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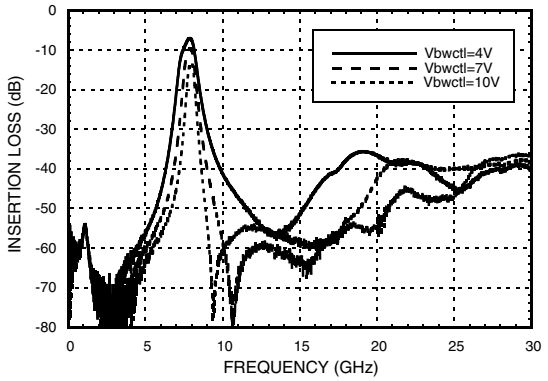
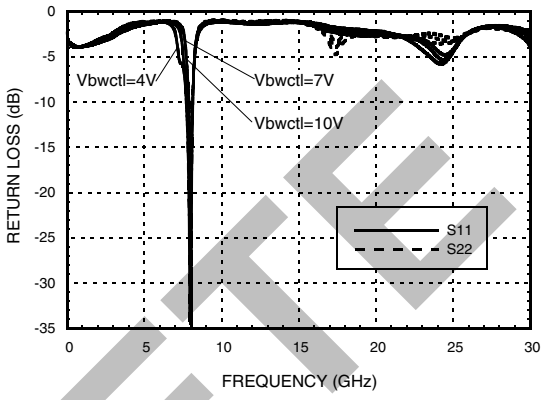
FILTER - TUNABLE, BAND PASS SMT
4.8 - 9.5 GHz

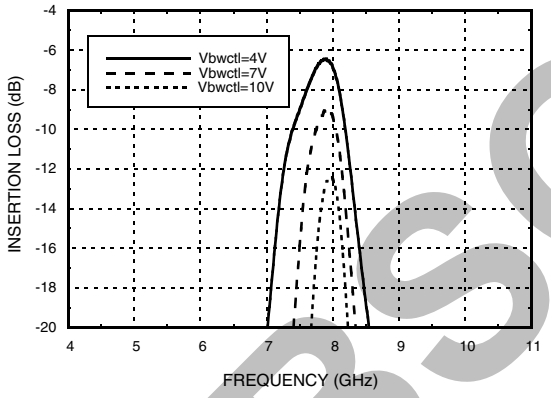
Broadband Insertion Loss vs. Vbwctl, Vfctl = 7V



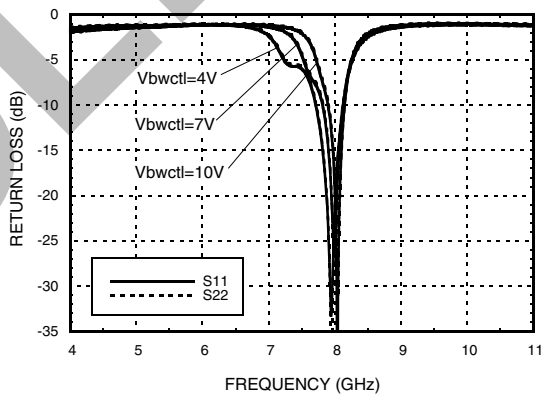
Broadband Return Loss vs. Vbwctl, Vfctl = 7V



