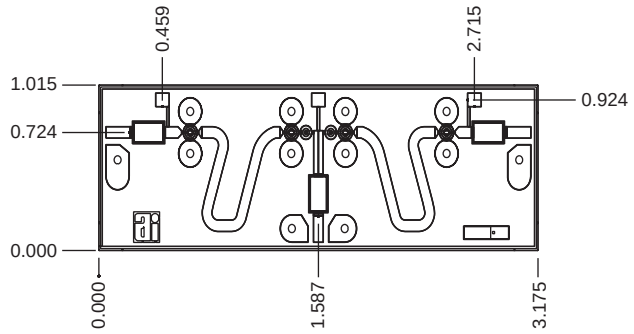
GaAs PIN IC SPDT Switch
2–18 GHz

AP218R2-00

Features

- Low Loss <2.0 dB
- High Isolation >50 dB
- Good Return Loss <-9 dB
- Broadband 2–18 GHz
- Fast Switching <2 ns
- High Power Handling Capability 40 dBm Peak 27 dBm CW

Chip Outline



Dimensions indicated in mm.
All DC (V) pads are 0.1 x 0.1 mm and RF In, Out pads are 0.07 mm wide.
Chip thickness = 0.1 mm.

Description

The AP218R2-00 GaAs PIN IC SPDT switch chip is ideal for low loss, high isolation applications, especially where broadband, high power handling is required. The GaAs IC employs two shunt and one series PIN diode per arm to achieve low loss, high isolation switching with exceptional power handling characteristics. Typical switching speed is 2 ns. Power consumption is low, typically 75 mA total at -5 V.

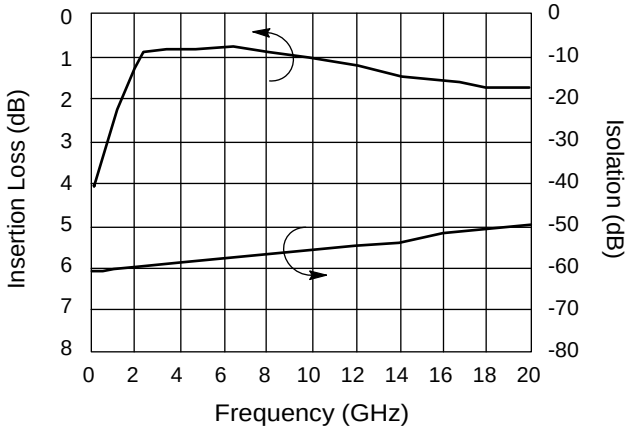
Electrical Specifications at 25°C

Parameter	Frequency	Min.	Typ.	Max.	Unit
Frequency Range	2–18 GHz				
Insertion Loss			2.0		dB
VSWR			-12	-9	dB
Isolation			50		dB

Operating Characteristics at 25°C

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Speed	Rise, Fall (10/90% or 90/10% RF)			2		nS
Switching Current	On Arm Off Arm V_{OFF}			24 48 -5		mA mA V
Input Power for 1 dB Compression	+25mA/-3.5 V			33		dBm
Control Voltages	V_{Low} V_{High}			-5 +5		V V

Typical Performance Data



Typical Insertion Loss and Isolation vs. Frequency

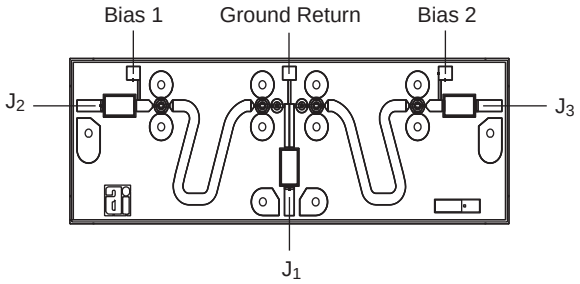
Absolute Maximum Ratings

Characteristic	Value
Operating Temperature (T_{OP})	-55°C to +125°C
Storage Temperature (T_{ST})	-65°C to +150°C
DC Reverse Bias	-70 V (-10 μA)
DC Forward Bias	1.3 V (50 mA)
P_{IN}	10 W

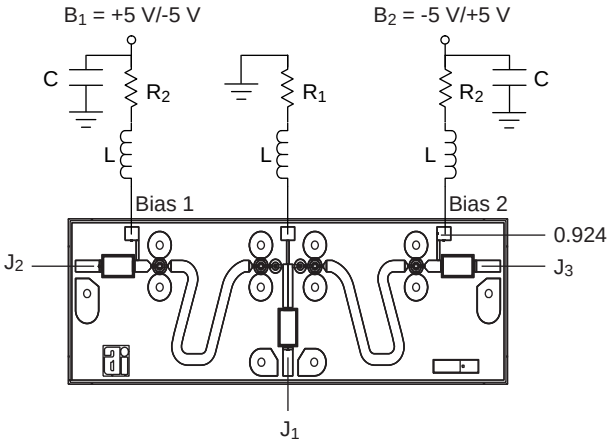
Truth Table

B_1	B_2	J_1–J_2	J_1–J_3
+5 V	-5 V	Isolation	Insertion Loss
-5 V	+5 V	Insertion Loss	Isolation

Chip Layout



Suggested External Bias Scheme



L = 5–10 turn 0.7 mil gold wire air core
C = 5–20 pF
R_1 = 820 Ω
R_2 = 180 Ω