SELECTED ITEM DRAWING

			ANALOG DEVICES	
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**	**8 GHz to 14 GHz, 2 Watt Power Amplifier With Power Detector**	
			SIZE **A**	DRAWING NUMBER **SID000092**

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1. SCOPE

1.1. Scope

This drawing establishes the requirements for the non-hermetic, 8 GHz to 14 GHz, GaAs, PHEMT, MMIC, 2 Watt Power Amplifier with Power Detector, to be screened with guidelines to NASA/EEE-INST-002, Section M4, Table 2 and Table 3, Level 2 applications, to the requirements specified in 4.1, and 4.2 herein.

1.2. Analog Devices Part Number

Generic Part Number	Screened Part Number
ADH952AS	HMC8825LP5GE

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
MIL-STD-1580C	Destructive Physical Analysis for Electronic, Electromagnetic, and Electromechanical Parts

DEPARTMENT OF DEFENSE PERFORMANCE SPECIFICATIONS

MIL-PRF-38535	Integrated Circuits (Microcircuits) Manufacturing, General Specification For
PEM-INST-001	Instructions for Plastic Encapsulated Microcircuit (PEM) Selection, Screening, and Qualification
NASA/EEE-INST-002	Instructions for EEE Parts Selection, Screening, Qualification and Derating

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.

HMC952ALP5GE Data Sheet	Commercial Product Datasheet	v03.0418 (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 a production lot. Inspection lot records shall be maintained to provide traceability of its origin.

3.4. DPA
If specified on Purchase Order, DPA testing shall be done in accordance with MIL-STD-1580C, Sections 16.1.

3.5. Solder Dipping
If specified on Purchase Order, Solder dipping of terminals is required. The terminal finish of the devices is 100% Matte Sn and shall be hot solder dipped with Sn63 in accordance with MIL-PRF-38535.

3.6. 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. Flight Screening Requirements
Flight screening requirements for PEM devices shall be per EEE-INST-002, Section M4, Table 2, Level 2 applications. Where applicable, electrical testing shall consist of tests specified in Table I herein.

4.1.1. Initial (Pre Burn-In) Electrical Test
Initial electrical test shall consist of the tests specified on Table I tested at room temperature only.

4.1.2. Post Burn-In Electrical Test
Post Burn-In electrical test shall consist of the tests specified on Table I, tested at room temperature only. Devices must meet delta parameter requirements in accordance with Table II and PDA requirements of ≤ 10%.

4.1.3. Final Electrical Test (Temperature Extremes)
The final electrical test shall consist of tests specified in Table I, tested at -40 °C and +85 °C, which shall be Read and Record only.

4.2. Qualification Requirements for PEMS
Qualification requirements for PEMS devices shall be per EEE-INST-002, Section M4, Table 3, Level 2 applications. Where applicable, electrical testing shall consist of tests specified in Table I herein.

4.2.1. Post Steady State Life Electrical Test
Post steady state life electrical tests shall consist of the tests specified per Table I tested at +25 °C, -40 °C, and +85 °C. -40 °C, and +85 °C shall be Read and Record only.

5. EEE-INST-002 SECTION M4 EXCEPTIONS

5.1. Qualification Requirements for PEMS
Radiation Analysis: SEE has not been evaluated.

6. PREPARATION FOR DELIVERY

The preparation for delivery, packaging, preservation, ESD protection and handling shall be in accordance with MIL-PRF-38535.

6.1. Part Marking
Devices shall be marked as specified on Figure 1 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. DPA Report (if applicable).
c. Summary of electrical test requirements defined in 4.1 herein.
d. Summary of qualification requirements for PEMS results defined in 4.2 herein.
e. Failure Analysis with photos (If applicable).
f. 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 PERFORMANCE CHARACTERISTICS (-40 °C, +25 °C AND +85 °C)

