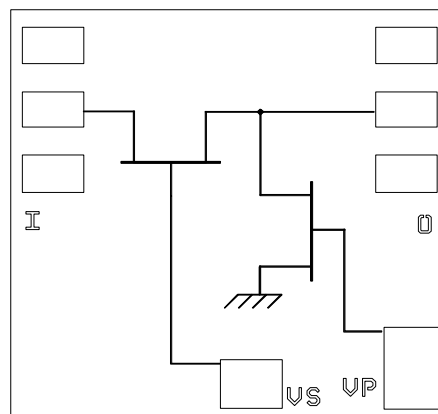


Advanced Information: AI1714

DC-14GHz Voltage Variable Attenuator

GaAs Monolithic Microwave IC

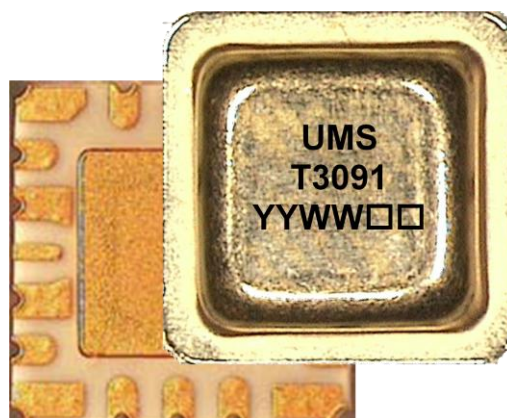


UMS develops a Voltage Variable Attenuator (VVA) in leadless surface mount hermetic metal ceramic 6x6mm² package, which operates from DC to 14GHz.

This device, with an excellent linearity over the full attenuation range, is dedicated to a wide range of applications, from defense electronics to commercial communication systems.

The circuit is manufactured with a MESFET process, 0.7µm gate length, via holes through the substrate and air bridges.

The CHT3091 is also available as a bare die, and in a standard surface mount 16 leads QFN3x3, compliant with the regulation in particular with the directives RoHS N°2011/65 and REACH N°1907/2006.



Electrical Characteristics

Tamb.= +25°C

Symbol	Parameter	Min	Typ	Max	Unit
F_{in}	Input frequency range	DC		14	GHz
Min Att.	Minimum attenuation $ S_{21} $ ($V_S=0V; V_P=-5V$)		2.5	4.0	dB
Max Att.	Maximum attenuation $ S_{21} $ ($V_S=-5V; V_P=0V$)	20	23		dB
$VSWR_{in}$	Input Return Loss		10		dB
$VSWR_{out}$	Output Return Loss		10		dB
P_{in1dB}	Input 1dB compression point.(any attenuation, 1 – 14GHz)		15		dBm

These values are representative of on board measurements as defined on the drawing 500566 (see below).

