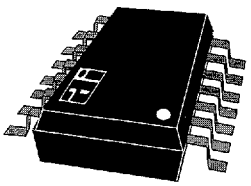
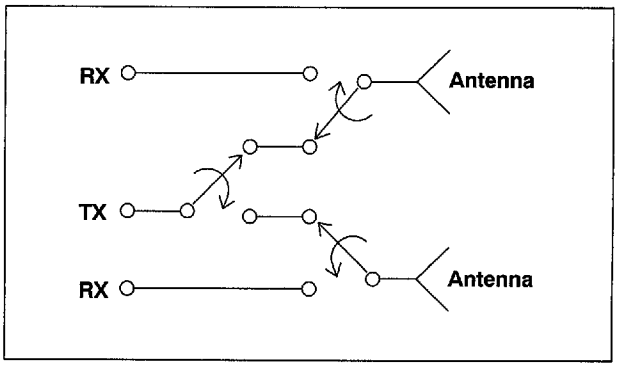
GaAs Dual Antenna T/R Switch
DC–2.5 GHz

AS113–24

Features

- Transmit to either of Two Antenna Ports
- Receive from both Antenna Ports
- Operates with 0, –5 Volts
- Low DC Power Consumption
- Low Cost Plastic Package





Description

Alpha's new GaAs MMIC T/R switch is packaged in a SOIC 14 lead plastic package and is designed for low cost commercial applications.

Electrical Specifications at 25°C

Parameter		Min	Typ	Max	
Path: TX Mode					
Insertion Loss (Tx to Ant.)	DC–1 GHz DC–2 GHz DC–2.5 GHz	– – –	0.9 0.95 1.5	1.1 1.1 1.7	dB dB dB
Isolation (Ant. to Rx)	DC–1 GHz DC–2 GHz DC–2.5 GHz	25 17 16	27 20 19		dB dB dB
VSWR	DC–1 GHz DC–2 GHz DC–2.5 GHz			1.25:1 1.5:1 1.6	
Path: RX Mode					
Insertion Loss (Ant. to Rx)	DC–1 GHz DC–2 GHz DC–2.5 GHz		0.6 0.95 0.9	0.9 1.0 1.2	dB dB dB
Isolation (Ant. to Tx)	DC–1 GHz DC–2 GHz DC–2.5 GHz	30 24 20	33 27 25		dB dB dB
VSWR	DC–1 GHz DC–2 GHz DC–2.5 GHz			1.25:1 1.6:1 1.7:1	

Operating Characteristics at 25°C

Impedance	50 Ohms Nominal		
Switching Characteristics (Tx/Rx Mode			
RISE, FALL (10/90% or 90/10% RF)	50	ns	Typ
ON, OFF (50% CTL to 90/10% RF)	100	ns	Typ
Video Feedthru	50	mV	Typ
Intermodulation Intercept Point for two–tone input power up to +13 dBm @ Vlow = 0V, Vhigh = –5V (Tx/Rx Mode)			
Intercept Points	**IP3**		
1.9 GHz	44	dBm	Typ
Input Power for 1 dB Compression (Tx) @ 1.9 GHz			
Control Voltages	**0/–6V**		
Tx to Ant.	34	dBm	Typ
Ant. to Rx	30	dBm	Typ
Control Voltages			
Low (0)	–0.2/0V @ 20 µA Max		
High (1)	–6/–3V @ 300 µA Max		

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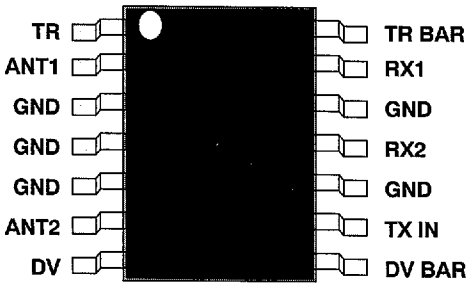
Truth Table

TR	TR Bar	DV	DV Bar	Function
0	–5	0	–5	TX–ANT2 Ins
0	–5	–5	0	TX–ANT1 Ins
–5	0	X	X	Both Antennas Receive

