

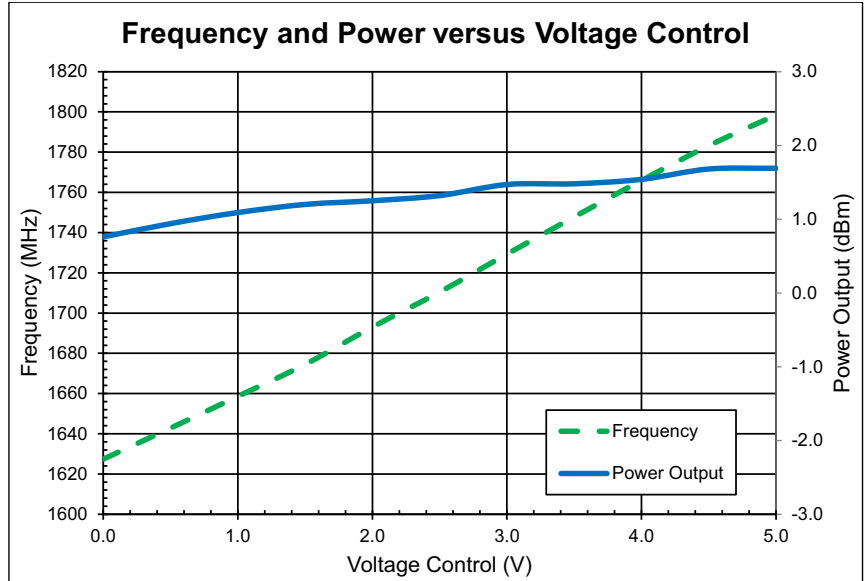


Features

- -125dBc/Hz Typical at 100 kHz Offset
- P_{OUT} 0dBm Typical
- 5V Supply
- 25mA Current Consumption
- Low Profile 6mm x 6mm Package

Applications

- 2G, 3G and 4G (LTE and WIMAX) Cellular Base Stations
- High Performance Transceiver Applications



Product Description

The RFVC9753 is a Voltage Controlled Oscillator (VCO) designed for high performance transceiver applications. It offers phase noise performance that meets or exceeds the requirements of 2G, 3G, and 4G (LTE and WiMAX) cellular base stations. Compared to the current generation of monolithic VCOs, the RFVC9753 provides improved phase noise and lower current consumption thereby lowering energy consumption and improving base station thermal management. The RFVC9753 is also 75% smaller than today's signal source modules, while providing the same low phase noise performance, satisfying the trend toward smaller base station sizes for microcells and remote radio heads.

Ordering Information

| | |
|------------------|---|
| RFVC9753SQ | Sample bag with 25 pieces |
| RFVC9753SR | 7" Sample reel with 100 pieces |
| RFVC9753TR7 | 7" Reel with 750 pieces |
| RFVC9753TR13 | 13" Reel with 2500 pieces |
| RFVC9753PCBA-410 | 1680MHz to 1740MHz PCBA with 5-piece sample bag |

Optimum Technology Matching® Applied

- | | | | |
|--------------------------------------|--------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> GaAs HBT | <input type="checkbox"/> SiGe BiCMOS | <input type="checkbox"/> GaAs pHEMT | <input type="checkbox"/> GaN HEMT |
| <input type="checkbox"/> GaAs MESFET | <input type="checkbox"/> Si BiCMOS | <input type="checkbox"/> Si CMOS | <input type="checkbox"/> BiFET HBT |
| <input type="checkbox"/> InGaP HBT | <input type="checkbox"/> SiGe HBT | <input type="checkbox"/> Si BJT | <input type="checkbox"/> LDMOS |

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Absolute Maximum Ratings

| Parameter | Rating | Unit |
|---------------------------------------|------------------|------|
| Supply Voltage (V_{CC}) | 7 | V |
| Control Voltage | 0 to 9 | V |
| DC Voltage on RF Out | 20 | V |
| Operating Temperature Range (T_L) | -40 to +85 | °C |
| Storage Temperature | -55 to +125 | °C |
| ESD Rating - Human Body Model (HBM) | Class 3A (4000V) | |
| Moisture Sensitivity Level | 3 | |



