

## Applications

- Band 1 Uplink Infrastructure
- Base Station
- General Purpose Wireless

## Product Features

- 60 MHz Bandwidth
- High Attenuation
- Low Loss
- Single-ended Operation
- Small Size: 3 x 3 x 1.02 mm
- Surface Mount Device
- RoHS Compliant, Pb-Free

## General Description

The TQQ7301 is an exceptionally high performance uplink BAW filter for Band 1. This filter is housed in a compact 3x3 x 1.02 mm package for base station applications.

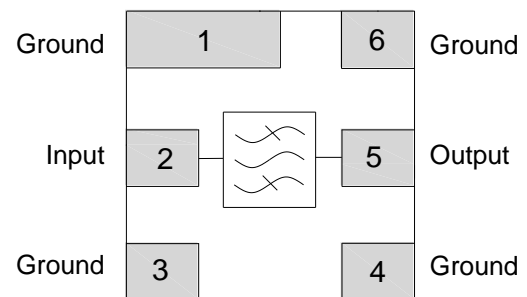
Low insertion loss, coupled with high attenuation makes this filter an ideal choice for uplink RF filtering needs.

The TQQ7301 is part of TriQuint's extensive portfolio of RF Baw and SAW filters.



6 Pin 3 x 3 mm leadless SMT Package

## Functional Block Diagram



Top View

## Pin Configuration

Pin No.	Label
2	Input
5	Output
1,3,4,6	Case Ground

## Ordering Information

Part No.	Description
TQQ7301	Band 1 UL BAW Filter
TQQ7301-EVB	Evaluation board

Standard T/R size = 2500 pieces on a 7" reel

**Absolute Maximum Ratings**

Parameter	Rating
Storage Temperature	-40 to +95 °C
RF Input Power (CW, +95 °C for 10 years)	+27 dBm
(CW, +95 °C for 1,000 hours)	+30 dBm
(CW, +55 °C for 10,000 hours)	+30 dBm
(CW, +95 °C for 2 hours)	+33 dBm

Operation of this device outside the parameter ranges given above may cause permanent damage.

**Recommended Operating Conditions**

Parameter	Min	Typ	Max	Units
T <sub>CASE</sub>	-40		+95	°C

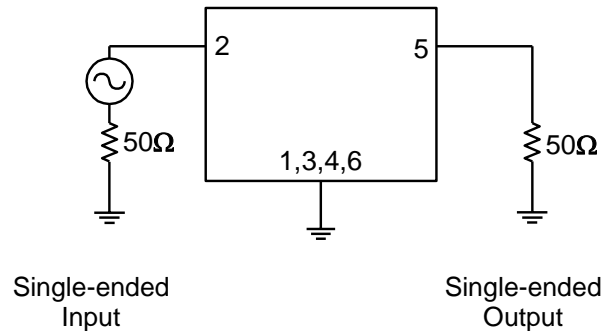
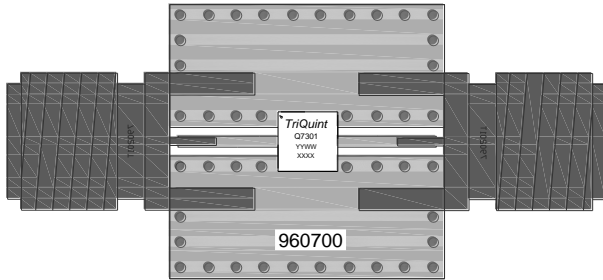
Electrical specifications are measured at specified test conditions.

**Electrical Specifications**

Operating Temperature Range: -40 to +95°C.

