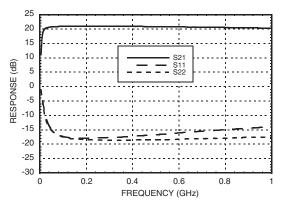


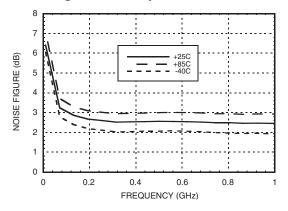
#### v02.0710

# EARTH FRIENDLY IF Band Performance

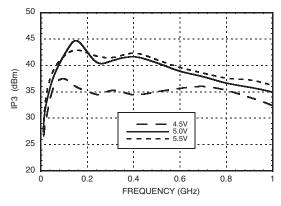
## Gain & Return Loss



## Noise Figure vs. Temperature



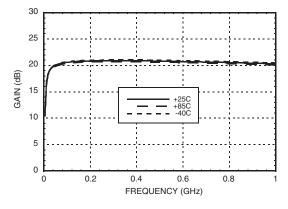
## **Output IP3 vs. Vcc**



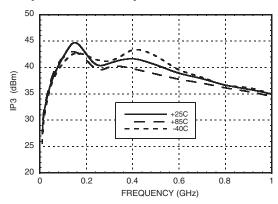
# HMC741ST89E

# InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz

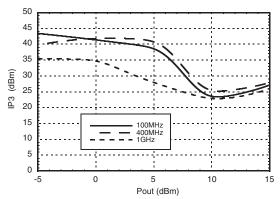
## Gain vs. Temperature



## Output IP3 vs. Temperature



## Output IP3 vs. Output Power



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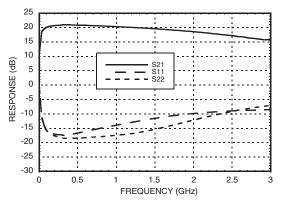
# HMC741ST89E

## InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz

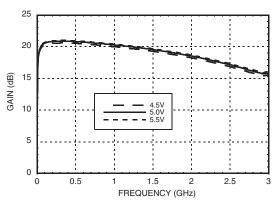


**Broadband Performance** 

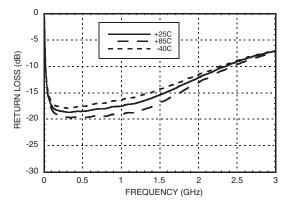
## Gain & Return Loss



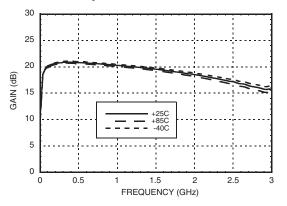
Gain vs. Vcc



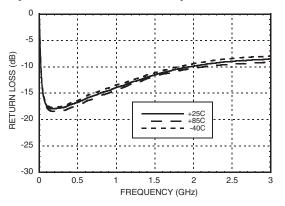
**Output Return Loss vs. Temperature** 



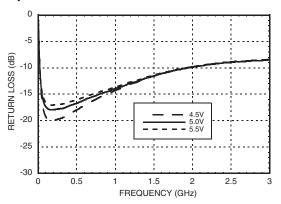
Gain vs. Temperature



Input Return Loss vs. Temperature



Input Return Loss vs. Vcc



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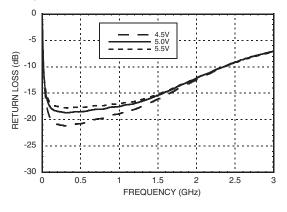


InGaP HBT ACTIVE BIAS

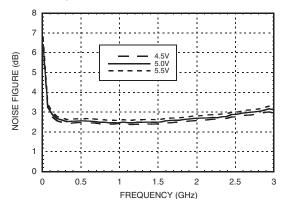
#### v02.0710



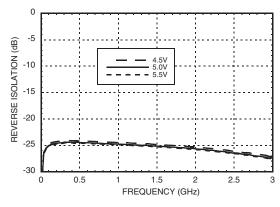
## **Output Return Loss vs. Vcc**



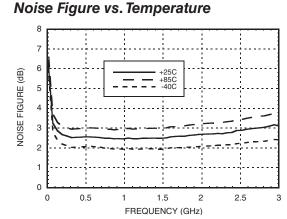
## Noise Figure vs. Vcc



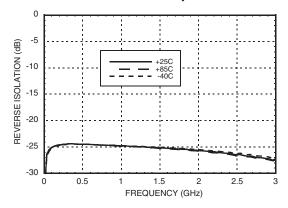
### **Reverse Isolation vs. Vcc**



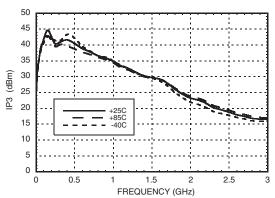
# MMIC AMPLIFIER, 0.05 – 3 GHz



## Reverse Isolation vs. Temperature



## Output IP3 vs. Temperature



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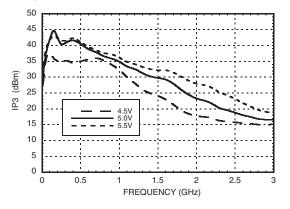
InGaP HBT ACTIVE BIAS

