QPQ1060

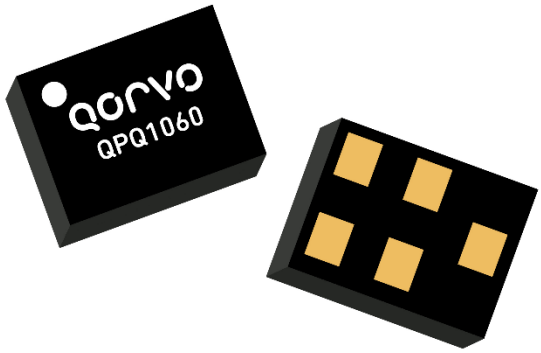
L1 Low Loss GPS SAW Filter

General Description

QPQ1060 is a L1 GPS Band Pass Filter in a compact size for use in any GPS application. Designed for rejection of unwanted GPS signals, this SAW filter also has excellent power handling capability for low power transmitters.

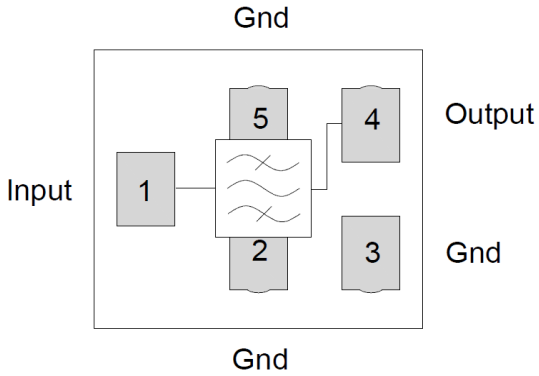
Housed in a 1.4 x 1.2 mm laminate with over mold package, this device allows for a compact and cost-effective diplexer solution for GPS applications.

No matching components are required, making the PCB design and implementation easy.



1.4 X 1.2 X 0.84 mm

Functional Block Diagram



Top View

Pin Configuration - Single Ended

Pin No.	Label
1	Antenna Input (1)
2, 3, 5	Ground
4	L1 Output (1)

(1) Blocking capacitors are required on any ports where a DC voltage may be present.

Product Features

- Usable bandwidth 31 MHz
- No matching required for operation at 50Ω
- Excellent rejection for GPS operation
- High Isolation
- High Rejection
- Laminate with Over Mold Surface Mount Package (SMP)
- Small Size: 1.4 x 1.2 x 0.84mm

Performance is typical across frequency. Please reference electrical specification table and data plots for more details.

Applications

- General purpose GPS
- Communication Systems

Ordering Information

Part No.	Description
QPQ1060TR7	7” Taped Reel with 2500 pieces
QPQ1060EVB	Evaluation board

Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to 125°C
Operation Temperature	-55 to 105°C
RF Input Power (1) - Test conditions: PW = 200ms; DC = 50% @ +25 °C	33 dBm

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

(1) Input Power for both Input & Output ports

Minimum Lifetime Ratings

Conditions	Rating
RF Input Power (1), @ Pin 1 (Antenna Port), @ Pin 4 (L1 Port)	>10 years @ +95C
	>5 years @ +105C

(1) Input Power: CW, 25 dBm

Electrical Specifications (1,2)

L1 Band GPS					
Parameter (3)	**Conditions**	**Min**	**Typical (4)**	**Max**	**Units**
Center Frequency	1559.92 - 1590.92 MHz	-	1575.42	-	MHz
Maximum Insertion Loss	1559.92 - 1590.92 MHz	-	1.4	2.0	dB
	1563.42 - 1587.42 MHz	-	1.3	-	
	1565.42 - 1585.42 MHz	-	1.2	-	
Amplitude Variation	1559.92 - 1590.92 MHz	-	0.4	0.7	dB
	1563.42 - 1587.42 MHz	-	0.3	-	
	1565.42 - 1585.42 MHz	-	0.2	-	
Group Delay Variation	1559.92 - 1590.92 MHz	-	19	33	ns
	1563.42 - 1587.42 MHz	-	15	-	
	1565.42 - 1585.42 MHz	-	14	-	
Absolute Attenuation (Relative to 0 dB)	10 - 1505.42 MHz	40	42	-	dB
	1645.42 - 2500 MHz	44	46	-	
Input Return Loss	1559.92 - 1590.92 MHz	10	15	-	dB
	1563.42 - 1587.42 MHz	-	15	-	
	1565.42 - 1585.42 MHz	-	15	-	
Output Return Loss	1559.92 - 1590.92 MHz	10	14	-	dB
	1563.42 - 1587.42 MHz	-	14	-	
	1565.42 - 1585.42 MHz	-	14	-	
Nominal Impedance (5)	Single Ended	-	50	-	Ohm

Notes:

1. All specifications are based on the Qorvo schematics for the reference designs shown on page 3.
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 manufacture tolerances.
4. Typical values are based on average measurements at room temperature on pcb. (25 °C ±5 °C)
5. Optimum impedance to achieve the performance shown.

Evaluation Board – QPQ1060-EVB

Notes: Blocking capacitors are required on any RF ports where a DC voltage may be present.