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

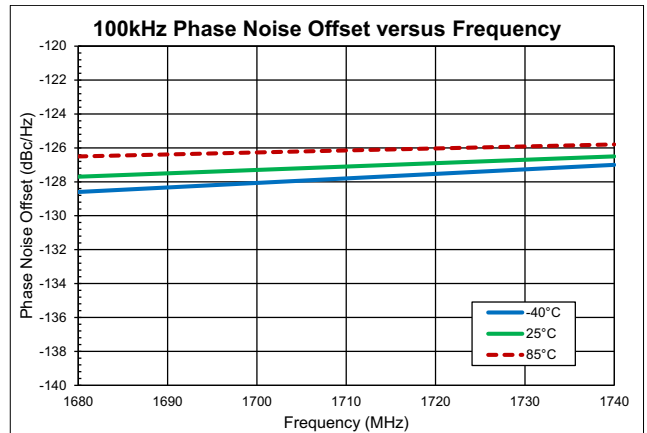
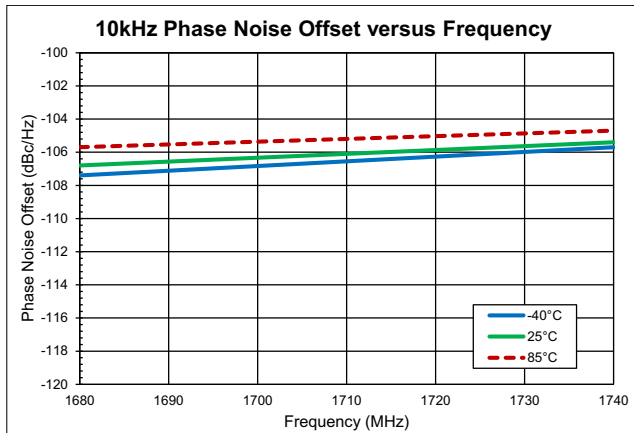
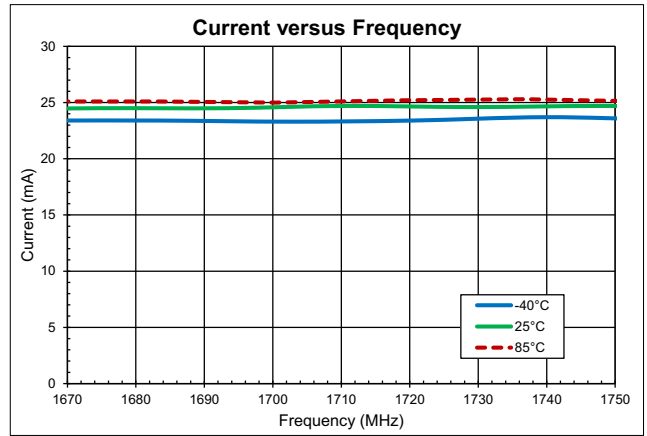
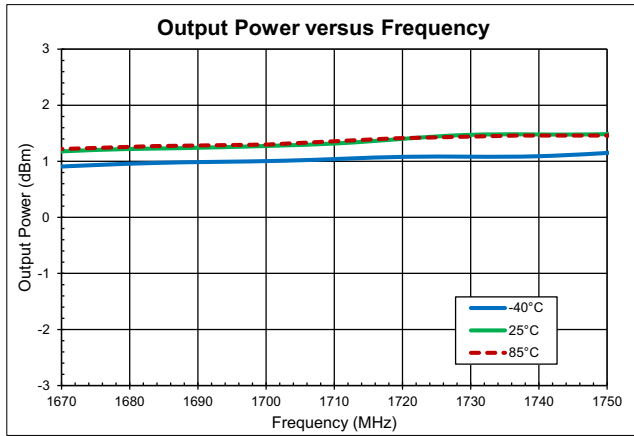
