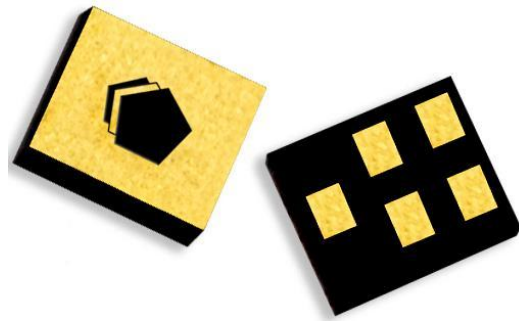


# 857144

## 1176.45 MHz SAW Filter

### Applications

- For GPS applications



### Product Features

- High attenuation
- Usable bandwidth 20.46 MHz
- Single-ended operation
- Ceramic chip-scale Package (CSP)
- Small Size: 1.40 x 1.20 x 0.46 mm
- Hermetically Sealed
- RoHS compliant, Pb-free

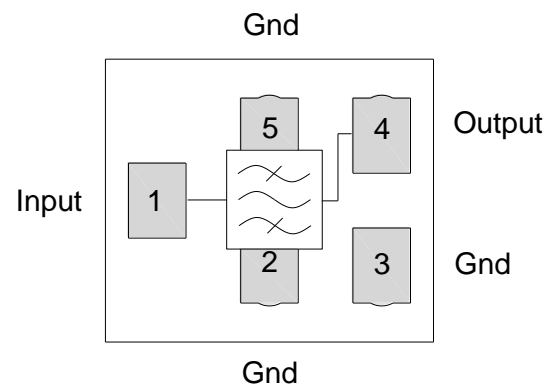
### General Description

857144 is specifically designed for GPS applications.

857144 uses advanced and inexpensive packaging techniques to achieve an extremely small 1.40 x 1.20 x 0.46 mm hermetically sealed package.

### Functional Block Diagram

Top view



### Pin Configuration

Pin #	Balanced	Description
1		Input
4		Output
2,3,5		Ground

### Ordering Information

Part No.	Description
857144	packaged part
857144-EVB	evaluation board

Standard T/R size = 10000 units/reel.

## Specifications

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

Specified Temperature Range: <sup>(2)</sup> -55 to +85 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typical <sup>(4)</sup>	Max	Units
Center Frequency		-	1176.45	-	MHz
Maximum Insertion Loss	1175.25 – 1177.65 MHz	-	2.0	3.5	dB
Lower 4.5dB Bandedge		-	1154.06	1166.22	MHz
Upper 4.5dB Bandedge		1186.68	1192.39	-	MHz
Lower 21dB Bandedge		1126.45	1148.84	-	MHz
Upper 21dB Bandedge		-	1202.93	1226.45	MHz
Amplitude Variation	1175.25 – 1177.65 MHz	-	0.07	0.2	dB p-p
Relative Attenuation <sup>(5)</sup>	414 – 550 MHz	20	39.6	-	dB
	1100 – 1126.45 MHz	21	33.4	-	dB
	1226.45 – 1250 MHz	21	38.4	-	dB
	1310 – 1770 MHz	20	37.6	-	dB
Input Return Loss	1175.25 – 1177.65 MHz	10	14.5	-	dB
Output Return Loss	1175.25 – 1177.65 MHz	10	14.6	-	dB
Source Impedance (Single-ended) <sup>(6)</sup>		-	50	-	Ω
Load Impedance (Single-ended) <sup>(6)</sup>		-	50	-	Ω

Notes:

- All specifications are based on the TriQuint schematic for the main reference design shown on page 3
- In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
- Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
- Typical values are based on average measurements at room temperature
- Relative to zero dB.
- This is the optimum impedance in order to achieve the performance shown

### Absolute Maximum Ratings

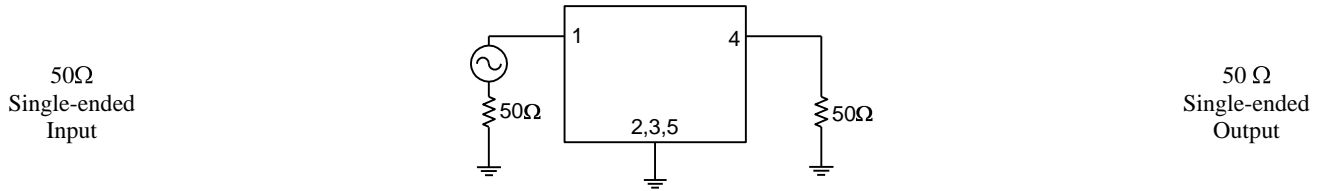
Parameter	Rating
Operating Temperature <sup>(7)</sup>	-55 to +85 °C
Storage Temperature	-55 to +85 °C
Input Power <sup>(8)</sup>	+15 dBm

- Device may operate over this range with degraded Electrical Specifications
- Device is measured for equivalent 10K hours @ +85 °C [CW Signal]

