

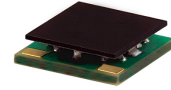
Surface Mount ^{top hat®} Low Pass Filter

ULP-190+

50Ω DC to 190 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-190+ is a lowpass filter in a top hat package (size of 0.25" x 0.25") fabricated using SMT technology. Covering DC to 190 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 |
| Small size, 0.25" x 0.25" | The Ultra miniature surface mount package enables the ULP-190+ to be used in compact designs. |

Notes

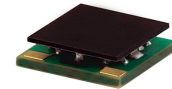
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Features

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

Applications

- Wireless communications
- Receivers / Transformers
- Lab use

Electrical Specifications at 25°C

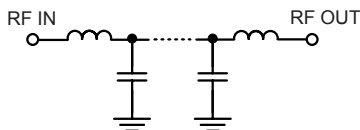
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|-----------|----------------|-----------------|-----------|------|------|--------|
| Pass Band | Insertion Loss | DC-F1 | DC-190 | — | 1.5 | 2.0 dB |
| | Freq. Cut-Off | F2 | 220 | — | 3.0 | dB |
| | VSWR | DC-F1 | DC-190 | — | 1.5 | :1 |
| Stop Band | Rejection Loss | F3-F4 | 264-300 | 20 | 27 | — dB |
| | | F4-F5 | 300-1300 | 40 | 47 | — dB |
| | VSWR | F5-F6 | 1300-3000 | — | 20 | — dB |
| | | F3-F5 | 264-1300 | — | 20 | — :1 |

Maximum Ratings

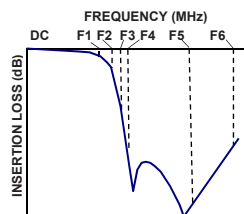
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 0.6 W max. |

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

Functional Schematic



Typical Frequency Response

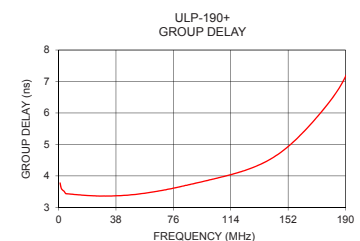
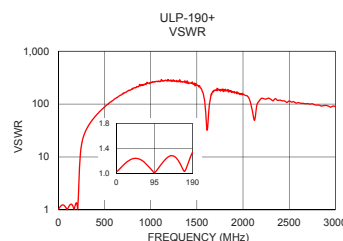
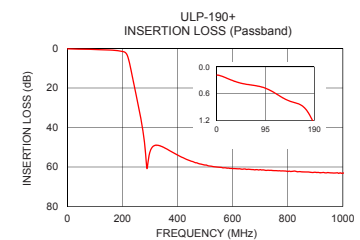
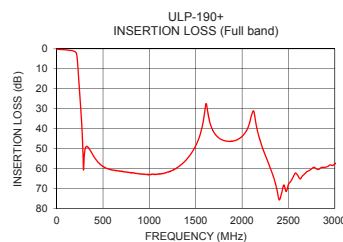


Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 1 | 0.18 | 1.03 | 1 | 3.77 |
| 50 | 0.37 | 1.24 | 5 | 3.43 |
| 100 | 0.50 | 1.04 | 8 | 3.42 |
| 190 | 1.29 | 1.34 | 24 | 3.37 |
| 200 | 1.53 | 1.31 | 40 | 3.37 |
| 217 | 3.23 | 1.92 | 56 | 3.44 |
| 220 | 4.30 | 2.60 | 80 | 3.65 |
| 230 | 9.97 | 6.78 | 96 | 3.83 |
| 245 | 20.18 | 14.68 | 104 | 3.92 |
| 260 | 30.37 | 20.57 | 112 | 4.01 |
| 264 | 33.22 | 21.93 | 120 | 4.12 |
| 300 | 52.43 | 32.24 | 128 | 4.25 |
| 500 | 59.00 | 87.32 | 136 | 4.42 |
| 750 | 61.84 | 175.38 | 144 | 4.64 |
| 1000 | 63.14 | 252.97 | 160 | 5.29 |
| 1300 | 59.71 | 272.65 | 168 | 5.69 |
| 1500 | 48.57 | 230.26 | 176 | 6.15 |
| 2000 | 43.89 | 154.74 | 184 | 6.66 |
| 2500 | 68.01 | 114.26 | 186 | 6.80 |
| 3000 | 57.75 | 89.75 | 190 | 7.15 |

+RoHS Compliant

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



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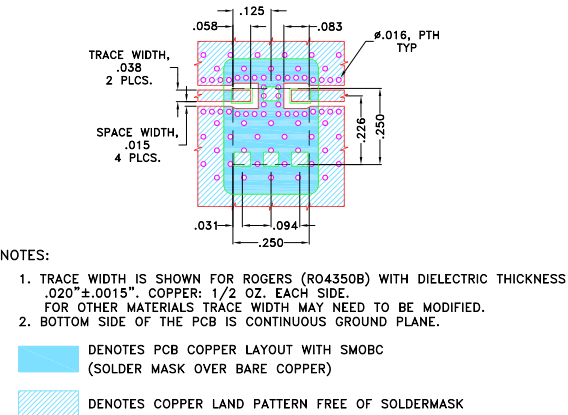
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ULP-190+
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Pad Connections

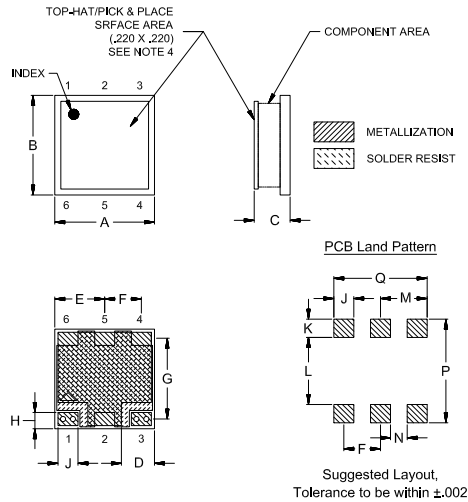
| | |
|--------|---------|
| INPUT | 1 |
| OUTPUT | 3 |
| GROUND | 2,4,5,6 |

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

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



Outline Drawing



Outline Dimensions (Inch)

| A | B | C | D | E | F | G | H | J | K |
|------|------|-----------|------|------|------|------|------|------|-------|
| - | - | Min Max | - | - | - | - | - | - | - |
| .250 | .250 | .075 .100 | .075 | .125 | .092 | .201 | .041 | .050 | .046 |
| 6.35 | 6.35 | 1.91 2.54 | 1.91 | 3.18 | 2.34 | 5.11 | 1.04 | 1.27 | 1.17 |
| 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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