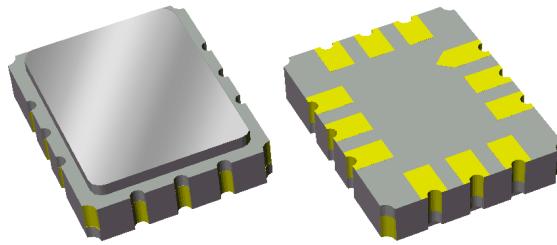


## Applications

- General purpose wireless
- WCDMA/LTE applications
- 3G, 4G, Multistandard



## Product Features

- Usable bandwidth 25 MHz
- Low loss
- High attenuation
- Low EVM
- Balanced operation
- Ceramic Surface Mount Package (SMP)
- Small Size: 7.01 x 5.51 x 1.63 mm
- Hermetically Sealed
- RoHS compliant, Pb-free



## General Description

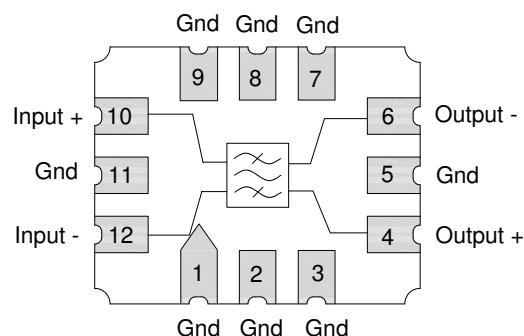
The 857124 is a high performance IF filter specifically designed for the demanding requirements of 4G wireless infrastructure systems.

Designed for versatile drive configurations, this filter is optimized for a balanced input and output, leading to elimination of baluns.

Low insertion loss, excellent attenuation and flat in-band performance leading to low EVM contribution, makes this filter an effective choice for our customers LTE and Multi-standard platforms.

## Functional Block Diagram

Top view



## Pin Configuration

| Pin # Bal/Bal | Description |
|---------------|-------------|
| 10            | Input +     |
| 12            | Input -     |
| 4             | Output +    |
| 6             | Output -    |
| 1,2,3,5       | Ground      |
| 7,8,9,11      | Ground      |

## Ordering Information

| Part No.   | Description      |
|------------|------------------|
| 857124     | packaged part    |
| 857124-EVB | evaluation board |

Standard T/R size = 3000 units/reel.

## Specifications

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

Specified Temperature Range: <sup>(2)</sup> -40 to +85 °C

| Parameter <sup>(3)</sup>                   | Conditions                                   | Min | Typical <sup>(4)</sup> | Max  | Units  |
|--|--|-----|------------------------|------|--------|
| Center Frequency                           |  | -   | 184.32                 | -    | MHz    |
| Insertion Loss                             | at 184.32 MHz                                | -   | 7.8                    | 9.0  | dB     |
| Amplitude Variation <sup>(5)</sup>         | 171.82 – 196.82 MHz (P1dB)                   | -   | 0.5                    | 1.0  | dB     |
|  | Over any 5 MHz span within P1dB              | -   | 0.3                    | 0.8  | dB     |
| Group Delay Variation <sup>(5)</sup>       | 171.82 – 196.82 MHz                          | -   | 25                     | 40   | ns p-p |
| Absolute Group Delay                       | at 184.32 MHz                                | -   | 0.50                   | 0.55 | μs     |
| EVM  | Over any 3.84 MHz span within P1dB           | -   | 1.3                    | 2.5  | %      |
| IIP3                                       | Tones 5 MHz separated, power >5 dBm per tone | 45  | 54                     | -    | dBm    |
| Temperature Drift <sup>(6)</sup>           |  | -   | 0.23                   | 0.3  | dB     |
| Input VSWR                                 | 171.82 – 196.82 MHz                          | -   | 1.6                    | 2.5  | -      |
| Output VSWR                                | 171.82 – 196.82 MHz                          | -   | 2.0                    | 2.5  | -      |
| Relative Attenuation <sup>(7)</sup>        | 10.0 – 75.0 MHz                              | 55  | 80                     | -    | dB     |
|  | 75.0 – 151.82 MHz                            | 40  | 51                     | -    | dB     |
|  | 151.82 – 161.82 MHz                          | 30  | 45                     | -    | dB     |
|  | 161.82 – 166.82 MHz                          | 10  | 25                     | -    | dB     |
|  | 202.82 – 206.82 MHz                          | 10  | 20                     | -    | dB     |
|  | 206.82 – 216.82 MHz                          | 30  | 41                     | -    | dB     |
|  | 216.82 – 290.0 MHz                           | 40  | 48                     | -    | dB     |
|  | 290.0 – 330.0 MHz                            | 50  | 59                     | -    | dB     |
|  | 330.0 – 410.0 MHz                            | 30  | 37                     | -    | dB     |
|  | 410.0 – 2000 MHz                             | 55  | 72                     | -    | dB     |
| Source Impedance (balanced) <sup>(8)</sup> |  | -   | 200                    | -    | Ω      |
| Load Impedance (balanced) <sup>(8)</sup>   |  | -   | 150                    | -    | Ω      |

