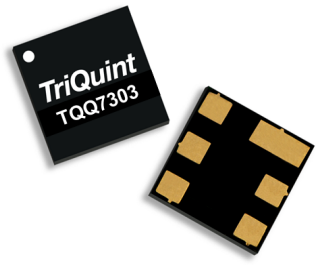
TQQ7303

1747.5 MHz LTE Band 3 Uplink BAW Filter

Applications

- LTE Band 3 Uplink Infrastructure
- Base Station
- General Purpose Wireless

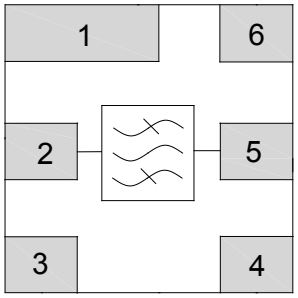


6 Pin 3x3 mm leadless SMT Package

Product Features

- 75 MHz Bandwidth
- High Attenuation
- Low Loss
- Single-ended Operation
- Small Size: 3.00 x 3.00 x 1.02 mm
- Surface Mount Device
- RoHS Compliant, Pb-Free

Functional Block Diagram



Top View

General Description

The TQQ7303 is an exceptionally high performance uplink BAW filter for LTE Band 3. This filter is housed in a compact 3x3 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 TQQ7303 is part of TriQuint's extensive portfolio of RF Baw and SAW filters.

Pin Configuration

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

Ordering Information

Part No.	Description
TQQ7303	1747.5 MHz BAW Filter
TQQ7303-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, +55°C for 10,000 hours)	+30 dBm

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

Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
T_{CASE}	−40		+85	°C

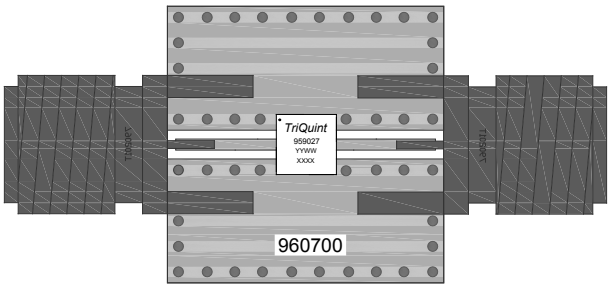
Electrical specifications are measured at specified test conditions.

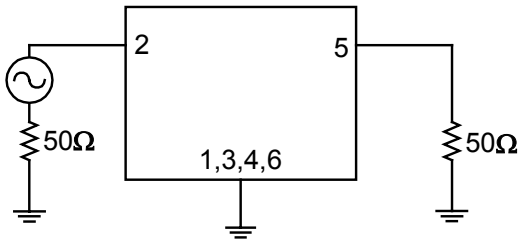
Electrical Specifications(1,2,3,4)

Parameter	Conditions	Min	Typ	Max	Units
Center Frequency		-	1747.5	-	MHz
3.0 dB Bandwidth		-	81	-	MHz
Insertion Loss	1710-1785 MHz, +25°C	-	2.4	3.0	dB
	1710-1785 MHz, −40 to +85°C	-	3.0	3.5	dB
Passband Ripple(5)(6)	+25°C	-	1.0	1.8	dB p−p
	−40 to +85°C	-	1.6	2.4	dB p−p
Group Delay Ripple	+25°C	-	20	40	ns p-p
	+25°C to +85°C	-	38	55	ns p-p
Group Delay Ripple (any 5 MHz band in passband)	+25°C	-	7	18	ns p-p
	-40°C to +85°C	-	14	30	ns p-p
Input/Output VSWR		-	1.9:1	2.4:1	ratio
Stopband Attenuation (relative to zero dB)	0.9 – 720 MHz	30	32	-	dB
	720 – 1670 MHz	28	32	-	
	1670 – 1680 MHz	10	20	-	
	1805 – 1825 MHz (−40 to −10ºC)	38	46	-	
	1825 – 1880 MHz	44	52	-	
	1880 – 1920 MHz	30	44	-	
	1920 – 2110 MHz	40	42	-	
	2110 – 2170 MHz	40	44	-	
	2170 – 2660 MHz	24	28	-	
	2660 – 2690 MHz	22	26	-	
	2690– 3800 MHz (8)	10	17	-	
	3800– 5000 MHz (8)	5	11	-	
Source/Load Impedance (7)	Single ended	-	50	-	Ohms

Notes:
1. All specifications are based on the TriQuint schematic for the main reference design.
2. Production test is performed at room temp. to a guard-banded specification to ensure electrical compliance over temperature.
3. Electrical margin has been built into the design to account for variation due to temperature drift and manufacturing tolerances.
4. Typical values are based on average measurements at room temperature of 25°C.
5. This is defined as the difference between the maximum and minimum insertion loss within the specified band.
6. This is defined as the worst difference between a peak and adjacent valley within defined frequency points.
7. This is the optimum impedance in order to achieve the performance shown.

