

HMC963* PRODUCT PAGE QUICK LINKS

Last Content Update: 02/23/2017

COMPARABLE PARTS

View a parametric search of comparable parts.

EVALUATION KITS

- HMC963LC4 Evaluation Board

DOCUMENTATION

Application Notes

- AN-1363: Meeting Biasing Requirements of Externally Biased RF/Microwave Amplifiers with Active Bias Controllers
- Broadband Biasing of Amplifiers General Application Note
- MMIC Amplifier Biasing Procedure Application Note
- Thermal Management for Surface Mount Components General Application Note

Data Sheet

- HMC963 Data Sheet

TOOLS AND SIMULATIONS

- HMC963 S-Parameter

REFERENCE MATERIALS

Quality Documentation

- Package/Assembly Qualification Test Report: LC4, LC4B (QTR: 2014-00380 REV: 01)
- Semiconductor Qualification Test Report: PHEMT-A (QTR: 2013-00267)

DESIGN RESOURCES

- HMC963 Material Declaration
- PCN-PDN Information
- Quality And Reliability
- Symbols and Footprints

DISCUSSIONS

View all HMC963 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.

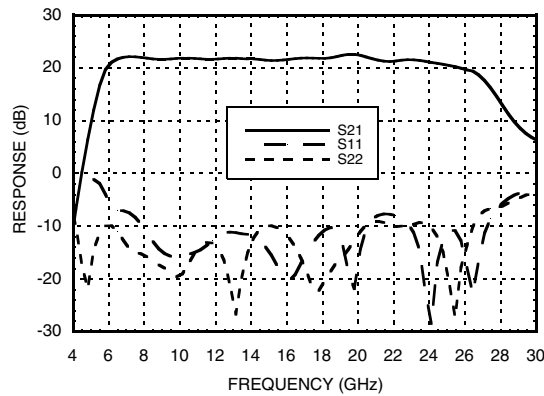
DOCUMENT FEEDBACK

Submit feedback for this data sheet.

