

DATA SHEET

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

Features

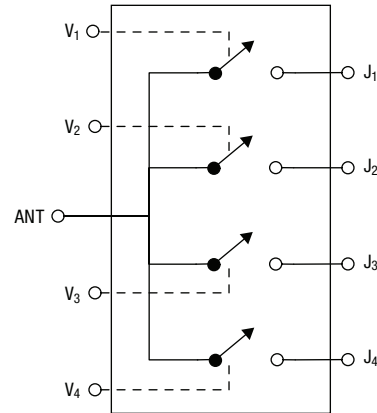
- 4 symmetric RF paths
- Positive voltage control
- High IP3
- Excellent harmonic performance
- Handles GSM power levels
- Available in 100% RF tested chip form
- Available lead (Pb)-free, RoHS-compliant, and Green

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

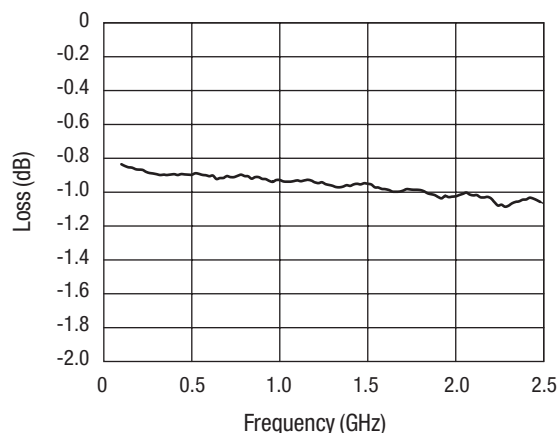
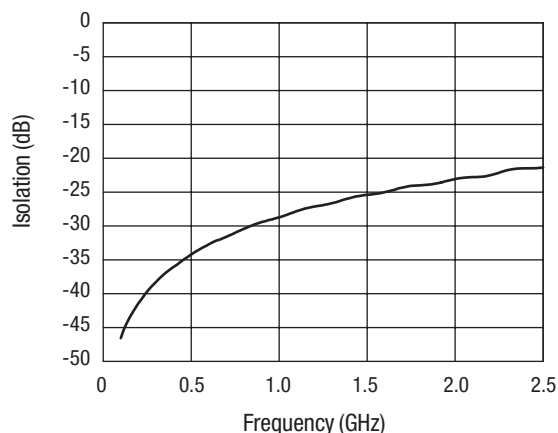
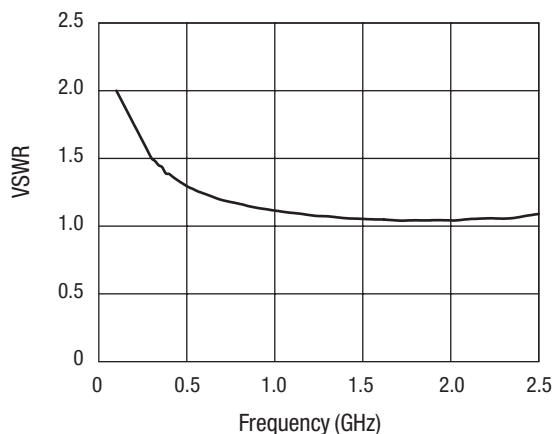

Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain <1,000 ppm antimony trioxide in polymeric materials.

Simplified Schematic

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)			50		ns
	On, off (50% CTL to 90/10% RF)			100		ns
	Video feedthru			50		mV
IP3	13 dBm/tone			+55		dBm
2nd and 3rd harmonics	34 dBm input 900 MHz			-65		dBc
Control voltage	$V_{HIGH}V_{LOW}$		3		5	V
			0		0.2	V
Control port current	$V_{CTL} = 5\text{ V}$				200	μA
	$V_{CTL} = 3\text{ V}$				200	μA
	$V_{CTL} = 2.7\text{ V}$				200	μA
	$V_{CTL} = 0\text{ V}$				20	μA

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

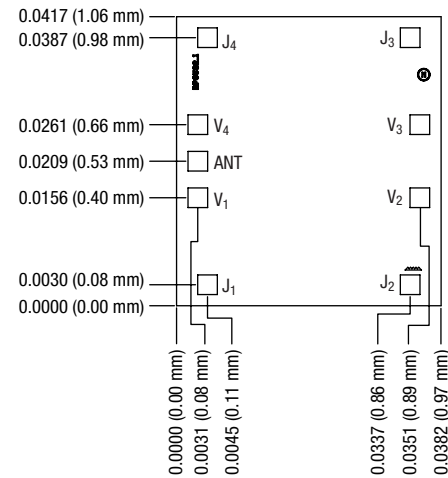
V_{LOW} = 0.

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.

Outline and Pin Out Drawing

Chip thickness 0.008 ± 0.001 (0.203 ± 0.025).

Bond pad dimensions: 0.028 (0.07 mm square).

Bond pad metallization: gold.

Backside metallization: none.

Dimensions in inches (mm).

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