Absolute Maximum Ratings ⁽¹⁾

Tamb.= +25°C

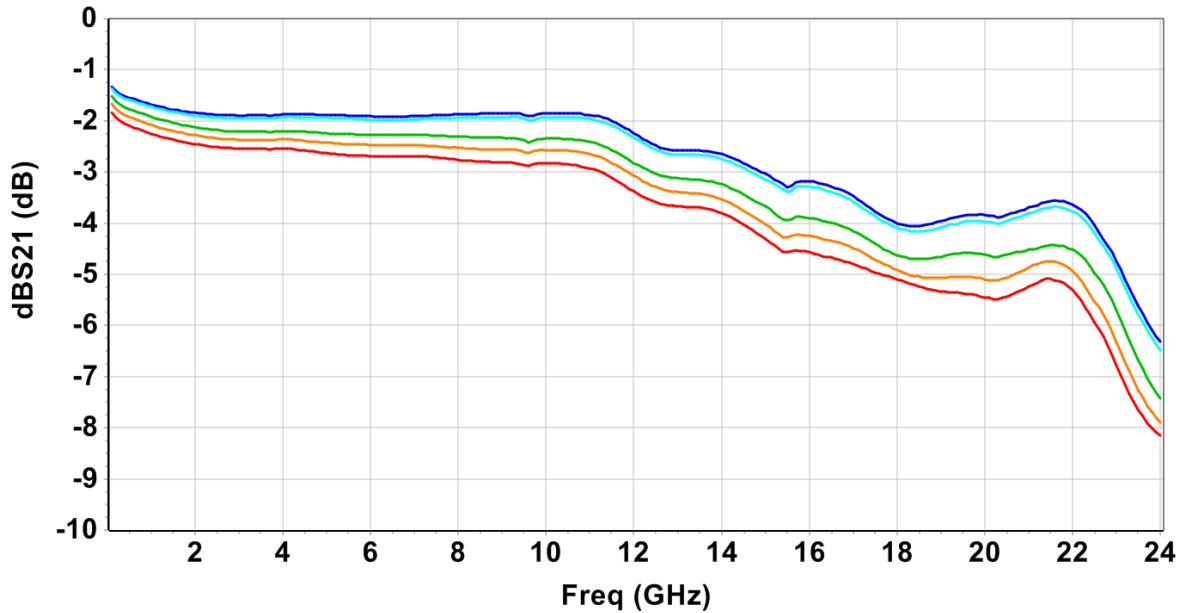
Symbol	Parameter	Values	Unit
V_P	V_P control voltage	-6V to +0.6V	V
V_S	V_S control voltage	-6V to +0.6V	V
P_{in}	RF input power	30	dBm
T_a	Operating temperature range	-40 to +85	°C
T_{stg}	Storage temperature range	-55 to +155	°C

⁽¹⁾ Operation of this device above anyone of these parameters may cause permanent damage.