TQQ7303-PCB Evaluation Board





Single-ended Input

Single-ended Output

Bill of Material – TQQ7303-PCB

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	1742.5 MHz BAW Filter	TriQuint	TQQ7303
n/a	n/a	Printed Circuit Board	TriQuint	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

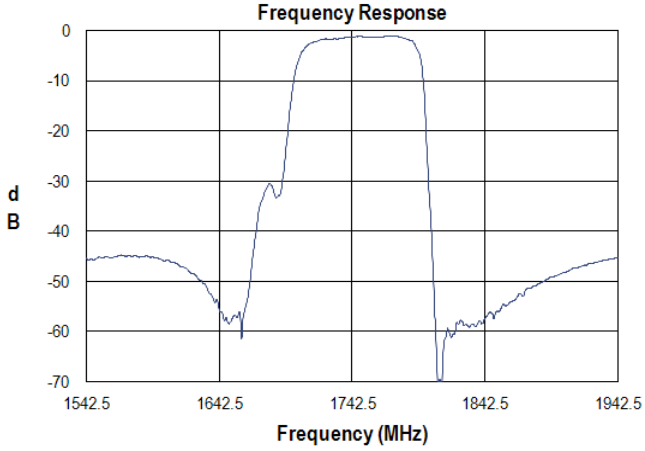
Finish plating: Nickel: 3-8µm thick, Gold: .03-.2µm thick

