

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.

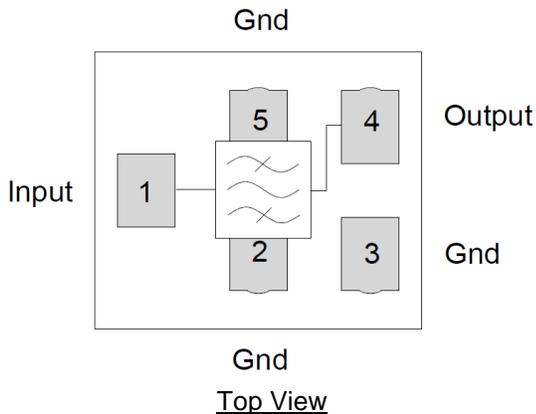
Housed in a 1.4 x 1.2 mm laminate with over mold package, this device allows for a compact and cost-effective diplexer solution for GPS applications.

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



1.4 X 1.2 X 0.84 mm

Functional Block Diagram



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	-55 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

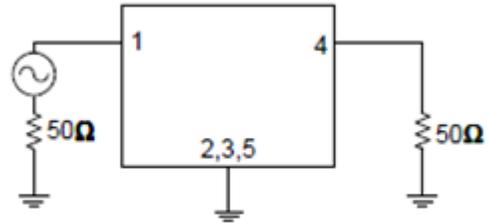
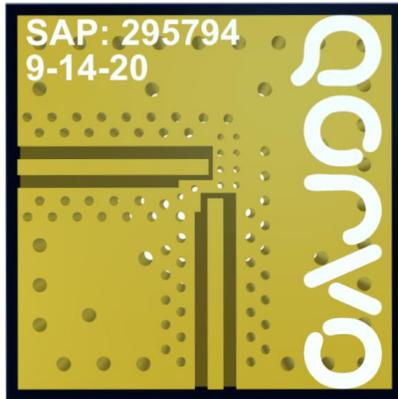
Electrical Specifications ^(1,2)

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:

- All specifications are based on the Qorvo schematics for the reference designs shown on page 3.
- In production, devices will be tested at room temperature to a guard banded specification to ensure electrical compliance over temperature.
- Electrical margin has been built into the design to account for the variations due to temperature drift and manufacture tolerances.
- Typical values are based on average measurements at room temperature on pcb. (25 °C ±5 °C)
- Optimum impedance to achieve the performance shown.

