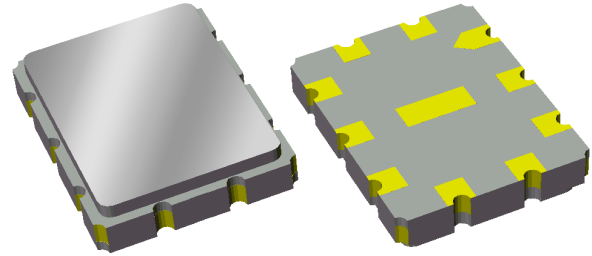


# 857176

## 140 MHz SAW Filter

### Applications

- For Military applications



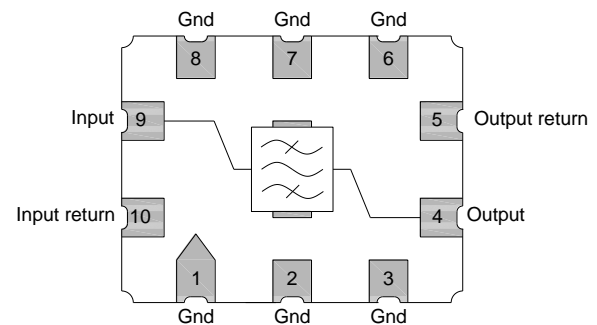
### Product Features

- Typical 3dB Bandwidth of 28.5 MHz
- Low loss
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small Size
- Dimensions: 9.0 x 7.0 x 1.5mm
- Hermetically Sealed
- RoHS compliant, Pb-free



### Functional Block Diagram

Top view



### General Description

The 857176 is a high-performance IF SAW filter with a center frequency of 140 MHz and a 3 dB bandwidth of 28.5 MHz.

It features low loss with excellent attenuation, and is designed to be used with a single ended input and output.

The device is RoHS compliant and Pb-free.

### Pin Configuration

Pin #	SE	Description
9		Input
10		Input Return
4		Output
5		Output Return
1,2,3,6,7,8		Case Ground

### Ordering Information

Part No.	Description
857176	packaged part
857176-EVB	evaluation board

Standard T/R size = 2000 units/reel.

## Specifications

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

Specified Temperature Range: <sup>(2)</sup> -55 to +105 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typical <sup>(4)</sup>	Max	Units
Center Frequency		-	140	-	MHz
Insertion Loss	at minimum	-	19.75	21	dB
Lower 1dB Band Edge <sup>(5)</sup>		-	-	127.8	MHz
Upper 1dB Band Edge <sup>(5)</sup>		152.2	-	-	MHz
Lower 3dB Band Edge <sup>(5)</sup>		-	-	126.85	MHz
Upper 3dB Band Edge <sup>(5)</sup>		153.15	-	-	MHz
Lower 40dB Band Edge <sup>(5)</sup>		120.5	-	-	MHz
Upper 40dB Band Edge <sup>(5)</sup>		-	-	159.5	MHz
Amplitude Variation <sup>(6)</sup>	127.8 – 152.2 MHz	-	-	1.0	dB p-p
Phase Linearity	127.8 – 152.2 MHz	-	-	7.0	deg p-p
Group Delay Variation	127.8 – 152.2 MHz	-	-	50	ns p-p
Group Delay	127.8 – 152.2 MHz	-	-	-	µs
Relative Attenuation <sup>(5)</sup>	15 – 90 MHz	40	-	-	dB
	90 – 120.5 MHz	40	-	-	dB
	159.5 – 190 MHz	40	-	-	dB
	190 – 350 MHz	42.5	-	-	dB
Source Impedance (single-ended) <sup>(7)</sup>		-	50	-	Ω
Load Impedance (single-ended) <sup>(7)</sup>		-	50	-	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. Relative to minimum insertion loss
6. Is defined as the difference between the maximum and minimum loss within the specified frequency range
7. This is the optimum impedance in order to achieve the performance shown

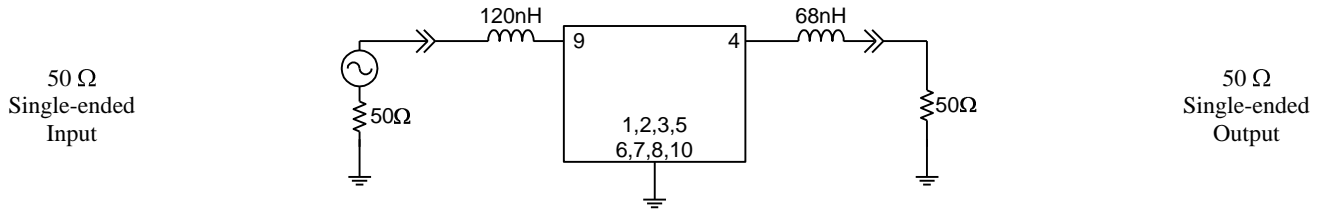
### Absolute Maximum Ratings

Parameter	Rating
Operating Temperature	-55 to +105 °C
Storage Temperature	-55 to +105 °C

