



NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED



THIS PAGE INTENTIONALLY LEFT BLANK



MICROWAVE CORPORATION v03.0913



HMC788LP2E

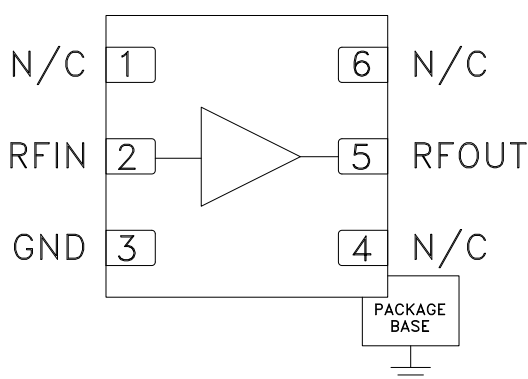
pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

Typical Applications

The HMC788LP2E is ideal for:

- Cellular/3G & LTE/WiMAX/4G
- LO Driver Applications
- Microwave Radio
- Test & Measurement Equipment
- UWB Communications

Functional Diagram



Features

- P1dB Output Power: +20 dBm
- Output IP3: +30 dBm
- Gain: 14 dB
- 50 Ohm I/O's
- 6 Lead 2x2 mm DFN SMT Package: 4 mm²

General Description

The HMC788LP2E is a GaAs pHEMT Gain Block MMIC SMT DC to 10 GHz amplifier. This 2x2 mm DFN packaged amplifier can be used as either a cascadable 50 Ohm gain stage or to drive the LO port of many of Hittite's single and double-balanced mixers with up to +20 dBm output power. The HMC788LP2E offers 14 dB of gain and an output IP3 of +30 dBm while requiring only 76 mA from a +5V supply. The Darlington feedback pair exhibits reduced sensitivity to normal process variations and yields excellent gain stability over temperature while requiring a minimal number of external bias components.

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

Parameter		Min.	Typ.	Max.	Units
Gain	DC - 6.0 GHz	12	14		dB
	6.0 - 10.0 GHz	9	12		dB
Gain Variation Over Temperature	DC - 6.0 GHz		0.012		dB/ °C
	6.0 - 10.0 GHz		0.025		dB/ °C
Return Loss Input	DC - 6.0 GHz		16		dB
	6.0 - 10.0 GHz		9		dB
Return Loss Output	DC - 6.0 GHz		9		dB
	6.0 - 10.0 GHz		15		dB
Reverse Isolation	DC - 10.0 GHz		25		dB
Output Power for 1 dB Compression (P1dB)	DC - 6.0 GHz	18	20		dBm
	6.0 - 10.0 GHz	15	18		dBm
Output Third Order Intercept (IP3)	DC - 6.0 GHz		30		dBm
	6.0 - 10.0 GHz		27		dBm
Noise Figure	DC - 6.0 GHz		7		dB
	6.0 - 10.0 GHz		9		dB
Supply Current (Icq)			76		mA

Note: Data taken with broadband bias tee on device output.

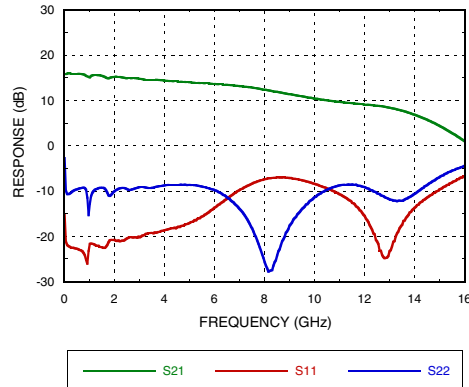
For price, delivery and to place orders: Hittite Microwave Corporation, 2 Elizabeth Drive, Chelmsford, MA 01824

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

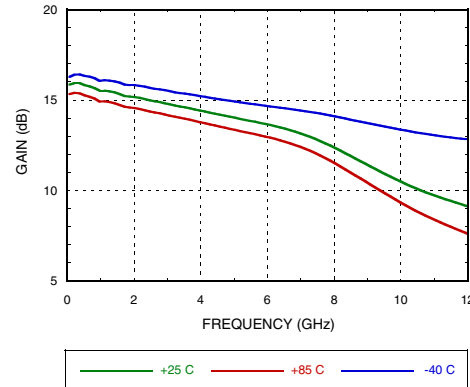
Application Support: Phone: 978-250-3343 or apps@hittite.com

pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

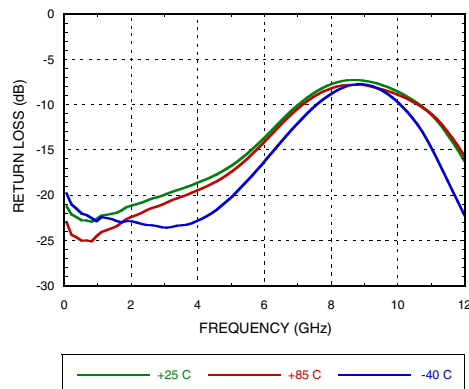
Broadband Gain & Return Loss



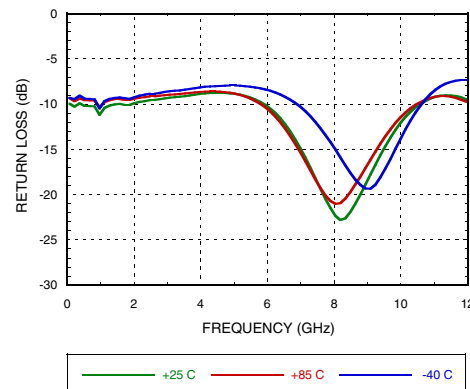
Gain vs. Temperature



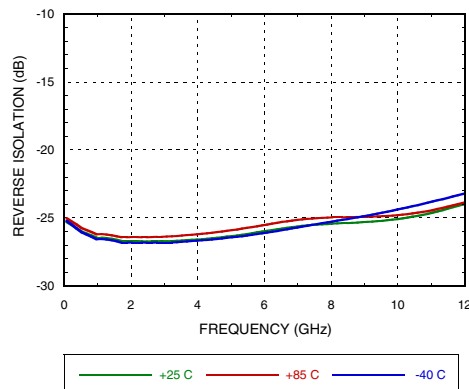
Input Return Loss vs. Temperature



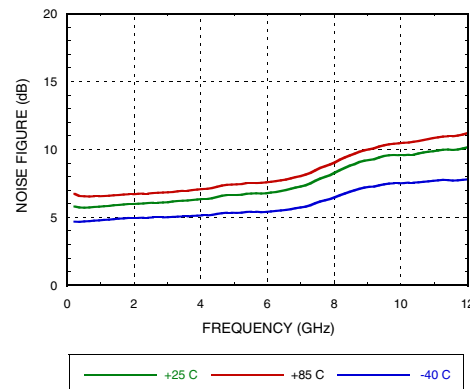
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature





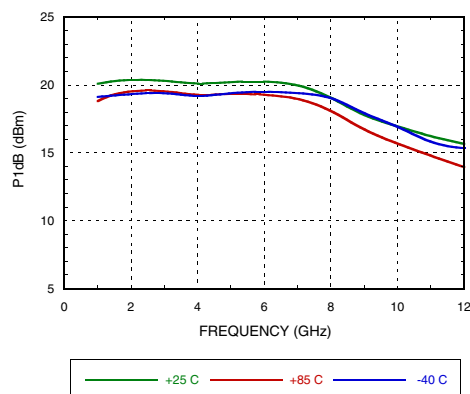
MICROWAVE CORPORATION v03.0913



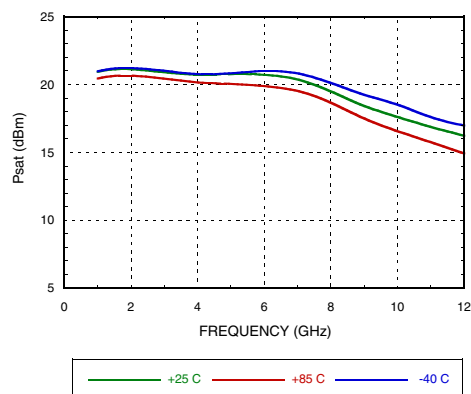
HMC788LP2E

pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

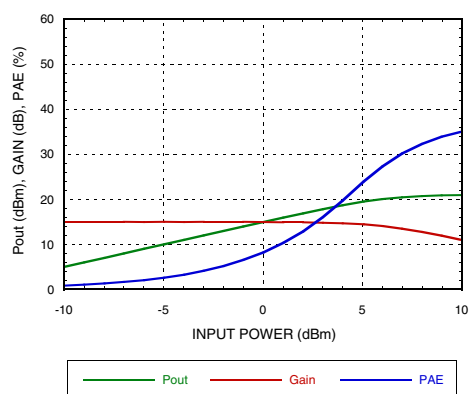
P1dB vs. Temperature



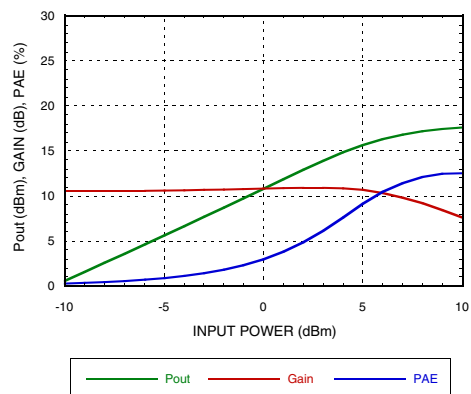
Psat vs. Temperature



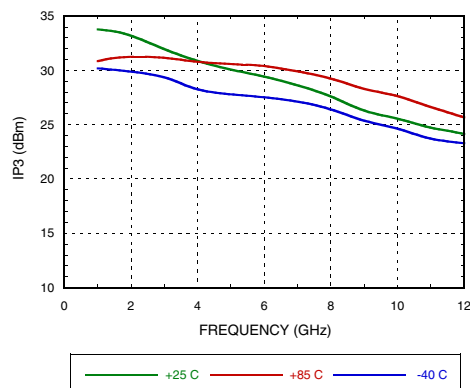
Power Compression @ 1 GHz



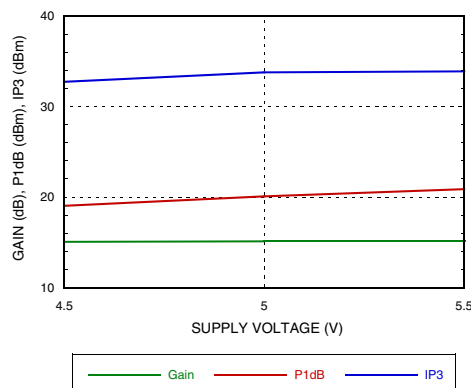
Power Compression @ 10 GHz



Output IP3 vs. Temperature ^[1]



Gain & Power vs. Supply Voltage @ 1 GHz



[1] +5 dBm / Tone Output Power

pHEMT GAIN BLOCK
MMIC AMPLIFIER, DC - 10 GHz

Absolute Maximum Ratings

Collector Bias Voltage (Vcc)	+7V
RF Input Power (RFIN)(Vs = +5V)	+15 dBm
Junction Temperature	150 °C
Continuous P _{diss} (T = 85 °C) (derate 10.4 mW/°C above 85 °C)	0.68 W
Thermal Resistance (junction to ground paddle)	96 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A

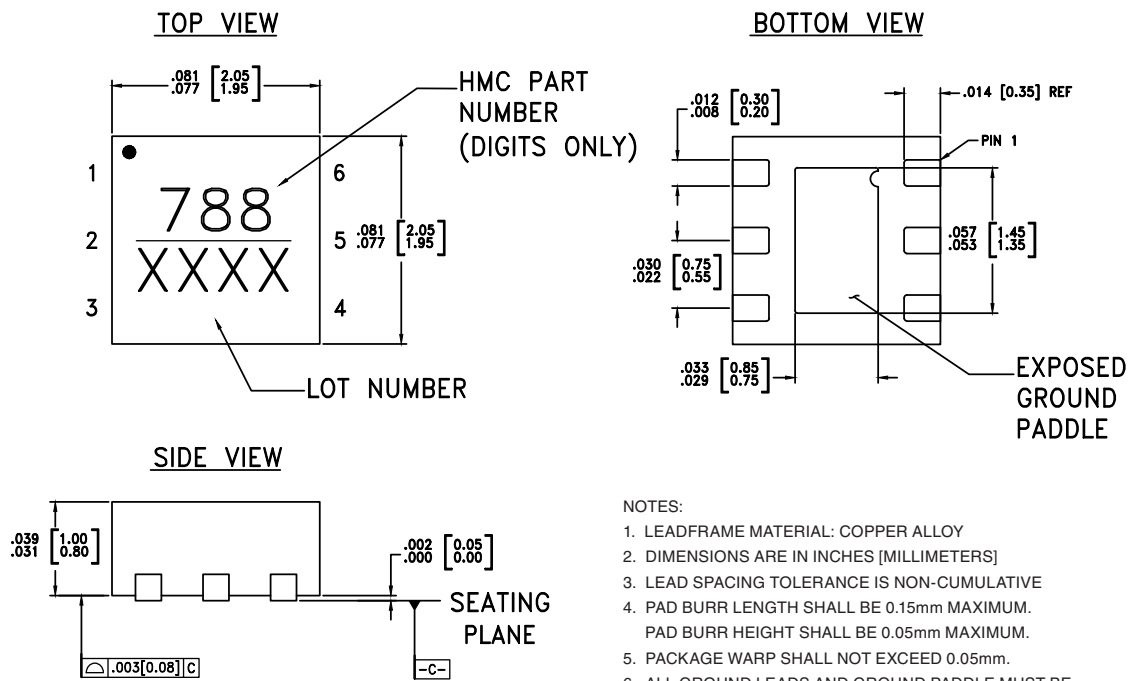
Typical Supply Current

Vcc (V)	Ic _q (mA)
4.5	64
5.0	76
5.5	88



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[1]
HMC788LP2E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	788 XXXX