Evaluation Board – QPQ1060-EVB



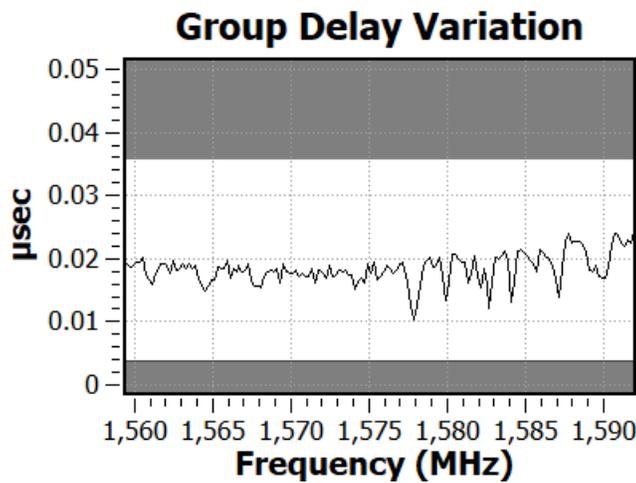
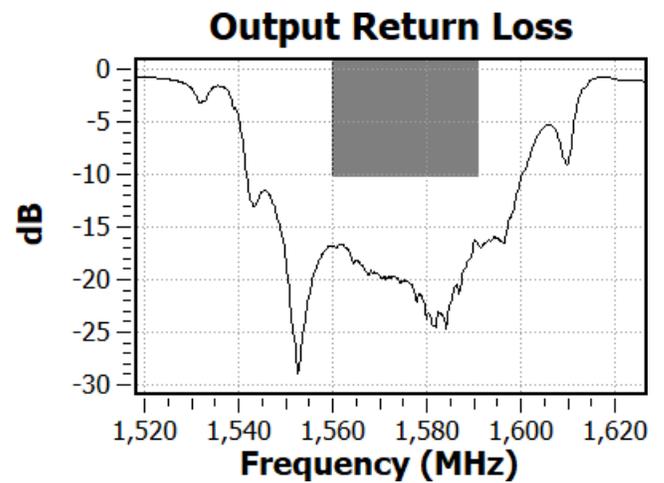
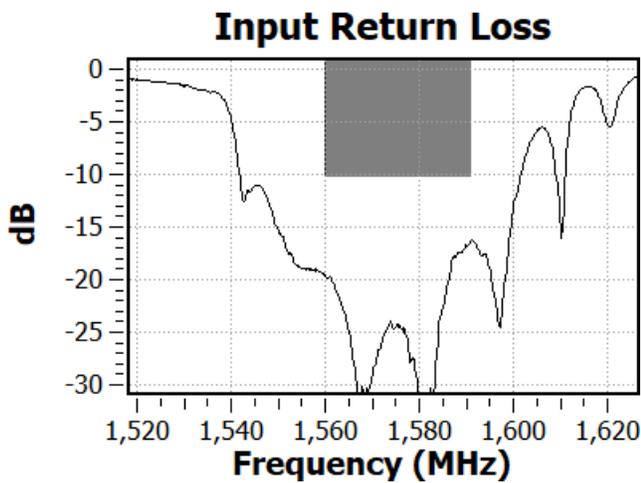
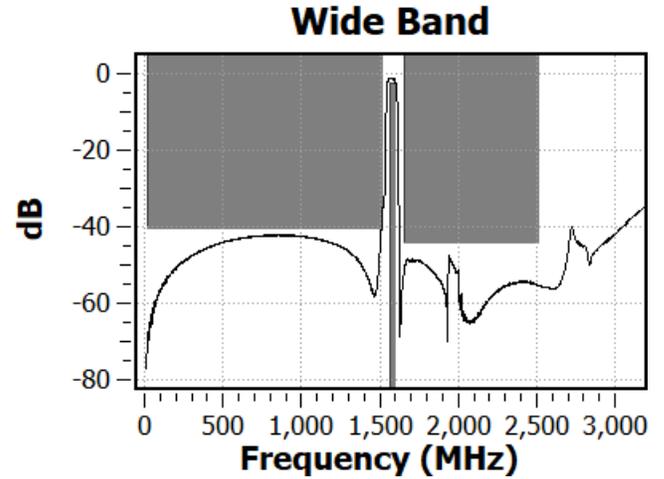
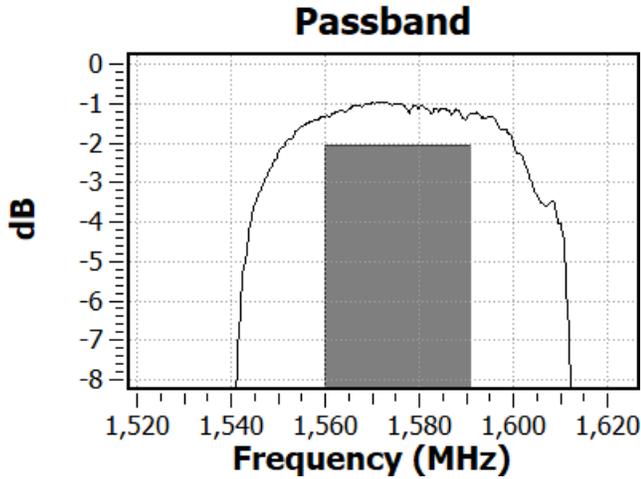
Notes: Blocking capacitors are required on any RF ports where a DC voltage may be present.

