

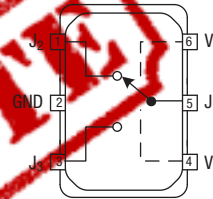
**DATA SHEET**

# SKY13306-313LF: GaAs SPDT Switch 100 MHz–6 GHz

## Features

- Broadband: 100 MHz – 6 GHz
- Very low insertion loss: 0.5 dB typ. 2.4–2.5 GHz
- High linearity: IIP3 = 53 dBm typ. 3 V
- Low current consumption: <50uA @ 3 V
- Miniature QFN-6 2 x 3 mm package
- Lead (Pb)-free and RoHS-compliant MSL1 @ 260 C per JEDEC J-STD-020

## Functional Block Diagram



## Description

The SKY13306-313LF is an IC FET SPDT switch in a low-cost miniature QFN- 6 plastic package. The SKY13306-313LF features low insertion loss, excellent linearity and positive voltage operation with very low DC power consumption. This general purpose switch can be used in a variety of telecommunications applications, and was designed for use as a transmit-receive switch for WLAN applications such as 802-11a/b/g. The QFN-6 package is lead (Pb)-free and meets all current requirements for RoHS.

**NEW**

Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Product is in development stages, performance is based on simulation, and pin out and package are advanced and may change.

## Electrical Specifications

**T = 25 °C,  $V_{CTL} = 0/3$  V,  $Z_0 = 50 \Omega$ , unless otherwise noted**

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Insertion loss	$J_1-J_2, J_1-J_3$	0.10 GHz–6.00 GHz		0.6	0.9	dB
		2.40 GHz–2.50 GHz		0.5	0.7	dB
		3.40 GHz–3.60 GHz		0.5	0.7	dB
		5.15 GHz–5.85 GHz		0.6	0.8	dB
Isolation	$J_1-J_2, J_1-J_3$	0.10 GHz–6.00 GHz	21	25		dB
		2.40 GHz–2.50 GHz	22	25		dB
		3.40 GHz–3.60 GHz	23	26		dB
		5.15 GHz–5.85 GHz	21	24		dB
Return loss	Insertion loss state	0.10 GHz–6.00 GHz		15		dB
		2.40 GHz–2.50 GHz		25		dB
		3.40 GHz–3.60 GHz		16		dB
		5.15 GHz–5.85 GHz		15		dB
Input power for 0.1 dB compression		2.4 GHz–2.5 GHz		35		dBm
2nd Harmonic	$P_{IN} = 22$ dBm	2.45 GHz		-70		dBc
3rd Harmonic	$P_{IN} = 22$ dBm	2.45 GHz		-68		dBc
Input 3rd order intercept point	Two tones, 15 dBm each tone, 5 MHz spacing	5.2 GHz		53		dBm
Control voltage			2.7		5	V
$V_{HIGH}$			-0.25		0.25	V
$V_{LOW}$						
Control port current	$V_{CTL} = 0$ V			10	100	$\mu$ A
	$V_{CTL} = 3$ V			15	200	$\mu$ A
	$V_{CTL} = 0$ V			10	50	$\mu$ A

## Absolute Maximum Ratings

Characteristic	Value
RF input power @ 0.5 V	36.5 dBm @ 25 °C
RF input power @ 0.3 V	36 dBm @ 25 °C
Control voltage	-0.2 V $\leq V_{CTL} \leq 6$ V
Operating temperature range	-40 °C to +85 °C
Storage temperature range	-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

$V_1^{(1)}$	$V_2^{(1)}$	$J_1-J_2$	$J_1-J_3$
0	$V_{HIGH}$	Isolation	Insertion loss
$V_{HIGH}$	0	Insertion loss	Isolation

All other conditions not recommended. No damage to the switch will occur if a non-recommended combination of control voltages is present. The switch will not provide full isolation or minimum insertion loss under such conditions.

1.  $2.7 \text{ V} \leq V_{HIGH} \leq 5 \text{ V}$ .

## Recommended Solder Reflow Profiles

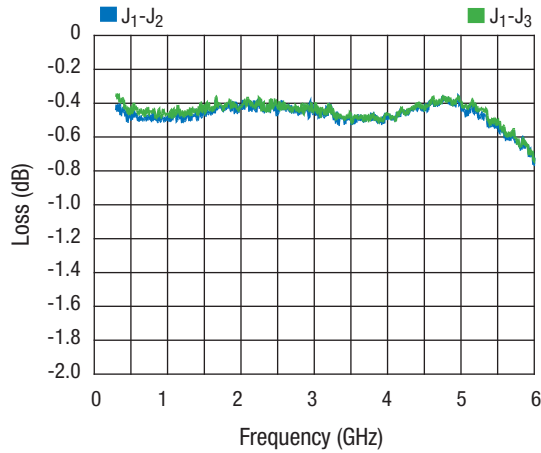
Refer to the [“Recommended Solder Reflow Profile”](#) Application Note.

