

High Isolation Switches G_{AAs} Surface Mount[□] & Coaxial

SPST/SPDT With/ Without TTL Drivers DC to 5 GHz



MODEL NO.	FREQ. GHz f _L - f _U	SPST	SPDT	TTL DRIVER	ABSORPTIVE	REFLECTIVE	INSERTION LOSS, dB										1dB COMP, dBm				IN-OUT ISOLATION, dB										CASE STYLE Note B	c o n n e c t i o n	PRICE \$ Qty. (1-9)						
							FREQUENCY BAND										FREQUENCY BAND				FREQUENCY BAND																		
							A		B		C		D		E		A		B		C		D		E		A		B					C		D		E	
							Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.				Typ.	Min.	Typ.	Min.	Typ.	Min.
* KSWHA-1-20 △ ZFSWHA-1-20 RSW-2-25P	DC-2.0 DC-2.0 DC-2.5	● ● ●	 ● ●	 ●	● ● ●	 ●	0.8 0.8 0.5	1.2 1.2 0.9	1.3 1.3 0.7	1.7 1.7 1.1	1.3 1.3 1.0	1.7 1.7 1.5	— — 1.2	— — 1.8	— — —	19 19 26	19 19 27	26 26 29	— — 28	75 75 75	60 60 55	65 65 49	58 58 44	65 65 48	58 58 43	— — 42	— — 30	— — —	XX112 J17 CL620	ek em ke	34.95 74.95 3.95***								
NEW ZASW-2-50DR NEW ZASWA-2-50DR	DC-5 DC-5	● ●	● ●	 ●	● ●	● ●	1.3 1.3	2.0 2.0	1.7 1.7	2.5 2.5	1.8 1.8	3.0 3.0	— —	— 3.0	4.5 4.5	17 17	20 20	20 20	19 19	100 100	80 80	90 90	75 75	82 82	65 65	— —	— —	68 68	46 46	CY353 CY353	lw lw	89.95 89.95							
A=DC to 100 MHz							B=100 to 1000 MHz					C=1000 to 2000 MHz					D=2000 to 2500MHz					E= 2000 to 5000MHz																	

additional specifications, all models

Model Series	KSWHA	ZFSWHA	RSW	ZASW, ZASWA
Control Voltage, V	-8/0 for compression	-8/0 for compression	0/+5V	0/+5V
Low Threshold, V	-8 to -5/0 other specs	-8 to -5/0 other specs	-0.2 min., 0.2 max.	0 min., 0.8 max.
High Threshold, V			3 min., 7 max.	2 min., 5 max.
Control Current, mA	0.2 max. to -8V	0.5 max. at -9V to -12V typ.	.165 typ.	High V, 5 max.
Positive Supply V.	n/a	n/a	5 typ., 7 max.	+5+0.5/-0.1
Negative Supply V.	n/a	n/a	n/a	-5-0.5/+0.1
Positive Supply Current, mA	n/a	n/a	50-100 μ A typ.	22 typ., 60 max.
Negative Supply Current, mA	n/a	n/a	n/a	22 typ., 60 max.
VSWR(:1)	DC-0.2GHz	0.2-2GHz	1.3 typ.	1.3 typ.
ON, all ports	1.25 max	1.5 max	1.7 max.	1.3 typ.
OFF, Input	1.25 max.	1.5 max.	—	3.3 typ.
OFF, Output	1.4 max.	1.5 max.		
Rise/ Fall time (10% - 90%), ns	3 typ., 5 max.		10 typ.	5 typ., 15 max.
Switching time, 50% of Control to 90% RF (Turn-on), ns	7 typ., 10 max.		20 typ.	10 typ., 20 max.
10% RF (Turn-off), ns	3 typ., 10 max.		20 typ.	10 typ., 20 max.
**Video Leakage, mVp-p	30 typ., 50 max.		50 typ.	140 typ.
Operating Temperature, °C	-55 to 100		-40 to 85	-20 to 85
Storage Temperature, °C	-55 to 150		-65 to 150	-55 to 150
RF Power Input Max.★	Steady state DC-.02	.02-.5	.5-2 GHz	
	0/-8V control, +23	+30	+33 dBm	
	As modulator^ +14.5	+20	+27 dBm	
			1W	250 mW
			(>500 MHz)	

★ Above 20°C derate power linearly to zero at 150°C.

^ In modulator service, unrestricted switching is permitted with RF applied.