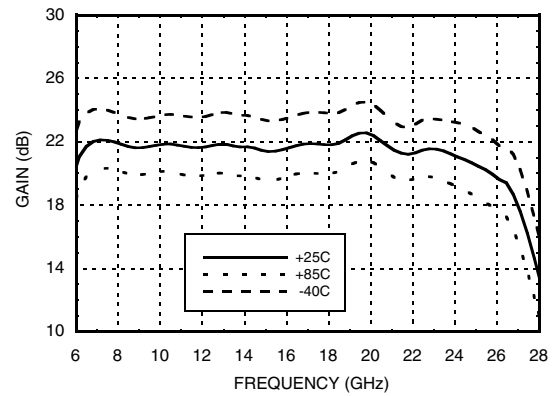


**GaAs pHEMT MMIC LOW NOISE
AMPLIFIER, 6 - 26.5 GHz**

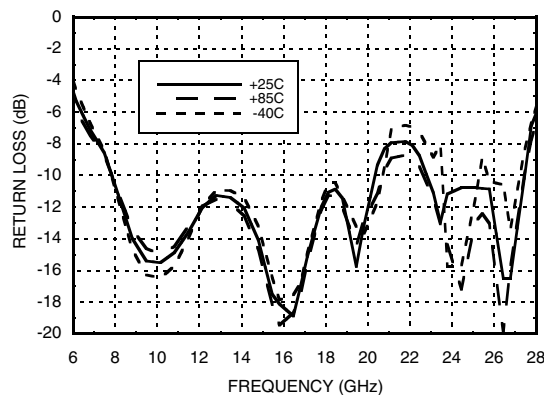
Broadband Gain & Return Loss



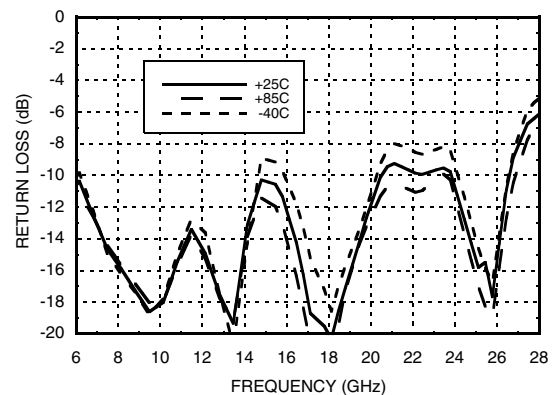
Gain vs. Temperature



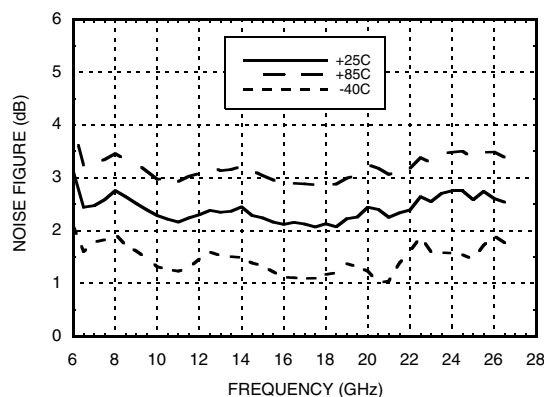
Input Return Loss vs. Temperature



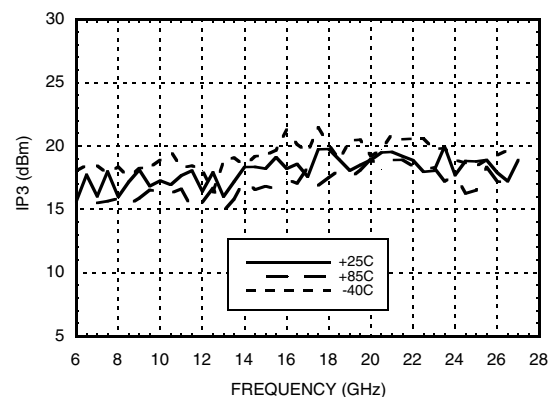
Output Return Loss vs. Temperature



Noise Figure vs. Temperature ^[1]



Output IP3 vs. Temperature

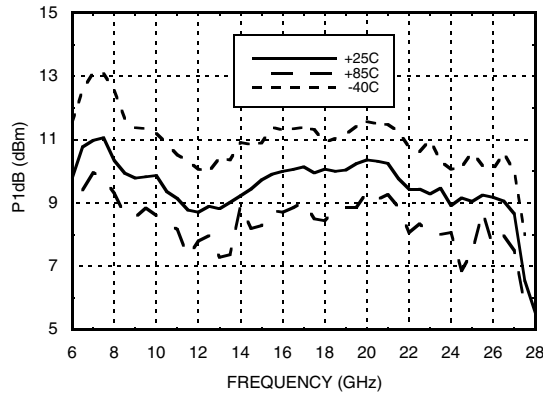


[1] Board loss subtracted out.

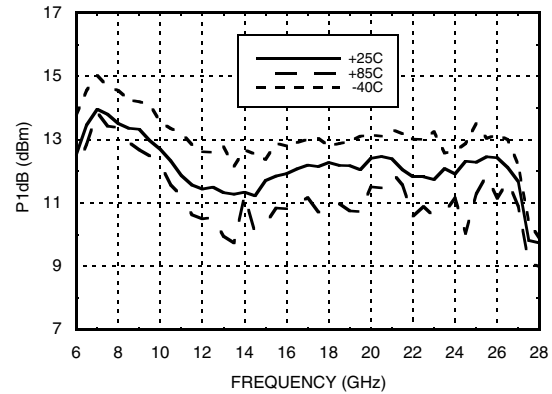


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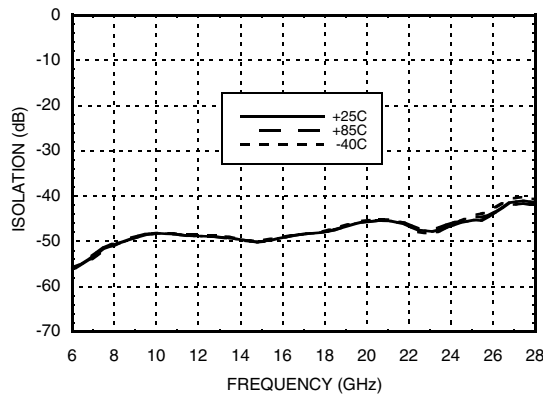
P1dB vs. Temperature



