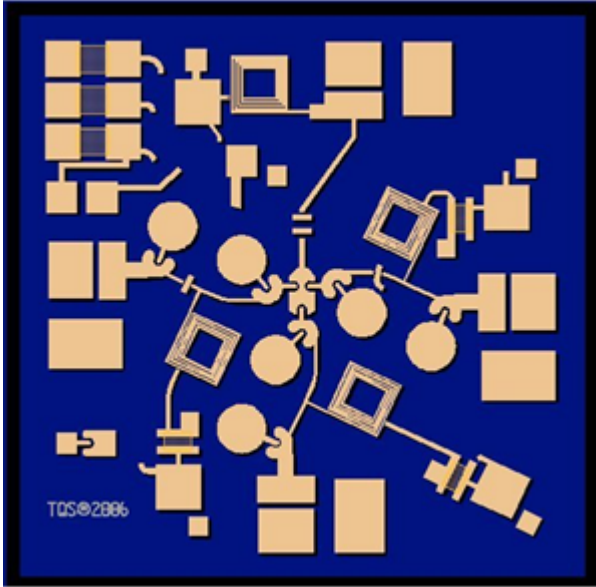


4 - 18 GHz VPIN SP3T Switch

TGS2313



Key Features

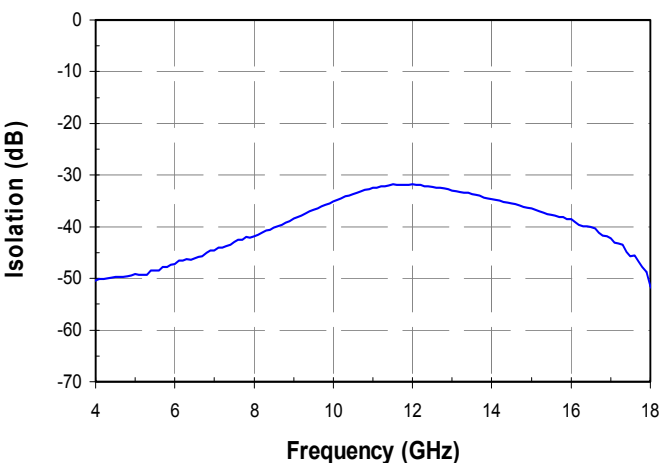
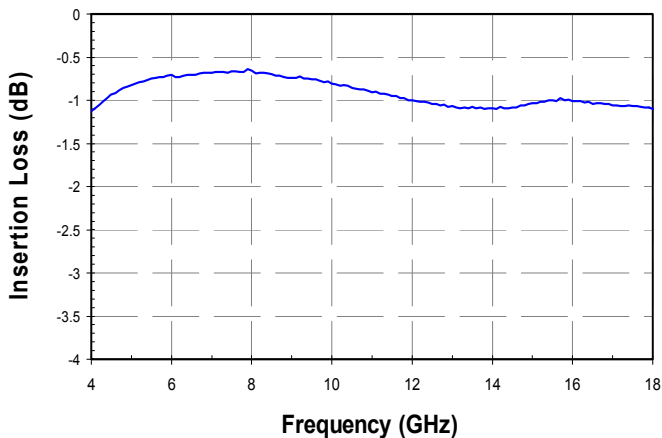
- 4-18 GHz High Isolation SP3T
- 1.0 dB Typical Insertion Loss
- 35 dB Nominal Isolation
- 12 dB Typical Return Loss
- On-Chip Bias Network
- DC blocked at RF ports
- Chip dimensions: 2.16 x 2.16 x 0.10 mm
(0.085 x 0.085 x 0.004 in)

Primary Applications

- EW Receivers
- Radar
- Communications Systems

Measured Fixtured Data

$I_{control} = \pm 20mA$



Product Description

The TriQuint TGS2313 is a 4-18 GHz Single Pole Triple Throw (SP3T) Switch. This part is designed using TriQuint's proven standard VPIN production process.

The TGS2313 provides a nominal 1.0 dB insertion loss, 12 dB return loss, and 35 dB isolation.

The TGS2313 integrates DC blocking capacitors on all ports and includes decoupled DC bias pads to reduce the number of off-chip components.

