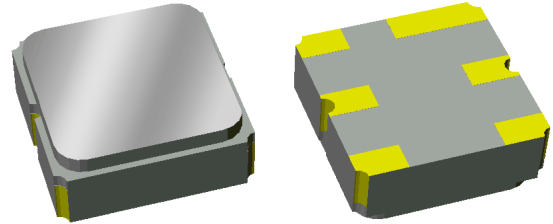



## Applications

- LTE Band 1 UL Filter for Infrastructure
- 3G, 4G Multi-Standard
- Wireless Repeaters
- General Purpose Wireless
- Base Stations

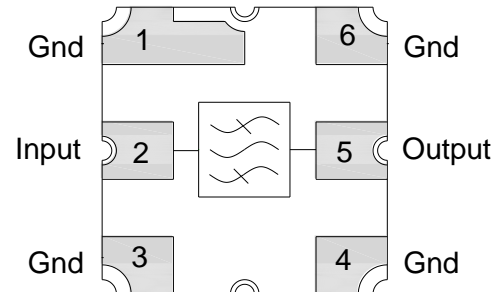


SMP-12, 3.00 x 3.00 x 1.22 mm

## Product Features

- 60 MHz Bandwidth
- Low Loss
- High Attenuation
- Single-ended Operation
- No impedance matching required for operation at 50 Ω
- Small Size: 3.00 x 3.00 x 1.22 mm
- Ceramic Surface Mount Package (SMP)
- Hermetically Sealed
- RoHS Compliant, Pb-Free 

## Functional Block Diagram



## General Description

856532 is a Band 1 Uplink filter for general purpose wireless applications. This filter was specifically designed in a 3x3 mm hermetic package for base station applications and is part of our wide portfolio of RF filters in the same package.

856532 has low insertion loss, coupled with high attenuation and good power handling, making this filter a natural choice for our customers uplink RF filtering needs and other general purpose applications.

856532 require no matching components, making filter implementation easy.

## Pin Configuration – Single Ended

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

## Ordering Information

Part No.	Description
856532	Packaged part
856532-EVB	Evaluation board

Standard T/R size = 5000 units/reel

**Absolute Maximum Ratings**

Parameter	Rating
Storage Temperature <sup>(1)</sup>	-40 to +85 °C
Operable Temperature <sup>(2)</sup>	-30 to +105 °C
RF Input Power <sup>(3)</sup>	+10 dBm

- Notes:
1. Operation of this device outside the parameter ranges given may cause permanent damage.
  2. Specifications are not guaranteed over all operating conditions.
  3. Input Power is targeted for an applied CW modulated RF signal at 105 °C for 10 years.

**Electrical Specifications <sup>(1)</sup>**

Test conditions unless otherwise noted: <sup>(2)</sup> Temp= -30 °C to +85 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typ <sup>(4)</sup>	Max	Units
Center Frequency		-	1950	-	MHz
Maximum Insertion Loss	1920 – 1980 MHz	-	2.5	3.0	dB
Amplitude Ripple <sup>(5)</sup>		-	0.7	1.5	dB p-p
Absolute Attenuation <sup>(6)</sup>	10 – 1000 MHz	25	31.7	-	dB
	1000 – 1880 MHz	20	31.8		
	2110 – 2170 MHz	40	43.6		
	2170 – 3800 MHz	25	29.1		
	3800 – 5000 MHz	18	22.5		
Input/Output Return Loss	1920 – 1980 MHz	8	9.6	-	dB