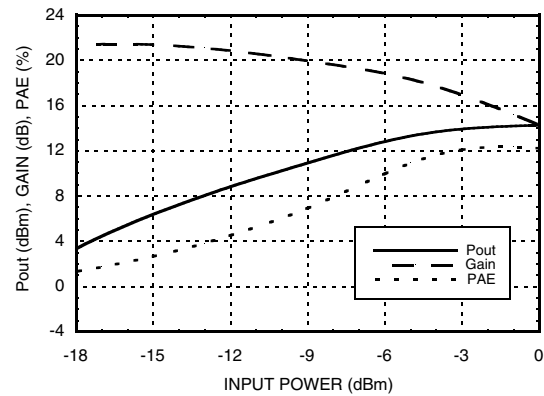
Psat vs. Temperature



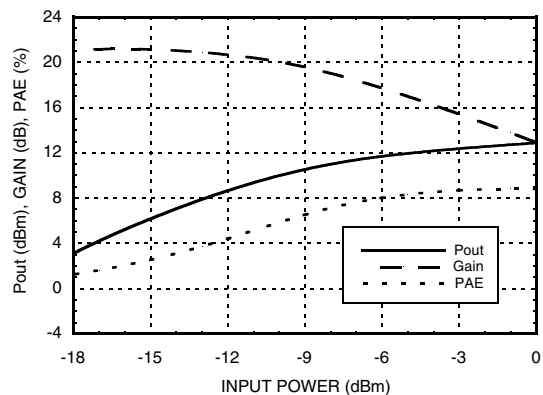
Reverse Isolation vs. Temperature



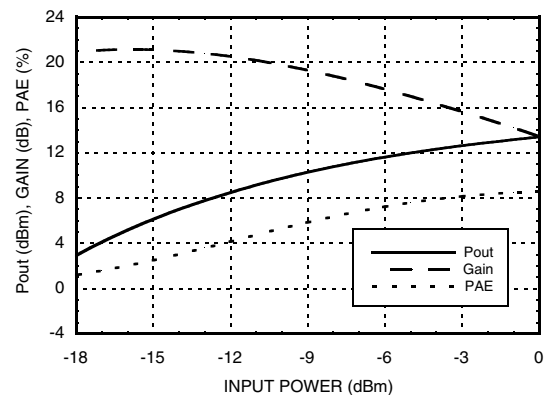
Power Compression @ 8 GHz



Power Compression @ 16 GHz



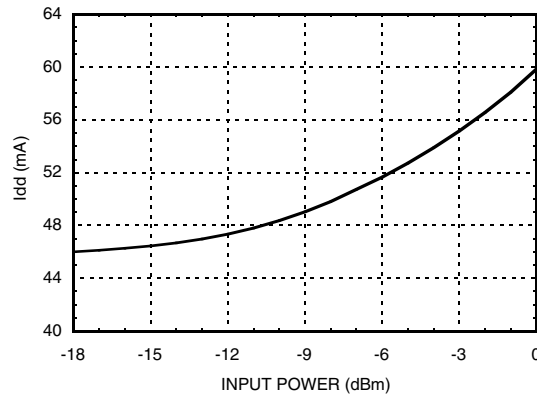
Power Compression @ 24 GHz





GaAs pHEMT MMIC LOW NOISE AMPLIFIER, 6 - 26.5 GHz

Current vs. Input Power @ 16 GHz



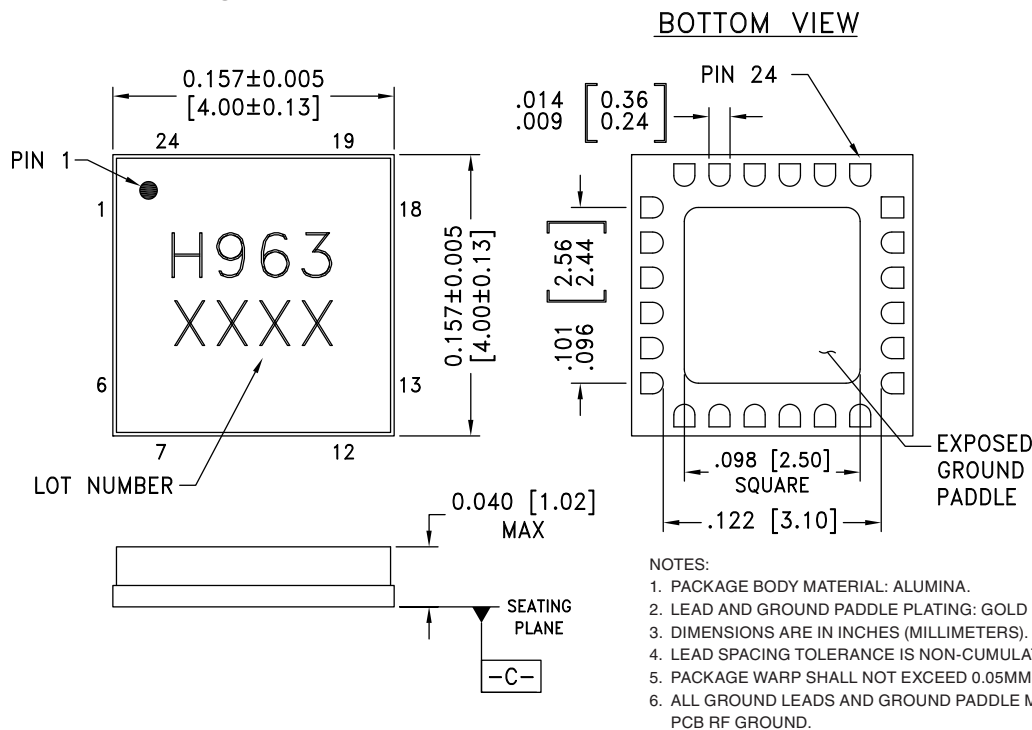
Absolute Maximum Ratings

Drain Bias Voltage	+4V
RF Input Power	0 dBm
Channel Temperature	150 °C