Notes:

1. All specifications are based on the TriQuint schematic 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. Variation is defined as the total peak to peak variation over the defined frequency range
6. Temperature Drift specification is defined on Page 3 and is guaranteed by design and won't be measured in production
7. Relative to insertion loss at center frequency
8. This is the optimum impedance in order to achieve the performance shown

### Absolute Maximum Ratings

| Parameter             | Rating                                  |
|-----------------------|---|
| Operating Temperature | -40 to +85 °C                           |
| Storage Temperature   | -40 to +85 °C                           |
| Input Power           | +22 dBm (max) CW for 24 hours at +55 °C |

Operation of this device outside the parameter ranges given above may cause permanent damage.

**857124****184.32 MHz SAW Filter**

  
**TriQuint**   
**SEMICONDUCTOR**

## Temperature Drift Specification

Temperature Drift Equations:

$$\text{Temp Drift}_{\text{high}} = \left| \frac{\max(T_{\text{ambient}} - T_{\text{hot}}) - \min(T_{\text{ambient}} - T_{\text{hot}})}{2} \right|$$

$$\text{Temp Drift}_{\text{low}} = \left| \frac{\max(T_{\text{ambient}} - T_{\text{cold}}) - \min(T_{\text{ambient}} - T_{\text{cold}})}{2} \right|$$

Temperature Drift Terms Defined:

$T_{\text{ambient}}$  - Transmission power in dB measured at +25 degrees C.

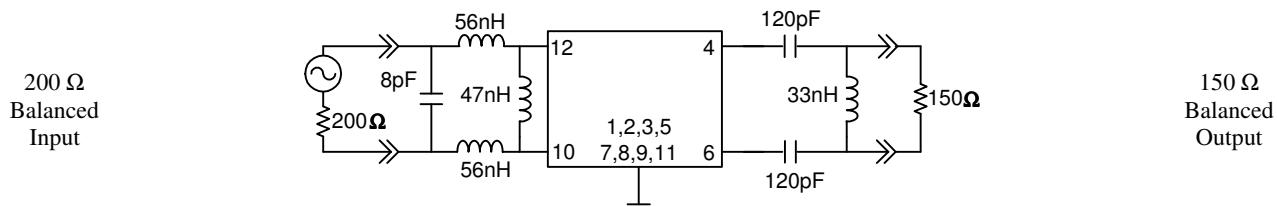
$T_{\text{hot}}$  - Transmission power in dB measured at +85 degrees C.

$T_{\text{cold}}$  - Transmission power in dB measured at -40 degrees C.

