



MICROWAVE CORPORATION v00.0808



HMC451LP3 / 451LP3E

GaAs PHEMT MMIC MEDIUM POWER AMPLIFIER, 5 - 18 GHz

Typical Applications

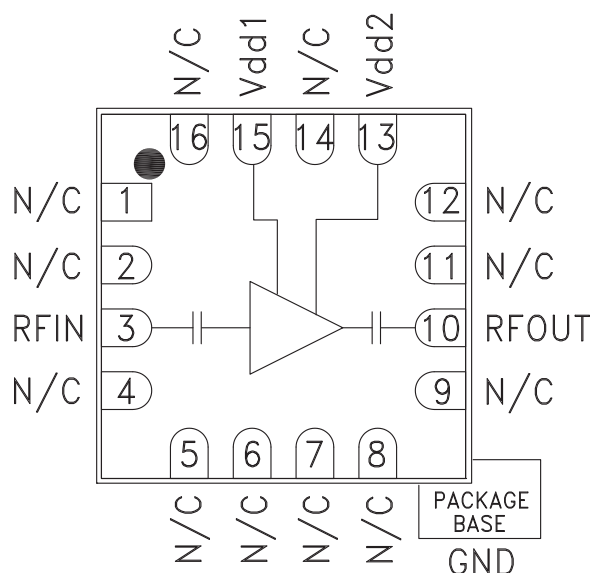
The HMC451LP3(E) is ideal for:

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

Features

- Gain: 18 dB
- Saturated Power: +21 dBm @ 18% PAE
- Output IP3: +28 dBm
- Single Supply: +5V @ 120 mA
- 50 Ohm Matched Input/Output
- 16 Lead 3x3mm SMT Package: 9mm²

Functional Diagram



General Description

The HMC451LP3(E) is an efficient GaAs PHEMT MMIC Medium Power Amplifier housed in a leadless RoHS compliant SMT package. Operating between 5 and 18 GHz, the amplifier provides 18 dB of gain, +21 dBm of saturated power and 18% 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 LO driver for HMC mixers. The HMC451LP3(E) eliminates the need for wire bonding, and 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.	Units
Frequency Range	5 - 16			16 - 18			GHz
Gain	15	18		12.5	16		dB
Gain Variation Over Temperature		0.02	0.03		0.02	0.03	dB/ °C
Input Return Loss		13			13		dB
Output Return Loss		12			8		dB
Output Power for 1 dB Compression (P1dB)	16.5	19.5		16	19		dBm
Saturated Output Power (Psat)		21			20		dBm
Output Third Order Intercept (IP3)		28			25		dBm
Noise Figure		7			7		dB
Supply Current (Idd)		120	150		120	150	mA

For price, delivery and to place orders: Hittite Microwave Corporation, 20 Alpha Road, Chelmsford, MA 01824

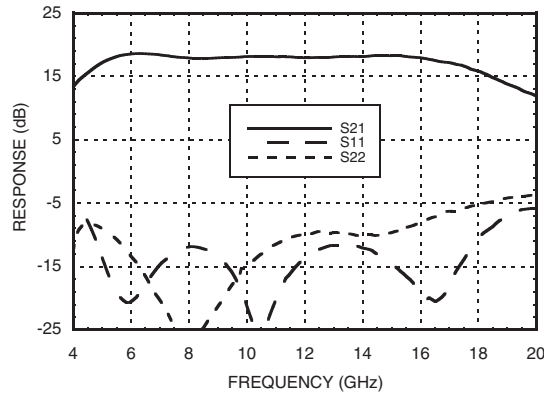
Phone: 978-250-3343 Fax: 978-250-3373 Order On-line at www.hittite.com

