# Coaxial Switch

# ZMSW-1111

## 50Ω SPST Pin Diode Reflective 10 to 2500 MHz


*Generic photo used for illustration purposes only*

CASE STYLE: JJ77

| Connectors | Model |
|---|---|
| **SMA** | ZMSW-1111 |

### Maximum Ratings

| | |
|---|---|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| Power | +20 dBm |
| Control Current | 5mA |

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

### Coaxial/Pin Connections

| | |
|---|---|
| RF IN | COM |
| RF OUT 2 | RF-2 |
| CONTROL 1 | 1 |
| CONTROL 2 | 2 |

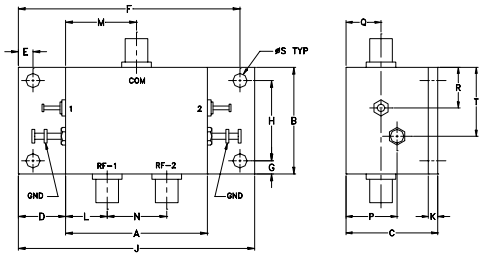
### Features

- wideband, 10 to 2500 MHz
- good isolation, 35 dB typ.

### Applications

- UHF/VHF
- satellite communicatons
- antenna switching
- test set-ups

### Outline Drawing




### Outline Dimensions (inch / mm)

| A | B | C | D | E | F | G | H | J | |
|---|---|---|---|---|---|---|---|---|---|
| 1.50 | 1.13 | .97 | .50 | .155 | 2.345 | .14 | .850 | 2.50 | |
| 38.10 | 28.70 | 24.64 | 12.70 | 3.94 | 59.56 | 3.56 | 21.59 | 63.50 | |
| K | L | M | N | P | Q | R | S | T | wt |
| .10 | .44 | .75 | .63 | .54 | .37 | .43 | .150 | .73 | grams |
| 2.54 | 11.18 | 19.05 | 16.00 | 13.72 | 9.40 | 10.92 | 3.81 | 18.54 | 50.0 |

### Electrical Specifications

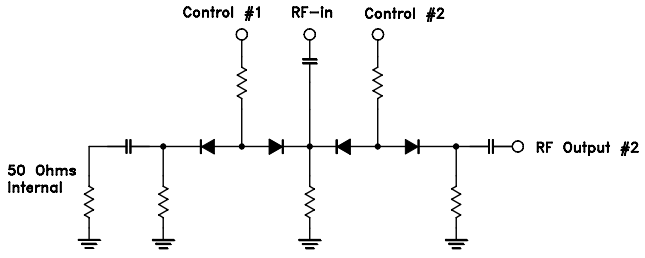
| MODEL NO. | FREQ. (MHz) | | INSERTION LOSS (dB) | | | | IN-OUT ISOLATION (dB) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Low band lw | | Upper band U | | Frequency Band L | | M | | U | |
| | $f_L$ | $f_U$ | Typ. | Max. | Typ. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Min. |
| ZMSW-1111 | 10 | 2500 | 1.1 | 1.9 | 1.9 | 2.7 | 50 | 45 | 35 | 28 | 28 | 22 |

L= low range($f_L$ to 10 $f_L$) M=mid range(10 $f_L$ to $f_U$/2) lw=low band ($f_L$ to $f_U$/2) U=upper range ($f_U$/2 to $f_U$)

| Additional Specifications | |
|---|---|
| VSWR ("ON" STATE) | 1.7 Max |
| SWITCHING TIME (µSEC)<br>RISE TIME (µSEC) | 4 Max.<br>2 Typ. |
| CONTROL VOLTAGE<br>ON condition<br>OFF condition | <br>+5V<br>0V |
| 1 dB COMPRESSION<br>10 to 200 MHz<br>Above 200 MHz | <br>+6 increasing to +19 dBm<br>+19 dBm min. |

| LOGIC | | | |
|---|---|---|---|
| | CON-TROL 1 | CON-TROL 2 | RF-2 |
| State 1: | 0V | +5V | ON |
| State 2: | +5V | 0V | OFF* |
| *Absorptive at RF IN | | | |

