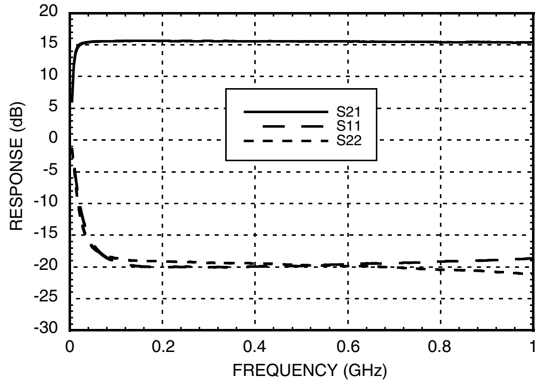
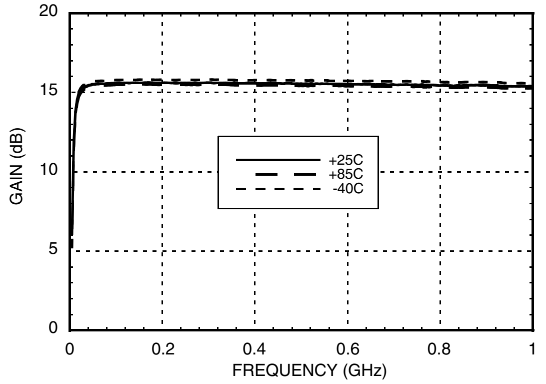
InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz

