

MoCA Triplex Filter

5 - 42 / 54 - 1002 / 1125 - 1675 MHz

Rev. V3

Description

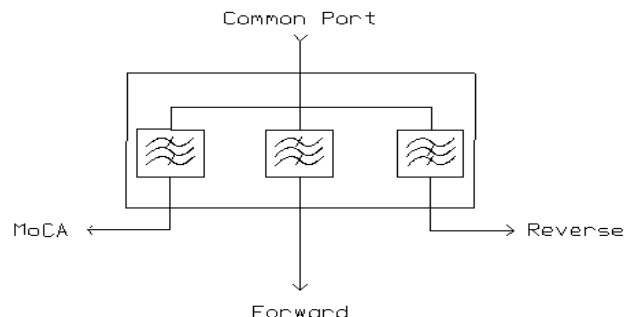
- MACOM Technology Solution's MAFL-011018 is a surface mount triplex filter designed for MoCA applications

Features

- 75 Ohm
- SMT unit
- RoHS compliant

Electrical specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 75\Omega$

Block Diagram

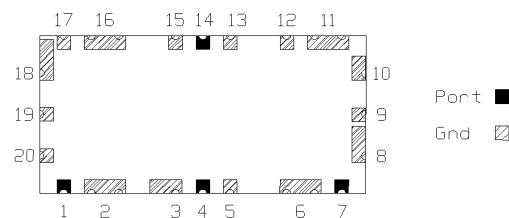


Parameter	Units	Min	Typ	Max
Reverse Path				
Insertion loss				
5-42 MHz	dB	-	1.2	1.5
Rejection				
54-88 MHz	dB	62	65	-
88-126 MHz	dB	62	65	-
126-860 MHz	dB	64	70	-
860-1002 MHz	dB	64	70	-
1125-1675 MHz	dB	60	64	-
1675-3000 MHz	dB	30	50	-
Forward path				
Insertion loss				
54-88 MHz	dB	-	1.5	2.0
88-860 MHz	dB	-	0.75	1.5
860-1002 MHz	dB	-	2.75	2.75
Rejection				
5-38 MHz	dB	50	55	-
38-42 MHz	dB	43	45	-
1125 -1675 MHz	dB	43	45	-
1675-3000 MHz	dB	20	30	-
MoCA Path				
Insertion Loss				
1125-1150 MHz	dB	-	2.8	3.0
1150-1650 MHz	dB	-	2.5	2.7
1650-1675 MHz	dB	-	2.5	3.0
Rejection				
5-42 MHz	dB	49	70	-
54-1002 MHz	dB	49	55	-
2300-3000 MHz	dB	25	35	-

Parameter	Units	Min	Typ	Max
Input Return Loss				
5-42 MHz	dB	16	18	-
54-860MHz	dB	16	18	-
860-1002MHz	dB	12	16	-
1125-1675 MHz	dB	12	16	-
Isolation				
Forward to Reverse				
5-38 MHz	dB	55	58	-
38-42 MHz	dB	43	45	-
54-88 MHz	dB	60	65	-
88-126 MHz	dB	60	65	-
126-860 MHz	dB	60	65	-
860-1002 MHz	dB	60	65	-
Forward to MoCA				
5-42 MHz	dB	49	70	-
54-88 MHz	dB	49	70	-
88-126 MHz	dB	49	70	-
126-860 MHz	dB	49	53	-
860-1002 MHz	dB	49	55	-
1125-1150 MHz	dB	43	45	-
1150-1650 MHz	dB	43	50	-
1650-1675 MHz	dB	43	50	-

Pin Configuration

Function	Pin Number
MoCA Port	1
Forward Port	4
Reverse Port	7
Common Port	14
Ground	2, 3, 5, 6, 8-13, 15-20



