Features

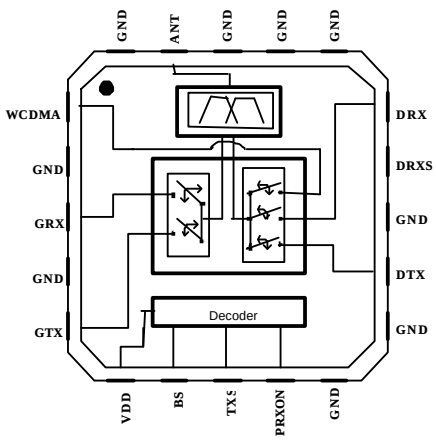
- GSM Power Handling with +2.0 V Control Voltage
- Low Power Consumption. Less than 1µA in Rx Mode.
- Integrated Low Loss Diplexer.
- Integrated Decoder.
- Leadless 5x 5 mm FQFP-N, 20 Pin Package.
- Low Insertion Loss, 0.8 dB in GSM Transmit Mode.
- Excellent Harmonic Characteristics.

Description

The M/A-COM MASWSS0049 is a GaAs monolithic switch in a low cost, FQFP-N, surface mount plastic package. The MASWSS0049 is ideally suited for applications where very low power consumption, high power handling, and low cost are required. The MASWSS0049 includes an integrated decoder and a low loss diplexer. The switch offers GSM power handling with below +2.5V control voltage. The supply voltage VDD should be connected to the highest available voltage.

The MASWSS0049 is fabricated using a new 0.5-micron gate length GaAs pHEMT process. The process features full chip passivation for increased performance and reliability. This switch is designed for Dual Mode WCDMA/GSM/DCS handsets where the phone needs to be able to simultaneously receive a WCDMA and GSM signal.

Functional Schematic



Ordering Information

Part Number	Description
MASWSS0049-XFLT1	MASWSS0049 on 1000 Piece Tape and Reel
MASWSS0049-XFLT3	MASWSS0049 on 3000 Piece Tape and Reel
MASWSS0049-XFLS0	MASWSS0049 Sample Test Board

* If specific reel size is required, consult factory for part number assignment

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ELECTRICAL CHARACTERISTICS: Test Conditions: VDD = 2.5V, Vctrl =2.0V, T_A = +25°C

Mode	Specifications	Freq. (MHz)	Units	Min.	Typ.	Max.
ANT -> GSM RX	Insertion Loss	925 -960	dB		1.3	
ANT -> UMTS Tx	Insertion Loss	1920-1980	dB		1.4	
ANT -> UMTS Rx	Insertion Loss	2110-2170	dB		1.25	
	Isolation ANT to DCS Tx	1710-1785	dB		22	
	Isolation ANT to GSM Tx	880 – 915	dB		17	
	Isolation UMTS to DCS Rx	1920 –1980	dB		30	
	Isolation UMTS to GSM Rx	1920 –1980	dB		30	
	Isolation UMTS to GSM Tx	1920 –1980	dB		30	
	Isolation DCS Tx to DCS Rx	1710 – 1785	dB		30	
	Isolation DCS Tx to GSM Rx	1710 – 1785	dB		30	
	Isolation GSM Tx to DCS Rx	880 – 915	dB		30	
	Isolation GSM Tx to GSM Rx	880 - 915	dB		18	
ANT -> DCS RX	Insertion Loss	1805 -1880	dB		1.45	
	Isolation ANT to DCS Tx	1710 – 1785	dB		24	
	Isolation ANT to GSM Tx	880 – 915	dB		13	
	Isolation DCS Tx to DCS Rx	1710 – 1785	dB		25	
	Isolation DCS Tx to GSM Rx	1710 – 1785	dB		30	
	Isolation GSM Tx to DCS Rx	880 – 915	dB		30	
	Isolation GSM Tx to GSM Rx	880 - 915	dB		30	
ANT -> GSM TX	Insertion Loss	880 – 915	dB		0.8	
	Isolation GSM Tx to UMTS	880 – 915	dB		30	
	Isolation GSM Tx to DCS Rx	880 – 915	dB		30	
	Isolation GSM Tx to GSM Rx	880 – 915	dB		25	
	Isolation DCS Tx to DCS Rx	1710 – 1785	dB		30	
	Isolation DCS Tx to GSM Rx	1710 – 1785	dB		30	
ANT -> DCS TX	Insertion Loss	1710 –1785	dB		1.4	
	Isolation DCS Tx to UMTS	1710 –1785	dB		25	
	Isolation DCS Tx to DCS Rx	1710 –1785	dB		30	
	Isolation DCS Tx to GSM Rx	1710 –1785	dB		30	
	Isolation GSM Tx to DCS Rx	880 – 915	dB		30	
	Isolation GSM Tx to GSM Rx	880 – 915	dB		30	
2nd Harmonics	Freq = 900 MHz, Input Power = +34 dBm		dBc		-90	
	Freq = 1810 MHz, Input Power = +32 dBm		dBc		-74	
3rd Harmonics	Freq = 900 MHz, Input Power = +34 dBm		dBc		-80	
	Freq = 1810 MHz, Input Power = +32 dBm		dBc		-76	
Supply Voltage			Volts		2.5	
High Control Voltages			Volts	2.0	2.5	
Low Control Voltages			Volts		0	