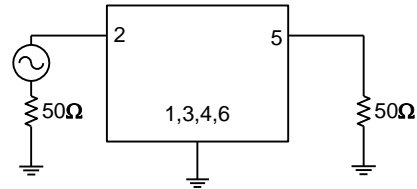
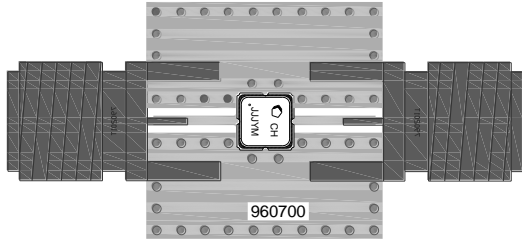
Test conditions unless otherwise noted: <sup>(2)</sup> Temp= -40 °C to +85 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typ <sup>(4)</sup>	Max	Units
Maximum Insertion Loss	1920 – 1980 MHz		2.5	3.2	dB
Amplitude Ripple <sup>(5)</sup>	1920 – 1980 MHz		0.7	1.5	dB p-p
Absolute Attenuation <sup>(6)</sup>	10 – 1000 MHz	25	31.7	-	dB
	1000 – 1880 MHz	20	31.8		
	2110 – 2170 MHz	40	43.6		
	2170 – 3800 MHz	25	29.1		
	3800 – 5000 MHz	18	22.5		
	3800 – 5000 MHz at +105 °C <sup>(8)</sup>	17	22.5		
Input/Output Return Loss	1920 – 1980 MHz	8	9.6	-	dB
	1920 – 1980 MHz at +105 °C <sup>(8)</sup>	7	8.6		
Source Impedance <sup>(7)</sup>	single-ended	-	50	-	Ω
Load Impedance <sup>(7)</sup>	single-ended	-	50	-	Ω

Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3.
2. In production, devices will be tested at room temperature to a guardbanded 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.
5. Evaluated as peak-to-adjacent valley ripple.
6. Relative to zero dB.
7. This is the optimum impedance in order to achieve the performance shown.
8. Extended temperature operation: the filter can be operated up to +105 °C with de-rated specification as noted.

**Evaluation Board**



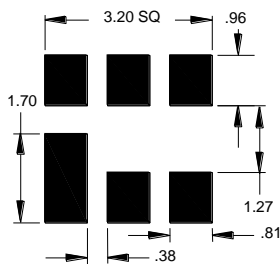
**Notes:**

1. No impedance matching required.
2. Top, middle & bottom layers: 1 oz. copper. Substrates: FR4 dielectric 0.31" thick. Finish plating: Nickel: 3-8 μm thick, Gold: 0.03-0.2 μm thick. Hole plating: Copper min .0008 μm thick.

**Bill of Material**

Reference Des.	Value	Description	Manuf.	Part Number
U1	-	1950 MHz SAW filter	TriQuint	856532
SMA	-	SMA connector	Radiall	9602-1111-018
PCB	-	3-Layer	TriQuint	960700

