Surface Mount
Switch

MSW-2-20+

50Ω SPDT, Reflective DC[4] to 2.0 GHz



Generic photo used for illustration purposes only

CASE STYLE: XX211

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	20, 50, 100, 200, 500, 1000
13"	2000

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Input Power	see Note 1
Control Current	see Note 2

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

RF IN	1
RF OUT 1	6
RF OUT 2	3
CONTROL 1	5
CONTROL 2	4
GROUND	2,7,8

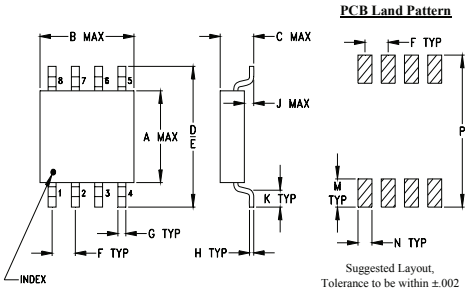
Features

- wideband, DC to 2.0 GHz
- very fast switching, 4ns typ.
- low insertion loss, 0.5 dB typ.
- low video leakage, 15 mVp-p typ.

Applications

- cellular
- PCN
- 2-way radio
- receiver antenna switching

Outline Drawing

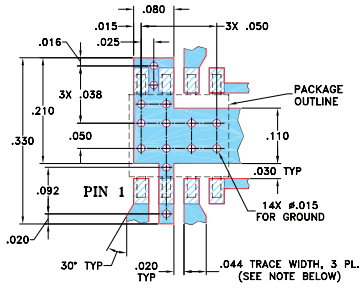


Outline Dimensions (inch / mm)

A	B	C	D	E	F	G
.163	.210	.077	.250	.220	.050	.017
4.14	5.33	1.96	6.35	5.59	1.27	0.43

H	J	K	M	N	P	wt
.009	.025	.030	.050	.030	.270	grams
0.23	0.64	0.76	1.27	0.76	6.86	0.10

Demo Board MCL P/N: TB-203
Suggested PCB Layout (PL-108)



NOTES: 1.TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2.BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Specifications

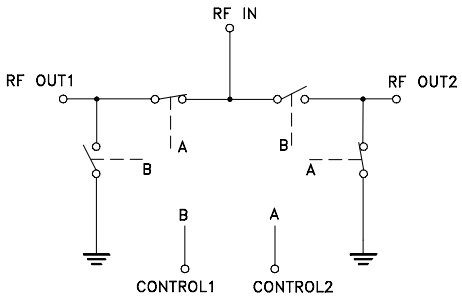
FREQ.[4] (GHz)		INSERTION LOSS (dB)								1dB COMPR. (dBm)				IN-OUT ISOLATION (dB)							
		DC-100 MHz		100-500 MHz		500-1000 MHz		1000-2000 MHz		DC-100 MHz	100-500 MHz	500-1000 MHz	1000-2000 MHz	DC-100 MHz		100-500 MHz		500-1000 MHz		1000-2000 MHz	
f_L	f_U	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Typ.	Typ.	Typ	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min
DC	2.0	0.30	0.8	0.4	0.9	0.50	1.0	0.75	1.3	22	23	24	25	55	50	43	36	34	28	24	20

Additional Specifications		
Control Voltage	-8/0 for compression spec, -8 to -5/0 for all other specs	
Control Current, mA	0.2 max to -8V, 0.02 max at 0 to -0.2V	
VSWR(:1)	DC-1GHz 1.2 typ.	1-2GHz 1.4 typ.
Rise/Fall time (10%-90%), ns Switching time, 50% of Control to 90% RF(Turn-on), ns 10% RF(Turn-off), ns	4 typ. 10 typ 4 typ	
**Video Leakage, mVp-p 0/-5V Control	19 typ.	

CONTROL LOGIC			
Control Ports		RF outputs	
1	2	1	2
0	-V	Off	On
-V	0	On	Off

** Video leakage or break through is defined as leakage of switching signal to RF output ports.
1. RF Power Input(dBm), Max.DC-100MHz100-500MHz500-2000MHz
• Steady State Control 0/-8V 23 27 31
• As a Modulator 11 17 21
2. Control Current, 500µA (occurs at -9V to -12V typ)
3. OFF state of RF output is low impedance
4. All RF connections must be DC blocked or held at 0V DC.

