

Broadband Switch: SP4T Switch: Series 91 and 92

Series 91 and 92 Miniature Broadband SP4T Switches

MODELS 9140-500 AND 9240-500

These switches provide high-performance characteristics over a multi-octave frequency range. Model 9140-500 covers the 1 to 18 GHz frequency range while the Model 9240-500 covers the 0.2 to 4 GHz range. Their description and operation are the same as that for the Models 9120-500 and 9220-500 SP2T switches.

MODELS 9140T-500, 9140W-500 AND 9240T-500

These switches are Non-reflective versions of the switches described above.

MODELS 9140AH-500 AND 9140AHT-500

These switches are the same as the 9120AH-500 and the 9120AHT-500 except for the number of ports.

SERIES F91 AND F92

The Series F91 and F92 switches are the same as the corresponding Series 91 and 92 models except the units are equipped with integrated drivers.

SERIES G91 AND G92

These switches are the same as the Series G91 and G92 SP2T switches except for the number of ports.

- Frequency range (Series 91): 1 to 18 GHz
- Frequency range (Series 92): 0.2 to 4 GHz
- Rise and fall times as fast as 10 nsec
- Reflective and Non-reflective models
- Low VSWR and insertion loss
- Isolation: up to 60 dB
- Miniature size, light weight



**F9140AH-33
(WITH INTEGRATED DRIVER)**



**9140AH-500
(DRIVERLESS)**

MODEL NO.(1)	CHARACTERISTIC	FREQUENCY (GHz)					
		0.2-1	1-2	2-4	4-8	8-12.4	12.4-18
9140-500 F9140	Min. Isolation (dB)	-	60	60	60	60	50
	Max. Insertion Loss (dB)	-	1.4	1.4	1.5	2.0	2.8
	Max. VSWR (ON)	-	1.75	1.75	1.75	1.75	2.0
G9140*	Min. Isolation (dB)	-	60	60	60	60	50
	Max. Insertion Loss (dB)	-	2.0	2.0	2.2	2.7	3.0
	Max. VSWR (ON)	-	1.5	1.5	1.7	1.7	2.0
9240-500* F9240*	Min. Isolation (dB)	60	60	60	-	-	-
	Max. Insertion Loss (dB)	1.5	1.5	1.5	-	-	-
	Max. VSWR (ON)	1.6	1.6	1.6	-	-	-
G9240*	Min. Isolation (dB)	60	60	60	-	-	-
	Max. Insertion Loss (dB)	2.0	2.0	2.0	-	-	-
	Max. VSWR (ON)	1.5	1.5	1.5	-	-	-
9140T-500* F9140T* G9140T*	Min. Isolation (dB)	-	50	50	45	40	40
	Max. Insertion Loss (dB)	-	1.5	1.5	1.7	2.0	2.5
	Max. VSWR (ON or OFF)	-	1.5	1.5	1.7	1.7	2.0
9240T-500* F9240T* G9240T*	Min. Isolation (dB)	60	60	60	-	-	-
	Max. Insertion Loss (dB)	1.3	1.3	1.5	-	-	-
	Max. VSWR (ON or OFF)	1.5	1.5	1.5	-	-	-
9140W-500* F9140W G9240W*	Min. Isolation (dB)	-	60	60	60	60	55
	Max. Insertion Loss (dB)	-	2.0	2.0	2.2	2.7	3.0
	Max. VSWR (ON or OFF)	-	1.5	1.7	1.7	2.0	2.0
9140AH-500* F9140AH	Min. Isolation (dB)	-	60	60	60	60	50
	Max. Insertion Loss (dB)	-	1.4	1.4	1.5	2.0	2.8
	Max. VSWR (ON)	-	1.75	1.75	1.75	2.0	2.0
9140AHT-500* F9140AHT	Min. Isolation (dB)	-	60	60	60	60	50
	Max. Insertion Loss (dB)	-	1.6	1.6	1.8	2.5	3.3
	Max. VSWR (ON)	-	1.75	1.75	1.9	2.0	2.0
	Max. VSWR (OFF)	-	1.75	1.75	2.0	2.2	2.3

*Special-order product. Consult factory before ordering.

