PRELIMINARY

QPQ1903

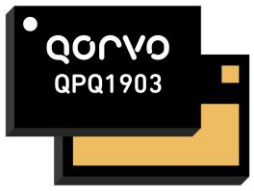
Wi-Fi bandBoost BAW Filter

Product Overview

The Qorvo® QPQ1903 is an high-performance, high power, Bulk Acoustic Wave (BAW) band-pass filter with extremely steep skirts, simultaneously exhibiting low loss in the Wi-Fi UNII1-2a band and high near-in rejection in the UNII2c-3 band.

The filter module is specifically designed to enable industry leading capacity performance in Wi-Fi applications that result in higher power capability in more Wi-Fi channels than systems with no or traditional filter solutions. End users will see a better capability to deliver features that take advantage of sub-banding the 5GHz Wi-Fi spectrum in use cases such as tri-radio Wi-Fi mesh applications.

Using common module packaging techniques to achieve the industry standard footprint while negating as many external passive placements to help end users ease of integration into their circuits



3 Pad 1.7x1.1mm Laminate Package

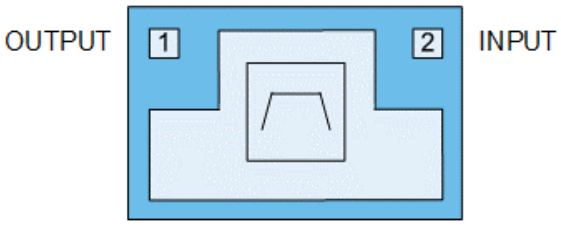
Key Features

- 5170-5330 MHz
- Low Insertion Loss in Wi-Fi UNII1-2a bands
- High rejection in Wi-Fi UNII2c-3 bands
- Extended temperature performance from -20 to +95 °C
- High power handling to +28dBm averaged Input Power

Applications

- Access Points
- Wireless Routers
- Residential Gateways
- Customer Premise Equipment
- Internet of Things

Functional Block Diagram



Top View

Ordering Information

Part Number	Description
QPQ1903SB	Sample bag with 5 pieces
QPQ1903SR	7” reel with 100 pieces
QPQ1903TR13	13” reel with 10,000 pieces
QPQ1903EVB01	Assembled Evaluation Board

Absolute Maximum Ratings

Parameter	Conditions	Rating
Operating Case Temperature	No damage	-40 to 125 °C
Storage Temperature		-40 to 125 °C

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device.

Minimum Lifetime Ratings

Parameter	Conditions	Rating
Power Handling MTTF >1M hours, +95°C	HT20 802.11n MCS0 signal, 10dB PAR, applied to Pin 2	+28 dBm

Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
$T_{OPERATING}$*	-20		+95	°C

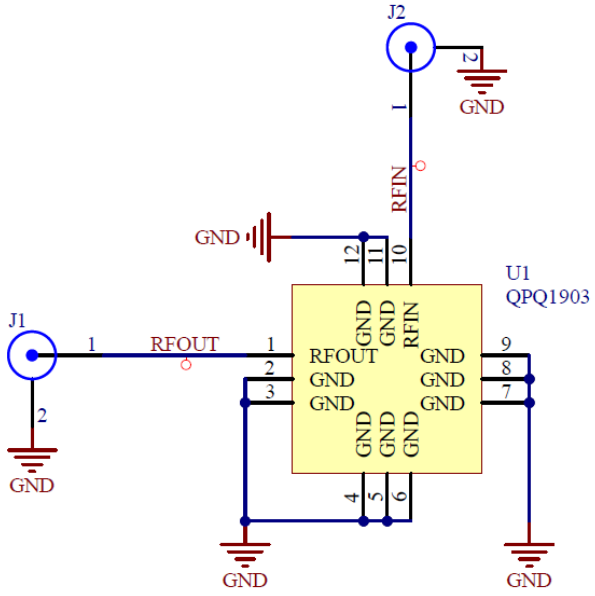
Electrical specifications are measured at specified test conditions. Specifications are not guaranteed over all recommended operating conditions. * $T_{OPERATING}$ is temperature at the package ground

