



Switched Multiplexer

The SA212-M1 Switched Multiplexer (SwMux) is a fast multi-configurable filter bank working in the 2GHz to 6 GHz frequency range.

Consisting of 16 channels, each one independently controlled, providing over 65,500 combinations of overall filter responses capable of changing every 100nsecs to a different filter response. This provide the user with a fast, flexible, filter network capable of providing differing Band pass or Band stop responses on a pulse by pulse basis in dense signal environments.

When used in conjunction with a DG009-M1 ADU, these components can provide the ability to detect interfering signals

and remove them from receiver systems on an adaptive basis.

The SwMux has a single RF input feeding a power splitter and in turn 16 independently controlled channels. The outputs of these channels are then recombined in a further power splitter providing a single RF output.

Control of the SwMux is achieved by setting 16 control bits on the control port. Control data is not latched within the SwMux, allowing maximum user flexibility.

The SwMux has been designed for use in airborne transport environments of -20 degC to +80 degC and up to 50,000 feet altitude.

FEATURES

- Operating Range 2 – 6 GHz
- 16 Contiguous channels Low loss
- Low channel ripples
- Bandpass / Bandstop configuration

APPLICATIONS

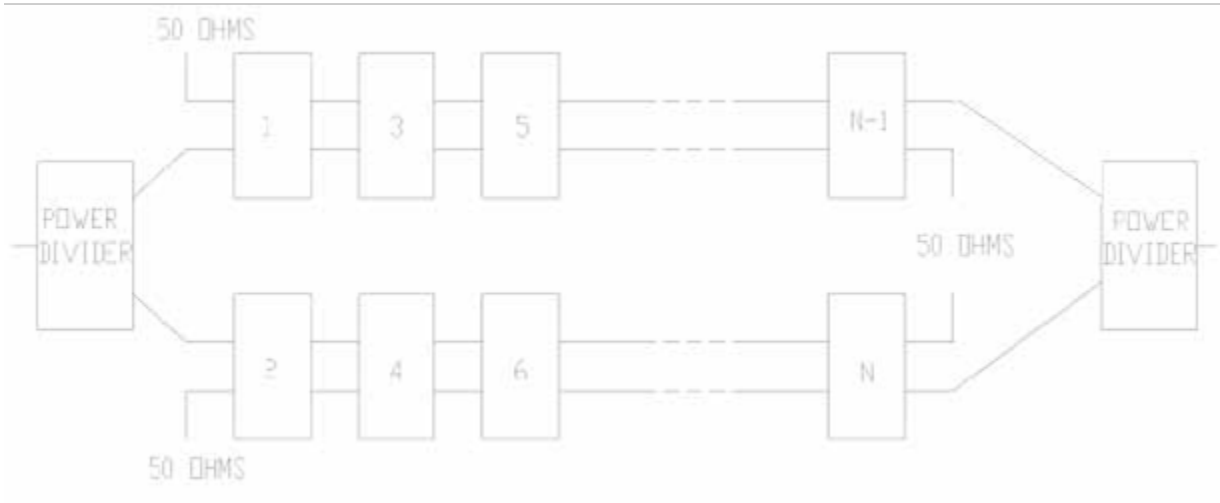
- Adaptive filtering
- Interferer removal
- Channelisation

