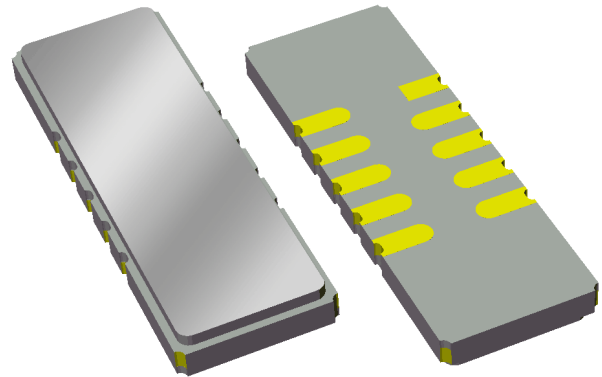


# 857177

## 140 MHz SAW Filter

### Applications

- For Military applications



### Product Features

- Typical 3 dB bandwidth of 1.5 MHz
- Low loss
- High Attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small Size
- Dimensions: 19.00 x 6.50 x 1.75mm
- RoHS compliant, Pb-free

### General Description

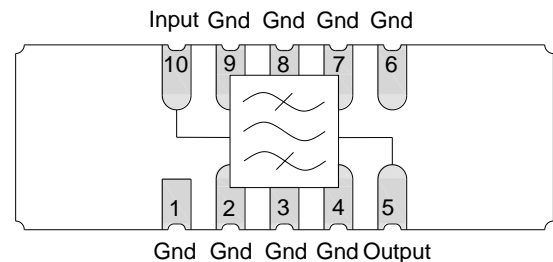
The 857177 is a high-performance IF SAW filter with a center frequency of 140 MHz and a 3 dB bandwidth of 1.5 MHz.

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

This device is RoHS compliant and Pb-free.

### Functional Block Diagram

Top view



### Pin Configuration

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

### Ordering Information

Part No.	Description
857177	packaged part
857177-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	-	23.5	25	dB
Lower 1.0 dB Bandedge		-	-	139.55	MHz
Upper 1.0 dB Bandedge <sup>(5)</sup>		140.45	-	-	MHz
Lower 3.0 dB Bandedge		-	-	139.4	MHz
Upper 3.0 dB Bandedge <sup>(5)</sup>		140.6	-	-	MHz
Lower 40.0 dB Bandedge		138.6	-	-	MHz
Upper 40.0 dB Bandedge <sup>(5)</sup>		-	-	141.4	MHz
Amplitude Variation <sup>(6)</sup>	139.55 – 140.45 MHz	-	0.35	1.0	dB p-p
Phase Linearity	139.55 – 140.45 MHz	-	3.0	6.0	deg p-p
Group Delay Variation	139.55 – 140.45 MHz	-	80	200	ns p-p
Relative Attenuation	15 – 138.3 MHz	50	-	-	dB
	141.7 – 145 MHz	45	-	-	dB
	145 – 155 MHz	43	-	-	dB
	155 – 220 MHz	50	-	-	dB
	220 – 240 MHz	30	-	-	dB
	240 – 252 MHz	50	-	-	dB
	252 – 270 MHz	20	-	-	dB
	270 – 350 MHz	50	-	-	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 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. Relative to insertion loss at center frequency
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