Application Support: Phone: 978-250-3343 or apps@hittite.com

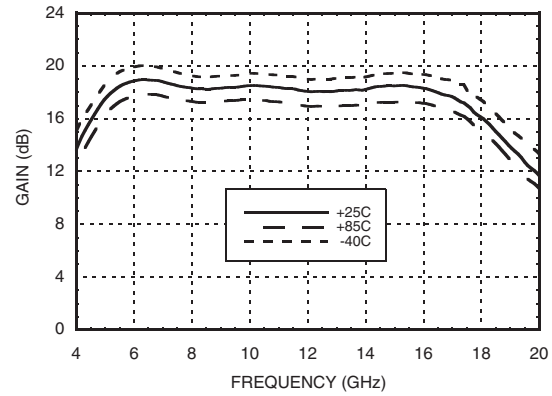
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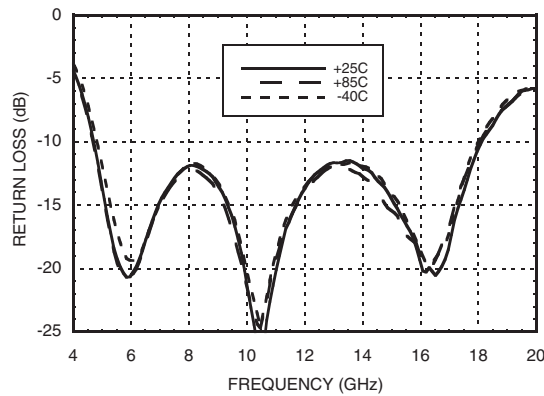
Broadband Gain & Return Loss



