

DATA SHEET

SKY13318-321LF: PHEMT GaAs IC High-Power 4-CTL DPDT Switch LF-6 GHz

Features

- Application 802.11a (5.2–5.8 GHz) and 802.11b, (2.4 GHz) diversity
- Operating frequency LF-6 GHz
- Positive low voltage control (0/3 V operation)
- Low insertion loss, less than 1.2 dB, LF-6 GHz
- High linearity 57 dBm IIP3
- Miniature QFN-12 3 x 3 x 0.75 mm plastic package
- Available lead (Pb)-free, RoHS-compliant, and Green™, MSL-1 @ 260 °C per JEDEC J-STD-020

Description

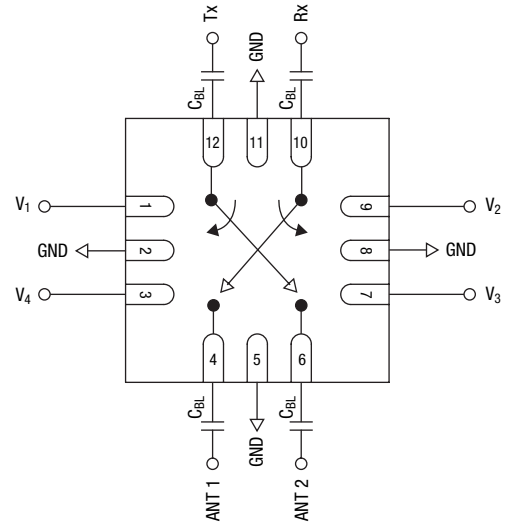
Skyworks SKY13318-321LF is a broadband DPDT switch designed to combine T/R and antenna diversity switching functions on a single IC. The device is designed to handle high power and maintain high linearity at low control voltages. This-low cost switch is ideal for Wi-Fi systems and is capable of covering both the 2.4 GHz and 5 GHz bands.

NEW



Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain <1,000 ppm antimony trioxide in polymeric materials.

Pin Out (Top View)



DC blocking caps (C_{BL}) must be supplied externally.
 $C_{BL} = 15 \text{ pF}$ for operation $> 2 \text{ GHz}$.

Electrical Specifications at 25 °C (0, 3 V)

| Parameter ^(1, 4) | Condition | Frequency | Min. | Typ. | Max. | Unit |
|-------------------------------|-------------------------------|-------------|------|------|------|------|
| Insertion loss ⁽²⁾ | Between any pair of ports | 2.4–2.5 GHz | | 0.95 | 1.1 | dB |
| | | 5.0–6.0 GHz | | 1.15 | 1.3 | dB |
| Isolation | A1–Tx, A2–Rx, A2–Tx, or A1–Rx | 2.4–2.5 GHz | 20 | 22 | | dB |
| | | 5.0–6.0 GHz | 13 | 15 | | dB |
| | A1–A2 or Tx–Rx | 2.4–2.5 GHz | 20 | 22 | | dB |
| | | 5.0–6.0 GHz | 15 | 17 | | dB |
| Return loss ⁽³⁾ | | 2.4–2.5 GHz | | 24 | | dB |
| | | 5.0–6.0 GHz | | 18 | | dB |

1. All measurements made in a 50 Ω system.
 2. Insertion loss changes by 0.003 dB/C.

3. Return loss for insertion loss state.
 4. Tx and Rx paths can be used interchangeably.

Operating Characteristics at 25 °C (0, 3 V)

| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|---------------------------|--------------------------|---------------|------|------|------|------|
| Switching characteristics | | | | | | |
| Rise, fall | 10/90% or 90/10% RF) | | | 20 | | ns |
| On, off | 50% CTL to 90/10% RF) | | | 50 | | ns |
| Video feedthru | | | | 50 | | mV |
| IIP3 | V _{CTL} = 0/3 V | 2.4 GHz | | 57 | | dBm |
| | | 5.2 GHz | | 56 | | dBm |
| | V _{CTL} = 0/5 V | 2.4 GHz | | 60 | | dBm |
| | | 5.2 GHz | | 57 | | dBm |
| P ₁ dB | V _{CTL} = 0/3 V | 2.4–5.875 GHz | | 34 | | dBm |
| Gate leakage current | V _{CTL} = 0/3 V | | | 10 | | μA |
| Thermal resistance | | | | 25 | | °C/W |
| Control voltages | | | 2.5 | 3 | 5 | V |

Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|-----------------------------------|
| RF input power | 35 dBm > 500 MHz 0/7 V control |
| Control voltage | -0.2 V, +8 V |
| Operating temperature | -40 °C to +85 °C |
| Storage temperature | -65 °C to +150 °C |