IF Band Performance

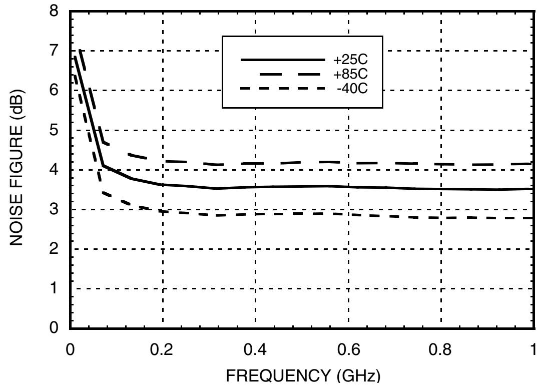
Gain & Return Loss



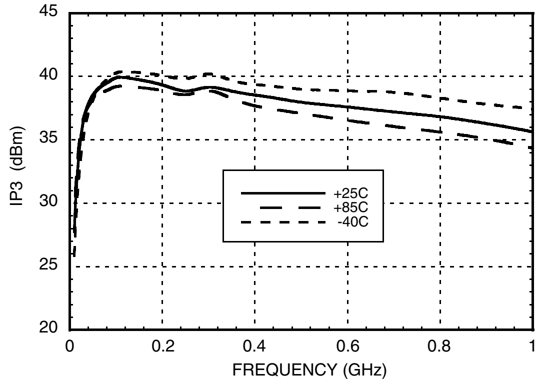
Gain vs. Temperature



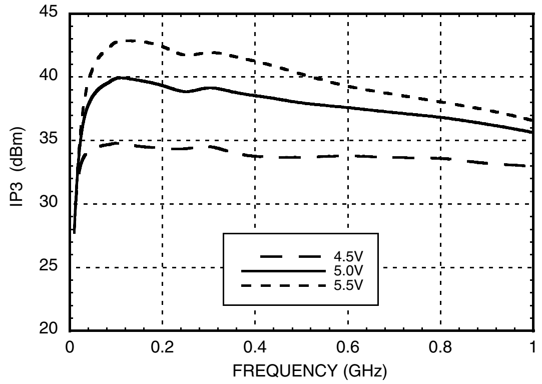
Noise Figure vs. Temperature



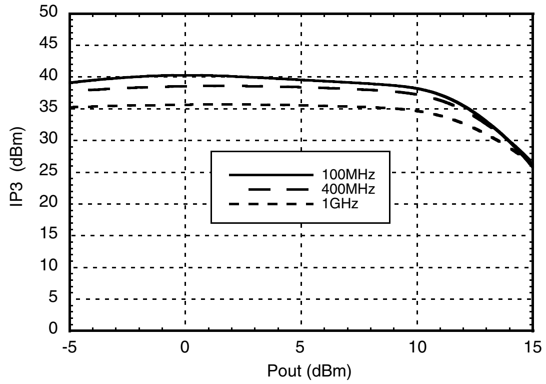
Output IP3 vs. Temperature



Output IP3 vs. Vcc



Output IP3 vs. Output Power



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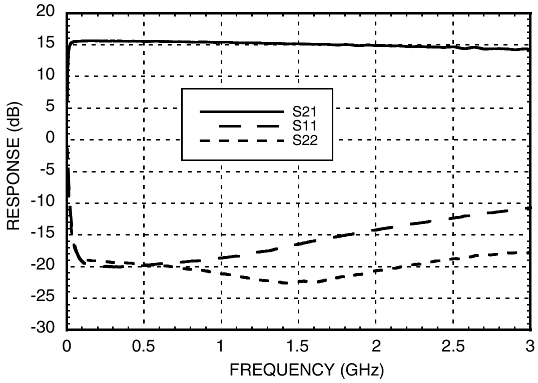
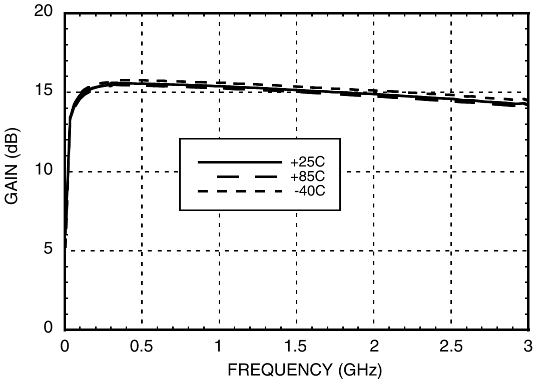
InGaP HBT ACTIVE BIAS MMIC AMPLIFIER, 0.05 – 3 GHz