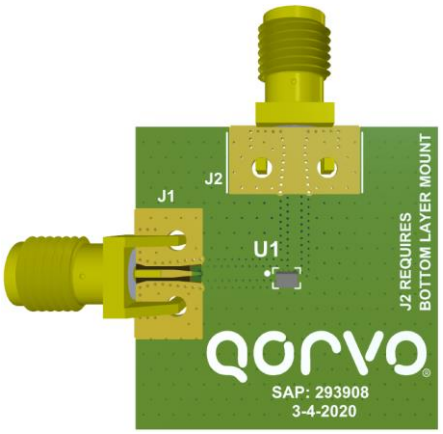
Electrical Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
(INPUT-OUTPUT) (1)(2)	Unless otherwise noted: Typ. T = 25°C				
Insertion Loss(3)	*f* = 5170-5330 MHz (160MHz BW Channel)	-	1.5	1.9	dB
Amplitude Variation	*f* = 5170-5330 MHz (20MHz BW Channel)	-	0.16	0.5	dB
	f = 5170-5330 MHz (40MHz BW Channel)	-	0.19	0.8	dB
	f = 5170-5330 MHz (80MHz BW Channel)	-	0.26	1.0	dB
	f = 5170-5330 MHz (160MHz BW Channel)	-	0.32	1.25	dB
Rejection	*f* = 30-2400 MHz	20	37		dB
	f = 2400-2500 MHz	20	39		dB
	f = 2400-3000 MHz	20	39		dB
	f = 3400-3800 MHz	30	43		dB
	f = 3800-4900 MHz	20	29		dB
	f = 5490-5850 MHz	54	66		dB
	f = 7203-7500 MHz	17	23		dB
	f = 10300-11800 MHz	16	27		dB
INPUT VSWR	*f* = 5170-5330 MHz		TBD	2.0:1	
OUTPUT VSWR	*f* = 5170-5330 MHz		TBD	2.0:1	
2nd and 3rd Harmonics	P_{IN} = +28 dBm		TBD	-50	dBm/MHz
	P_{IN} = +30 dBm		TBD	-50	dBm/MHz

Notes:
1) All specifications are based on the QPQ1903 Applications Circuit
2) Pin 2 must be used for input. The large signal performance of this filter, such as power handling, may not be symmetric.
3) Integrated IL referenced to 0 dB. 160MHz bandwidth

Evaluation Board Schematic

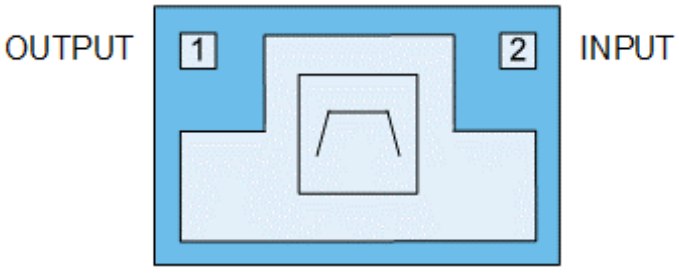




Bill of Material

Ref. Des.	Value	Description	Manuf.	Part number
-	-	Printed Circuit Board		
U1	-	Wi-Fi BAW Filter	Qorvo	QPQ1903

