

**Technical Data****SA212-M1****FEATURES**

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

**APPLICATIONS**

Adaptive filtering  
Interferer removal  
Channelisation

**Product Description**

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 1 RF output.

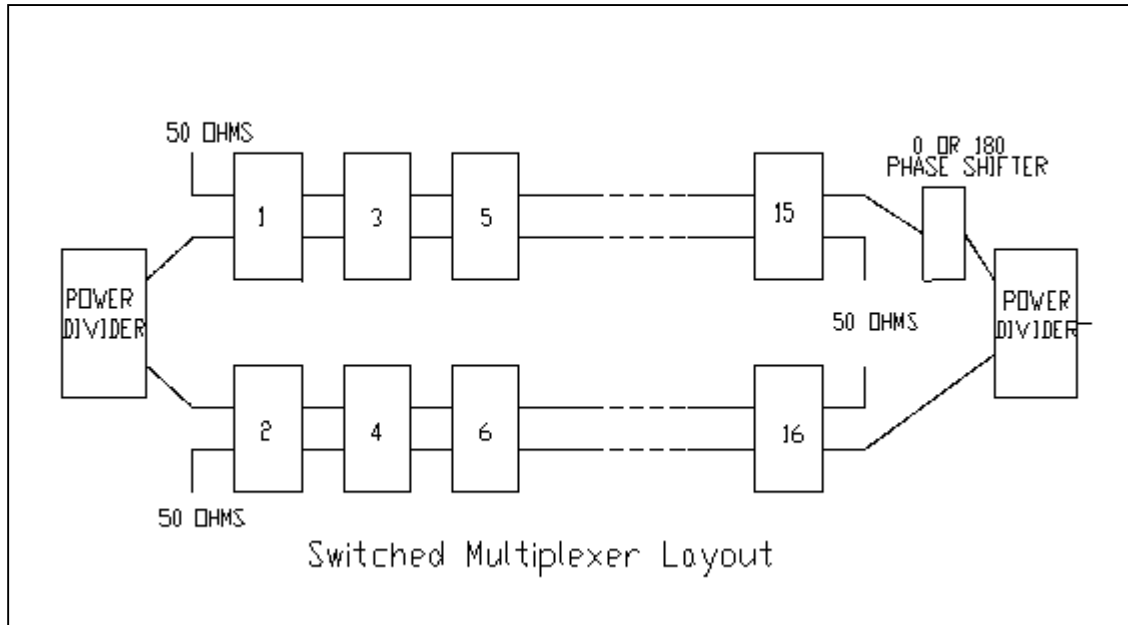
Control of the SwMux is achieved by setting 16 control bits on the control port. Control data is not latched within the SwMux, allowing maximum user flexibility.

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

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**Electrical Specification**

Number of Channels:	16 channels, each with a 250 MHz bandwidth																																				
Nominal 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:	< 23.5 dB																																				
All channels 'ON'																																					
Insertion Loss at 2.0 and 6.0 GHz:	< Average passband insertion loss of channels 1 and																																				
(Ch1 or Ch 16 switched ON)	16 respectively plus 6dB																																				
Channel Passband Ripple:	< 1.0 dB peak to peak																																				
Center Frequency $f_c \pm 50$ MHz																																					
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:	> 48 dBc except																																				
	Channel 1 $f_c-250$ MHz > 42 dBc																																				
	Channel 16 $f_c-250$ MHz > 46 dBc																																				
	Channel 16 $f_c+250$ MHz > 42 dBc																																				
	> 59 dBc																																				
at $f_c \pm 300$ MHz:																																					
at $f_c \pm 350$ MHz:	> 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):	> 64 dBc																																				
7.5 - 13 GHz:	> 30 dBc																																				
Channel Centre Frequencies :																																					
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="border: none;">Channel</th> <th style="border: none;">1</th> <th style="border: none;">2</th> <th style="border: none;">3</th> <th style="border: none;">4</th> <th style="border: none;">5</th> <th style="border: none;">6</th> <th style="border: none;">7</th> <th style="border: none;">8</th> </tr> </thead> <tbody> <tr> <td style="border: none;">Centre Frequency</td> <td>2.125</td> <td>2.375</td> <td>2.625</td> <td>2.875</td> <td>3.125</td> <td>3.375</td> <td>3.625</td> <td>3.875</td> </tr> <tr> <td style="border: none;">Channel</td> <td style="border: none;">9</td> <td style="border: none;">10</td> <td style="border: none;">11</td> <td style="border: none;">12</td> <td style="border: none;">13</td> <td style="border: none;">14</td> <td style="border: none;">15</td> <td style="border: none;">16</td> </tr> <tr> <td style="border: none;">Centre Frequency</td> <td>4.125</td> <td>4.375</td> <td>4.625</td> <td>4.875</td> <td>5.125</td> <td>5.375</td> <td>5.625</td> <td>5.875</td> </tr> </tbody> </table>	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
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Crossover Frequency Tolerance:	< $\pm 7$ MHz																																				
Crossover Drift:	< $\pm 12$ 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' :	Appropriate channel ON, low insertion loss.																																				
LOW level logic '0':	Appropriate channel OFF position, high isolation.																																				
Power Supply																																					
+ 5.0 Volts:	< 100 mA																																				
-12.0 Volt:	< 120 mA																																				
Power Consumption:	< 1.9 Watt																																				
Operating Temperature:	-20 <sup>o</sup> C to +80 <sup>o</sup> C (baseplate) continuously																																				
Weight:	< 0.9 Kg																																				

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**Block Diagram**

**Connector Information**

Port J1	RF Input	sma female
Port J2	RF Output	sma female
Port J3	Supply Voltages & Logic Input	MDM31 Socket

**Pin Assignment for Connector J3 (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		

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**Outline Drawing**