Parameter	Conditions	Min	Typ	Max	Units	
Pass Band Frequency		1920		1980		
Center Frequency		-	1950	-	MHz	
3.0 dB Bandwidth		-	60	-	MHz	
Insertion Loss	1920 – 1980 MHz	+25 °C	-	2.0	3.2	dB
		-40 °C to +95 °C	-	3.0	4.0	
Amplitude Variation	1920 – 1980 MHz	-40 °C to +95 °C	-	1.0	2.0	dB p-p
Input Return Loss		7.5	10.4	-	dB	
Output Return Loss		7.5	10.1	-	dB	
Stopband Attenuation (relative to zero dB)	0.9MHz to 1400MHz	30	34	-	dB	
	1400 MHz to 1495 MHz	30	34	-		
	1495 MHz to 1700 MHz	30	36	-		
	1700 MHz to 1785 MHz	36	40	-		
	1785 MHz to 1870 MHz	30	38	-		
	1870 MHz to 1888 MHz	15	-	-		
	2030 MHz to 2050 MHz	35	41	-		
	2050 MHz to 2080 MHz	33	39	-		
	2080 MHz to 2170 MHz	30	42	-		
	2170 MHz to 4170 MHz	25	32	-		
4170 MHz to 5000 MHz	30	41	-			
5000 MHz to 5720 MHz	10	36	-			
5720 MHz to 6000 MHz	8	40	-			
Group Delay Variation	1920 – 1980 MHz	-	17	40	ns p-p	
Group Delay Variation	Any 5 MHz band in passband	-	8	21	ns p-p	

**TQQ7301-PCB Evaluation Board**



**Bill of Material – TQQ7301-PCB**

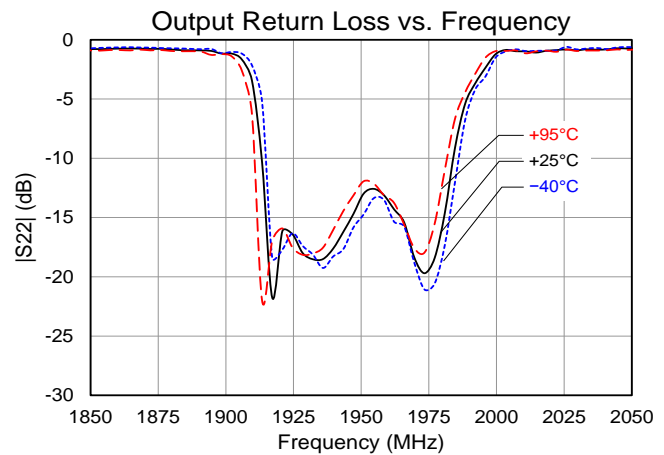
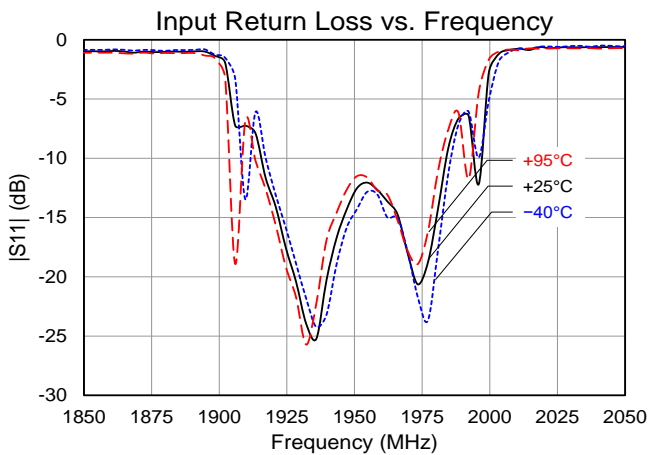
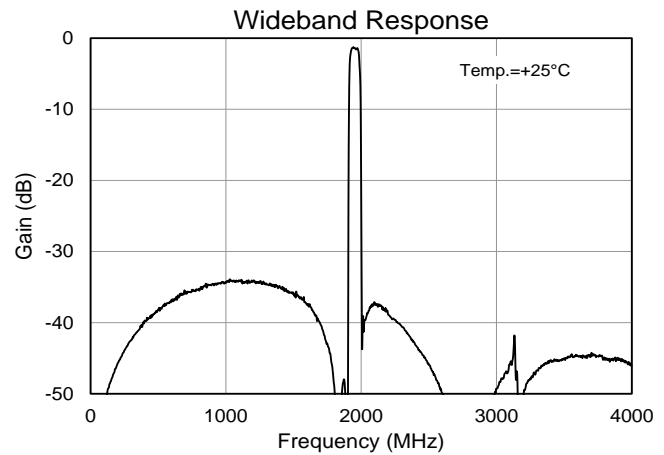
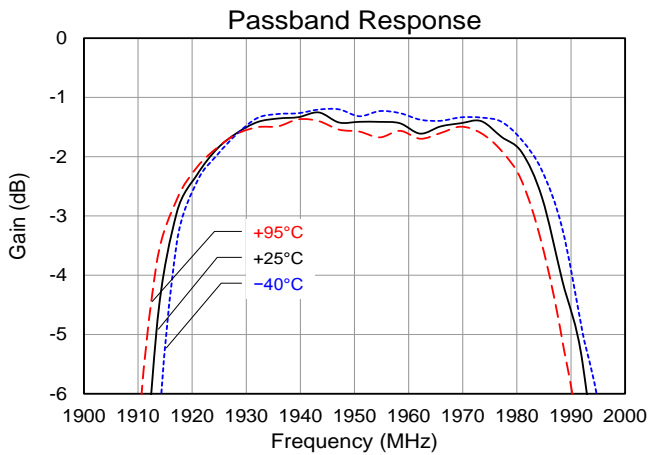
Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	Band 1 Uplink BAW Filter	Qorvo	TQQ7301
n/a	n/a	Printed Circuit Board	Qorvo	960700
n/a	n/a	SMA Edge Connector	Radiall	9602-1111-018