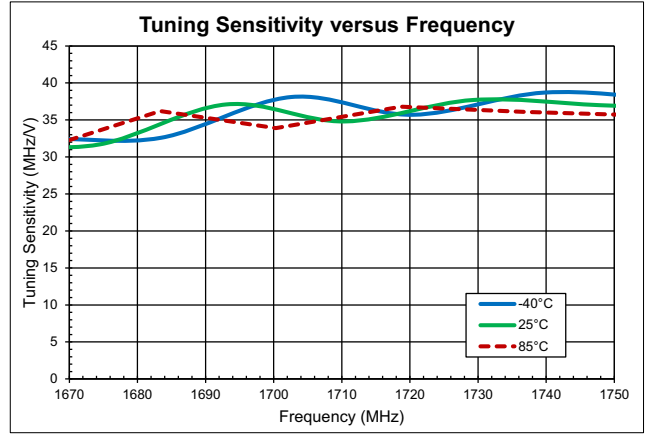
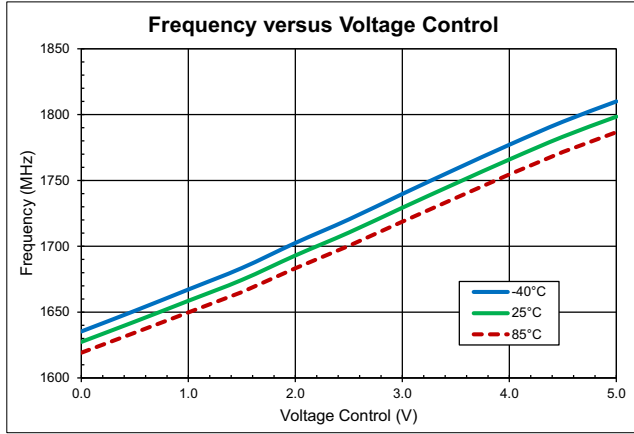
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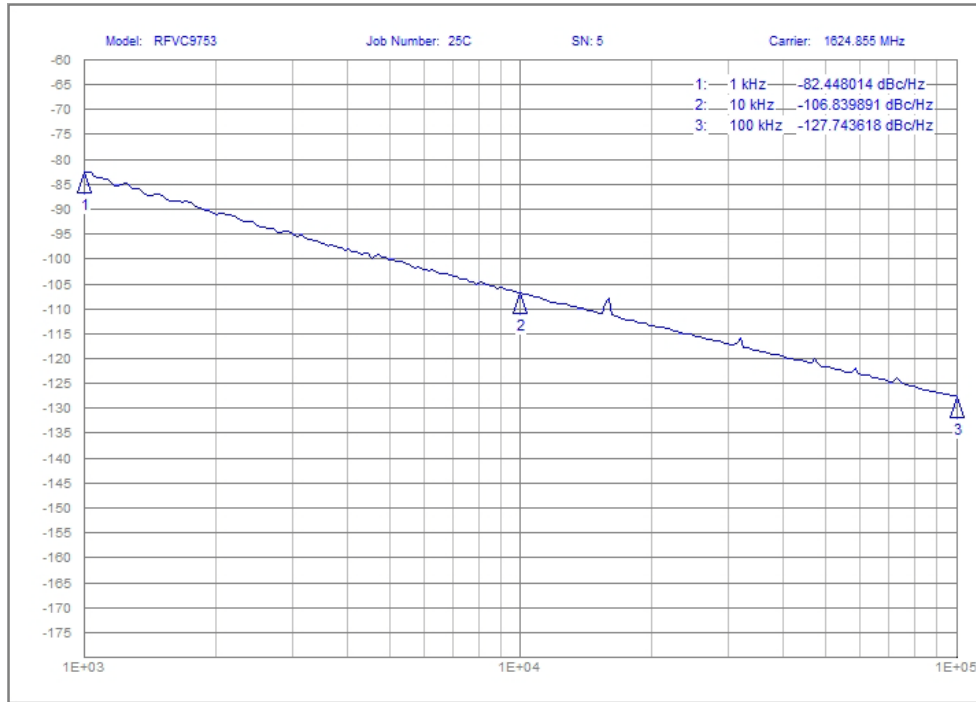
RoHS (Restriction of Hazardous Substances): Compliant per EU Directive 2002/95/EC.