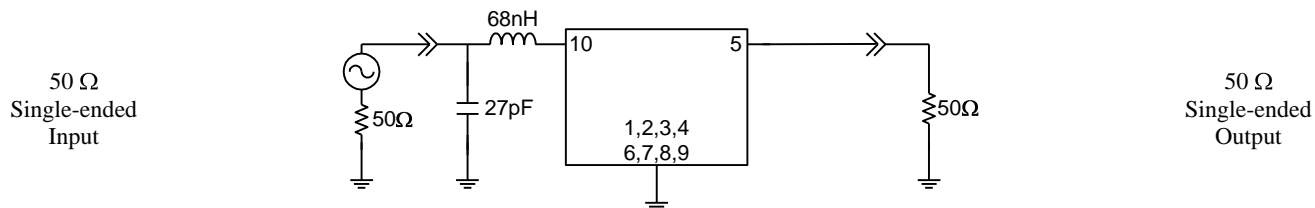
### Absolute Maximum Ratings

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

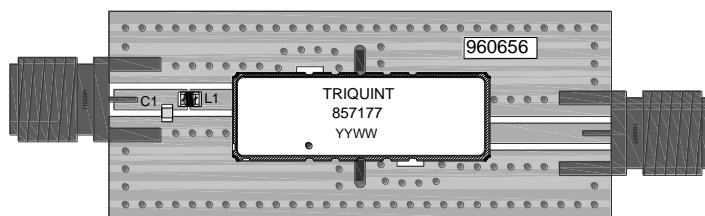
#### Schematic



#### Notes:

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

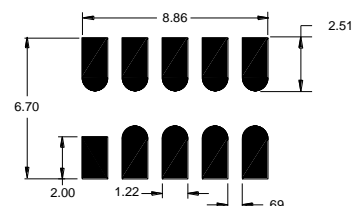
#### PC Board



#### 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



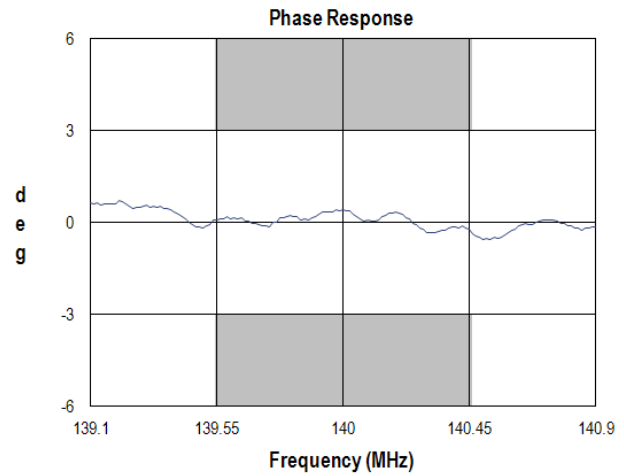
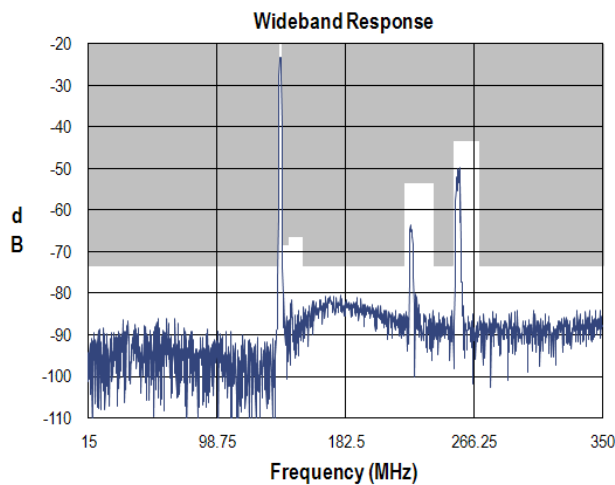
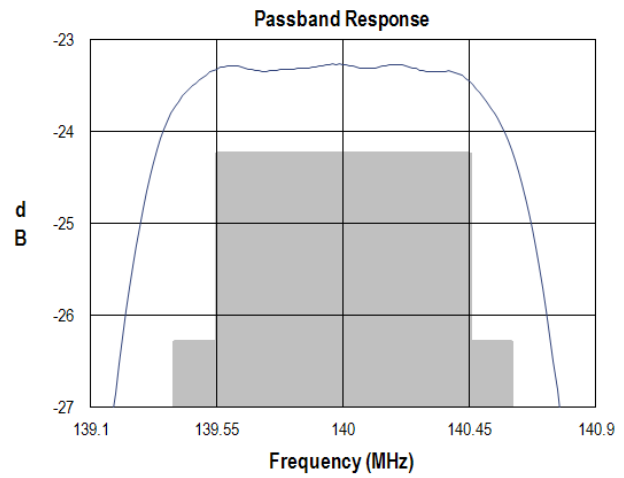
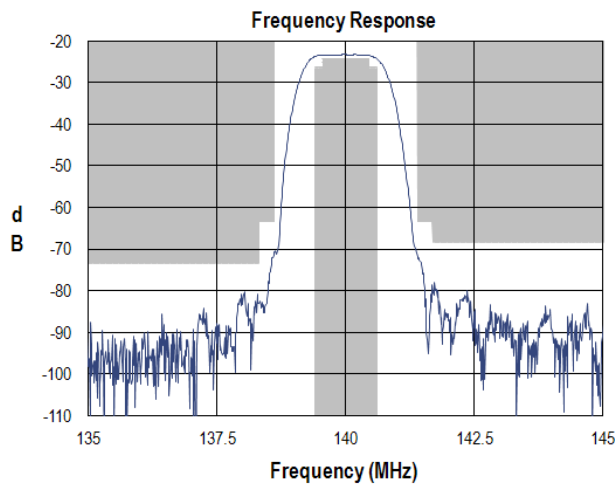
#### Notes:

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

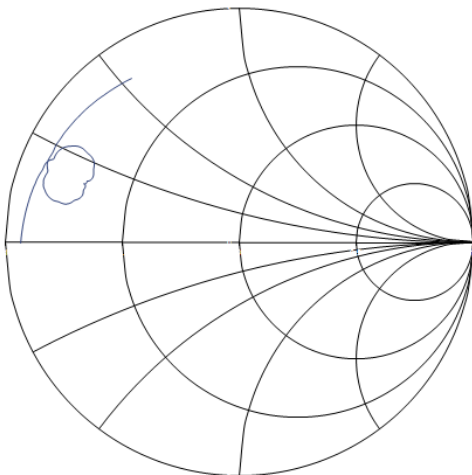
#### Bill of Material

Reference Desg.	Value	Description	Manufacturer	Part Number
L1	68nH	Coil Wire-wound, 0805, 5%	Coilcraft	0805CS-680XJLC
C1	27pF	Chip Capacitor, 0603, 5%	MuRata	GRM1885C1H270JA01
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960656

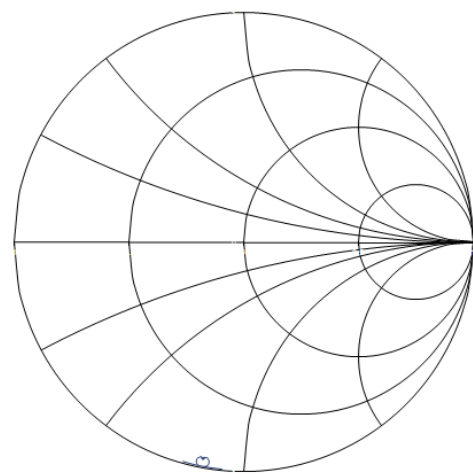
**Typical Performance** (at room temperature)



**Input Smith Chart**

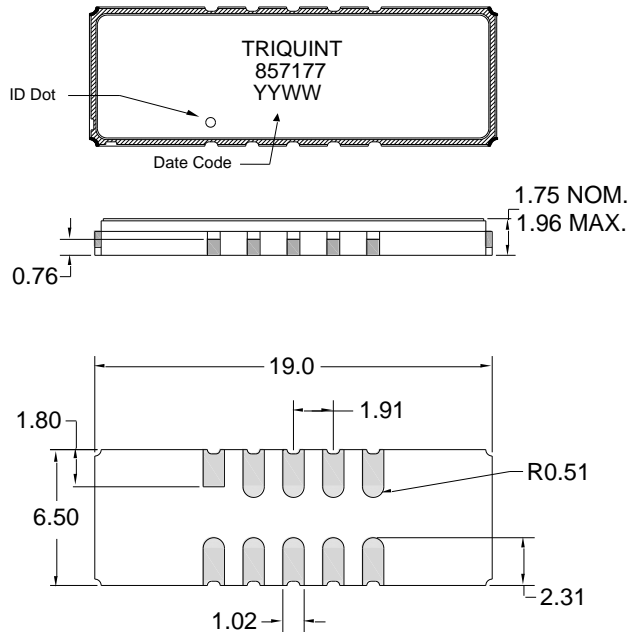


**Output Smith Chart**



### Mechanical Information

#### Package Information, Dimensions and Marking



Package Style: SMP-75  
Dimensions: 19.00 x 6.50 x 1.75mm

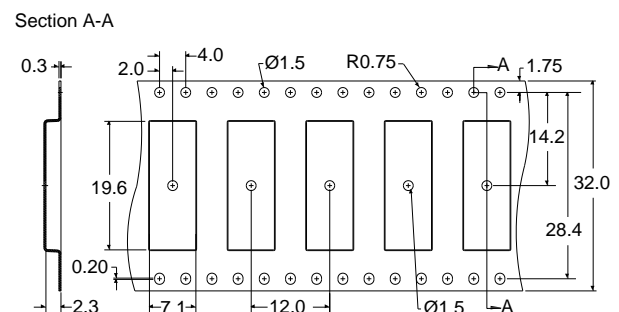
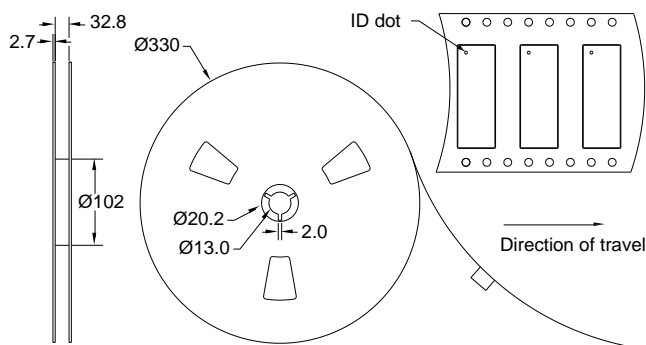
Body:  $Al_2O_3$  ceramic  
Lid: Kovar, Ni plated  
Terminations: Au plating 0.5 - 1.0 $\mu$ m, over a 2-6 $\mu$ m Ni plating

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

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