

HMC505* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

EVALUATION KITS

- HMC505LP4 Evaluation Board

DOCUMENTATION

Data Sheet

- HMC505 Data Sheet

REFERENCE MATERIALS

Quality Documentation

- Package/Assembly Qualification Test Report: LP4, LP4B, LP4C, LP4K (QTR: 2013-00487 REV: 04)
- Package/Assembly Qualification Test Report: Plastic Encapsulated QFN (QTR: 05006 REV: 02)
- Semiconductor Qualification Test Report: GaAs HBT-A (QTR: 2013-00228)

DESIGN RESOURCES

- HMC505 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC505 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

TECHNICAL SUPPORT

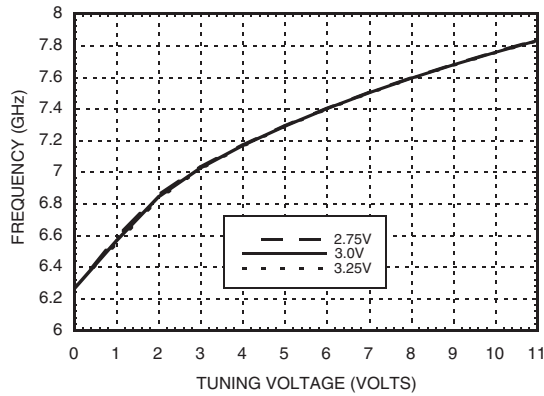
Submit a technical question or find your regional support number.

DOCUMENT FEEDBACK

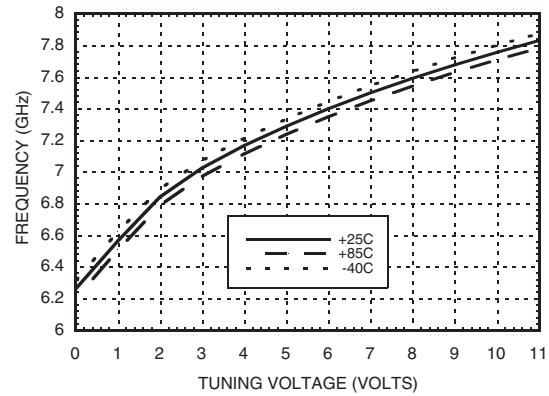
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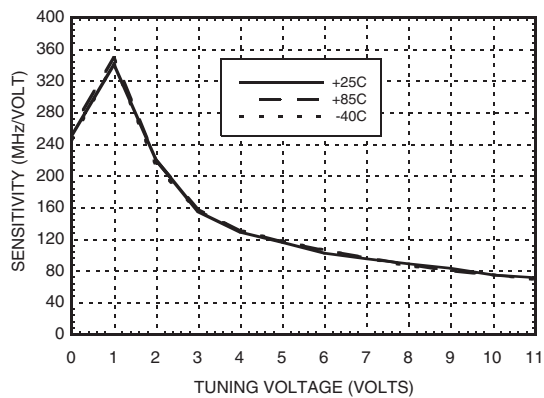
Frequency vs. Tuning Voltage, $T = 25^{\circ}\text{C}$



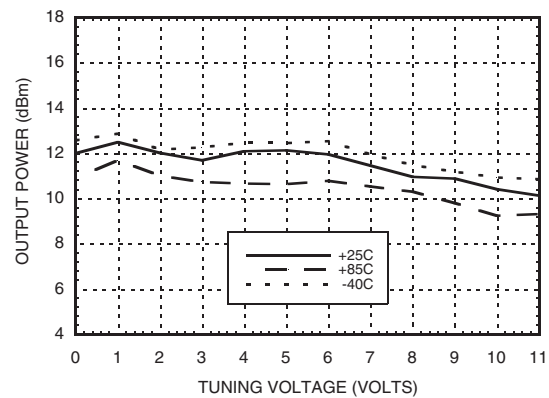
Frequency vs. Tuning Voltage, $V_{CC} = +3\text{V}$



