

PHEMT GaAs IC High Power SP4T Switch 0.1–2.5 GHz



AS166-300

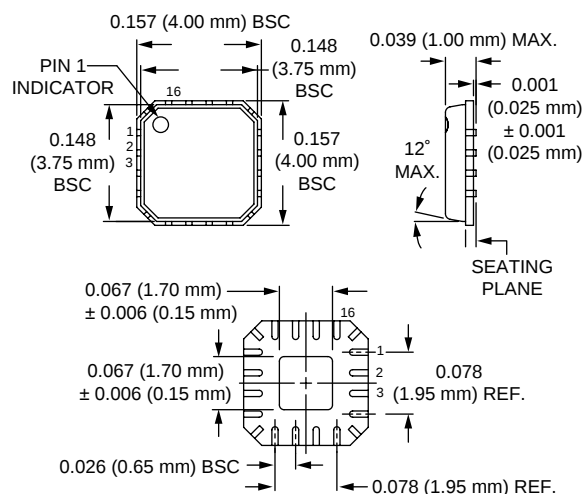
Features

- 2 T_X Paths and 2 R_X Paths
- Positive Voltage Control
- High IP3
- Excellent Harmonic Performance
- Handles GSM Power Levels
- Available in MLF-16 (4 x 4 mm) Package

Description

The AS166-300 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.

MLF-16 (4 x 4 mm)



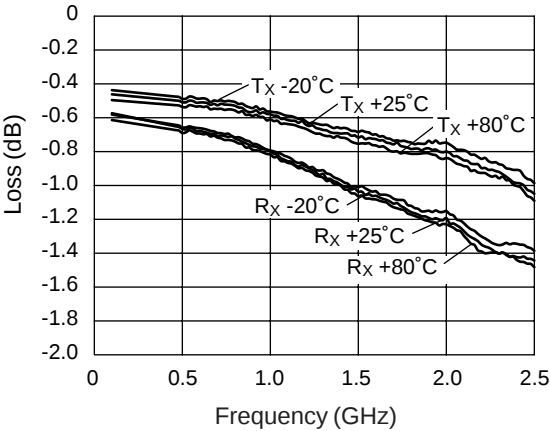
Electrical Specifications at 25°C (0, +3 V)

Parameter		Frequency	Min.	Typ.	Max.	Unit
Insertion Loss	T _X -Ant	0.1–0.5 GHz		0.55	0.75	dB
		0.5–1.0 GHz		0.55	0.75	dB
		1.0–2.0 GHz		0.80	1.00	dB
		2.0–2.5 GHz		1.00	1.20	dB
	R _X -Ant	0.1–0.5 GHz		0.75	0.95	dB
		0.5–1.0 GHz		0.80	1.00	dB
		1.0–2.0 GHz		1.20	1.40	dB
		2.0–2.5 GHz		1.40	1.60	dB
Isolation	T _X -Ant	0.1–0.5 GHz	20	22		dB
		0.5–1.0 GHz	17	20		dB
		1.0–2.0 GHz	14	16		dB
		2.0–2.5 GHz	13	14.5		dB
	R _X -Ant	0.1–0.5 GHz	24	26		dB
		0.5–1.0 GHz	23	25		dB
		1.0–2.0 GHz	21	23		dB
		2.0–2.5 GHz	21	23		dB
VSWR		0.1–1.0 GHz		1.4:1		
		1.0–2.0 GHz		1.5:1		
		2.0–2.5 GHz		1.55:1		

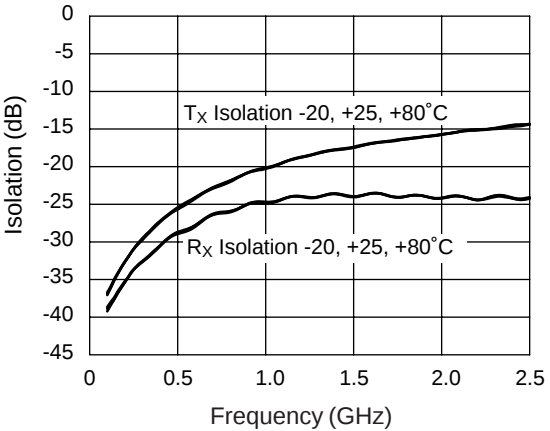
Operating Characteristics at 25°C (0, +3 V)

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 Harmonic	34 dBm Input 900 MHz		65	70		dBc
3rd Harmonic	34 dBm Input 900 MHz		55	65		dBc
Control Voltages	V _{Low} = 0 V _{High} = 2.7 to 5 V @ 100 µA Max.					

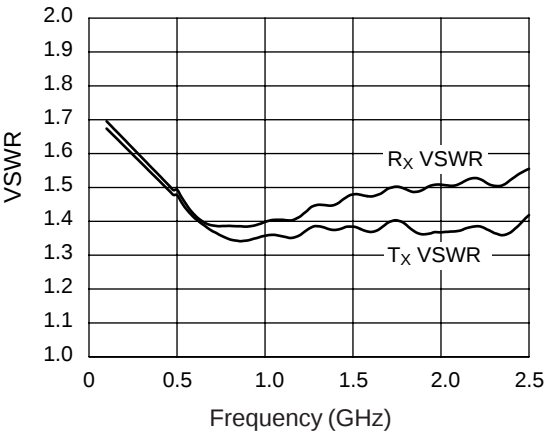
Typical Performance Data



Insertion Loss vs. Frequency



Isolation vs. Frequency



VSWR vs. Frequency

Truth Table

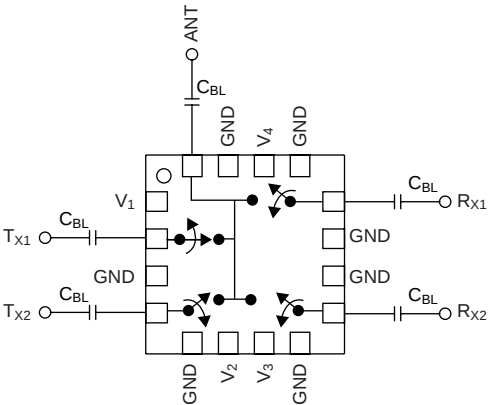
V ₁	V ₂	V ₃	V ₄	Ant-T _{X1}	Ant-T _{X2}	Ant-R _{X2}	Ant-R _{X1}
V _{High}	V _{Low}	V _{Low}	V _{Low}	Ins. Loss	Isolation	Isolation	Isolation
V _{Low}	V _{High}	V _{Low}	V _{Low}	Isolation	Ins. Loss	Isolation	Isolation
V _{Low}	V _{Low}	V _{High}	V _{Low}	Isolation	Isolation	Ins. Loss	Isolation
V _{Low}	V _{Low}	V _{Low}	V _{High}	Isolation	Isolation	Isolation	Ins. Loss

V_{Low} = 0 V.
 V_{High} = 2.7 to 5 V.

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

Pin Out



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