The part is ideally suited for EW receivers, radar, and communication systems.

Evaluation Boards are available upon request.

Lead-free and RoHS compliant.

Datasheet subject to change without notice.

**TABLE I
MAXIMUM RATINGS**

| Symbol | Parameter 1/ | Value | Notes |
|-----------|-------------------------------------|---------------|--------|
| V^+ | Positive Supply Voltage | +3 V | 2/, 3/ |
| V^- | Negative Supply Voltage | -3 V | |
| I^+ | Positive Supply Current (Quiescent) | 22 mA | 2/ 3/ |
| P_{IN} | Input Continuous Wave Power | 24 dBm | 3/ |
| P_D | Power Dissipated | 0.45 W | 3/4/ |
| T_M | Mounting Temperature (30 Seconds) | 320 °C | |
| T_{STG} | Storage Temperature | -65 to 150 °C | |

- 1/ These ratings represent the maximum operable values for this device.
- 2/ V^+_{max} and I^+_{max} are both per bias pad.
- 3/ Combinations of supply voltage, supply current, input power, and output power shall not exceed P_D .
- 4/ When operated at this bias condition with a base plate temperature of 70 °C, the median life is reduced to TBD hours.

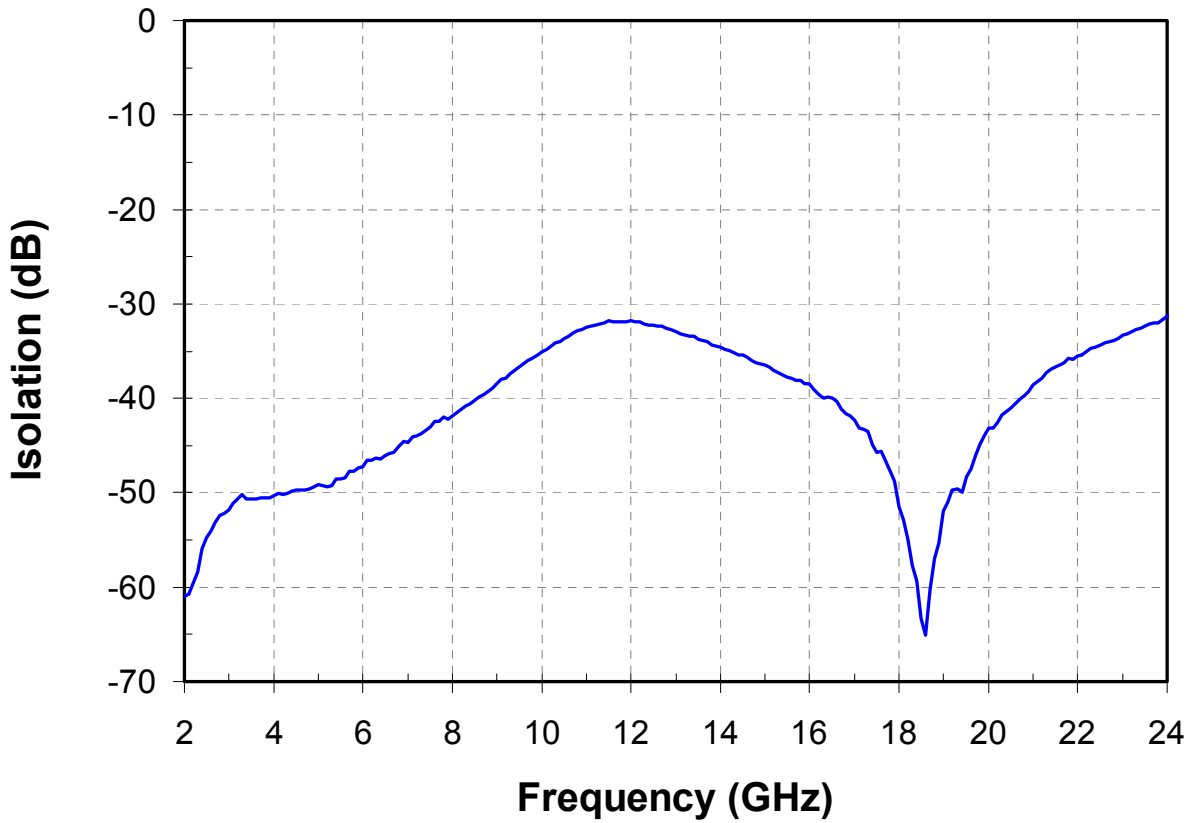
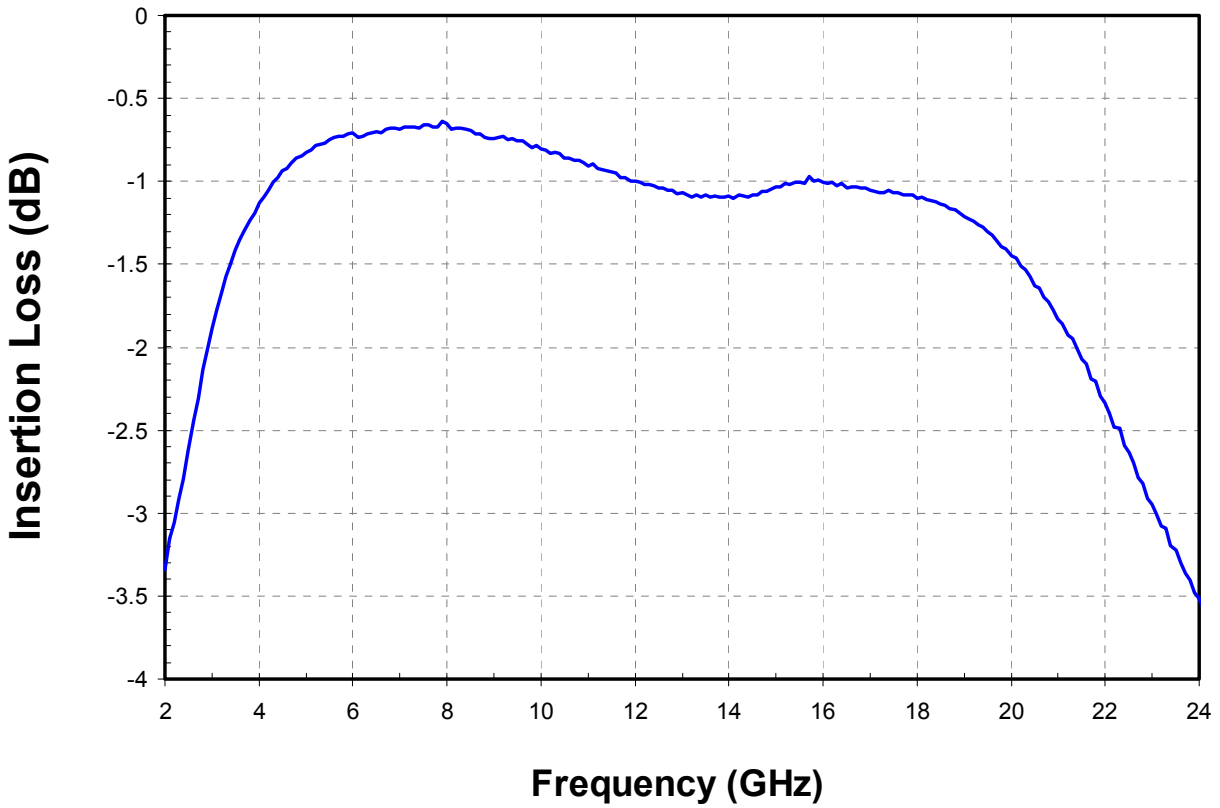
**TABLE II
FUNCTION TABLE**

| STATE | RF-A | RF-B | RF-C | Icontrol-A | Icontrol-B | Icontrol-C |
|-------|----------|----------|----------|------------|------------|------------|
| 1 | Low-Loss | Isolated | Isolated | +20 mA | -20mA | -20mA |
| 2 | Isolated | Low-Loss | Isolated | -20mA | +20 mA | -20mA |
| 3 | Isolated | Isolated | Low-Loss | -20mA | -20mA | +20 mA |

TABLE III
RF CHARACTERIZATION TABLE
 (T_A = 25 °C, Nominal)
 I_{control} = ± 20mA

