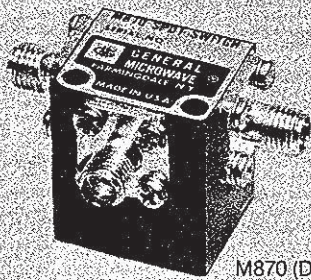
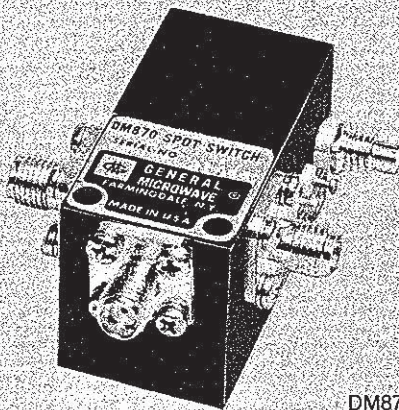


# Models M870 and DM870 Ultra-Broadband SP2T Switches

- Frequency range: 0.2 to 18 GHz
- Low VSWR and insertion loss
- Up to 60 dB isolation
- Small size, light weight



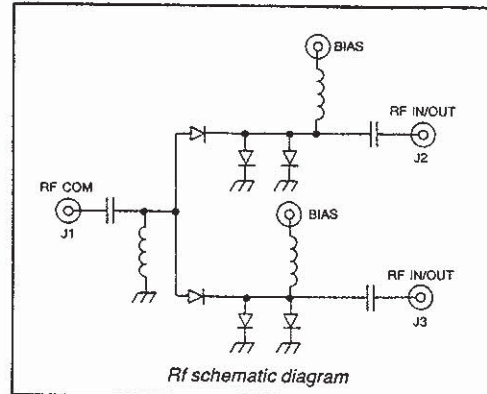
M870 (DRIVERLESS)



DM870  
(WITH INTEGRATED  
DRIVER)

## MODEL M870

Model M870 is a high-performance broadband single-pole two-throw switch that operates over the full instantaneous bandwidth of 0.2 to 18 GHz. Design features include an integrated circuit assembly of PIN diodes mounted in a microstrip transmission line as well as a resistive bias line that contributes to the broadband low-loss performance. The circuit configuration of the Model M870 is shown below.



By applying positive current to a bias terminal, the associated port is OFF since the corresponding shunt diodes are biased to a low resistance and the series diode to a high resistance. With negative current at the bias terminal, the converse conditions are established and the port is ON. Since bias terminals are individually available for both ports, the user has the option of operating with either or both ports ON or OFF.

## MODEL DM870

The Model DM870 is the same as the Model M870 except it is equipped with an integrated driver that is powered by +15 and -12 to -15 volt supplies. The proper currents required to switch the ports ON or OFF are provided by the driver, which is controlled by external logic signals. Standard units are wired so that one port is biased ON and the other OFF at all times. See AVAILABLE OPTIONS for independent port control.



# Models M870 and DM870 Specifications

MODEL NO. (2)	CHARACTERISTIC	FREQUENCY (GHz)			
		0.2 to 4.0	4.0 to 8.0	8.0 to 12.4	12.4 to 18.0
M870 DM870	Min. Isolation (dB)	60	55	55	55
	Max. Insertion Loss (dB)	1.5	1.5	1.75	2.2
	Max. VSWR (ON)	1.5	1.75	1.75	2.0

## PERFORMANCE CHARACTERISTICS

Switching Speed (port to port) . . . . . 2  $\mu$ sec max.<sup>(1)</sup>

### Power Handling Capability

Without Performance Degradation . . . 1W cw or peak

Survival Power . . . . . 1W average, 75W peak  
(1  $\mu$ sec max. pulse width)

## Power Supply Requirements

### MODEL M870

Bias current required at each port for rated isolation and insertion loss<sup>(3)</sup>

Port OFF . . . . . + 30 mA

Port ON . . . . . - 30 mA

### MODEL DM870 (For one port ON)

+15V  $\pm$  2%, 65 mA

- 12 to - 15V, 65 mA

## Control Characteristics

### MODEL DM870

Control Input Impedance . . . TTL, low power Schottky, two unit load. (A unit load is 0.8 mA sink current and 40  $\mu$ A source current.)

Control Logic . . . . . One port ON and one port OFF. Logic "0" (-0.3 to +0.8V) connects J1 to J3. Logic "1" (+2.0 to +5.0V) connects J1 to J2.

