

GaAs IC SPDT Switch Chip

DC–6 GHz With Independent Bias Control



AS006R2-00, AS006M2-00

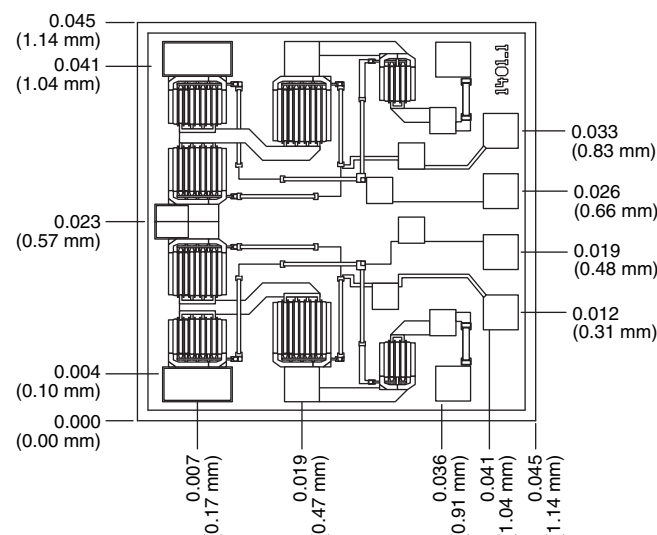
Features

- Independent Bias Control of Series and Shunt FETs
- Non-Reflective or Reflective Option
- Excellent Intermodulation and Temperature Stability
- Fast Switching, Low Transients

Description

The AS006R2-00 and AS006M2-00 are designed for applications up to 6 GHz which require low loss and medium isolation. The chip is a rugged .008" thick, and has a fully passivated surface allowing for ease of handling for MCM assemblies. Ti/W/Au gate metal makes this product ideal for commercial, SatCom and military applications.

Chip Outline



Dimensions indicated in mm.
All bonding pads are 0.1 x 0.1 mm.
Chip thickness = 0.2 mm.

Electrical Specifications at 25°C

Parameter ¹	Frequency ⁵	AS006R2-00		AS006M2-00		Unit
		Min.	Max.	Min.	Max.	
Insertion Loss ²	DC–1.0 GHz		0.9		1.0	dB
	DC–2.0 GHz		1.0		1.1	dB
	DC–4.0 GHz		1.3		1.4	dB
	DC–6.0 GHz		1.6		1.7	dB
Isolation	DC–1.0 GHz	55		57		dB
	DC–2.0 GHz	49		50		dB
	DC–4.0 GHz	38		40		dB
	DC–6.0 GHz	30		32		dB
VSWR ³	DC–1.0 GHz		1.2:1		1.2:1	
	DC–2.0 GHz		1.3:1		1.3:1	
	DC–4.0 GHz		1.5:1		1.5:1	
	DC–6.0 GHz		1.5:1		1.6:1	

Operating Characteristics at 25°C

Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics	Rise, Fall (10/90% or 90/10% RF)			3		ns
	On, Off (50% CTL to 90/10% RF)			6		ns
	Video Feedthru ⁴			20		mV
Input Power for 1 dB Compression	0/-5 V (0/-8 V)	0.5–6 GHz		24 (30)		dBm
		0.001 GHz		16 (20)		dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power 13 dBm	0.5–6 GHz		46		dBm
		0.001 GHz		35		dBm
Control Voltages	$V_{Low} = 0 \text{ to } -0.2 \text{ V @ } 20 \mu\text{A Max.}$ $V_{High} = -5 \text{ V @ } 50 \mu\text{A to } -9 \text{ V @ } 200 \mu\text{A Max.}$					