| Parameter | Specification | | | Unit | Condition |
|---------------------------------|---------------|------|------|----------|-----------|
| | Min. | Typ. | Max. | | |
| Frequency | 1680 | | 1740 | MHz | |
| Tuning Voltage | 0.5 | | 4.5 | V | |
| Tuning Sensitivity | 29 | 34 | 39 | MHz/V | |
| Output Power | -2.5 | 0.0 | 2.5 | dBm | |
| 2nd Harmonic | | | -12 | dBc | |
| SSB Phase Noise @ 10kHz Offset | | -105 | -100 | dBc/Hz | |
| SSB Phase Noise @ 100kHz Offset | | -125 | -120 | dBc/Hz | |
| SSB Phase Noise @ 800kHz Offset | | -146 | -141 | dBc/Hz | |
| SSB Phase Noise @ 6MHz Offset | | -155 | -150 | dBc/Hz | |
| Power Supply | 4.9 | 5.0 | 5.1 | V | |
| Supply Current | | 23 | 30 | mA | |
| Frequency Pushing | | 0.2 | 0.5 | MHz/V | |
| Frequency Pulling (2:1 VSWR) | | 0.2 | 0.5 | MHz, p-p | |

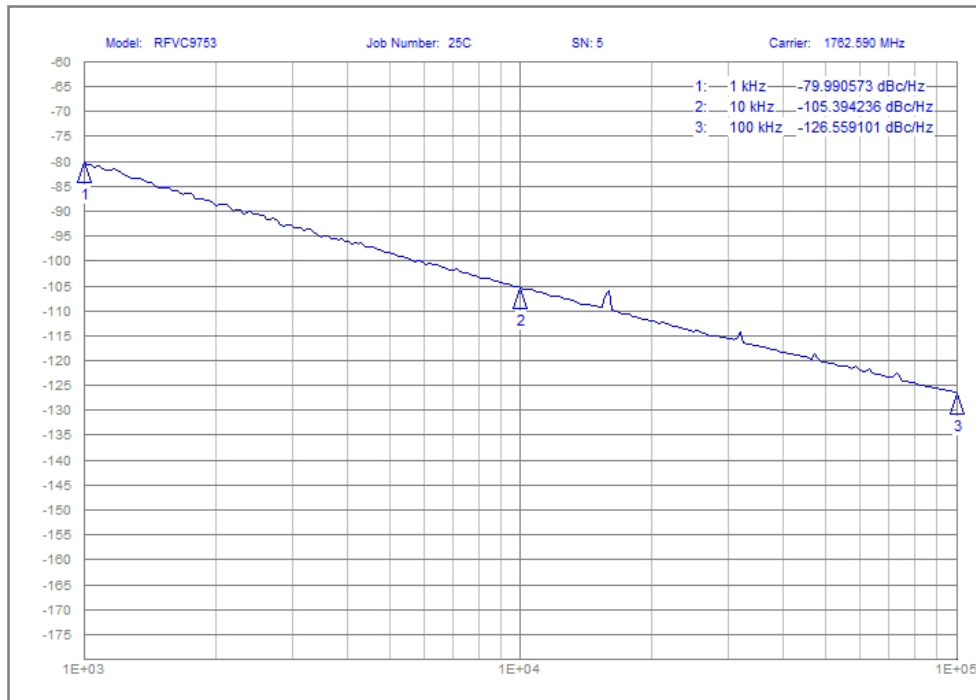
Typical Evaluation Board Performance ($V_{CC} = 5V$)



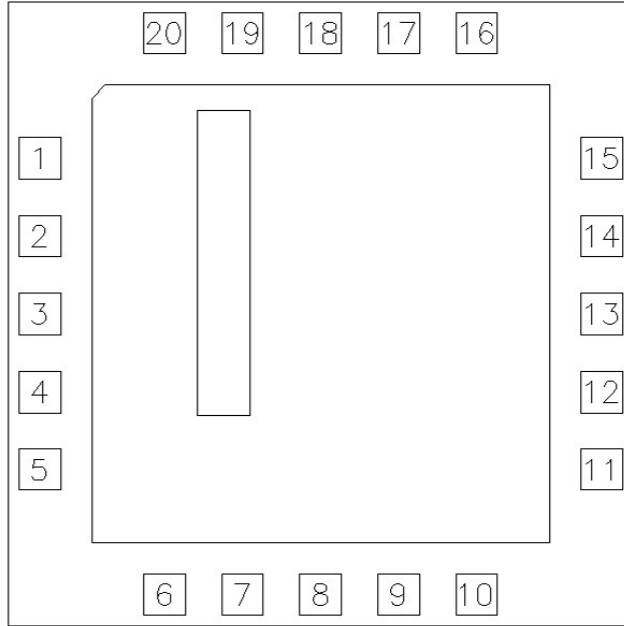
Typical Evaluation Board Performance ($V_{CC} = 5V, 25^{\circ}C$) 1680MHz



