

Typical Applications

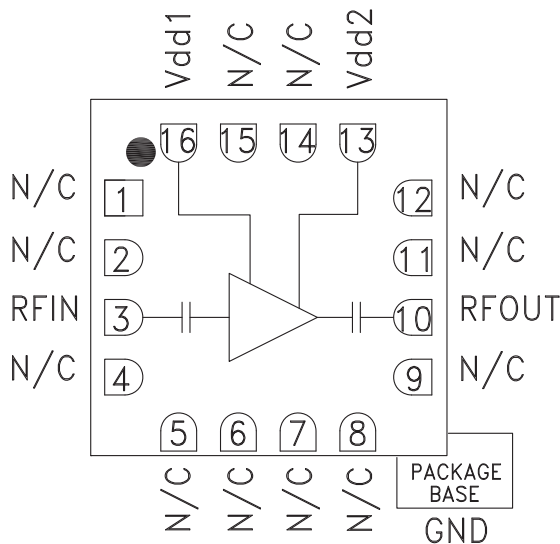
The HMC451LC3 is ideal for use as a medium power amplifier for:

- Microwave Radio & VSAT
- Military & Space
- Test Equipment & Sensors
- Fiber Optics
- LO Driver for HMC Mixers

Features

Gain: 19 dB
Saturated Power: +21 dBm @ 21% PAE
Output IP3: +30 dBm
Single Supply: +5V @ 114 mA
50 Ohm Matched Input/Output
RoHS Compliant 3 x 3 mm SMT package

Functional Diagram



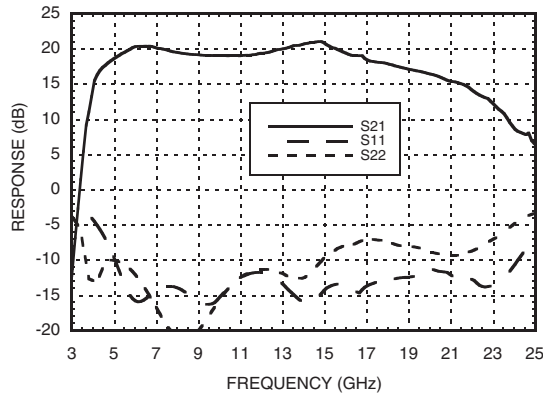
General Description

The HMC451LC3 is an efficient GaAs PHEMT MMIC Medium Power Amplifier housed in a leadless RoHS compliant SMT package. Operating between 5 and 20 GHz, the amplifier provides 19 dB of gain, +21 dBm of saturated power and 21% PAE from a single +5V supply. This 50 Ohm matched amplifier does not require any external components and the RF I/O's are DC blocked, making it an ideal linear gain block or driver for HMC SMT mixers. The HMC451LC3 allows the use of surface mount manufacturing techniques.

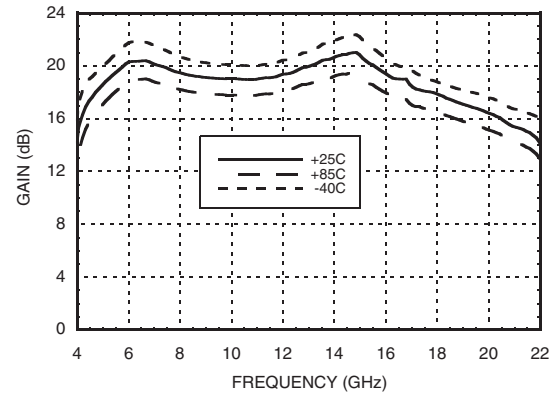
Electrical Specifications, $T_A = +25^\circ \text{C}$, $V_{dd1} = V_{dd2} = +5\text{V}$