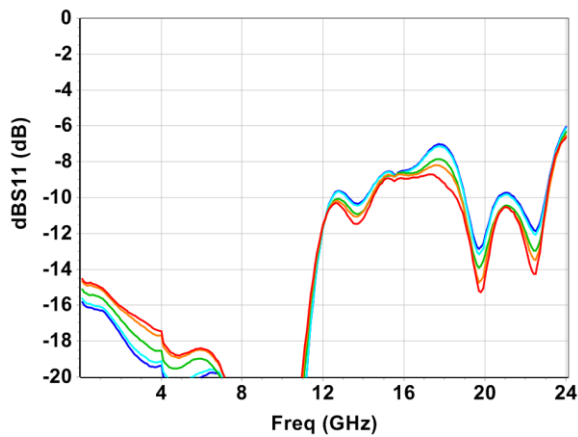
Typical Board Measurements

Min attenuation $V_s = 0V$; $V_p = -5V$ Temperature : -55, -40, +25, +85, +125°C

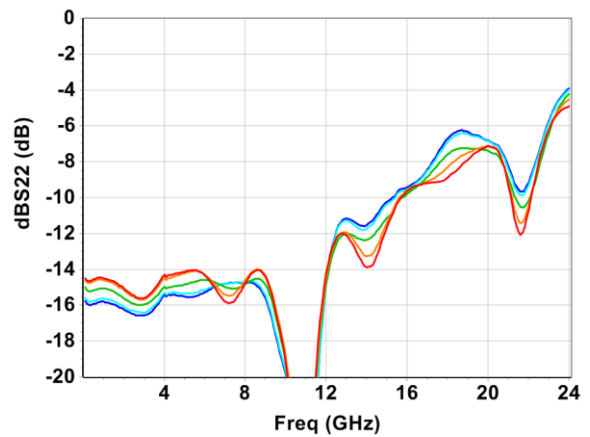
Gain versus Frequency and Temperature



Input Return Loss versus Frequency and Temperature



Output Return Loss versus Frequency and Temperature

