HMC533* PRODUCT PAGE QUICK LINKS

Last Content Update: 11/29/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

EVALUATION KITS

- HMC533LP4 Evaluation Board.

DOCUMENTATION

Data Sheet

- HMC533 Data Sheet

REFERENCE MATERIALS

Product Selection Guide

- RF, Microwave, and Millimeter Wave IC Selection Guide 2017

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

- HMC533 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC533 EngineerZone Discussions.

SAMPLE AND BUY

Visit the product page to see pricing options.

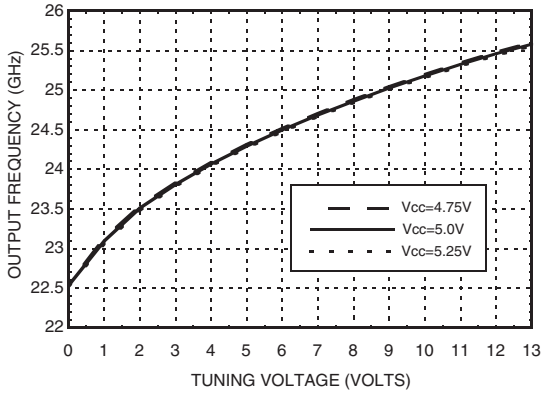
TECHNICAL SUPPORT

Submit a technical question or find your regional support number.

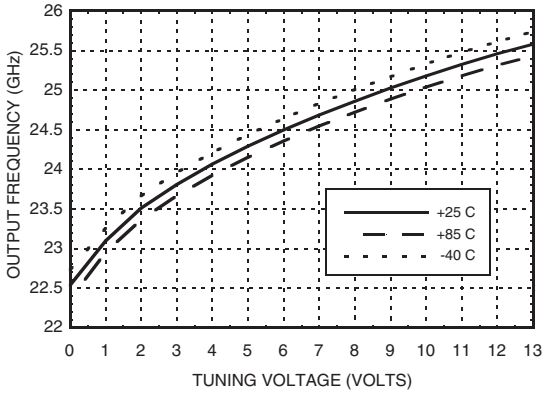
DOCUMENT FEEDBACK

Submit feedback for this data sheet.

