

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

6.15 GHz to 12 GHz,
Hybrid VCO with Varactor Diodes

SIZE
A

DRAWING NUMBER
SID000094

SID000094 **Rev. B**
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1. SCOPE

1.1. Scope

This drawing establishes the requirements for the 6.15 GHz to 12 GHz, MMIC, Hybrid VCO with Varactor Diodes, assembled hermetically in the LH250 package, as defined in 4.1, 4.2 and 4.3 herein.

1.2. Analog Devices Part Number

<u>Generic Part Number</u>	<u>Screened Part Number</u>
ADH732S	HMC8732LH250

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

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.

HMC732LC4B Data Sheet Commercial Product Datasheet v02.0514 (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 lot and wafer number. Inspection lot records shall be maintained to provide traceability to the specific wafer and wafer lot from which the chips originated as well as traceability to package and materials.

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. Element Evaluation Requirements

The element evaluation requirements are defined in Table I herein.

4.2. Flight Screening Requirements

Flight screening requirements shall be per MIL-PRF-38534 Table C-IX, Class K screening.

4.2.1. Electrical Test Requirements

Electrical test requirements are defined in Table II herein.

4.2.2. Electrical Performance Characteristics

Electrical performance characteristics are specified on Table III herein.

4.2.3. Burn-In Delta Requirements

Pre and Post Burn-In Electrical test and delta parameters shall consist of the tests specified in Table IV herein.

4.3. Quality Conformance Inspection (QCI)

Group B, Group C, and Group D tests shall be performed per with MIL-PRF-38534, Table C-Xb (Option 2), Table C-Xc, and Table C-Xd, Class K screening.

4.3.1. Post Steady State Life Electrical Test

Post steady state life electrical tests shall consist of the tests specified per Table III tested at room temperature only. Devices must meet delta parameter requirements in accordance with Table IV herein.

5. MIL-PRF-38534 HYBRID SCREENING AND QUALITY CONFORMANCE INSPECTION EXCEPTIONS

5.1. Flight Screening Requirements

Burn-In: Duration = 320 hours.

5.2. Group B

Subgroup 3: Resistance to solvents is not applicable.

Subgroup 5: In-line data used.

Subgroup 6: In-line data used.

5.3. Group C

Subgroup 1: Resistance to soldering heat is not applicable.

Subgroup 1: Qty/Acc = 10/0

Subgroup 3: Devices from Subgroup 1 shall be used. Performed prior Subgroup 4.

Subgroup 4: Devices from Subgroup 1 shall be used.

Subgroup 5: Not performed.

5.4. Group D

Subgroup 3: Not applicable.

Subgroup 4: Empty packages used.

6. PREPARATION FOR DELIVERY

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

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. Summary of electrical test requirements defined in 4.2 herein.
- c. Summary of QCI results defined in 4.3 herein.
- d. Failure Analysis with photos (If applicable).
- e. 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.
- f. Varactor diodes Certificate of Conformance (C of C).

TABLE I: ELEMENT EVALUATION REQUIREMENTS

Component	Element Evaluation / Lot Acceptance
Package and Lid	Per MIL-PRF-38534 Table C-Xd. Class K Screening.
Varactor Diodes	Per MIL-PRF-38534 Table C-II. Class H Screening. <u>1/</u>
VCO Die	Performed at hybrid level. Per MIL-PRF-38534 Table C-Xb, C-Xc, and C-Xd. Class K Screening.

TABLE I Note:
1/ C of C shall be provided on Test Report.

TABLE II: ELECTRICAL TEST REQUIREMENTS

Test Requirement	Subgroups (in accordance with MIL-PRF-38534, Table C-Xa)
Interim Electrical Parameters	1, 4
Final Electrical Parameters	1, 4 <u>1/2/</u>
Group A Electrical Parameters	1, 2, 3, 4, 5, 6
Group C End-Point Electrical Parameters	1, 4 <u>2/</u>

TABLE II Notes:
1/ PDA applies to Table III subgroup 1 and Table IV delta parameters.
2/ See Table IV for delta parameters.

TABLE III: ELECTRICAL PERFORMANCE CHARACTERISTICS (-40 °C, +25 °C AND +85 °C)

Parameter	Conditions <u>1/</u> Unless otherwise specified	Group A Subgroups	Limits		Units
			Min	Max	
Frequency Range	Vtune = 0 V	4, 5, 6		6.15	GHz
	Vtune = 23 V	4, 5, 6	12		GHz
RFOUT Pout	Vtune = 0 V, 12 V, & 23V	4	-3		dBm
		5, 6	-5		dBm
Tune Port Leakage Current	Vcc = 0V & Vtune = 23 V	1		10	μA
		2, 3		50	μA
SSB Phase Noise	Vtune = 0 V, 10 V and 12 V & 100 kHz offset	4		-85	dBc/Hz
		5, 6		-77	dBc/Hz
Supply Current	Vtune = 0 V, 12 V, & 23V	1, 2, 3		75	mA

TABLE III Note:
1/ Limits apply between -40 °C and +85 °C with Vcc = +5 V unless otherwise noted.

