

Analog Devices Welcomes Hittite Microwave Corporation

NO CONTENT ON THE ATTACHED DOCUMENT HAS CHANGED



THIS PAGE INTENTIONALLY LEFT BLANK

Typical Applications

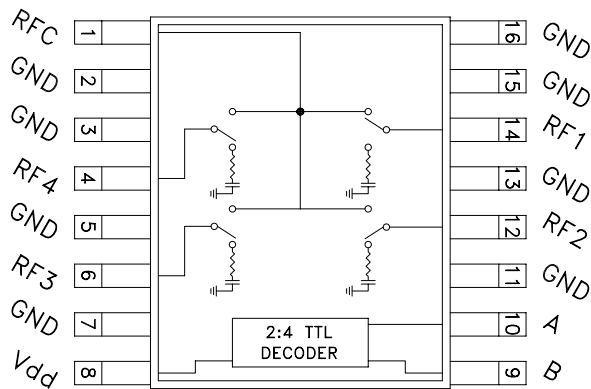
The HMC241AQS16 & HMC241AQS16E are ideal for:

- Base Stations & Portable Wireless
- CATV / DBS
- Wireless Local Loop
- Test Equipment

Features

- RoHS Compliant Product
- Low Insertion Loss (2 GHz): 0.7 dB
- Single Positive Supply: $V_{dd} = +5V$
- Integrated 2:4 TTL Decoder
- 16 Lead QSOP Package

Functional Diagram



General Description

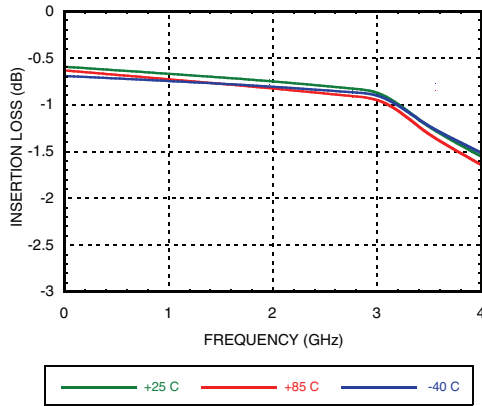
The HMC241AQS16 & HMC241AQS16E are general purpose low-cost non-reflective SP4T switches in 16-lead QSOP packages. Covering DC - 3.5 GHz, this switch offers high isolation and has a low insertion loss of 0.7 dB at 2 GHz. The switch offers a single positive bias and true TTL/CMOS compatibility. A 2:4 decoder is integrated on the switch requiring only 2 control lines and a positive bias to select each path, replacing 8 control lines normally required by GaAs SP4T switches.

Electrical Specifications, $T_A = +25^\circ C$, For TTL Control and $V_{dd} = +5V$ in a 50 Ohm System

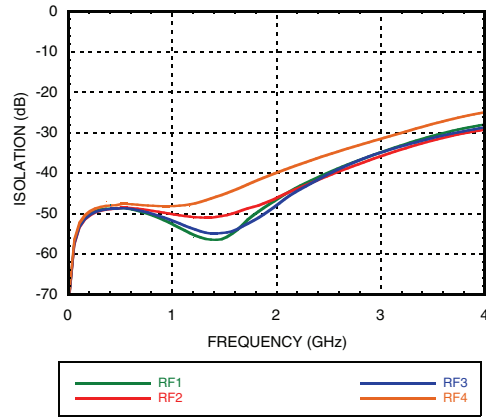
| Parameter | Frequency | Min. | Typ. | Max. | Units |
|---|-------------------|--|------|-----------|-------|
| Insertion Loss | DC - 1.0 GHz | | 0.7 | 1.0 | dB |
| | DC - 2.0 GHz | | 0.8 | 1.1 | dB |
| | DC - 2.5 GHz | | 0.8 | 1.1 | dB |
| | DC - 3.5 GHz | | 1.0 | 1.5 | dB |
| Isolation | DC - 1.0 GHz | 40 | 47 | | dB |
| | DC - 2.0 GHz | 32 | 40 | | dB |
| | DC - 2.5 GHz | 28 | 36 | | dB |
| | DC - 3.5 GHz | 23 | 32 | | dB |
| Return Loss | "On State" | DC - 2.5 GHz | 17 | 21 | dB |
| | | DC - 3.5 GHz | 9 | 18 | dB |
| Return Loss | RF1-4 "Off State" | 0.3 - 3.5 GHz | 8 | 12 | dB |
| | | 0.5 - 2.5 GHz | 12 | 16 | dB |
| Input Power for 1dB Compression | 0.3 - 3.5 GHz | 26 | 29 | | dBm |
| Input Third Order Intercept (Two-Tone Input Power = +10 dBm Each Tone) | 0.3 - 3.5 GHz | 40 | 48 | | dBm |
| Switching Characteristics | 0.3 - 3.5 GHz | | | | |
| | | tRISE, tFALL (10/90% RF) tON, tOFF (50% CTL to 10/90% RF) | | 40 150 | |