Recommended Maximum Ratings

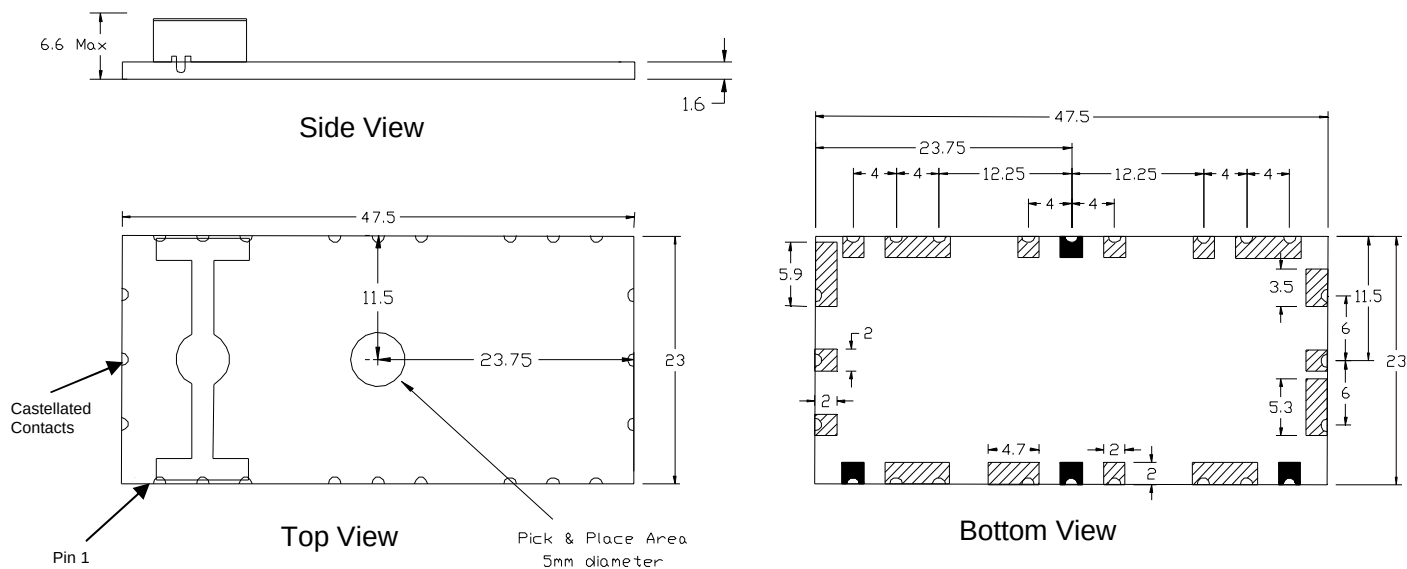
Parameter	Absolute maximum
RF power	250mW
DC current	30mA
Operating temperature	-40°C to +85°C
Storage temperature	-40°C to +85°C

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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Filter Dimensions