Continuous P _{diss} (T = 85 °C) (derate 8 mW/°C above 85 °C)	0.52 W
Thermal Resistance (Channel to ground paddle)	125 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 0 <150 V



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[2]
HMC963LC4	Alumina, White	Gold over Nickel	MSL3 ^[1]	H963 XXXX

[1] Max peak reflow temperature of 260 °C

[2] 4-Digit lot number XXXX

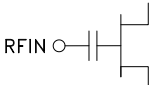
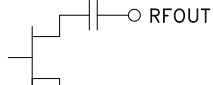
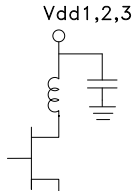
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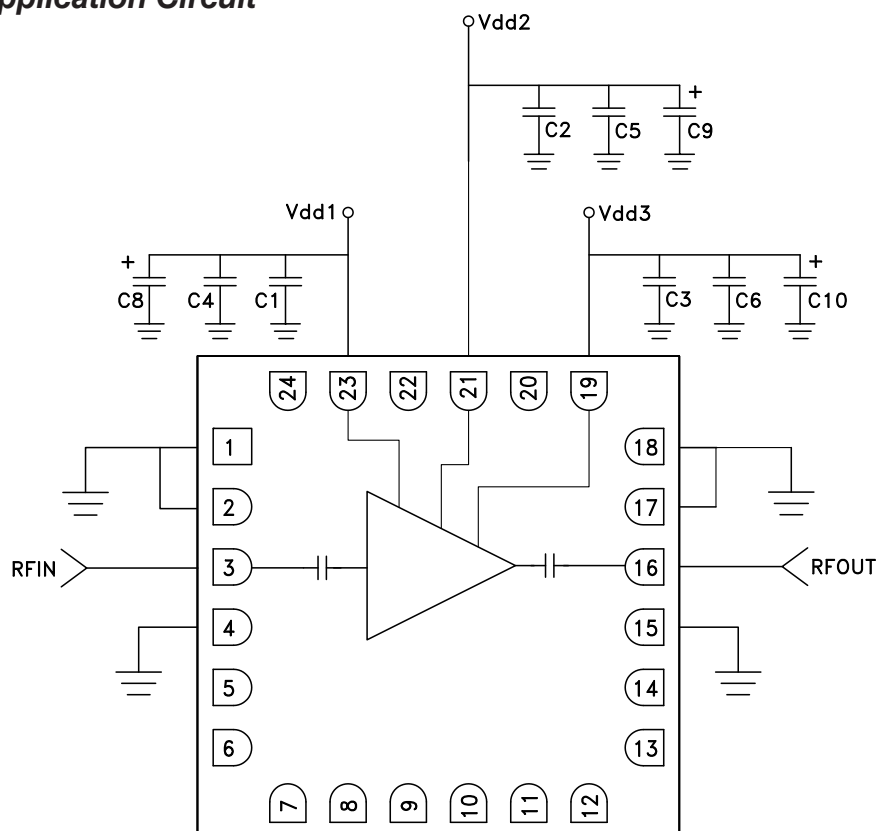


