

SELECTED ITEM DRAWING



4.15 GHz to 8 GHz,
Hybrid VCO with Varactor Diodes

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

SIZE
A

DRAWING NUMBER
SID000096

1. SCOPE

1.1. Scope

This drawing establishes the requirements for the 4.15 GHz to 8 GHz, 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>
ADH586S	HMC8343LH250

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.

HMC586LC4B Data Sheet Commercial Product Datasheet v03.0514 (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-STD-883, TM 5004, Table I for Class Level S 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 and Group D tests shall be performed per with MIL-STD-883, TM 5005, Table II and Table IV for Class Level S 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-STD-883 TM 5004 AND TM 5005 EXCEPTIONS

5.1. Wafer Fabrication

Foundry information is available upon request.

5.2. Flight Screening Requirements

Non-Destruct Bond Pull: Not performed.

Reverse Bias Burn-In: Not applicable.

Burn-In: Duration = 320 hours.

5.3. Group B

Subgroup 2: Resistance to solvents is not applicable.

Subgroup 5: Qty/Acc = 5/0.

Subgroup 6: Not performed.

5.4. Group D

Subgroup 5: Not applicable.

Subgroup 7: Not applicable.

Subgroup 8: Not applicable.

Subgroup 9: Not applicable.

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-STD-883 TM 5005, Table IV Class Level S screening
Varactor Diodes	Per MIL-PRF-38534 Table C-II Class H Screening. <u>1/</u>
VCO Die	Performed at hybrid level. Per MIL-STD-883 TM 5005, Table II and Table IV Class Level S 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 B End-Point Electrical Parameters	1, 4 <u>2/</u>
Group D End-Point Electrical Parameters	1, 4

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>1/3/</u> Unless otherwise specified	Group A Subgroups	Limits		Units
			Min	Max	
Frequency Range	Vtune = 0 V	4		4.15	GHz
	Vtune = 18 V	4	8		GHz
VCO Output Power <u>2/</u>		4	+2		dBm
Tune Port Leakage Current	Vtune = 18 V	1		10	μA
SSB Phase Noise <u>2/</u>	100 kHz offset	4		-94	dBc/Hz
Supply Current		1		75	mA

TABLE III Notes:
1/ Limits apply at +25 °C only with Vcc = +5 V.
2/ It shall be measured with Vtune at 0 V and 18 V only.
3/ -40 °C and +85 °C (subgroups 2, 3, 5 and 6) shall be Read and Record only.

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

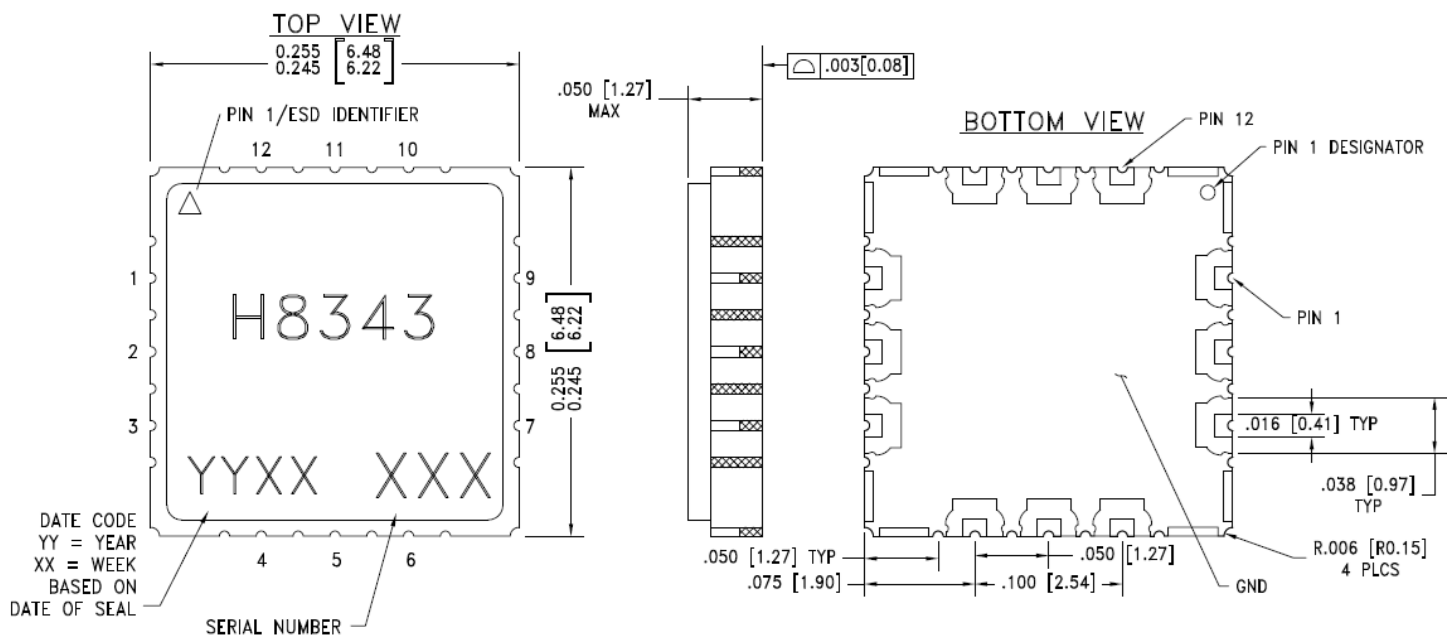
Parameter	Test Conditions	Delta Limits	Units
VCO Output Power	Per Table III	± 1.2	dB
Supply Current		± 10	%

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 hour / 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	GND	7	RFOUT	10	GND
2	GND	5	GND	8	GND	11	GND
3	Vtune	6	Vcc	9	GND	12	GND

Average Weight: 0.25 grams

Figure 1 – Device Outline for the HMC8343LH250

ORDERING GUIDE

Model	Temperature Range	Package Description	Package Option
HMC8343LH250	–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.	04/29/2025
B	Updated Section 4.3.1 and Figure 1	09/17/2025