** Video leakage or break through is defined as leakage of TTL switching signal to RF output ports.

NOTES:

* KSWHA model hermetically sealed.

*** Prices for quantities 10-49

△ Available with SMA connectors

□ Non-hermetic

A. Environmental specifications and re-flow soldering information available in General Information Section.

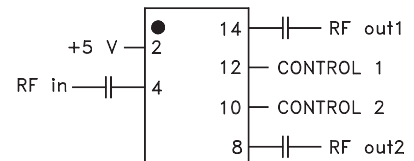
B. Connector types and case mounted options, case finishes are given in section 0, see "Case styles & outline drawings".

C. Prices and Specifications subject to change without notice.

control logic, all models

Model Series	Control Ports	RF outputs
	1 2	1 2
KSWHA	0 -v	Off —
ZFSWHA	-v 0	On —
RSW	Low High	On Off
	High Low	Off On
ZASW/ ZASWA	TTL High Low	Off On
		On Off

RSW-2-25P connection schematic showing external dc blocking capacitors



NOTE: impedance of the capacitor should be less than 5 ohms over the operating frequency range.

pin and coaxial connections

see case style outline drawings for pin locations

PORT	ek	em	ke	lw
RF IN	1	1	4	1
RF OUT 1	5	2	14	3
RF OUT 2	—	—	8	6
TTL IN	—	—	—	4
+5V	—	—	2	2
-5V	—	—	—	5
CONTROL 1	2	4	12	—
CONTROL 2	3	3	10	—
GND CASE	—	—	—	—
GND EXT.	4,6,7,8	—	1,3,5,6	—
			7,9,11,13	

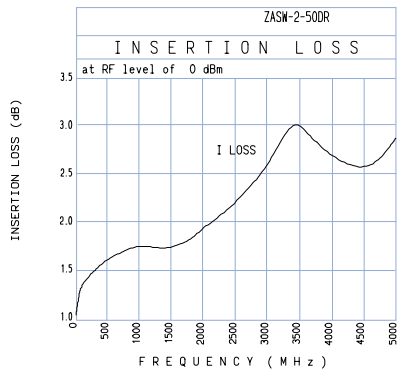
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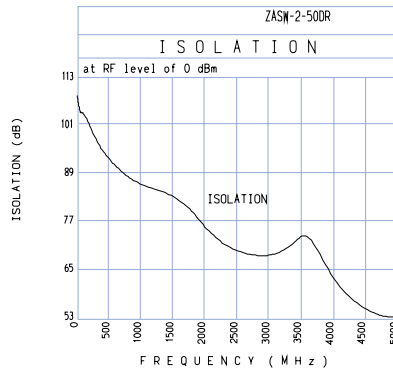
ZASW-2-50DR



ON INSERTION LOSS (dB)
IN-OUT1

FREQ. (MHz)	$\bar{X}$	σ
1.00	1.06	0.01
10.00	1.08	0.01
50.00	1.28	0.01
100.00	1.38	0.00
300.00	1.53	0.01
500.00	1.64	0.02
700.00	1.71	0.03
1000.00	1.80	0.05
1400.00	1.73	0.02
1800.00	1.83	0.07
2000.00	1.98	0.07
2400.00	2.15	0.06
2800.00	2.46	0.05
3000.00	2.60	0.13
3400.00	3.13	0.04
3600.00	2.96	0.08
4000.00	2.70	0.13
4500.00	2.55	0.17
4800.00	2.71	0.22
5000.00	2.90	0.16

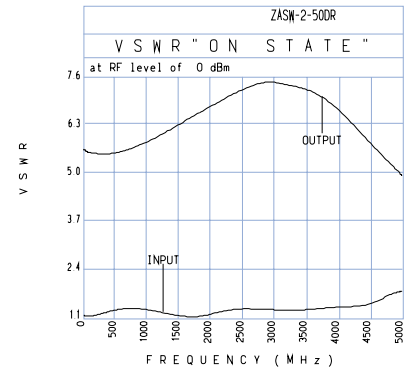
reflective



OFF ISOLATION (dB)
IN-OUT

$\bar{X}$	σ
109.17	3.64
108.91	10.51
104.03	5.94
105.82	7.43
97.50	4.30
93.26	3.56
89.84	2.64
86.55	2.68
85.22	3.42
80.88	1.20
75.82	0.90
70.36	0.67
69.10	0.43
68.74	0.75
71.45	4.25
76.78	3.43
62.02	0.76
55.47	0.73
53.70	0.67
53.70	0.76

