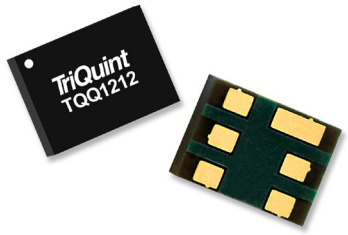
TQQ1212

1900/2017.5 MHz Dual Band Saw Filter Module

Applications

- General Purpose Wireless
- Uplink Band 34 and Band 39 Infrastructure

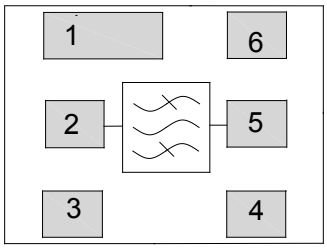


6 Pin 3 x 4 mm leadless SMT Package

Product Features

- Band 34 Usable Bandwidth 15 MHz
- Band 39 Usable Bandwidth 40 MHz
- Single-Input/Single-Output Dual Passband
- High Attenuation
- Low Loss
- Internally Match for Single Ended 50 Ohm Operation
- Small Size: 4.00 x 3.00 x 1.07 mm
- Surface Mount Device
- RoHS compliant, Pb-free

Functional Block Diagram



Top View

General Description

TQQ1212 is a general purpose Dual Band Uplink SAW filter Module for Band 34 and 39. This module was specifically designed in a 4 x 3 mm package for base station applications where two filter passbands share an optimally phased single input and a single output.

Low insertion loss, coupled with high attenuation and excellent power handling, makes this filter a natural choice for our customers RF filtering needs.

This filter module is part of TriQuint's wide portfolio of RF filters.

Pin Configuration

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

Ordering Information

Part No.	Description
TQQ1212	Dual Band Saw Filter Module
TQQ1212-PCB	Evaluation board

Standard T/R size = 2500 pieces on a 13" reel

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	−55 to 150 °C
RF Input Power(1)	+19 dBm
RF Input Power(2)	+20 dBm

Notes:
1. CW modulated RF signal at 55 °C for 10000 hours.
2. CW modulated RF signal at 55 °C for 5000 hours.
3. 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

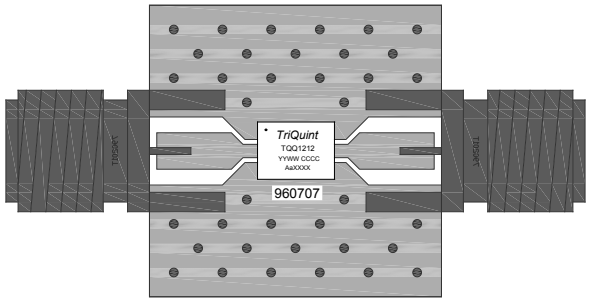
Electrical specifications are measured at specified test conditions.

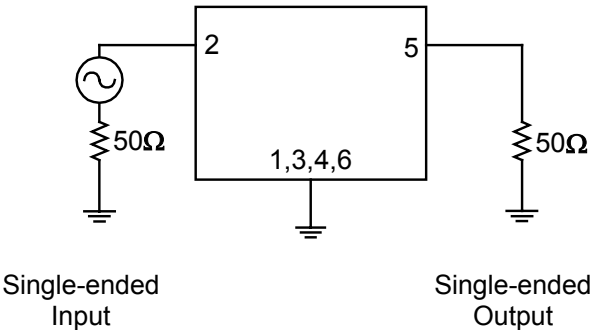
Electrical Specifications (1,2,3,4)

Parameter	Conditions	Min	Typ	Max	Units
Center Frequency	Band 39	-	1900	-	MHz
	Band 34	-	2017.5	-	MHz
Insertion Loss	1880 – 1920 MHz	-	2.3	3.8	dB
	2010 – 2025 MHz	-	2.7	3.8	dB
Amplitude Variation (5)	1880 – 1920 MHz	-	0.7	2.0	dB
	2010 – 2025 MHz	-	0.4	1.4	dB
Group Delay	1880 – 1920 MHz	-	14	31	ns
	2010 – 2025 MHz	-	18	36	ns
Group Delay Variation(6)	1880 – 1920 MHz	-	8.6	20	ns
	2010 – 2025 MHz	-	3.4	20	ns
Input Return Loss	1880 – 1920 MHz	9.5	13	-	dB
	2010 – 2025 MHz	11	17	-	
Output Return Loss	1880 – 1920 MHz	9.5	13	-	dB
	2010 – 2025 MHz	10.5	17	-	
Stopband Attenuation (7)	10 – 1700 MHz 1700 – 1785 MHz 1785 – 1800 MHz 1840.48 – 1855.48 MHz 1950 – 1980 MHz 2070 – 2110 MHz 2110 – 2300 MHz 2300 – 2400 MHz 2400 – 4000 MHz	26 29 28 20 13 25 32 33 28	28 31 43 31 31 34 36 38 37	- - - - - - - - -	dB
Source/Load Impedance (8)	Single ended	-	50	-	Ohms