1. All measurements made in a 50 Ω system, unless otherwise specified.

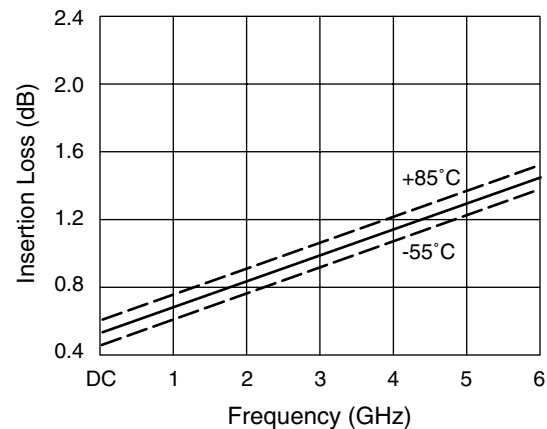
2. Insertion loss changes by 0.003 dB/°C.

3. VSWR for input and output, AS006M2-00 only.

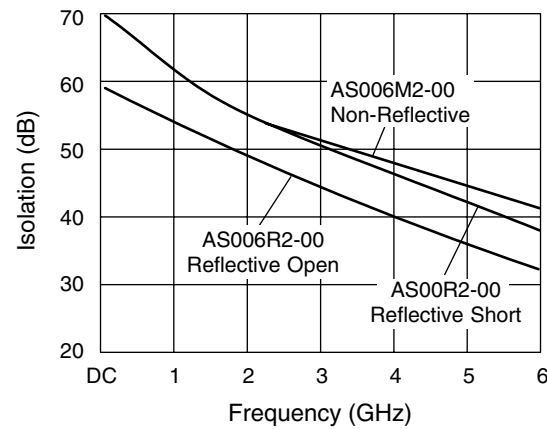
4. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

5. DC = 300 kHz.

Typical Performance Data

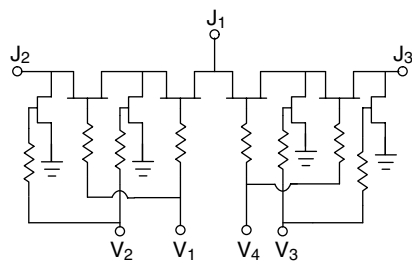


Insertion Loss vs. Frequency

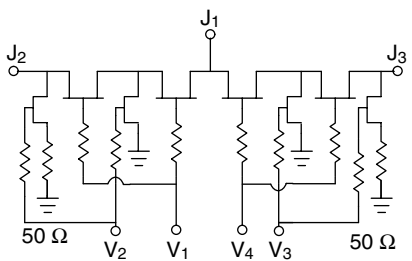


Isolation vs. Frequency

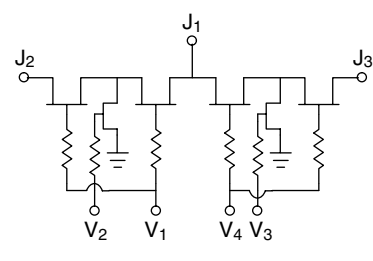
Truth Table and Bonding Options



AS006R2-00 Reflective Short



AS006M2-00 Non-Reflective



AS006R2-00 Reflective Open

Option	J ₁ –J ₂	J ₁ –J ₃	V ₁ , V ₃	V ₂ , V ₄	A	B, C	D	E	F, G	H, K
AS006R2-00	Ins. Loss	Isolation	0	-5	J ₁	GND	J ₂	J ₃	NC	GND
	Isolation	Ins. Loss	-5	0						
AS006M2-00	Ins. Loss	Isolation	0	-5	J ₁	GND	J ₂	J ₃	GND	NC
	Isolation	Ins. Loss	-5	0						

Absolute Maximum Ratings

Characteristic	Value
RF Input Power (RF In)	2 W > 500 MHz 0-8 V 0.5 W @ 50 MHz 0-8 V
Control Voltage (V _C)	+0.2 V, -10 V
Operating Temperature (T _{OP})	-40°C to +90°C
Storage Temperature (T _{ST})	-65°C to +150°C
Thermal Resistance (Θ _{JC})	25°C/W

Chip Layout