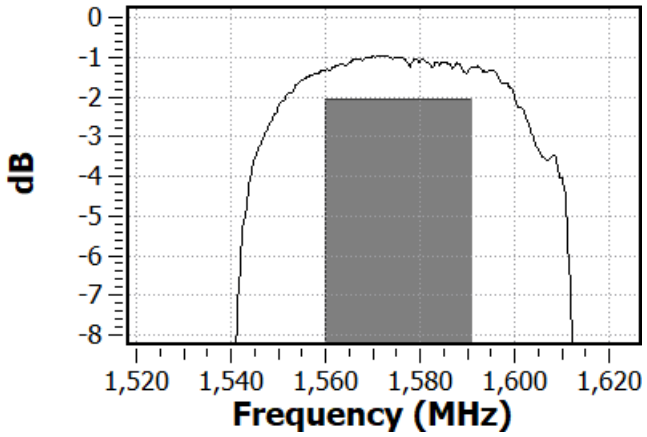
Bill of Material – QPQ1060-EVB

Reference Des.	Value	Description	Manuf.	Part Number
DUT	-	L1 Low Loss GPS SAW Filter	Qorvo	QPQ1060
SMA	-	SMA connector	Various	
PCB	-	Printed Circuit Board	Various	

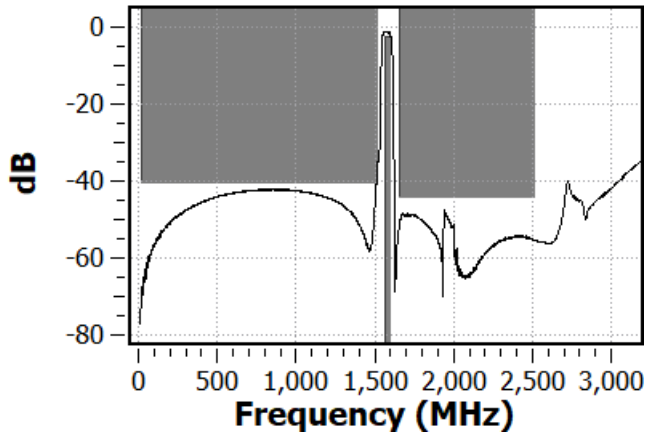
Typical Performances

Test conditions unless otherwise noted: Temp = +25 °C, 50 Ω system

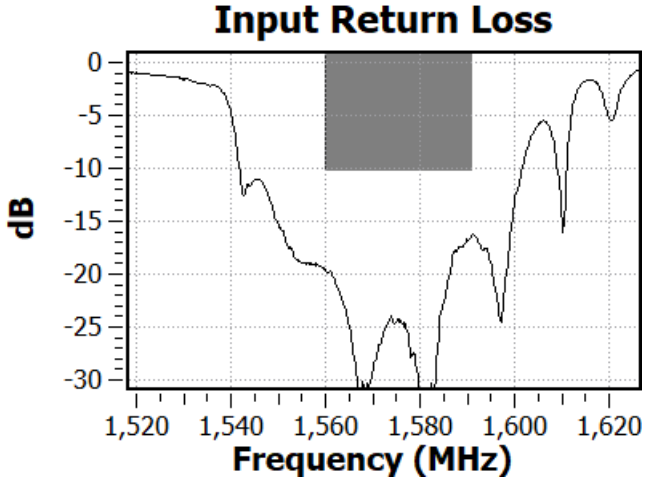
Passband



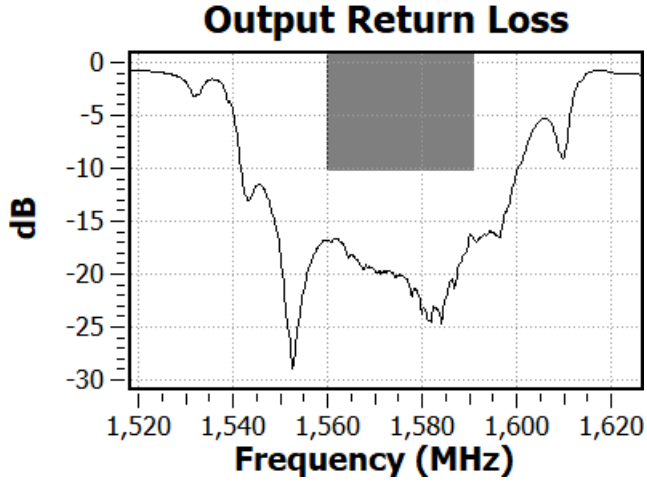
Wide Band



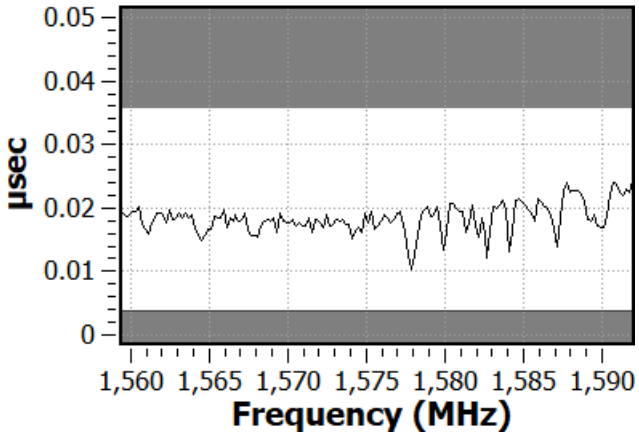
Input Return Loss



Output Return Loss

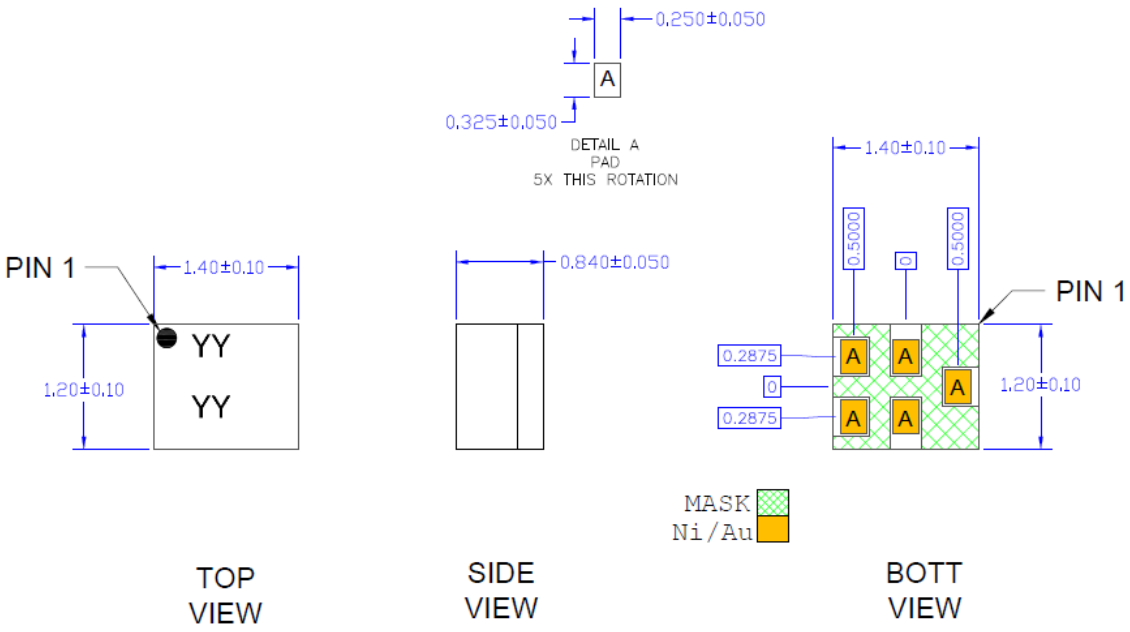


Group Delay Variation



