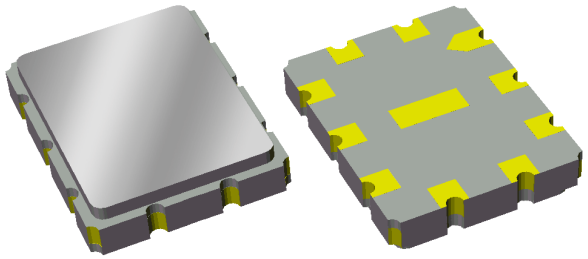
857176

140 MHz SAW Filter

Applications

- For Military applications

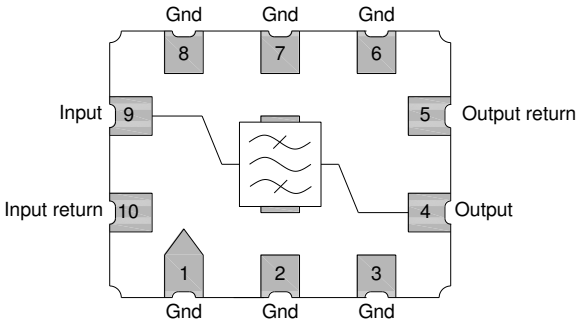


Product Features

- 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 [1]

Specified Temperature Range: [2] -55 to +105 ºC

Parameter [3]	Conditions	Min	Typical [4]	Max	Units
Center Frequency		-	140	-	MHz
Insertion Loss	at minimum	-	19.75	21	dB
Lower 1dB Band Edge [5]		-	-	127.8	MHz
Upper 1dB Band Edge [5]		152.2	-	-	MHz
Lower 3dB Band Edge [5]		-	-	126.85	MHz
Upper 3dB Band Edge [5]		153.15	-	-	MHz
Lower 40dB Band Edge [5]		120.5	-	-	MHz
Upper 40dB Band Edge [5]		-	-	159.5	MHz
Amplitude Variation[6]	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 [5]	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) [7]		-	50	-	Ω
Load Impedance (single-ended) [7]		-	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

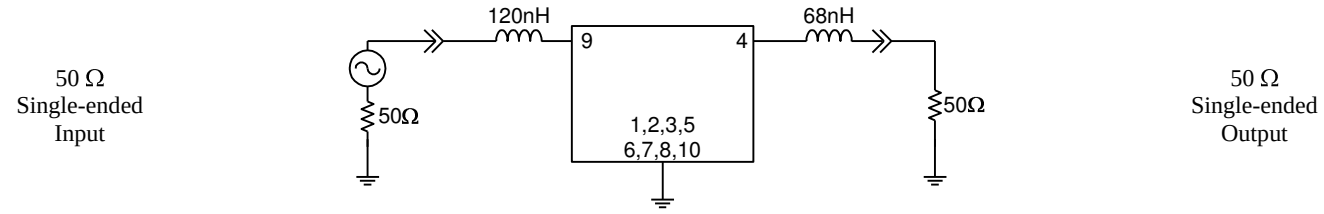
Absolute Maximum Ratings

Parameter	Rating
Operating Temperature	-55 to +105 ºC
Storage Temperature	-55 to +105 ºC

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

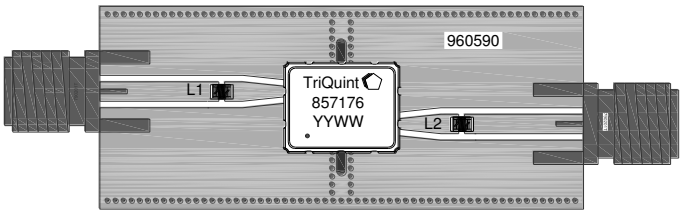
Reference Design – 50Ω SE Input, 50Ω SE Output

Schematic



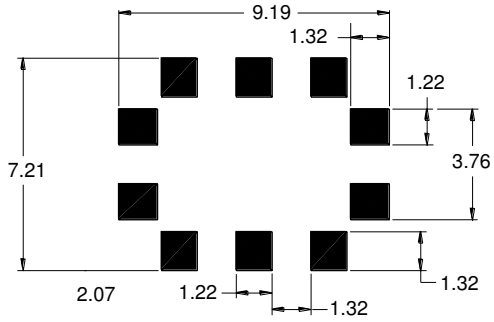
Notes:
1. Actual matching values may vary due to PCB layout and parasitics