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	

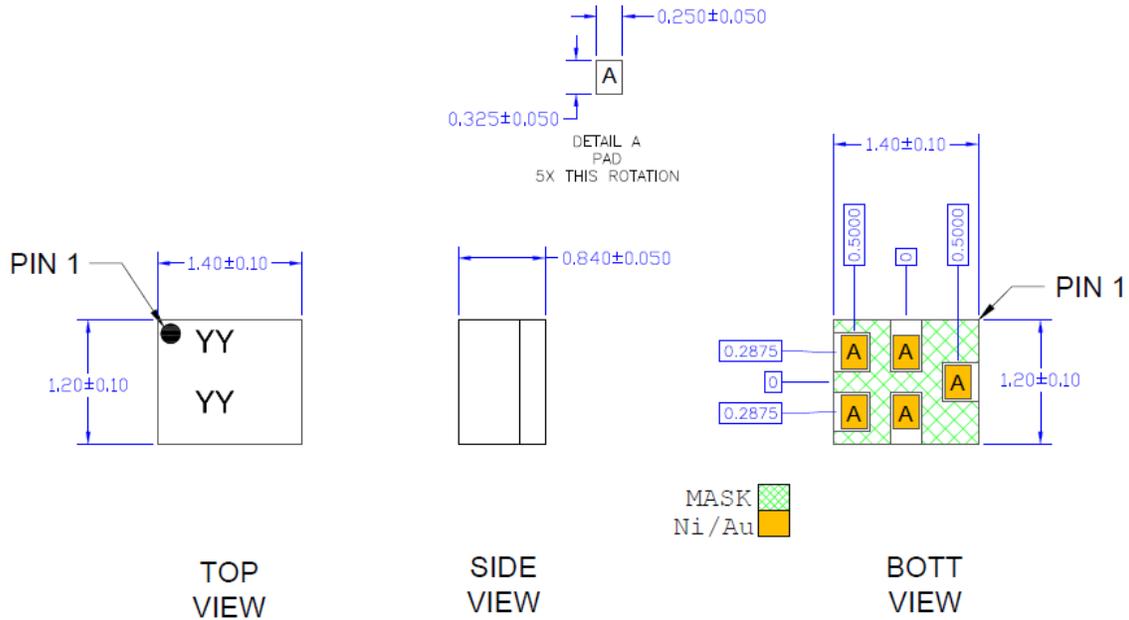
Typical Performances

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



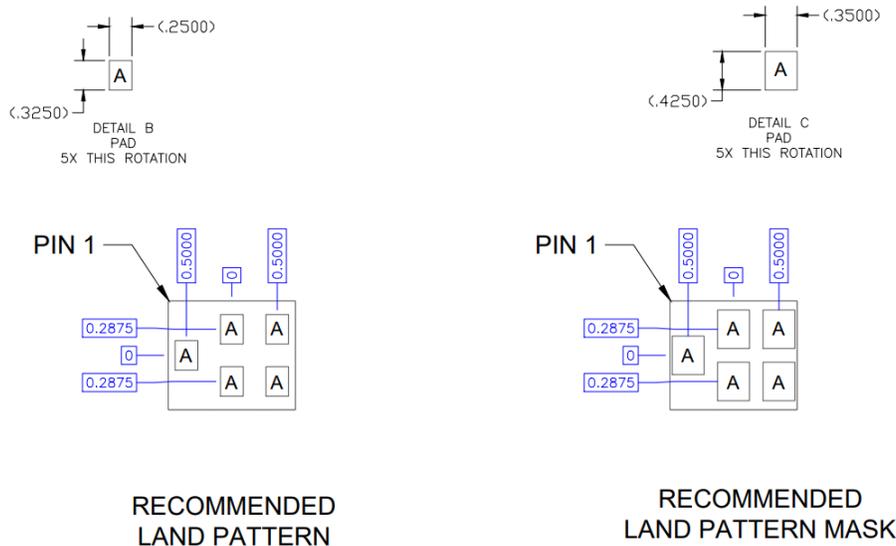
Package Marking and Dimensions

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

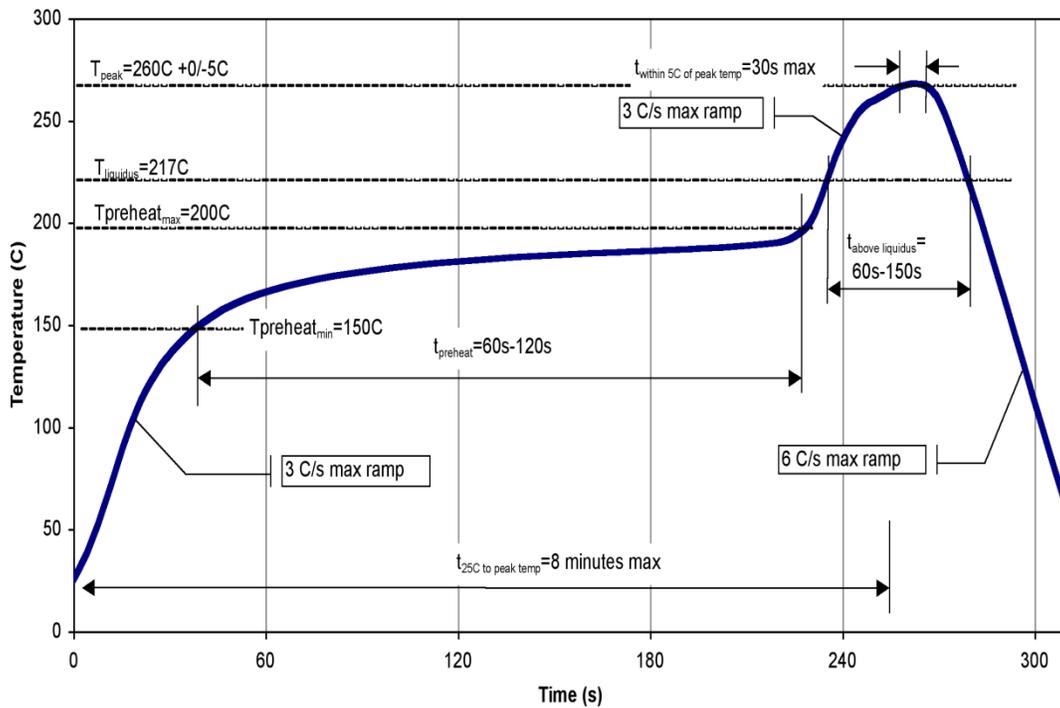


- Notes:
1. All dimensions are in millimeters. Angles are in degrees. .

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



Handling Precautions

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 3A	ESDA / JEDEC JS-001
ESD – Charged Device Model (CDM)	Class C3	ESDA / JEDEC JS-002
MSL – Moisture Sensitivity Level	Level 3	IPC/JEDEC J-STD-020



Caution!
ESD-Sensitive Device

RoHS Compliance

This part is compliant with 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 (C₁₅H₁₂Br₄O₂) Free
- SVHC Free
- PFOS Free

Contact Information

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

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Email: customer.support@qorvo.com

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