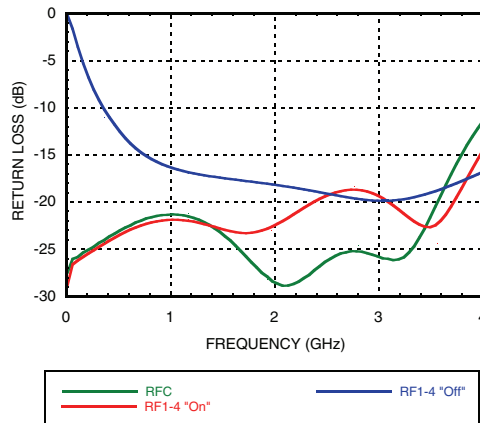
Insertion Loss



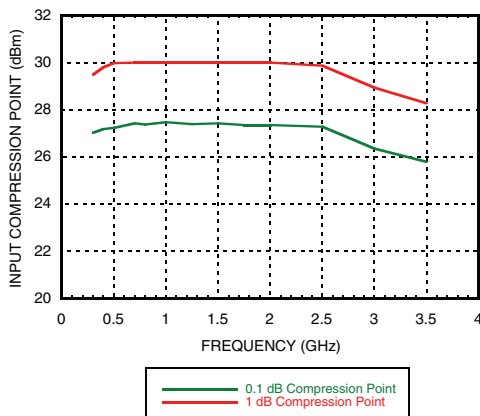
Isolation



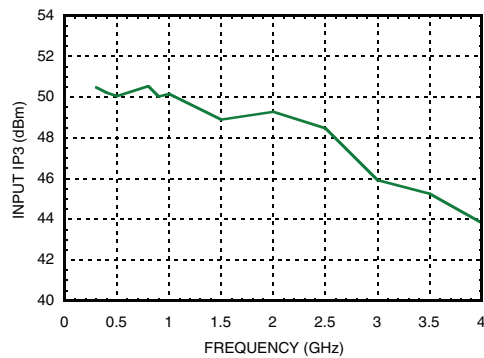
Return Loss



0.1 and 1 dB Input Compression Point



Input Third Order Intercept Point



NOTE:

DC Blocking capacitors are required at ports RFC and RF1, 2, 3, 4.



