

DATA SHEET

AS211-334: PHEMT GaAs IC SPDT Switch LF-4 GHz

Applications

- General-purpose switch for telecommunication applications

Features

- P_1 dB 30 dBm typical @ 3 V
- IP3 43 dBm typical @ 3 V
- Low insertion loss (0.3 dB @ 0.9 GHz)
- Low DC power consumption
- 1.5 x 1.2 x 0.8 mm Land Grid Array (LGA) package
- PHEMT process
- Lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

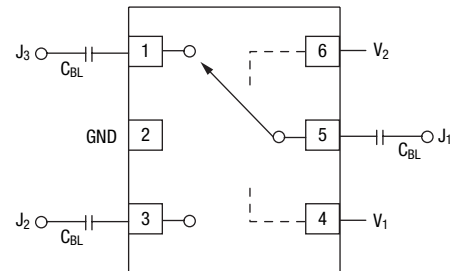
Description

The AS211-334 is an IC FET SPDT switch in a low-cost miniature LGA package. The AS211-334 features low insertion loss and positive voltage operation with very low DC power consumption.

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



Pin Out (Top View)



DC blocking capacitors (C_{BL}) must be supplied externally for positive voltage operation. $C_{BL} = 47$ pF for operation >500 MHz.

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

$Z_0 = 50 \Omega$, unless otherwise noted

Parameter	Frequency	Min.	Typ.	Max.	Unit
Insertion loss	0.1–1 GHz		0.3	0.5	dB
	1.0–2 GHz		0.4	0.6	dB
	2.0–3 GHz		0.5	0.7	dB
	3.0–4 GHz		0.6	0.8	dB
Isolation	0.1–1 GHz	22	25		dB
	1.0–2 GHz	20	22		dB
	2.0–3 GHz	20	23		dB
	3.0–4 GHz	23	26		dB
VSWR	LF-4 GHz		1.2:1	1.3:1	

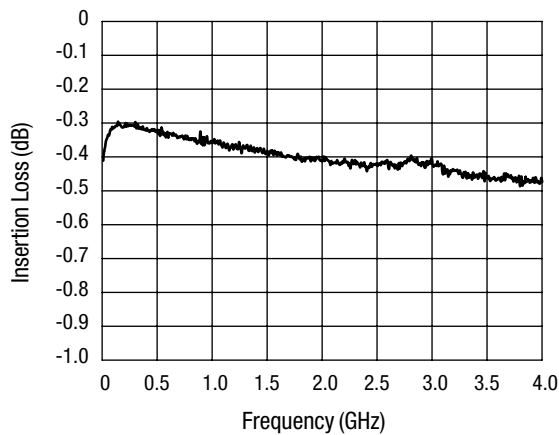
Operating Characteristics at 25 °C (0, 3 V)

$Z_0 = 50 \Omega$, unless otherwise noted

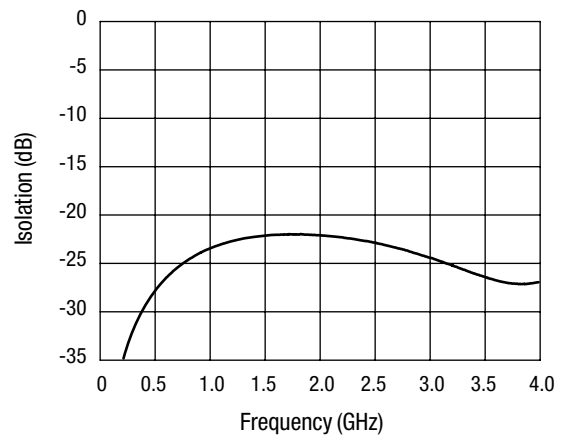
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			10		ns
On, off	50% CTL to 90/10% RF			20		ns
Video feedthru	$T_{RISE} = 1 \text{ ns}$, BW = 500 MHz			25		mV
Input power for 1 dB compression	0/3 V 0/5 V	0.5–3 GHz 0.5–3 GHz		30 34		dBm dBm
Intermodulation intercept point (IP3)	For two-tone input power 5 dBm 0/3 V 0/5 V	0.5–3 GHz 0.5–3 GHz		43 50		dBm dBm
Thermal resistance				25		°C/W
Control voltages	$V_{LOW} = 0 \text{ to } 0.2 \text{ V @ } 20 \mu\text{A max.}$ $V_{HIGH} = 3 \text{ V @ } 100 \mu\text{A max. to } 5 \text{ V @ } 200 \mu\text{A max.}$					