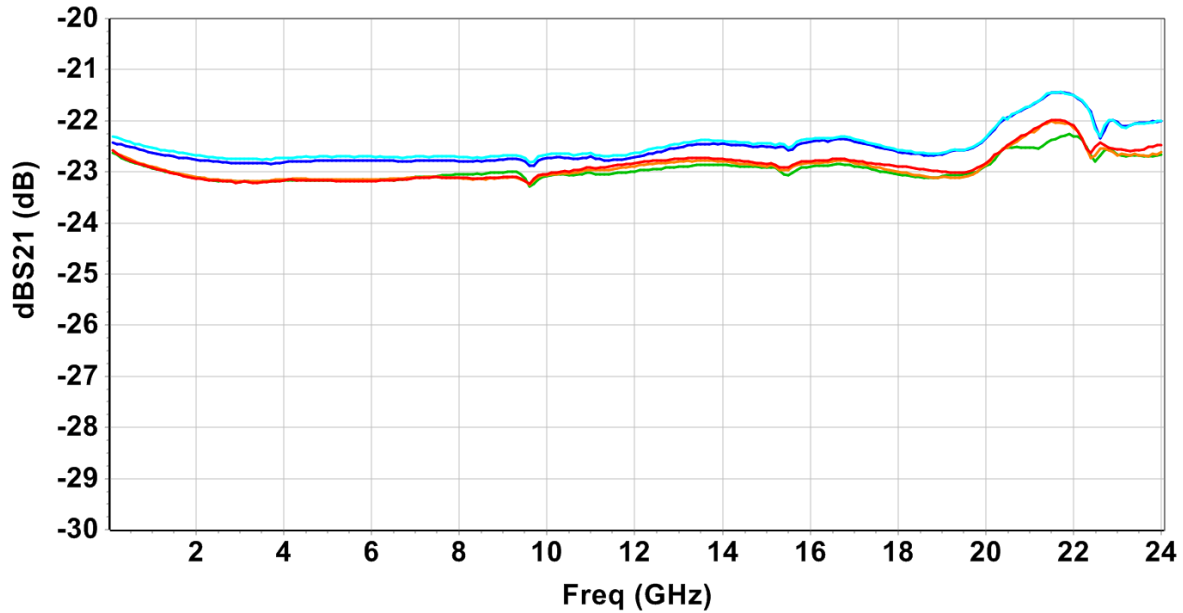


Advanced Information

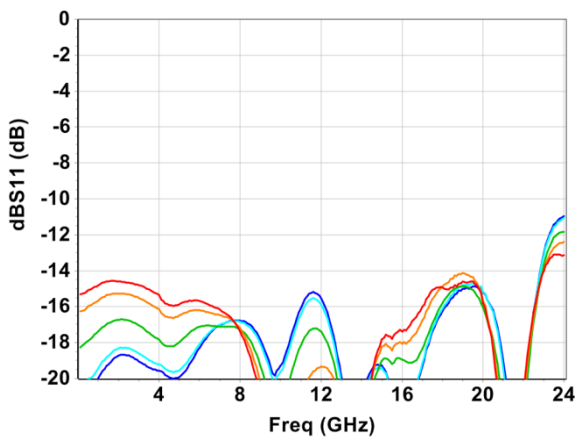
Typical Board Measurements

Max attenuation $V_s = -5V$; $V_p = 0V$ Temperature : -55, -40, +25, +85, +125°C

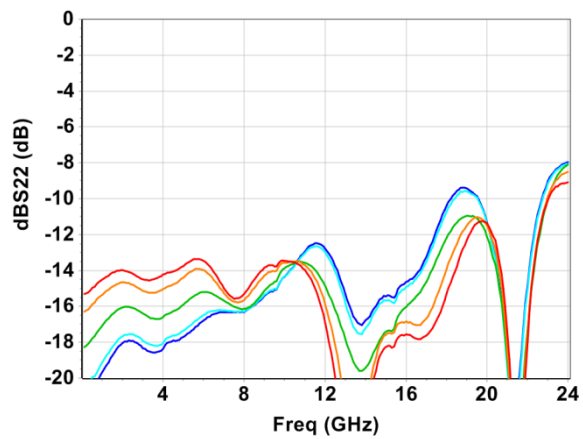
Gain versus Frequency and Temperature