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	5 - 15			15 - 18			18 - 20			GHz
Gain	16	19		15	18		14	17		dB
Gain Variation Over Temperature		0.015	0.025		0.015	0.025		0.015	0.025	dB/°C
Input Return Loss		13			13			12		dB
Output Return Loss		12			8			8		dB
Output Power for 1 dB Compression (P1dB)	16.5	19.5		16	19		16.5	19.5		dBm
Saturated Output Power (Psat)		21			20.5			21		dBm
Output Third Order Intercept (IP3)		32			29			29		dBm
Noise Figure		7			6.5			7		dB
Supply Current (Idd)		114			114			114		mA

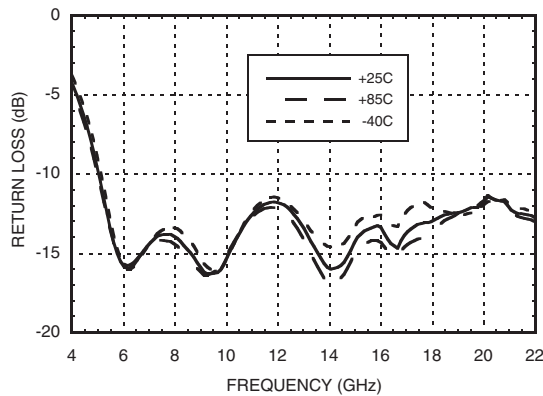
Broadband Gain & Return Loss



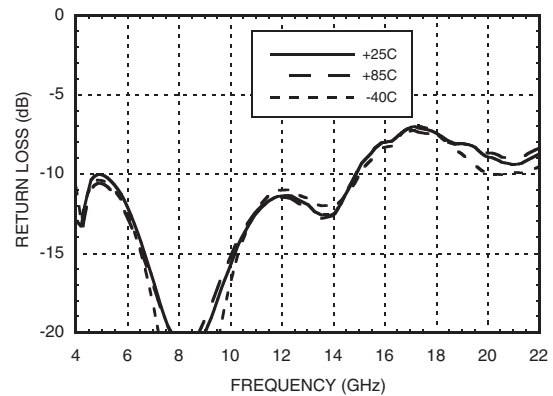
Gain vs. Temperature