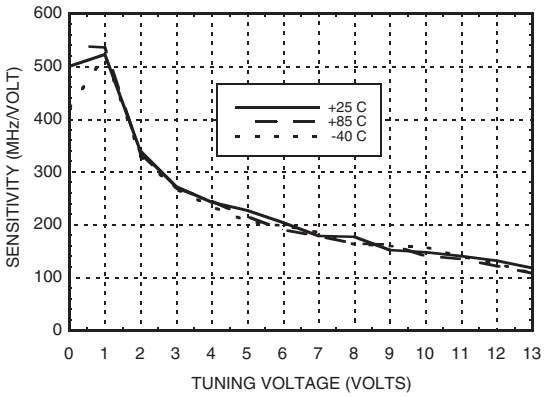
Frequency vs. Tuning Voltage, T= 25°C



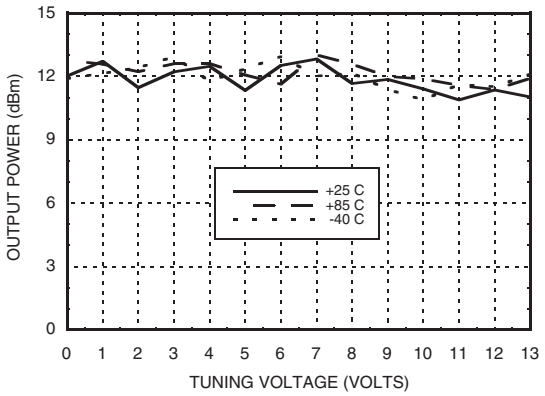
Frequency vs. Tuning Voltage, Vcc= +5V



Sensitivity vs. Tuning Voltage, Vcc= +5V



Output Power vs. Tuning Voltage, Vcc= +5V



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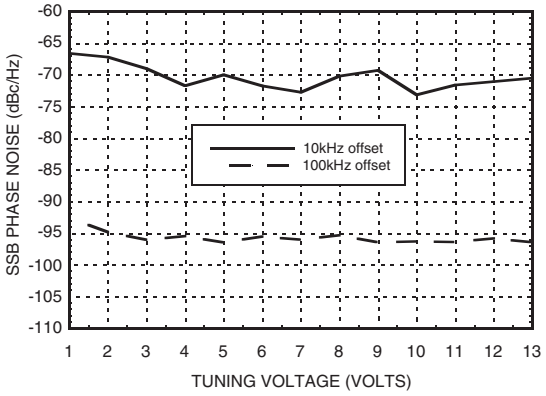
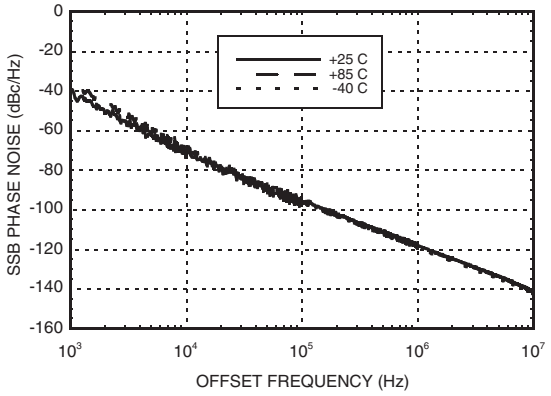
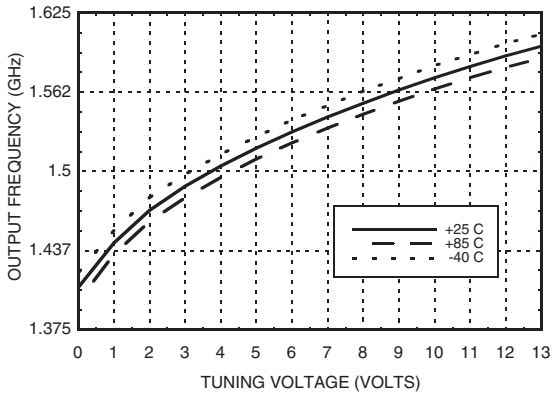
SSB Phase Noise vs. Tuning Voltage



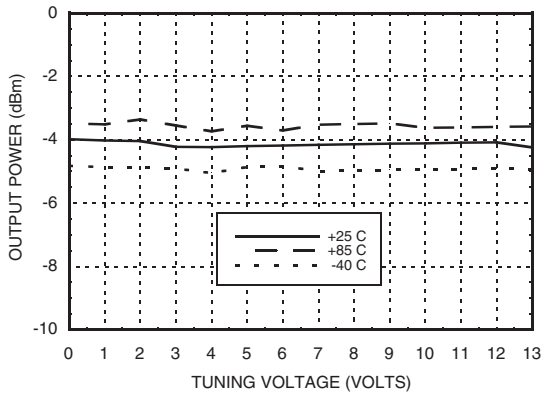
SSB Phase Noise @ Vtune= +5V



Divide-by-16 Frequency vs. Tuning Voltage, Vcc= +5V



Divide-by-16 Output Power vs. Tuning Voltage, Vcc= +5V



Absolute Maximum Ratings

Vcc1, Vcc2	5.5 V
Vtune	0 to 15V Max.
Junction Temperature	135 °C
Continuous Pdiss (T=85 °C) (derate 28 mW/C above 85 °C	1.4 W
Thermal Resistance	36 °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)
4.75	200
5.0	220
5.25	240

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

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

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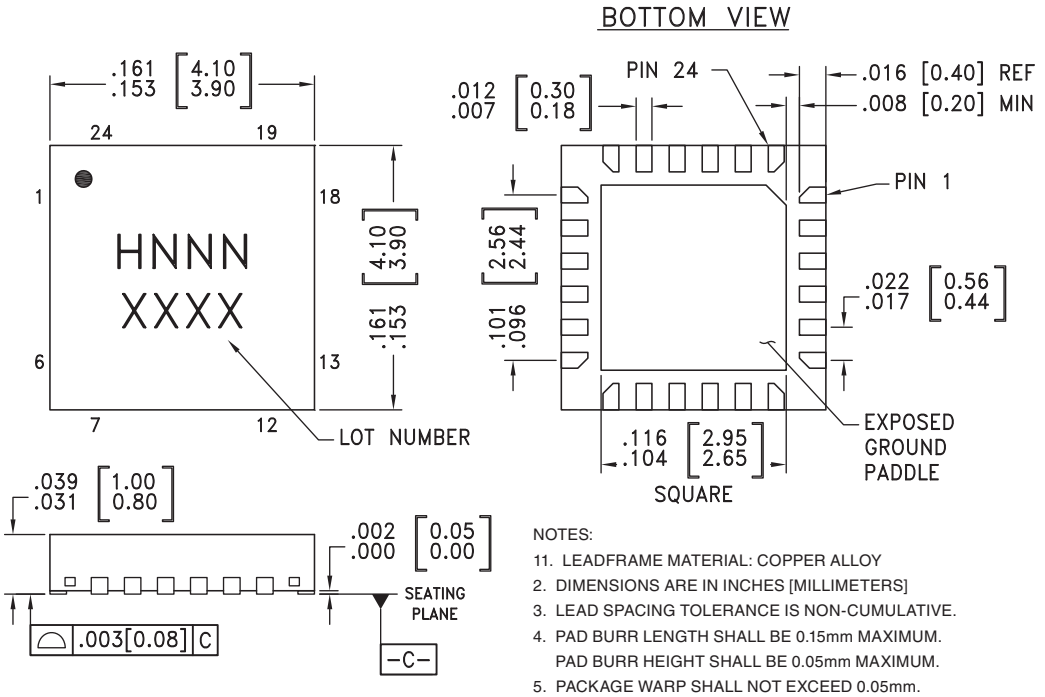
Outline Drawing



