

# Surface Mount High Isolation Switch

50Ω SPDT, Absorptive DC to 4500 MHz

## M3SWA-2-50DR+ M3SWA-2-50DR



CASE STYLE: DL805  
PRICE: \$4.95 ea. QTY (10-49)

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

The +Suffix identifies RoHS Compliance. See our web site  
for RoHS Compliance methodologies and qualifications.

### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
Supply V, Input Power	see notes

### 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

### Features

- high isolation, 65 dB typ. at 1 GHz
- low insertion loss, 0.7 dB typ.
- integral TTL driver
- miniature case style DL805

### Applications

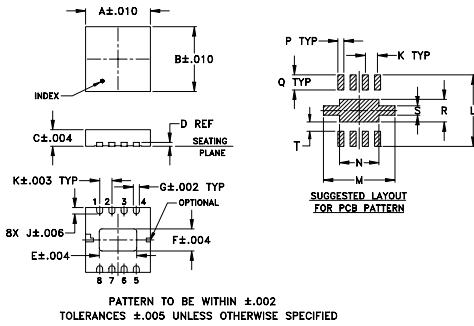
- automated switching networks
- transmitters/receivers

### Electrical Specifications (T<sub>AMB</sub>=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	DC-100 MHz	100-1000 MHz	1000-2000 MHz	2000-4500 MHz
f <sub>i</sub> f <sub>o</sub>	Typ. Max.	Typ. Max.	Typ. Max.	Typ. Max.	Typ. Typ.	Typ. Typ.	Typ. Typ.	Typ. Typ.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.
DC 4500	0.6 1.0	0.7 1.2	0.9 1.4	1.4 2.0	20 <sup>†</sup> 25	25 20	20 20	20 20	80 65	65 53	57 50	36 30

<sup>†</sup>drops to 17.0 dBm at 10 MHz

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K
0.128	0.128	0.035	0.008	0.080	0.047	0.013	-	0.014	0.025
3.25	3.25	0.89	0.20	2.03	1.19	0.33	-	0.36	0.64
L	M	N	P	Q	R	S	T	wt	
0.158	0.158	0.084	0.013	0.030	0.048	0.020	0.025	grams	
4.01	4.01	2.13	0.33	0.76	1.22	0.51	0.64	0.02	

### Additional Specifications

Power Supply Voltage @ -40°C to 85°C	@ -55°C to 100°C	Current, mA
+4.80 to +5.25V	+4.90 to +5.25V	9 max.
-5.25 to -4.80V	-5.25 to -4.90V	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)	1.1 Typ. to 2GHz, 1.25 Typ. to 4.5 GHz	
Rise/Fall Time, ns	5 Typ., 10 Max.	
Switching Time, ns turn on/off	10 Typ., 15 Max.	
Video Leakage <sup>†</sup> , mVp-p	30 Typ.	

\* For all states of absorptive switch

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

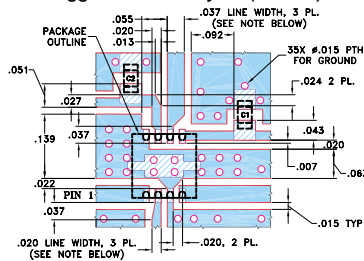
1. Absolute maximum power and voltage rating:

RF input power, 250mW  
Supply voltage: ±6V DC

2. All RF pins must be DC blocked or held at 0V DC

TTL	CONTROL LOGIC	
	RF1	RF2
LOW	ON	OFF
HIGH	OFF	ON

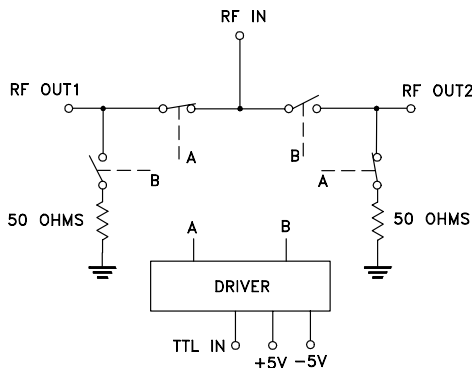
### Demo Board MCL P/N: TB-159 Suggested PCB Layout (PL-120)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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 WITH SMOBC (SOLDER MASK OVER BARE COPPER)
  - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Electrical Schematic



## Typical Performance Data

FREQ. (MHz)	ON INSERTION LOSS (dB) IN-OUT		OFF ISOLATION (dB) IN-OUT		IN $\bar{x}$	VSWR	
	$\bar{x}$	$\sigma$	$\bar{x}$	$\sigma$		ON $\bar{x}$	OUT OFF $\bar{x}$
0.03	0.43	0.42	81.90	84.37	1.12	1.11	1.07
0.1	0.49	0.49	96.01	95.96	1.12	1.12	1.07
1.0	0.51	0.52	103.59	109.20	1.12	1.12	1.06
10	0.53	0.54	88.69	94.84	1.12	1.12	1.06
20	0.55	0.56	83.86	86.93	1.11	1.11	1.06
60	0.59	0.59	82.69	74.90	1.11	1.11	1.06
100	0.60	0.60	82.42	74.88	1.11	1.11	1.07
400	0.65	0.66	67.99	78.58	1.11	1.11	1.07
1000	0.72	0.73	56.08	57.11	1.09	1.13	1.06
1400	0.79	0.82	51.33	52.07	1.06	1.18	1.05
1800	0.90	0.94	45.23	45.31	1.06	1.23	1.03
2250	0.94	0.98	41.56	41.78	1.05	1.26	1.03
2750	1.08	1.12	37.28	37.22	1.06	1.24	1.06
3000	0.92	0.94	35.46	35.21	1.06	1.21	1.06
3250	1.08	1.13	33.83	33.04	1.05	1.19	1.07
3500	1.35	1.48	32.52	31.11	1.06	1.20	1.07
3750	1.23	1.20	31.29	31.39	1.09	1.23	1.07
4000	1.26	1.27	29.94	29.68	1.14	1.26	1.05
4250	1.20	1.27	28.37	27.76	1.18	1.32	1.06
4500	1.51	1.62	26.81	25.76	1.22	1.39	1.06