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

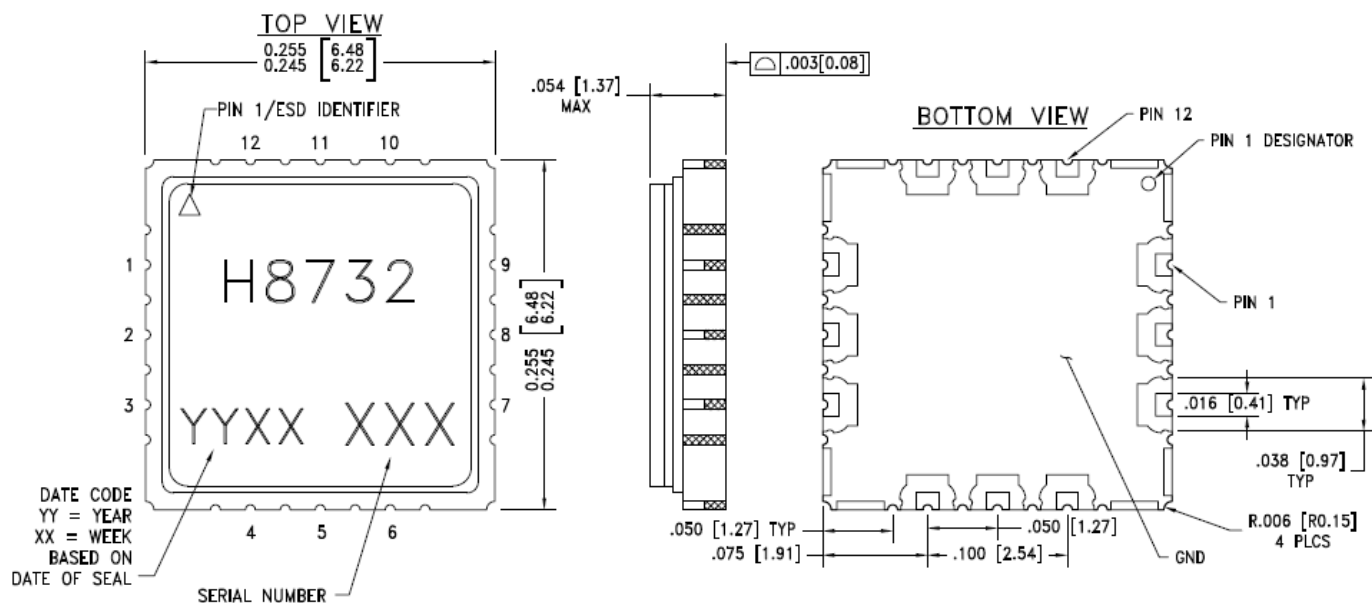
Parameter	Test Conditions	Delta Limits	Units
RFOUT Pout	Per Table III	± 1.2	dB
Supply Current		± 10	%

TABLE IV Notes:

1/ Delta test is performed at $T_A = +25\text{ }^{\circ}\text{C}$ only.

2/ Table II limits will not be exceeded.

3/ Deltas calculated at pre/post 320 hours and post 320 hours / post1000 hours.



NOTES:

1. PACKAGE BODY MATERIAL: CERAMIC & KOVAR
2. LEAD AND GROUND PADDLE PLATING: GOLD 40-80 MICROINCHES.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. CHARACTERS TO BE LASER MARKED WITH .018"MIN to .030"MAX HEIGHT REQUIREMENTS. UTILIZE MAXIMUM CHARACTER HEIGHT BASED ON LID DIMENSIONS AND BEST FIT. LOCATE APPROX. AS SHOWN.
6. PAD BURR LENGTH 0.15mm MAX. PAD BURR HEIGHT 0.25mm MAX.
7. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
8. THE SOLDER FILLET BETWEEN PACKAGE AND COVER IS PART OF THE DESIGN SEAL AREA.

Pin #	Function	Pin #	Function	Pin #	Function	Pin #	Function
1	GND	4	Vtune	7	RFOUT	10	GND
2	GND	5	GND	8	GND	11	GND
3	GND	6	Vcc	9	GND	12	GND

Average Weight: 0.25 grams

Figure 1 – Device Outline for the HMC8732LH250

ORDERING GUIDE

Model	Temperature Range	Package Description	Package Option
HMC8732LH250	–40 °C to +85 °C	12-Lead Ceramic Hermetic Leadless Chip Carrier	LH250 (E-12-6)

Revision History

Revision History		
Rev	Description of Change	Date
A	Initial release.	04/16/2025
B	Updated Figure 1	09/17/2025