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

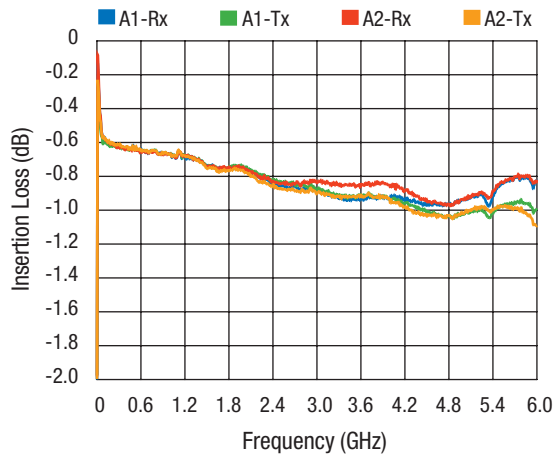
CAUTION: *Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.*

Truth Table

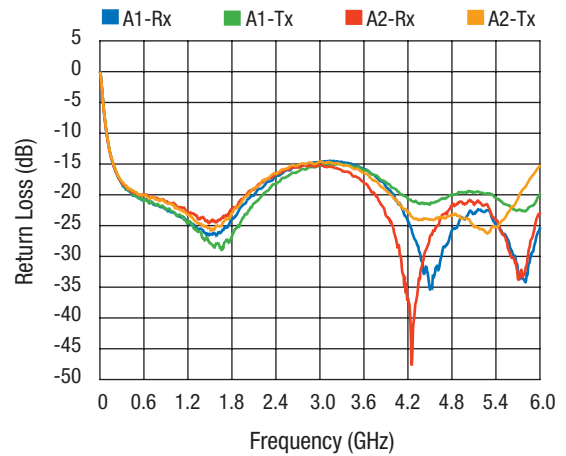
| V ₁ | V ₂ | V ₃ | V ₄ | A1-Tx | A2-Rx | A2-Tx | A1-Rx |
|----------------|----------------|----------------|----------------|-------|-------|-------|-------|
| 1 | 0 | 0 | 0 | IL | ISO | ISO | ISO |
| 0 | 1 | 0 | 0 | ISO | IL | ISO | ISO |
| 0 | 0 | 1 | 0 | ISO | ISO | IL | ISO |
| 0 | 0 | 0 | 1 | ISO | ISO | ISO | IL |

All other conditions not recommended.