Pin Out



Absolute Maximum Ratings

RF Input Power:
Tx Mode 4W ≥ 800 MHz,
Rx Mode 2W ≥ 800 MHz

Control Voltage: +0.2, –8.0V

Operating Temperature: –40°C to +85 °C

Storage Temperature: –65 °C to 150 °C

Θ_{JC}: 25 °C/W

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Typical Performance Data

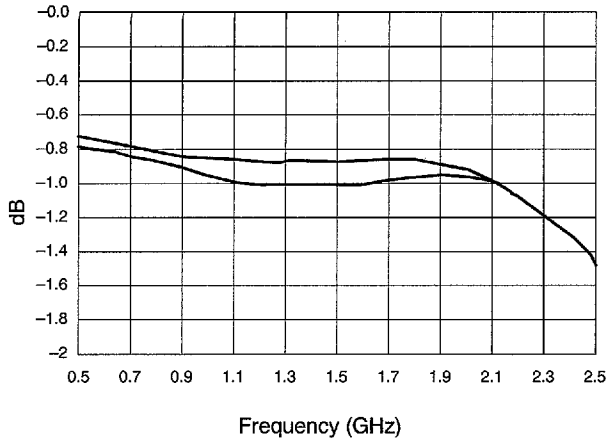

Figure 1. Transmit Insert Loss
TX–ANT1, TX–ANT2

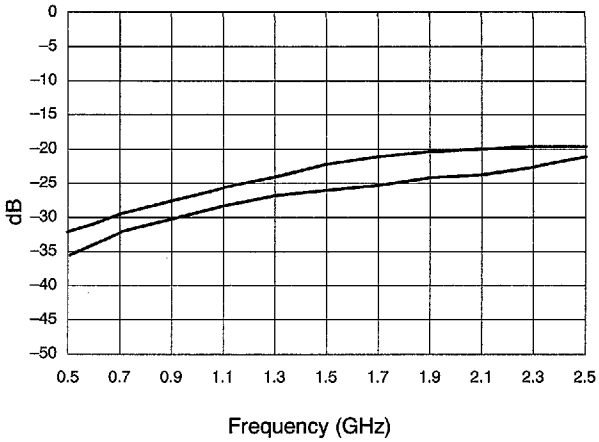

Figure 2. Receive Isolation During Transmit
RX1 Isolation, RX2 Isolation

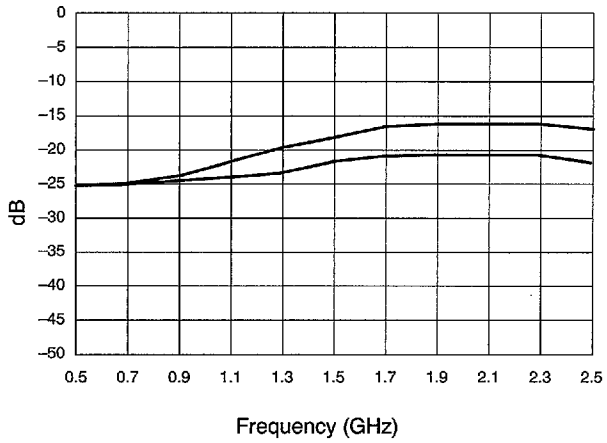

Figure 3. Transmit Return Loss
TX–ANT1, TX–ANT2

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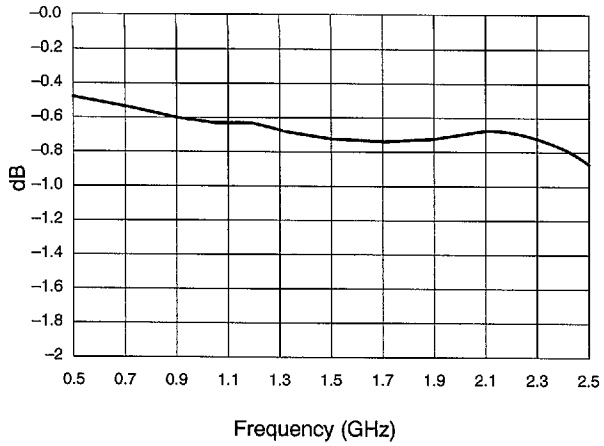

Figure 4. Receive Insertion Loss ANT1–RX1, ANT2–RX2

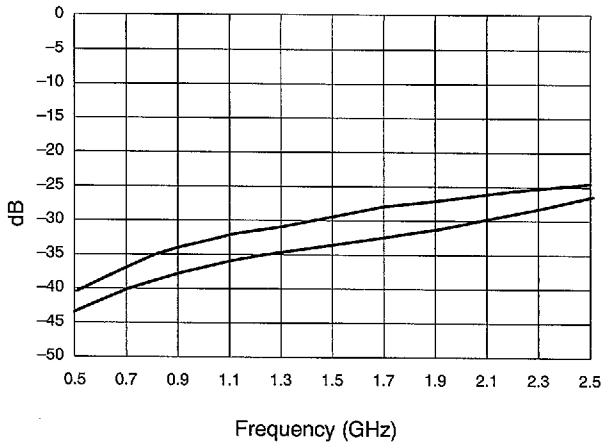

Figure 5. Transmit Isolation During Receive

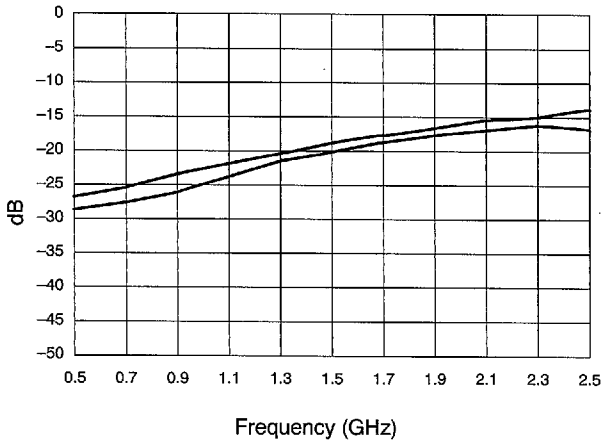

Figure 6. Receive Return Loss ANT1–RX1, ANT2–RX2

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RF GaAs MMIC Products in Metal Packages

Numerical Index