

Surface Mount Switch

50Ω SPDT, Absorptive DC³ to 2.0 GHz

MSWA-2-20+



CASE STYLE: XX211

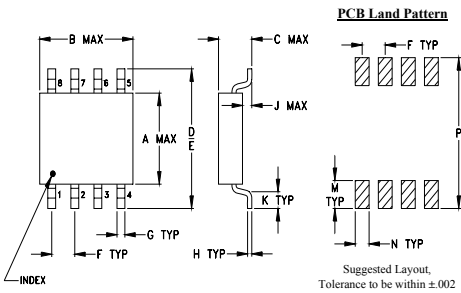
Maximum Ratings

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

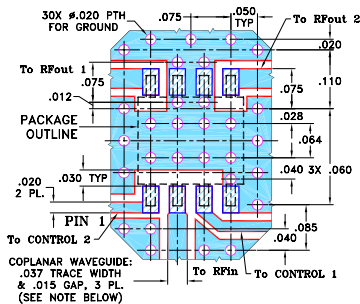
Outline Drawing



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-205 Suggested PCB Layout (PL-219)



- NOTE:
- COPLANAR WAVEGUIDE PARAMETERS ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH & GAP MAY NEED TO BE MODIFIED.
 - 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

Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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

Features

- wideband, DC to 2.0 GHz
- low video leakage, 8 mVp-p typ.
- very fast switching, 5ns typ.

Applications

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

+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 |

Electrical Specifications

| FREQ. ³ (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. |
| DC 2.0 | 0.65 0.9 | 0.9 1.2 | 0.95 1.3 | 1.20 1.5 | 20 24 | 27 29 | 60 50 | 45 37 | 40 32 | 30 25 | | | | |

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 | 3 typ. | |
| Switching time, 50% of Control to 90% RF(Turn-on), ns | 9 typ | |
| 10% RF(Turn-off), ns | 3 typ | |
| **Video Leakage, mVp-p 0/-5V Control | 19 typ. | |

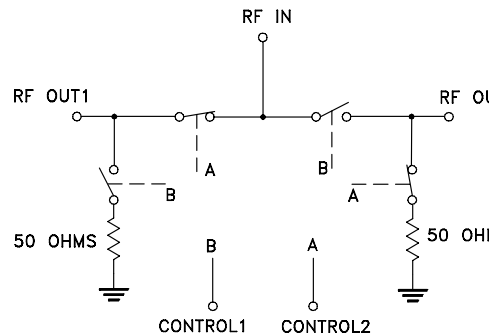
CONTROL LOGIC

| 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.

- RF Power Input (dBm), Max. DC-100MHz 100-500 MHz 500-2000MHz
 - Steady State Control 0/-8V 24 27 33
 - As a Modulator 12 17 23
- Control Current, 500µA (occurs at -9V to -12V typ.)
- All RF connections must be DC blocked or held at 0V DC.

