

# Coaxial Switch

## ZFSW-2-46

50Ω SPDT, Reflective DC<sup>5</sup> to 4.6 GHz

### Maximum Ratings

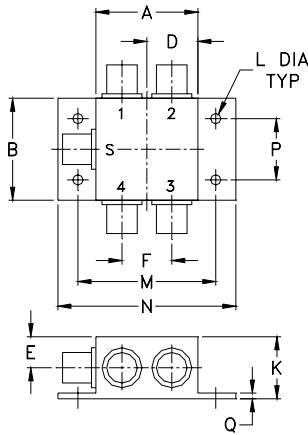
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 150°C
Input Power	see Note 1
Control V	see Note 2

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

### Coaxial Connections

RF IN	s
RF OUT 1	3
RF OUT 2	2
CONTROL 1	4
CONTROL 2	1

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.25	1.25	--	.63	.38	.61	--	--
31.75	31.75	--	16.00	9.65	15.49	--	--
J	K	L	M	N	P	Q	wt
--	.76	.125	1.688	2.18	.75	.07	grams
--	19.30	3.18	42.88	55.37	19.05	1.78	85.0

### Features

- wideband, DC to 4.6 GHz
- high isolation, 50 dB typ.
- excellent VSWR, 1.3:1 typ

### Applications

- instrumentation
- communication systems
- laboratory



Generic photo used for illustration purposes only

CASE STYLE: G144

Connectors	Model
SMA	ZFSW-2-46

### Electrical Specifications

FREQ. <sup>5</sup> (GHz)	INSERTION LOSS (dB)						1dB COMPR. (dBm)			IN-OUT ISOLATION (dB)						
	DC-200 MHz		200-1000 MHz		1000-4600 MHz		DC-200 MHz	200-1000 MHz	1000-4600 MHz	DC-200 MHz		200-1000 MHz		1000-4600 MHz		
f <sub>L</sub>	f <sub>U</sub>	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Min.
DC	4.6	0.9	1.1	1.0	1.3	1.3	1.8*	10	17	27	60	50	50	40	40	28

\*1.8 dB max up to 3 GHz, 2.8 dB max 3-4.6 GHz

### Additional Specifications

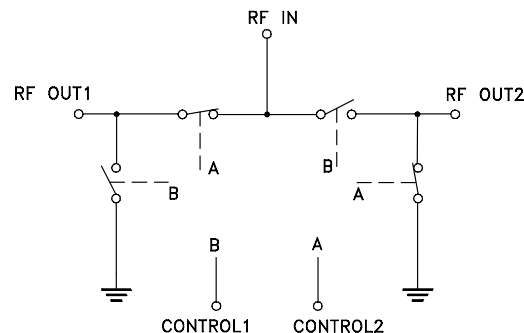
Control Voltage, volts	
Low State	-0.2 to 0
High State (negative)	
for compression specs	-8
for other specs	-5 to -8
Control Current, mA	2.5 typ. at -8V
VSWR(:1)	1.3 typ.
Rise/Fall time (10%-90%), ns	2 typ.
Switching time, 50% of Control to 90% RF (Turn-on), ns	4 typ.
10% RF (Turn-off), ns	2.5 typ.
Video Leakage, mVp-p 0/-5V Control	30 typ.

1. Max Input RF power, +30 dBm except 100-500 MHz +27 dBm, and DC-100 MHz +24 dBm
2. Control voltage (-10V) maximum.
3. Video leakage or break through is defined as leakage of switching signal to RF output ports.
4. OFF state at RF output is low impedance.
5. All RF connections must be DC blocked or held at 0V DC.

