

PHEMT GaAs IC High Power SP3T Switch DC–2 GHz


AS227-321

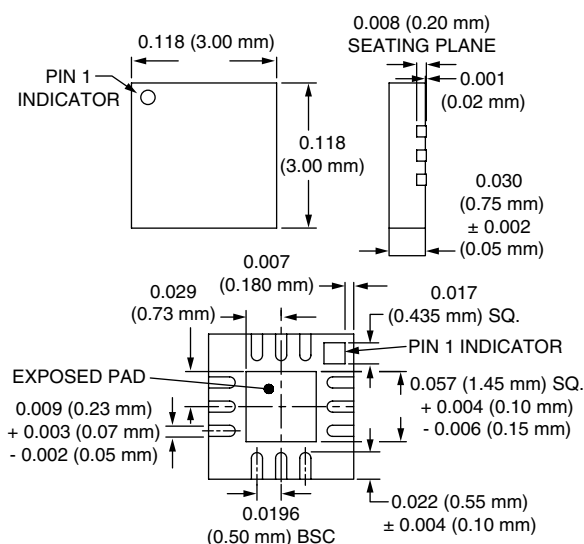
Features

- Positive Low Voltage Control
(0/2.75 V Operation)
- Low Insertion Loss (< 0.5 dB @ 1 GHz)
- High Isolation (> 25 dB @ 1 GHz)
- Excellent IIP3 (63 dBm @ 2.75 V,
27 dBm/Tone)
- Miniature QFN-12 Plastic Package
- PHEMT Process

Description

The AS227-321 is a PHEMT GaAs IC SP3T antenna switch operating in the 900 MHz and 1800 MHz frequency bands. Switching between the antenna and T_X/R_X ports is accomplished with 3 control inputs. When the control inputs are driven with the appropriate voltages, a low insertion loss path is provided from an antenna port to an R_X or T_X port, while the other ports have high attenuation.

QFN-12



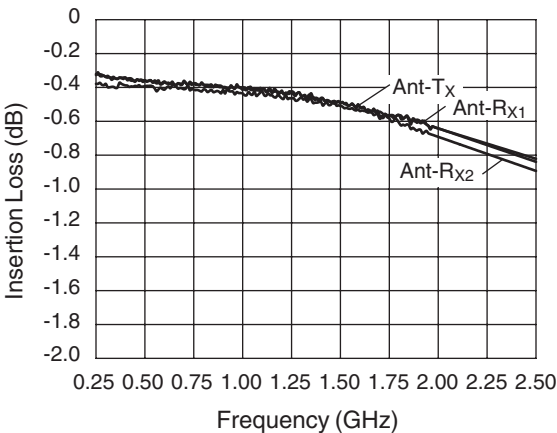
Electrical Specifications at 25°C (0, +2.75 V)

Parameter	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss	Ant-RF1, RF2, RF3	DC–0.5 GHz	0.45	0.6	dB
		DC–1.0 GHz	0.50	0.7	dB
		DC–2.0 GHz	0.70	0.9	dB
Isolation	Ant-RF1, RF2, RF3	DC–0.5 GHz	30	32	dB
		DC–1.0 GHz	24	26	dB
		DC–2.0 GHz	18	20	dB
Return Loss	Ant-RF1, RF2, RF3	DC–0.5 GHz	18		dB
		DC–1.0 GHz	18		dB
		DC–2.0 GHz	14		dB

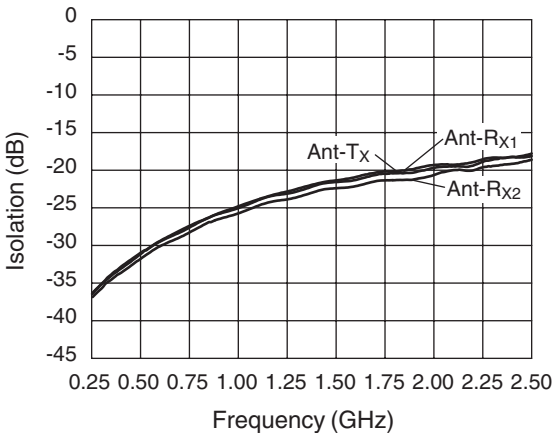
Operating Characteristics at 25°C (0, +2.75 V)

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
IIP3	27 dBm/Tone	824/869 MHz		63		dBm
2nd/3rd Harmonic	34.5 dBm	900 MHz		65		dBc
Gate Leakage Current	34 dBm In @ 2.75 V			50		μA
Control Voltages	V_{Low}		-0.25	0	0.25	V
	V_{High}		2.60	2.75	5.00	V

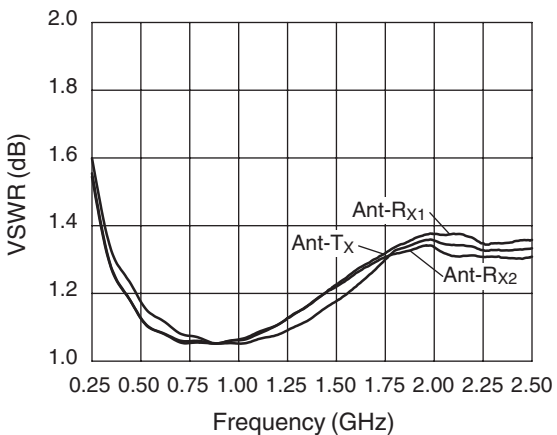
Typical Performance Data



Insertion Loss vs. Frequency



Isolation vs. Frequency



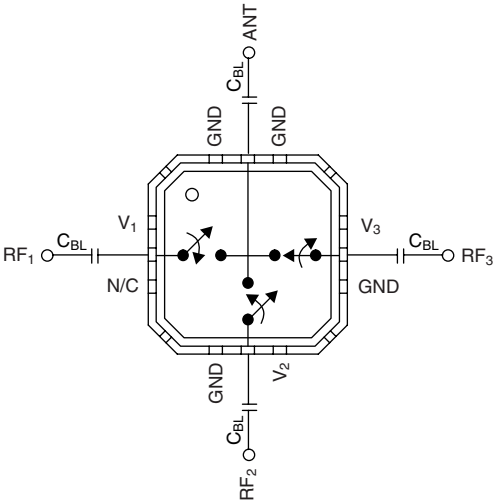
VSWR vs. Frequency

Truth Table

V ₁	V ₂	V ₃	Ant-RF1	Ant-RF2	Ant-RF3
V _{High}	V _{Low}	V _{Low}	Ins. Loss	Isolation	Isolation
V _{Low}	V _{High}	V _{Low}	Isolation	Ins. Loss	Isolation
V _{Low}	V _{Low}	V _{High}	Isolation	Isolation	Ins. Loss

V_{Low} = 0–0.2 V.
 V_{High} = 2.75–5 V.

Pin Out



DC blocks required. C_{BL} = 47 pF for operation >500 MHz.