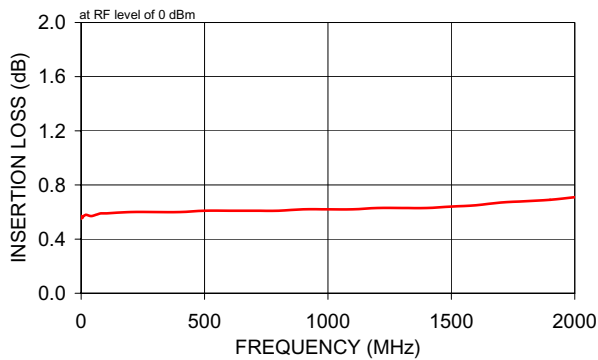
Electrical Schematic



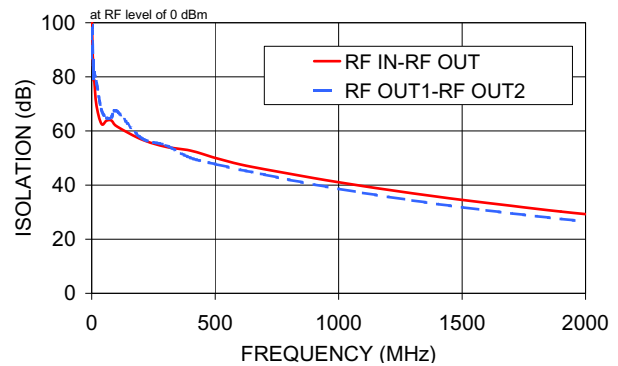
Typical Performance Data

| FREQ. (MHz) | ON INSERTION LOSS (dB) Control @ 0V/-5V) | | OFF ISOLATION (dB) Control @ 0V/-5V) | | VSWR | |
|----------------|---|-------|---|-------------------|-------|--------|
| | RF IN-RF OUT | | RF IN - RF OUT | RF OUT 1-RF OUT 2 | RF IN | RF OUT |
| | 0.3 | 0.55 | 86.64 | 87.15 | 1.11 | 1.11 |
| 10.0 | 0.57 | 78.95 | 81.46 | 1.09 | 1.10 | |
| 100.0 | 0.59 | 61.84 | 67.44 | 1.07 | 1.08 | |
| 200.0 | 0.60 | 56.95 | 57.49 | 1.08 | 1.09 | |
| 300.0 | 0.60 | 54.13 | 54.74 | 1.09 | 1.10 | |
| 400.0 | 0.60 | 52.77 | 50.08 | 1.09 | 1.10 | |
| 500.0 | 0.61 | 50.05 | 47.79 | 1.09 | 1.10 | |
| 600.0 | 0.61 | 47.67 | 45.68 | 1.09 | 1.10 | |
| 700.0 | 0.61 | 45.86 | 43.87 | 1.10 | 1.11 | |
| 800.0 | 0.61 | 44.23 | 41.94 | 1.09 | 1.11 | |
| 900.0 | 0.62 | 42.57 | 40.21 | 1.09 | 1.12 | |
| 1000.0 | 0.62 | 41.06 | 38.64 | 1.09 | 1.13 | |
| 1100.0 | 0.62 | 39.61 | 37.10 | 1.08 | 1.14 | |
| 1200.0 | 0.63 | 38.25 | 35.67 | 1.07 | 1.15 | |
| 1300.0 | 0.63 | 36.95 | 34.30 | 1.06 | 1.16 | |
| 1400.0 | 0.63 | 35.70 | 33.02 | 1.05 | 1.16 | |
| 1500.0 | 0.64 | 34.52 | 31.82 | 1.04 | 1.16 | |
| 1600.0 | 0.65 | 33.41 | 30.67 | 1.04 | 1.15 | |
| 1700.0 | 0.67 | 32.34 | 29.57 | 1.04 | 1.15 | |
| 1800.0 | 0.68 | 31.24 | 28.52 | 1.05 | 1.15 | |
| 1900.0 | 0.69 | 30.21 | 27.51 | 1.06 | 1.15 | |
| 2000.0 | 0.71 | 29.26 | 26.54 | 1.08 | 1.16 | |

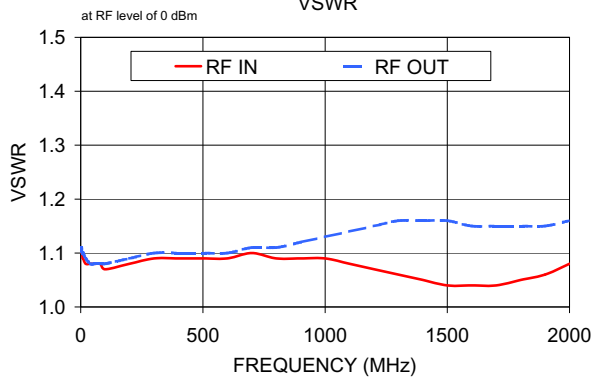
MSWA-2-20+
INSERTION LOSS



MSWA-2-20+
ISOLATION



MSWA-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