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



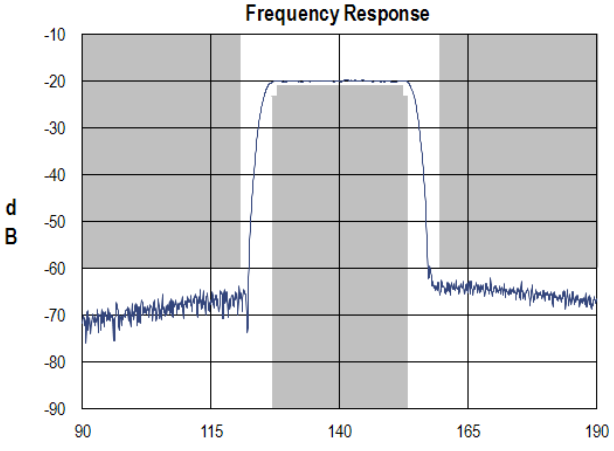
Notes:
1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

Bill of Material

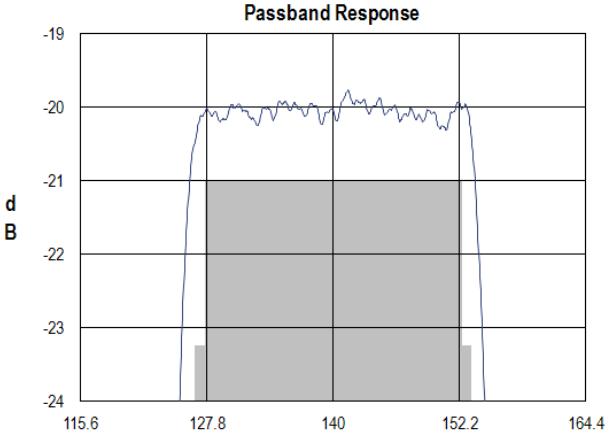
Reference Desg.	Value	Description	Manufacturer	Part Number
L1	120nH	Coil Wire-wound, 0805, 5%	Coilcraft	0805CS-121XJLC
L2	68nH	Coil Wire-wound, 0805, 5%	Coilcraft	0805CS-680XJLC
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960590

Typical Performance (at room temperature)