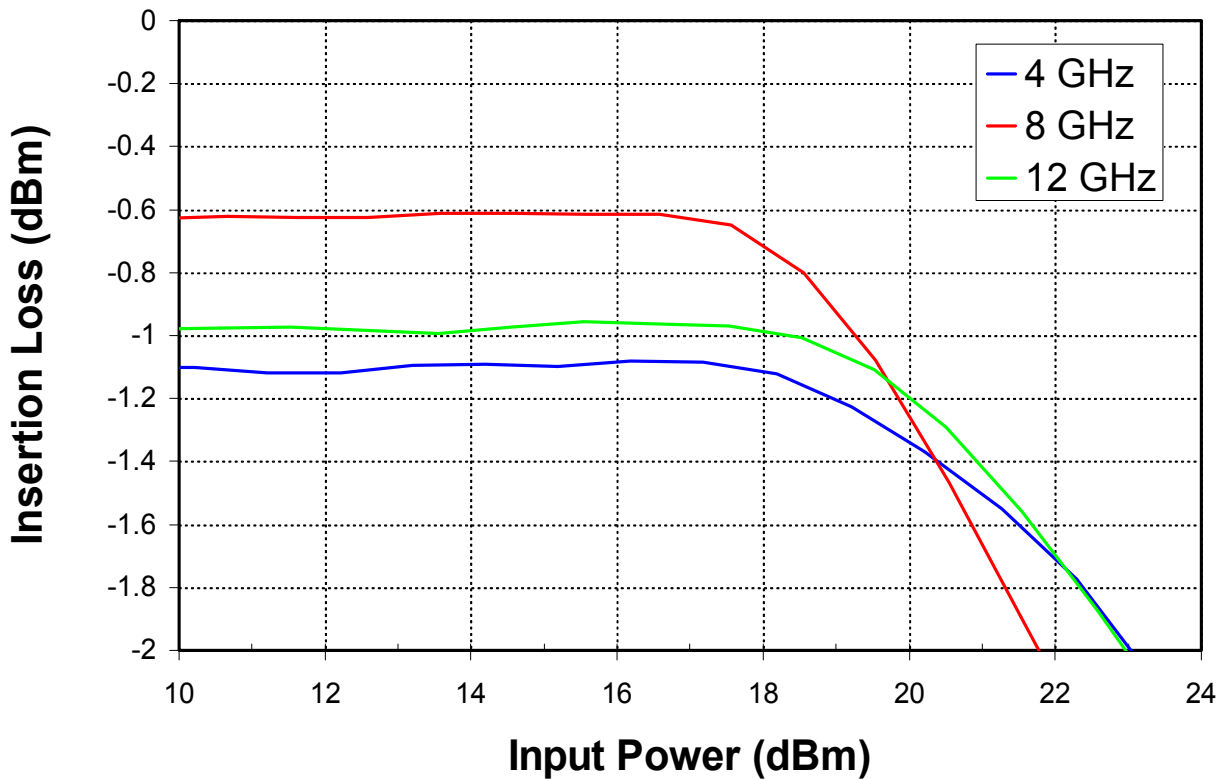
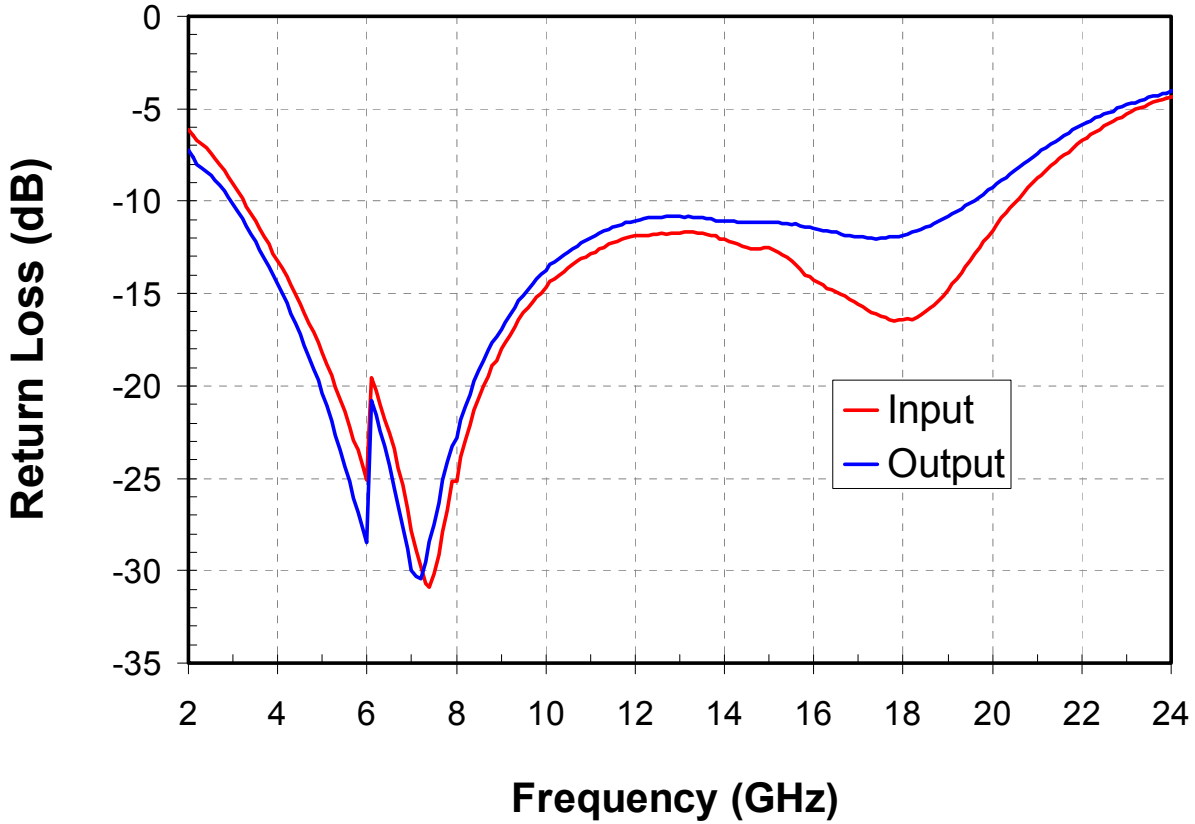
| PARAMETER | THROUGH PATH IDENTIFICATION | TEST CONDITION | NOMINAL | UNITS |
|--------------------|---|----------------|---------|-------|
| Insertion Loss | RF Input to RF Output A | f = 4 – 18 GHz | 1.0 | dB |
| Isolation | RF Input to RF Output B RF Input to RF Output C | f = 4 – 18 GHz | 35 | dB |
| Input Return Loss | RF Input to RF Output A RF Input to RF Output B RF Input to RF Output C | f = 4 – 18 GHz | 12 | dB |
| Output Return Loss | RF Input to RF Output A RF Input to RF Output B RF Input to RF Output C | f = 4 – 18 GHz | 12 | dB |