Typical Performance Data (3 V, $C_{BL} = 47 \text{ pF}$)

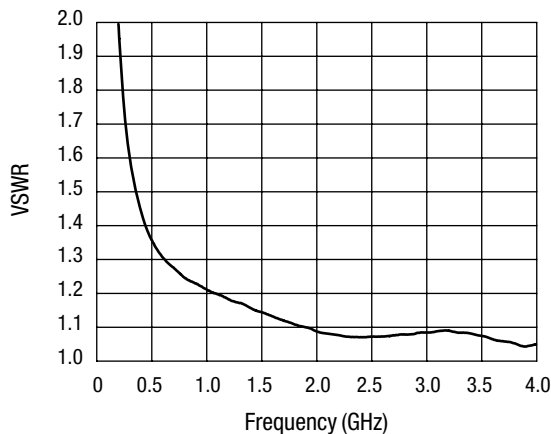
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Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

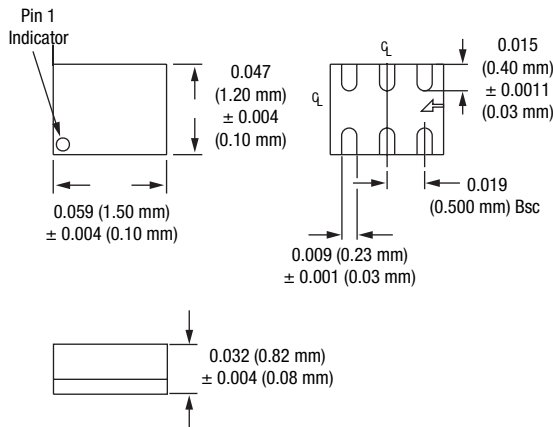
Absolute Maximum Ratings

Characteristic	Value
RF input power	6 W > 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.

LGA-6 (1.5 x 1.2 mm)

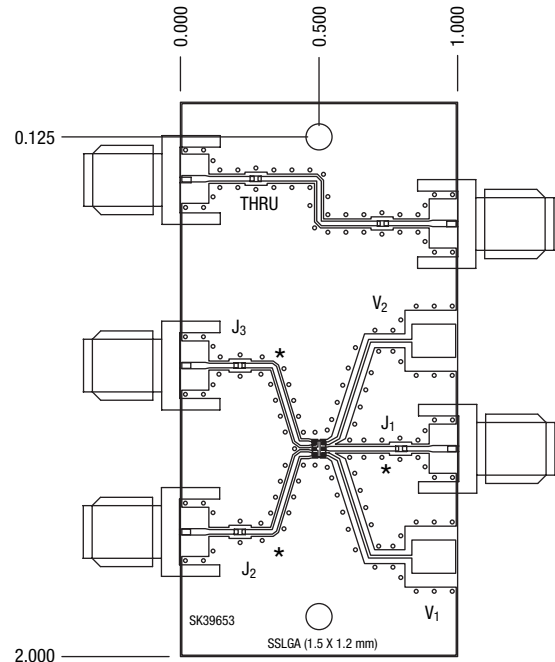


Truth Table

V ₁	V ₂	J ₁ -J ₂	J ₁ -J ₃
V _{HIGH}	V _{LOW}	Isolation	Insertion loss
V _{LOW}	V _{HIGH}	Insertion loss	Isolation

All other states not recommended.
V_{LOW} = 0 to 0.2 V.
V_{HIGH} = 3 to 5 V.

Test Board



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.

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