

PHEMT GaAs IC High Power SP4T Switch 0.1–2.5 GHz



AS221-306

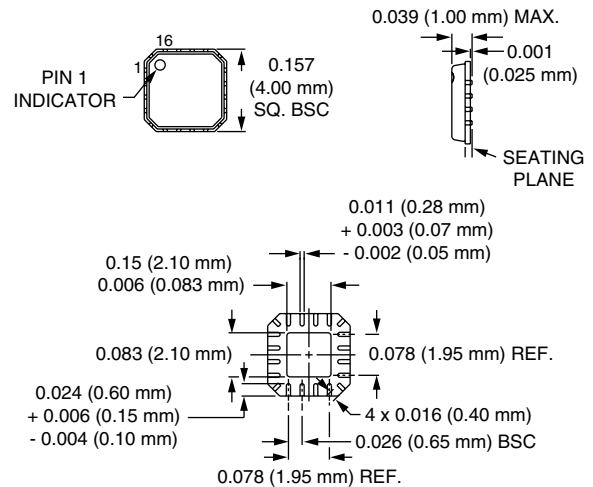
Features

- 4 Symmetric RF Paths
- Positive Voltage Control @ 2.6 V
- High IP3
- Excellent Harmonic Performance
- Handles GSM Power Levels
- Available in MLF-16 (4 x 4 mm) Package

Description

The AS221-306 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 both low loss, low current and small size are critical parameters.

QFN-16 (4 x 4 mm)



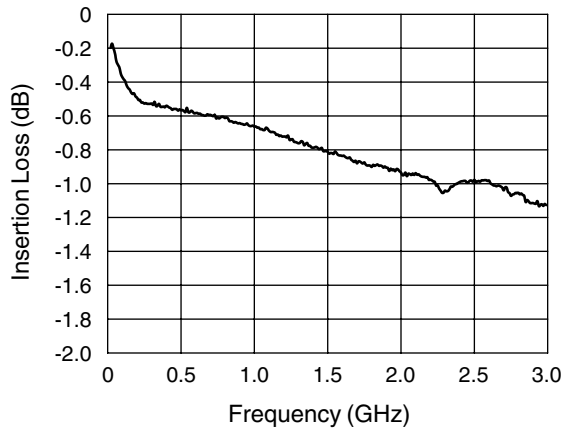
Electrical Specifications at 25°C (0, +2.6 V)

Parameter	Frequency	Min.	Typ.	Max.	Unit	
Insertion Loss	Ant-J ₁ , J ₂ , J ₃ , J ₄	0.1–0.5 GHz		0.6	0.7	dB
		0.5–1.0 GHz		0.7	0.8	dB
		1.0–2.0 GHz		0.9	1.1	dB
		2.0–2.5 GHz		1.1	1.2	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	22		dB
VSWR		0.1–1.0 GHz		1.2:1		
		1.0–2.5 GHz		1.3:1		

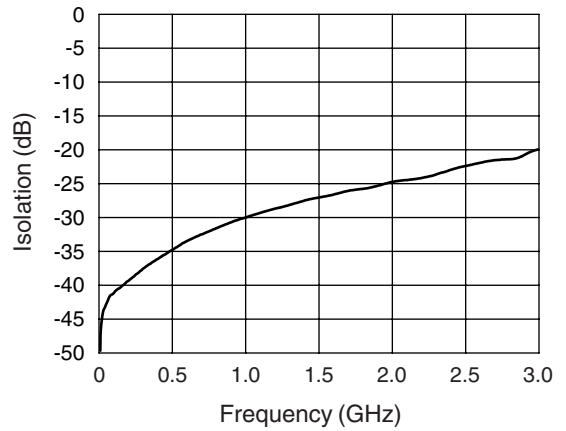
Operating Characteristics at 25°C (0, +2.6 V)

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 Voltages	V _{Low} = 0 V _{High} = 2.6 V @ 200 μA					

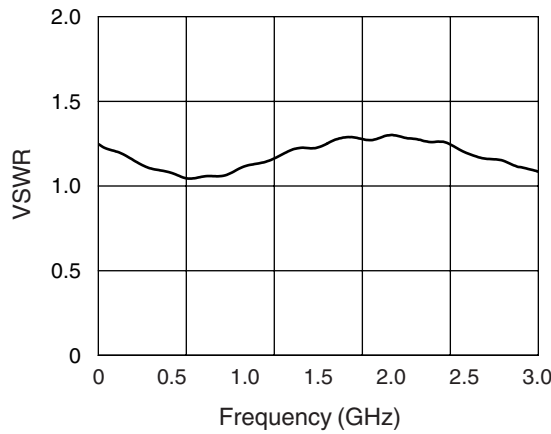
Typical Performance Data



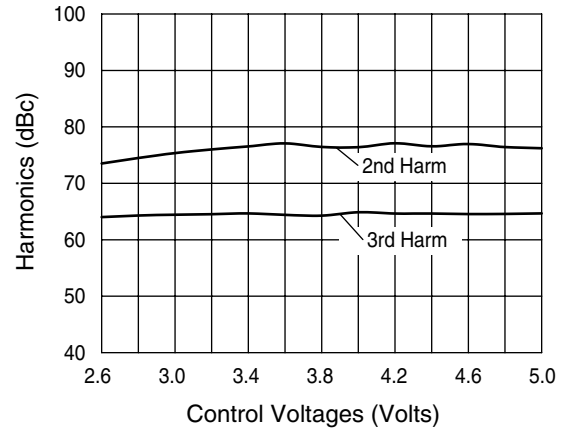
Typical Insertion Loss vs. Frequency



Typical Isolation vs. Frequency



Typical VSWR vs. Frequency



Typical Harmonics vs. Control Voltages

Absolute Maximum Ratings

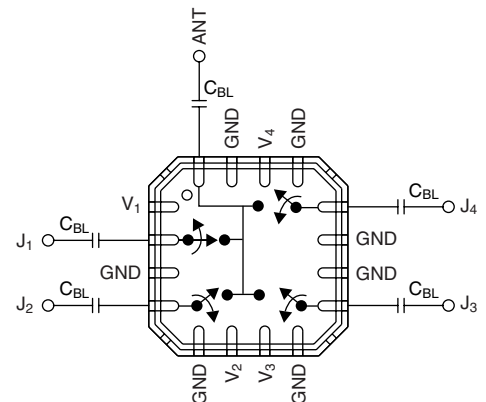
Characteristic	Value
RF Input Power	4 W > 0.5 GHz 0/+6 V Control
Control Voltage	+6 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
θ_{JC}	25°C/W

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} = 2.6 V.

Pin Out



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