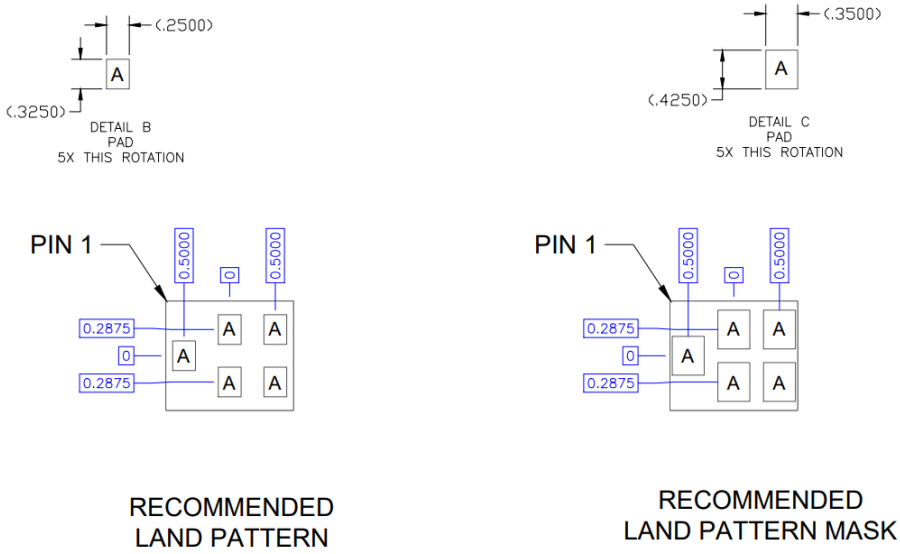
Package Marking and Dimensions

Marking: Qorvo Logo
Part Number – 1060
Trace Code – Assigned by subcontractor



Notes:
1. All dimensions are in millimeters. Angles are in degrees.
2. The terminal #1 identifier and terminal numbering conform to JESD 95-1 SPP-012

PCB Mounting Pattern



Notes:
1. All dimensions are in millimeters. Angles are in degrees. .

Assembly Notes

1. Compatible with both Lead-free solder (260°C peak reflow temperature) and tin/lead (245°C peak reflow temp.) soldering processes.
2. Contact plating: ENEPIG

Recommended Soldering Profile