Broadband Performance

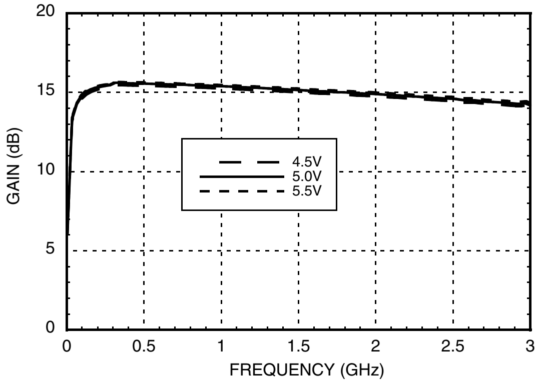
Gain & Return Loss



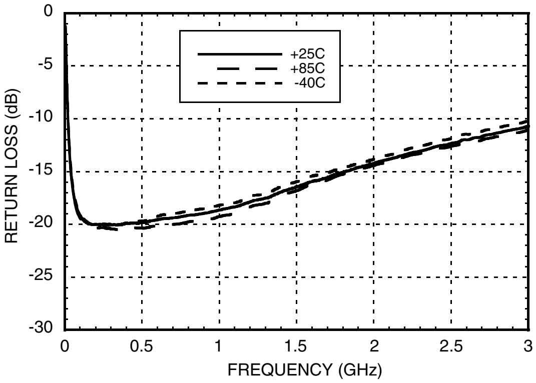
Gain vs. Temperature



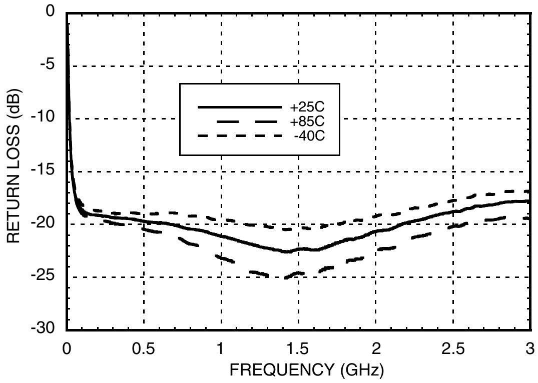
Gain vs. Vcc



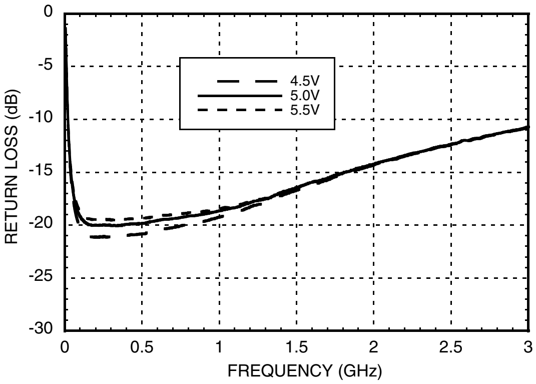
Input Return Loss vs. Temperature



Output Return Loss vs. Temperature



Input Return Loss vs. Vcc



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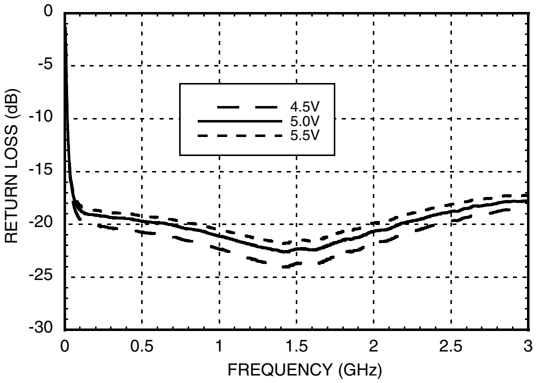
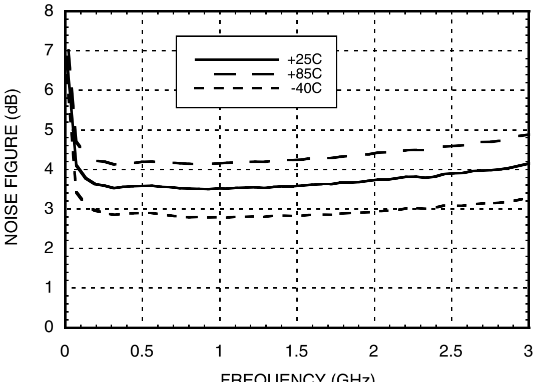
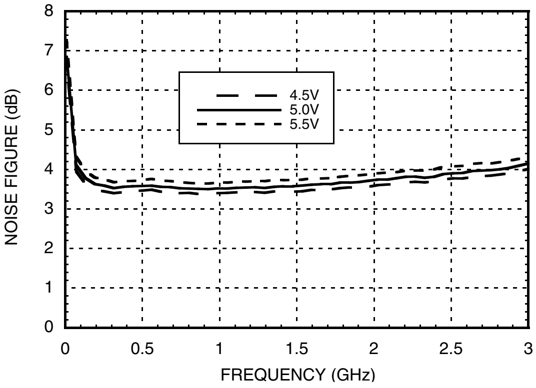
Output Return Loss vs. Vcc