### CONTROL LOGIC

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

### Electrical Schematic



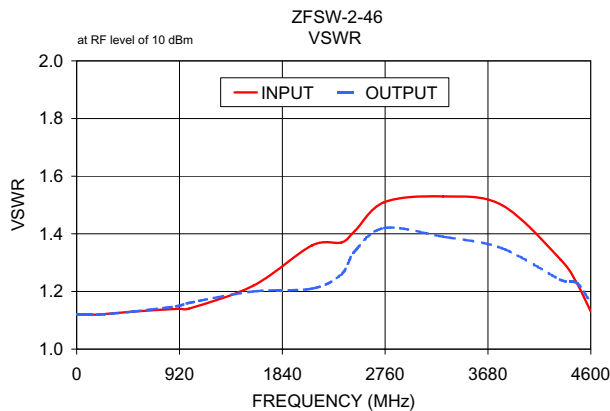
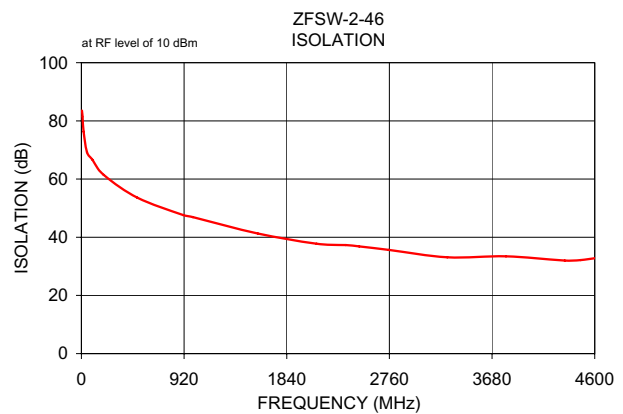
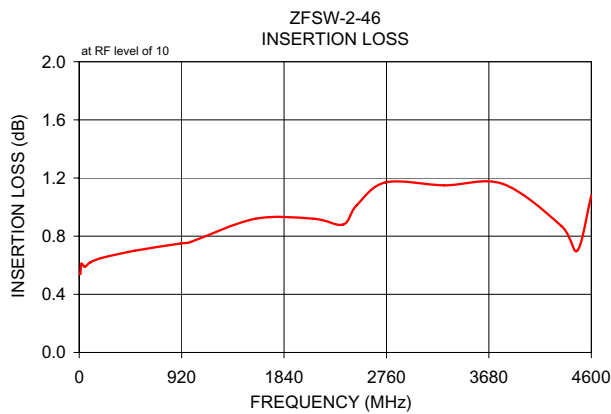
### Notes

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## Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB) CONTROL @ 0V/-5V IN-OUT		OFF ISOLATION (dB) CONTROL @ 0V/-5V IN-OUT		VSWR IN	VSWR ON	VSWR OUT OFF
	$\bar{x}$	$\sigma$	$\bar{x}$	$\sigma$			
3.00	0.54	0.04	83.44	4.68	1.12	1.12	16.46
5.00	0.54	0.04	83.46	2.97	1.12	1.12	16.21
10.00	0.54	0.04	81.44	2.66	1.12	1.12	16.21
20.00	0.61	0.06	76.29	2.13	1.12	1.12	16.04
50.00	0.59	0.04	69.27	0.92	1.12	1.12	15.37
100.00	0.62	0.04	66.59	1.42	1.12	1.12	14.63
200.00	0.65	0.04	61.43	0.74	1.12	1.12	14.00
500.00	0.70	0.04	53.61	0.93	1.13	1.13	12.83
911.55	0.75	0.04	47.64	0.59	1.14	1.15	11.86
1000.00	0.76	0.04	46.91	0.61	1.14	1.16	11.79
1581.00	0.92	0.05	41.27	0.47	1.22	1.20	11.85
2107.00	0.92	0.06	37.77	0.41	1.36	1.21	11.91
2370.00	0.88	0.06	37.33	0.42	1.37	1.26	9.64
2489.55	1.01	0.07	36.86	0.43	1.41	1.34	9.98
2752.55	1.17	0.09	35.65	0.39	1.51	1.42	9.70
3278.55	1.15	0.11	33.10	0.42	1.53	1.39	13.14
3804.55	1.16	0.08	33.46	0.37	1.50	1.35	13.37
4330.55	0.87	0.05	31.99	0.42	1.31	1.24	15.41
4474.00	0.70	0.04	32.16	0.40	1.23	1.23	17.84
4600.00	1.08	0.04	32.78	0.42	1.13	1.16	14.40