1740MHz



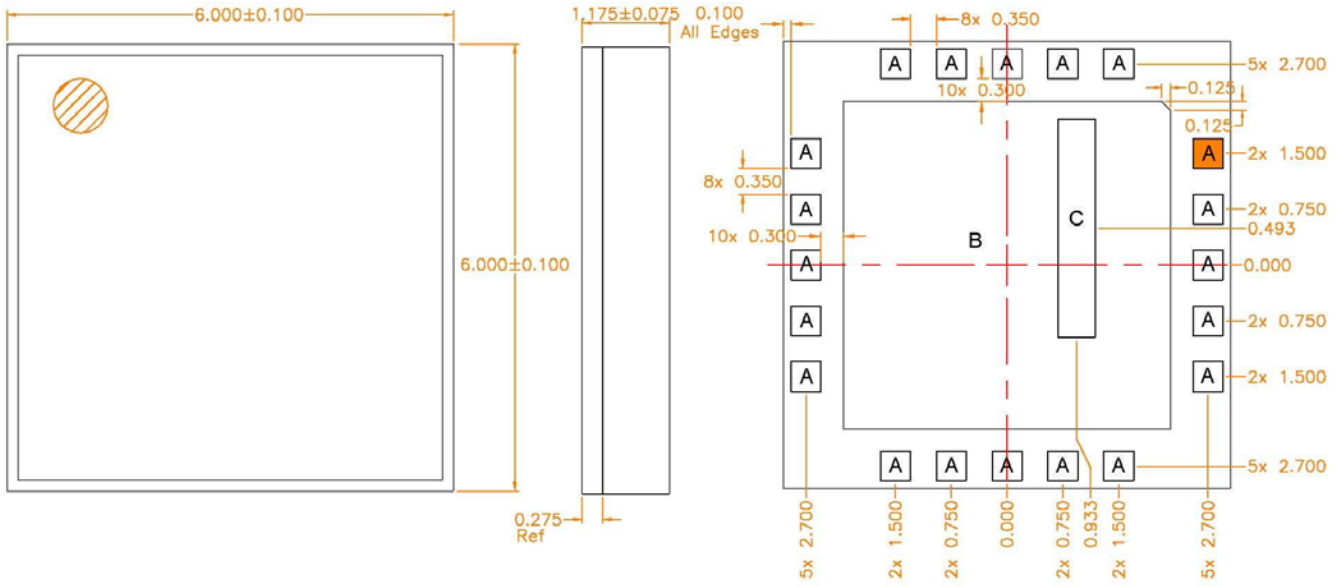
Pin Out Top View



Pin Names and Descriptions

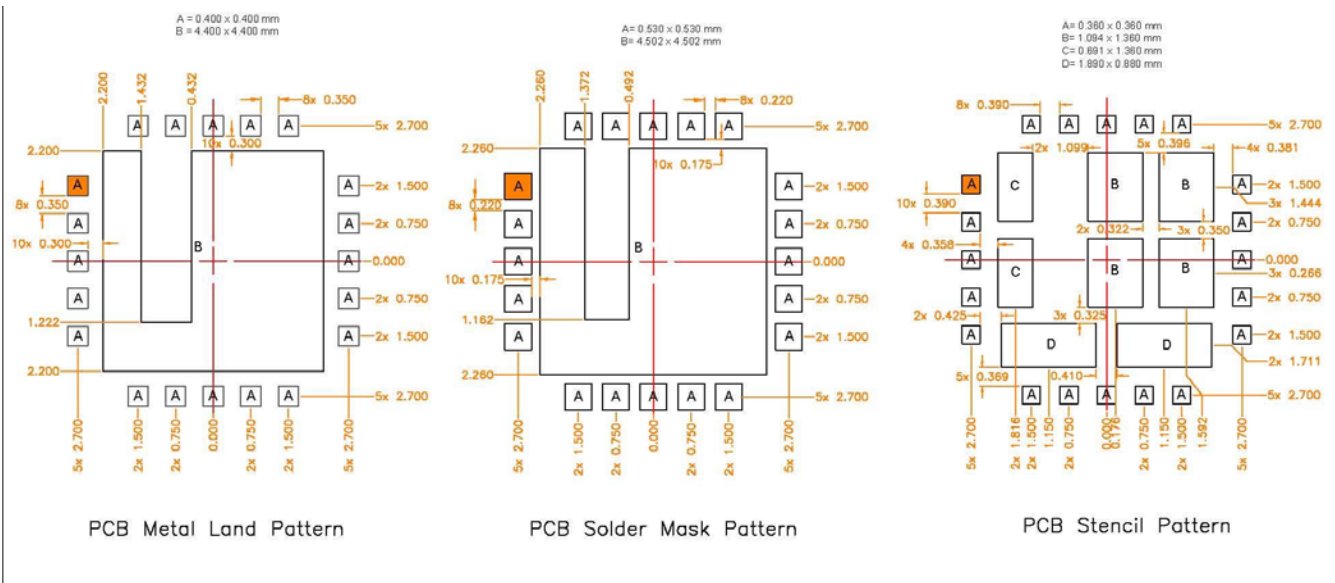
| Pin | Name | Description |
|-----|--------|-----------------|
| 1 | GND | Ground |
| 2 | GND | Ground |
| 3 | VT | Control Voltage |
| 4 | GND | Ground |
| 5 | GND | Ground |
| 6 | GND | Ground |
| 7 | GND | Ground |
| 8 | GND | Ground |
| 9 | GND | Ground |
| 10 | GND | Ground |
| 11 | GND | Ground |
| 12 | GND | Ground |
| 13 | RF OUT | VCO RF Output |
| 14 | GND | Ground |
| 15 | GND | Ground |
| 16 | GND | Ground |
| 17 | GND | Ground |
| 18 | VCC | Supply Voltage |
| 19 | GND | Ground |
| 20 | GND | Ground |