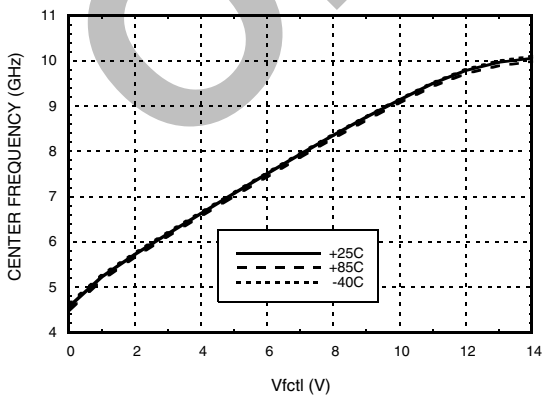
Insertion Loss vs. Vbwctl, Vfctl = 7V



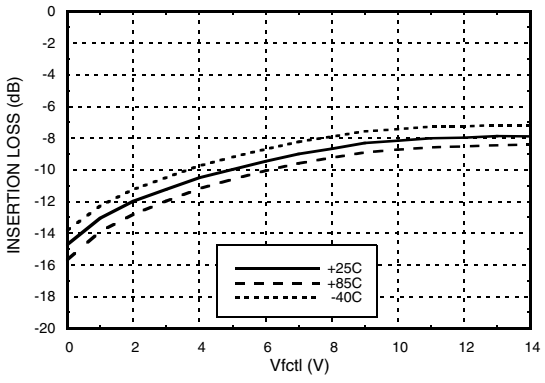
Return Loss vs. Vbwctl, Vfctl = 7V



Center Frequency vs. Temperature, Vfctl = Vbwctl



Insertion Loss vs. Temperature, Vfctl = Vbwctl



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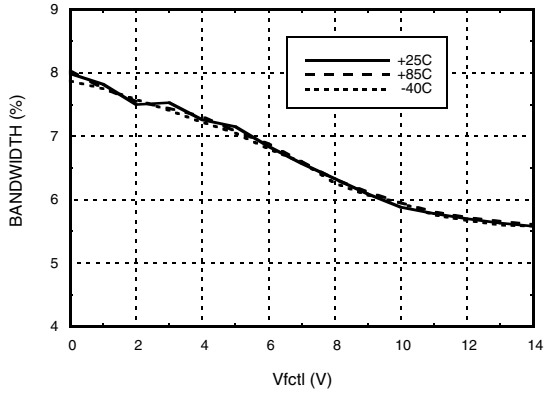
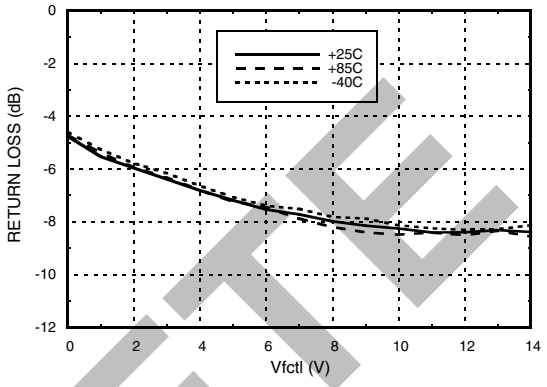
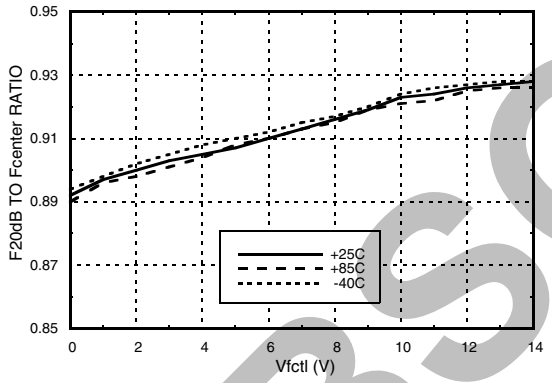
3 dB Bandwidth vs. Temperature, Vfctl = Vbwctl



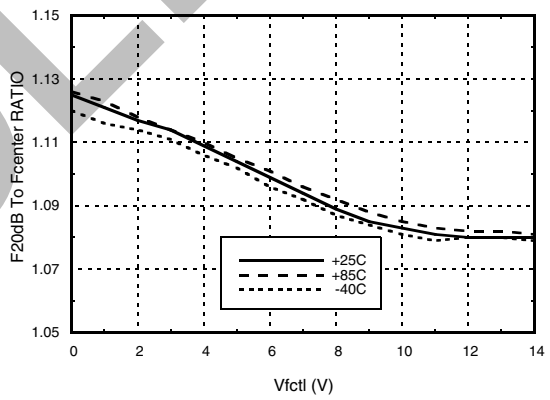
Maximum Return Loss in a 2 dB Bandwidth vs. Temperature, Vfctl = Vbwctl



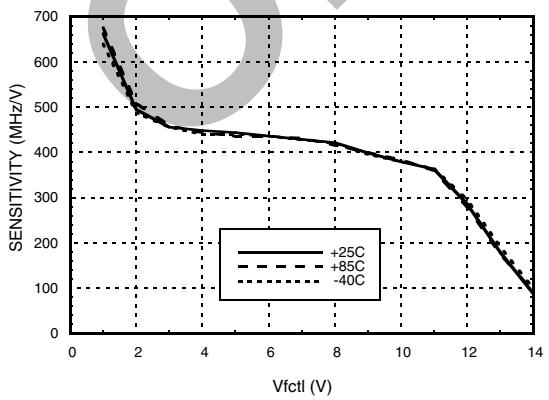
Low Side Rejection Ratio vs. Temperature, Vfctl = Vbwctl [1]



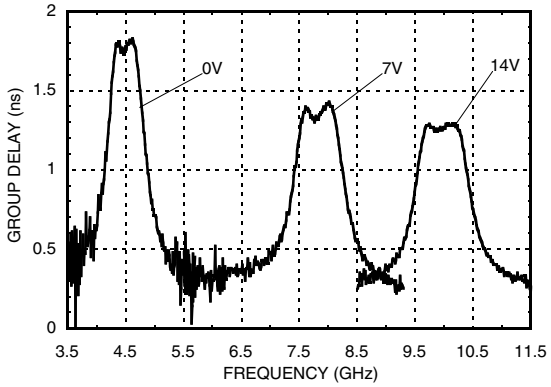
High Side Rejection Ratio vs. Temperature, Vfctl = Vbwctl [1]



Tuning Sensitivity vs. Temperature, Vfctl = Vbwctl



Group Delay



[1] Rejection ratio is defined as the ratio of the frequency at which the relative insertion loss is 20 dB to *f*center

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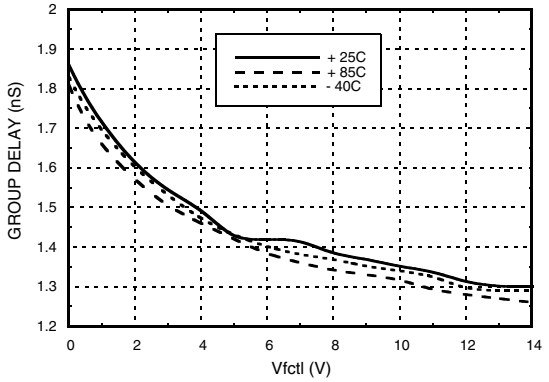
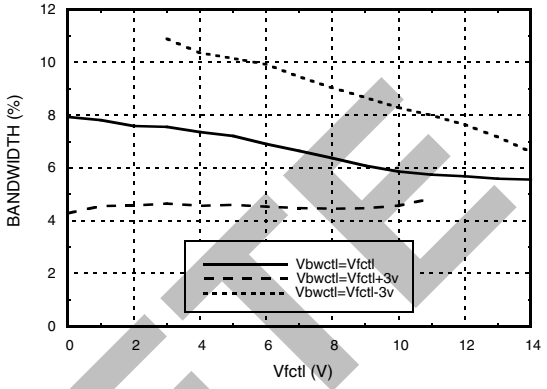
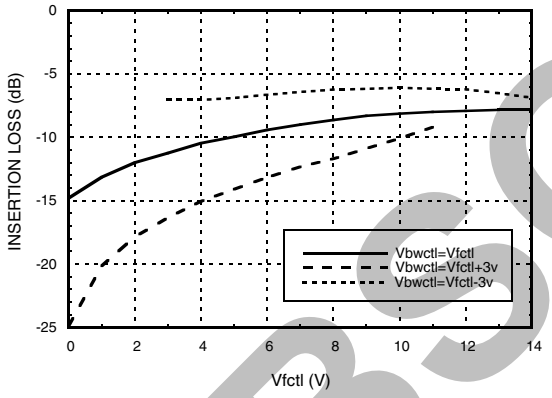
Group Delay vs. Fcenter vs. Temperature



