

Surface Mount High Isolation Switch

50Ω SPDT, Reflective DC to 4500 MHz

SWM-2-50DR+ SWM-2-50DR

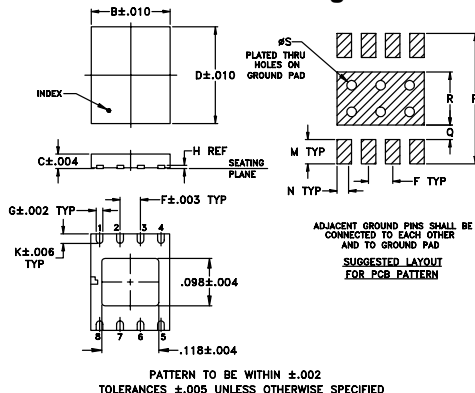
Maximum Ratings

| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Power and Voltage | see note 1 |

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 |

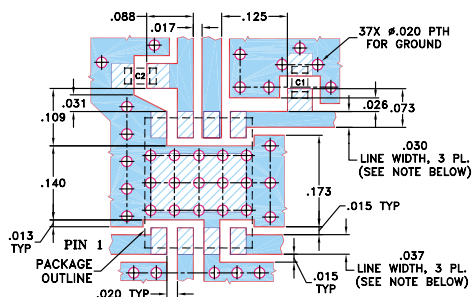
Outline Drawing



Outline Dimensions (inch)

| A | B | C | D | E | F | G | H | J | K |
|----|------|------|------|------|------|------|------|-------|------|
| -- | .193 | .035 | .236 | -- | .050 | .017 | .008 | -- | .024 |
| -- | 4.90 | 0.90 | 6.00 | -- | 1.27 | 0.43 | 0.20 | -- | 0.60 |
| L | M | N | P | Q | R | S | T | wt | |
| -- | .050 | .030 | .270 | .030 | .110 | .020 | -- | grams | |
| -- | 1.27 | 0.76 | 6.86 | 0.76 | 2.79 | 0.51 | -- | 0.08 | |

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



NOTE:

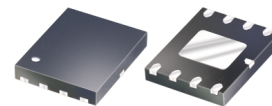
- CAPACITORS C1 & C2: 10 \pm 2% pF, 0603 SIZE
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS .020" \pm .002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT
- DENOTES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

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 identifies 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 | 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 | DC-100 MHz | 100-1000 MHz | 1000-2000 MHz | 2000-4500 MHz |
| f _L | f _U | Typ. | Max. | Typ. | Max. | Typ. | Max. | Typ. | Max. | Typ. | Typ. | Typ. | Typ. | Typ. | Min. | Typ. | Min. | Typ. | Min. | 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

Switching Specifications

| | | |
|--------------------------------|--|-------------|
| Power Supply | Current, mA | |
| Voltage | 9 max. | |
| +5V \pm .20 | 9 max. | |
| -5V \pm .20 | | |
| TTL Control | Voltage, V | Current, mA |
| low threshold | 0 min., 0.8 max. | 0.2 max. |
| high threshold | 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. | |

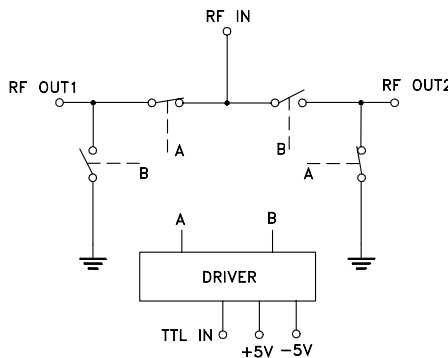
* For all states of reflective switch in "ON" condition, "OFF port" 5:1 VSWR typ.

** 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: \pm 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



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SWM-2-50DR
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SWM-2-50DR+ SWM-2-50DR

Typical Performance Data

| FREQ. (MHz) | ON INSERTION LOSS (dB) Control @ -5V IN-OUT | | OFF ISOLATION (dB) Control @ 0V IN-OUT | | VSWR | | |
|----------------|---|----------|--|----------|------|------|---------|
| | | | | | IN | ON | OUT OFF |
| | \bar{x} | σ | \bar{x} | σ | | | |
| 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 |