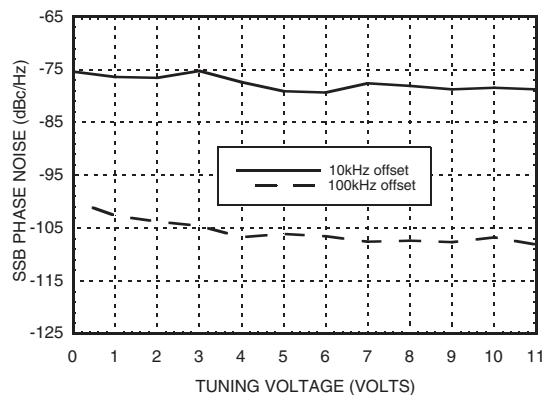
Sensitivity vs. Tuning Voltage, $V_{CC} = +3\text{V}$



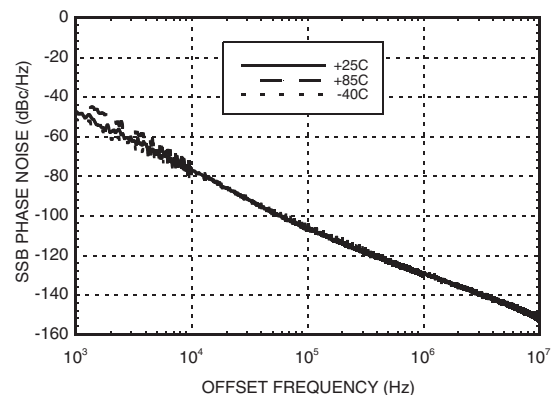
**Output Power vs.
Tuning Voltage, $V_{CC} = +3\text{V}$**



Phase Noise vs. Tuning Voltage



Typical SSB Phase Noise @ $V_{\text{tune}} = +5\text{V}$





MMIC VCO w/ BUFFER AMPLIFIER, 6.8 - 7.4 GHz

Absolute Maximum Ratings

Vcc	+3.5 Vdc
Vtune	0 to +11V
Channel Temperature	135 °C
Continuous Pdiss (T = 85°C) (derate 6.31 mW/°C above 85°C)	315 mW
Thermal Resistance (R _{TH}) (junction to package base)	158 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

Typical Supply Current vs. Vcc

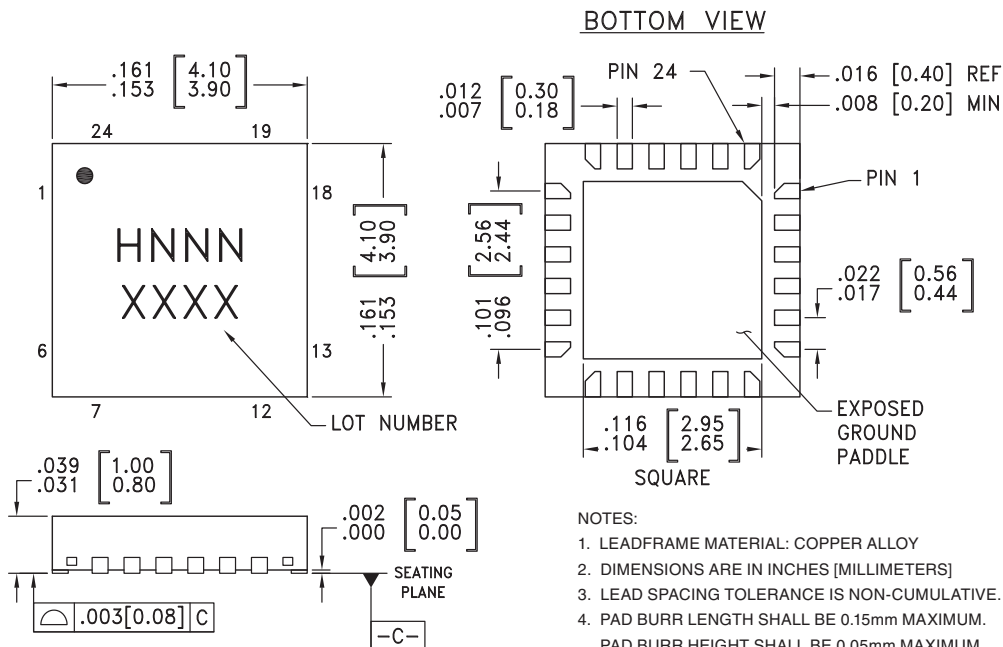
Vcc (V)	Icc (mA)
2.75	70
3.0	80
3.25	90

Note: VCO will operate over full voltage range shown above.



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM.
PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOT FOR SUGGESTED LAND PATTERN.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC505LP4	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	H505 XXXX
HMC505LP4E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	H505 XXXX

[1] Max peak reflow temperature of 235 °C


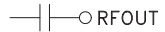
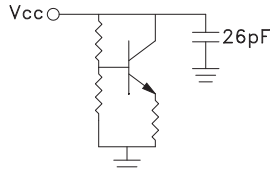
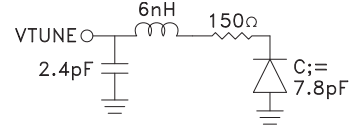

[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX

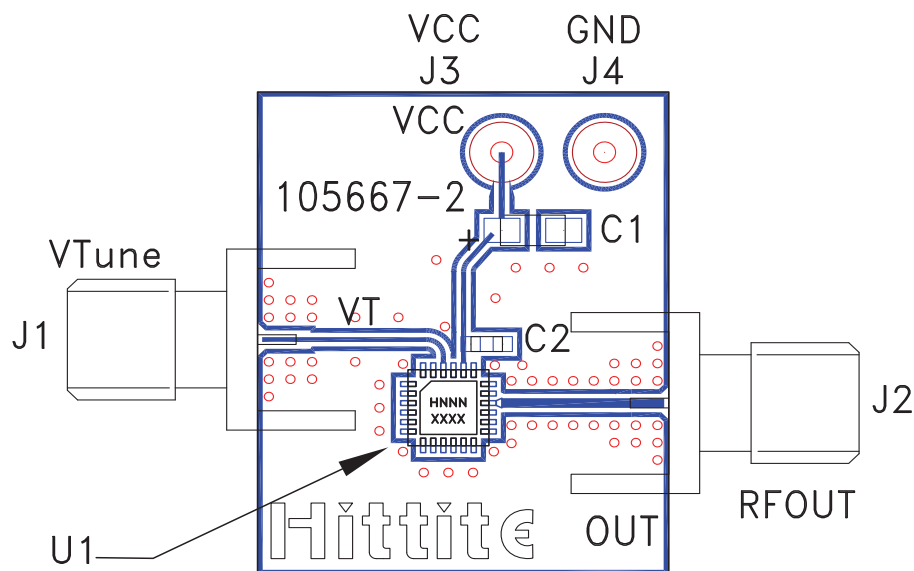
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**MMIC VCO w/ BUFFER
AMPLIFIER, 6.8 - 7.4 GHz**
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1- 14, 17 - 19, 21, 23, 24	N/C	No Connection. These pins may be connected to RF ground. Performance will not be affected.	
15	GND	This pin must be connected to RF & DC ground.	
16	RFOUT	RF output (AC coupled)	
20	Vcc	Supply Voltage Vcc= 3V	
22	VTUNE	Control Voltage Input. Modulation port bandwidth dependent on drive source impedance.	
	GND	Package bottom has an exposed metal paddle that must be RF & DC grounded.	

Evaluation PCB



List of Materials for Evaluation PCB 105706 [1]

Item	Description
J1 - J2	PCB Mount SMA RF Connector
J3 - J4	DC Pin
C1	4.7 μ F Tantalum Capacitor
C2	10,000 pF Capacitor, 0603 Pkg.
U1	HMC505LP4 / HMC505LP4E VCO
PCB [2]	105667 Eval Board

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the final application should use RF circuit design techniques. Signal lines should have 50 ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation circuit board shown is available from Hittite upon request.



v02.0508

HMC505LP4 / 505LP4E

**MMIC VCO w/ BUFFER
AMPLIFIER, 6.8 - 7.4 GHz**

Notes:

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VCOs & PLOs - SMT

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