

QFN Hybrid X Band 4 way Switched Filter Bank with External By-pass

LW48-797755

TYPICAL APPLICATIONS

The miniature Filter assembly is ideal for:

- RADAR
- EW
- Military Comms and datalinks
- Test and Measurement

GENERAL DESCRIPTION

Custom Microwave Hybrid in a standard QFN10 package, unit is fully matched to 50ohm. Design is integrated with LNA, GaAs Switch and custom Filter functions specific to bands of interest. Base design is broadband allowing customer selection of filter frequency in the 6 to 18GHz band with up to a 30% bandwidth.

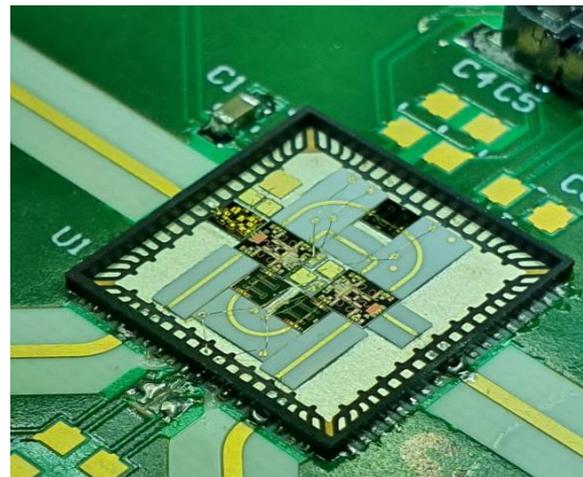
Solutions allow users to shrink high Q filter space and take advantage of matched supporting components for optimum system performance.

Alternate design options with custom features such as an input limiter and filters up to 30GHz are available on request.

Evaluation board available

PRODUCT FEATURES

- Built-In LNA SP4T
- MMIC Based Filters
- Broad band operation for design re-use
- High isolation
- Custom package and filter options
- QFN standard packages for low start-up cost



ELECTRICAL CHARACTERISTICS - Operational $T_A = 25\text{ }^\circ\text{C}$, $\pm 5\text{V}_{DC}$, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Operating Frequency Range	7		13	GHz
Passband 1 @1dB B/W	9.5		12.5	GHz
Gain in switched path 1	+12	+13		dB
Noise Figure			2.0	dB
Switching speed			100	nS
Rejection out of band, 6.5 & 16 GHz	-25.0	-35.0		dBc

[1] Option for single DC Supply arrangements. Quote requirements under LW22-797xxx when ordering.

ELECTRICAL CHARACTERISTICS - Operational $T_A = 25\text{ }^\circ\text{C}$, $\pm 5\text{V}_{\text{DC}}$, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Passband 2 (Thru path)	7		13	GHz
Gain in switched path 2	+15	+16		dB
Noise Figure			2.0	dB
Switching speed			100	nS
Passband 3 @1dB B/W	7.0		8.25	GHz
Gain in switched path 3	+10	+11		dB
Noise Figure			2.5	dB
Switching speed			100	nS
Rejection out of band, 3.0GHz	-55.0	-60.0		dBc
Rejection out of band, 10.0GHz	-35.0	-40.0		dBc
Rejection out of band, 18GHz	-55.0	-60.0		dBc
Passband 4 (External by-pass)	7		13	GHz
Gain in switched path 4	+12	+13		dB
Noise Figure			2.0	dB
Switching speed			100	nS
Isolation between switched paths		-40.0		dBc
Input match		-10		dB
Output P1dB Compression point		+10.0		dBm

CONTROL CHARACTERISTICS AND ADVANCED FEATURES

PARAMETER	VALUE
Supply voltage	$\pm 5\text{V}$ ($\pm 5\%$)
Supply current	150mA / 10mA
Control voltages bands 1-4	Pins 27/28/66/68
Control voltages	-5V & 0V
RF IN	Pins 9&10
RF OUT	Pins 45&46
External By-pass Input / Output	Pins 22&23/32&33

MECHANICAL CHARACTERISTICS

PARAMETER	VALUE	UNITS
Package size	QFN 10x10mm	
RF In /Out	50 Ohms	
Ground connection	Pins 8/11/Back paddle	
All NC pins to be grounded		

ENVIRONMENTAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNITS
Operating Temp	-40		+85	$^\circ\text{C}$
Storage Temp	-55		+150	$^\circ\text{C}$
Vibration MIL-STD-810g:514.7	0.04g ² /Hz 10Hz to 2000Hz.			
Mech Shock	20G 11mS			

ESD PRECAUTIONS - Observe standard precautions when handling ESD-sensitive devices.

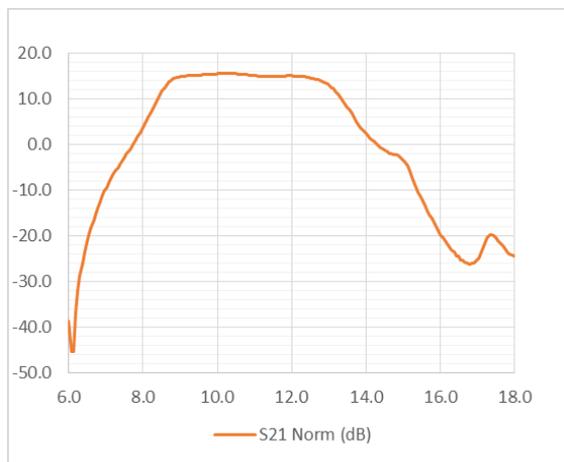
TRUTH TABLE

Control 1	Control 2	Control 3	Control 4	Filter selected
L	L	H	H	1
H	L	L	H	2
L	H	H	L	3
H	H	L	L	4

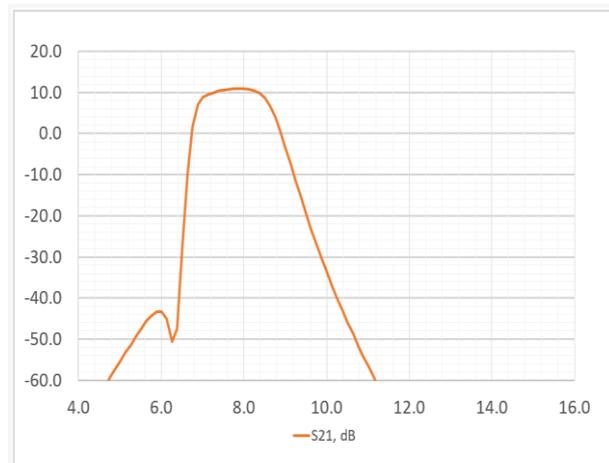
Low = 0V, High = -5V

All other combinations of the control signals results in an attenuation > 40 dB between input and output ports

Filter performance Band 1



Filter performance Band 3



OUTLINE DRAWING

