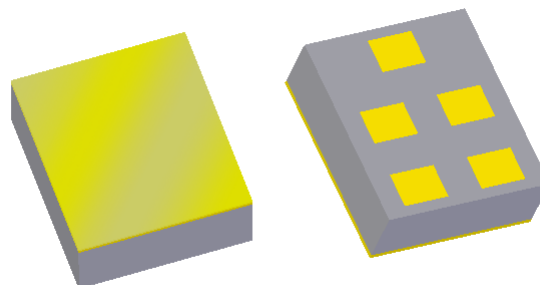



## Applications

- For GPS application
- Suitable for Automotive applications-  
Compliant to the AEC-Q200 reliability standard



Surface Mount 1.40 x 1.20 x 0.46 mm

## Product Features

- Compatible with leading chipset suppliers
- Low loss
- Usable bandwidth of 2 MHz
- Single-ended operation
- Ceramic Chip Scale Package (CSP)
- Hermetic
- Manufacturing facilities are certified with ISO/TS 16949:2002
- **RoHS** compliant (2002/95/EC), **Pb-free** 

## General Description

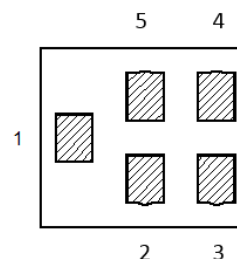
The 856561 is a high-performance SAW filter designed for GPS applications. It is suitable for Automotive applications too.

Dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.10\text{mm}$

Body: Al<sub>2</sub>O<sub>3</sub> ceramic  
Lid: Kovar or Alloy 42, Au over Ni plated  
Terminations: Au plating 0.5 - 1.0  $\mu\text{m}$ ,  
over a 2 - 6  $\mu\text{m}$  Ni plating

## Functional Block Diagram

Top view



## Pin Configuration

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

## Ordering Information

Part No.	Description
856561	Packaged part
856561-EVB	Evaluation board

Standard T/R size = 10,000 units/reel.

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

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

Parameter <sup>(3)</sup>	Minimum	Typical <sup>(4)</sup>	Maximum	Unit
Center Frequency	-	1575.42	-	MHz
<i>Insertion Loss</i>				
1574.42 - 1576.42 MHz (-30 to +85 °C)	-	0.75	1.2	dB
1574.42 - 1576.42 MHz	-	0.75	1.4	dB
<i>Absolute Attenuation</i> <sup>(5)</sup>				
0.1 - 824 MHz	32	36	-	dB
824 - 849 MHz	33.5	36	-	dB
849 - 960 MHz	32	36	-	dB
1495 - 1515 MHz	25	31	-	dB
1635 - 1655 MHz	35	40	-	dB
1710 - 1750 MHz	35	39	-	dB
1750 - 1780 MHz	35	39	-	dB
1780 - 1785 MHz	35	39	-	dB
1850 - 1910 MHz	35	39	-	dB
1920 - 1980 MHz	35	39	-	dB
2402 - 2480 MHz	25	35	-	dB
3000 - 4000 MHz	10	15	-	dB
4000 - 6000 MHz	10	15	-	dB
<i>Input/output Return Loss</i>				
1574.42 - 1576.42 MHz	10	15	-	dB
<i>Source Impedance (single-ended)</i> <sup>(6)</sup>	-	50	-	Ω
<i>Load Impedance (single-ended)</i> <sup>(6)</sup>	-	50	-	Ω

### Notes:

- (1) All specifications are based on the TriQuint test circuit shown below
- (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 zero dB
- (6) This is the optimum impedance in order to achieve the performance shown

## Absolute Maximum Ratings

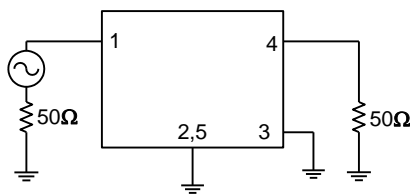
Parameter	Rating
Operating Temperature <sup>(7)</sup>	-40 to +85 °C
Storage Temperature	-40 to +85 °C
Power handling 824-849 Mhz, 1850-1910 Mhz	+20 dBm +20 dBm <sup>(8)</sup>

Notes:

- (7) The SAW filter will function over the recommended range without degradation in reliability or permanent change in performance, but is not guaranteed to meet electrical specifications.
- (8) Power handling will be CW signal for 10,000 hours at +55 °

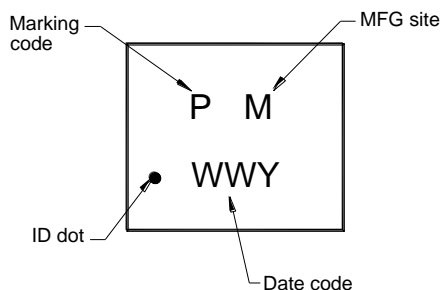
## Matching Schematics

50  $\Omega$   
Single-ended  
Input



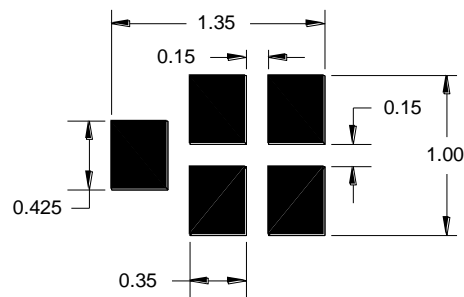
50  $\Omega$   
Single-ended  
Output

## Marking



The date code consists of: WW = 2 digit week,  
Y = last digit of year, M = manufacturing site code