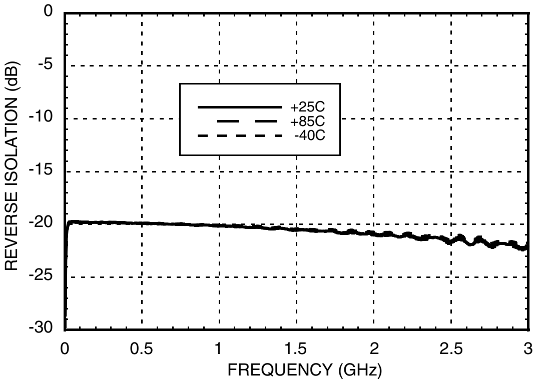
Noise Figure vs. Temperature



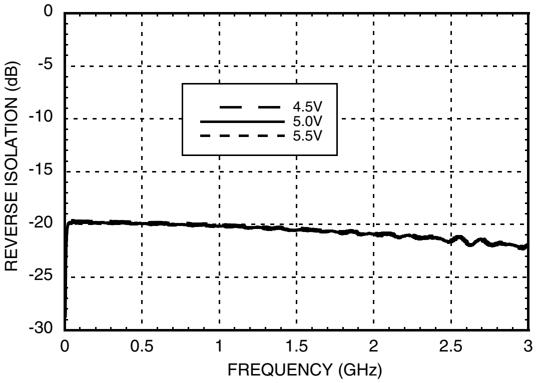
Noise Figure vs. Vcc



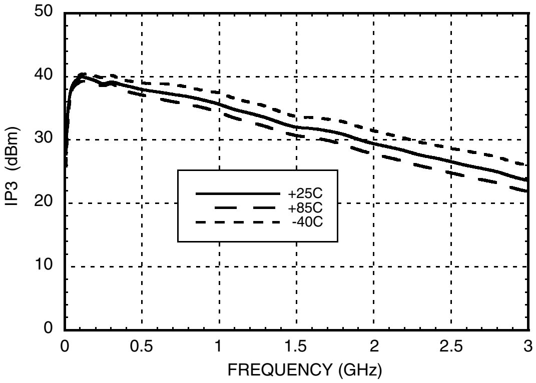
Reverse Isolation vs. Temperature



Reverse Isolation vs. Vcc



Output IP3 vs. Temperature



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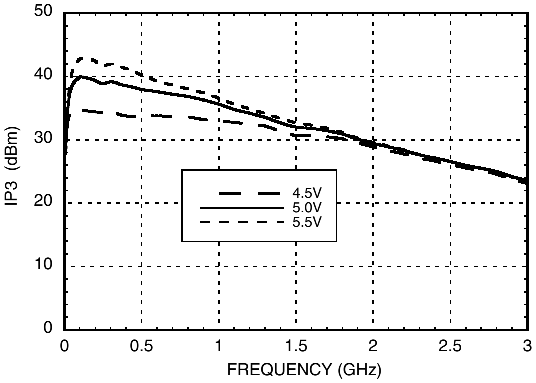
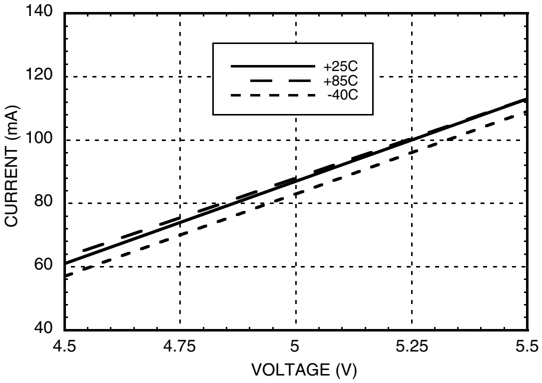
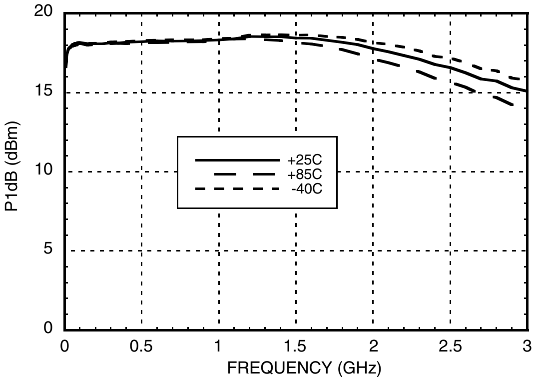
Output IP3 vs. Vcc



