



2V Dual Mode WCDMA & Triple Band GSM/DCS/PCS SP6T Switch 0.5 - 2.0 GHz

V 1P.00

Preliminary

MASWSS0055

Features

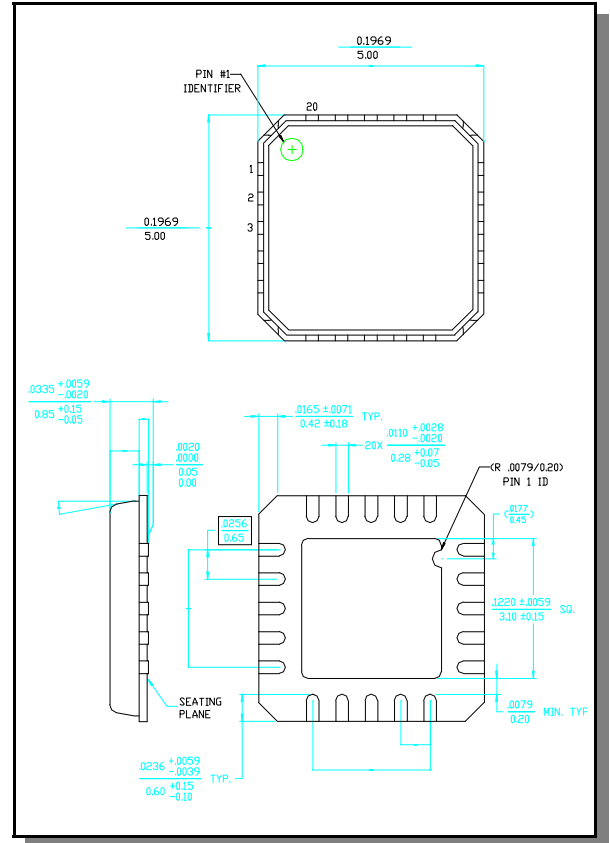
- GSM Power Handling with +2.0V Control Voltage
- Low Power Consumption. Less than 1 μ A in Rx Mode
- Integrated Low Loss Diplexer
- Integrated Decoder
- Leadless 5 x 5 mm FQFP-N, 20 Pin Package
- Low Insertion Loss, 0.8 dB in GSM Transmit Mode
- Excellent Harmonic Characteristics

Description

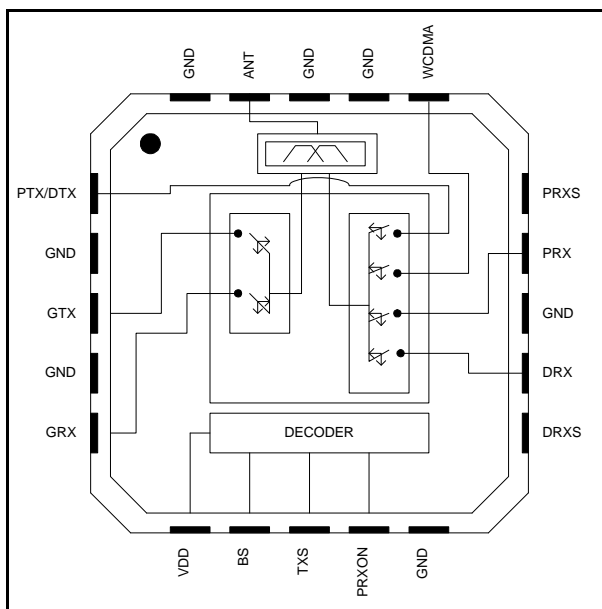
The M/A-COM MASWSS0055 is a GaAs monolithic switch in a low cost, FQFP-N surface mount plastic package. The MASWSS0055 is ideally suited for applications where very low power consumption, high power handling, and low cost are required. The MASWSS0055 includes an integrated decoder and a low loss diplexer. 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 MASWSS0055 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, Triple band GSM/DCS/PCS handsets where the phone needs to be able to simultaneously receive a WCDMA and GSM signal.

