

Applications

Performance Parameters vs Frequency

Generally speaking, the RF performance of coaxial switches is frequency dependent. With increasing frequency, VSWR and insertion loss increase while isolation decreases. All data sheets specify these three parameters as “worst case” at the highest operating frequency. If the switch is to be used over a narrow frequency band, better performance can be achieved.

Actuator Current vs Temperature

The resistance of the actuator coil varies as a function of temperature. There is an inverse relationship between the operating temperature of the switch and the actuator drive current. For switches operating at 28 VDC, the approximate actuator drive current at temperature, T, can be calculated using the equation:

$$I_T = \frac{I_A}{[1 + .00385 (T-20)]}$$

Where:

I_T = Actuator current at temperature, T

I_A = Room temperature actuator current – see data sheet

T = Temperature of interest in °C

Magnetic Sensitivity

An electro-mechanical switch can be sensitive to ferrous materials and external magnetic fields. Neighboring ferrous materials should be permitted no closer than 0.5 inches and adjacent external magnetic fields should be limited to a flux density of less than 5 Gauss.

Series Application of Multi-Throw Switches

This example shows a single-pole 9-throw unit made up of four 3-throw switches. The number of throws possible using this technique is essentially unlimited and is equal to the total number of throws available in the output stage. If a two-stage unit were set up using six position switches, the resultant would be a total of 36 outputs or a SP36T switch bank. See Figure 1.

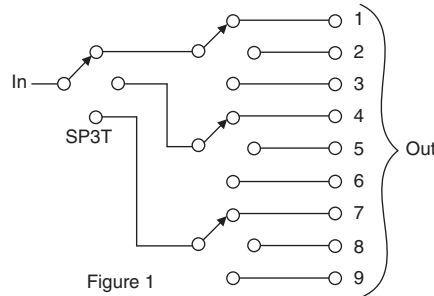
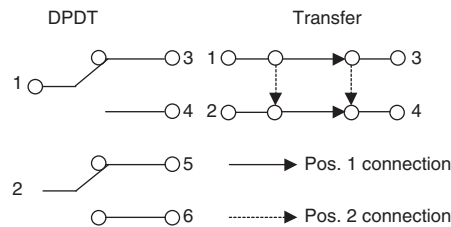


Figure 1

Transfer Switch

The transfer switch is essentially a modified double-pole-double-throw (DPDT) device. However, a true DPDT switch is a six port device that contains two totally independent transmission paths. In a transfer switch two transmission paths are provided but they are not totally independent as illustrated in Figure 2.



Examples of applications of the transfer switch are as follows:

Two Transmitters to Either of Two Antennas

Two microwave transmitters can be connected to either of two alternate antennas as shown in Figure 3.

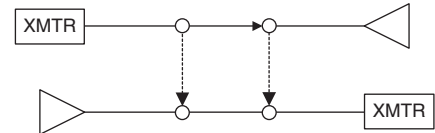


Figure 3

Circuit Insertion

A complete microwave circuit or circuit element can be inserted into a transmission line by using a transfer switch as shown in Figure 4.

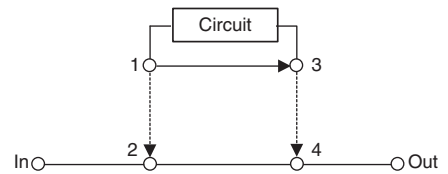


Figure 4

In the event that the 1-3 shorting of the microwave circuit is undesirable, this leg can be left out.

Special Feature

Switching High-Power or Highly Sensitive Signals

Ensure the most linear response with the best galvanically matched contact system in the industry. Extremely low passive intermodulation is standard on all of our switches.

Carrier Frequency 1	Carrier Frequency 2	PIM 3rd Order Frequency	PIM 5th Order Frequency
870 MHz	893 MHz	847 MHz	824 MHz

	3rd Order Intermodulation	5th Order Intermodulation
SPDT	-91 dBm	-110 dBm
	-134 dBc	-153 dBc
Transfer	-103 dBm	-123 dBm
	-146 dBc	-165 dBc
Multiple Positions	-96 dBm	-115 dBm
	-139 dBc	-158 dBc