NOTES:

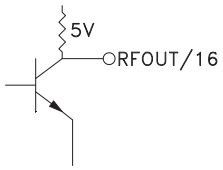
11. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM. PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED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

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC533LP4	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	H533 XXXX
HMC533LP4E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H533 XXXX

[1] Max peak reflow temperature of 235 °C
[2] Max peak reflow temperature of 260 °C
[3] 4-Digit lot number XXXX

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 15, 17, 21, 23	GND	Package bottom has an exposed metal paddle that must also be connected to RF/DC ground.	
2	RFOUT/16	Divided-by-16 Output	

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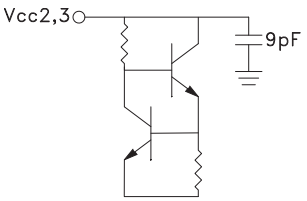
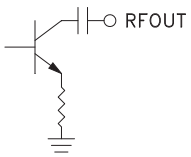
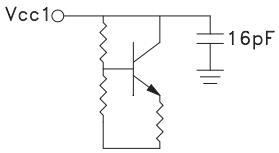
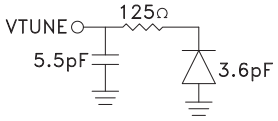
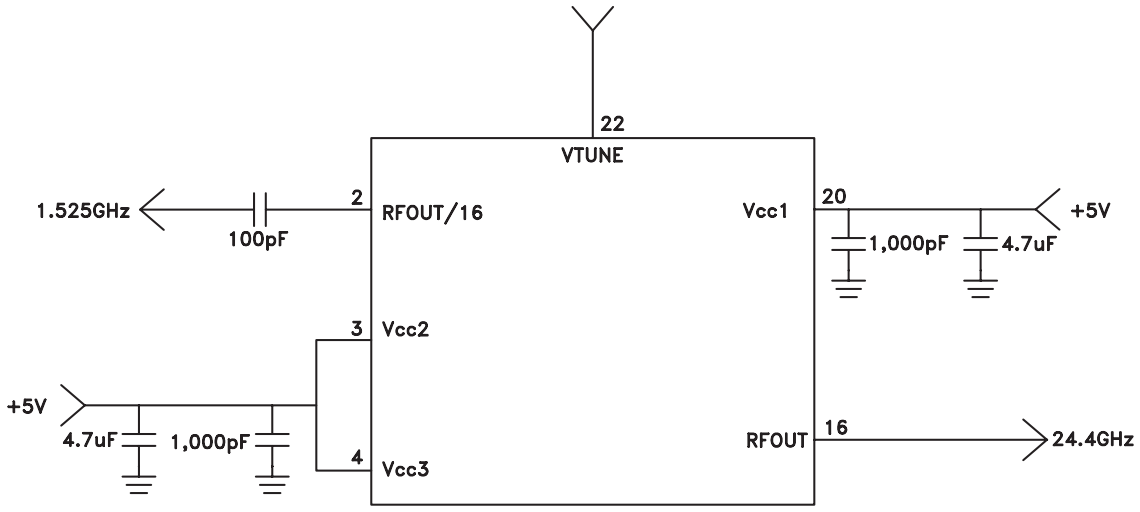
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
3, 4	VCC2, VCC3	Supply voltage for prescaler. If prescaler is not required, these pins may be left open to conserve 100 mA of current	
5-14, 18, 19, 24	N/C	No Connection. These pins may be connected to RF/ DC ground. Performance will not be affected.	
16	RFOUT	RF output (AC coupled).	
20	VCC1	Supply Voltage, +5V	
22	VTUNE	Control Voltage Input. Modulation port bandwidth dependent on drive source impedance.	