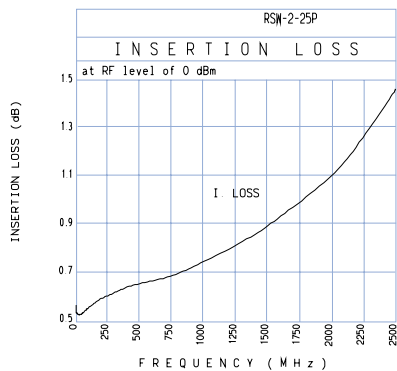
DC to 5.0 GHz



VSWR

IN	ON	OUT1	OFF
$\bar{X}$	$\bar{X}$	$\bar{X}$	$\bar{X}$
1.20	5.70	1.23	
1.19	5.70	1.23	
1.17	5.63	1.18	
1.16	5.61	1.17	
1.25	5.56	1.25	
1.34	5.59	1.35	
1.40	5.68	1.43	
1.37	5.89	1.42	
1.20	6.26	1.20	
1.13	6.68	1.09	
1.24	6.86	1.24	
1.39	7.25	1.38	
1.36	7.53	1.18	
1.34	7.53	1.17	
1.33	7.38	1.41	
1.36	7.28	1.53	
1.43	6.83	1.41	
1.43	5.87	1.36	
1.78	5.34	1.58	
1.85	4.99	1.68	

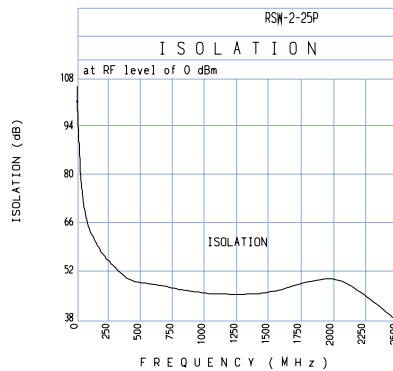
RSW-2-25P



ON INSERTION LOSS (dB)
IN-OUT1

FREQ. (MHz)	$\bar{X}$	σ
0.50	0.57	0.00
1.00	0.56	0.00
2.00	0.55	0.00
4.00	0.54	0.00
10.00	0.54	0.01
20.00	0.53	0.00
40.00	0.53	0.00
80.00	0.55	0.00
100.00	0.56	0.00
200.00	0.60	0.00
300.00	0.62	0.00
400.00	0.65	0.00
600.00	0.67	0.00
800.00	0.70	0.00
1000.00	0.75	0.00
1400.00	0.86	0.00
1600.00	0.94	0.00
2000.00	1.10	0.01
2200.00	1.23	0.01
2500.00	1.47	0.01

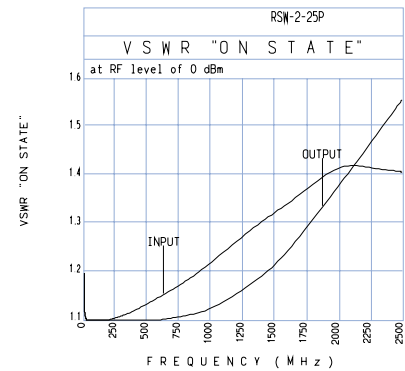
reflective



OFF ISOLATION (dB)
IN-OUT

$\bar{X}$	σ
106.63	5.38
100.28	2.50
103.85	4.87
100.18	7.91
96.68	2.02
87.15	3.20
73.96	0.57
67.09	0.40
64.43	0.29
57.31	0.27
53.92	0.22
49.51	0.10
49.03	0.26
47.31	0.22
46.03	0.22
45.76	0.24
47.08	0.26
52.10	0.87
47.09	0.76
38.36	0.51

DC to 2.5 GHz



VSWR

IN	OUT1	OUT2
$\bar{X}$	$\bar{X}$	$\bar{X}$
1.20	1.20	1.19
1.15	1.15	1.15
1.13	1.13	1.13
1.12	1.12	1.12
1.11	1.11	1.11
1.10	1.10	1.10
1.10	1.10	1.10
1.10	1.10	1.10
1.10	1.10	1.10
1.10	1.10	1.09
1.10	1.10	1.10
1.11	1.10	1.10
1.12	1.10	1.09
1.15	1.10	1.09
1.18	1.11	1.10
1.22	1.12	1.11
1.31	1.19	1.17
1.34	1.24	1.21
1.43	1.38	1.35
1.42	1.45	1.41
1.41	1.56	1.49