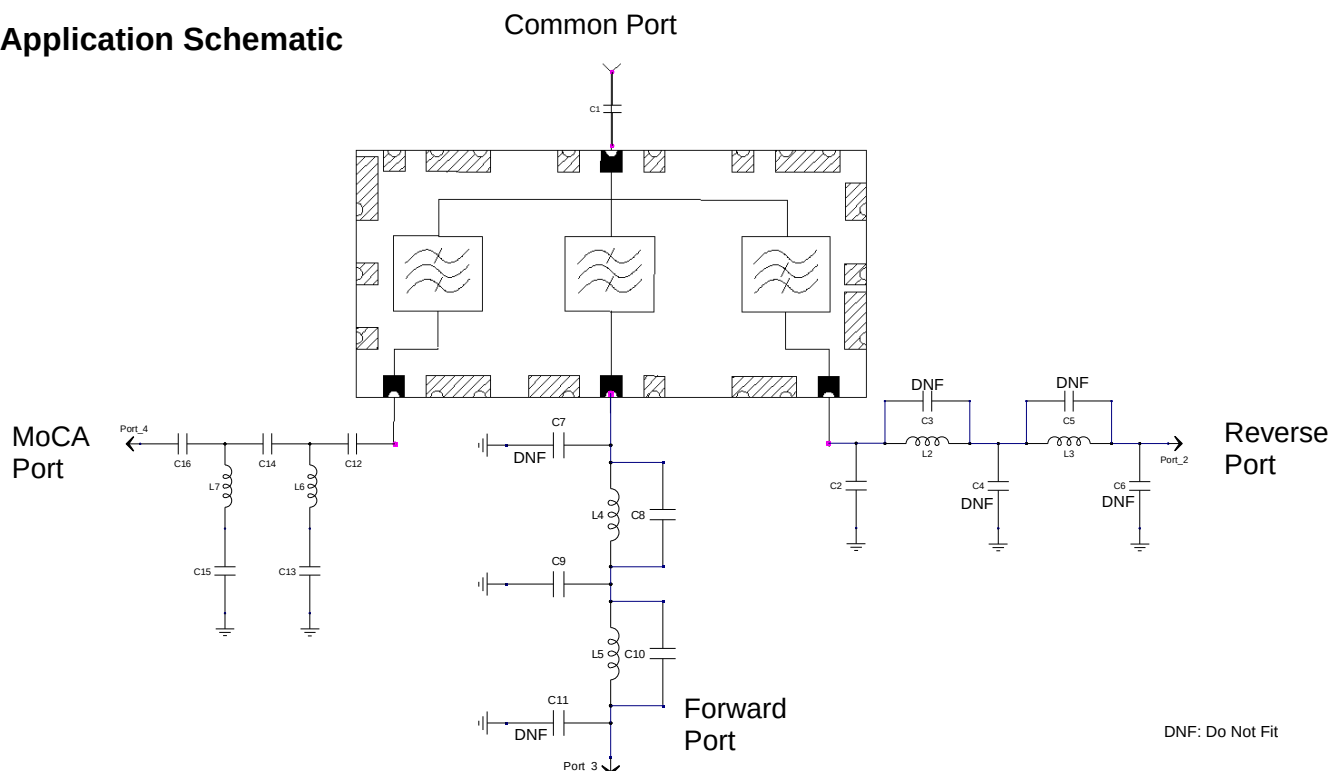


Dimensions in mm. Tolerance: $.x \pm 0.1$ unless otherwise noted

Solder Resist Colour: Green

PCB Pad Finish: ENIG

Application Schematic



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MoCA Triplex Filter

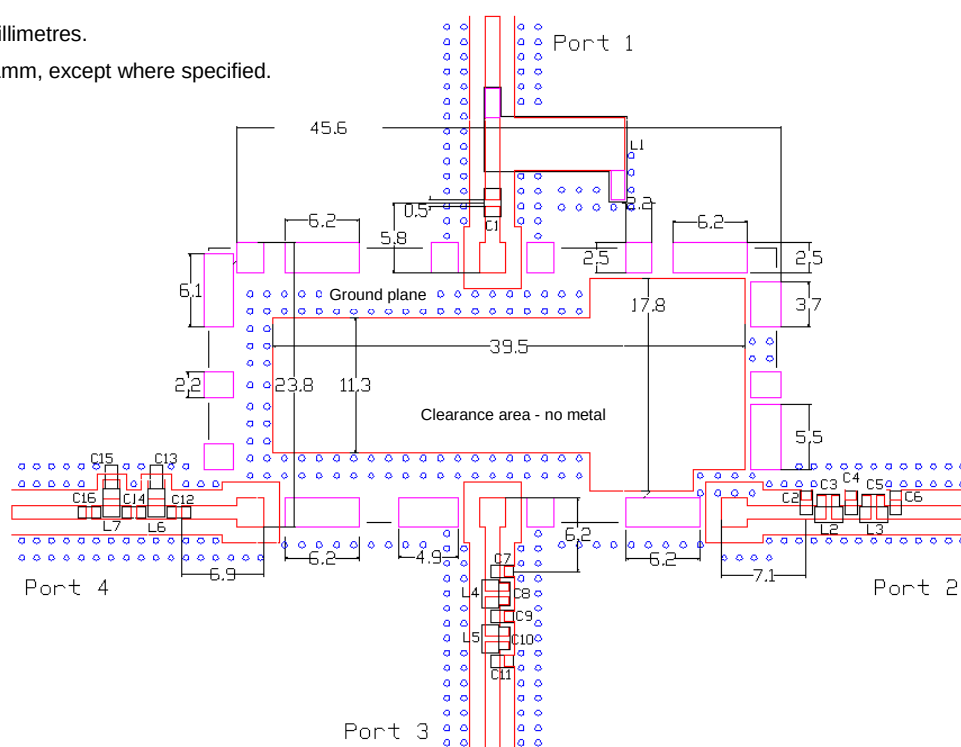
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Recommended Application Layout

Dimensions are millimetres.