**PCB Mounting Pattern**

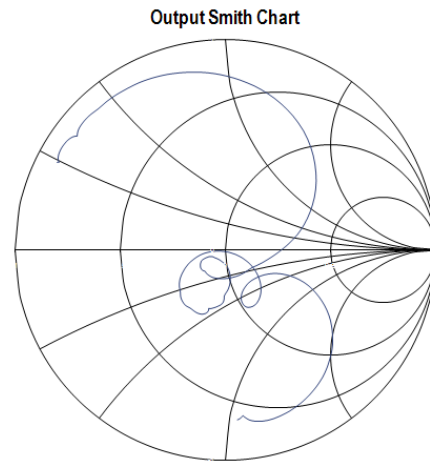
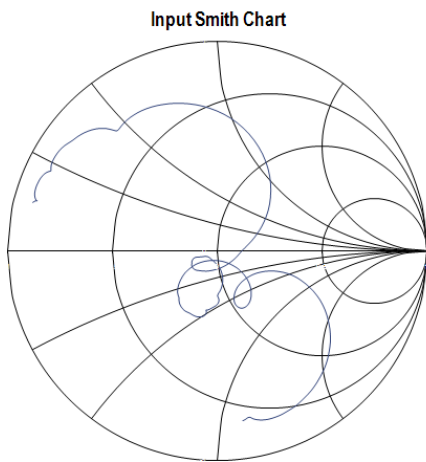
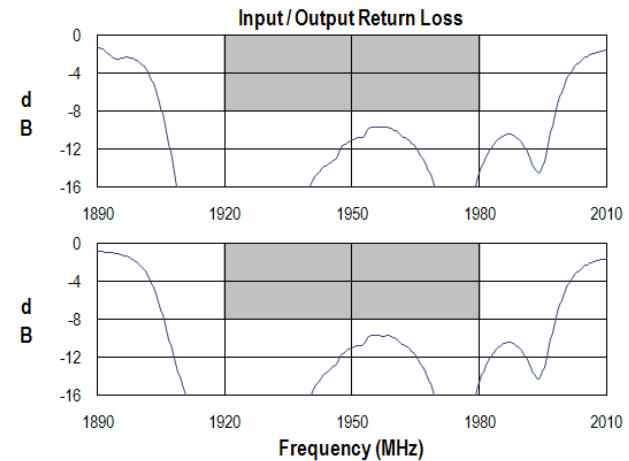
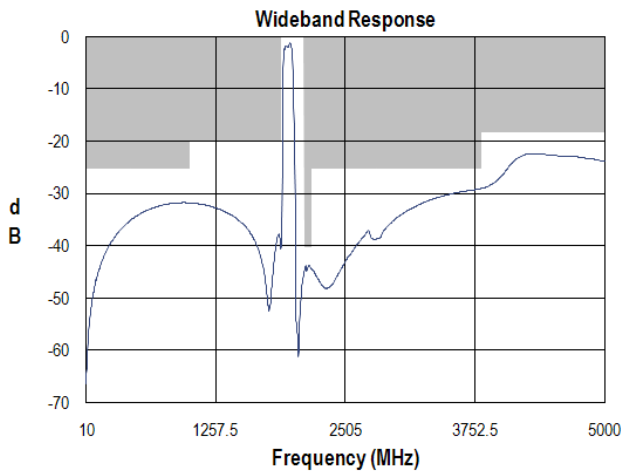
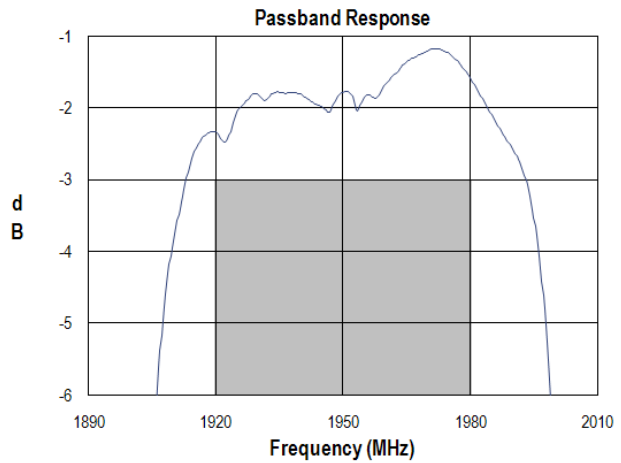
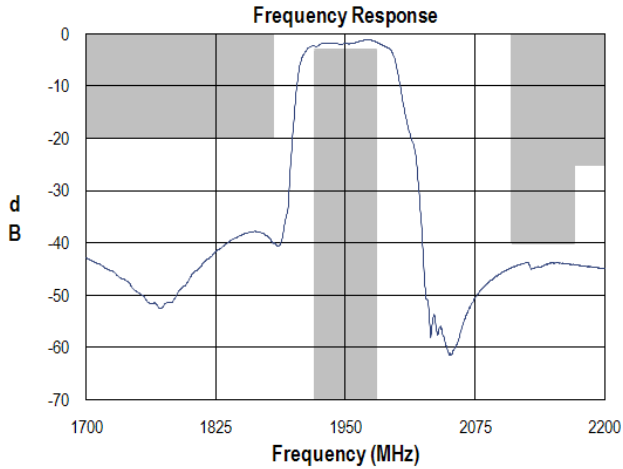