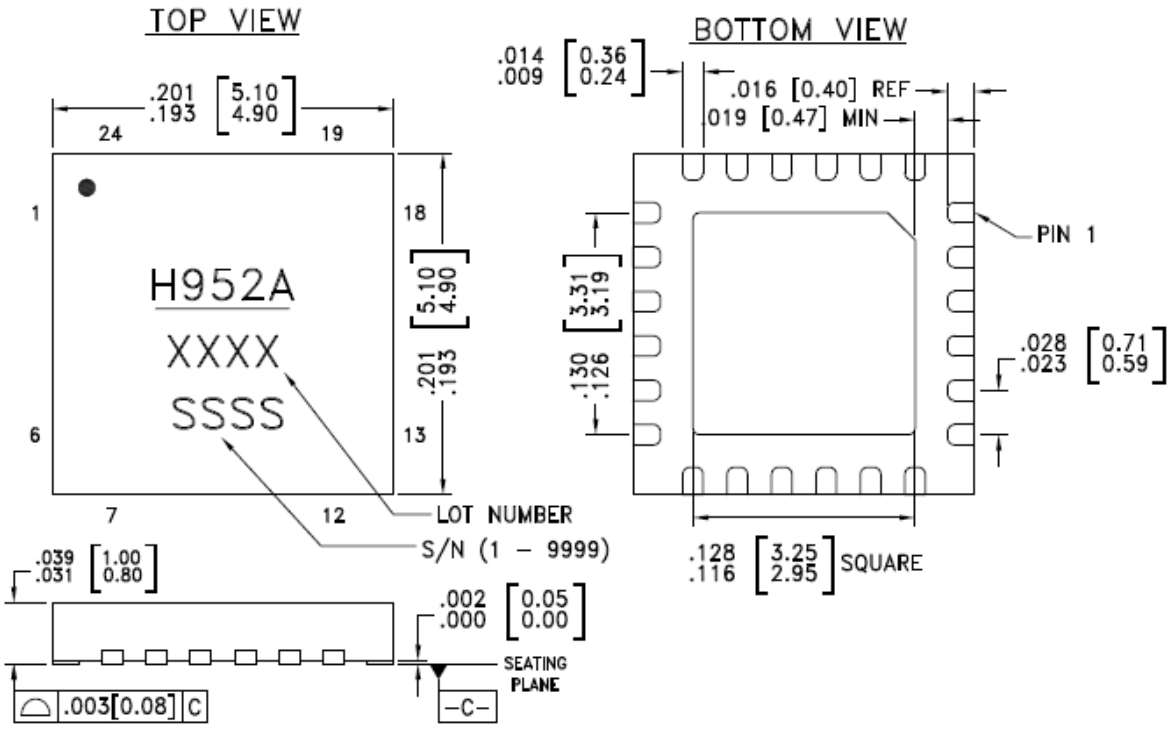
Parameter	Test Conditions 1/2/6/7/ Unless otherwise specified	Group A Subgroups	Limits			Units
			Min	Typ	Max	
Gain 3/	RFIN = 8 GHz	4	28.5			dB
	RFIN = 9 GHz & 13 GHz	4	30			dB
	RFIN = 14 GHz	4	28			dB
Output Power 1dB Compression (OP1dB) 4/5/	RFIN = 8 GHz & 9 GHz	7	31			dBm
	RFIN = 13 GHz & 14 GHz	7	32			dBm
Vdet	RFIN = 11 GHz, PIN = -20 dBm	4	0.1		1	V
Vref		4	0.1		1	V
Vdet – Vref Delta		4	-0.3		0.3	V
Total Supply Current (Idd)	No Signal at RFIN	1		1400		mA

TABLE I Notes:
1/ Test limits apply at +25 °C only with Vdd1 = Vdd2 = Vdd3 = Vdd4 = +6 V, and Idd = 1400 mA
2/ -40 °C and +85 °C (Subgroups 2, 3, 5, 6, 8A, and 8B) are Read and Record only.
3/ PIN = -15 dBm
4/ OP1dB testing is go-no-go confirming minimum requirements are met.
5/ OP1dB shall be measured at +25 °C only.
6/ Adjust Vgg between -2 V and 0 V to achieve Idd = 1400 mA typical.
7/ Each device shall use the individual Vgg voltage established at pre burn-in throughout all electrical testing.

TABLE II: BURN-IN DELTA LIMITS 1/2/3/4/

Parameter	Test Conditions	Delta Limits	Units
Gain	Per Table II	± 1	dB
Total Supply Current (Idd)		± 10	%

TABLE II Notes:
1/ Delta test is performed at T_A = +25 °C only.
2/ Table I limits will not be exceeded.
3/ Deltas calculated at pre/post 240 hours.
4/ Vgg voltage set to pre burn-In value for each device.



NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEAD AND GROUND PADDLE MATERIAL: COPPER ALLOY.
3. LEAD AND GROUND PADDLE PLATING: 100% MATTE TIN.
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
6. CHARACTERS TO BE HELVETICA MEDIUM, .025 HIGH, WHITE INK, OR LASER MARK LOCATED APPROX. AS SHOWN.
7. PAD BURR LENGTH SHALL BE 0.15mm MAX. PAD BURR HEIGHT SHALL BE 0.25mm MAX.
8. PACKAGE WARP SHALL NOT EXCEED 0.05mm
9. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
10. REFER TO ADI APPLICATION NOTE FOR SUGGESTED PCB LAND PATTERN.

PIN #	FUNCTION	PIN #	FUNCTION	PIN #	FUNCTION	PIN #	FUNCTION
1	N/C	7	Vgg2	13	VDET	19	N/C
2	N/C	8	Vgg3	14	N/C	20	Vdd3
3	N/C	9	N/C	15	GND	21	Vdd2
4	RFIN	10	N/C	16	RFOUT	22	Vdd1
5	GND	11	Vdd4	17	N/C	23	N/C
6	Vgg1	12	VREF	18	N/C	24	N/C

The HMC8825LP5GE has a MSL rating of MSL3.

Figure 1 – Device Outline for the HMC8825LP5GE

ORDERING GUIDE

Model	Temperature Range	Package Description	Lead Finish	Package Option
HMC8825LP5GE	–40 °C to +85 °C	24-Lead RoHS-Compliant Low Stress Injection Molded Plastic	100% Matte Sn	LFCSP (CP-24-20)

Revision History

Revision History		
Rev	**Description of Change**	**Date**
A	Initial release.	04/16/2025

ANALOG DEVICES

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