Hole plating: Copper min .0008µm thick

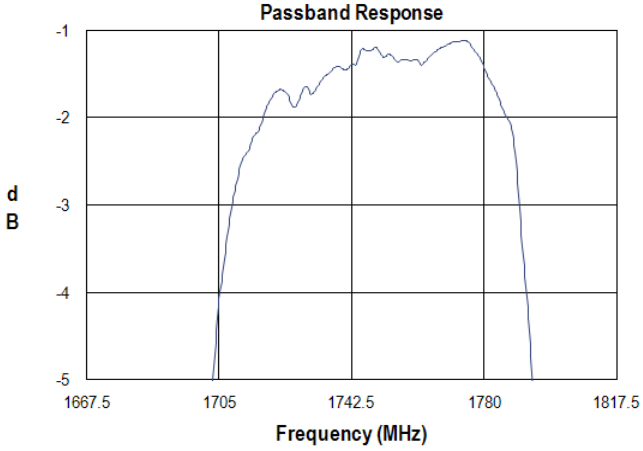
Performance Plots

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

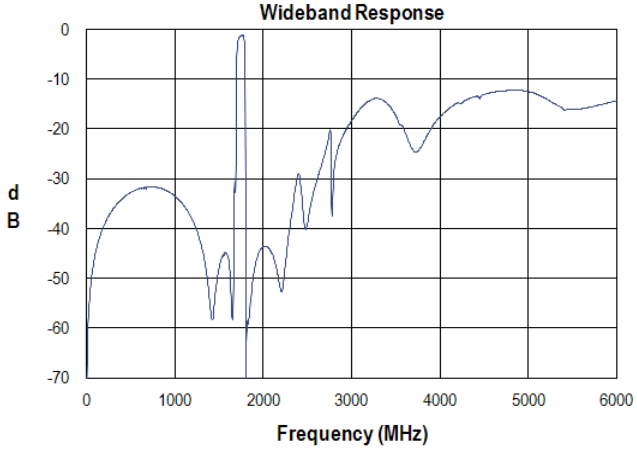
Frequency Response



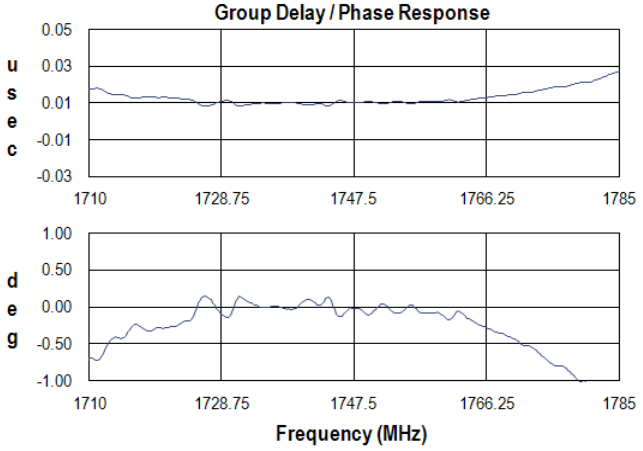
Passband Response



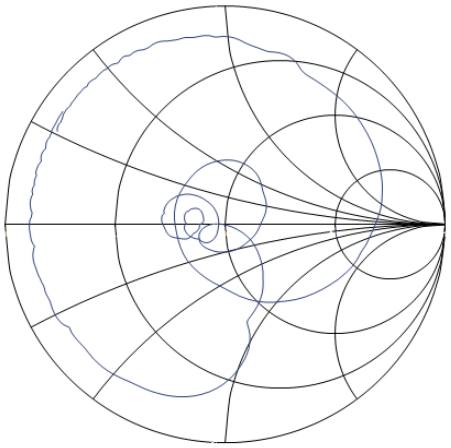
Wideband Response



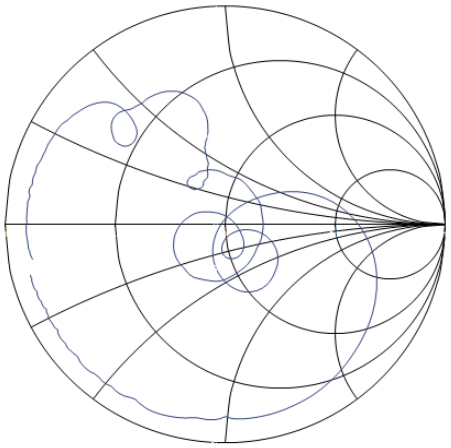
Group Delay / Phase Response



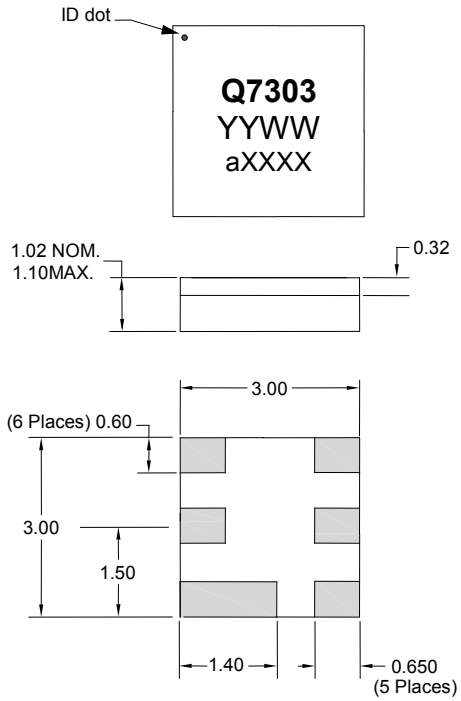
Input Smith Chart



Output Smith Chart



Package Material, Marking and Dimensions



Package Style: 6-pin 3x3 leadless SMT
Dimensions: 3.00 x 3.00 x 1.02 mm

4 layer laminate based over-molded module

Contact plating : ENIG (Electroless Nickel Immersion Gold)
Terminations: *Au* plating 0.5 - 1.0µm, over a 2-6µm *Ni* plating

All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

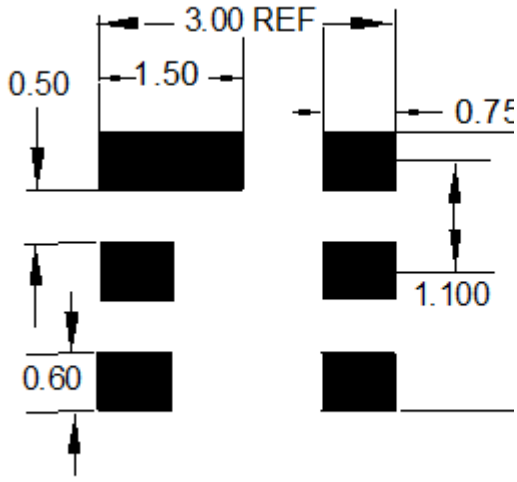
Package Marking:

Part Number: **Q7303**
Year/Week: YYWW
Assembly Code: aXXXX

PCB Mounting Pattern

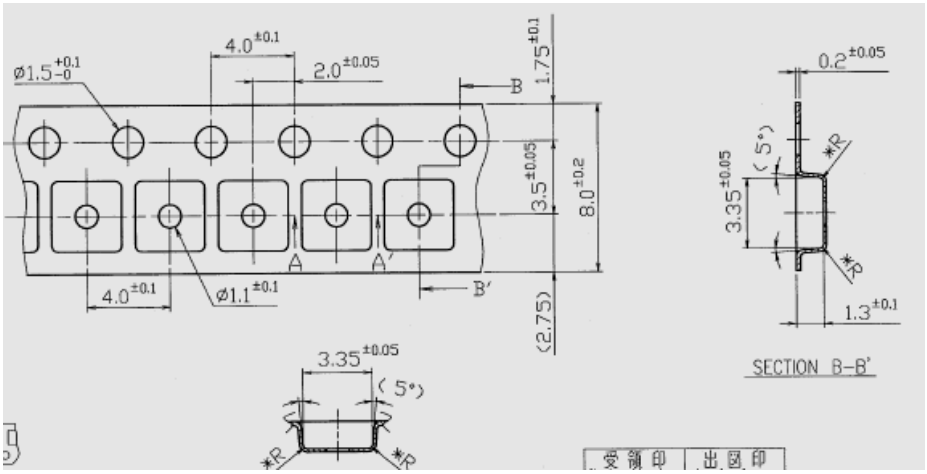
Notes:

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

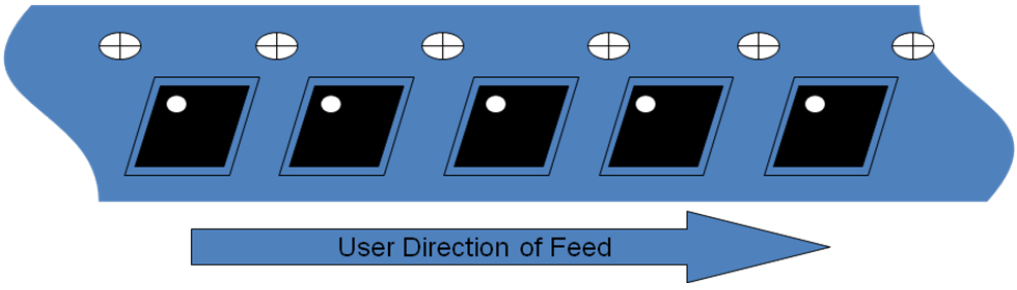


Tape and Reel Information – Carrier and Cover Tape Dimensions

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

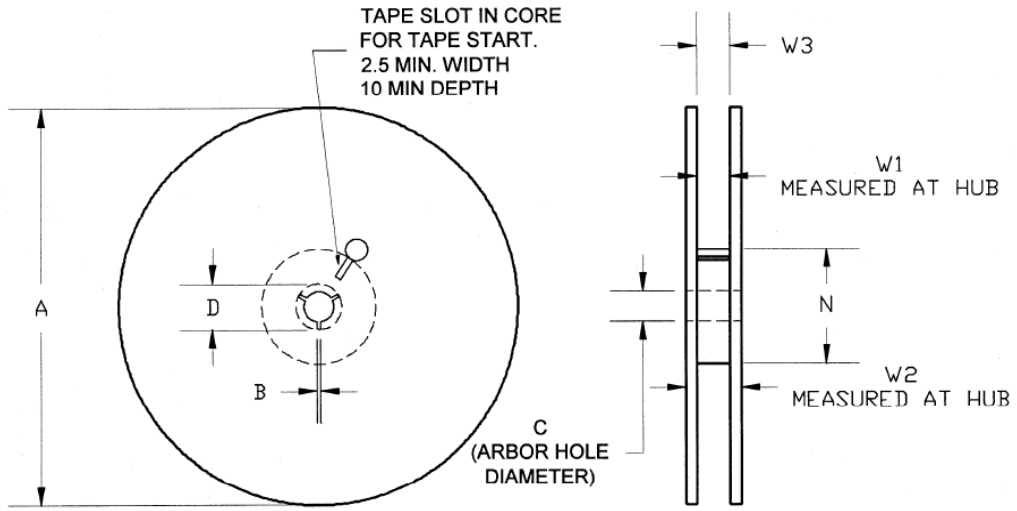


Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.132	3.35
	Width	B0	0.132	3.35
	Depth	K0	0.055	1.40
	Pitch	P1	0.157	4.00
Centerline Distance	Cavity to Perforation - Length Direction	P2	0.079	2.00
	Cavity to Perforation - Width Direction	F	0.138	3.50
Cover Tape	Width	C	0.213	5.40
Carrier 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 0
Value: Passes ≥ 200V min
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class B
Value: Passes ≥ 200V min
Test: Machine Model (MM)
Standard: JEDEC Standard JESD22-A115

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, and information about TriQuint:

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