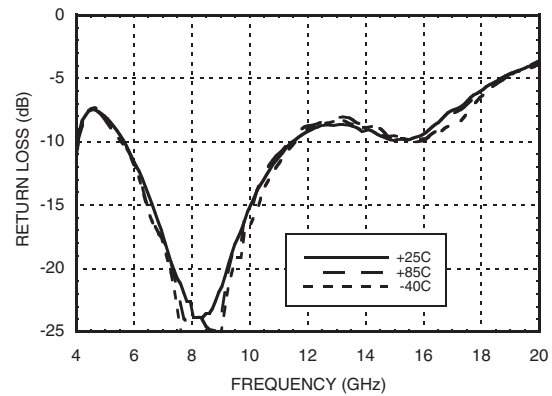
Gain vs. Temperature



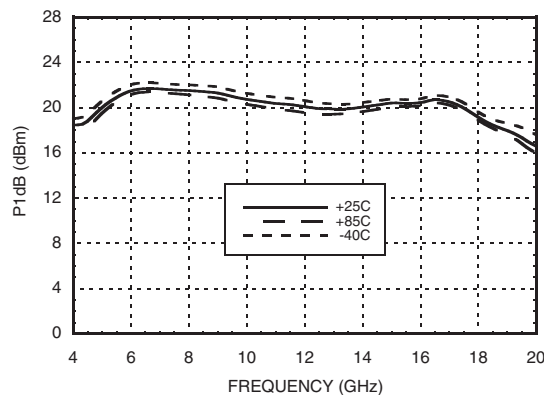
Input Return Loss vs. Temperature



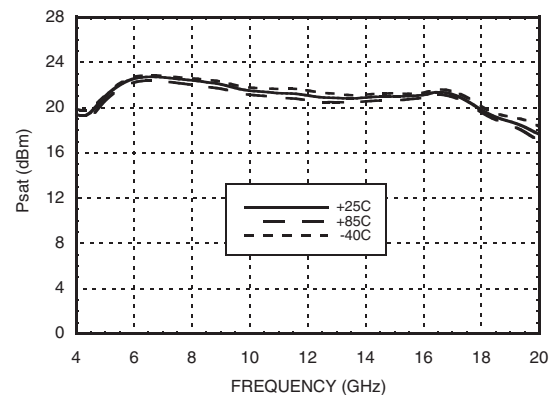
Output Return Loss vs. Temperature



P_{1dB} vs. Temperature



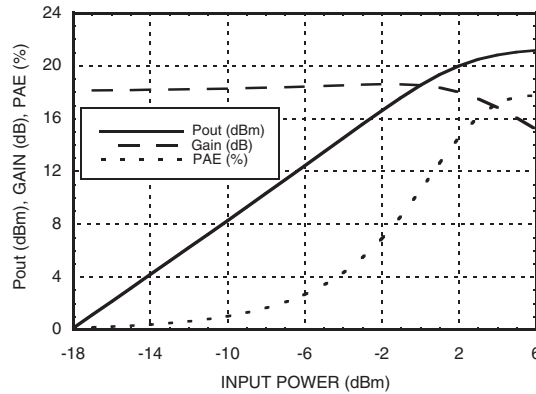
Psat vs. Temperature



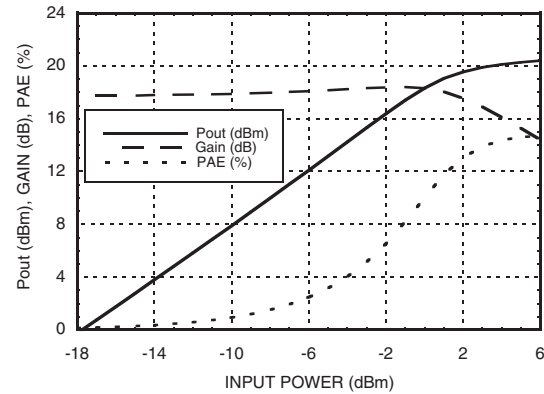
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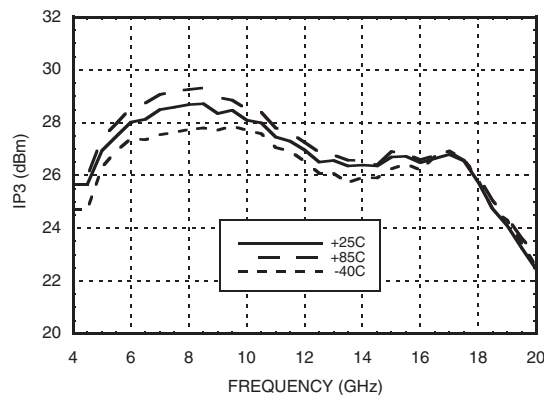
Power Compression @ 10 GHz



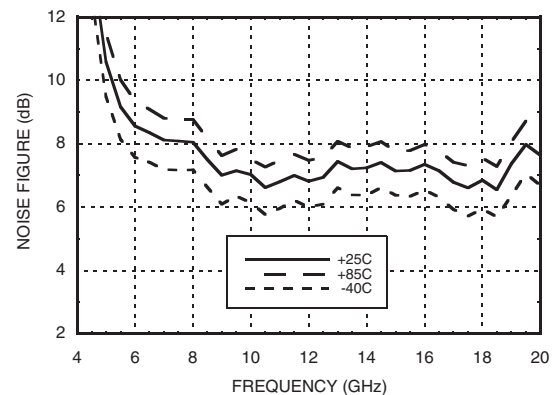
Power Compression @ 17 GHz



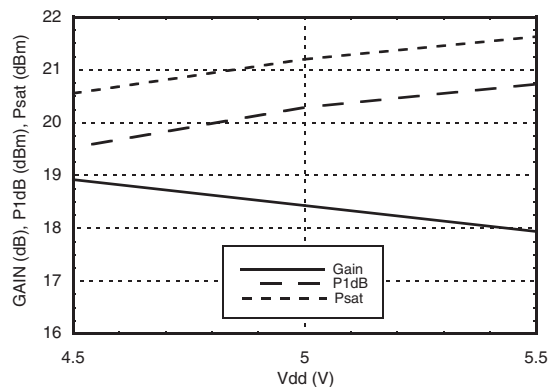
Output IP3 vs. Temperature



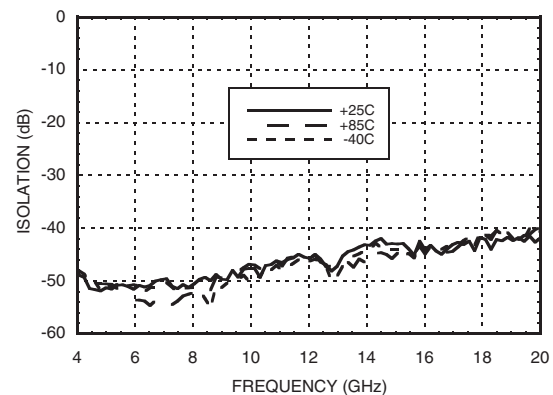
Noise Figure vs. Temperature



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

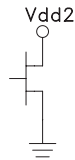
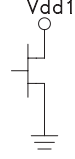