PERFORMANCE CHARACTERISTICS

Power Handling Capability

Without Performance Degradation

Units without "T" or "W" suffix: 1W cw or peak

Units with "T" or W suffix

Input to any "OFF" port: 100 mW cw or peak

Input to any "ON" port: 1W cw or peak

Input to common port: 1W cw or peak

Survival Power

Units without "T" or "W" suffix: 1W average

75W peak (1 μsec max. pulse width)

Units with "T" or "W" suffix

Input to any "OFF" port: 1W average,

10W peak (1 μsec max. pulse width)

Input to any "ON" port: 1W average,

75W peak (1 μsec max. pulse width)

Input to common port: 1W average,

75W peak (1 μsec max. pulse width)

(1) Models prefixed with "F" or "G" are equipped with integrated TTL-compatible drivers; models without the "F" or "G" prefix are current-controlled units and are furnished without drivers; models suffixed with "T" or "W" are non-reflective except a high VSWR will be present at the common port if all other ports are OFF; models suffixed with "H" are high-speed units.

Switching Characteristics⁽¹⁾

SERIES 91/F91/G91

Units without "H" suffix

ON time 250 nsec max.

OFF time 250 nsec max.

Units with "H" suffix

Rise time 10 nsec max.

Fall time 10 nsec max.

ON time 25 nsec max.

OFF time 20 nsec max.

Repetition rate 20 MHz max.

SERIES 92/F92/G92

ON time 500 nsec max.

OFF time 500 nsec max.

Power Supply Requirements

SERIES 91/92/F91/F92

Driverless Units

Bias current required at each port for rated isolation

and insertion loss.

PORT OFF

Units without "H" suffix +50 mA

Units with "H" suffix +30 mA

PORT ON

Units without "H" suffix -50 mA

Units with "H" suffix -35 mA

Units With Integrated Drivers

(For one port ON)

	+5V ± 5%	-12 to -15V
Units Without "H" Suffix	190 mA	80 mA
Units With "H" Suffix	95 mA	80 mA
Units With "HT" Suffix	135 mA	80 mA

Control Characteristics

SERIES 91/92/F91/F92

Units With Integrated Drivers

Non-Operating Temperature

Control Input Impedance

Units without "H" suffix.....

TTL, low power Schottky, one unit load. (A unit load is 0.8 mA sink current and 40 μA source current.)

Units with "H" suffix.....

TTL, advanced Schottky, one unit load. (A unit load is 0.6 mA sink current and 20 μA source current.)

Control Logic

..... Logic "0" (-0.3 to +0.8V) for port ON and logic "1" (+2.0 to +5.0 V) for port OFF.

SERIES G91/G92

Control Input Impedance

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Schottky TTL, one unit load. (A unit load is 2.0 mA sink current and 50 μA source current.)

Control Logic

.....

Logic "0" (-0.3 to +0.8V) for port ON and logic "1" (+2.0 to +5.0 V) for port OFF.

SERIES G91/G92

(For one port ON)

+5V \pm 5%, 100 mA

+15V \pm 5%, 40 mA

(1) For driverless units, shaped current pulses must be provided by user.

ENVIRONMENTAL RATINGS

Temperature Range

Units with integrated drivers

Operating Range -65°C to +110°C

Non-Operating Range -65°C to +125°C

Driverless Units

Operating and non-operating -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.)

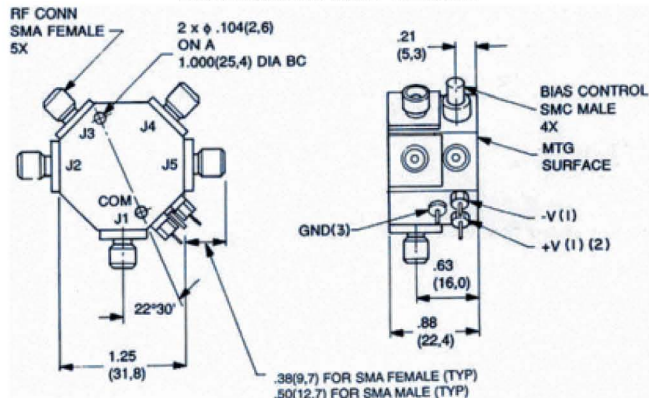
Temp. Cycling

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

AVAILABLE OPTIONS

- 3** SMA female bias/control connectors
- 7** SMA male RF connectors
- 9** Inverse control logic; logic "0" for port OFF and logic "1" for port ON (Not applicable to Series 91/92)
- 33** EMI filter solder-type bias/control terminals
- 41⁽¹⁾** Internal video filter, common port only
- 42⁽¹⁾** Internal video filter, output ports only
- 43⁽¹⁾** Internal video filter, all ports
- 55⁽²⁾** Frequency range 0.5 to 18 GHz.
- 64A** SMB male bias/control connector

DIMENSIONS AND WEIGHT



Weight 2 oz. (57 grams) approx.