(1) Switching speed, defined as the interval between the instant the rf power level in the port-switched OFF drops to 90% of its original value and the instant the rf power level in the port switched ON rises to 90% of its final value, is rated for ports driven by shaped current pulses. For the Model DM870, the pulses are provided by the integrated driver. For the Model M870, the pulses must be provided by the user.

(2) DM870 is equipped with an integrated TTL compatible driver; M870 is a current-controlled unit that is furnished without a driver.

(3) For operation of Models M870 with more than one port ON, total negative current must be limited to -40 mA. Do not apply more than 75 mA to any OFF port or more than -40 mA to any ON port.



# Models M870 and DM870 Specifications

## ENVIRONMENTAL RATINGS

### Operating Temperature Range

Model M870	-65°C to +125°C
Model DM870	-65°C to +110°C

### Non-Operating Temperature Range

-65°C to +125°C

Humidity ..... MIL-STD-202F, Method 103B, Cond. B (96 hrs. at 95%)

Shock ..... MIL-STD-202F, Method 213B, Cond. B (75G, 6 msec)

Vibration ..... MIL-STD-202F, Method 204D, Cond. B (.06" double amplitude or 15G, whichever is less)

Altitude ..... MIL-STD-202F, Method 105C, Cond. B (50,000 ft.)

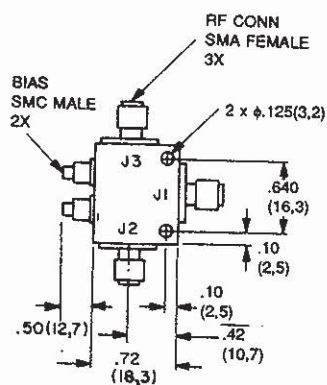
Temp. Cycling ..... MIL-STD-202F, Method 107D, Cond. A, 5 cycles

## AVAILABLE OPTIONS

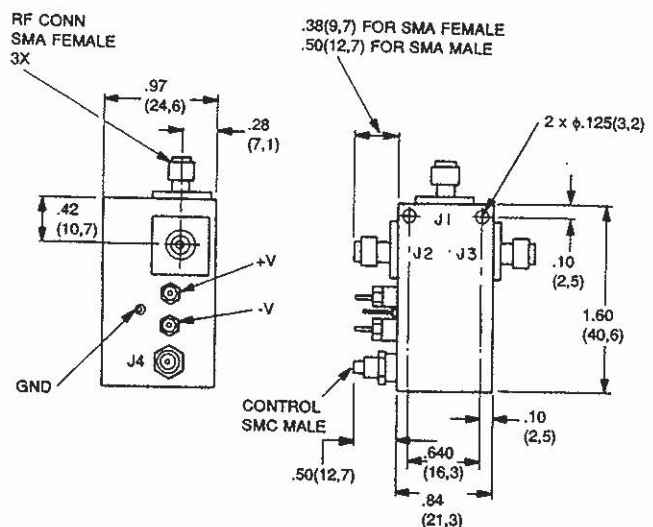
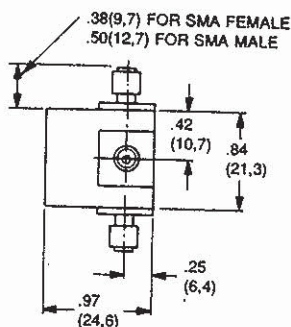
Option No.	Description
7	SMA male rf connectors
7A	J1 SMA male; J2 and J3 SMA female
7B	J1 SMA female; J2 and J3 SMA male
9	Inverse control logic; logic "0" for port ON and logic "1" for port OFF (available only in conjunction with Option 22)
20 <sup>(1)</sup>	Two unit load control input impedance
22	Individual port control (DM 870 only — one unit load); logic "0" for port OFF and logic "1" for port ON. Also available with logic "0" for port ON and logic "1" for port OFF (Specify Option 9)
33	EMI Filter solder-type bias/control terminal
64A	SMB male bias/control connector

(1) Not applicable to Model M870. All Models DM870 are furnished with this option unless otherwise specified by customer. Other options, such as 50 ohms to ground, are available on special order.

## DIMENSIONS AND WEIGHTS



MODEL M870  
Wt: 1.5 oz. (43 gm) approx.



MODEL DM870  
Wt: 2.5 oz (71 gm) approx.

Dimensional Tolerances, unless otherwise indicated: .XX ± .02; .XXX ± .005