**Evaluation Board PCB Information**

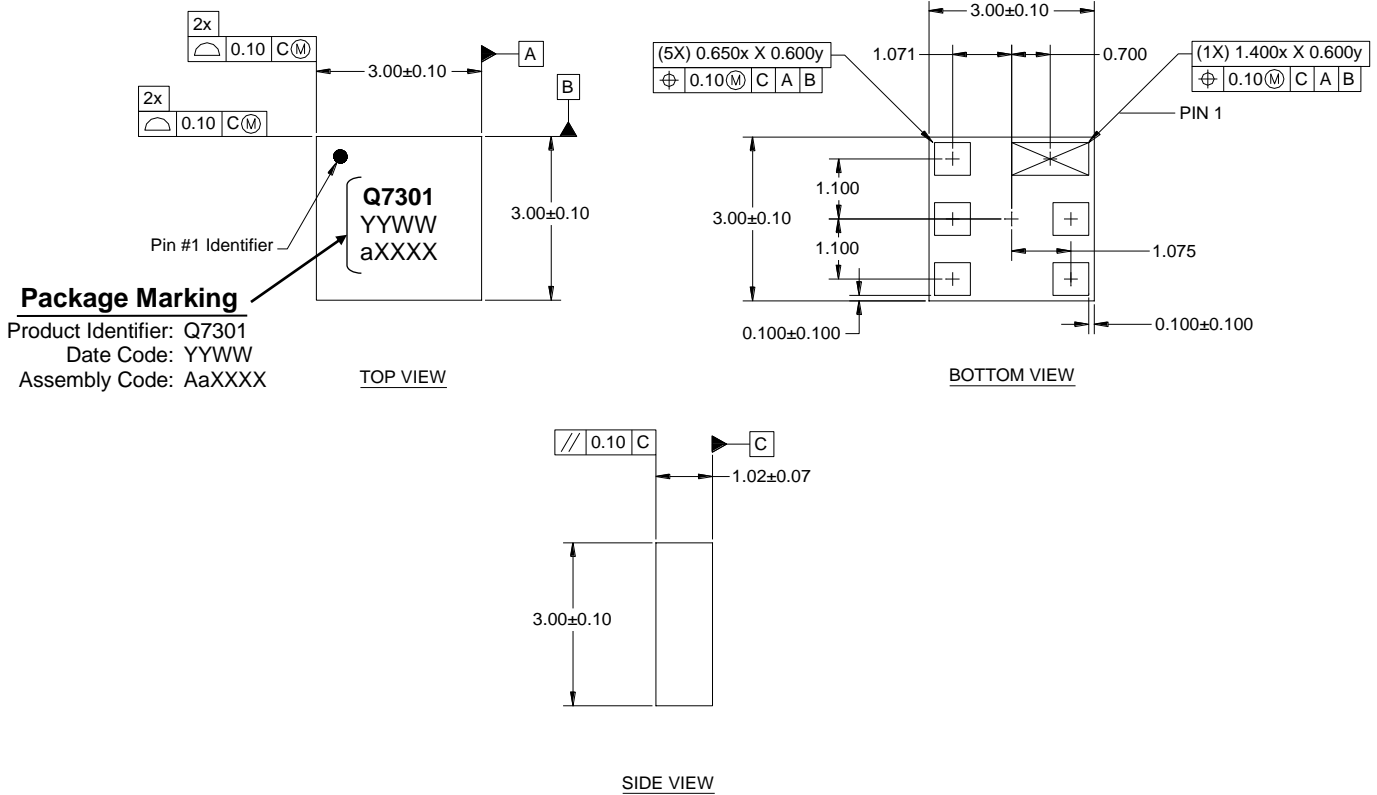
Top, middle & bottom layers: 1 oz copper  
 Substrates: FR4 dielectric, .031" thick  
 Finish plating: Nickel: 3-8μm thick, Gold: .03-.2μm thick  
 Hole plating: Copper min .0008μm thick

