SELECTED ITEM DRAWING

Unless otherwise specified DIMENSIONS ARE IN INCHES (MM)	TOLERANCES: .XX +/- 0.010 .XXX +/- 0.005 .XXXX +/- 0.002 ANGLES+/- .5 DEG	Drawing practices per **ASME Y14.100**	**DC to 4 GHz, Gain Block Amplifier**	
			SIZE **A**	DRAWING NUMBER **SID000033**

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1. SCOPE

1.1. Scope

This drawing establishes the requirements for the DC to 4 GHz, GaAs, InGaP, HBT, MMIC, Gain Block Amplifier, to be screened in accordance with MIL-PRF-38534, Class K, to the requirements specified in 4.1, and 4.2 herein.

1.2. Analog Devices Part Number

Generic Part Number	Screened Part Number
ADH395S	HMC8674

2. APPLICABLE DOCUMENTS

2.1. Government Documents

Unless otherwise specified, the following drawings and standards, of the issue in effect on the date of the accepted purchase order, in the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, shall form a part of this drawing to the extent specified herein.

DEPARTMENT OF DEFENSE TEST METHOD STANDARD

MIL-STD-883	Microcircuits

DEPARTMENT OF DEFENSE PERFORMANCE SPECIFICATIONS

MIL-PRF-38534	Hybrid Microcircuits, General Specifications For
MIL-PRF-38535	Integrated Circuit (Microcircuits) Manufacturing, General Specifications For

2.2. Non-Government Documents

The following documents, of the issue in effect on the date of the purchase order, form a part of this drawing to the extent specified herein:

Analog Devices Inc.

HMC395 Data Sheet	Commercial Product Die Datasheet	v02.0109 (Reference Only)

3. REQUIREMENTS

3.1. General Requirements

The devices delivered shall comply to this specification.

3.2. Design Construction and Physical Dimensions

The design construction and physical dimensions shall be as defined in Figure 1 herein.

3.3. Traceability

Each delivered device shall be traceable to the wafer number and the wafer lot number of each device. Inspection lot records shall be maintained to provide traceability to the specific wafer and wafer lot from which the chips originated.

3.4. Burn-In and Life Test Circuit

The burn-in and life test circuit and conditions 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 methods 1005 and 1015 per MIL-STD-883.

4. QUALITY ASSURANCE PROVISIONS

4.1. Wafer Acceptance Testing

The wafer lot acceptance testing shall consist of Class Level S inspections per MIL-STD-883 TM 5007. All deliverable Die shall have passed Element evaluation per 4.2.2 and passed 100% visual inspection, per MIL-STD-883 TM2010 Condition A, after wafer dicing.

4.2. Dice Qualification Requirements

Dice qualification requirements shall be in accordance with MIL-PRF-38534, Appendix C, Table C-II, per Class K.

4.2.1. Element Electrical Test (RF-On Wafer)

Die are not able to be electrically tested on-wafer. Delivered Die will be picked from the center of the wafer only and inspected per MIL-STD-883, Method 2010A.

4.2.2. Element Evaluation (Lot Acceptance Testing)

Sample Die shall be randomly selected from inspected Die per 4.2.1 and shall be mounted to suitable fixturing for screening.

4.2.2.1. Initial Electrical Test (Pre Burn-In)

Pre Burn-In electrical tests shall consist of the tests specified on Table I, tested at room temperature only.

4.2.2.2. Interim Electrical Test (Post Burn-In)

Post Burn-In electrical tests shall consist of the tests specified on Table I, tested at room temperature only and shall meet performance requirements in accordance with Table I and Table II.

4.2.2.3. Final Electrical Test (Post Life Test)

Final electrical tests shall consist of the tests specified in Table I, tested at -40 °C and +85 °C, and shall meet performance requirements in accordance with Table I and Table II.

5. MIL-PRF-38534 EXCEPTIONS

5.1. Wafer Fabrication

Foundry information is available upon request.

5.2. Microcircuit Dice Evaluation Requirements (TABLE C-II)

- Pre-screen test post assembly required to Die qualification to remove all assembly related rejects.
- Subgroup 4: mechanical shock or constant acceleration not performed.
- Subgroup 4: Interim and post burn-in electrical tests will include tests screened at +25 °C only.
- Subgroup 4: Qty/Acc = 45 (0).

6. PREPARATION FOR DELIVERY

The preparation for delivery, packaging, preservation, ESD protection and handling shall be in accordance with MIL-PRF-38534.

6.1. Die Packaging Information

The Die shall be delivered in accordance with Table III herein.