### Electrical Schematic

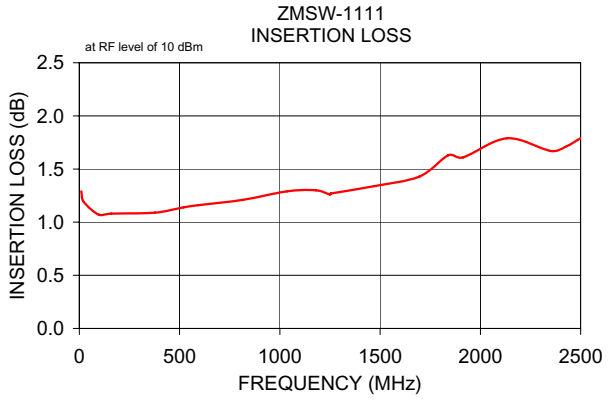


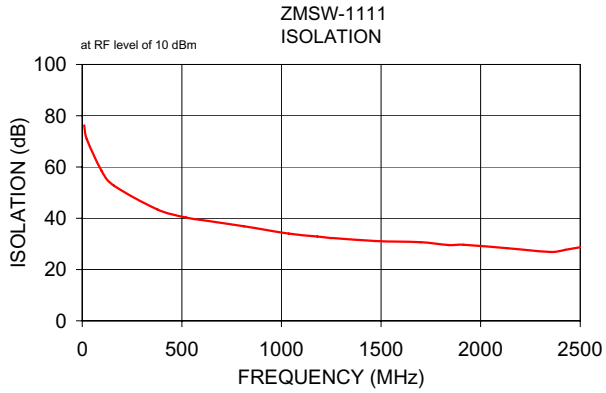

Notes

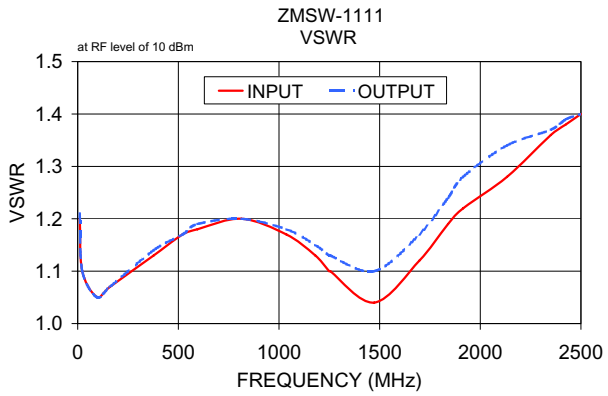
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