Tolerance: .x ± 0.1mm, except where specified.



NOTE: Any deviation from recommended footprint will compromise the filter performance
For optimal filter performance the 4 transmission lines need to be at 75 Ω impedance
Substrate is 1.6mm thick FR4
Track dimension = 1.15mm
Gap dimension = 1.3mm

Recommended Component Values

Description Ref	Des	Qty
RES,SMT,0603,Zero Ohm	C1,L3	2
CAP,SMT,0402,27pF,+/-2%,50V,C0G	C2	1
Do Not Fit (DNF)	C3,C4,C5,C6, C7,C11,L1	7
CAP,SMT,0402,2.7pF, +/--.25%, 50V,C0G	C8	1
CAP,SMT,0402,1.3pF +/-0.1pF, 50V, C0G	C9	1
CAP,SMT,0402,0.6pF,+/-0.1pF,50V,C0G	C10	1
CAP,SMT,0402,2.0pF,+/-0.1pF,50V,COG	C12	1
CAP,SMT,0402,7.5pF,+/-0.25pF,50V,C0G	C13	1
RES,SMT,0402,Zero Ohm	C14,C16	2
CAP,SMT,0402,3.0pF,+/-0.25pF,50V,C0G	C15	1
IND,SMT,0603,220nH	L2	1
IND,SMT,0603,5.6nH	L4	1
IND,SMT,0603,6.8nH	L5	1
IND,SMT,0603,12nH	L6	1
IND,SMT,0603,22nH	L7	1

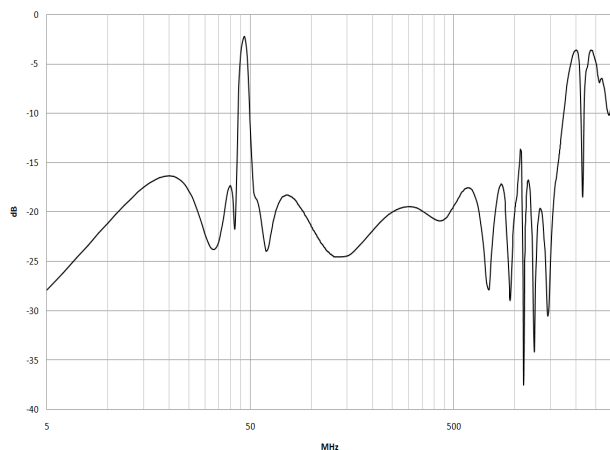
- It is not recommended to run tracks under the filter.
- RF shield should be kept a minimum of 10mm above the filter
- A ground is required on the top layer of the application PCB. Recommended ground pattern shown. A clearance area in the centre of the application ground is required as shown.
- This ground plane is connected to the filter ground plane and forms a 75 Ω co-planar wave guide for the input and output RF transmission lines.

