SKYWORKS®

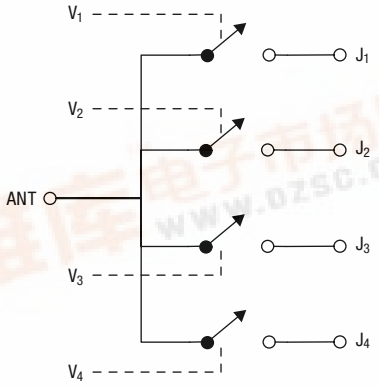
DATA SHEET

AS192-000: PHEMT GaAs IC High-Power SP4T Switch 0.1–2.5 GHz

Features

- 4 symmetric RF paths
- Positive voltage control
- High IP3
- Excellent harmonic performance
- Handles GSM power levels
- Available in 100% RF tested chip form
- Available lead (Pb)-free, RoHS-compliant, and Green

Simplified Schematic



Description

The AS192-000 is a reflective SP4T switch. It is an ideal switch for higher power applications. It can be used for GSM dual-band handset applications where low loss, low current and small size are critical parameters.

NEW

Skyworks Green products are lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, and are free from antimony trioxide and brominated flame retardants.

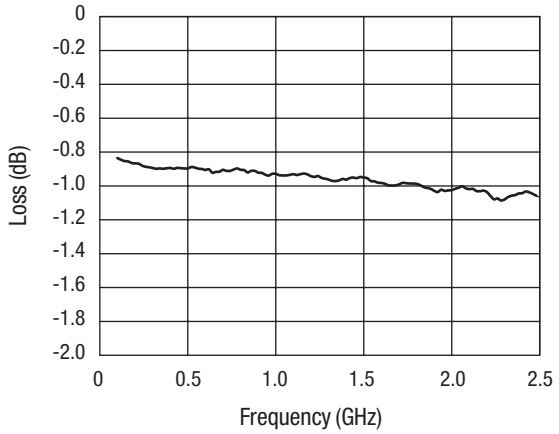
Electrical Specifications at 25 °C (0, +4.5 V)

Parameter		Frequency	Min.	Typ.	Max.	Unit
Insertion loss	Ant-J_1, J_2, J_3, J_4	0.1–0.5 GHz		0.90	1.1	dB
		0.5–1.0 GHz		0.95	1.1	dB
		1.0–2.0 GHz		1.00	1.2	dB
		2.0–2.5 GHz		1.10	1.3	dB
Isolation	Ant-J_1, J_2, J_3, J_4	0.1–0.5 GHz	30	34		dB
		0.5–1.0 GHz	25	29		dB
		1.0–2.0 GHz	19	23		dB
		2.0–2.5 GHz	18	21		dB
VSWR		0.1–1.0 GHz		1.3:1		
		1.0–2.5 GHz		1.4:1		

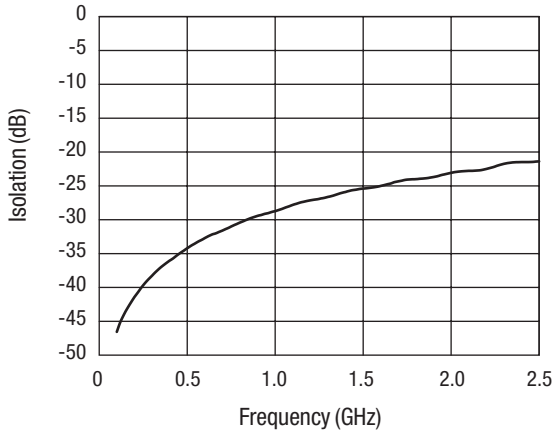
Operating Characteristics at 25 °C (0, +4.5 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics	Rise, fall (10/90% or 90/10% RF) On, off (50% CTL to 90/10% RF) Video feedthru			50 100 50		ns ns mV
IP3	13 dBm/tone			+55		dBm
2nd and 3rd harmonics	34 dBm input 900 MHz			+65		dBc
Control voltages	V_{LOW} = 0 V_{HIGH} = +4.5 V @ 200 mA max. for RF power > 30 dBm V_{HIGH} = +3.0 V @ 200 mA max. for RF power 20–30 dBm V_{HIGH} = +2.7 V @ 200 mA max. for RF power < 20 dBm					