### Notes

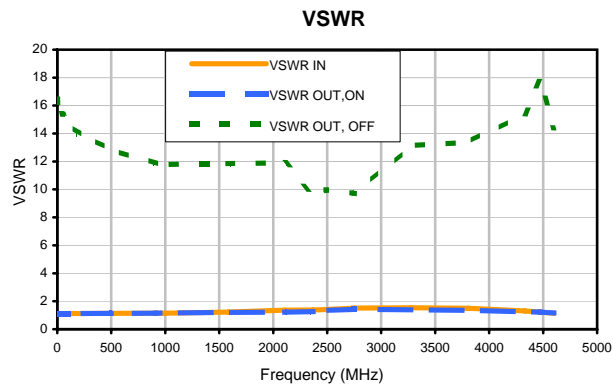
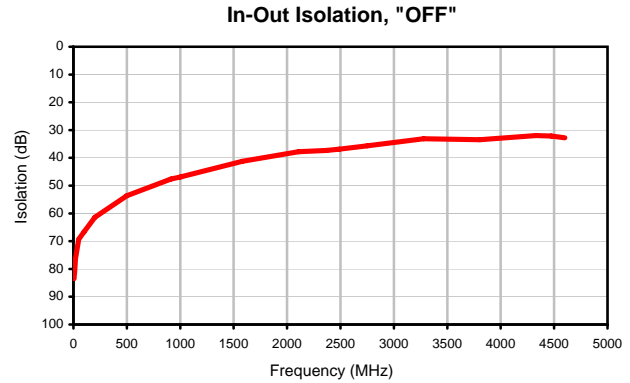
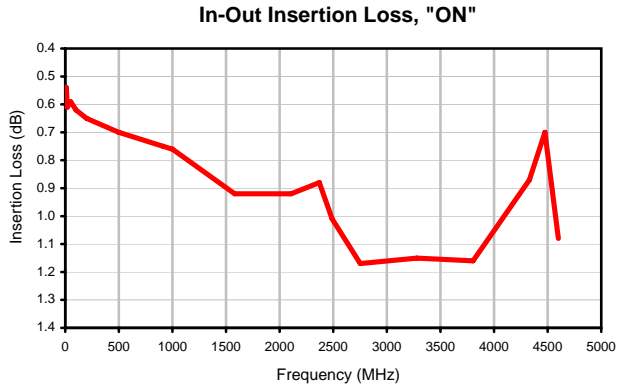
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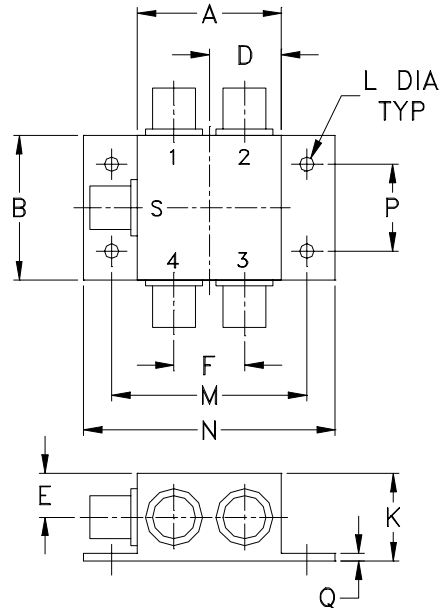
## Typical Performance Data

FREQUENCY (MHz)	INSERTION LOSS Control @ 0V/-5V (dB) IN-OUT , "ON"	ISOLATION Control @ 0V/-5V (dB) IN-OUT , "OFF"	VSWR (:1)		
			IN	OUT , "ON"	OUT , "OFF"
3	0.54	83.44	1.12	1.12	16.46
5	0.54	83.46	1.12	1.12	16.21
10	0.54	81.44	1.12	1.12	16.21
20	0.61	76.29	1.12	1.12	16.04
50	0.59	69.27	1.12	1.12	15.37
100	0.62	66.59	1.12	1.12	14.63
200	0.65	61.43	1.12	1.12	14.00
500	0.70	53.61	1.13	1.13	12.83
912	0.75	47.64	1.14	1.15	11.86
1000	0.76	46.91	1.14	1.16	11.79
1581	0.92	41.27	1.22	1.20	11.85
2107	0.92	37.77	1.36	1.21	11.91
2370	0.88	37.33	1.37	1.26	9.64
2490	1.01	36.86	1.41	1.34	9.98
2753	1.17	35.65	1.51	1.42	9.70
3279	1.15	33.10	1.53	1.39	13.14
3805	1.16	33.46	1.50	1.35	13.37
4331	0.87	31.99	1.31	1.24	15.41
4474	0.70	32.16	1.23	1.23	17.84
4600	1.08	32.78	1.13	1.16	14.40

## Typical Performance Curves



### Outline Dimensions



CASE #	A	B	C	D	E	F	G	H	J	K	L
G144	1.25 (31.75)	1.25 (31.75)	-- --	.63 (16.00)	.38 (9.65)	.61 (15.49)	-- --	-- --	-- --	.76 (19.30)	.125 (3.18)

CASE #	M	N	P	Q	WT. GRAM
G144	1.688 (42.88)	2.18 (55.37)	.75 (19.05)	.07 (1.78)	85.0

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3 Pl.  $\pm .015$

#### Notes:

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



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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 Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 150°C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C 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