MMIC AMPLIFIER, 0.05 - 3 GHz

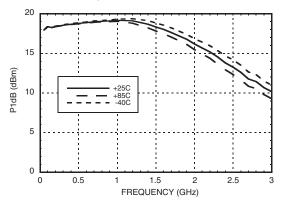
#### v02.0710



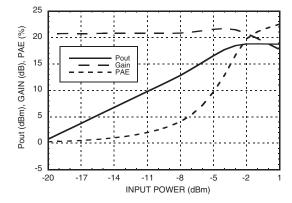
## **Output IP3 vs. Vcc**



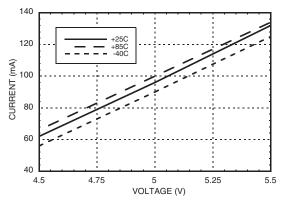
## P1dB vs. Temperature



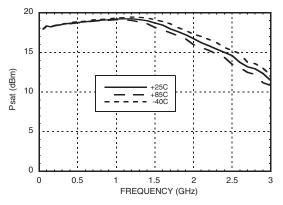
## Power Compression @ 500 MHz



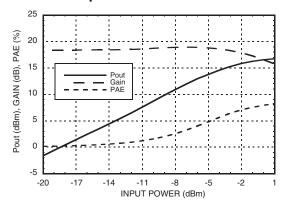
## Current vs. Temperature



## Psat vs. Temperature



### Power Compression @ 2 GHz



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## Absolute Maximum Ratings

Collector Bias Voltage (Vcc)	+5.5 Vdc
RF Input Power (RFIN)	+15 dBm
Junction Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 10.22 mW/°C above 85 °C)	0.66 W
Thermal Resistance (junction to lead)	97.83 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HMB)	Class 1C



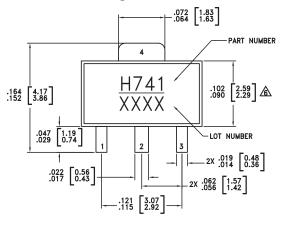
## ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS

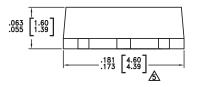
MMIC AMPLIFIER, 0.05 - 3 GHz

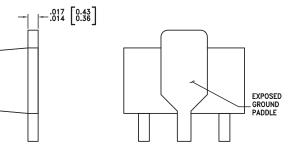
**HMC741ST89E** 

InGaP HBT ACTIVE BIAS

## **Outline Drawing**







NOTES:

1. PACKAGE BODY MATERIAL:

MOLDING COMPOUND MP-180S OR EQUIVALENT.

2. LEAD MATERIAL: Cu w/ Ag SPOT PLATING.

3. LEAD PLATING: 100% MATTE TIN.

4. DIMENSIONS ARE IN INCHES [MILLIMETERS]

ADIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.

7. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

## Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking <sup>[1]</sup>
HMC741ST89E RoHS-compliant Low Stress Injection Molded Plastic		100% matte Sn	MSL1 <sup>[2]</sup>	<u>H741</u> XXXX

[1] 4-Digit lot number XXXX

[2] Max peak reflow temperature of 260 °C

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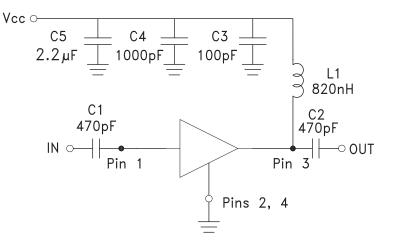
# InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz



## **Pin Descriptions**

Pin Number	Function	Description	Interface Schematic	
1	IN	This pin is DC coupled. An off chip DC blocking capacitor is required.		
3	OUT	RF output and DC Bias (Vcc) for the output stage.		
2, 4	GND	These pins and package bottom must be connected to RF/DC ground.		

## **Application Circuit**



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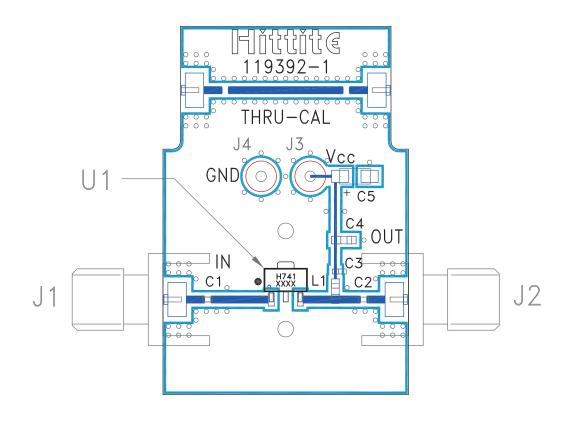


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## InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz

## **Evaluation PCB**



## List of Materials for Evaluation PCB 124390 [1]

Item	Description
J1, J2	PCB Mount SMA Connector
J3, J4	DC Pin
C1, C2	470 pF Capacitor, 0402 Pkg.
C3	100 pF Capacitor, 0402 Pkg.
C4	1000 pF Capacitor, 0603 Pkg.
C5	2.2 µF Capacitor Tantalum
L1	820 nH Inductor, 0603 Pkg.
U1	HMC741ST89E
PCB [2]	119392 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: FR4

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 package bottom 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.

8 AMPLIFIERS - DRIVER & GAIN BLOCK - SMT

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