

High Isolation Switches *GAs* 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)										1 dB COMPR. (dBm)				IN-OUT ISOLATION (dB)					CASE STYLE Note B	CONNECTION	PRICE \$ Qty. (1-9)					
					frequency band										frequency band				frequency band												
					A	B	C	D	E	A	B	C	D	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.	Max.	Typ.	Max.								
*◆ KSWHA-1-20	DC-2.0	●	●	●	0.8	1.2	1.3	1.7	1.3	1.7	—	—	—	—	19	19	26	—	75	60	65	58	65	58	—	—	—	—	XX112	ek	34.95
▲ ZFSWHA-1-20	DC-2.0	●	●	●	0.8	1.2	1.3	1.7	1.3	1.7	—	—	—	—	19	19	26	—	75	60	65	58	65	58	—	—	—	—	J17	em	74.95
◆ RSW-2-25P	DC-2.5	●	●	●	0.5	0.9	0.7	1.1	1.0	1.5	1.2	1.8	—	—	26	27	29	28	75	55	49	44	48	43	42	30	—	—	CL620	ke	3.95***
NEW ZASW-2-50DR	DC-5	●	●	●	1.3	2.0	1.7	2.5	1.8	3.0	—	—	3.0	4.5	17	20	20	19	100	80	90	75	82	65	—	—	68	46	CY353	lw	89.95
NEW ZASWA-2-50DR	DC-5	●	●	●	1.3	2.0	1.7	2.5	1.8	3.0	—	—	3.0	4.5	17	20	20	19	100	80	90	75	82	65	—	—	68	46	CY353	lw	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 to -5/0 other specs		0/+5V	0 min., 0.8 max.
Low Threshold, V			-0.2 min., 0.2 max.	2 min., 5 max.
High Threshold, V			3 min., 7 max.	
Control Current, mA	0.2 max. to -8V 0.5 max. at -9V to -12V typ.		.165 typ.	High V, 5 max. Low V, 0.2 max.
Positive Supply V.	n/a		5 typ., 7 max.	+5+0.5/-0.1
Negative Supply V.	n/a		n/a	-5-0.5/+0.1
Positive Supply Current, mA	n/a		50-100 μ A typ.	22 typ., 60 max.
Negative Supply Current, mA	n/a		n/a	22 typ., 60 max.
VSWR(:1)	DC-0.2GHz	0.2-2GHz		
ON, all ports	1.25 max	1.5 max	1.3 typ.	1.3 typ.
OFF, Input	1.25 max.	1.5 max.	1.7 max.	1.3 typ.
OFF, Output	1.4 max.	1.5 max.	—	3.3 typ.
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		1W (>500 MHz)	250 mW
	As modulator^ +14.5 +20 +27 dBm			

- ★ 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.

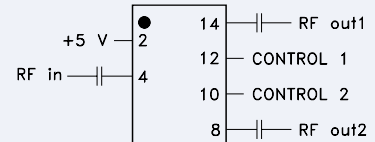
NOTES:

- ◆ Aqueous washable.
- * 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
KSWHA	1 2	1 2
ZFSWHA	0 -v	Off —
RSW	Low High	On Off
ZASW/ ZASWA	TTL High Low	Off On

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	—



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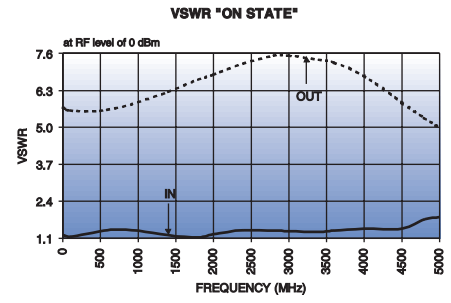
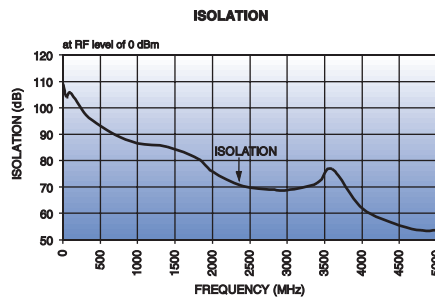
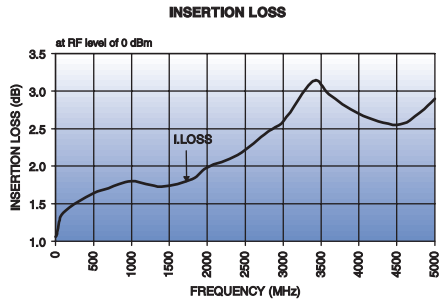
ISO 9001 CERTIFIED