Input Return Loss versus Frequency and Temperature



Output Return Loss versus Frequency and Temperature

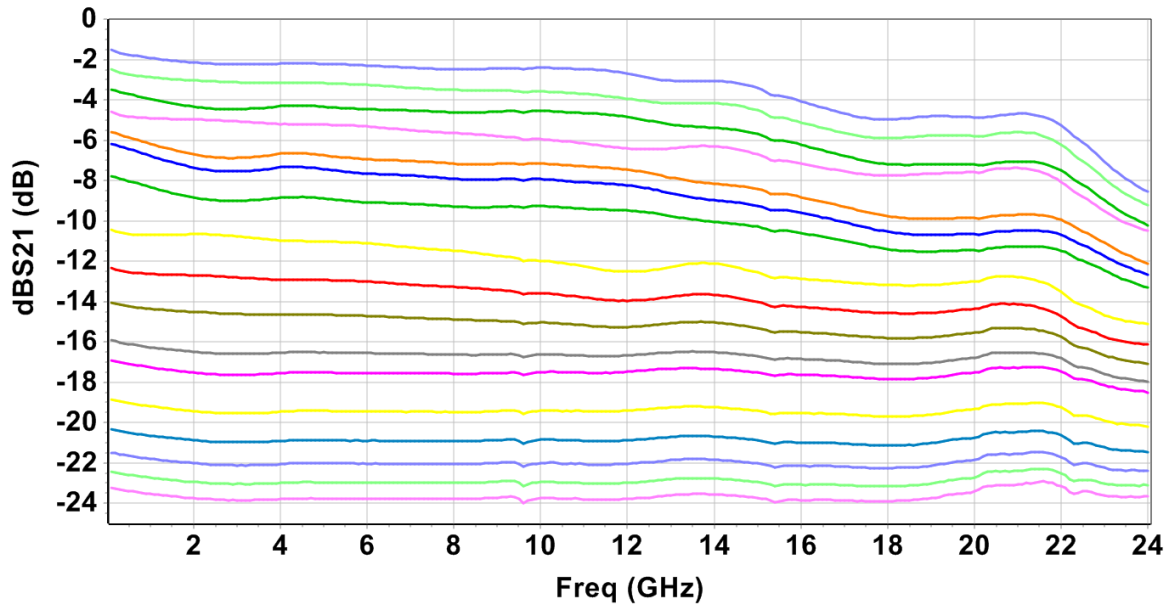


Advanced Information

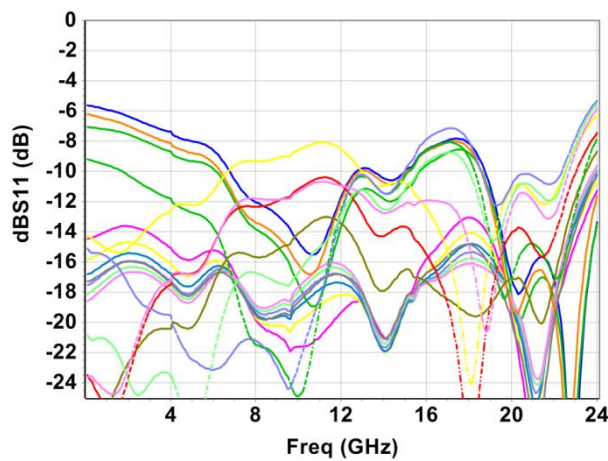
Typical Board Measurements

Tamb.= +25°C

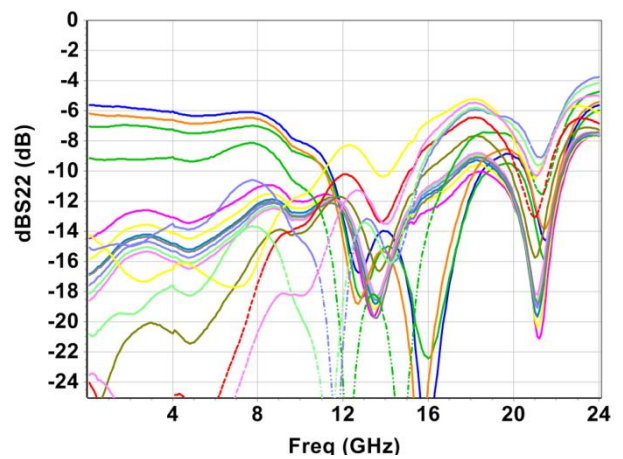
Gain versus Frequency and Gain Control Voltage