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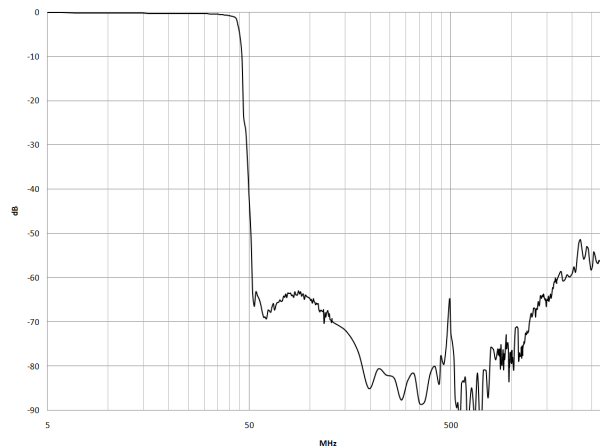
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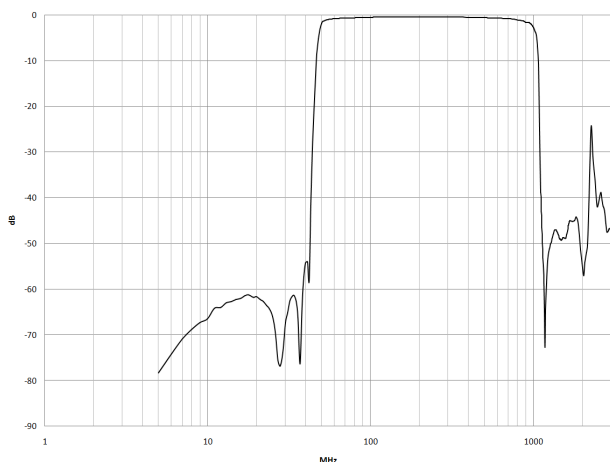
Common Port Return Loss