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

### Reference Design

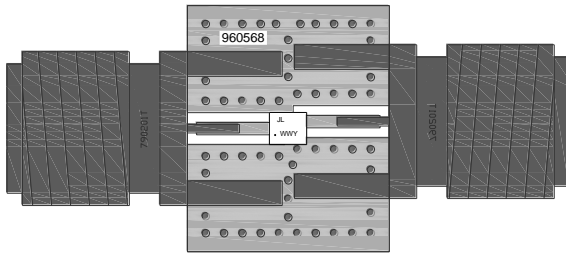
#### Schematic



Notes:

- Actual matching values may vary due to PCB layout and parasitic

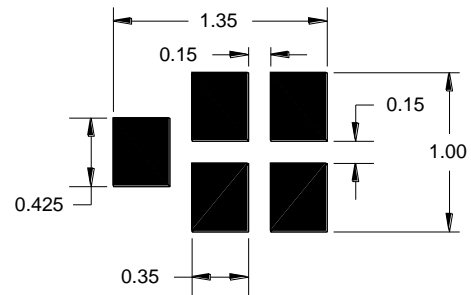
#### PC Board



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:

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

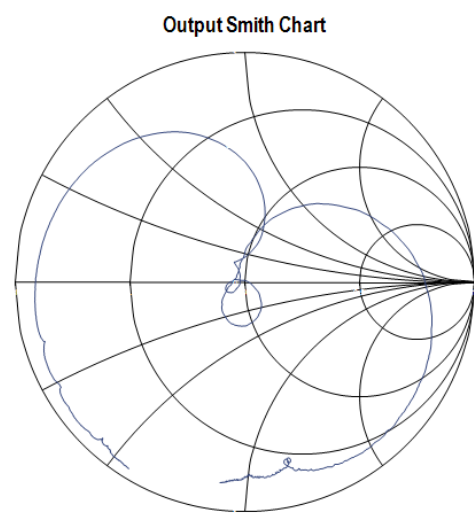
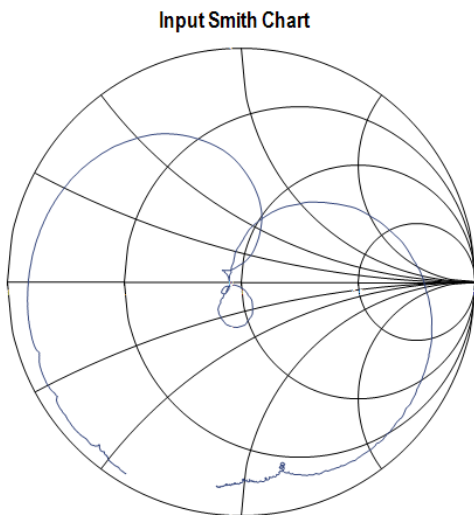
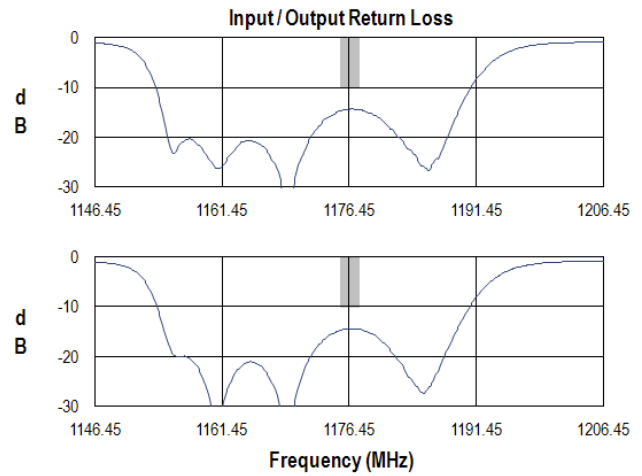
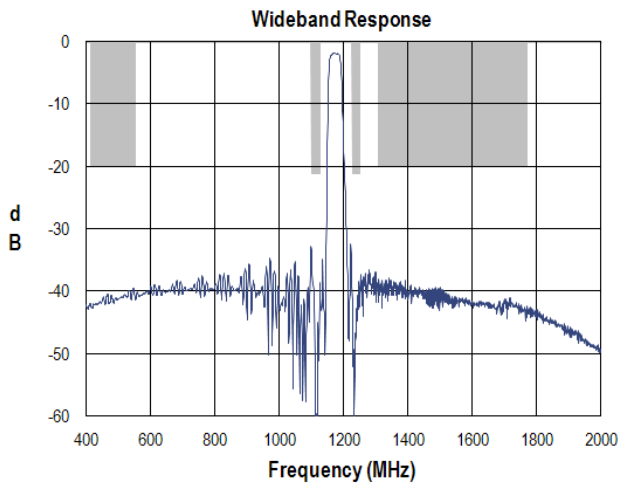
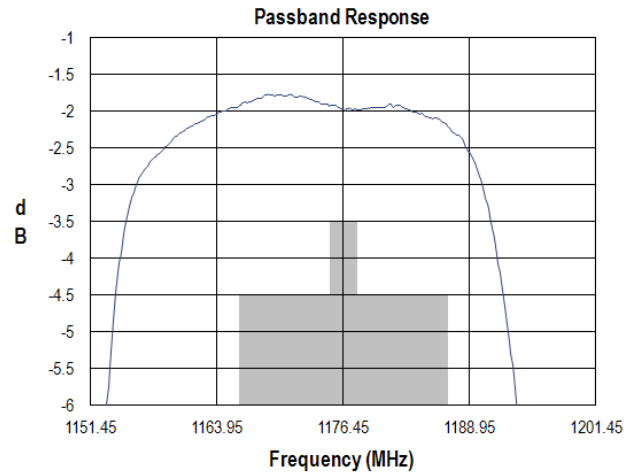
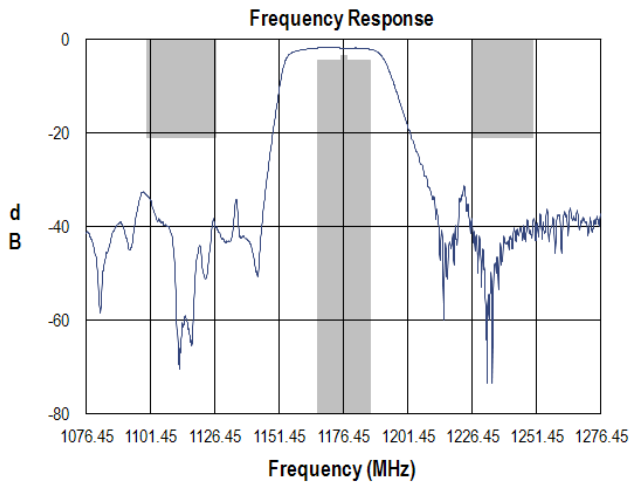
#### Bill of Material