**Notes:**

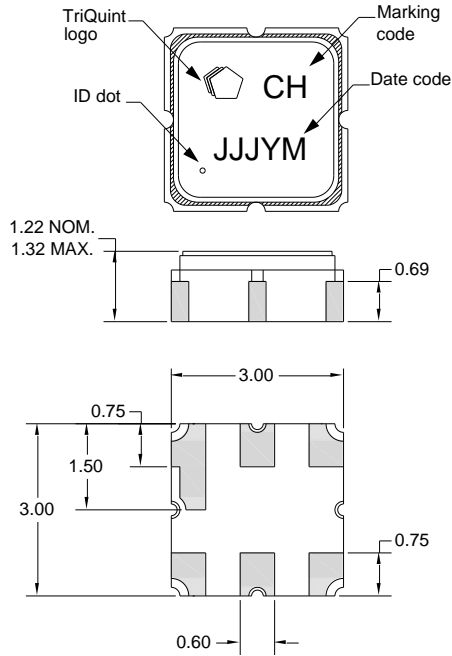
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

**Performance Plots – Evaluation Board**

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



**Package Information, Marking and Dimensions**



Package Style: SMP-12A

Body:  $Al_2O_3$  ceramic.

Lid: Kovar, Ni plated.

Terminations: Au plating 0.5 - 1.0  $\mu m$ , over a 2-6  $\mu m$  Ni plating.

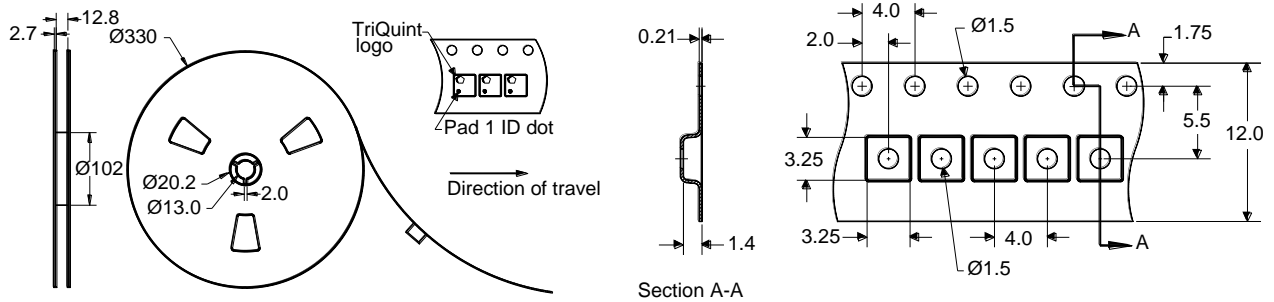
The date code consists of: day of the current year (Julian, 3 digits), Y = last digit of the year, and M = manufacturing site code.

Notes:

1. All dimensions shown are typical in millimeters.
2. All tolerances are  $\pm 0.15$  mm except overall length and width  $\pm 0.10$  mm.
3. An asterisk (\*) in front of the marking code indicates prototype.

**Tape and Reel information**

Standard T/R size = 5000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 1B  
Test: Electrostatic Discharge Sensitivity Testing,  
Human Body Model (HBM) - component level  
Standard: ESDA/JEDEC JS-001-2012

ESD Rating: Class B  
Test: Machine Model (MM)  
Standard: JEDEC Standard JESD22-A115

### MSL Rating

Not applicable. Hermetic package.

### Solderability

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

Refer to [Soldering Profile](#) for recommended guidelines.

### 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<sub>15</sub>H<sub>12</sub>Br<sub>4</sub>O<sub>2</sub>) Free
- PFOS Free
- SVHC Free

## Contact Information

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

**Web:** [www.triquint.com](http://www.triquint.com)

**Tel:** 877-800-8584

**Email:** [customer.support@qorvo.com](mailto:customer.support@qorvo.com)

For information about the merger of RFMD and TriQuint as Qorvo:

**Web:** [www.qorvo.com](http://www.qorvo.com)

For technical questions and application information:

**Email:** [flapplication.engineering@tqs.com](mailto:flapplication.engineering@tqs.com)

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