000616

ZASW-2-50DR

reflective

DC to 5.0 GHz



FREQUENCY (MHz)	ON INSERTION LOSS (dB) IN-OUT1	
	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

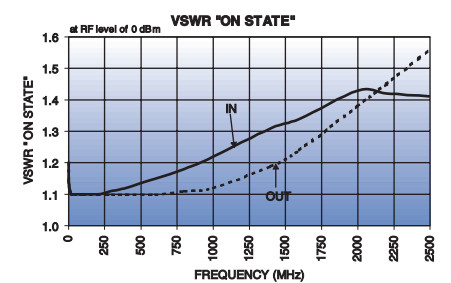
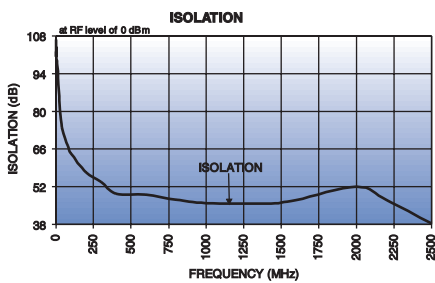
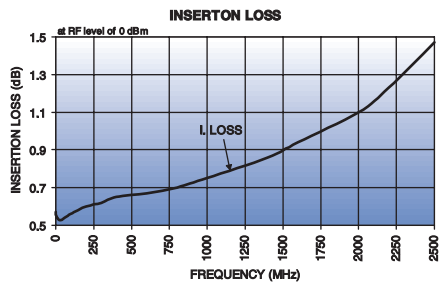
FREQUENCY (MHz)	OFF ISOLATION (dB) IN-OUT	
	X	σ
109.17	3.64	
108.91	10.51	
104.03	5.94	
105.82	7.43	
97.50	4.30	
93.26	3.56	
89.84	2.64	
86.55	2.68	
85.22	3.42	
80.88	1.20	
75.82	0.90	
70.36	0.67	
69.10	0.43	
68.74	0.75	
71.45	4.25	
76.78	3.43	
62.02	0.76	
55.47	0.73	
53.70	0.67	
53.70	0.76	

FREQUENCY (MHz)	VSWR ON STATE		
	IN	OUT1	OUT2
1.20	X	5.70	1.23
1.19	X	5.70	1.23
1.17	X	5.63	1.18
1.16	X	5.61	1.17
1.25	X	5.56	1.25
1.34	X	5.59	1.35
1.40	X	5.68	1.43
1.37	X	5.89	1.42
1.20	X	6.26	1.20
1.13	X	6.68	1.09
1.24	X	6.86	1.24
1.39	X	7.25	1.38
1.36	X	7.53	1.18
1.34	X	7.53	1.17
1.33	X	7.38	1.41
1.36	X	7.28	1.53
1.43	X	6.83	1.41
1.43	X	5.87	1.36
1.78	X	5.34	1.58
1.85	X	4.99	1.68

RSW-2-25P

reflective

DC to 2.5 GHz



FREQUENCY (MHz)	ON INSERTION LOSS (dB) IN-OUT1	
	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

FREQUENCY (MHz)	OFF ISOLATION (dB) IN-OUT	
	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	

FREQUENCY (MHz)	VSWR ON STATE		
	IN	OUT1	OUT2
1.20	X	1.20	1.19
1.15	X	1.15	1.15
1.13	X	1.13	1.13
1.12	X	1.12	1.12
1.11	X	1.11	1.11
1.10	X	1.10	1.10
1.10	X	1.10	1.10
1.10	X	1.10	1.10
1.10	X	1.10	1.09
1.10	X	1.10	1.10
1.11	X	1.10	1.10
1.12	X	1.10	1.09
1.15	X	1.10	1.09
1.18	X	1.11	1.10
1.22	X	1.12	1.11
1.31	X	1.19	1.17
1.34	X	1.24	1.21
1.43	X	1.38	1.35
1.42	X	1.45	1.41
1.41	X	1.56	1.49



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