Pin Configuration and Description

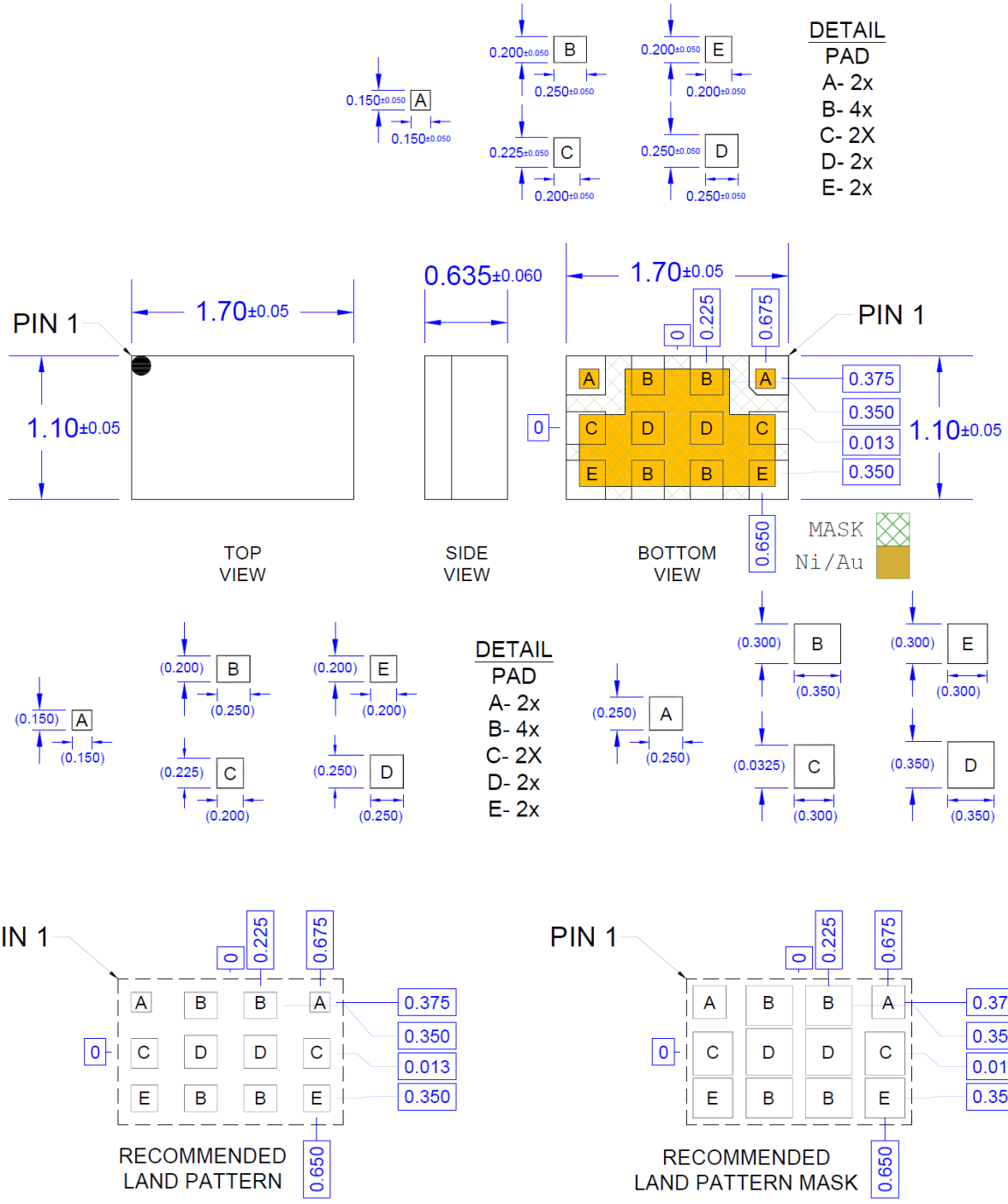


Top View

Pin Number	Label	Description
1	OUPUT	RF output. Internally matched to 50 Ω.
2	INPUT	RF input. Internally matched to 50 Ω.
-	GND	Ground connection.

Mechanical Information

Dimensions and PCB Mounting Pattern



Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. Dimension and tolerance formats conform to ASME Y14.4M-1994.
3. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012.

Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	TBD	ANSI/ESD/JEDEC JS-001
ESD – Charged Device Model (CDM)	TBD	ANSI/ESD/JEDEC JS-002
MSL – Moisture Sensitivity Level	Level 3	IPC/JEDEC J-STD-020

Caution!

ESD sensitive device

Solderability

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

Package lead plating: Bussed Ni/Au

RoHS Compliance

This part is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

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
- SVHC Free

Contact Information

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

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