**Performance Plots**

Test conditions unless otherwise noted: Temp.= +25 °C



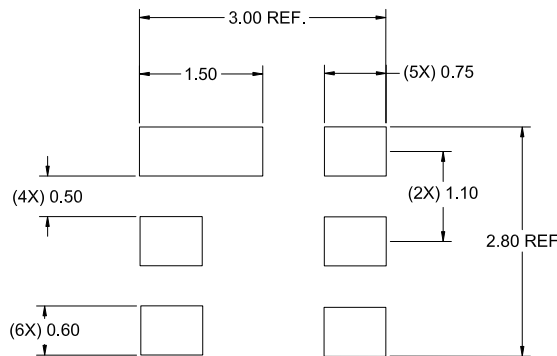
**Package Marking and Dimensions**



**Notes:**

1. All dimensions are in millimeters
2. All tolerances are ±0.15 mm except overall length and width ±0.10 mm
3. Contact plating : ENIG (Electroless Nickel Immersion Gold)
4. Terminations: 0.5 – 1.0 μm Au plating, over a 2 – 6 μm Ni plating

**PCB Mounting Pattern**

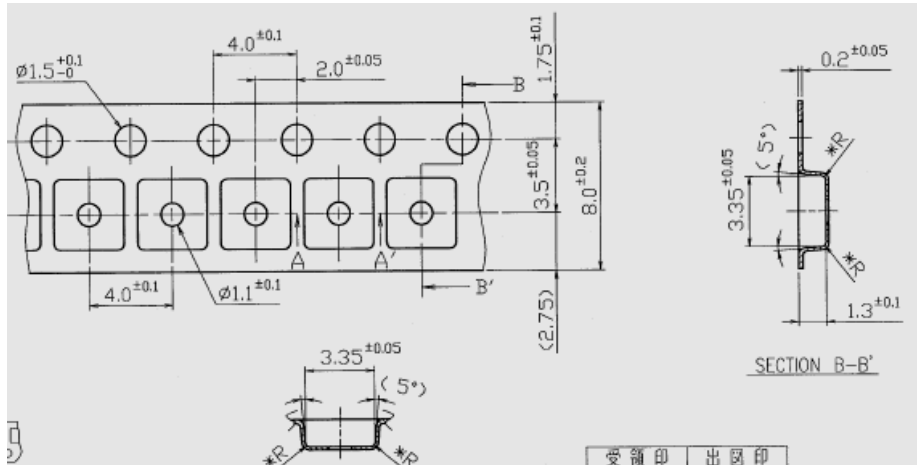


**Notes:**

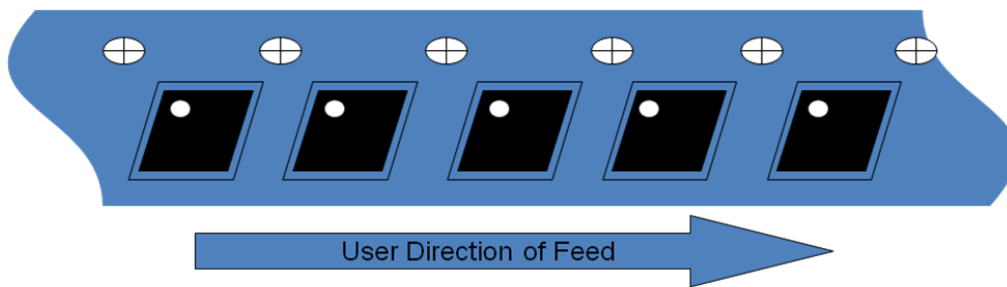
1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.