MICROWAVE CORPORATION v00.1213



HMC241AQS16 / 241AQS16E

GaAs MMIC SP4T NON-REFLECTIVE SWITCH, DC - 3.5 GHz

Bias Voltage & Current

| Vdd Range = +5 Vdc ± 10% | | |
|--------------------------|-----------------|-----------------|
| Vdd (Vdc) | Idd (Typ.) (mA) | Idd (Max.) (mA) |
| +5 | 2.5 | 6.0 |

TTL/CMOS Control Voltages

| State | Bias Condition |
|-------|-----------------------------|
| Low | 0 to +0.8 Vdc @ 0.5µA Typ. |
| High | +2.0 to +5 Vdc @ 50 µA Typ. |

Truth Table

| Control Input | | Signal Path State |
|---------------|------|-------------------|
| A | B | RFCOM to: |
| LOW | LOW | RF1 |
| HIGH | LOW | RF2 |
| LOW | HIGH | RF3 |
| HIGH | HIGH | RF4 |

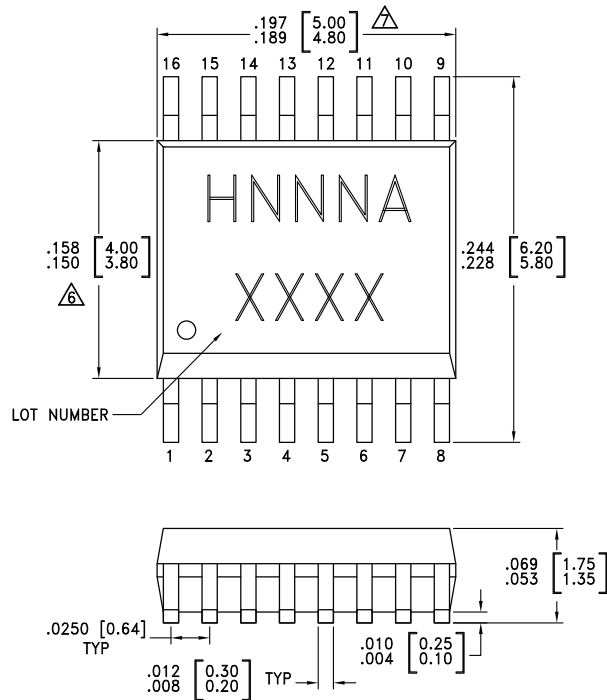
Absolute Maximum Ratings

| | |
|-------------------------------------|---------------------|
| Bias Voltage Range (Port Vdd) | +7.0 Vdc |
| Control Voltage Range (A & B) | -0.5V to Vdd +1 Vdc |
| Channel Temperature | 150 °C |
| Thermal Resistance | |
| Insertion Loss Path | 150 °C/W |
| Terminated Path | 297 °C/W |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -40 to +85 °C |
| Maximum Input Power Vdd = +5 Vdc | |
| Insertion Loss Path | +28.5 dBm |
| Terminated Path | +23.4 dBm |
| ESD Sensitivity (HBM) | Class 1A |



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS].
- △ DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
- ▲ DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
5. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

Package Information

| Part Number | Package Body Material | Leadframe Plating | MSL Rating | Package Marking ^[3] |
|--------------|--|-------------------|---------------------|--------------------------------|
| HMC241AQS16 | Low Stress Injection Molding Plastic Silica and Silicon Impregnated | Sn/Pb Solder | MSL1 ^[1] | HMC241A XXXX |
| HMC241AQS16E | RoHS-compliant Low Stress Injection Molding Plastic Silica and Silicon Impregnated | 100% Matte Tin | MSL1 ^[2] | HMC241A XXXX |


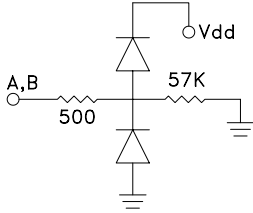
[1] Max peak reflow temperature of 235 °C

