

Surface Mount  **Low Pass Filter**

ULP-216+

50Ω DC to 216 MHz

The Big Deal

- Low Insertion loss, 1.5dB Typ.
- High rejection, > 40dB
- Sharp insertion loss roll-off
- Ultra miniature surface mount package



CASE STYLE: QA2224

Product Overview

The ULP-216+ is a lowpass filter in a top hat package (size of 0.25" x 0.25") fabricated using SMT technology. Covering DC to 216 MHz band width, these units offer good matching within the passband and high rejection. This model uses a miniature high Q capacitors and chip inductors for high reliability. In addition it has repeatable performance across production lots and consistent performance across temperature.

Key Features

Feature	Advantages
Low passband insertion loss	Passband insertion loss 1.5dB typical ensures low signal loss throughout the passband
Excellent stopband rejection	Rejection of 40 dB ensures unwanted spurious are eliminated
Excellent return loss at DC-216 MHz	This makes signal transmission with very less reflections and well-matched with the adjacent component used in the system
Small size, 0.25" x 0.25"	The Ultra miniature surface mount package enables the ULP-216+ to be used in compact designs.

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



Surface Mount ^{top hat®} Low Pass Filter

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CASE STYLE: QA2224

Features

- High rejection
- Sharp insertion loss roll-off
- Ultra miniature surface mount package

Applications

- Wireless communications
- Receivers / Transformers
- Lab use

Electrical Specifications at 25°C

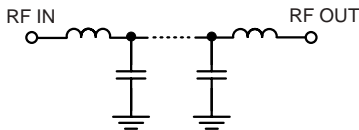
Parameter	F#	Frequency (MHz)	Min.	Typ.	Max.	Unit	
Pass Band	Insertion Loss	DC-F1	DC-216	—	1.5	2.0	dB
	Freq. Cut-Off	F2	232	—	3.0	—	dB
	VSWR	DC-F1	DC-216	—	1.3	—	:1
Stop Band	Rejection Loss	F3-F4	295-450	20	27	—	dB
	Rejection Loss	F4-F5	450-1300	40	47	—	dB
	VSWR	F3-F5	295-1300	—	20	—	:1

Maximum Ratings

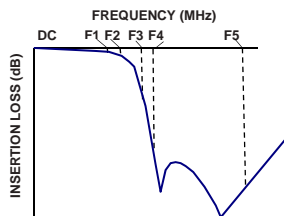
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power Input	1 W max.

Permanent damage may occur if any of these limits are exceeded.

Functional Schematic



Typical Frequency Response

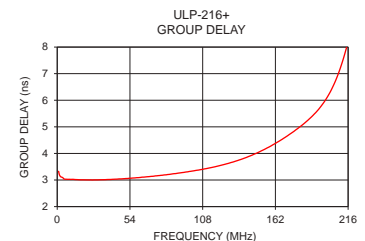
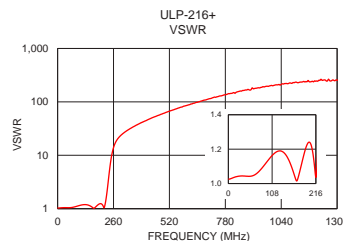
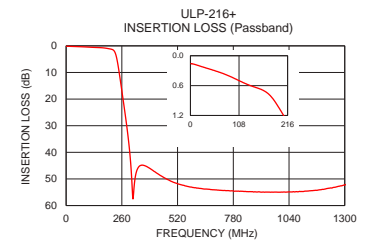
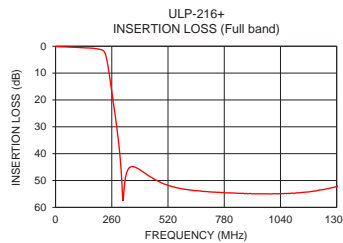


Typical Performance Data at 25°C

Frequency (MHz)	Insertion Loss (dB)	VSWR (:1)	Frequency (MHz)	Group Delay (nsec)
1	0.16	1.03	1	3.33
10	0.17	1.03	3	3.11
50	0.29	1.04	5	3.04
100	0.47	1.14	10	3.02
200	1.09	1.24	50	3.05
216	1.40	1.04	60	3.09
232	3.38	2.46	70	3.14
250	11.36	9.23	80	3.19
260	16.91	13.91	90	3.26
267	20.84	16.61	100	3.34
283	30.21	21.17	110	3.42
295	38.52	23.77	120	3.53
340	45.35	31.96	130	3.67
450	49.18	52.29	140	3.84
500	51.25	62.43	150	4.06
750	54.40	127.26	160	4.32
1000	54.99	199.91	180	4.99
1100	54.71	228.39	200	6.07
1200	53.94	242.75	210	7.18
1300	52.26	253.18	216	8.20

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



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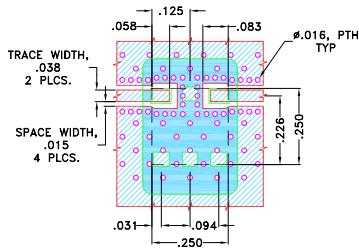
REV.A
M161927
ULP-216+
EDU2391
URJ
170513
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Pad Connections

INPUT	1
OUTPUT	3
GROUND	2,4,5,6

Demo Board MCL P/N: TB-894+
Suggested PCB Layout (PL-484)

SUGGESTED MOUNTING CONFIGURATION FOR
 QA2224 CASE STYLE "06FL09" PIN CODE

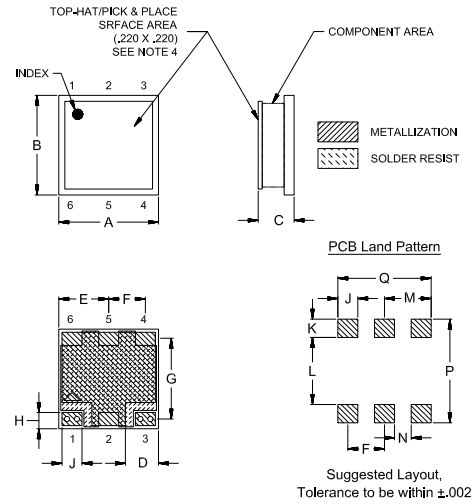


NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS (R04350B) WITH DIELECTRIC THICKNESS .020 \pm .0015". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



Outline Dimensions (Inch / mm)

A	B	C	D	E	F	G	H	J	K
-	Min	Max	-	-	-	-	-	-	-
.250	.250	.075	.100	.075	.125	.092	.201	.041	.050
6.35	6.35	1.91	2.54	1.91	3.18	2.34	5.11	1.04	1.27
L	M	N	P	Q					
-	-	-	-	-					Wt.
.168	.117	.042	.260	.234					grams
4.27	2.97	1.07	6.60	5.94					0.25

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