**Tape and Reel Information – Carrier and Cover Tape Dimensions**

Tape and reel specifications for this part are also available on the TriQuint website.  
Standard T/R size = 2500 pieces on a 7" reel

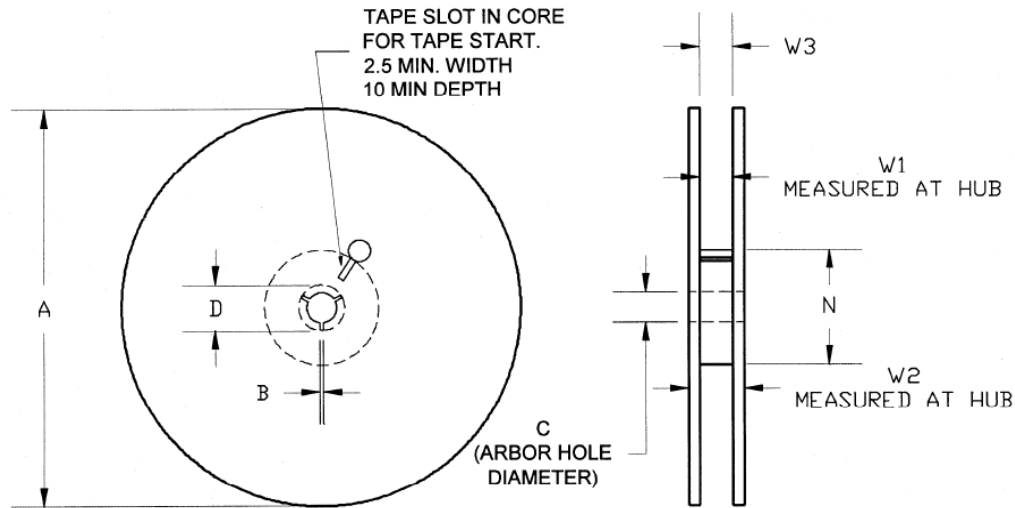


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.132	3.35
	Width	B0	0.132	3.35
	Depth	K0	0.055	1.40
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier Tape	Width	W	0.315	8.00



**Tape and Reel Information – Reel Dimensions**

Tape and reel specifications for this part are also available on the TriQuint website.  
Standard T/R size = 2,500 pieces on a 7" reel.



Feature	Measure	Symbol	Size (in)	Size (mm)
Flange	Diameter	A	6.969	177.0
	Thickness	W2	0.559	14.2
	Space Between Flange	W1	0.346	8.8
Hub	Outer Diameter	N	2.283	58.0
	Arbor Hole Diameter	C	0.512	13.0
	Key Slit Width	B	0.079	2.0
	Key Slit Diameter	D	0.787	20.0

## Product Compliance Information

### ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 1B  
Value:  $\geq 500$  V to  $< 1000$  V  
Test: Human Body Model (HBM)  
Standard: ESDA/JEDEC Standard JS-001-2012

ESD Rating: Class C3  
Value:  $> 1000$  V  
Test: Machine Model (CDM)  
Standard: JEDEC Standard JESD22-C101F

### MSL Rating

MSL Rating: Level 3  
Test: 260 °C convection reflow  
Standard: JEDEC Standard IPC/JEDEC J-STD-020

### Solderability

Compatible with both lead-free (260°C maximum reflow temperature) and tin/lead (245°C maximum reflow temperature) soldering processes.

Contact plating: ENIG (Electroless Nickel Immersion Gold)

### RoHS Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ( $C_{15}H_{12}Br_4O_2$ ) Free
- PFOS Free
- SVHC Free

## Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

Web: [www.triquint.com](http://www.triquint.com)

Tel: 877-800-8584

Email: [customer.support@qorvo.com](mailto:customer.support@qorvo.com)

For information about the merger of RFMD and TriQuint as Qorvo:

Web: [www.qorvo.com](http://www.qorvo.com)

For technical questions and application information:

Email: [sjcapplications.engineering@qorvo.com](mailto:sjcapplications.engineering@qorvo.com)

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