Measured Fixtured Data
Bias Conditions: $I_{control} = \pm 20$ mA

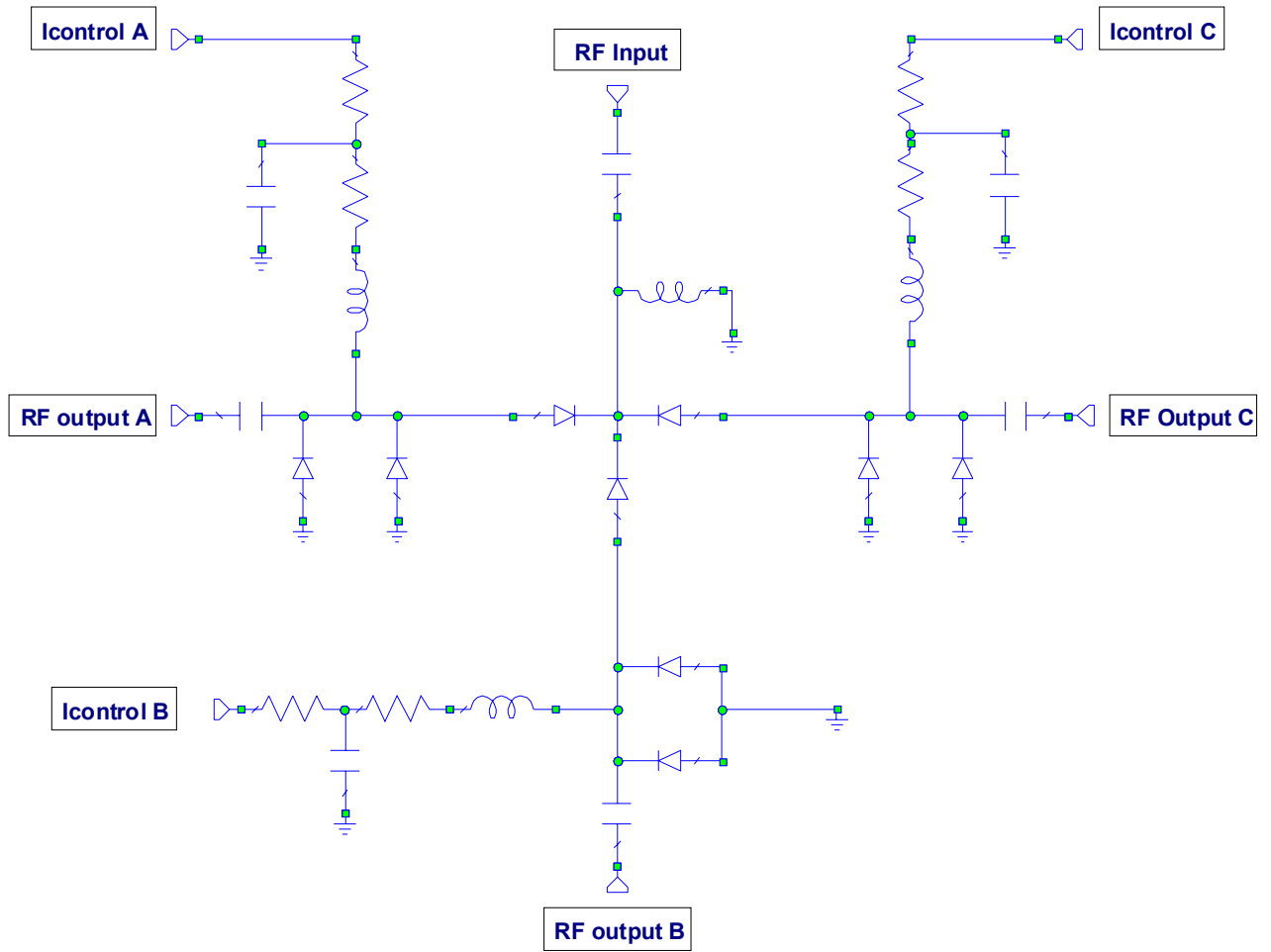


Measured Fixtured Data

