SWJ-08-T1

DPDT Motorized Switch with TTL Driver, WR-08, E-Plane

SWJ-08-T1 is a WR-08 motorized double pole, double throw (DPDT) transfer switch with a TTL driver that covers the frequency range of 90 to 140 GHz. It is an E-plane, bidirectional switch that has four ports which allows each port to be switched on and off between the adjacent ports. The typical insertion loss is 1.2 dB and the typical isolation is 50 dB. The RF ports are WR-08 waveguides with UG-387/U-M anti-cocking flanges. The bias and control signal is supplied by a standard MS3112E10-6P type connector.

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency Range	90 GHz		140 GHz
Insertion Loss		1.2 dB	
Return Loss		20 dB	
Isolation		50 dB	
Bias Voltage		±28 VDC	±30 VDC
Bias Current		250 mA	
Control Signal		TTL	
Switching Speed (Time)SEE NOTES		125 ms	
Cycle Time		250,000	
Power Handling		100 W (CW)	
Specification Temperature		+25°C	
Operating Temperature	-25°C		+65°C

Mechanical Specifications:

Item	Specification
RF Ports	WR-08 Waveguide with UG-387/U-M Anti-Cocking Flange
Bias Port and TTL Control Port	MS3112E10-6P
Body Material	Aluminum
Body Finish	Chem Film
Actuator Finish	Black Paint
Weight	7.0 Oz.
Outline	WJ-TF-A

ECCN

EAR99

FEATURES

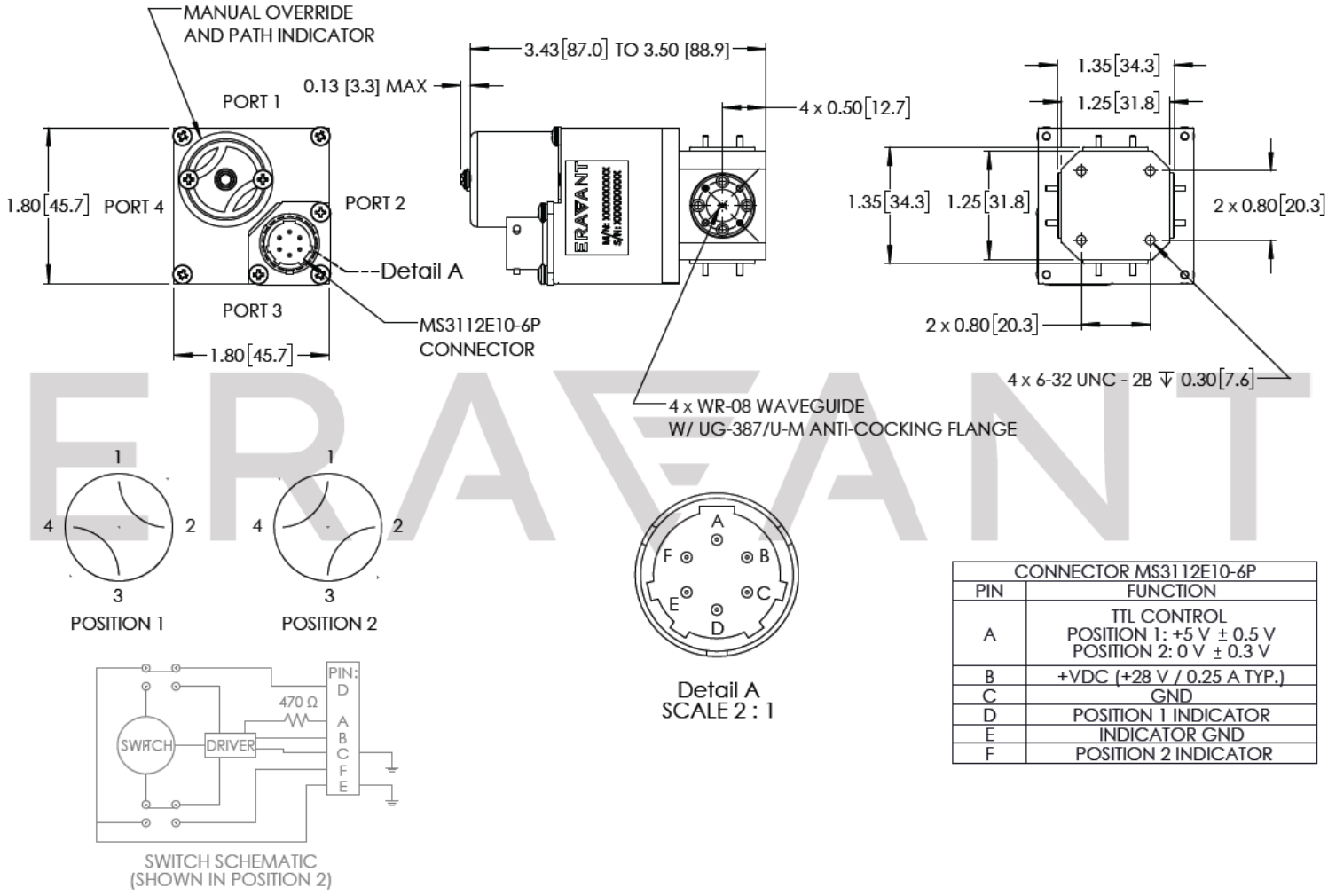
- Low Insertion Loss
- High Isolation
- TTL Control

APPLICATIONS

- Test Lab
- Communication Systems
- Radar Systems

SUPPLEMENTAL DETAILS

Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])



CONNECTOR MS3112E10-6P	
PIN	FUNCTION
A	TTL CONTROL POSITION 1: +5 V ± 0.5 V POSITION 2: 0 V ± 0.3 V
B	+VDC (+28 V / 0.25 A TYP.)
C	GND
D	POSITION 1 INDICATOR
E	INDICATOR GND
F	POSITION 2 INDICATOR

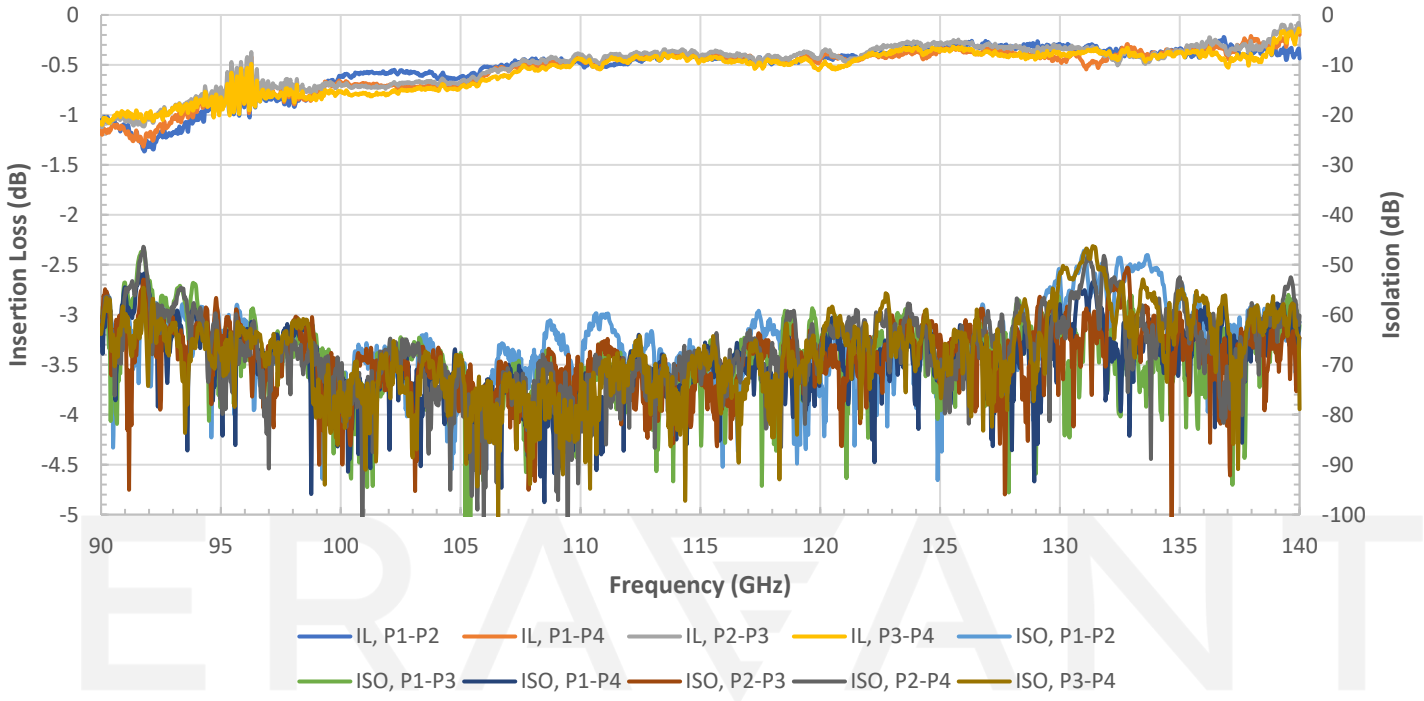
NOTE:

- On condition that test data is provided it is collected from a sample lot. Actual data may vary slightly from unit to unit. All testing is performed under +25 °C room temperature.
- On condition that simulated test data is provided, actual measured data may slightly vary.
- Eravant reserves the right to change the information presented without notice.

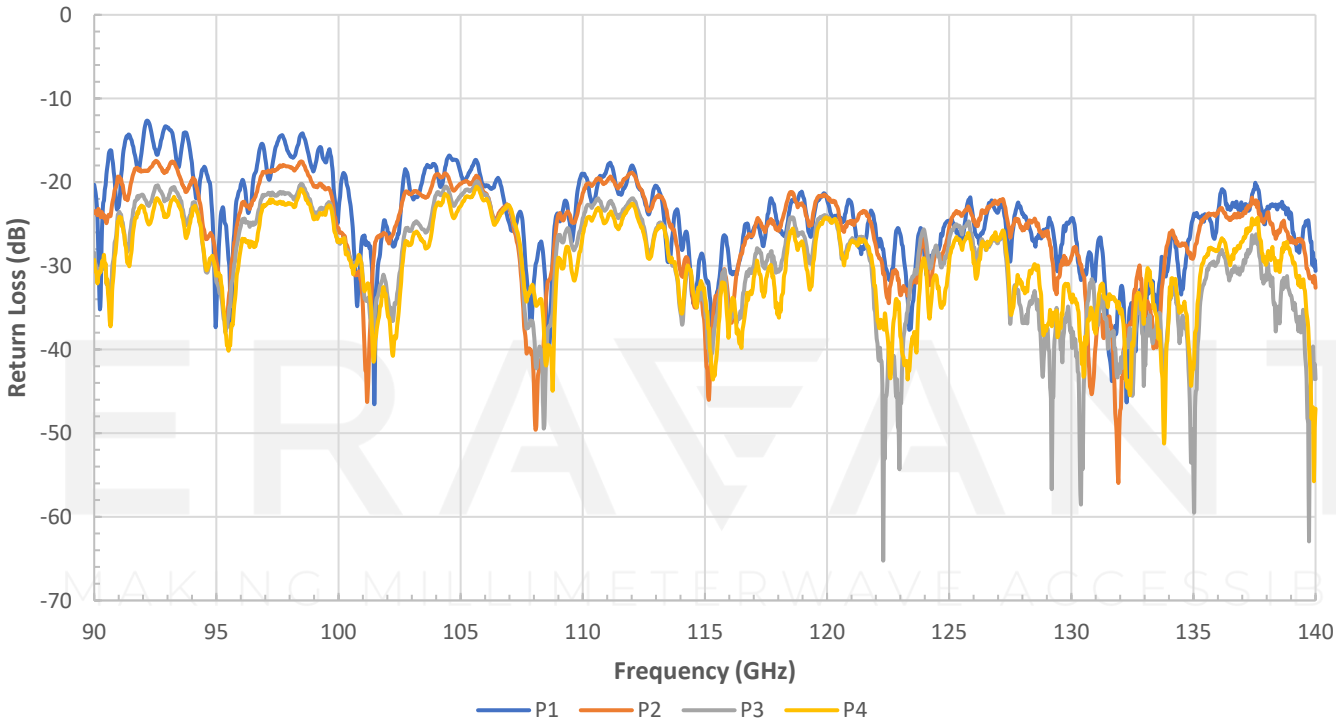
CAUTION:

- Always apply the +28 VDC first before applying the TTL to avoid the circuit instability, which could cause the switch damage.
- The switch is a static sensitive device. Always follow ESD rules when working with the switch.
- Any foreign objects in the waveguide will cause performance degradation and may damage or destroy the unit.
- For 1 mm connectors proper torque should be applied: 4.0 ± 0.15 inch-pounds (0.45 ± 0.02 Nm). Torque wrench model SCH-06004-S1 is highly recommended.
- For 1.35 mm, 1.85 mm, 2.4 mm, 2.92 mm, and SMA connectors proper torque should be applied: 8.0 ± 0.15 inch-pounds (0.90 ± 0.02 Nm). Torque wrench model SCH-08008-S1 is highly recommended

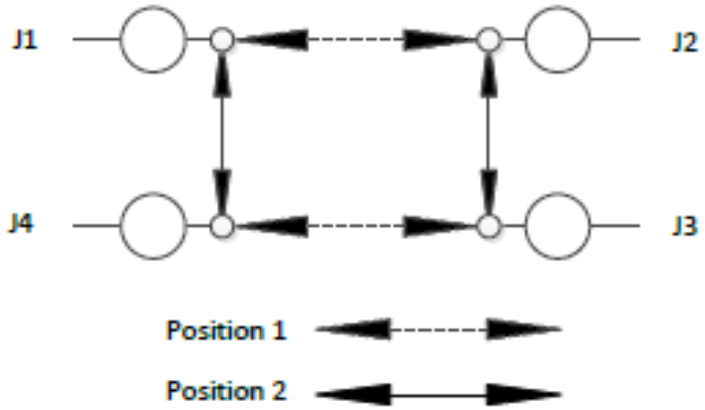
Typical Measured Insertion Loss and Isolation vs Frequency



Typical Measured Return Loss vs Frequency



Electrical Schematic:



NOTE:

- Switching time refers to the “on” time and “off” time. As illustrated below, the “on” time begins when a 50% control pulse is applied and ends when 90% of the RF signal is achieved. On the other hand, the “off” time begins when the control pulse drops below 50% and ends when 90% of the RF signal disappears. The switching time is related to the electro-mechanical configuration and TTL driver characteristics of the switch. It is not operation speed. For instance, the minimum time needed to switch back and forth is up to 0.5 second, i.e., 2 times per second for SWJ series motorized switch if operating continuously. The higher the switching speed, the more stress applied and the less cycle time (shorter life) of the switch is.