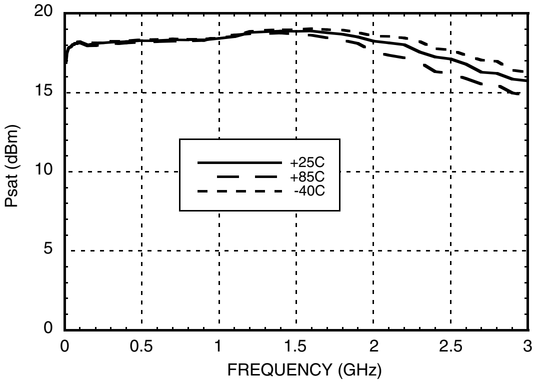
Current vs. Temperature



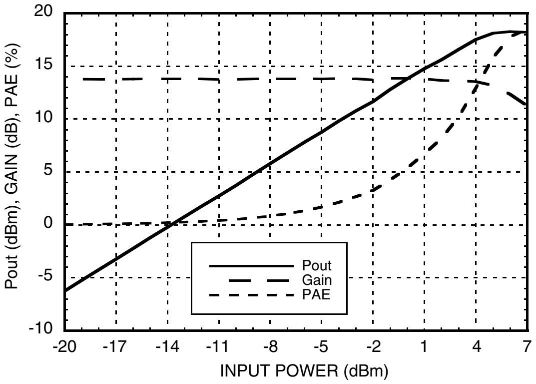
P1dB vs. Temperature



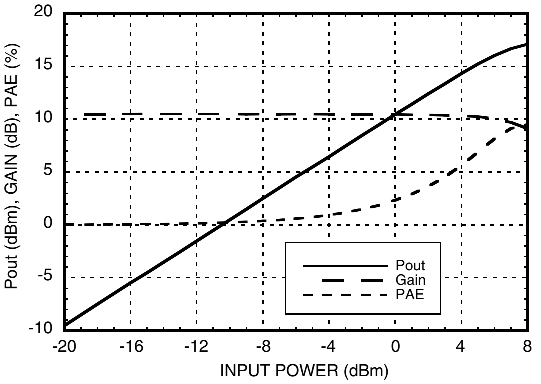
Psat vs. Temperature



Power Compression @ 500 MHz



Power Compression @ 2 GHz



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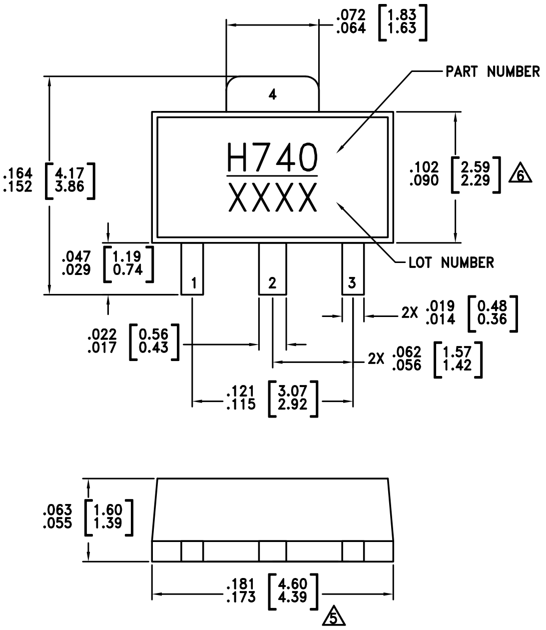
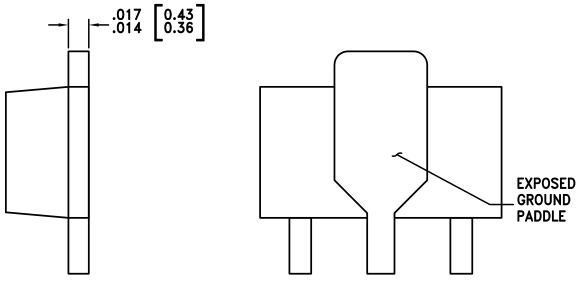
Absolute Maximum Ratings

Collector Bias Voltage (Vcc)	+5.5 Vdc
RF Input Power (RFIN)	+15 dBm
Junction Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 10.23 mW/°C above 85 °C)	0.66 W
Thermal Resistance (junction to lead)	97.78 °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

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]
5 DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
6 DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm 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 [1]
HMC740ST89E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H740 XXXX