Notes:
1. All specifications are based on the TriQuint schematic for the main reference design.
2. In production, devices will be tested at room temperature to a guard-banded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations 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. Relative to zero dB
8. This is the optimum impedance in order to achieve the performance shown

TQQ1212-PCB Evaluation Board





Bill of Material – TQQ1212-PCB

Reference Des.	Value	Description	Manuf.	Part Number
U1	n/a	Dual Band Saw Filter	TriQuint	TQQ1212
n/a	n/a	Printed Circuit Board	TriQuint	960707
n/a	n/a	SMA Edge Connector	Radiall	9602-1111-018

Evaluation Board PCB Information

Top, middle & bottom layers: 1 oz copper

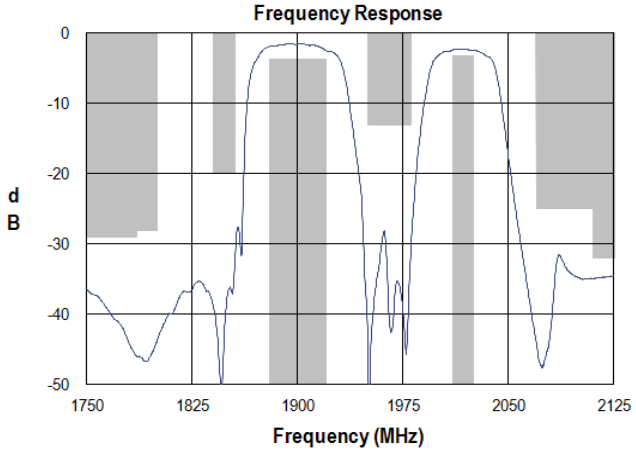
Substrates: FR4 dielectric, .031” thick

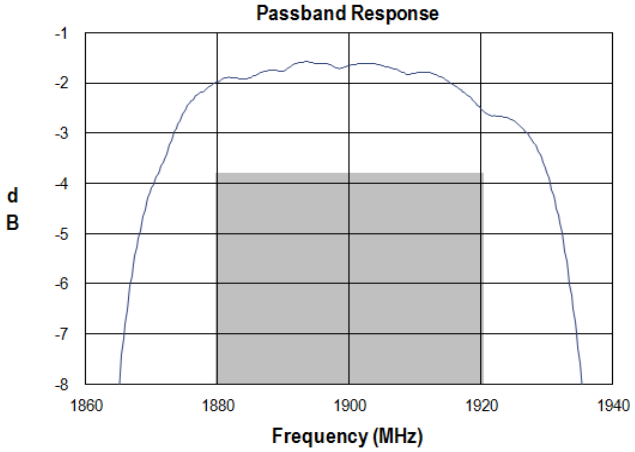
Finish plating: Nickel: 3-8µm thick, Gold: .03-.2µm thick