6.2. Inspection Data Requirements

The following data shall accompany each shipment.

a. A Certificate of Conformance (C of C) certifies that the lot(s) meets all requirements of this specification.
b. Die Photograph
c. Attribute data for all tests.
d. Wafer Lot Acceptance data including photos from SEM inspection in 4.1.
e. Element Evaluation test results per 4.2.2.
    a. Variables data for electrical end-point measurements.
f. Failure Analysis with photos (If applicable)
g. A cover sheet indicating the following purchasing information:
    1. Customer purchase order number.
    2. Analog Devices part number.
    3. Part lot identification codes.
    4. Date & quantity shipped.

TABLE I: ELECTRICAL CHARACTERISTICS FOR QUALIFICATION SAMPLES

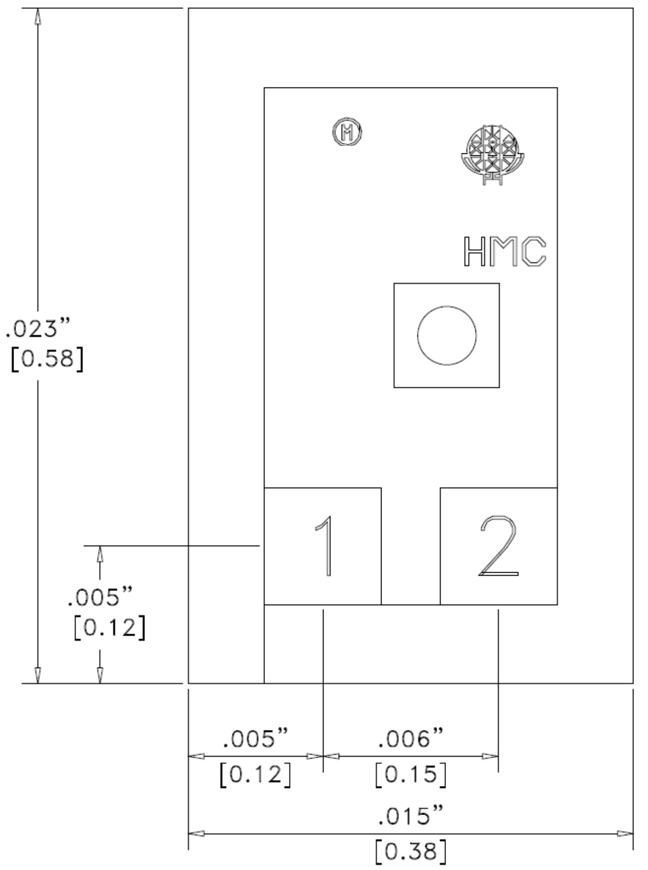
Parameter	Conditions 1/2/3/ Unless otherwise specified	Sub-Group	Limits		Units
			Min	Max	
Gain	RFIN = 0.1 GHz	4	15.3		dB
		5, 6	15		dB
	RFIN = 2 GHz	4	15		dB
		5, 6	14.5		dB
	RFIN = 4 GHz	4	13.5		dB
		5, 6	12.5		dB
Output Power for 1 dB Compression (OP1dB)	RFIN = 0.1 GHz	4	15.5		dBm
		5, 6	15		dBm
	RFIN = 2 GHz	4	13.5		dBm
		5, 6	13		dBm
	RFIN = 4 GHz	4	9		dBm
		5, 6	8		dBm
Supply Current (Icq)	No Signal at RF IN	4, 5, 6		65	mA

TABLE I Notes:
1/ Limits apply at +25 °C only with Vs = +5 V, and Rbias = 22 Ohm.
2/ Data taken with broadband bis tee on device output.
3/ See MIL-PRF-38535 Table C-Xa for subgroup parameter definitions.

TABLE II: BURN-IN/LIFE TEST DELTA LIMITS 1/2/3/

Parameter	Test Conditions	Delta Limits	Units
Gain	Per Table I	± 1	dB
Supply Current (Icq)		± 10	%

TABLE II Notes:
1/ Delta test is performed at T_A = +25 °C only.
2/ Table I limits will not be exceeded.
3/ Delta calculated pre/post 240 hours and post 240 hours / post 1000 hours.



PAD	DESCRIPTION
1	RF IN
2	RF OUT

NOTES:

1. ALL DIMENSIONS ARE IN INCHES [MM]
2. DIE THICKNESS IS .004”
3. TYPICAL BOND PAD IS .004” SQUARE
4. BACKSIDE METALIZATION: GOLD
5. BACKSIDE METAL IS GROUND
6. BOND PAD METALIZATION: GOLD

Figure 1 – Device Outline for the HMC8674

TABLE III: DIE PACKAGING INFORMATION

Standard Package	**Alternate**
GP-3 (Gel Pack)	1/

TABLE III Note:
1/ For alternate packaging information, contact Analog Devices Inc.

ORDERING GUIDE

Model	Temperature Range
HMC8674	−40 °C to +85 °C

Revision History

Revision History		
Rev	**Description of Change**	**Date**
A	Initial release.	10/08/2024

Printed in the U.S.A. **09/2024**

ANALOG DEVICES

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