[1] 4-Digit lot number XXXX
[2] Max peak reflow temperature of 260 °C

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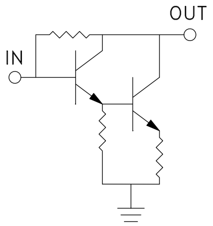
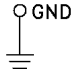
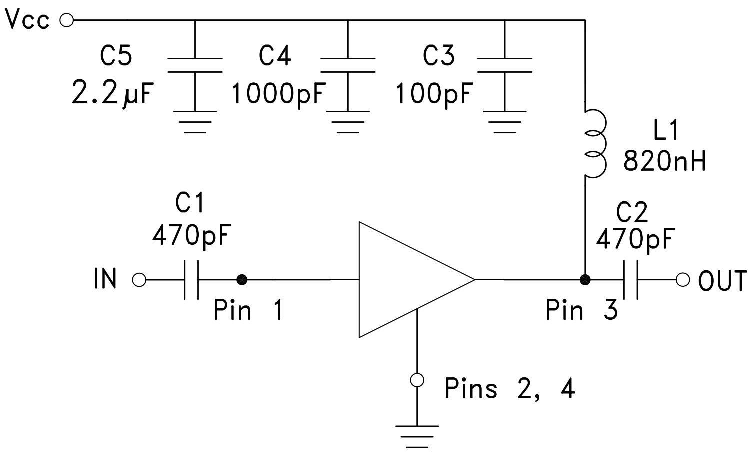
Pin Descriptions

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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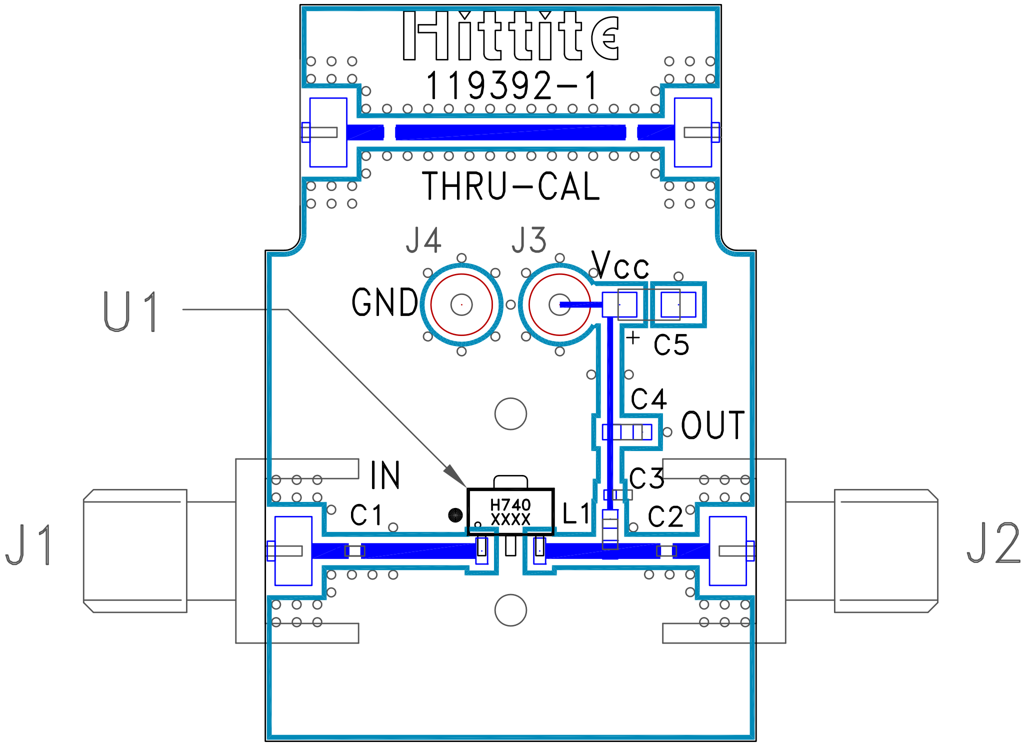
Evaluation PCB



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	HMC740ST89E
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.

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