Temperature Drift - Greater of Temp Drift<sub>high</sub> vs Temp Drift<sub>low</sub>

## Reference Design – 200Ω Bal Input, 150Ω Bal Output

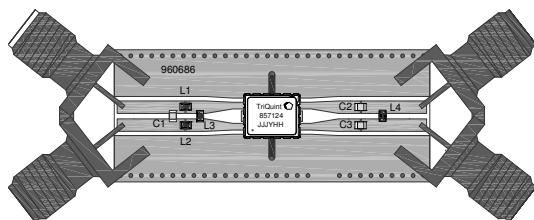
### Schematic



Notes:

1. Actual matching values may vary due to PCB layout and parasitic

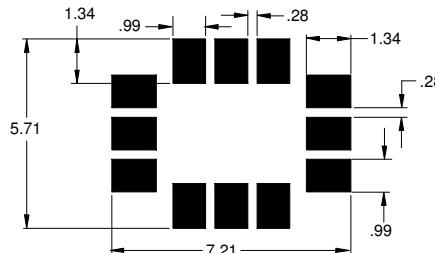
### PC Board



Notes:

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

### Mounting Configuration



Notes:

1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

### Bill of Material

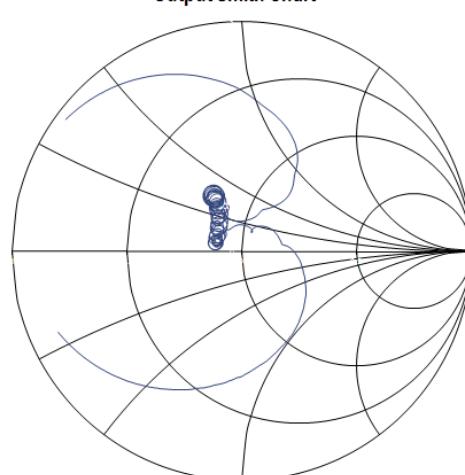
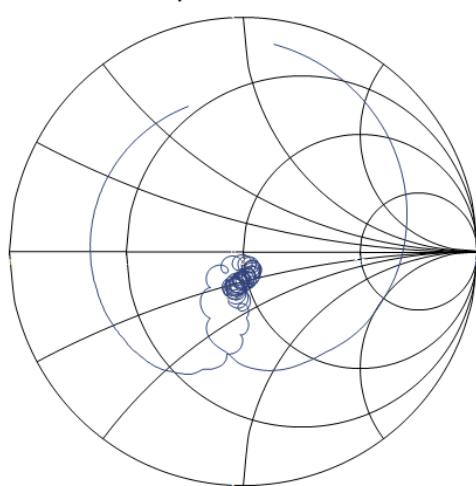
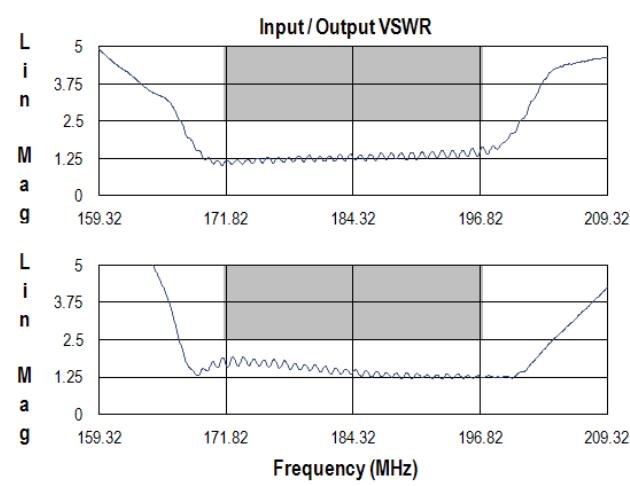
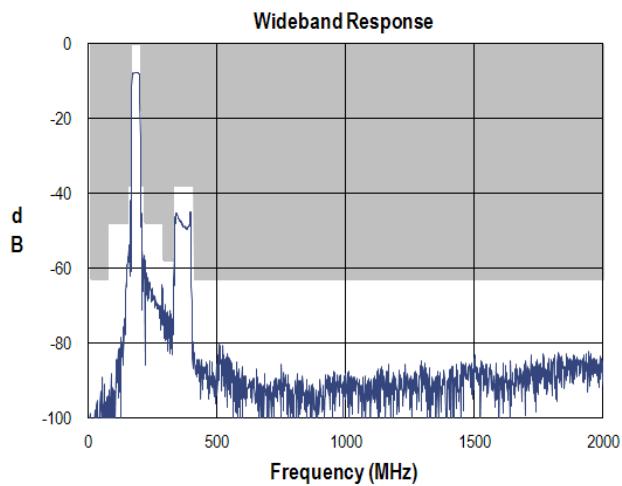
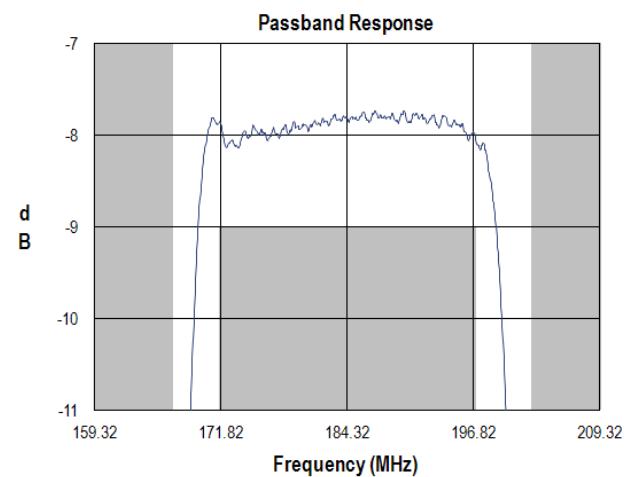
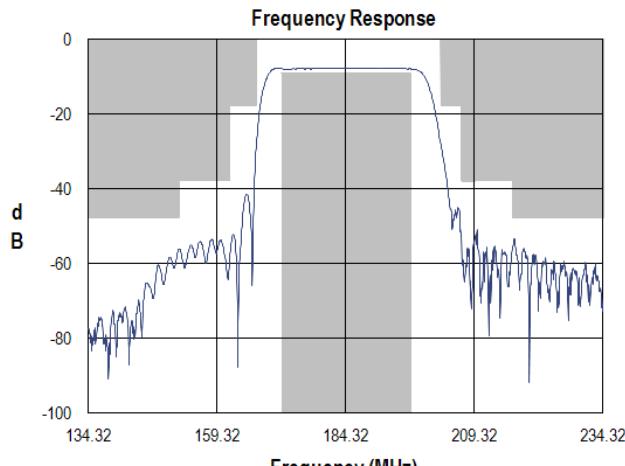
| Reference Desg. | Value | Description               | Manufacturer       | Part Number    |
|-----------------|-------|---------------------------|--------------------|----------------|
| L1              | 56nH  | Coil Wire-wound, 0603, 5% | Coilcraft          | 0603CS-56NXJBC |
| L2              | 56nH  | Coil Wire-wound, 0603, 5% | Coilcraft          | 0603CS-56NXJBC |
| L3              | 47nH  | Coil Wire-wound, 0603, 5% | Coilcraft          | 0603CS-47NXJBC |
| L4              | 33nH  | Coil Wire-wound, 0603, 5% | Coilcraft          | 0603CS-33NXJBC |
| C1              | 8pF   | Chip Ceramic, 0603, 5%    | Panasonic          | ECU-V1H080DCV  |
| C2              | 120pF | Chip Ceramic, 0603, 5%    | Panasonic          | ECU-V1H121KCV  |
| C3              | 120pF | Chip Ceramic, 0603, 5%    | Panasonic          | ECU-V1H121KCV  |
| SMA             | N/A   | SMA connector             | Johnson Components | 142-0701-801   |
| PCB             | N/A   | 3-layer                   | multiple           | 960686         |