## Typical Performance Data

| FREQ. (MHz) | ON INSERTION LOSS (dB) (Ctrl1 @ 0V, Ctrl 2 @5V) | | OFF ISOLATION (dB) (Ctrl1 @ 5V, Ctrl 2 @0V) | | VSWR | | |
|---|---|---|---|---|---|---|---|
| | | | | | IN | OUT | |
| | $\overline{x}$ | σ | $\overline{x}$ | σ | $\overline{x}$ | ON $\overline{x}$ | OFF $\overline{x}$ |
| 10.00 | 1.29 | 0.11 | 76.25 | 6.59 | 1.20 | 1.21 | 30.07 |
| 22.45 | 1.19 | 0.10 | 70.93 | 4.23 | 1.10 | 1.10 | 30.07 |
| 97.15 | 1.07 | 0.07 | 58.52 | 1.61 | 1.05 | 1.05 | 27.77 |
| 159.40 | 1.08 | 0.05 | 52.73 | 1.00 | 1.07 | 1.07 | 25.87 |
| 377.28 | 1.09 | 0.06 | 43.44 | 0.67 | 1.13 | 1.14 | 19.20 |
| 520.45 | 1.14 | 0.05 | 40.30 | 0.80 | 1.17 | 1.17 | 15.71 |
| 595.15 | 1.16 | 0.06 | 39.39 | 0.70 | 1.18 | 1.19 | 14.22 |
| 813.03 | 1.21 | 0.06 | 36.87 | 0.68 | 1.20 | 1.20 | 11.58 |
| 1037.13 | 1.29 | 0.06 | 34.02 | 0.70 | 1.17 | 1.18 | 10.27 |
| 1180.30 | 1.30 | 0.06 | 32.88 | 0.61 | 1.13 | 1.15 | 10.35 |
| 1248.78 | 1.26 | 0.06 | 32.28 | 0.66 | 1.10 | 1.13 | 10.47 |
| 1255.00 | 1.27 | 0.06 | 32.32 | 0.69 | 1.10 | 1.13 | 10.50 |
| 1472.88 | 1.34 | 0.05 | 31.11 | 0.62 | 1.04 | 1.10 | 12.99 |
| 1696.98 | 1.43 | 0.07 | 30.68 | 0.62 | 1.12 | 1.17 | 23.96 |
| 1840.15 | 1.63 | 0.09 | 29.53 | 0.60 | 1.19 | 1.24 | 76.42 |
| 1914.85 | 1.61 | 0.08 | 29.66 | 0.67 | 1.22 | 1.28 | 429.47 |
| 2132.73 | 1.79 | 0.09 | 28.33 | 0.92 | 1.28 | 1.34 | 42.78 |
| 2350.60 | 1.67 | 0.07 | 26.88 | 1.15 | 1.36 | 1.37 | 205.26 |
| 2425.30 | 1.71 | 0.07 | 27.69 | 1.12 | 1.38 | 1.39 | 152.56 |
| 2500.00 | 1.79 | 0.09 | 28.69 | 1.09 | 1.40 | 1.40 | 62.42 |