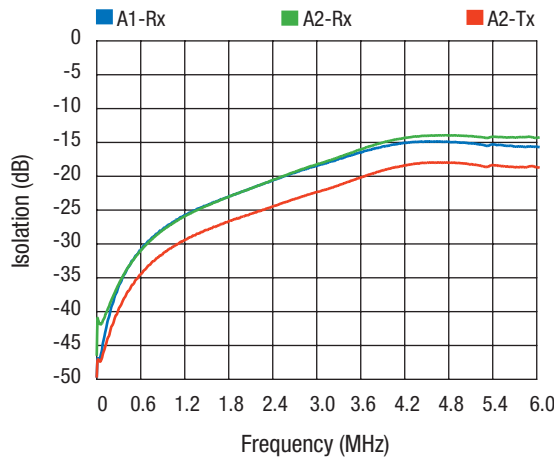
Typical Performance Data



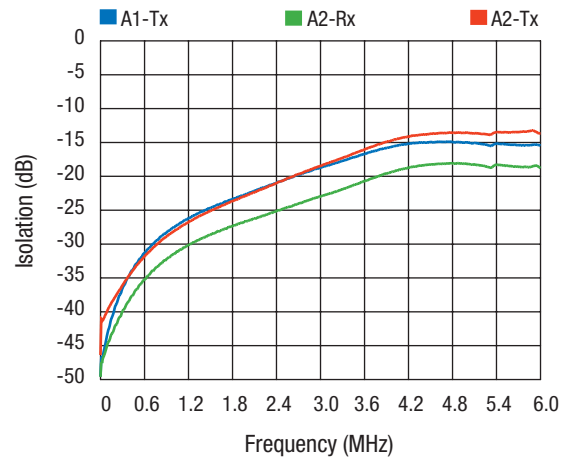
Insertion Loss vs. Frequency



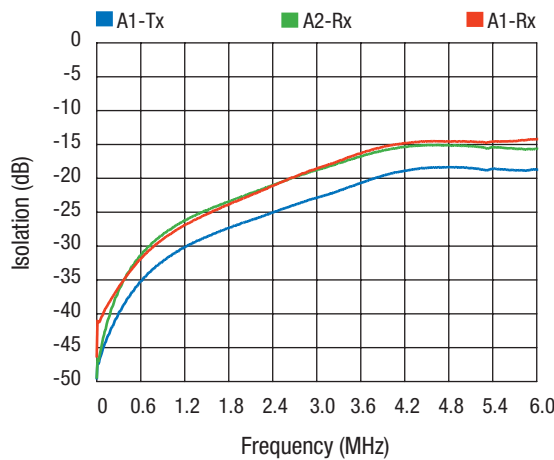
Return Loss vs. Frequency



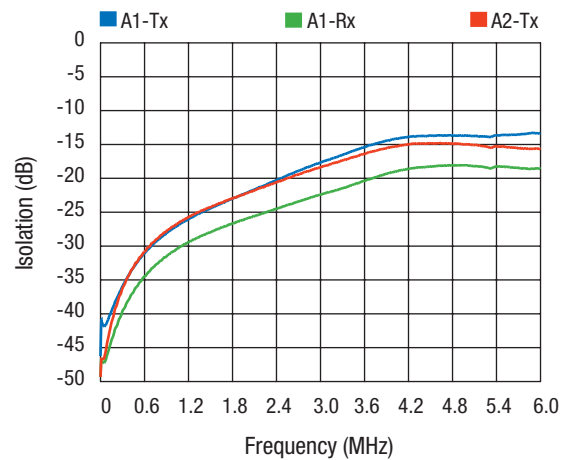
Isolation vs. Frequency



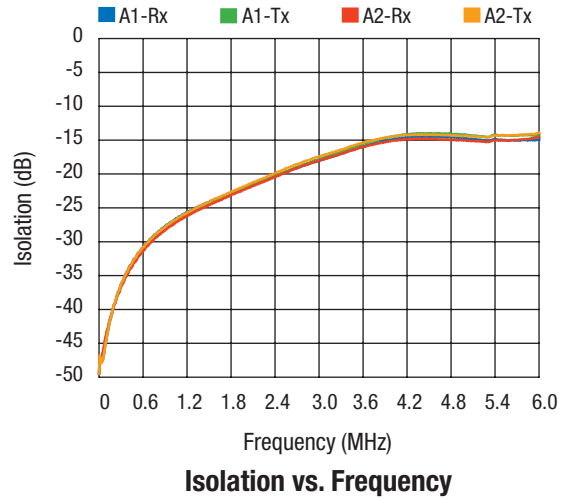
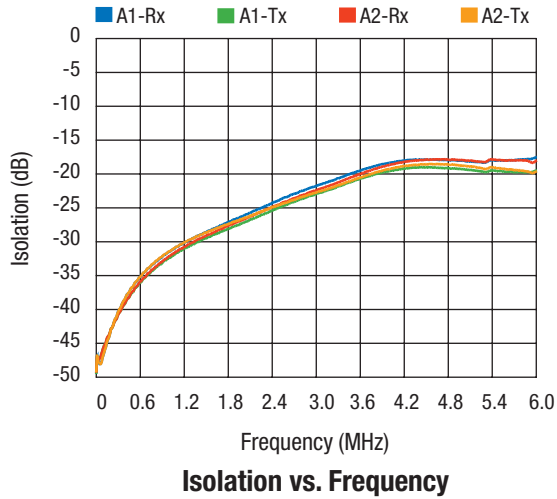
Isolation vs. Frequency



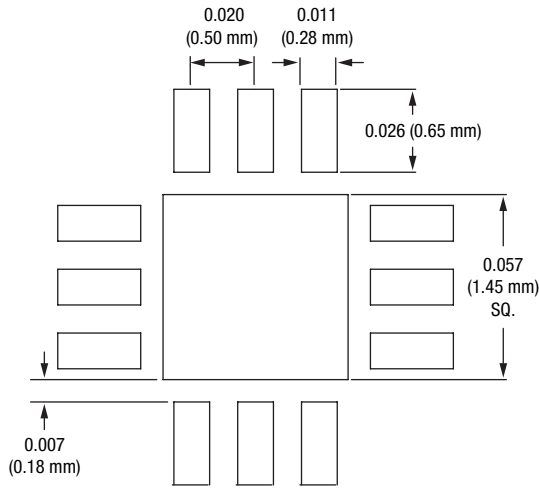
Isolation vs. Frequency



Isolation vs. Frequency

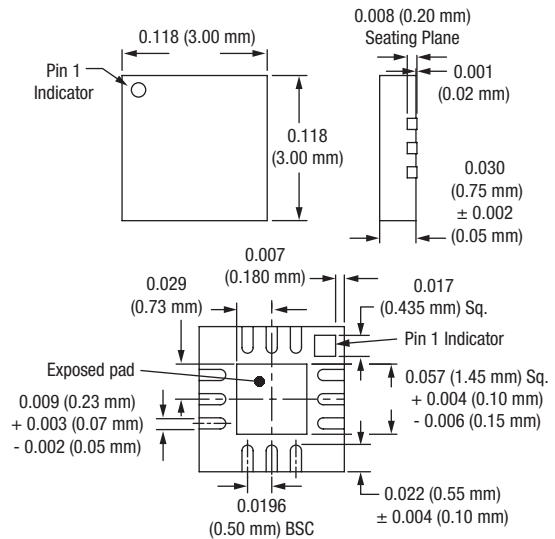


Suggested Land Pattern



Dimensions in inches (mm).

QFN-12



Recommended Solder Reflow Profiles

Refer to the [“Solder Reflow Information”](#) Application Note, document number 200164.

Tape and Reel Information

Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note, document number 200083.

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