## Tape and Reel Information

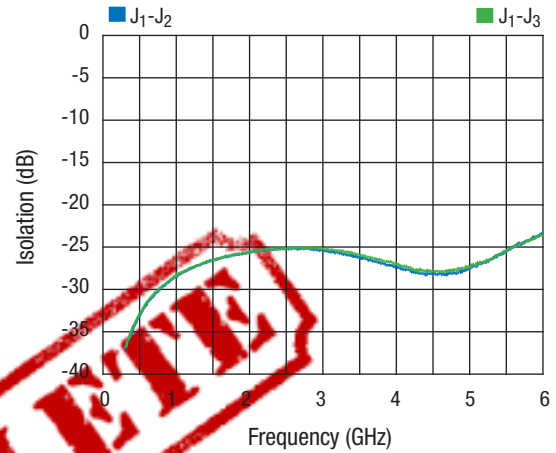
Refer to the [“Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation”](#) Application Note.

## Typical Performance Data

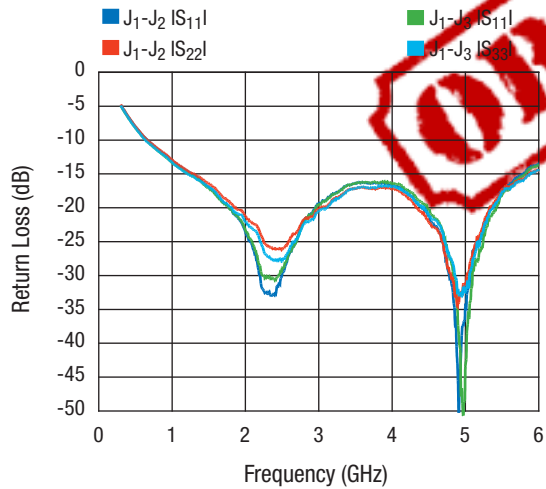
$T = 25\text{ }^{\circ}\text{C}$ ,  $V_{\text{CTL}} = 0/3\text{ V}$ ,  $Z_0 = 50\text{ }\Omega$ , unless otherwise noted



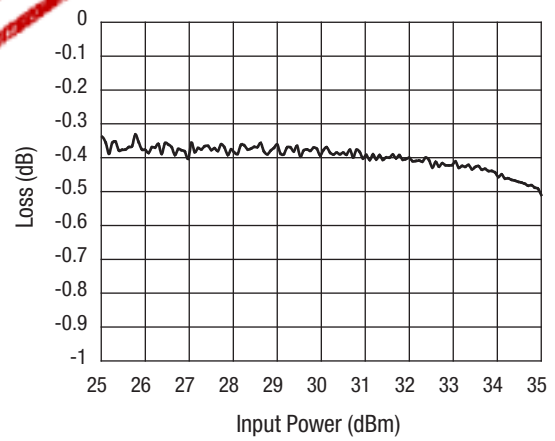
Typical Insertion Loss



Typical Isolation

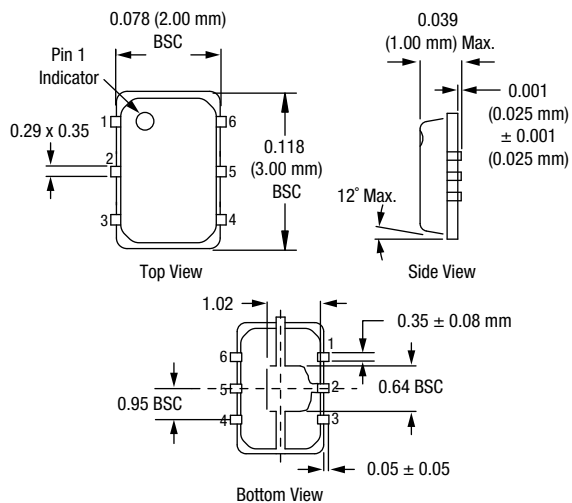


Typical Return Loss Insertion Loss State

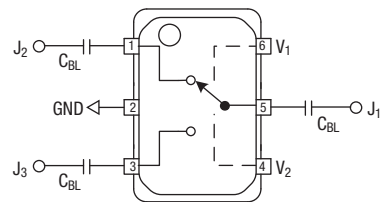


Typical Compression at 2.4 GHz

## QFN-6



## Pin Out and Suggested Circuit



DC blocking capacitors (C<sub>BL</sub>) must be supplied externally.  
C<sub>BL</sub> = 15 pF.

**OBsolete**



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