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

**Reference Design – 50Ω SE Input, 50Ω SE Output**

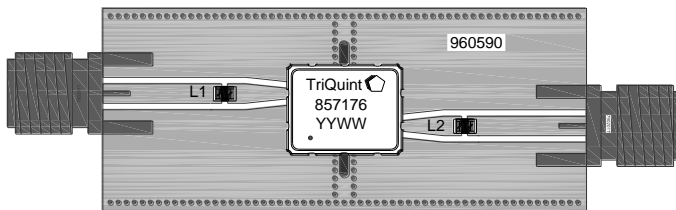
**Schematic**



Notes:

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

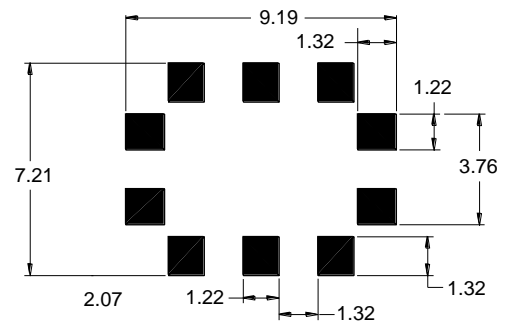
**PC Board**



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**



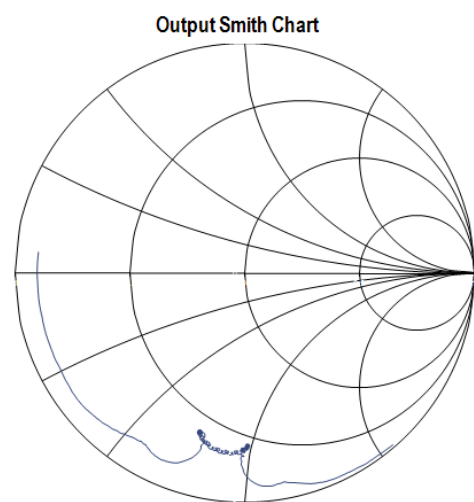
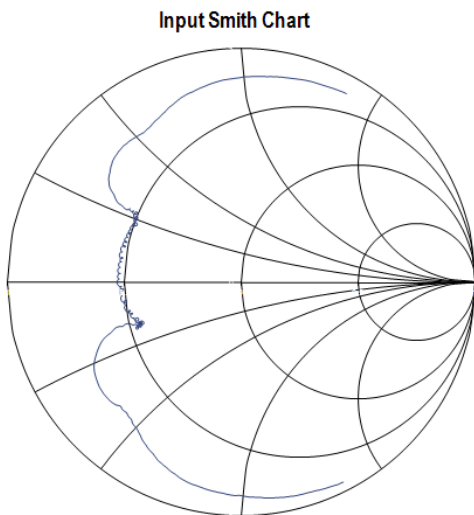
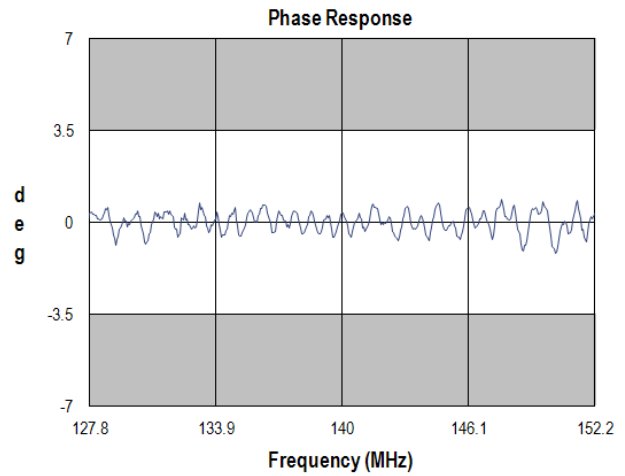
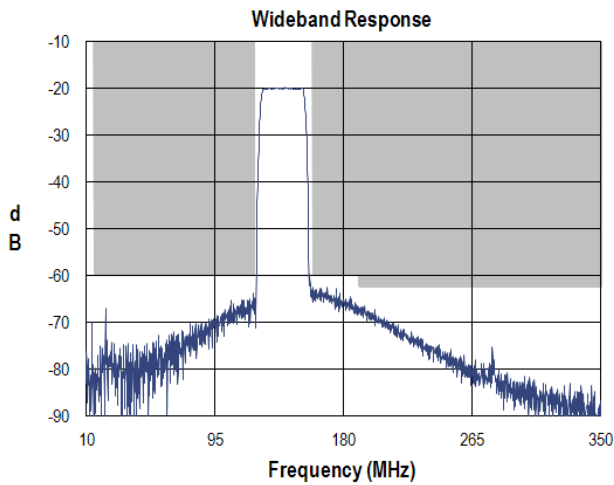
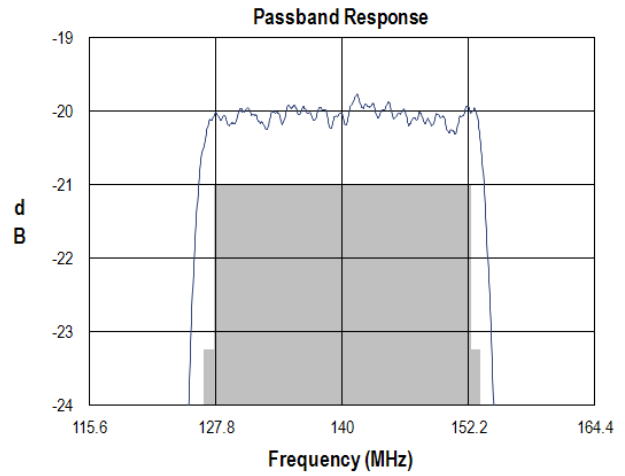
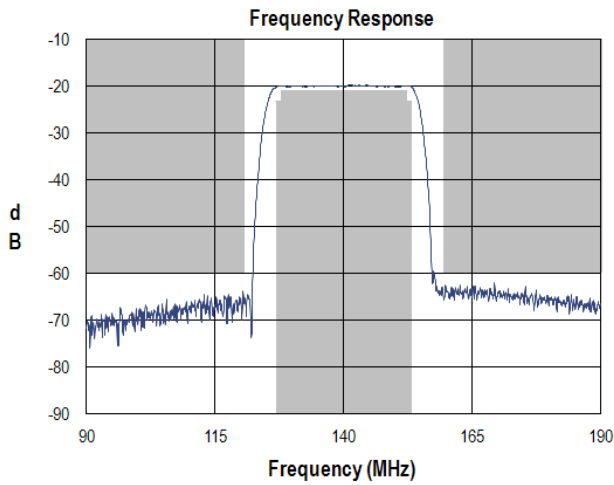
Notes:

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

**Bill of Material**

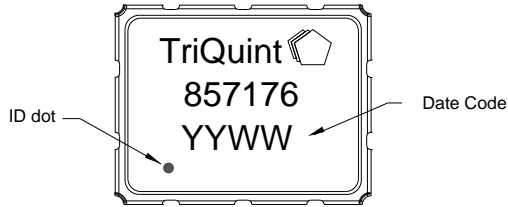
Reference Desg.	Value	Description	Manufacturer	Part Number
L1	120nH	Coil Wire-wound, 0805, 5%	Coilcraft	0805CS-121XJLC
L2	68nH	Coil Wire-wound, 0805, 5%	Coilcraft	0805CS-680XJLC
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960590

**Typical Performance** (at room temperature)



**Mechanical Information**

**Package Information, Dimensions and Marking**

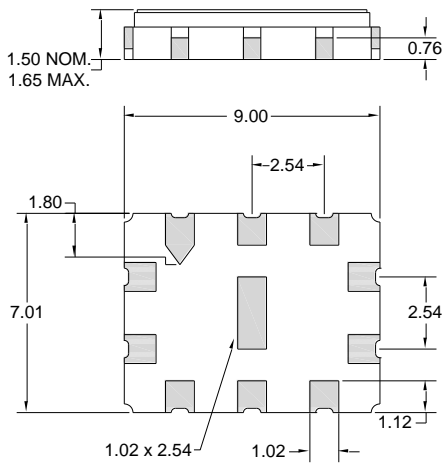


Package Style: SMP-35B  
 Dimensions: 9.00 x 7.01 x 1.50 mm

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

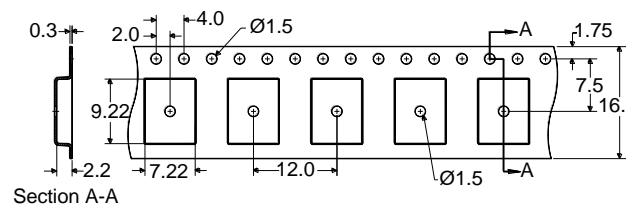
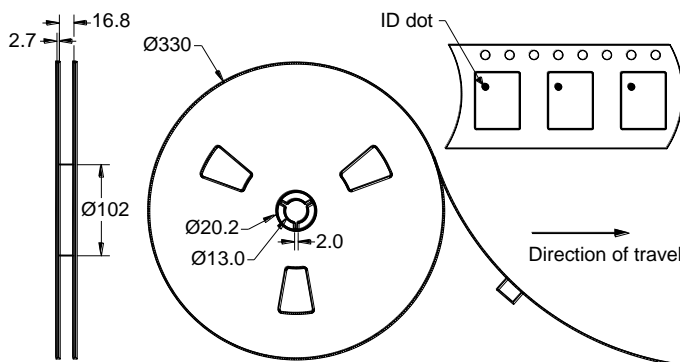
All dimensions shown are nominal in millimeters  
 All tolerances are  $\pm 0.15$ mm except overall length and width  $\pm 0.10$ mm

The date code consists of: YY = last two digits of the year,  
 WW = work week



**Tape and Reel Information**

Standard T/R size = 2000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Information



#### Caution! ESD-Sensitive Device

ESD Rating: TBD

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

ESD Rating: TBD

Value: Passes  $\geq$  TBD 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<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, and information about TriQuint:

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Email: [info-sales@tqs.com](mailto:info-sales@tqs.com)      Fax: +1.407.886.7061

For technical questions and application information:

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

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