1. DC blocking capacitors are required on all RF and shunt ports.
2. All impedances are 50 ohms

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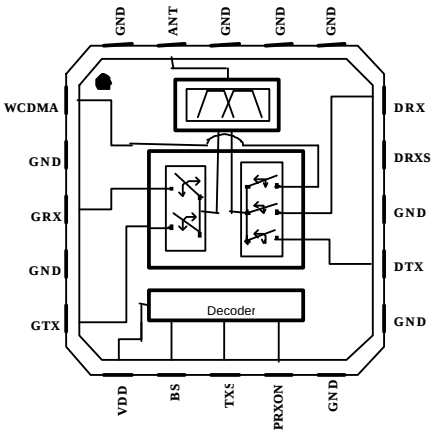
Pin Configuration

Pin No.	Pin Name	Description
1	WCDMA	WCDMA Port
2	GND	RF Ground
3	GRX	GSM Rx Port
4	GND	RF Ground
5	GTX	GSM Tx Port
6	VDD	Decoder Vdd
7	BS	Control 1
8	TXS	Control 2
9	PRXON	Control 3
10	GND	RF Ground
11	GND	RF Ground
12	DTX	DCS Tx Port
13	GND	RF Ground
14	DRXS	DCS Rx Shunt
15	DRX	DCS Rx Port
16	GND	RF Ground
17	GND	RF Ground
18	GND	RF Ground
19	ANT	Antenna
20	GND	RF Ground
21	GND	Paddle