GaAs pHEMT MMIC LOW NOISE AMPLIFIER, 6 - 26.5 GHz

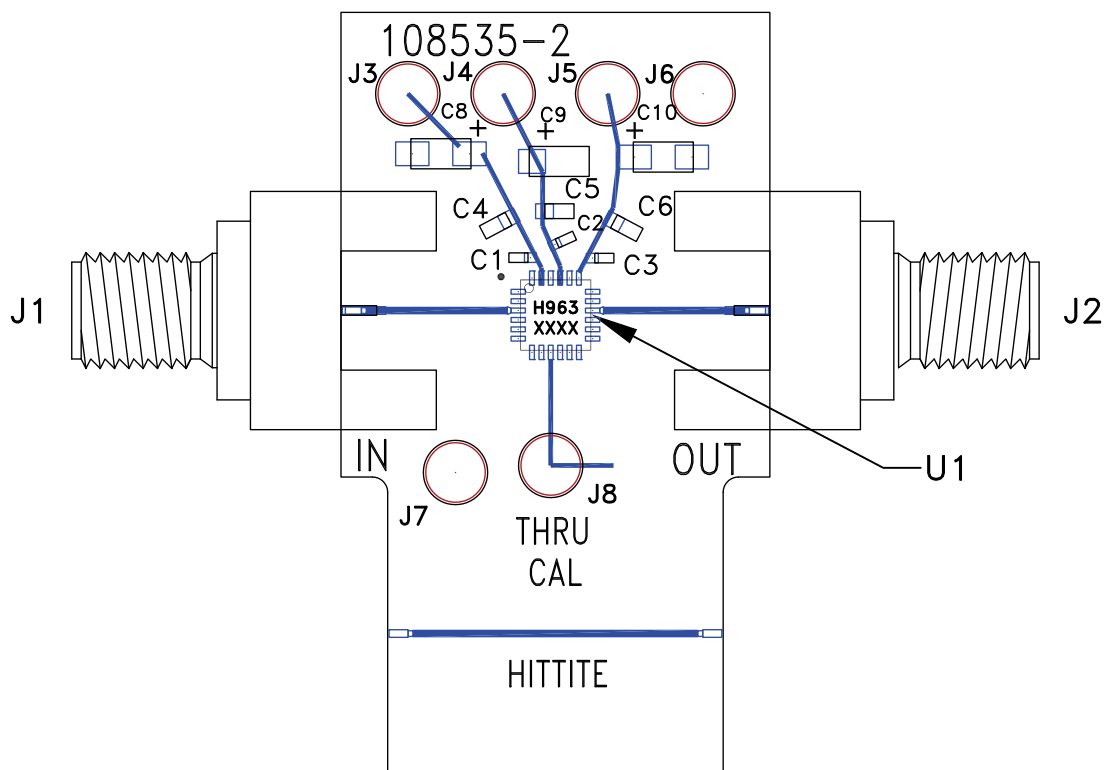
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 2, 4, 15, 17, 18	GND	These pins and package bottom must be connected to RF/DC ground.	
3	RFIN	This pin AC coupled and matched to 50 Ohms	
5 - 14, 20, 22, 24	N/C	No connection necessary. These pins may be connected to RF/DC ground. Performance will not be affected.	
16	RFOUT	This pin AC coupled and matched to 50 Ohms	
19, 21, 23	Vdd1, Vdd2, Vdd3	Power supply voltages for the amplifier. Bypass capacitors are required. See application circuit herein.	

Application Circuit



Capacitor	Value
C1 - C3	100 pF
C4 - C6	1000 pF
C8 - C10	2.2 µF

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Evaluation PCB

List of Material for Evaluation PCB EVAL01-HMC963LC4 ^[1]

Item	Description
J1, J2	2.92 mm Connectors
J3 - J8	DC Pin
C1 - C3	100 pF Capacitor, 0402 Pkg.
C4 - C6	1000 pF Capacitor, 0603 Pkg.
C8 - C10	2.2 μ F Capacitor, Tantalum
U1	HMC963LC4 Amplifier
PCB ^[2]	108535 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350 or Arlon 25FR

The circuit board used in this 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 board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Hittite upon request.