

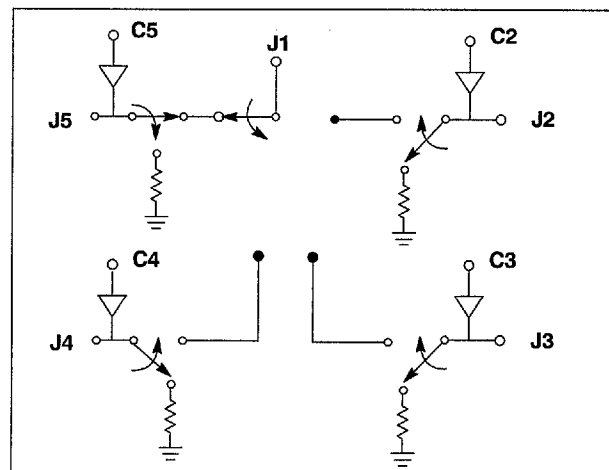
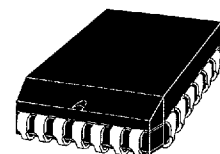
FET SP4T Non-Reflective Switch With Integral Driver In PLCC 28 Package DC-3 GHz



AK002M4-47

Features

- Integral Driver +5V, -5V Bias Supplies; CMOS and TTL Compatible
- Low DC Power Consumption ~ 20 mW per Arm
- 28 Lead Plastic Chip Carrier (PLCC)
- Individual TTL Control for Each Port
- Non-Reflective
- Base Station Switch Matrix Applications



Description

The AK002M4-47 is a SP4T non-reflective FET MMIC switch. The switch consists of a GaAs SP4T chip and an integral driver. This unit is used in telecommunication applications (e.g. base station switch matrixes) and requires 4 lines of control logic.

Electrical Specifications at 25°C

Insertion Loss ¹	DC - 0.5 GHz	1.1	dB	Max
	DC - 1 GHz	1.4	dB	Max
	DC - 2 GHz	1.6	dB	Max
	DC - 3 GHz	2.1	dB	Max
Isolation	DC - 0.5 GHz	48	dB	Min
	DC - 1 GHz	42	dB	Min
	DC - 2 GHz	33	dB	Min
	DC - 3 GHz	27	dB	Min
VSWR (I/O)	DC - 0.5 GHz	1.3:1		Max
	DC - 1 GHz	1.5:1		Max
	DC - 3 GHz	1.7:1		Max

1. Insertion loss changes by 0.003 dB/°C.

2. Measured in 500 MHz bandwidth with 1 ns risetime pulse.

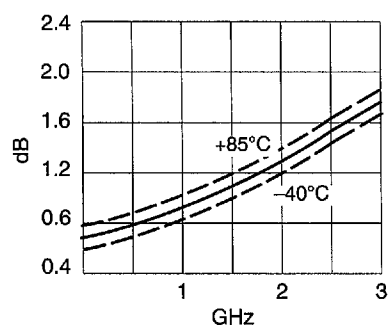
3. Bias voltage and ground must be connected before TTL voltage is applied to avoid irreversible damage to the device. Consult factory for application notes.

Operating Characteristics at 25°C

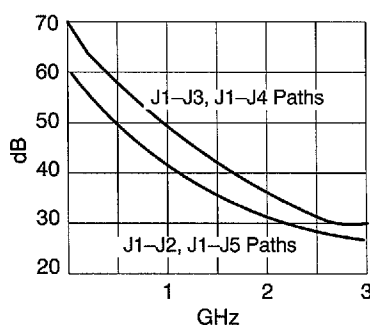
Impedance	50 Ohms Nominal		
Switching Characteristics			
RISE, FALL (10/90% or 90/10% RF)	15	ns	Typ
ON, OFF (50% CTL to 90/10% RF)	35	ns	Typ
Video Feedthru ²	30	mV	Typ
Input Power for 1 dB Compression			
0.5–3 GHz	+24	dBm	Typ
0.001 GHz	+16	dBm	Typ
Intermodulation Intercept Point for two–tone input power up to +13 dBm			
Intercept Points	IP2	IP3	
0.5–2 GHz +68	+62	+40	dBm Typ
0.001 GHz +57	+51	+29	dBm Typ
Logic Drives (Volts)			
	Min	Max	
Low (0)	0	0.5	Volts
High (1)	4	5	Volts
Bias Voltage			
	+5V ± 0.5V @ 3 mA Typ		
	–5V ± 0.25V @ 16 mA Typ ^{3,4}		

4. Current increases from 16 mA to 20 mA @ +85°C.

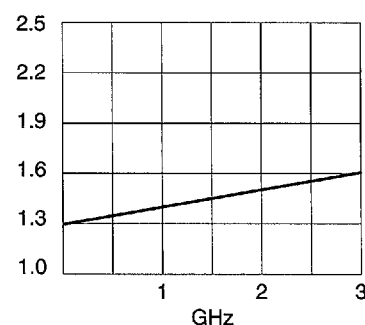
Typical Performance Data



Insertion Loss vs. Frequency

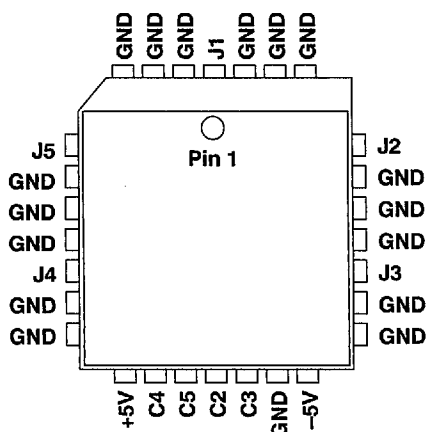


Isolation vs. Frequency



VSWR vs. Frequency

Pin Out¹



Absolute Maximum Ratings

RF Input Power:	0.8W > 500 MHz
	0.2W @ 50 MHz
Bias Voltages:	+7.0V, -7V
Control Voltages:	+7.0V
Operating Temperature:	-40°C to 85°C
Storage Temperature:	-65 to 150°C
Thermal Resistance:	30°C/W

Truth Table

Control Logic				Condition of J1 to:			
C2	C3	C4	C5	J2	J3	J4	J5
0	0	0	0	Insertion Loss	Insertion Loss	Insertion Loss	Insertion Loss
0	1	1	1	Insertion Loss	Isolation	Isolation	Isolation
1	0	1	1	Isolation	Insertion Loss	Isolation	Isolation
1	1	0	1	Isolation	Isolation	Insertion Loss	Isolation
1	1	1	0	Isolation	Isolation	Isolation	Insertion Loss
1	1	1	1	Isolation	Isolation	Isolation	Isolation

1. For schematic diagram refer to AK002M4-00.

RF GaAs MMIC Products in Metal Packages

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