[1] 4-Digit lot number XXXX

[2] Max peak reflow temperature of 260 °C



MICROWAVE CORPORATION v03.0913



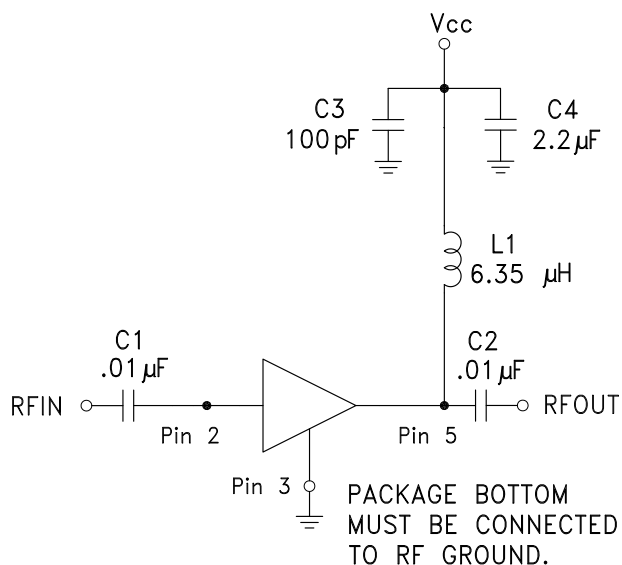
HMC788LP2E

pHEMT GAIN BLOCK MMIC AMPLIFIER, DC - 10 GHz

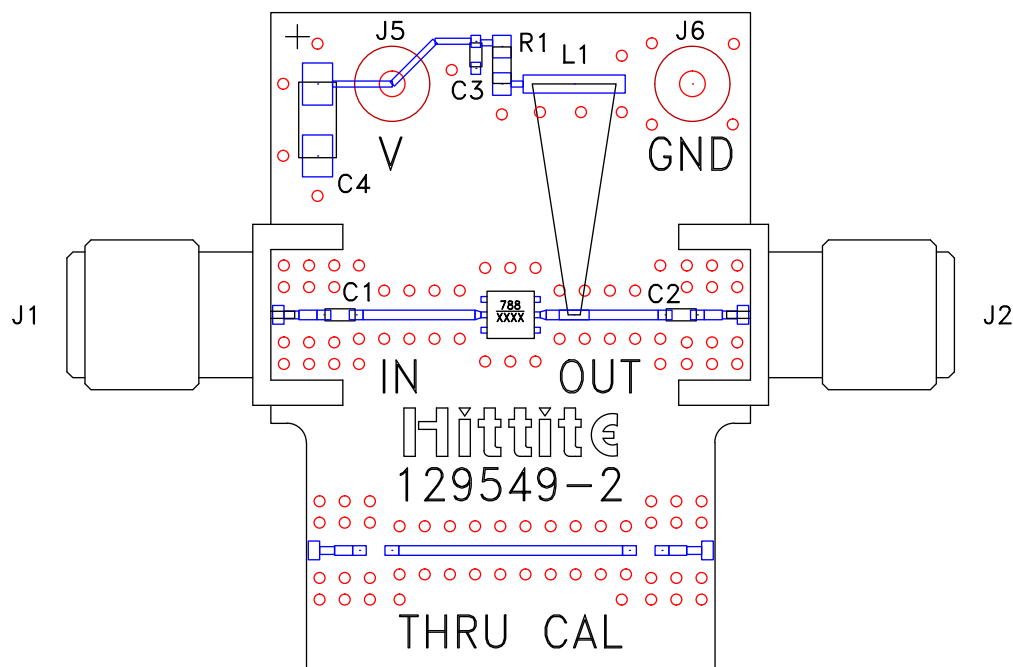
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 4, 6	N/C	The pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
2	RFIN	This pin is DC coupled. An off chip DC blocking capacitor is required.	
5	RFOUT	RF output and DC Bias for the output stage.	
3	GND	This pin and exposed ground paddle must be connected to RF/DC ground.	

Application Circuit



Evaluation PCB



List of Materials for Evaluation PCB 129550 ^[1]

Item	Description
J1 - J2	PC Mount SMA Connector
J5, J6	DC Pin
C1, C2	0.01 μ F Capacitor, 0502 Pkg.
C3	100 pF Capacitor, 0402 Pkg.
C4	2.2 μ F Case A Pkg.
R1	0 Ohm Resistor, 0402 Pkg.
L1	Inductor, Conical 6.35 μ H
U1	HMC788LP2E
PCB [2]	129549 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

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.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.