict between the metric and inch-pound units, the inch-pound shall take precedence.
2. Metric equivalents are for general information only.
3. All leads: ϕb applies between L1 and L2. $\phi b1$ applies between L2 and .500 (12.70 mm) from the reference plain. Diameter is uncontrolled in L1 and beyond .500 (12.70 mm) from the reference plane.
4. Measured from maximum diameter of the product.
5. Leads having a maximum diameter .019 (0.48 mm) measured in gauging plane .054 (1.37 mm) +.001 (0.03 mm) - .000 (0.00 mm) below the base plane of the product shall be within .007 (0.18 mm) of their true position relative to a maximum width tab.
6. The product may be measured by direct methods or by gauge.
7. All leads: Increase maximum limit by .003 (0.08 mm) when lead finish A or B is applied.
8. The location, alpha, of the leads N is 360°/N. N is total number of leads or lead positions.

FIGURE 1. Case outline.

Case X

Symbol	Dimensions				Notes
	Millimetes		Inches		
	Min	Max	Min	Max	
A	4.19	4.70	.165	.185	
ϕb	0.41	0.48	.016	.019	3,5,7
$\phi b1$	0.41	0.53	.016	.021	3,5,7
ϕD	8.51	9.40	.335	.370	
$\phi D1$	7.75	8.51	.305	.335	
$\phi D2$	2.79	4.06	.110	.160	
F	----	1.02	----	.040	
k	0.69	0.86	.027	.034	
k1	0.69	1.14	.027	.045	4
L	12.700	19.05	.500	.750	3
L1	----	1.27	-----	.050	3
L2	6.35	----	.250	----	3

Case outline	Symbol				Note
	α	e	e1	N	
X	45°C BSC	.200 BSC	.100 BSC	8	5

FIGURE 1. Case outline - Continued.

Device type	01
Case outline	X
Terminal number	Terminal symbol
1	GROUND
2	OUTPUT CURRENT SET
3	OUTPUT
4	V_{CC}
5	GAIN SET
6	INPUT (COMMON EMITTER CONFIGURATION)
7	INPUT (COMMON BASE CONFIGURATION)
8	INPUT (5Ω APPLICATIONS)

FIGURE 2. Terminal connections.

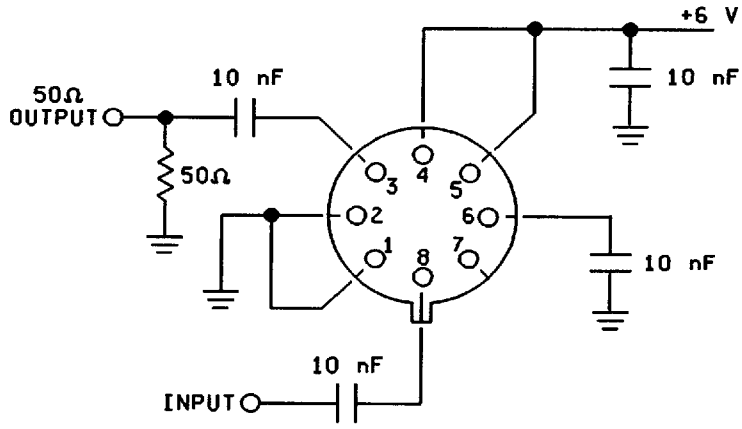


FIGURE 3. Test circuit.

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. 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 7, 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. 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 1005 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.

5. PACKAGING

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

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*,2,3,4,5,6
Group A test requirements (method 5005)	1,2,3,4,5,6
Groups C and D end-point electrical parameters (method 5005)	1

* PDA applies to subgroup 1.

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 original equipment manufacturer 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 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-481 using DD Form 1693, Engineering Change Proposal (Short Form).

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, Ohio 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.