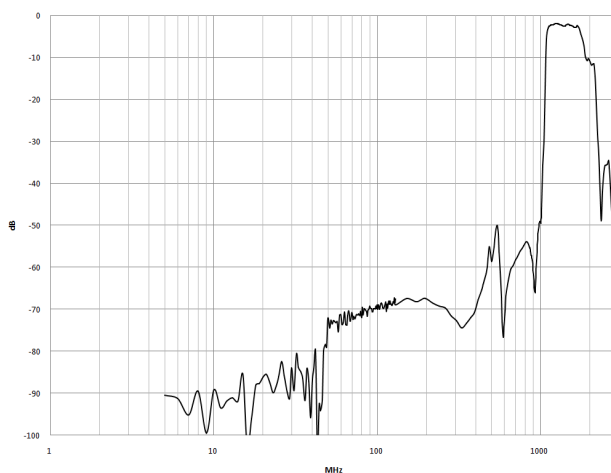
Reverse Path



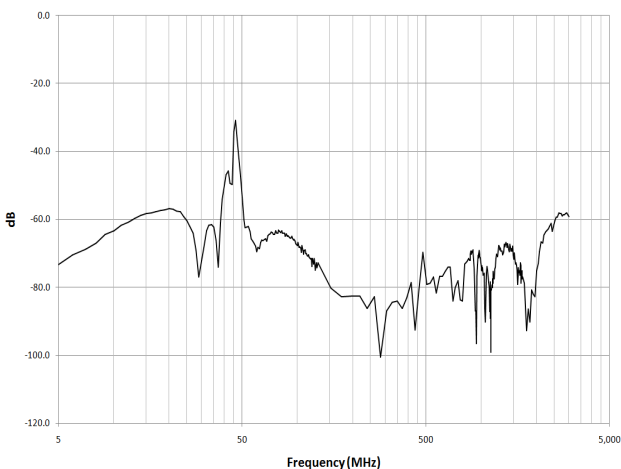
Forward Path



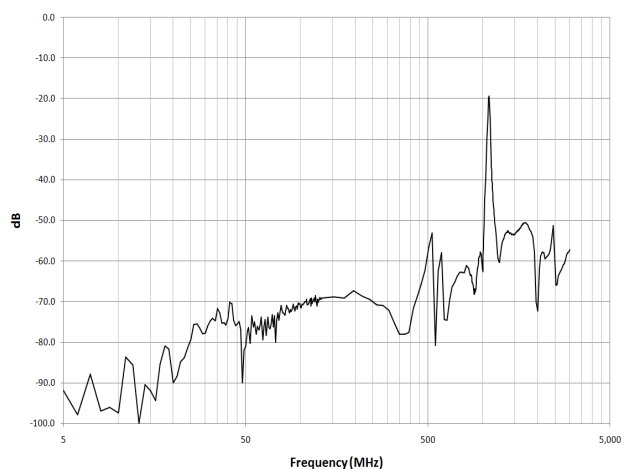
MoCA Path



Reverse to Forward Path Isolation



Forward to MoCA Path Isolation



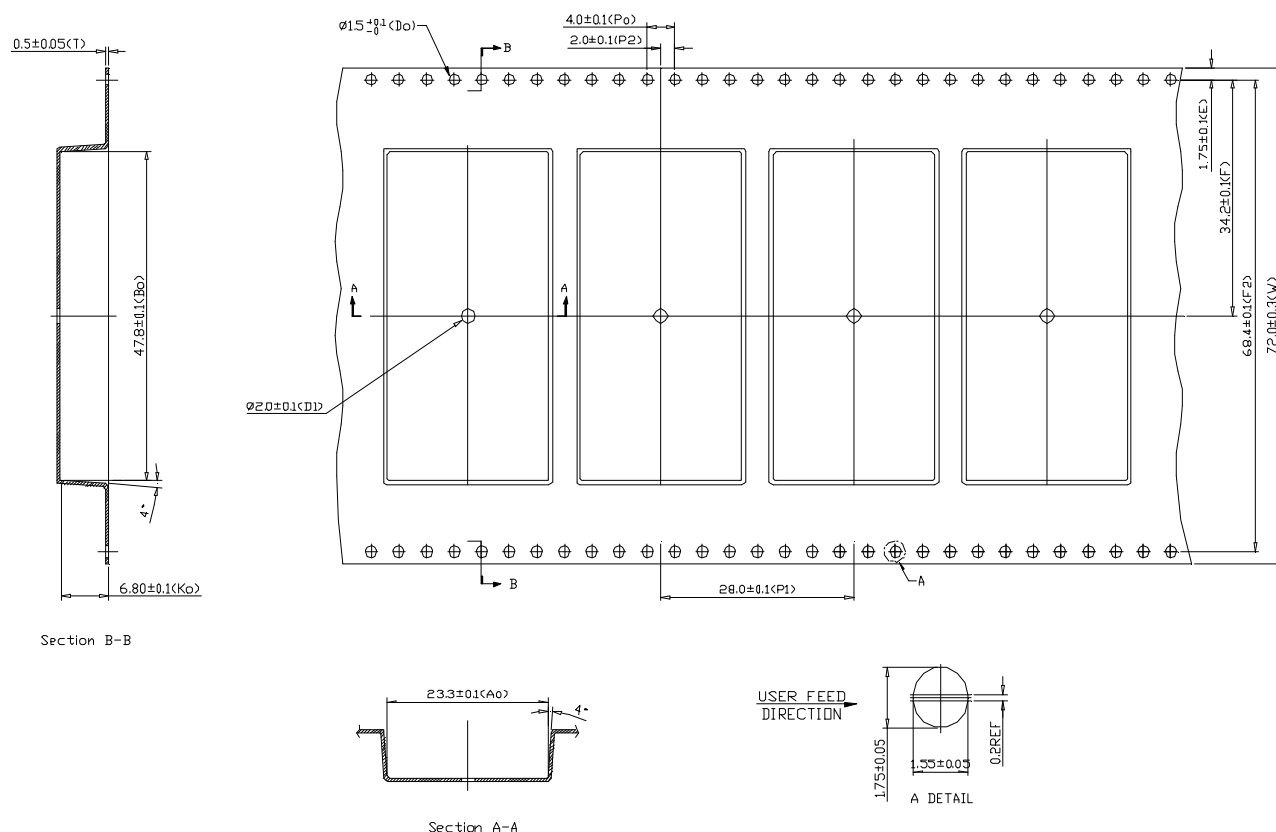
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Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	200
Reel Size	mm	330
Tape Width	mm	72.0
Pitch	mm	28.0
Ao	mm	23.3
Bo	mm	47.8
Ko	mm	6.8
Orientation	-	F54
Reference Application Note ANI-019 for orientation		

Ordering Information

Part Number	Package
MAFL-011018	Tape & Reel



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