Block Diagram

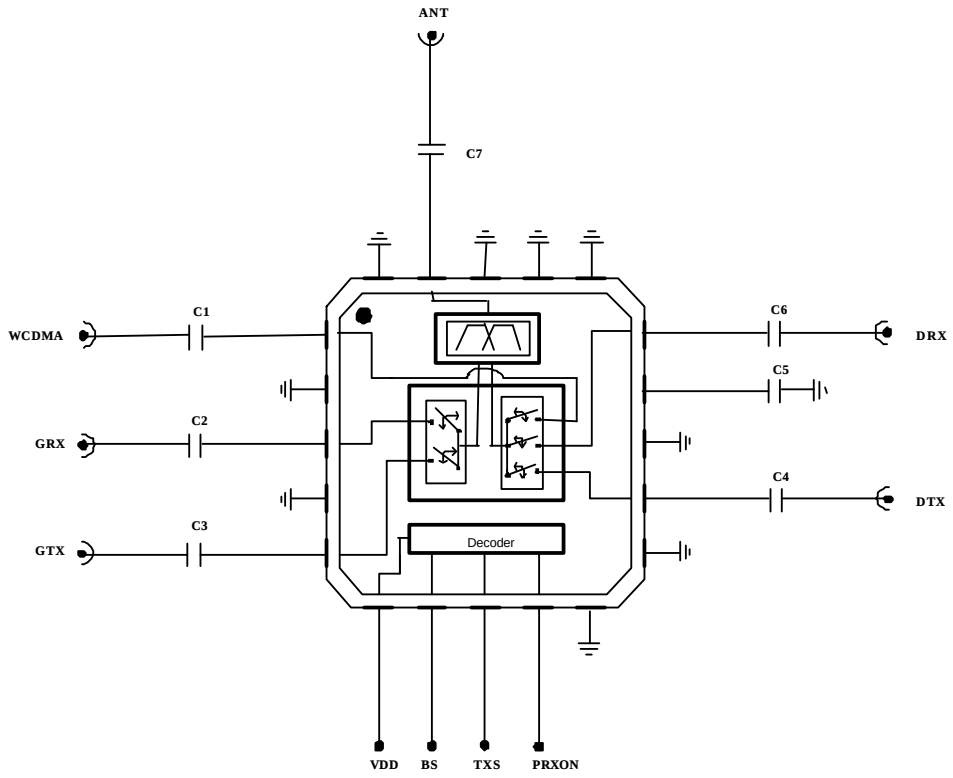


Truth Table

BS	TXS	PRXON	MODE
0	0	0	GSM RX – ANT WCDMA – ANT
0	1	0	GSM TX – ANT
1	1	0	DCS TX – ANT
1	0	0	DCS RX – ANT

Logic Level	Voltage Level
VLo “0”=	0 V
VHi “1”=	2.5 V

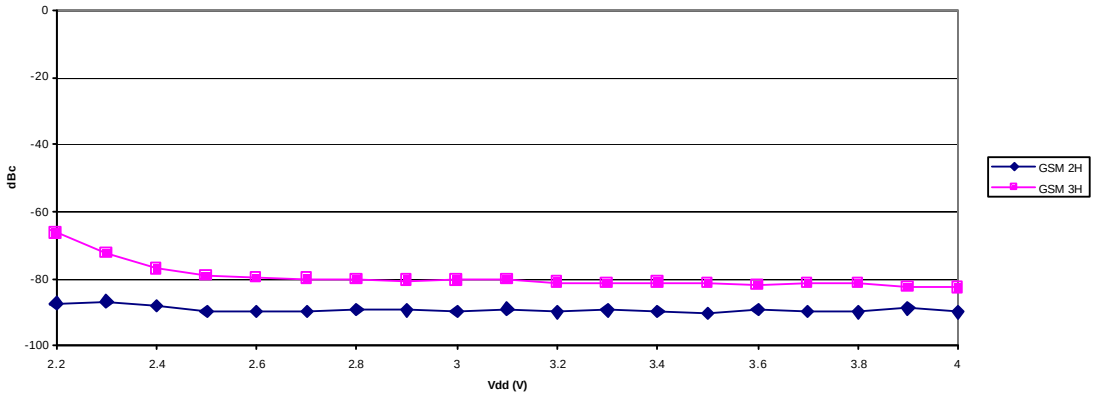
Sample Board Schematic



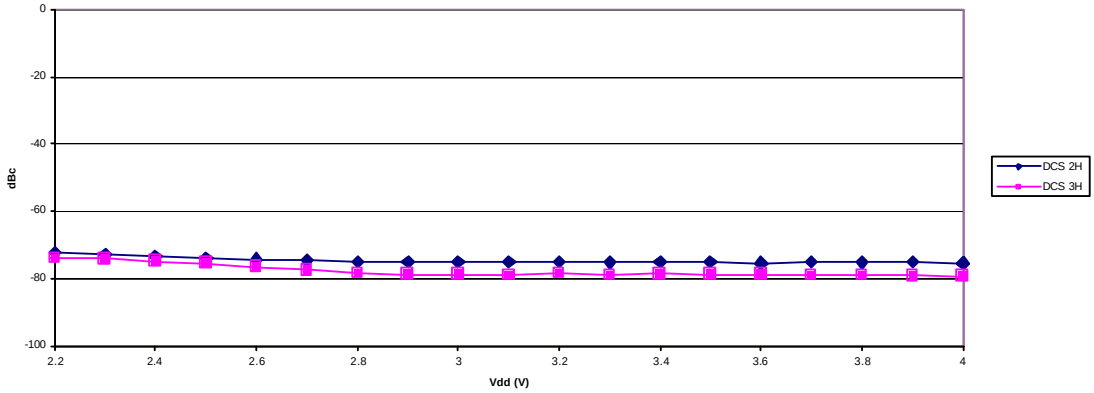
External Circuitry Parts List (Note: Values of external elements not final)

Ref. Designation	Value	Purpose
C1	22 pF	DC Block
C2	22 pF	DC Block
C3	22 pF	DC Block
C4	22 pF	DC Block
C5	4.7 pF	RF Shunt
C6	22 pF	DC Block
C7	22 pF	DC Block