See restrictions on published datasheets at www.teledynedefence.co.uk/

ELECTRICAL SPECIFICATIONS

| Parameter | Specification | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Number of Channels: | 16 channels, each with a 250 MHz bandwidth | | | | | | | |
| 12 dB Channel Bandwidth: | 300 MHz \pm 20 MHz over the temperature range | | | | | | | |
| Input and Output Port Return Loss: | > 9.54 dB | | | | | | | |
| Insertion Loss, Frequency Range (2.05 - 5.95) GHz All channels 'ON' | < 23.5 dB | | | | | | | |
| Insertion Loss at 2.0 and 6.0 GHz: (Ch 1 or Ch 16 switched ON) | < Average passband insertion loss of channels 1 and 16 respectively plus 6dB | | | | | | | |
| Channel Passband Ripple: Center Frequency $f_c \pm 50$ MHz | < 1.0 dB peak to peak | | | | | | | |
| Recombination Channels Ripple: | < 3.2 dB over the temperature range | | | | | | | |
| Frequency Range (2.05 - 5.95) GHz | | | | | | | | |
| Isolation Between ON and OFF states (Relative to average insertion loss of all channels ON) Frequency Range (2.0 – 6.0) GHz: | > 65 dBc | | | | | | | |
| Stopband Rejection of each ON Channel (Relative to insertion loss at f_c) at $f_c \pm 250$ MHz: Channel 1 $f_c - 250$ MHz Channel 16 $f_c - 250$ MHz Channel 16 $f_c + 250$ MHz at $f_c \pm 300$ MHz: at $f_c \pm 350$ MHz: | > 48 dBc except > 42 dBc > 46 dBc > 42 dBc > 59 dBc > 64 dBc | | | | | | | |
| Out of Band Rejection of Each ON Channel (Relative to average insertion loss of all channels ON) DC - 7.5 GHz (Excluding $f_c \pm 350$ MHz): 7.5 - 13 GHz: | > 64 dBc > 30 dBc | | | | | | | |
| Crossover Frequency Tolerance: | < ± 7 MHz | | | | | | | |
| Crossover Drift: | < ± 12 MHz over temperature range | | | | | | | |
| Switching Speed (50% Control To 10% / 90% RF): | < 100 ns | | | | | | | |
| All ON Group Delay Ripple, (2.05 - 5.95) GHz: | < 7.0 ns | | | | | | | |
| Worst Case Group Delay (2.05 - 5.95) GHz: | < 16.0 ns | | | | | | | |
| Control HIGH level logic '1': LOW level logic '0': | Appropriate channel ON, low insertion loss. Appropriate channel OFF position, high isolation. | | | | | | | |
| Power Supply + 5.0 Volts: -12.0 Volt: | < 100 mA < 120 mA | | | | | | | |
| Power Consumption: | < 1.9 Watt | | | | | | | |
| Operating Temperature: | -20°C to +80°C (baseplate) continuously | | | | | | | |
| Weight: | < 0.75 Kg | | | | | | | |
| Channel Centre Frequencies : | | | | | | | | |
| Channel | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Centre Frequency | 2.125 | 2.375 | 2.625 | 2.875 | 3.125 | 3.375 | 3.625 | 3.875 |
| Channel | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Centre Frequency | 4.125 | 4.375 | 4.625 | 4.875 | 5.125 | 5.375 | 5.625 | 5.875 |

BLOCK DIAGRAM



CONNECTOR INFORMATION

| | | |
|---------|-------------------------------|---------------|
| Port J1 | RF Input | sma female |
| Port J2 | RF Output | sma female |
| Port J3 | Supply Voltages & Logic Input | MDM 31 Socket |

| Pin No. | Signal Name | Pin No. | Signal Name |
|---------|------------------|---------|-------------|
| 1 | Input Channel 1 | 17 | GND |
| 2 | Input Channel 2 | 18 | GND |
| 3 | Input Channel 3 | 19 | GND |
| 4 | Input Channel 4 | 20 | N.C. |
| 5 | Input Channel 5 | 21 | +5V |
| 6 | Input Channel 6 | 22 | N.C. |
| 7 | Input Channel 7 | 23 | N.C. |
| 8 | Input Channel 8 | 24 | N.C. |
| 9 | Input Channel 9 | 25 | -12V |
| 10 | Input Channel 10 | 26 | N.C. |
| 11 | Input Channel 11 | 27 | N.C. |
| 12 | Input Channel 12 | 28 | N.C. |
| 13 | Input Channel 13 | 29 | N.C. |
| 14 | Input Channel 14 | 30 | N.C. |
| 15 | Input Channel 15 | 31 | N.C. |
| 16 | Input Channel 16 | | |