5 mm FQFP-N, 20-Lead



Functional Schematic



Absolute Maximum Ratings ¹

Parameter	Absolute Maximum
Max Input Power (0.5 - 2.0 GHz, 2.0V Control)	+38 dBm
Operating Voltage	+8.5 Volts
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

1. Operation of this device above any one of these parameters may cause permanent damage.

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

Mode	Specifications	Freq. (MHz)	Units	Min.	Typ.	Max.
ANT2 -> GSM RX	Insertion Loss	925 -960	dB	—	1.25	—
ANT1 -> UMTS Tx	Insertion Loss	1920-1980	dB	—	1.5	—
ANT1 -> UMTS Rx	Insertion Loss	2110-2170	dB	—	1.35	—
	Isolation ANT to DCS Tx	1710-1785	dB	—	20	—
	Isolation ANT to GSM Tx	880 – 915	dB	—	20	—
	Isolation UMTS to DCS Rx	1920 –1980	dB	—	30	—
	Isolation UMTS to PCS 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	1710 – 1785	dB	—	20	—
ANT1 -> DCS RX	Insertion Loss	1805 -1880	dB	—	1.55	—
	Isolation ANT to DCS Tx	1710 – 1785	dB	—	20	—
	Isolation ANT to GSM Tx	880 – 915	dB	—	15	—
	Isolation DCS Tx to DCS Rx	1710 – 1785	dB	—	20	—
	Isolation DCS Tx to PCS 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 PCS Rx	880 - 915	dB	—	30	—
	Isolation GSM Tx to GSM Rx	880 - 915	dB	—	30	—
ANT1 -> PCS RX	Insertion Loss	1930-1990	dB	—	1.55	—
	Isolation ANT to DCS Tx	1710 – 1785	dB	—	20	—
	Isolation ANT to GSM Tx	880 – 915	dB	—	15	—
	Isolation DCS Tx to DCS Rx	1710 – 1785	dB	—	30	—
	Isolation DCS Tx to PCS Rx	1710 - 1785	dB	—	20	—
	Isolation DCS Tx to GSM Rx	1710 – 1785	dB	—	30	—
	Isolation GSM Tx to DCS Rx	880 – 915	dB	—	30	—
	Isolation GSM Tx to PCS Rx	880 - 915	dB	—	30	—
	Isolation GSM Tx to GSM Rx	880 - 915	dB	—	30	—
ANT2 -> 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 PCS 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 PCS Rx	1710 -1785	dB	—	30	—
	Isolation DCS Tx to GSM Rx	1710 – 1785	dB	—	30	—
ANT1 -> DCS TX	Insertion Loss	1710 –1785	dB	—	1.45	—
	Isolation DCS Tx to UMTS	1710 –1785	dB	—	20	—
	Isolation DCS Tx to DCS Rx	1710 –1785	dB	—	30	—
	Isolation DCS Tx to PCS 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 PCS Rx	880 - 915	dB	—	30	—
	Isolation GSM Tx to GSM Rx	880 – 915	dB	—	30	—
2nd Harmonics			dBc	—	-84	-70
3rd Harmonics			dBc	—	-78	-65
Supply Voltage			Volts	2.0	2.5	4.0
High Control Voltages			Volts	2.0	2.5	4.0

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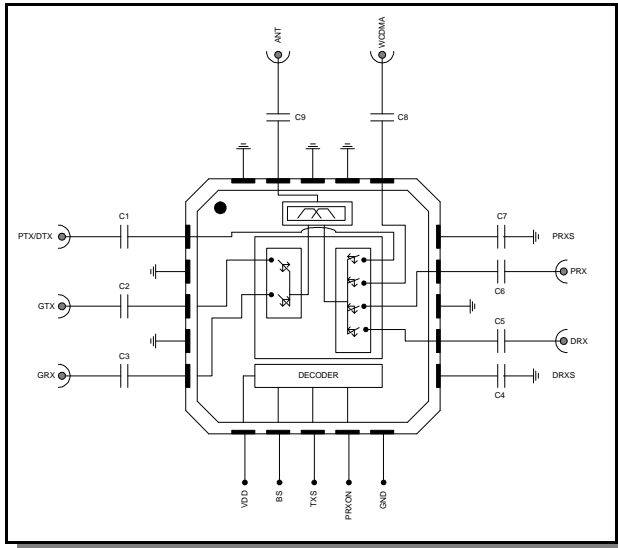
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Sample Board Schematic