Input Return Loss versus Frequency and Gain Control Voltage

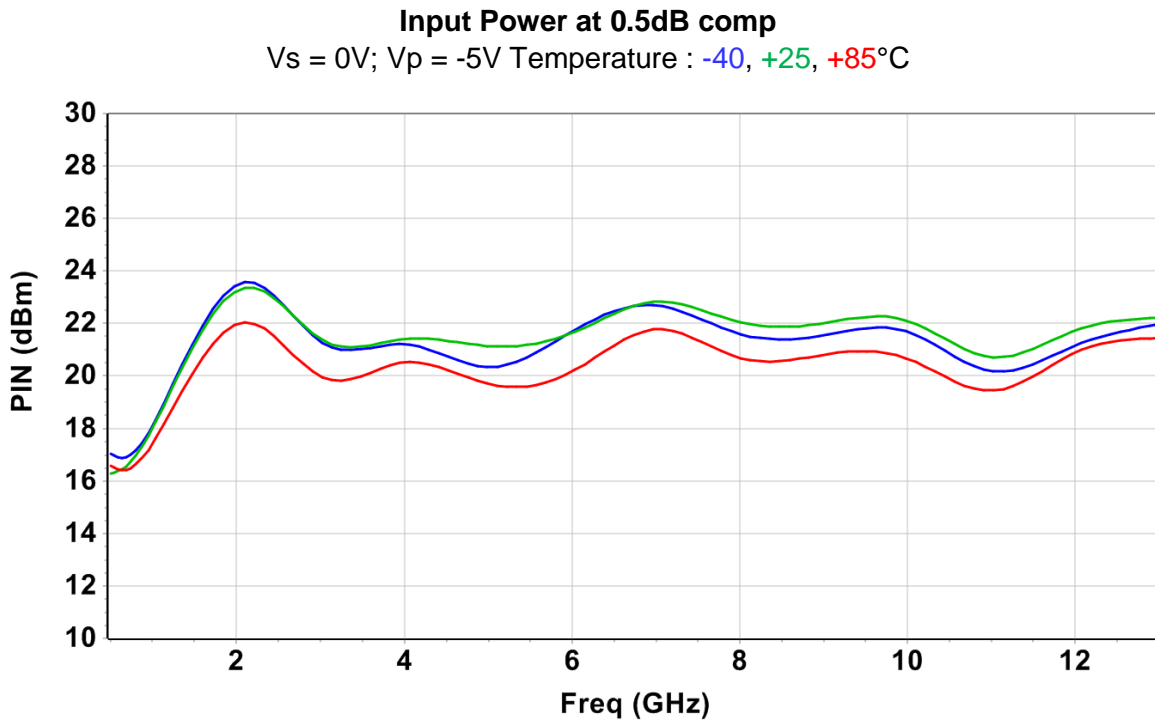
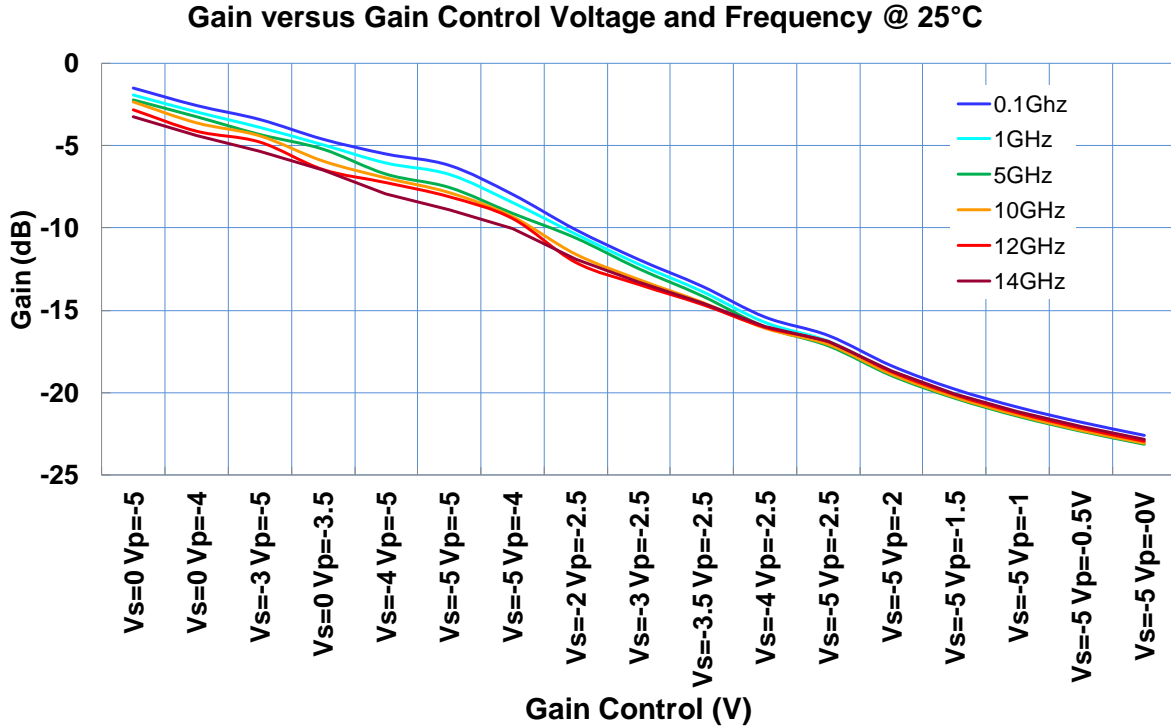