Package Drawing
Dimensions in millimeters

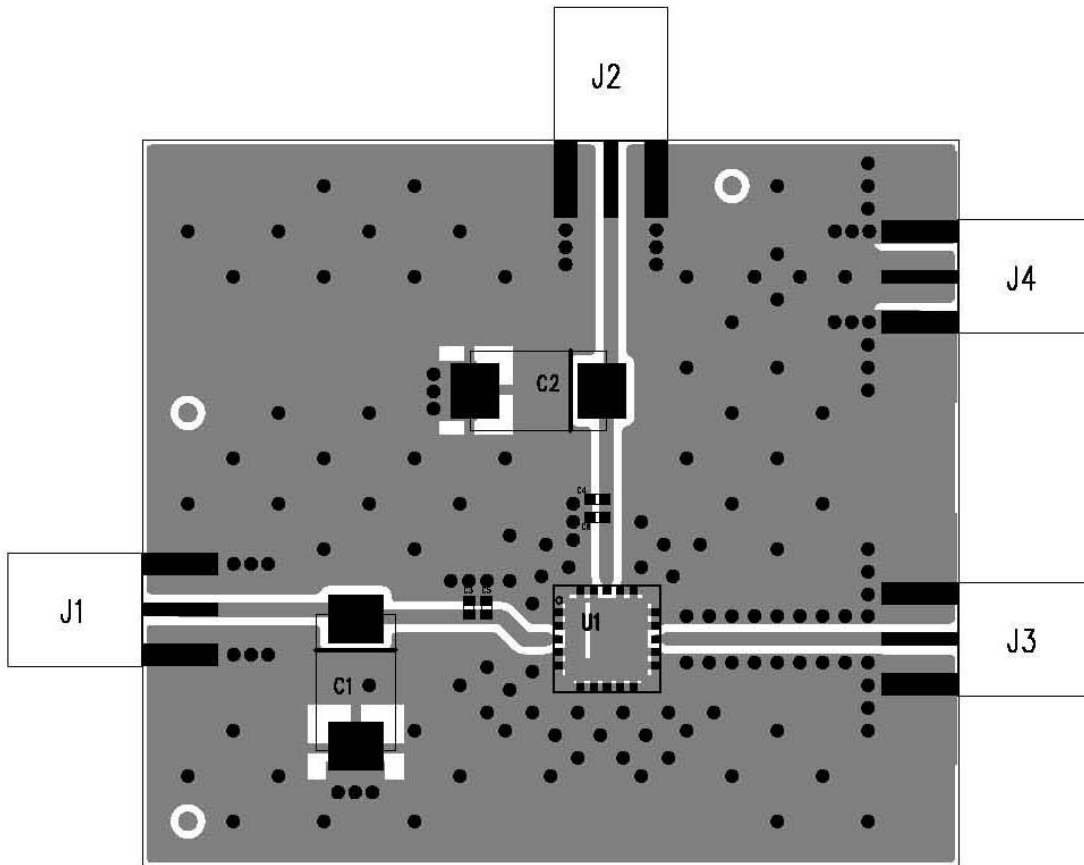


A = 0.400 x 0.400 mm
 B = 4.400 x 4.400 mm
 C = 0.500 x 2.930 mm (opening in metal)

Evaluation Board Pattern
Dimensions in millimeters



Evaluation Board Assembly Drawing



| Connector | Function | Description |
|-----------|----------|-----------------|
| J1 | V_T | Control Voltage |
| J2 | V_{CC} | Supply Voltage |
| J3 | RF OUT | RF Output |
| J4 | GND | Ground |