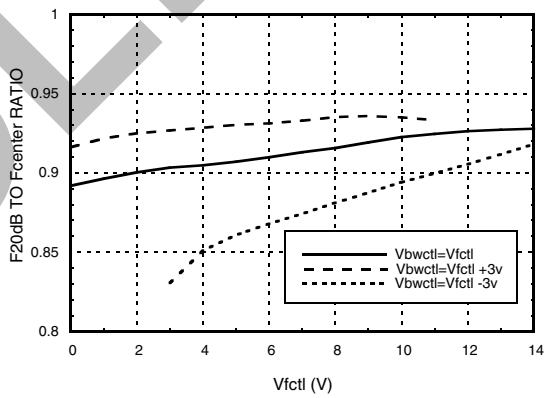
3 dB Bandwidth vs. Bandwidth Control



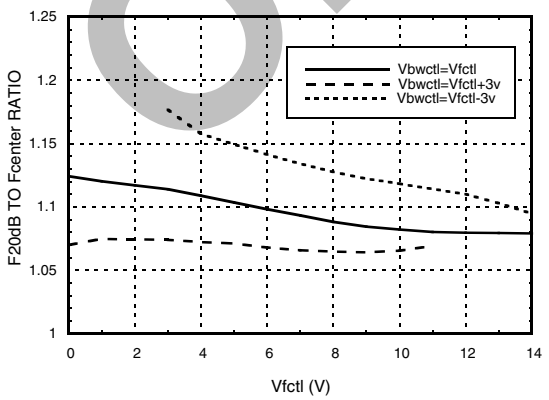
Insertion Loss vs. Bandwidth Control



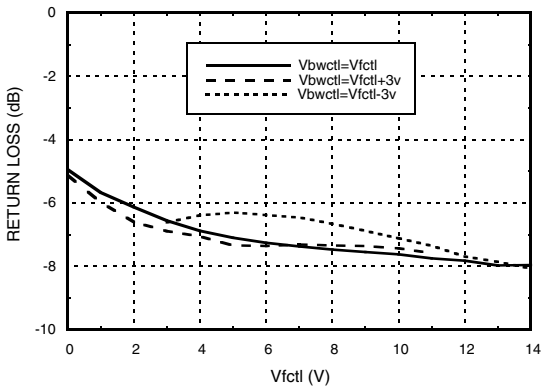
Low Side Rejection Ratio vs. Bandwidth Control [1]



High Side Rejection Ratio vs. Bandwidth Control [1]



Maximum Return Loss in a 2 dB Bandwidth vs. Bandwidth Control



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[1] Rejection ratio is defined as the ratio of the frequency at which the relative insertion loss is 20 dB to *f*center

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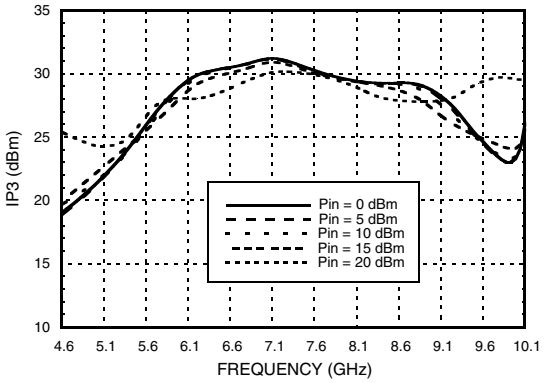
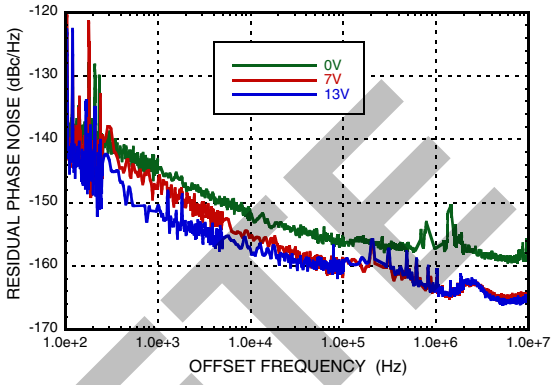
FILTER - TUNABLE, BAND PASS SMT 4.8 - 9.5 GHz

Input IP3 vs. Power Input Vfctl = Vbwctl



Residual Phase Noise Vfctl = Vbwctl



Absolute Maximum Ratings

Frequency Control Voltage (Vfctl)	-0.5 to +15V
Bandwidth Control Voltage (Vbwctl)	-0.5 to +15V
RF Power Input	26 dBm
Storage Temperature	-65 to +150 °C
ESD Rating (HBM)	Class 1B

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Reliability Information

Junction Temperature to Maintain 1 Million Hour MTTF	150 °C
Nominal Junction Temperature (T= 85 °C and Pin = 10 dBm)	90 °C
Operating Temperature	-40 to +85 °C