Electrical Schematic



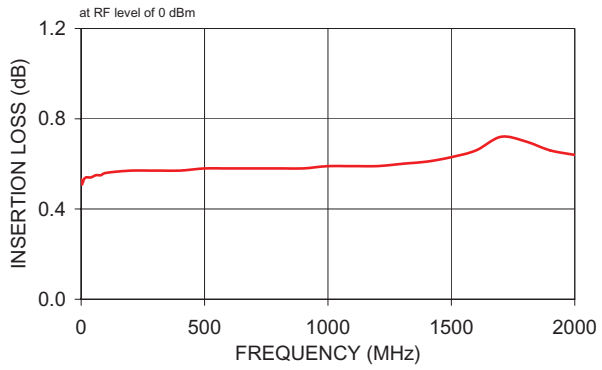
Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Mini-Circuits®
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

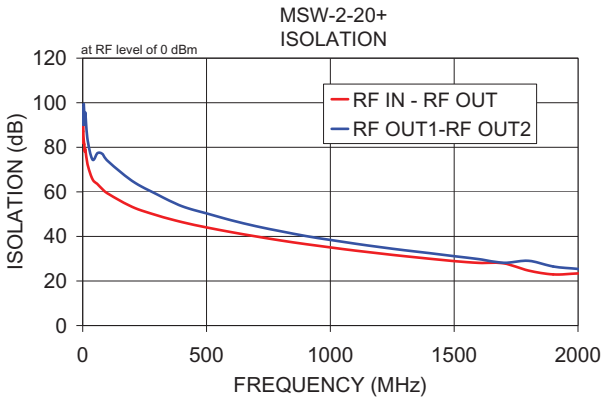
Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB) Control @ 0V/-5V)	OFF ISOLATION (dB) Control @ 0V/-5V) IN-OUT		VSWR	
				RF IN	RF OUT
	RF IN-RF OUT	RF IN-RF OUT	RF OUT1-RF OUT2		(ON PORT)
0.3	0.52	81.93	93.30	1.10	1.11
1.0	0.52	97.26	97.90	1.10	1.10
100.0	0.56	59.31	73.94	1.07	1.07
200.0	0.57	53.23	64.89	1.07	1.07
300.0	0.57	49.47	58.85	1.07	1.07
400.0	0.57	46.44	53.61	1.07	1.07
500.0	0.58	44.05	50.36	1.07	1.06
600.0	0.58	41.90	47.22	1.07	1.06
700.0	0.58	39.98	44.58	1.07	1.06
800.0	0.58	38.20	42.30	1.07	1.07
900.0	0.58	36.54	40.21	1.06	1.08
1000.0	0.59	35.06	38.40	1.06	1.09
1100.0	0.59	33.66	36.75	1.05	1.10
1200.0	0.59	32.36	35.21	1.04	1.10
1400.0	0.61	29.98	32.49	1.04	1.11
1500.0	0.63	28.91	31.14	1.03	1.11
1600.0	0.66	28.12	29.80	1.03	1.11
1800.0	0.70	24.70	29.05	1.04	1.12
1900.0	0.66	22.96	26.48	1.06	1.12
2000.0	0.64	23.40	25.43	1.06	1.13

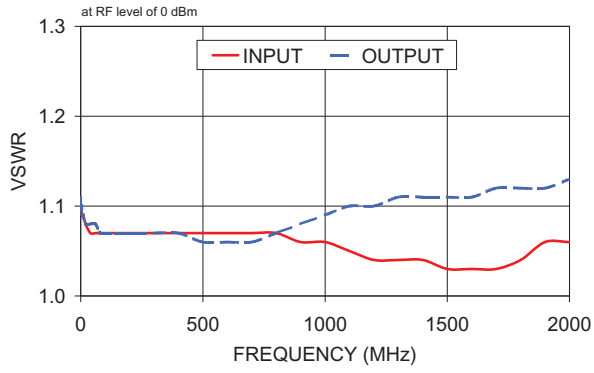
MSW-2-20+
INSERTION LOSS



MSW-2-20+
ISOLATION



MSW-2-20+
VSWR



Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp