SWJ-10-TS

Rev 1.6

DPDT Motorized Switch with TTL Driver, WR-10, E Plane

Description:

Model SWJ-10-TS is a WR-10 motorized double pole, double throw (DPDT) transfer switch with a TTL driver that covers the frequency range of 75 to 110 GHz. The switch has four ports and the switching is E plane. The switch is a bi-directional device which allows each port to be switched on and off between the adjacent ports. The insertion loss of the switch is 0.8 dB typical and the isolation is 50 dB typical. The switch has WR-10 waveguides with UG-387/U-M flanges. The bias and control signal connector is MS3112E-10-6P type.

Features:

- Low Insertion Loss
- High Isolation
- TTL Control

Applications:

- Test Set
- Communication Systems
- Radar Systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
Frequency	75 GHz		110 GHz
Insertion Loss		0.8 dB	
Isolation 75 to 80 GHz		40 dB	
Isolation, 80 to 110 GHz		50 dB	
Return Loss		20 dB	
Bias Voltage		+28 V_{DC}	+30 V_{DC}
Bias Current		250 mA	
Control Signal		TTL	
Switching Speed (Time) NOTE		125 ms	75 ms
Cycle Time	250,000	1,000,000	
Power Handling			100 W (CW)
Specification Temperature		+25°C	
Operating Temperature	-25°C		+65°C

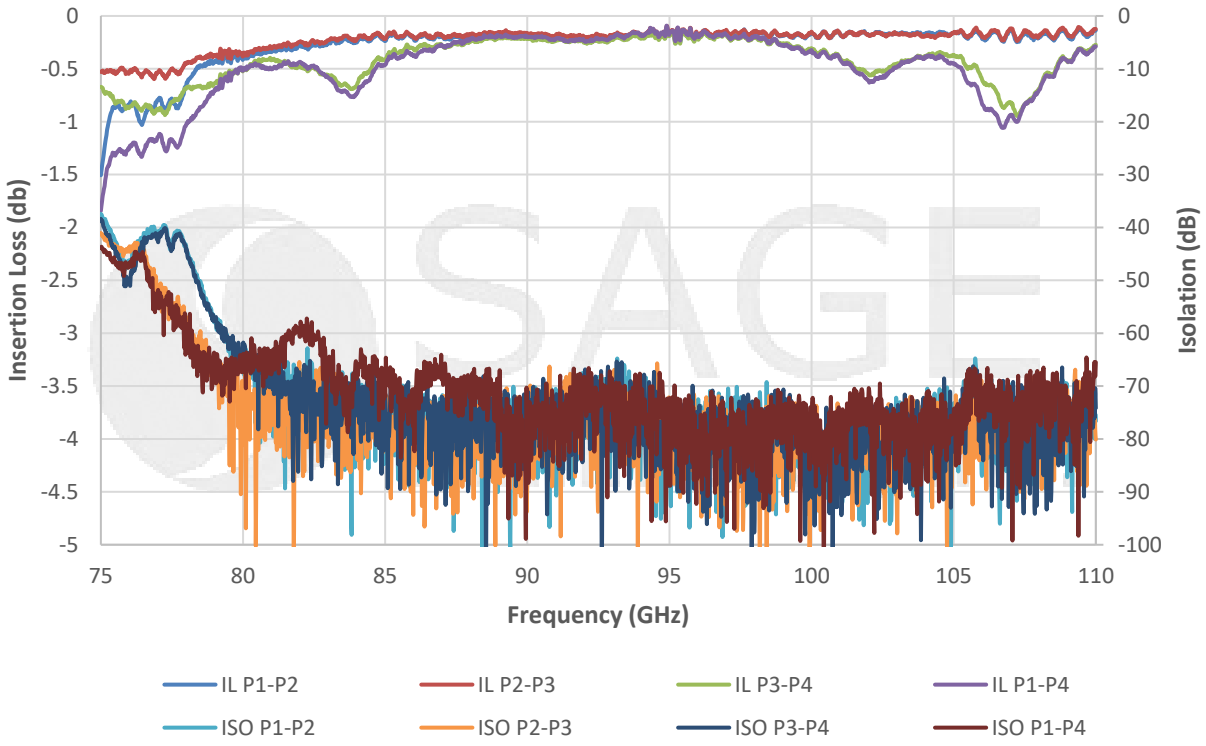
Mechanical Specifications:

Item	Specification
RF Ports	WR-10 Waveguide with UG-387/U-M Flange
Bias Port and TTL Control Ports	MS3112E-10-6P
Waveguide Material	Aluminum
Waveguide Finish	Clear Chem Film
Switch Body Finish	Black Paint
Weight	7.7 Oz
Outline	WJ-TW-S1

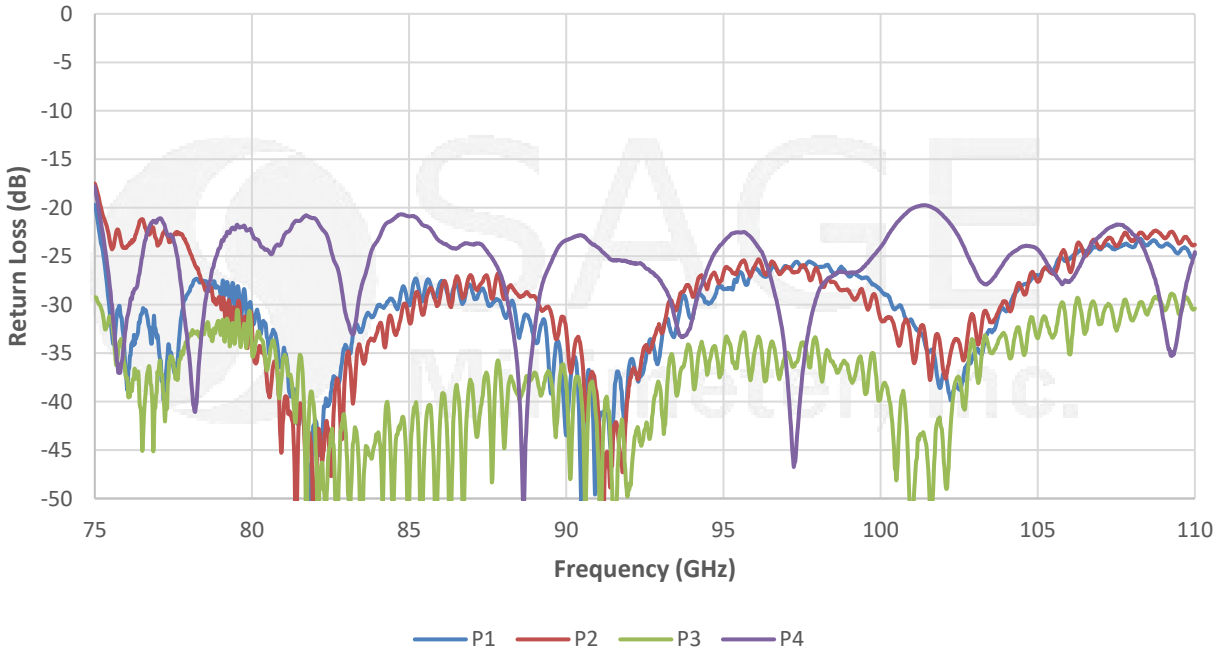
www.eravant.com | 501 Amapola Ave, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com

DPDT Motorized Switch with TTL Driver, WR-10, E Plane

Typical Measured Insertion Loss and Isolation vs Frequency



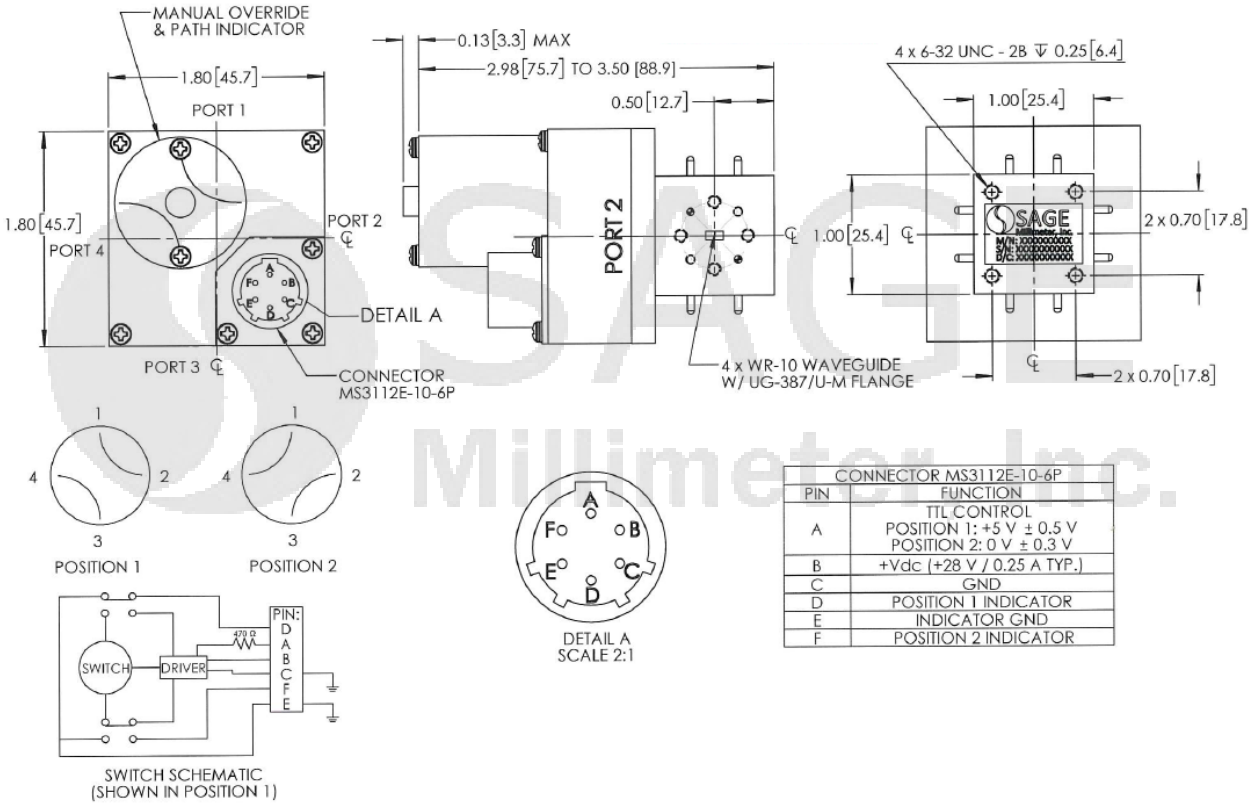
Typical Measured Return Loss vs Frequency



www.eravant.com | 501 Amapola Ave, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com

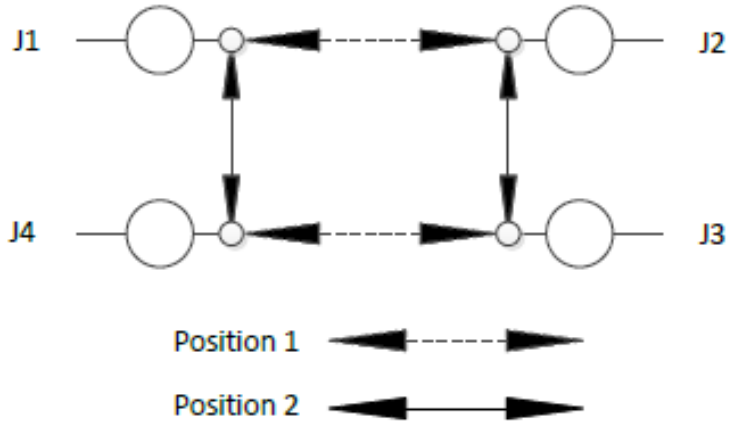
DPDT Motorized Switch with TTL Driver, WR-10, E Plane

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



CONNECTOR MS3112E-10-6P	
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

Electrical Schematic:

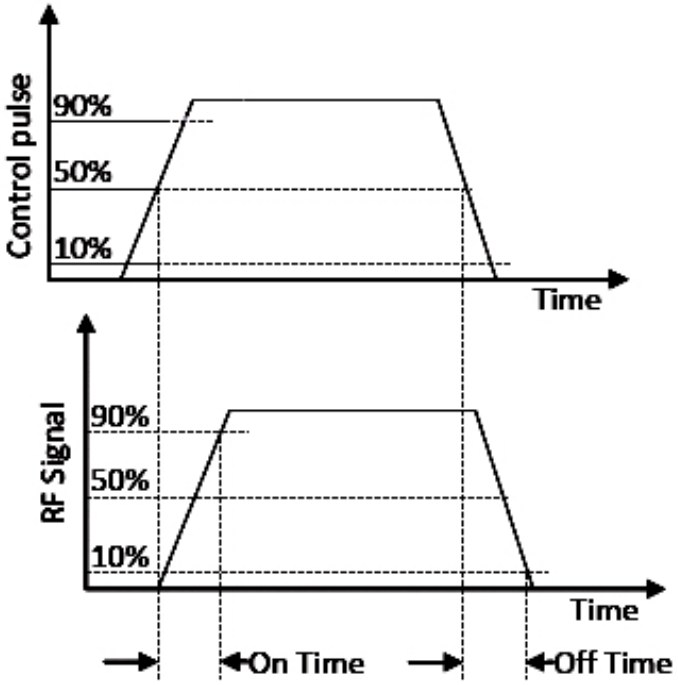


www.eravant.com | 501 Amapola Ave, Torrance, CA 90501
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: support@eravant.com

DPDT Motorized Switch with TTL Driver, WR-10, E Plane

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.
- Other mechanical configurations are available under different model numbers.
- 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 possible device damage.