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

# Switch SPST , 50Ω

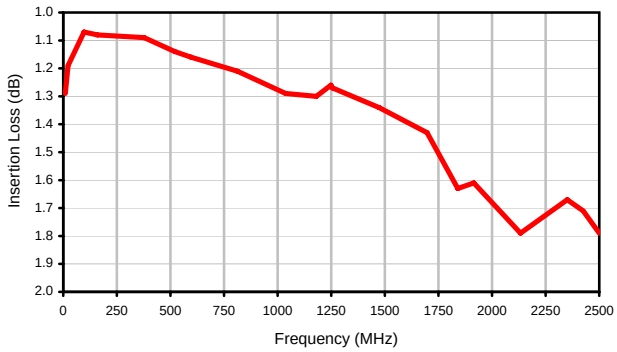
# ZMSW-1111

## *Typical Performance Data*

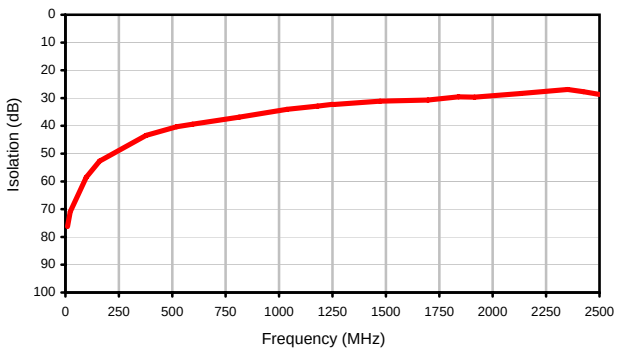
| FREQUENCY (MHz) | INSERTION LOSS C1=0V,C2=5V (dB) IN-OUT , "ON" | ISOLATION C1=5V,C2=0V (dB) IN-OUT , "OFF" | VSWR (:1) IN | VSWR (:1) OUT , "ON" | VSWR (:1) OUT , "OFF" |
|---|---|---|---|---|---|
| 10 | 1.29 | 76.25 | 1.20 | 1.21 | 30.07 |
| 22 | 1.19 | 70.93 | 1.10 | 1.10 | 30.07 |
| 97 | 1.07 | 58.52 | 1.05 | 1.05 | 27.77 |
| 159 | 1.08 | 52.73 | 1.07 | 1.07 | 25.87 |
| 377 | 1.09 | 43.44 | 1.13 | 1.14 | 19.20 |
| 520 | 1.14 | 40.30 | 1.17 | 1.17 | 15.71 |
| 595 | 1.16 | 39.39 | 1.18 | 1.19 | 14.22 |
| 813 | 1.21 | 36.87 | 1.20 | 1.20 | 11.58 |
| 1037 | 1.29 | 34.02 | 1.17 | 1.18 | 10.27 |
| 1180 | 1.30 | 32.88 | 1.13 | 1.15 | 10.35 |
| 1249 | 1.26 | 32.28 | 1.10 | 1.13 | 10.47 |
| 1255 | 1.27 | 32.32 | 1.10 | 1.13 | 10.50 |
| 1473 | 1.34 | 31.11 | 1.04 | 1.10 | 12.99 |
| 1697 | 1.43 | 30.68 | 1.12 | 1.17 | 23.96 |
| 1840 | 1.63 | 29.53 | 1.19 | 1.24 | 76.42 |
| 1915 | 1.61 | 29.66 | 1.22 | 1.28 | 429.47 |
| 2133 | 1.79 | 28.33 | 1.28 | 1.34 | 42.78 |
| 2351 | 1.67 | 26.88 | 1.36 | 1.37 | 205.26 |
| 2425 | 1.71 | 27.69 | 1.38 | 1.39 | 152.56 |
| 2500 | 1.79 | 28.69 | 1.40 | 1.40 | 62.42 |