Typical Application Circuit



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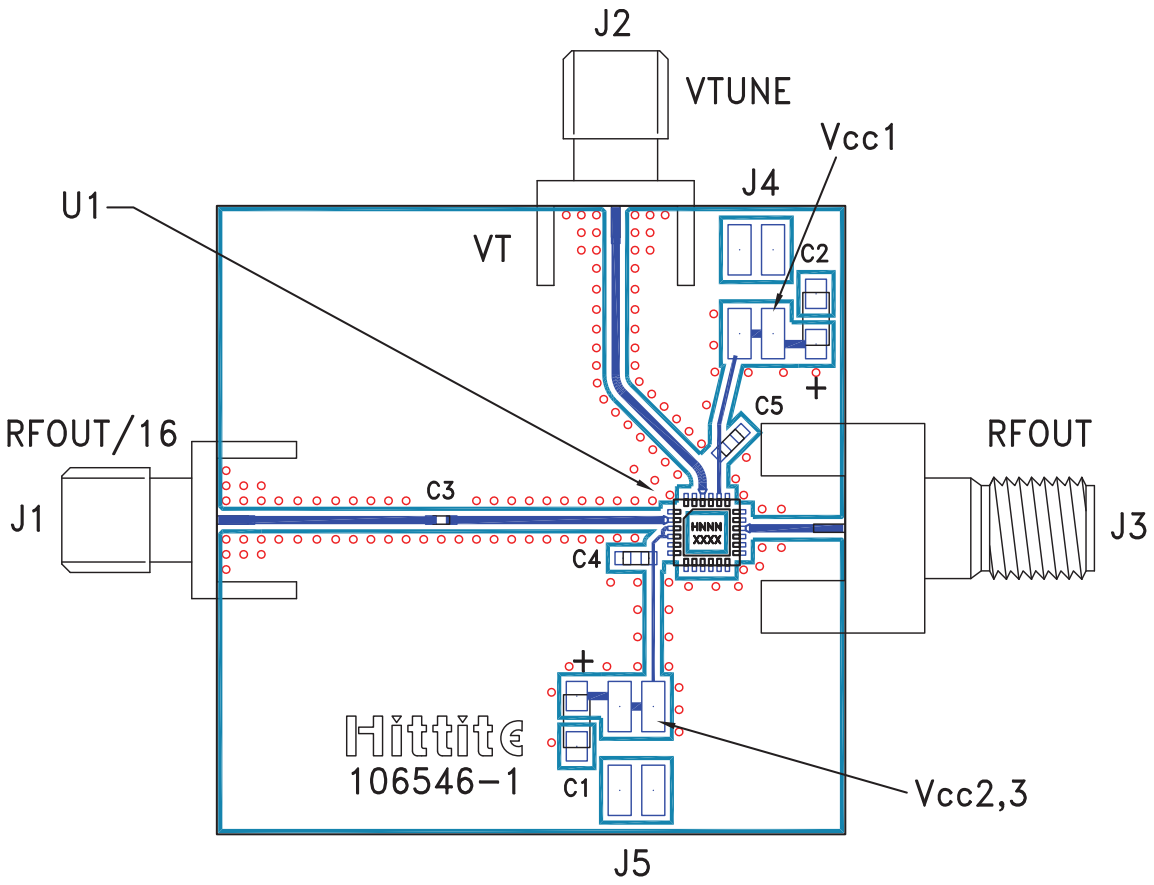
Evaluation PCB



List of Materials for Evaluation PCB 106651 [1]

Item	Description
J1 - J2	PCB Mount SMA RF Connector
J3	2.92 mm PCB mount k-connector
J4 - J5	2 mm DC Header
C1 - C2	4.7 µF Tantalum Capacitor
C3	100 pF Capacitor, 0402 Pkg.
C4 -C5	1,000 pF Capacitor, 0603 Pkg.
U1	HMC533LP4 / HMC533LP4E VCO
PCB [2]	106546 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 backside ground slug 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.

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