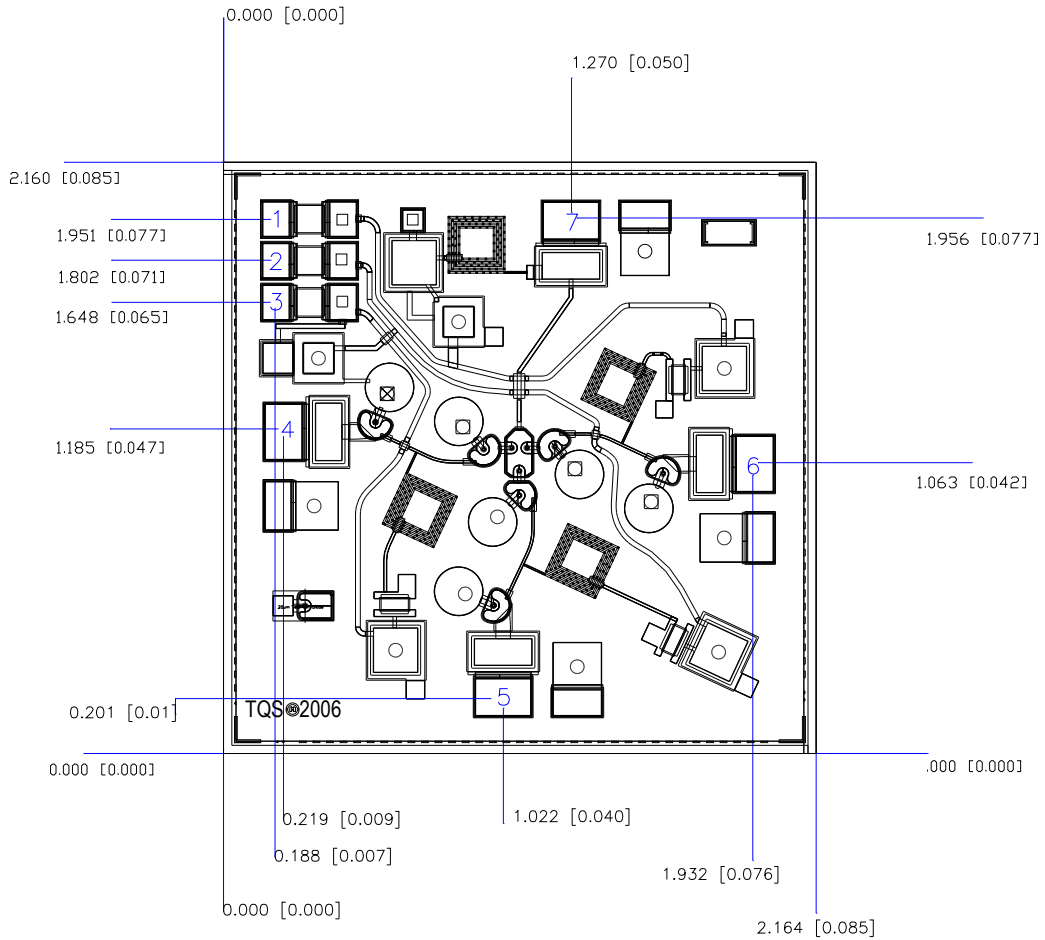
Bias Conditions: $I_{control} = \pm 20$ mA



Equivalent Schematic



Mechanical Drawing



Units: millimeters (inches)