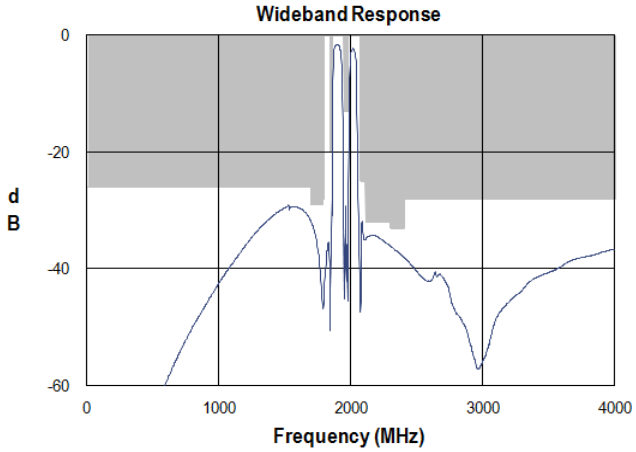
Hole plating: Copper min .0008µm thick

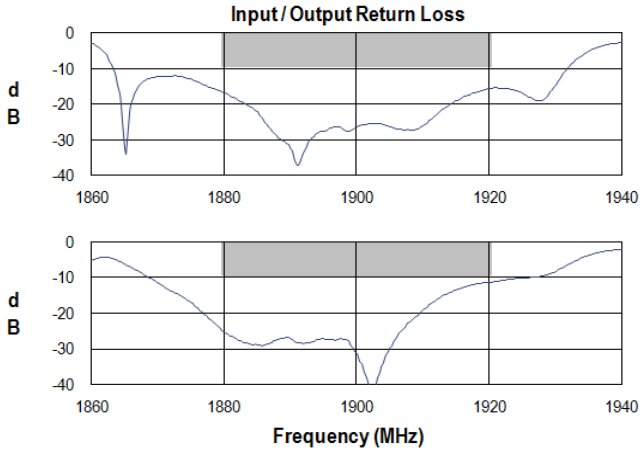
Performance Plots – Band 39

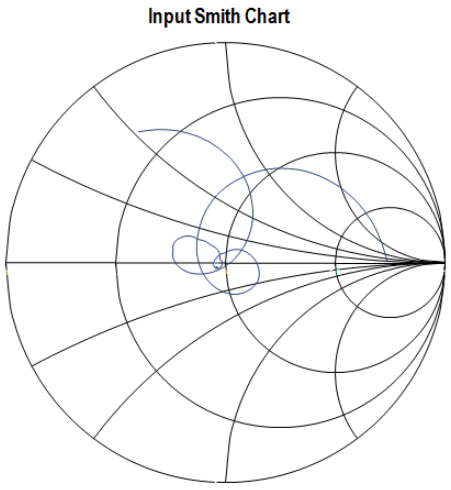
Test conditions unless otherwise noted: Temp= +25°C