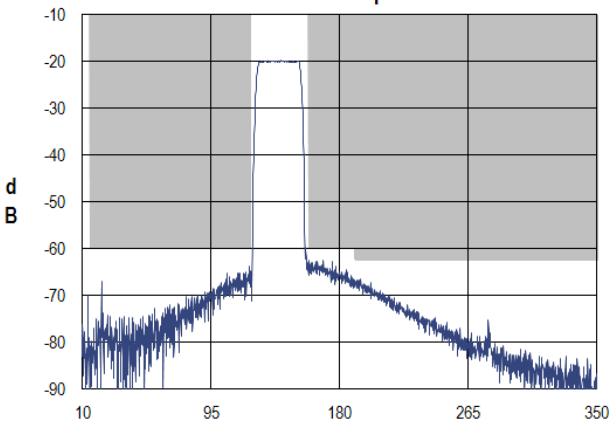
Frequency Response



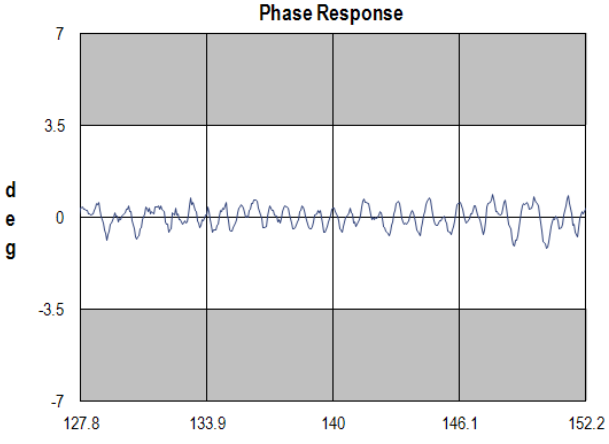
Passband Response



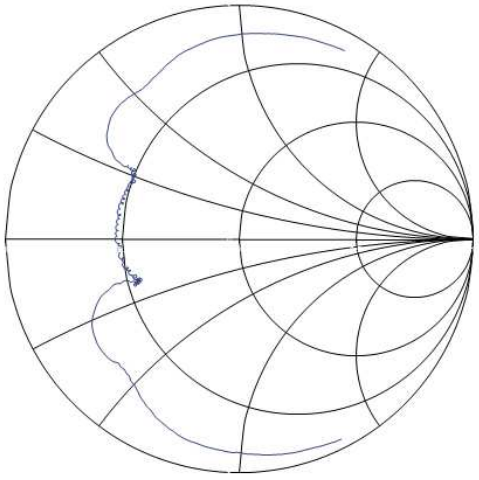
Wideband Response



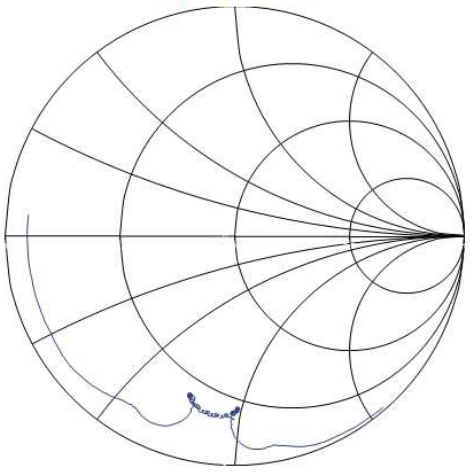
Phase Response



Input Smith Chart

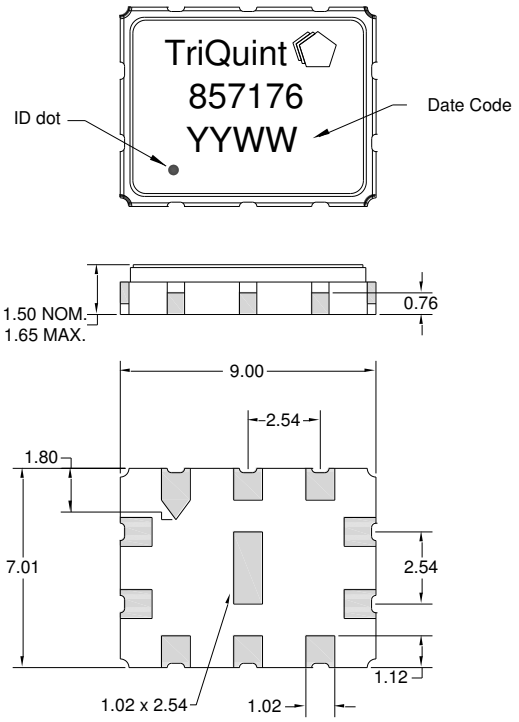


Output Smith Chart



Mechanical Information

Package Information, Dimensions and Marking



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

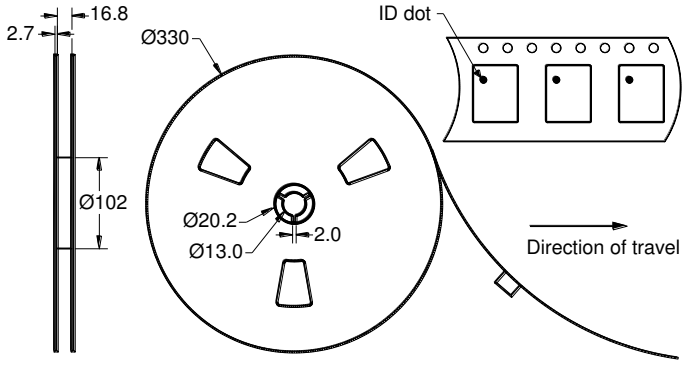
Body: Al_2O_3 ceramic
Lid: Kovar, Ni plated
Terminations: Au plating 0.5 - 1.0µm, over a 2-6µm Ni plating

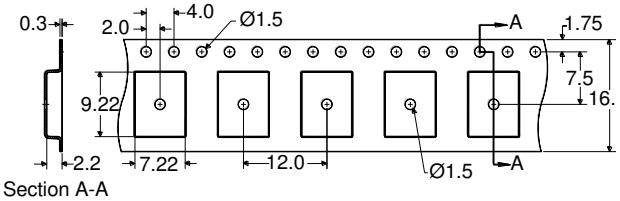
All dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

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 ≥ TBD V min.
Test: Human Body Model (HBM)
Standard: JEDEC Standard JESD22-A114

ESD Rating: TBD
Value: Passes ≥ 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 ($C_{15}H_{12}Br_40_2$) Free
- PFOS Free
- SVHC Free

Contact Information

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