Thickness: 0.100 (0.004)

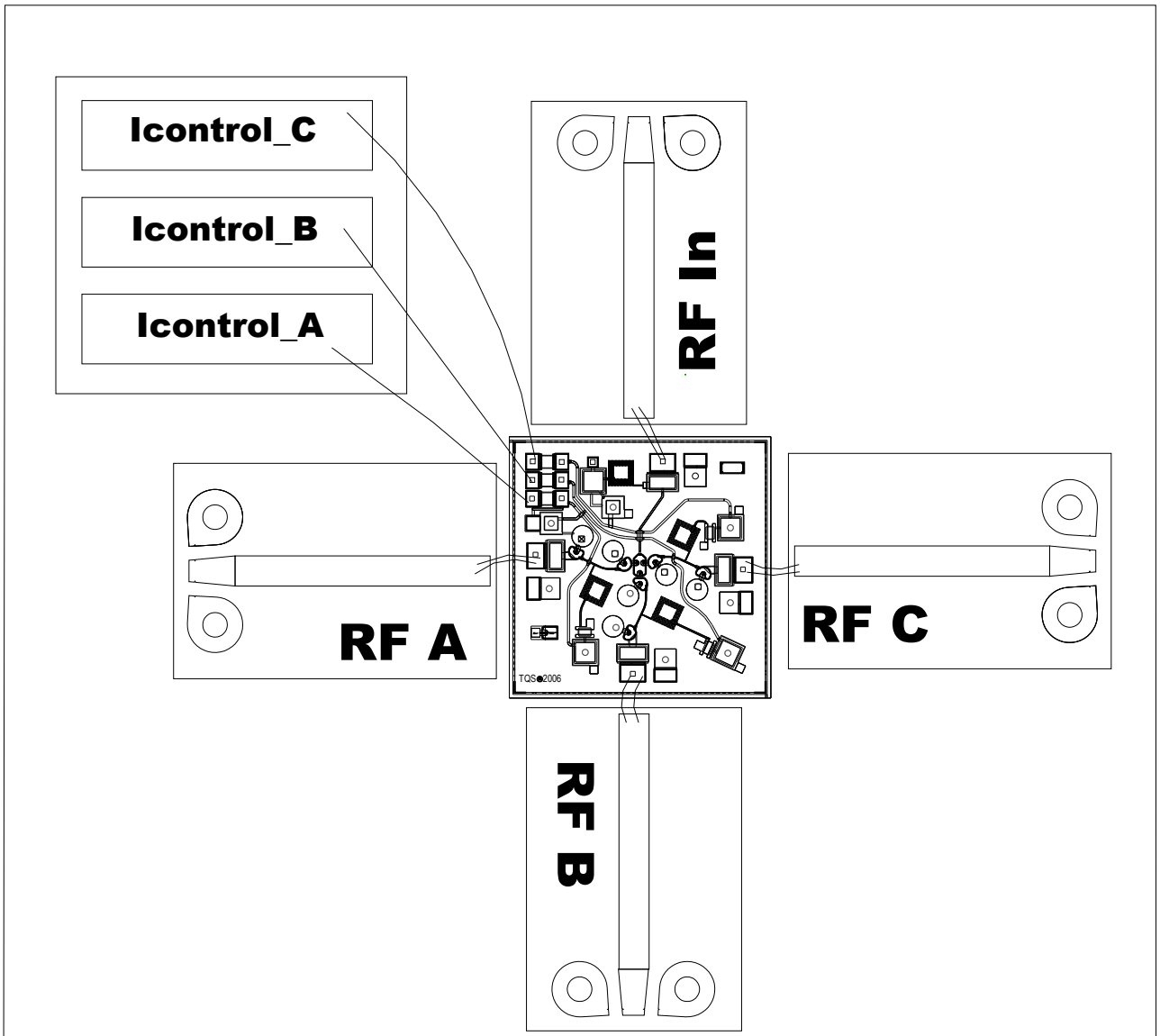
Chip edge to bond pad dimensions are shown to center of bond pad