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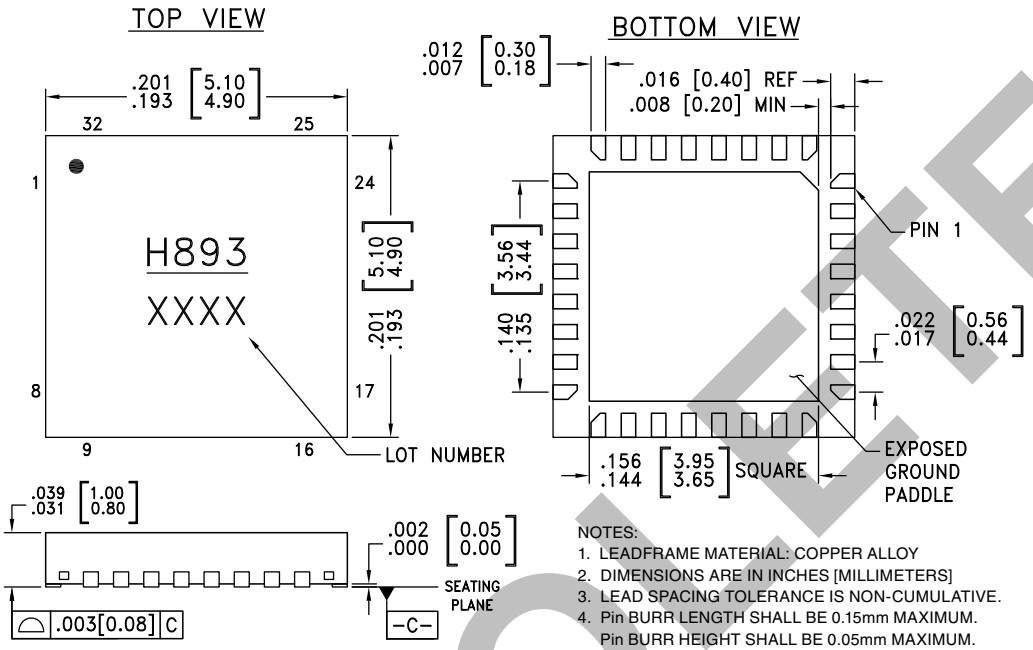
Outline Drawing



NOTES:
1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. Pin BURR LENGTH SHALL BE 0.15mm MAXIMUM. Pin BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [1]
HMC893LP5E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	H893 XXXX

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

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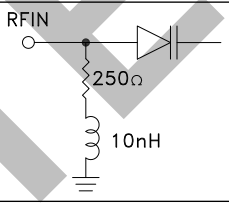
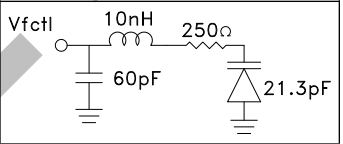
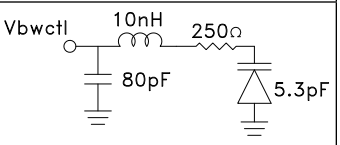
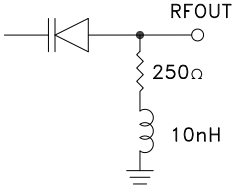
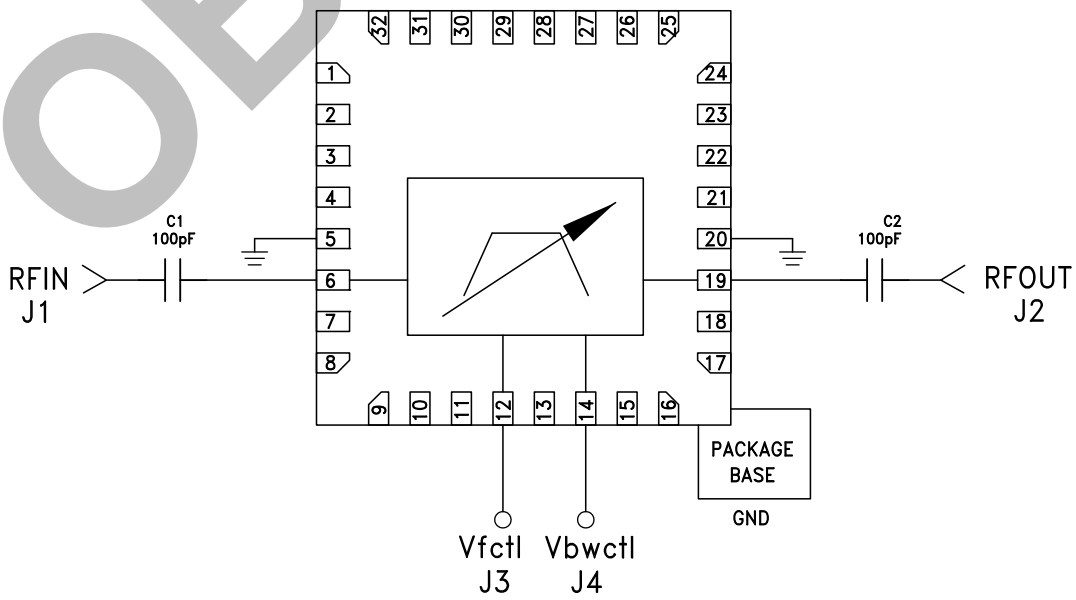
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1 - 4, 7 - 11, 13 15 - 18, 21 - 32	N/C	The pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
5, 20	GND	These pins and exposed paddle must be connected to RF/DC ground.	
6	RFIN	This pin is DC coupled and matched to 50 Ohms. External voltage must not be applied to this pin.	
12	Vfctl	Center frequency control voltage.	
14	Vbwctl	Bandwidth control voltage.	
19	RFOUT	This pin is DC coupled and matched to 50 Ohms. External voltage must not be applied to this pin.	