## *Typical Performance Curves*

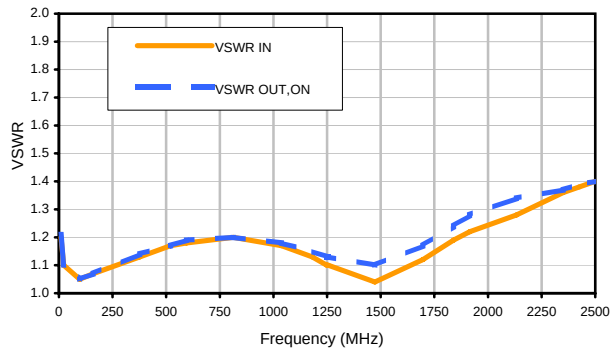
**In-Out Insertion Loss, "ON"**



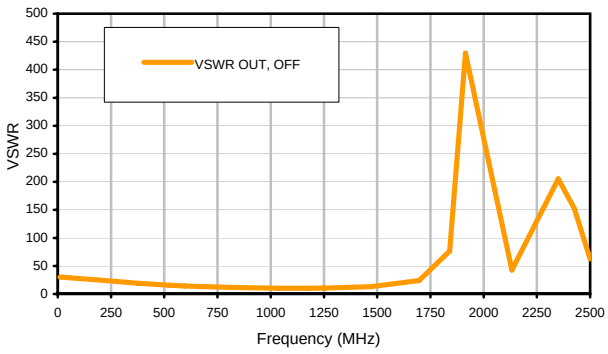

**In-Out Isolation, "OFF"**




**VSWR**



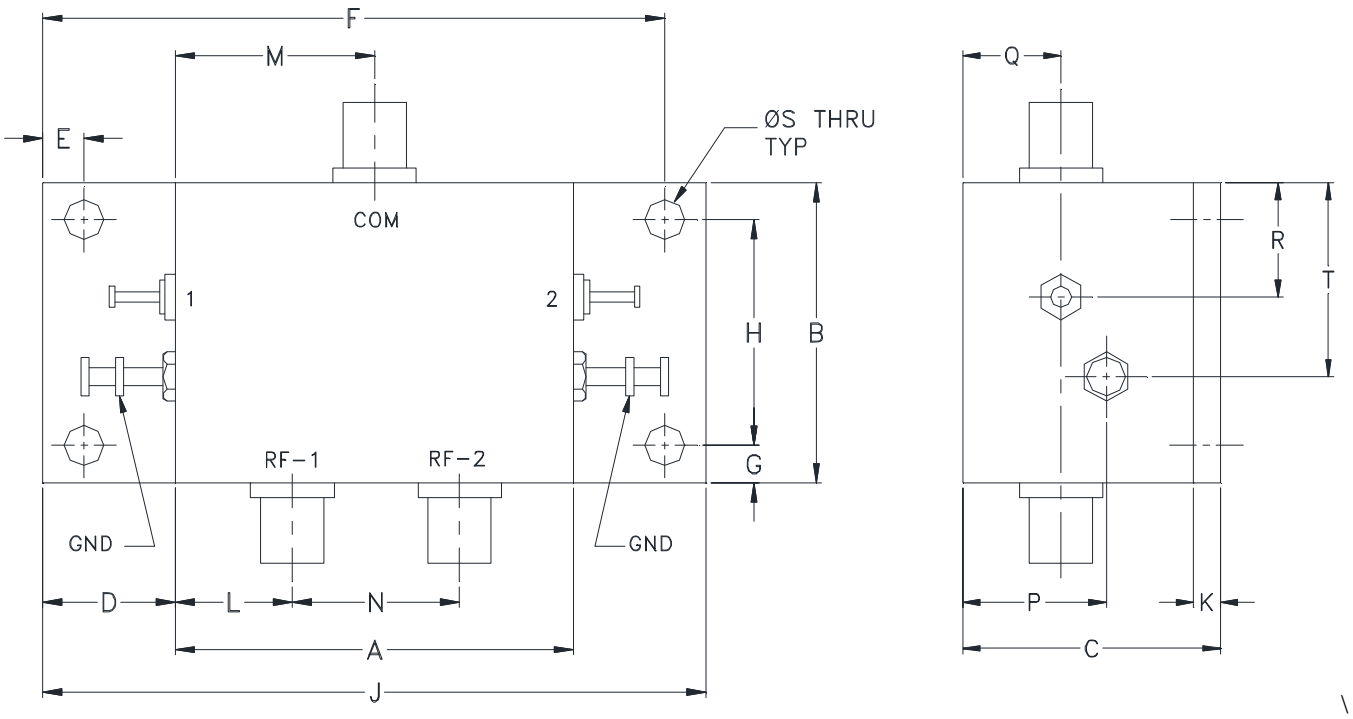

**VSWR**



# Case Style JJ

**JJ77**

## Outline Dimensions




| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JJ77 | 1.50 (38.10) | 1.13 (28.70) | .97 (24.64) | .50 (12.70) | .155 (3.94) | 2.345 (59.56) | .14 (3.56) | .850 (21.59) | 2.50 (63.50) | .10 (2.54) | .44 (11.18) | .75 (19.05) | .63 (16.00) |

| CASE# | P | Q | R | S | T | WT. GRAMS |
|---|---|---|---|---|---|---|
| JJ77 | .54 (13.72) | .37 (9.40) | .43 (10.92) | .150 (3.81) | .73 (18.54) | 50.0 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. + .03: 3 Pl. + .015**

### Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.


Mini-Circuits®
INTERNET http://www.minicircuits.com
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661
Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010
Mini-Circuits ISO 9001 & ISO 14001 Certified

Mini-Circuits

# Environmental Specifications ENV28

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|---|---|---|
| Operating Temperature | -55° to 100°C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Barometric Pressure | 100,000 Feet | MIL-STD-202, Method 105, Condition D |
| Humidity | 90% RH, 65°C<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103 |
| Thermal Shock | -65° to 125°C, 5 cycles | MIL-STD-202, Method 107, Condition B |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition I |