Chip size tolerance: +/- 0.051 (0.002)

GND IS BACKSIDE OF MMIC

| | | |
|-------------|---------------|-------------------------------|
| Bond pad #1 | (Vc) | 0.114 x 0.142 (0.004 x 0.006) |
| Bond pad #2 | (Vb) | 0.114 x 0.142 (0.004 x 0.006) |
| Bond pad #3 | (Va) | 0.114 x 0.142 (0.004 x 0.006) |
| Bond pad #4 | (RF Output A) | 0.152 x 0.218 (0.006 x 0.009) |
| Bond pad #5 | (RF Output B) | 0.218 x 0.152 (0.009 x 0.006) |
| Bond pad #6 | (RF Output C) | 0.152 x 0.218 (0.006 x 0.009) |
| Bond pad #7 | (RF Input) | 0.218 x 0.152 (0.009 x 0.006) |

Assembly Drawing



Note:

± 20mA control lines (IControl_A, IControl_B, IControl_C) use on-chip resistors for diode current control.

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.

Assembly Process Notes

Reflow process assembly notes:

- Use AuSn (80/20) solder with limited exposure to temperatures at or above 300 °C for 30 sec.
- An alloy station or conveyor furnace with reducing atmosphere should be used.
- No fluxes should be utilized.
- Coefficient of thermal expansion matching is critical for long-term reliability.
- Devices must be stored in a dry nitrogen atmosphere.

Component placement and adhesive attachment assembly notes:

- Vacuum pencils and/or vacuum collets are the preferred method of pick up.
- Air bridges must be avoided during placement.
- The force impact is critical during auto placement.
- Organic attachment can be used in low-power applications.
- Curing should be done in a convection oven; proper exhaust is a safety concern.
- Microwave or radiant curing should not be used because of differential heating.
- Coefficient of thermal expansion matching is critical.

Interconnect process assembly notes:

- Thermosonic ball bonding is the preferred interconnect technique.
- Force, time, and ultrasonics are critical parameters.
- Aluminum wire should not be used.
- Discrete FET devices with small pad sizes should be bonded with 0.0007-inch wire.
- Maximum stage temperature is 200 °C.

GaAs MMIC devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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