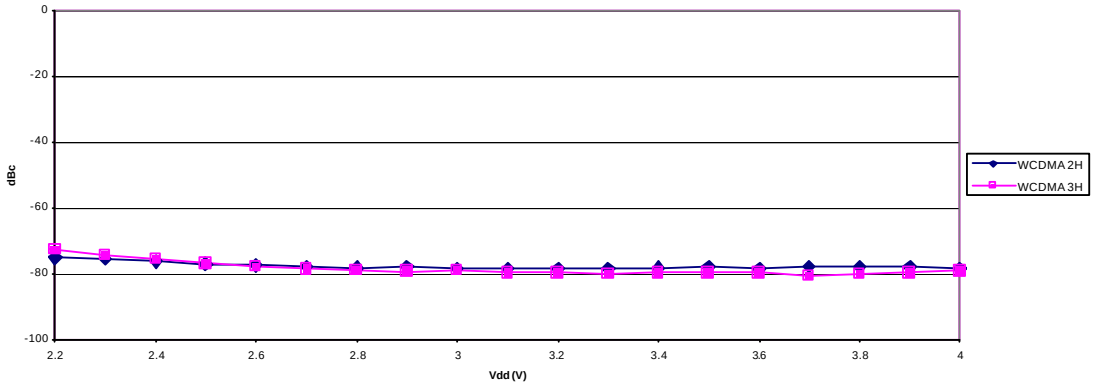
MASWSS0049 Harmonics at the GSM TX Port versus Voltage
Pin = 34 dBm, Vcontrol=2V



MASWSS0049 Harmonics at the DCS TX Port versus Voltage
Pin = 32 dBm, Vcontrol=2V



MASWSS0049 Harmonics at the WCDMA Port versus Voltage
Pin = 29 dBm, Vcontrol=2V



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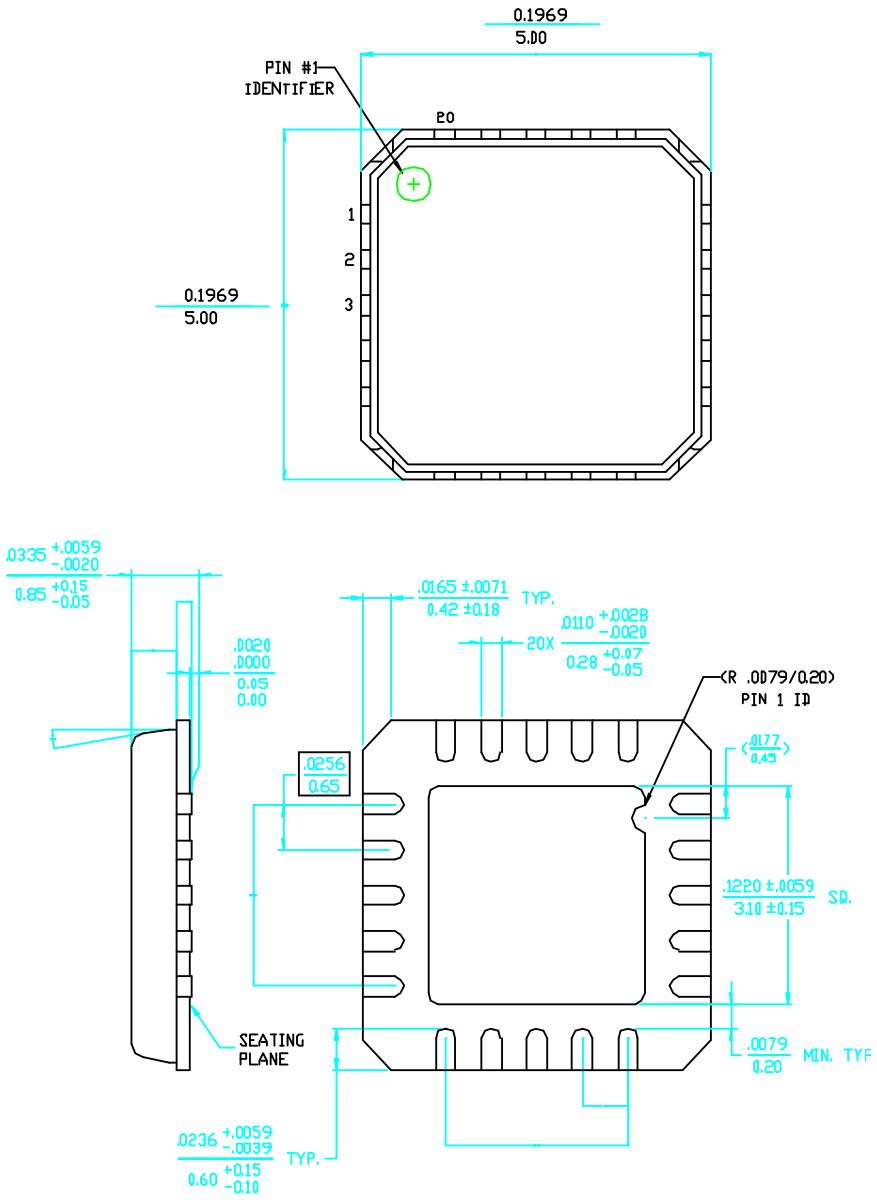
5 mm FQFP-N, 20-Lead



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