857124

184.32 MHz SAW Filter

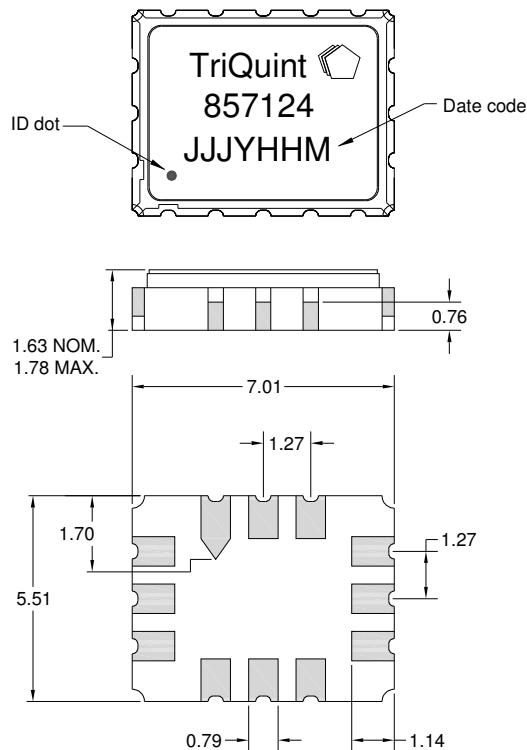
TriQuint   
SEMICONDUCTOR

## Typical Performance (at room temperature)



## Mechanical Information

### Package Information, Dimensions and Marking



Package Style: SMP-28B  
Dimensions: 7.01 x 5.51 x 1.63 mm

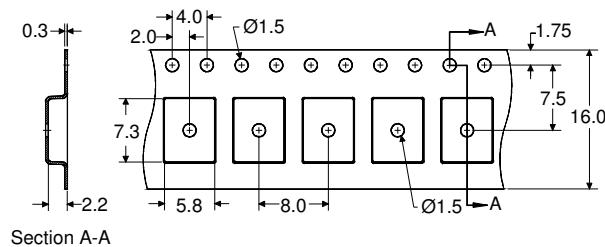
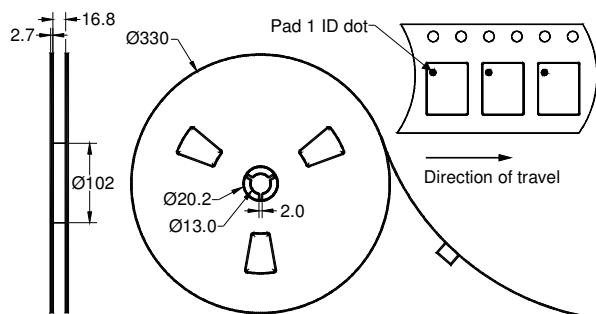
Body:  $Al_2O_3$  ceramic  
Lid: Kovar, Ni plated  
Terminations: Au plating 0.5 - 1.0 $\mu$ m, over a 2-6 $\mu$ m Ni plating

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

The date code consists of: day of the year (Julian, 3 digits), Y = last digit of the year (1 digit), HH = hour of the day (Military) and M=Manufacturing Site Code

### Tape and Reel Information

Standard T/R size = 3000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Information



#### Caution! ESD-Sensitive Device

ESD Rating: 1B

Value: Passes  $\geq 800$  V min.  
Test: Human Body Model (HBM)  
Standard: JEDEC Standard JESD22-A114

ESD Rating: B

Value: Passes  $\geq 300$  V min.  
Test: Machine Model (MM)  
Standard: JEDEC Standard JESD22-A115

### MSL Rating

Devices are Hermetic, therefore MSL is not applicable

### Solderability

Compatible with the latest version of J-STD-020, lead free solder, 260°C

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

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:

- 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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For technical questions and application information:

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

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