[2] Max peak reflow temperature of 260 °C

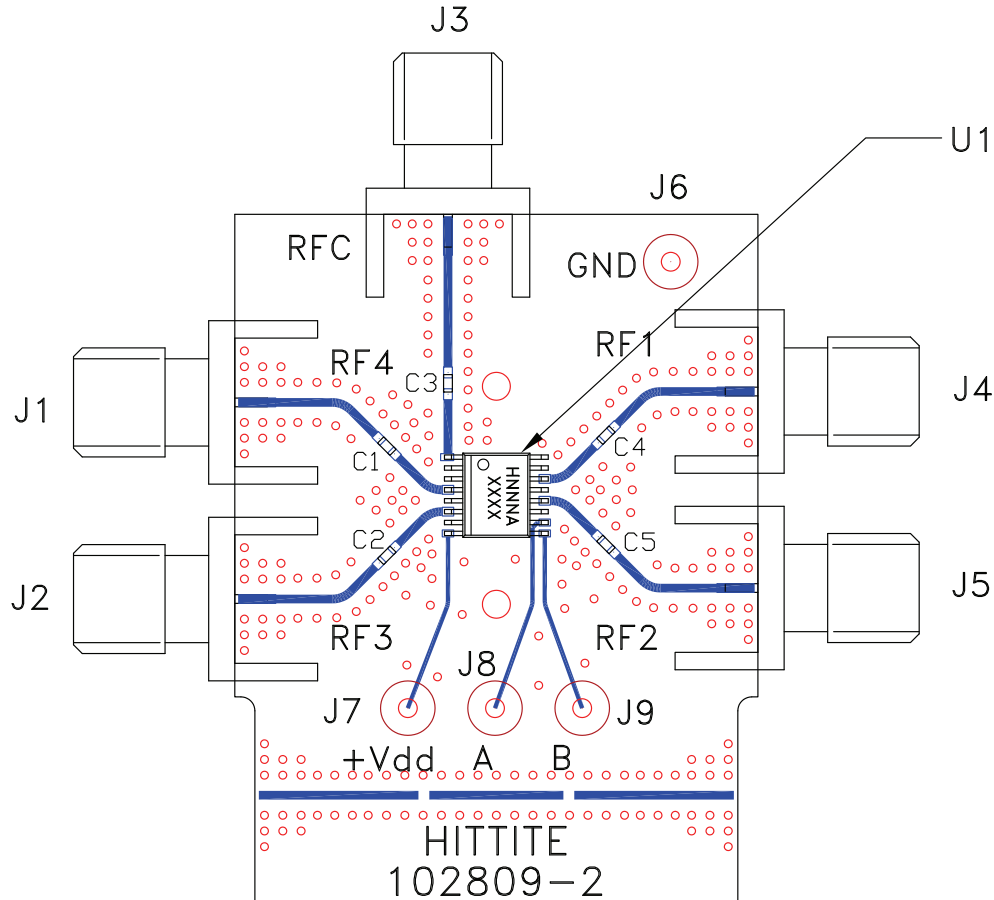
[3] 4-Digit lot number XXXX



Pin Descriptions

| Pin Number | Function | Description | Interface Schematic |
|----------------------------|-------------------------|--|---|
| 1, 4, 6, 12, 14 | RF4, RF3, RF2, RF1, RFC | This pin is DC coupled and matched to 50 Ohms. Blocking capacitors are required. | |
| 2, 3, 5, 7, 11, 13, 15, 16 | GND | This pin must be connected to PCB RF ground to maximize isolation. |  |
| 8 | Vdd | Supply Voltage +5 Vdc ±10% | |
| 9 | B | See truth table and control voltage table. |  |
| 10 | A | See truth table and control voltage table. | |

Evaluation PCB



List of Materials for Evaluation PCB EV1HMC241AQS16 [1]

| Item | Description |
|---------|-------------------------------------|
| J1 - J5 | PCB Mount SMA RF Connector |
| J6 - J9 | DC Pin |
| C1 - C5 | 330 pF capacitor, 0402 Pkg. |
| U1 | HMC241AQS16 / 241AQS16E SP4T Switch |
| PCB [2] | 102809 Evaluation PCB |

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the application should be generated with proper RF circuit design techniques. Signal lines at the RF port should have 50 ohm impedance and the package ground leads should be connected directly to the ground plane similar to that shown above. The evaluation circuit board shown above is available from Hittite Microwave Corporation upon request.



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

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.