Output Return Loss versus Frequency and Gain Control Voltage



Advanced Information

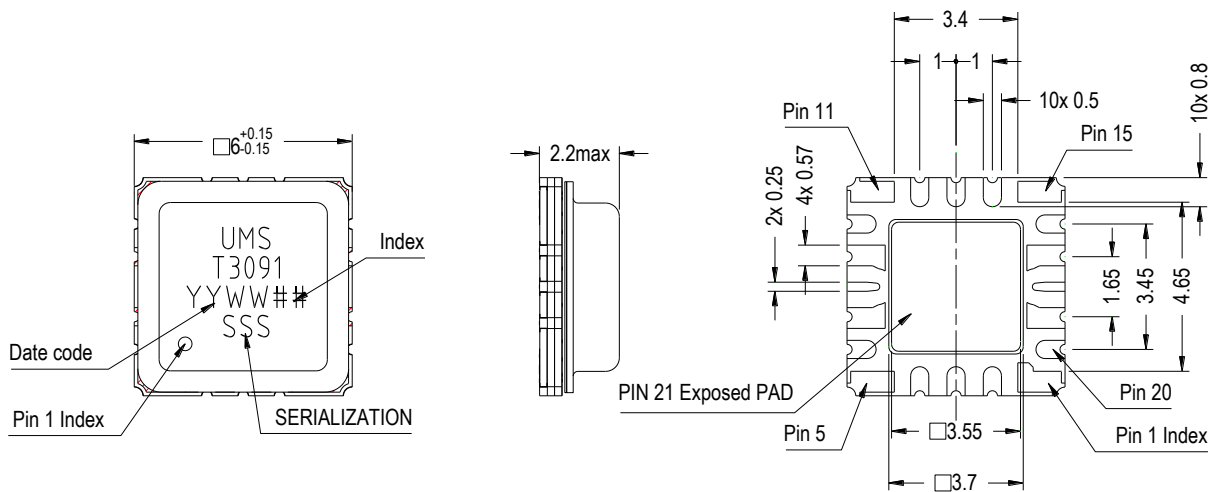
Typical Board Measurements



Advanced Information



Package outline ⁽¹⁾

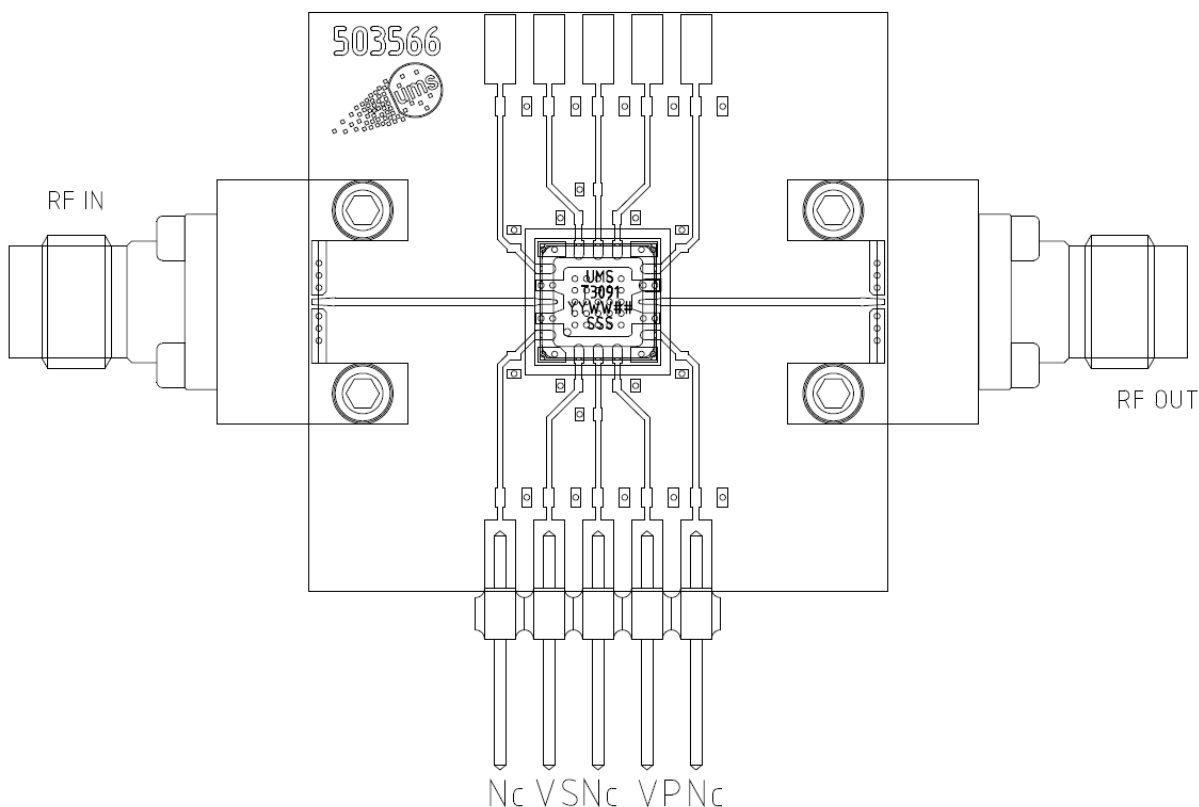


1	GND	8	RF OUT	15	GND
2	VS	9	GND	16	Nc
3	Nc	10	Nc	17	GND
4	VP	11	GND	18	RF IN
5	GND	12	Nc	19	GND
6	Nc	13	Nc	20	Nc
7	GND	14	Nc	21	GND

Advanced Information

Evaluation mother board

- Compatible with the proposed footprint.
- Based on typically Ro4003 / 8mils or equivalent.
- Using a micro-strip to coplanar transition to access the package.
- Recommended for the implementation of this product on a module board.



Advanced Information