

Surface Mount Switch

50Ω SPDT, Reflective DC to 2.0 GHz

MSW-2-20+ MSW-2-20



Maximum Ratings

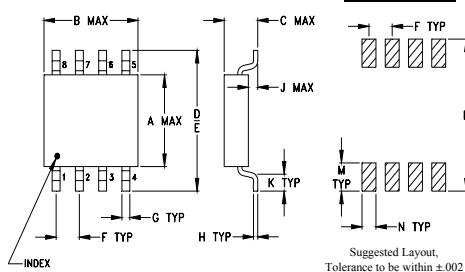
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Input Power	see Note 1
Control Current	see Note 2
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

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

Outline Drawing

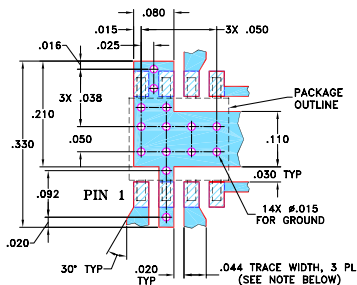
PCB Land Pattern



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.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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

CASE STYLE: XX211-1
PRICE: \$2.45 ea. QTY (10)

+ RoHS compliant in accordance
with EU Directive (2002/95/EC)

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

Electrical Specifications

FREQ. (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.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
DC	2.0	0.30	0.6	0.4	0.7	0.50	1.0	0.75	1.3	22	23	24	25	55	50	43	36	34	28	24	20	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	2 typ.	
Switching time, 50% of Control to 90% RF(Turn-on), ns	4 typ	
10% RF(Turn-off), ns	4 typ	
**Video Leakage, mVp-p 0/-5V Control	15 typ.	

** 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)

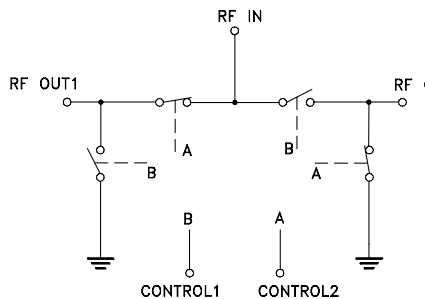
3. OFF state of RF output is low impedance

4. All RF pins must be DC blocked or held at 0V DC.

CONTROL LOGIC

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

Electrical Schematic



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ISO 9001 ISO 14001 AS 9100 CERTIFIED

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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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.

For detailed performance specs
& shopping online see web site

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MSW-2-20
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Typical Performance Data

FREQ. (MHz)	ON		OFF ISOLATION (dB)		VSWR	
	Control @ 0V/-5V		Control @ 0V/-5V		IN	
	IN-OUT		IN-OUT		OUT	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	ON \bar{x}
1.00	0.25	0.00	80.61	2.40	1.05	1.05
15.99	0.25	0.01	72.05	0.66	1.05	1.05
23.49	0.26	0.01	67.53	1.14	1.05	1.05
53.48	0.27	0.00	61.77	0.91	1.05	1.04
98.46	0.31	0.01	54.45	0.63	1.04	1.04
210.93	0.35	0.01	46.92	0.43	1.04	1.05
413.36	0.40	0.02	41.26	0.42	1.06	1.06
518.32	0.40	0.02	38.51	0.24	1.06	1.06
728.25	0.45	0.02	35.06	0.35	1.07	1.07
825.72	0.51	0.03	33.99	0.36	1.07	1.07
998.16	0.48	0.02	31.58	0.44	1.08	1.08
1140.62	0.52	0.03	29.73	0.45	1.08	1.08
1343.05	0.53	0.02	27.93	0.39	1.10	1.11
1552.98	0.59	0.01	26.40	0.31	1.16	1.17
1657.94	0.61	0.01	25.46	0.34	1.20	1.20
1755.41	0.64	0.02	24.84	0.31	1.25	1.24
1860.38	0.68	0.02	24.05	0.31	1.30	1.29
1897.86	0.69	0.02	23.79	0.27	1.33	1.31
1965.34	0.75	0.03	23.68	0.29	1.36	1.34
2002.83	0.76	0.02	23.33	0.28	1.38	1.36