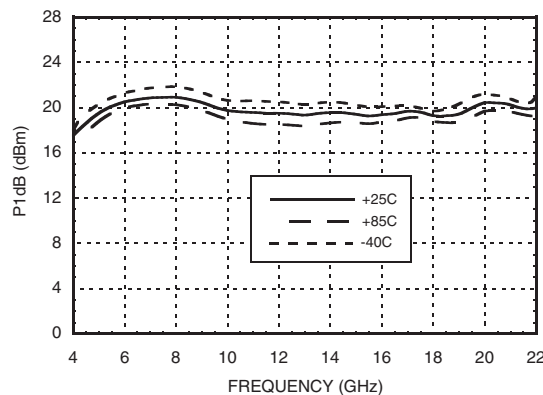
Input Return Loss vs. Temperature



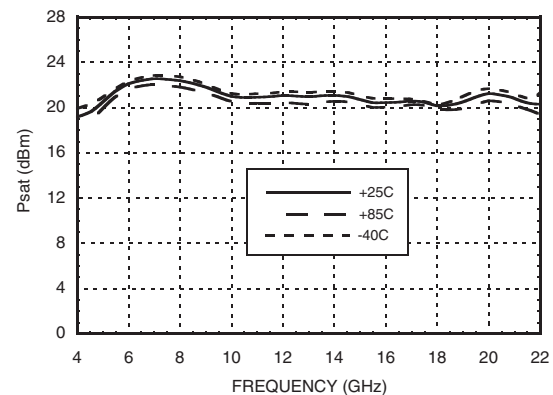
Output Return Loss vs. Temperature



P1dB vs. Temperature

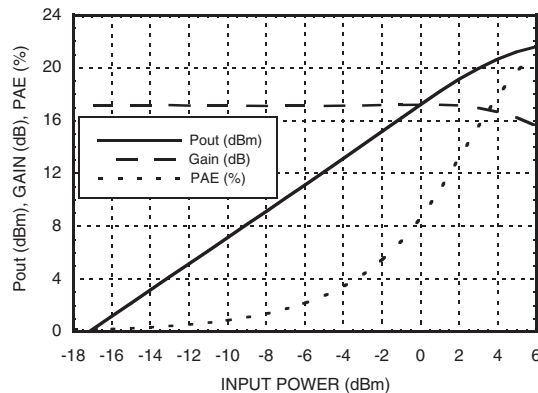


Psat vs. Temperature

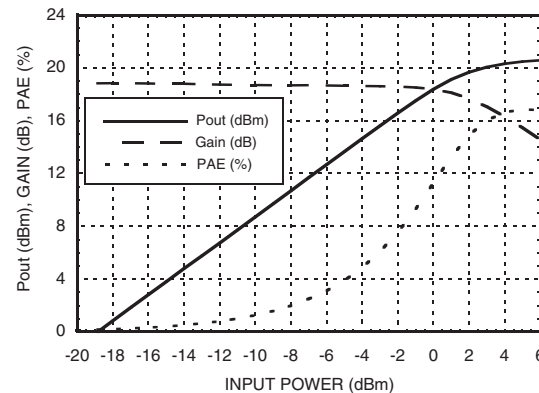


GaAs PHEMT MMIC MEDIUM POWER AMPLIFIER, 5 - 20 GHz

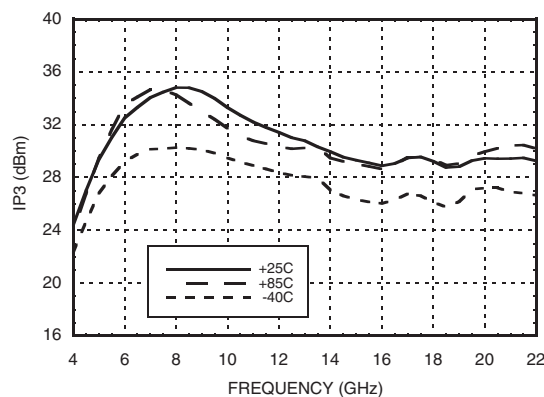
Power Compression @ 10 GHz



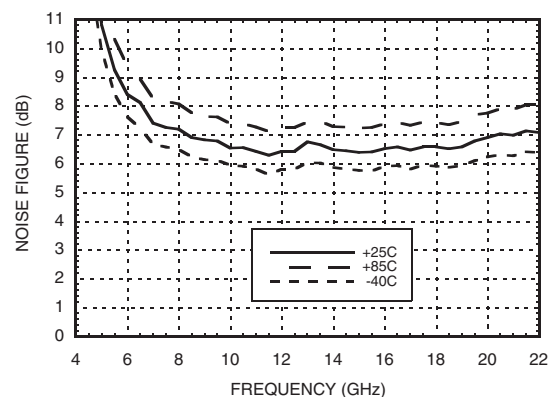
Power Compression @ 20 GHz



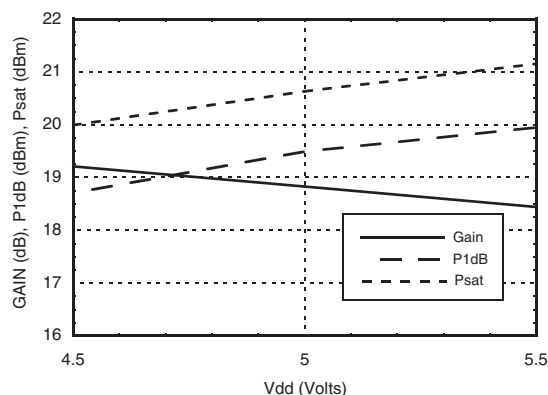
Output IP3 vs. Temperature



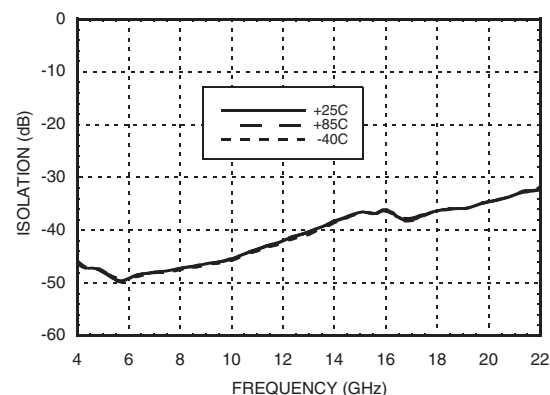
Noise Figure vs. Temperature



**Gain, P1dB & PSAT
vs. Supply Voltage @ 11 GHz**



Reverse Isolation vs. Temperature



GaAs PHEMT MMIC MEDIUM POWER AMPLIFIER, 5 - 20 GHz

Absolute Maximum Ratings

Drain Bias Voltage ($V_{dd1} = V_{dd2}$)	+5.5 Vdc
RF Input Power (RFIN)($V_{dd} = +5V_{dc}$)	+10 dBm
Channel Temperature	175 °C
Continuous P_{diss} ($T = 85$ °C) (derate 12.4 mW/°C above 85 °C)	1.1 W
Thermal Resistance (channel to ground paddle)	80 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Typical Supply Current vs. $V_{dd1} = V_{dd2}$

$V_{dd1} = V_{dd2}$ (V)	$I_{dd1} = I_{dd2}$ (mA)
+4.5	111
+5.0	114
+5.5	116

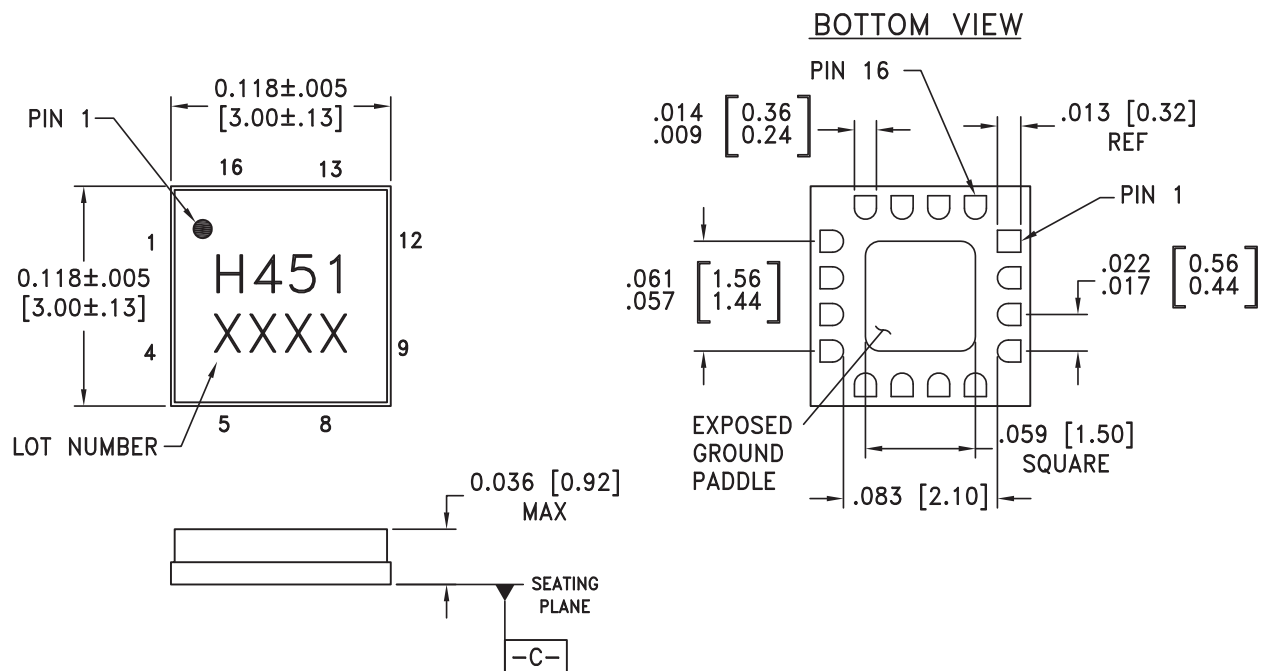
Note: Amplifier will operate over full voltage range shown above



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

11

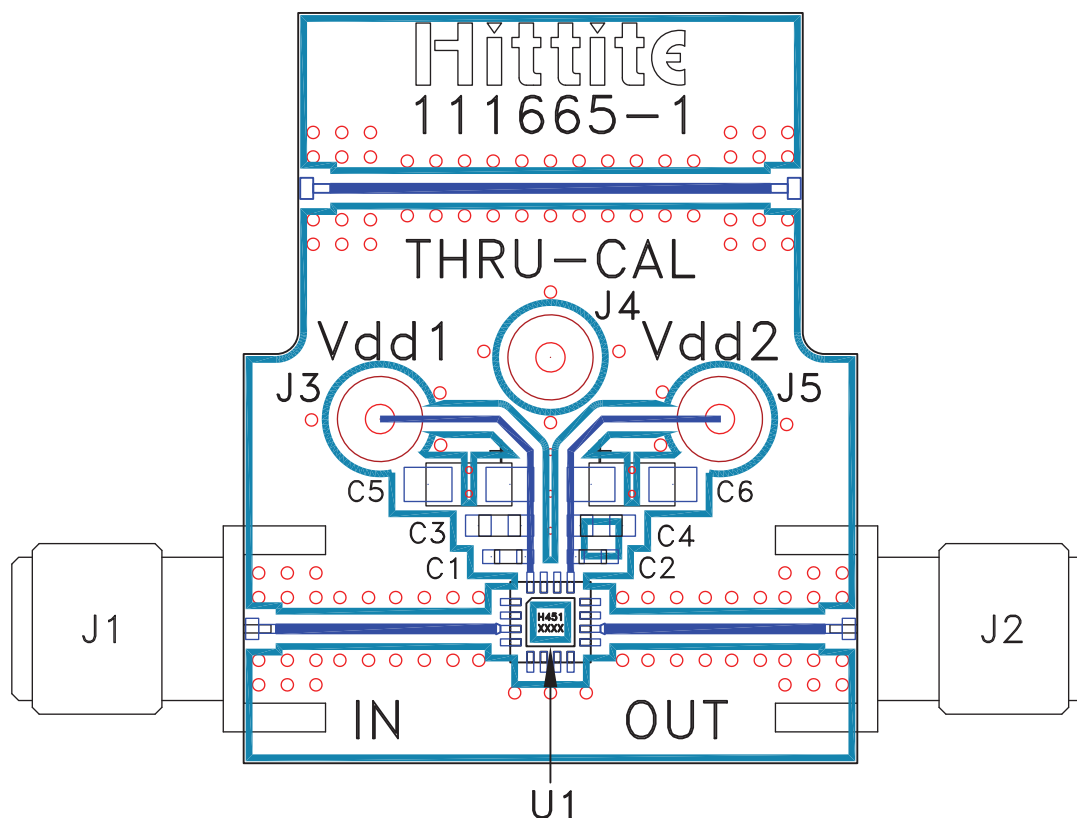
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM -C-
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Evaluation PCB



List of Materials for Evaluation PCB 111667 ^[1]

Item	Description
J1 - J2	PCB Mount SMA Connector
J3 - J5	DC Pin
C1, C2	100 pF Capacitor, 0402 Pkg.
C3, C4	1000 pF Capacitor, 0603 Pkg.
C5, C6	2.2 μ F Capacitor, Tantalum
U1	HMC451LC3 Amplifier
PCB ^[2]	111665 Evaluation PCB, 10 mils

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

Данный компонент на территории Российской Федерации

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Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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