External Circuitry Parts List

Ref. Designation	Value	Purpose
C1	22 pF	DC Block
C2	22 pF	DC Block
C3	22 pF	DC Block
C4	4.7 pF	RF Shunt
C5	22 pF	DC Block
C6	22 pF	DC Block
C7	4.7 pF	RF Shunt
C8	22 pF	DC Block
C9	22 pF	DC Block

Note: Values of external elements not final.

Truth Table

BS	TXS	PRXON	Mode
0	0	0	GSM RX-ANT WCDMA-ANT
0	1	0	GSM TX-ANT
1	0	0	DCS RX-ANT
1	0	1	PCS RX-ANT
1	1	0	DCS TX ANT

Logic Level	Voltage Level
VLo "0" =	0 V
VHi "1" =	2.5 V

Pin Configuration

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

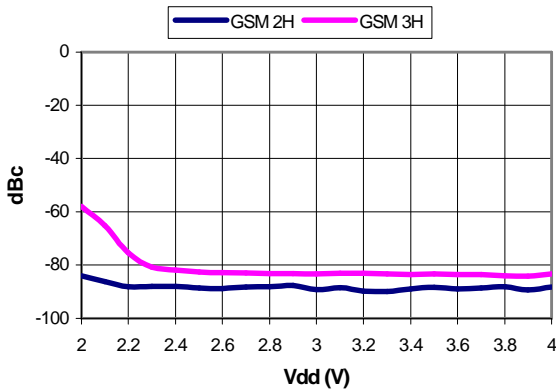
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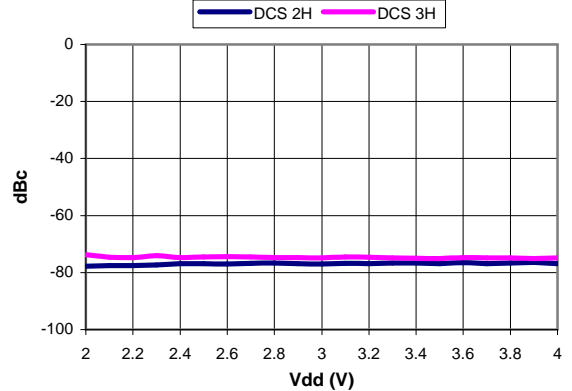
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Typical Performance Curves

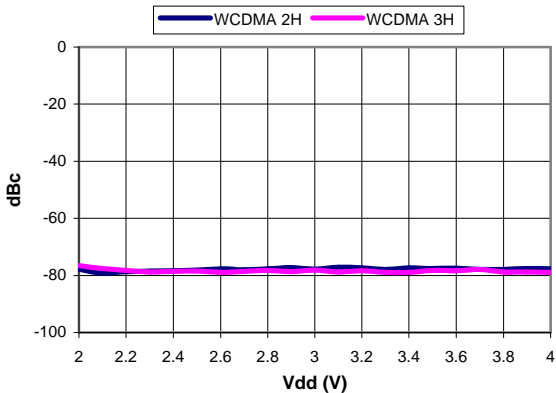
Harmonics at the GSM Tx Port vs. Voltage, Pin = 34 dBm, Vcontrol = 2V



Harmonics at the DCS Tx Port vs. Voltage, Pin = 32 dBm, Vcontrol = 2V



Harmonics at the WCDMA Tx Port vs. Voltage, Pin = 29 dBm, Vcontrol = 2V



Ordering Information

Part Number	Package
MASWSS0055-XFLT1	MASWSS0055 on 1000 Piece Tape and Reel
MASWSS0055-XFLT3	MASWSS0055 on 3000 Piece Tape and Reel
MASWSS0055-XFLS0	MASWSS0055 Sample Test Board

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