Reference Desg.	Value	Description	Manufacturer	Part Number
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960568

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## 1176.45 MHz SAW Filter

### Typical Performance (at room temperature)

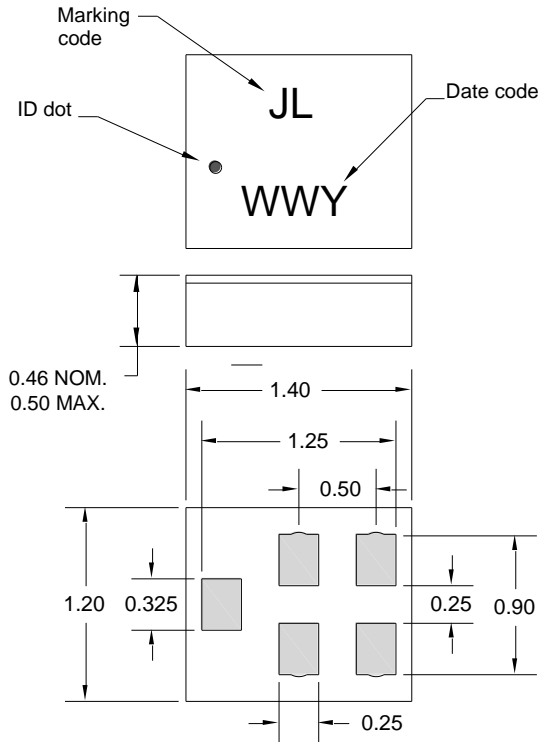


# 857144

## 1176.45 MHz SAW Filter

### Mechanical Information

#### Package Information, Dimensions and Marking



Package Style: CSP-5BT  
Dimensions: 1.40 x 1.20 x 0.46 mm

Body:  $Al_2O_3$  ceramic  
Lid: Kovar or Alloy 42, Au over Ni plated

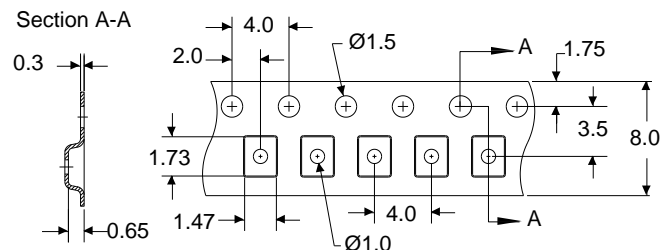
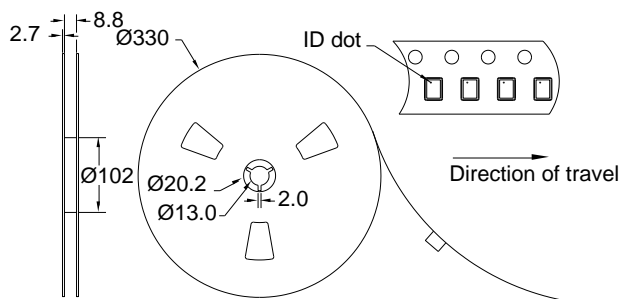
Terminations: Au plating 0.5 - 1.0 $\mu$ m, over a 2-6 $\mu$ m Ni plating

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: WW = 2 digit week and Y = last digit of year

#### Tape and Reel Information

Standard T/R size = 10000 units/reel. All dimensions are in millimeters



# 857144

## 1176.45 MHz SAW Filter

### 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

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

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