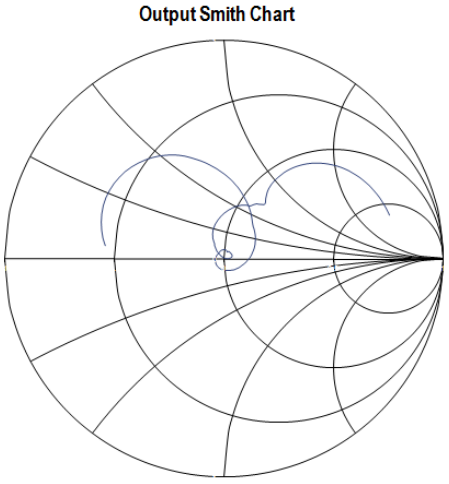








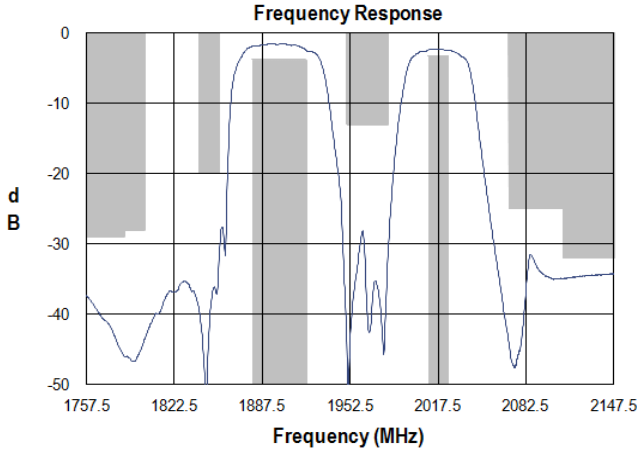




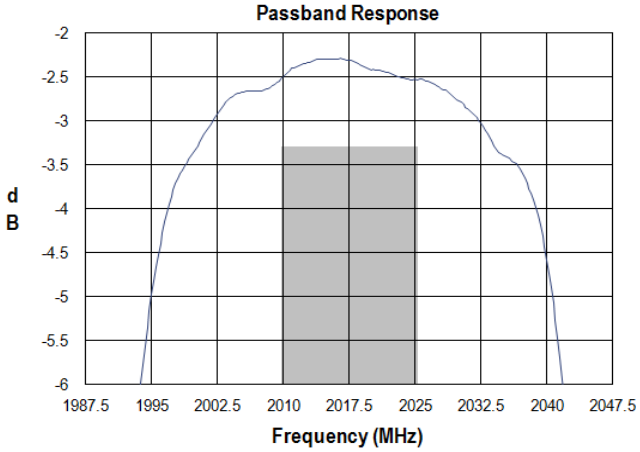
Performance Plots – Band 34

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

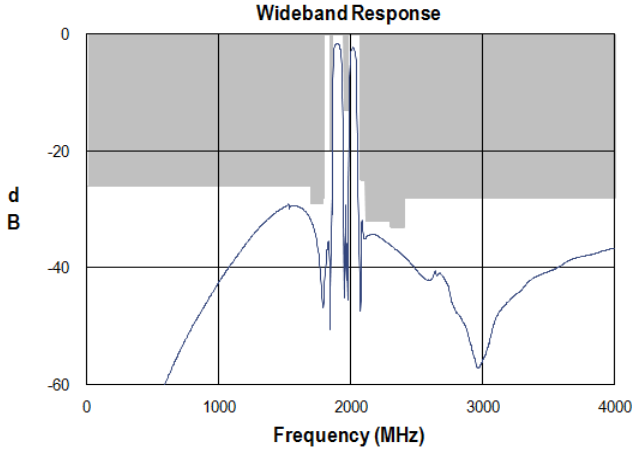
Frequency Response



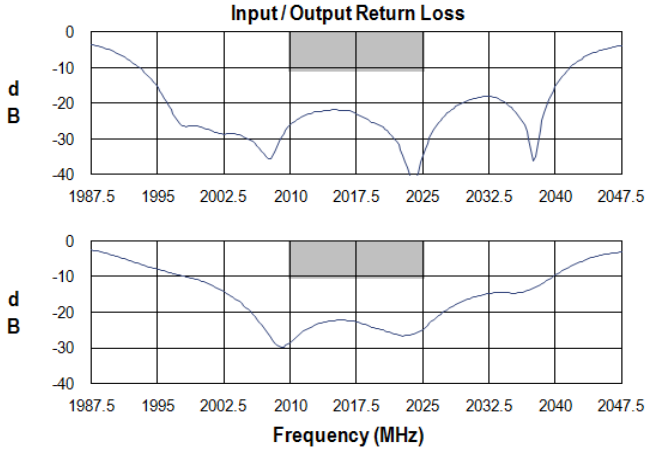
Passband Response



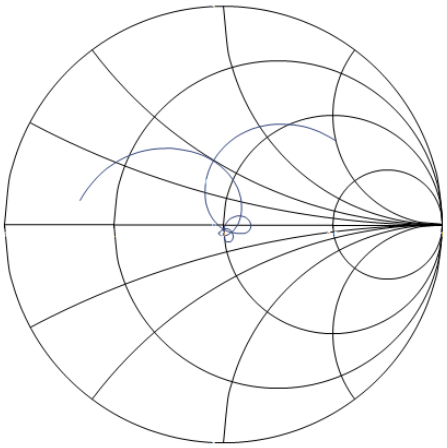
Wideband Response



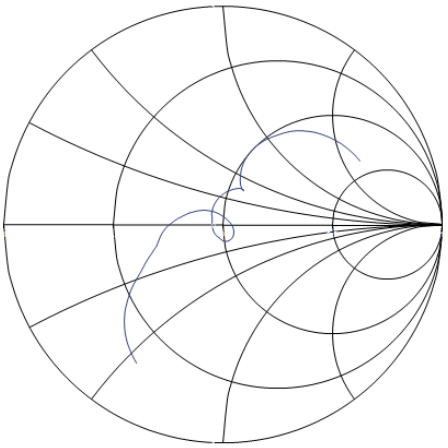
Input / Output Return Loss



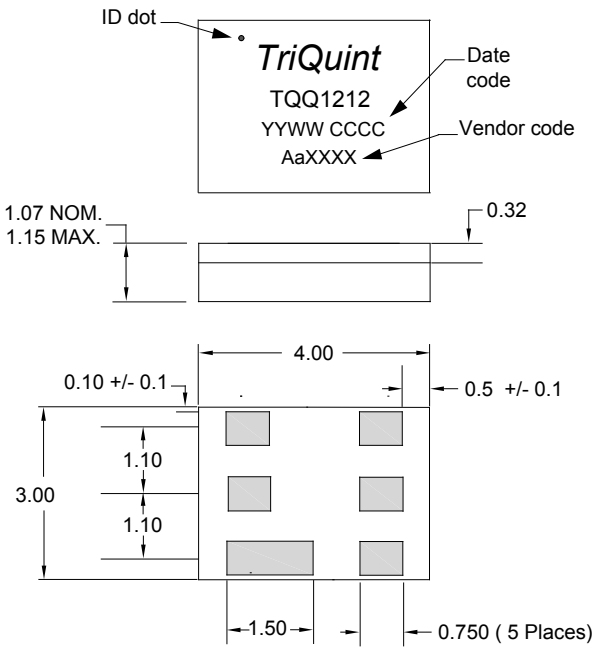
Input Smith Chart



Output Smith Chart



Package Material, Marking and Dimensions



Package Style: 6-pin 4x3 leadless SMT
Dimensions: 4.00 x 3.00 x 1.07 mm

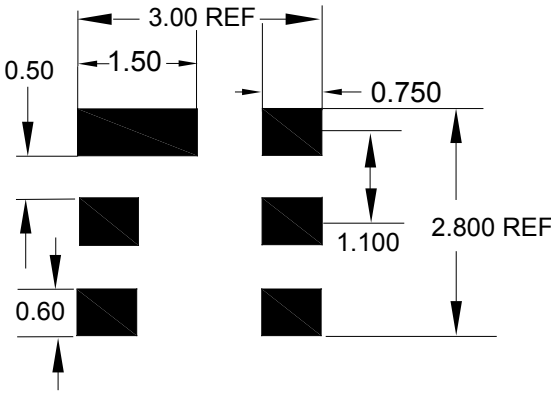
4 layer laminate based over-molded module
Plating on leads: Electrolytic Ni/Au

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

The date code consists of YYWW = Year/Week, XXXX = (XXXX= lot number).

PCB Mounting Pattern

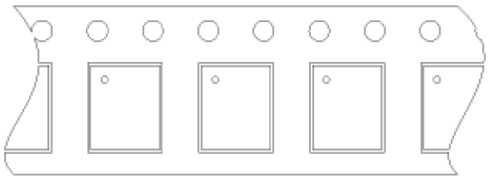
Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. Use 1 oz. copper minimum for top and bottom layer metal.



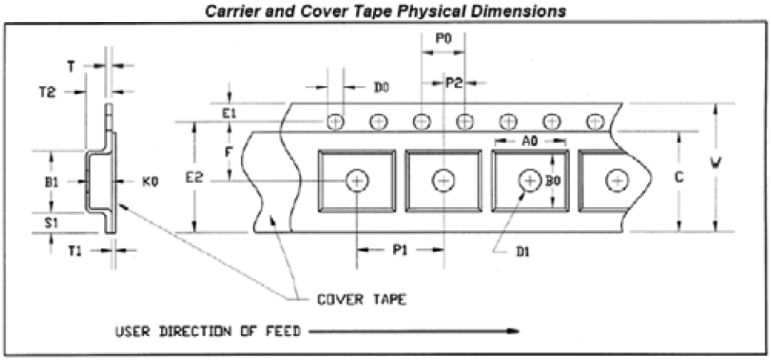
Tape and Reel Information

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

MODULE 3.5X3.5, 4x4, 5x5 and 6x6
User Direction of Feed



Carrier and Cover Tape Physical Dimensions



Feature	Measure	Symbol	Size (in)	Size (mm)
Cavity	Length	A0	0.134	3.40
	Width	B0	0.126	3.20
	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

Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Rating: Class 3B
Value: ≥ 8000 V
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV
Value: Passes ≥ 1000 V
Test: Charged Device Model (CDM)
Standard: JEDEC Standard JESD22-C101

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: Electrolytic Ni/Au

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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Email: info-sales@triquint.com **Fax:** +1.407.886.7061

For technical questions and application information:

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