DATA SHEET

AS195-306, AS195-306LF: PHEMT GaAs IC High-Power SP5T Switch 0.1–2 GHz

Features

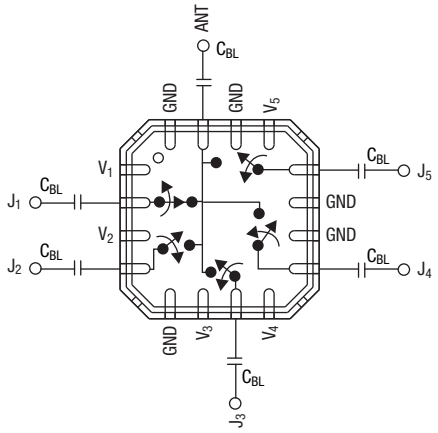
- 5 symmetric RF paths
- Positive voltage control
- High IP3
- Excellent harmonic performance
- Handles GSM power levels
- Available in QFN-16 (4 x 4 mm) package
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

Description

The AS195-306 is a reflective SP5T 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 offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.

Pin Out



DC blocking capacitors (C_{BL}) must be supplied externally.
C_{BL} = 47 pF for operating frequency >500 MHz.

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

Z_0 = 50 Ω, unless otherwise noted

Parameter		Frequency	Min.	Typ.	Max.	Unit
Insertion loss	Ant-J_1, J_2, J_3, J_4, J_5	0.1–0.5 GHz		0.5	0.7	dB
		0.5–1.0 GHz		0.6	0.8	dB
		1.0–2.0 GHz		1.0	1.1	dB
Isolation	Ant-J_1, J_2, J_3, J_4, J_5	0.1–0.5 GHz	30	35		dB
		0.5–1.0 GHz	25	27		dB
		1.0–2.0 GHz	21	23		dB
VSWR		0.1–1.0 GHz		1.4:1		
		1.0–2.0 GHz		1.6:1		

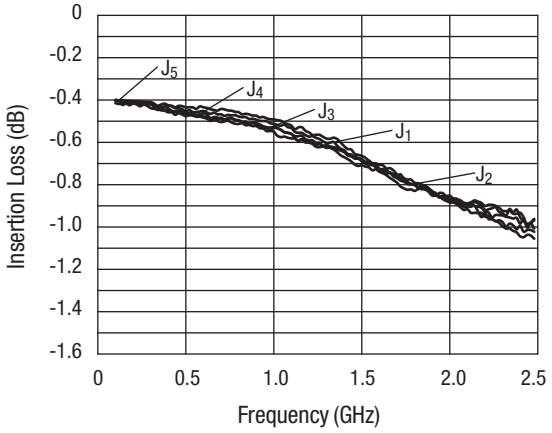
Operating Characteristics at 25 °C (0, 3 V)

Z_0 = 50 Ω, unless otherwise noted

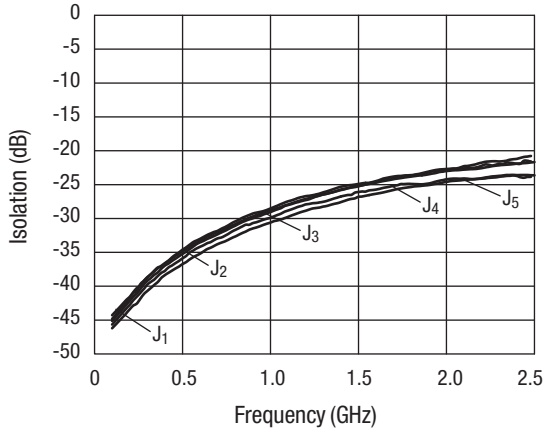
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching characteristics						
Rise, fall	10/90% or 90/10% RF			50		ns
On, off	50% CTL to 90/10% RF			100		ns
Video feedthru	T_{RISE} = 1 ns, BW = 500 MHz			50		mV
IP3	13 dBm/tone			55		dBm
2nd and 3rd harmonics	34 dBm input 900 MHz			-65		dBc
Thermal resistance				25		°C/W
Control voltages	V_{LOW} = 0 V_{HIGH} = 3 V @ 200 µA max.					

Typical Performance Data

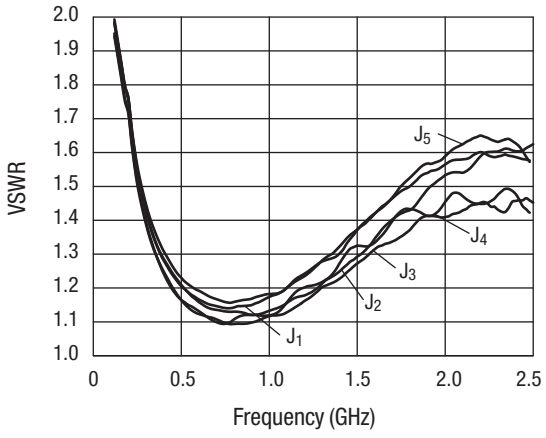
Z_0 = 50 Ω, unless otherwise noted



Typical Loss (All Paths) vs. Frequency



Typical Isolation (All Paths) vs. Frequency



VSWR vs. Frequency

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	36 dBm, f > 500 MHz, 27 dBm < 500 MHz, 0/8 V control 100 mW f <= 500 MHz
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	V_5	Ant-J_1	Ant-J_2	Ant-J_3	Ant-J_4	Ant-J_5
V_{HIGH}	0	0	0	0	Ins. loss	Isol.	Isol.	Isol.	Isol.
0	V_{HIGH}	0	0	0	Isol.	Ins. loss	Isol.	Isol.	Isol.
0	0	V_{HIGH}	0	0	Isol.	Isol.	Ins. loss	Isol.	Isol.
0	0	0	V_{HIGH}	0	Isol.	Isol.	Isol.	Ins. loss	Isol.
0	0	0	0	V_{HIGH}	Isol.	Isol.	Isol.	Isol.	Ins. loss

All other conditions not recommended.
"0" = 0 to 0.2 V.
"V_{HIGH}" = 2.7 to 5 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.

QFN-16 (4 x 4 mm)