Reverse Isolation vs. Temperature



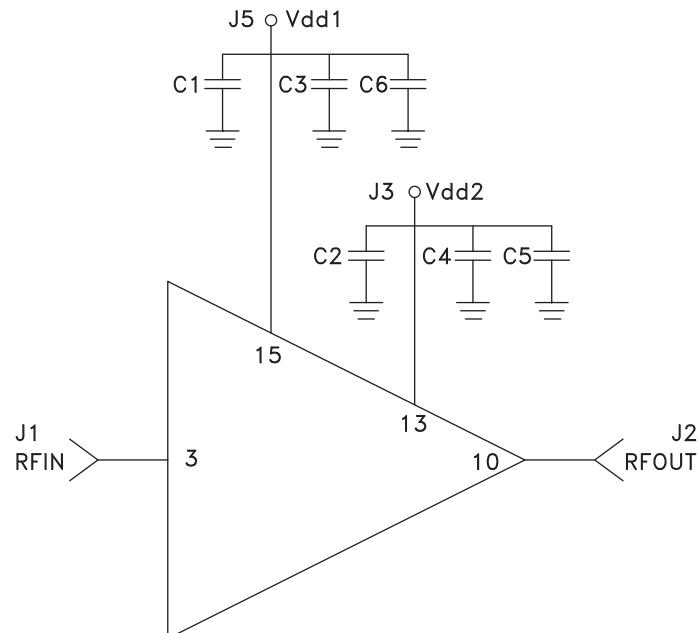


Pin Descriptions

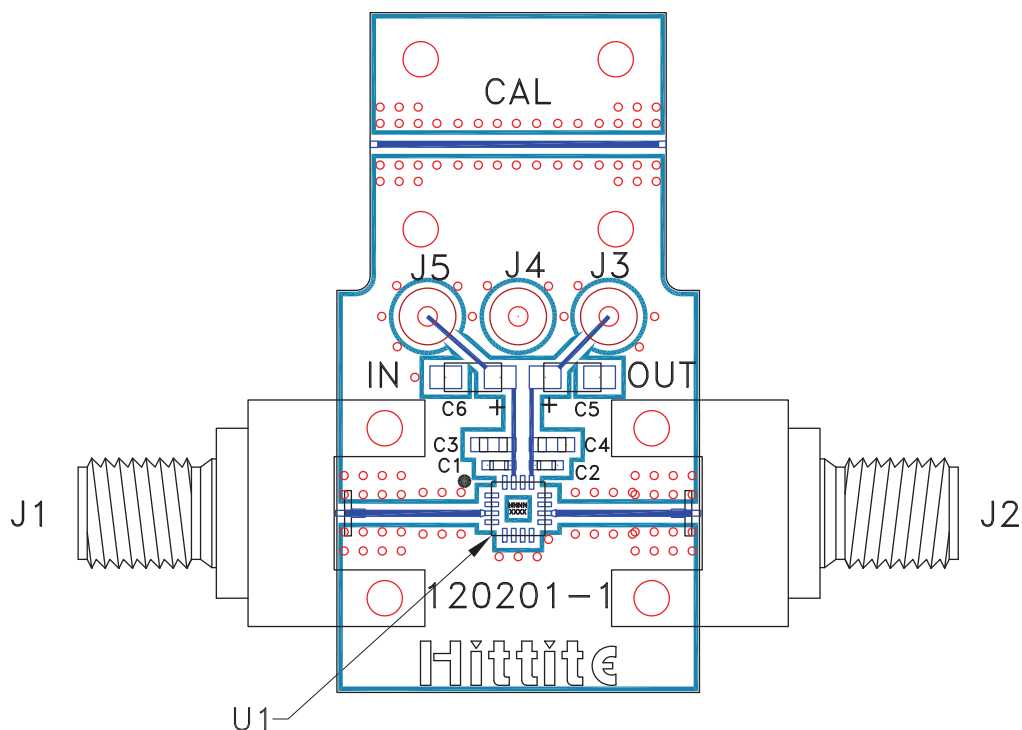
Pin Number	Function	Description	Interface Schematic
1, 2, 4 - 9, 11, 12, 14, 16	N/C	This pin may be connected to RF/DC ground. Performance will not be affected.	
3	RFIN	This pin is AC coupled and matched to 50 Ohms.	RFIN 
10	RFOUT	This pin is AC coupled and matched to 50 Ohms.	 RFOUT
13	Vdd2	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1,000 pF and 2.2 μ F are required.	
15	Vdd1	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1,000 pF and 2.2 μ F are required.	
	GND	Package bottom must be connected to RF/DC ground.	

Application Circuit

Component	Value
C1, C2	100 pF
C3, C4	1,000 pF
C5, C6	2.2 μ F



Evaluation PCB



List of Materials for Evaluation PCB 120202 ^[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	HMC451LP3(E) Amplifier
PCB [2]	120201 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Arlon 25FR

The circuit board used in the 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

Вы можете приобрести в компании MosChip.

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

Офис по работе с юридическими лицами:

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