

Surface Mount High Isolation Switch

SWM-2-50DR+

50Ω SPDT, Reflective DC to 4500 MHz

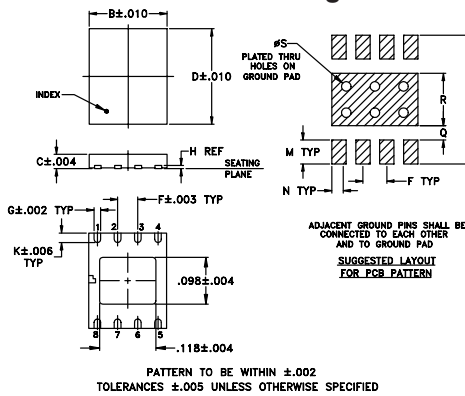
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Power and Voltage	see note 1
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

RF IN	6
RF OUT 1	1
RF OUT 2	4
TTL IN	2
+5V	5
-5V	7
TTL GND	3
GND	8
GND	PADDLE

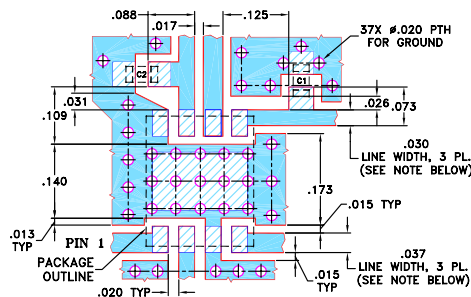
Outline Drawing



Outline Dimensions (inch)

A	B	C	D	E	F	G	H	J	K
-.193	.035	.236	-.050	.017	.008	-.024	-.024	-.024	-.024
4.90	0.90	6.00	1.27	0.43	0.20	-.060	-.060	-.060	-.060
L	M	N	P	Q	R	S	T	wt	
-.050	.030	.270	.030	.110	.020	-.051	-.051	grams	
1.27	0.76	6.86	0.76	2.79	0.51	-.008	-.008	0.08	

Demo Board MCL P/N: TB-161-1+
Suggested PCB Layout (PL-122)



NOTE:

- CAPACITORS C1 & C2: 10 ± 2% pF, 0603 SIZE
- 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS .020" ± .002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED
- 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Features

- high isolation, 55 dB typ. at 1 GHz
- low insertion loss, 0.7 dB typ.
- integral TTL driver
- aqueous washable

Applications

- automated switching networks
- transmitters/receiver isolation



CASE STYLE: DL1020
PRICE: \$5.30 ea. QTY (10-49)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Electrical Specifications (T_{AMB}=25°C)

FREQ. (MHz)	INSERTION LOSS (dB)				1dB COMPR. (dBm)				IN-OUT ISOLATION (dB)												
	DC-100 MHz		100-1000 MHz		1000-2000 MHz		2000-4500 MHz		DC-100 MHz		100-1000 MHz		1000-2000 MHz		2000-4500 MHz						
f _i	f _o	Typ.	Max.	Typ.	Max.	Typ.	Max.	Typ.	Typ.	Typ.	Typ.	Typ.	Min.	Typ.	Min.	Typ.	Min.				
DC	4500	0.6	0.9	0.7	1.2	0.9	1.4	1.6	1.9	20*	25	25	24	75	65	55	45	45	37	35	27

*drops to 17.0 dBm at 10 MHz

Seating Specifications

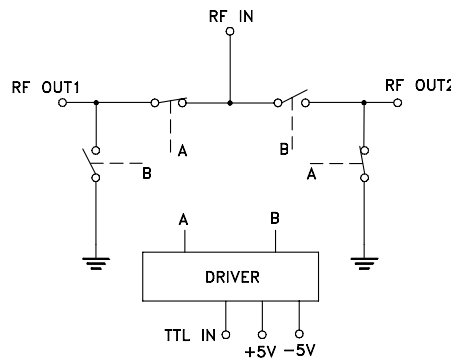
Power Supply Voltage	Current, mA	
+5V ±.20	9 max.	
-5V ±.20	9 max.	
TTL Control low threshold	Voltage, V	Current, mA
high threshold	0 min., 0.8 max.	0.2 max.
	2 min., 5 max.	5 max.
VSWR* (:1)	1.15 typ. to 2GHz, 1.3 typ. to 4.5 GHz	
Rise/Fall Time, ns	5 typ., 15 max.	
Switching Time, ns turn on/off	10 typ., 20 max.	
Video leakage**, mV p-p	30 typ.	

- * For all states of reflective switch in "ON" condition, "OFF port" 5:1 VSWR typ.
- ** Video leakage or break through is defined as leakage of TTL switching signal to RF output ports

- Absolute maximum power and voltage rating:
RF input power, 250mW
Supply voltage: ±6V DC
- OFF state of RF output is low impedance.
- All RF inputs must be DC blocked or held at 0V DC

TTL	CONTROL LOGIC	
	RF1	RF2
LOW	ON	OFF
HIGH	OFF	ON

Electrical Schematic



Mini-Circuits
ISO 9001 ISO 14001 AS 9100 CERTIFIED

IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp.

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Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB) Control @ -5V IN-OUT		OFF ISOLATION (dB) Control @ 0V IN-OUT		IN	VSWR		
	\bar{x}	σ	\bar{x}	σ		ON \bar{x}	OUT	OFF \bar{x}
0.30	0.52	0.00	113.18	10.77	1.12	1.12	5.30	
0.50	0.51	0.00	113.06	3.58	1.12	1.12	5.33	
0.80	0.51	0.00	109.96	6.86	1.12	1.12	5.34	
1.00	0.51	0.00	107.70	6.84	1.12	1.12	5.34	
4.00	0.52	0.00	97.85	1.38	1.12	1.12	5.33	
8.00	0.53	0.00	93.45	0.78	1.12	1.12	5.32	
20.00	0.55	0.00	87.22	1.53	1.11	1.11	5.31	
60.00	0.58	0.01	77.63	1.27	1.11	1.11	5.27	
100.00	0.59	0.01	73.10	1.40	1.11	1.11	5.23	
400.00	0.66	0.01	60.63	1.23	1.13	1.13	5.10	
600.00	0.69	0.01	56.70	1.15	1.14	1.15	5.11	
1000.00	0.75	0.01	51.22	1.02	1.15	1.17	5.14	
1500.00	0.82	0.01	45.93	0.87	1.18	1.22	5.05	
2000.00	0.90	0.01	42.42	0.87	1.26	1.32	5.02	
2500.00	1.08	0.02	39.36	0.87	1.39	1.44	5.35	
3000.00	1.25	0.03	36.68	0.73	1.53	1.52	6.02	
3500.00	1.43	0.02	35.06	0.72	1.50	1.49	6.75	
4000.00	1.68	0.02	32.67	0.53	1.39	1.29	6.55	
4250.00	1.67	0.01	33.95	0.58	1.28	1.15	6.07	
4500.00	1.54	0.01	32.31	0.44	1.12	1.10	6.34	