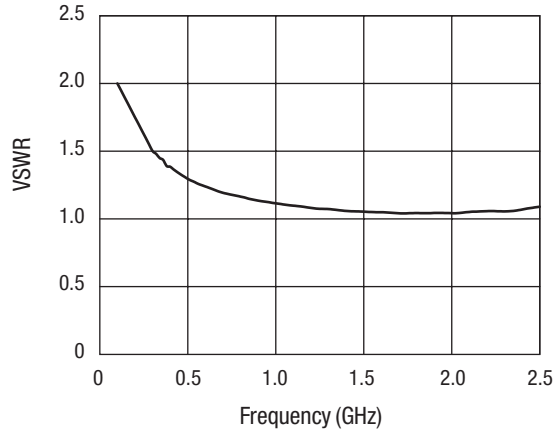
Typical Performance Data



Typical Insertion Loss vs. Frequency



Typical Isolation vs. Frequency



Typical VSWR

Absolute Maximum Ratings

Characteristic	Value
RF input power	4 W > 0.5 GHz 0/+6 V control
Control voltage	+6 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.

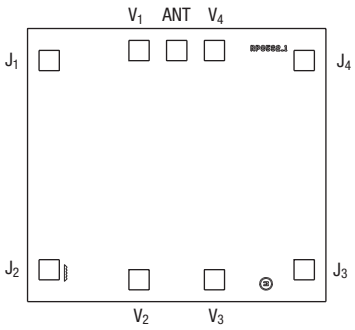
CAUTION: *Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without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

Truth Table

V_1	V_2	V_3	V_4	Ant-J_1	Ant-J_2	Ant-J_3	Ant-J_4
V_{HIGH}	V_{LOW}	V_{LOW}	V_{LOW}	Ins. loss	Isolation	Isolation	Isolation
V_{LOW}	V_{HIGH}	V_{LOW}	V_{LOW}	Isolation	Ins. loss	Isolation	Isolation
V_{LOW}	V_{Low}	V_{HIGH}	V_{LOW}	Isolation	Isolation	Ins. loss	Isolation
V_{LOW}	V_{LOW}	V_{LOW}	V_{HIGH}	Isolation	Isolation	Isolation	Ins. loss

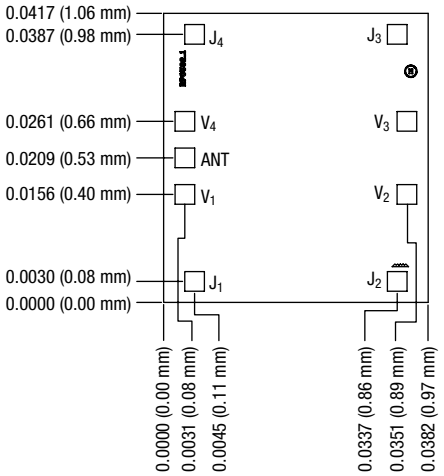
V_{LOW} = 0.
V_{HIGH} = 4.5 to 5.0 V for RF power > 30 dBm.
V_{HIGH} = 3.0 to 5.0 V for RF power 20–30 dBm.
V_{HIGH} = 2.7 to 5.0 V for RF power < 20 dBm.
All other conditions not recommended.

Pin Out



Notes:
DC blocking caps required on RF lines for positive voltage operation
bond pad metalization: gold
backside metalization: none
bond pad dimensions: 0.003 (0.075 mm) x 0.003 (0.075 mm)
See application note, Handling GaAs MMIC Die.

Outline Drawing



Chip thickness 0.008 ± 0.001 (0.203 ± 0.025).

Ordering Information

Model Name	Operating Temperature Range	Ordering Part Number	Package Description
AS192-000 GaAs SP4T switch	-40 °C to +85 °C	AS192-000	Wafer on plastic-ring film frame