Application Circuit



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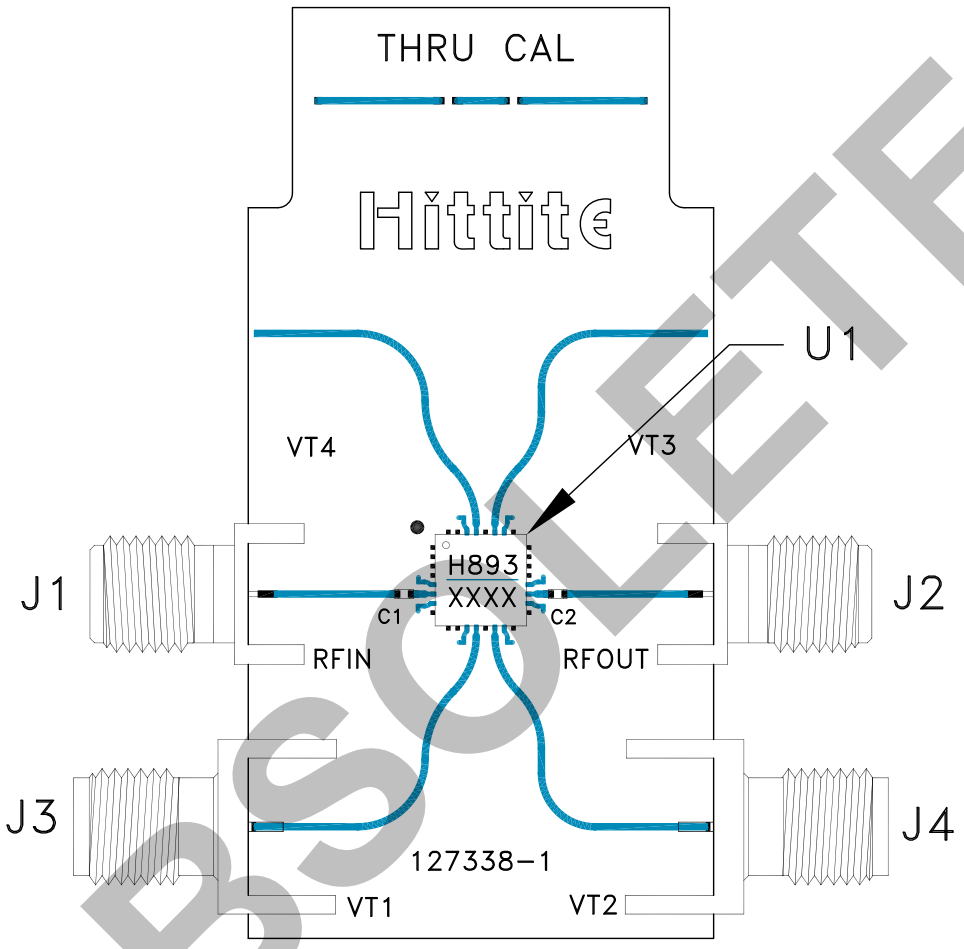
Evaluation PCB



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List of Materials for Evaluation PCB 128531 [1]

Item	Description
J1, J2	SMA - SRI
J3, J4	SMA - Johnson
C1, C2	100 pF Capacitor, 0402 Pkg.
U1	HMC893LP5E Filter - Tunable
PCB [2]	127338 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Arlon 25FR or Rogers 4350

The circuit board used in the application should use RF circuit design techniques. Signal lines should have 50 Ohms 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 circuit board shown is available from Hittite upon request.

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