## PCB Footprint

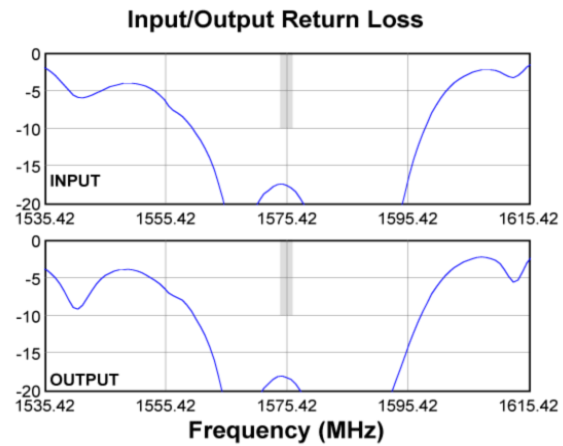
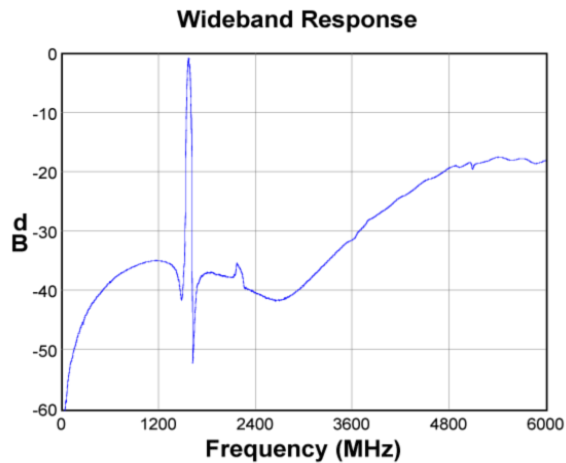
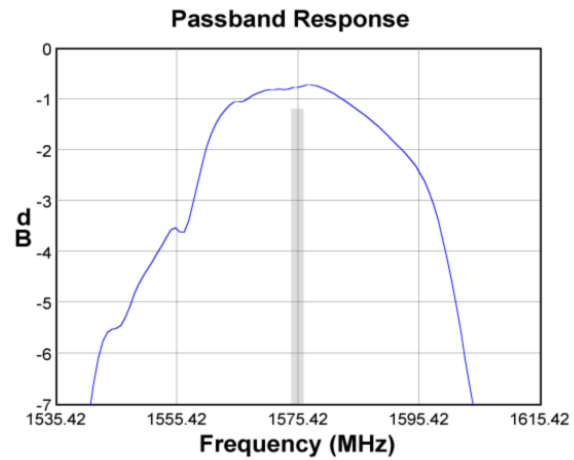
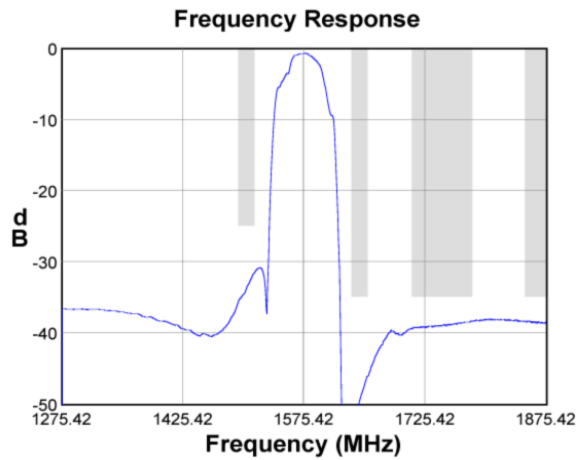


This footprint represents a recommendation only  
Dimensions shown are nominal in millimeters

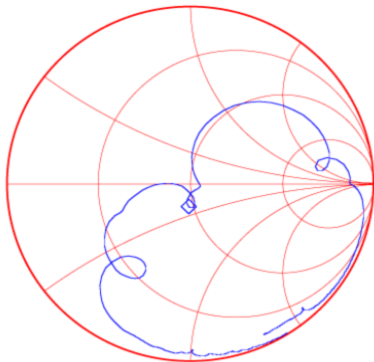
Notes:

- Actual matching may vary due to PCB layout and parasitic

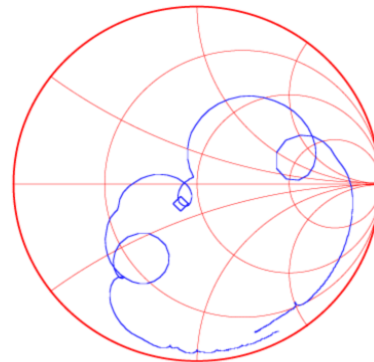
**Typical Performance (at room temperature)**



**Input Smith Chart**

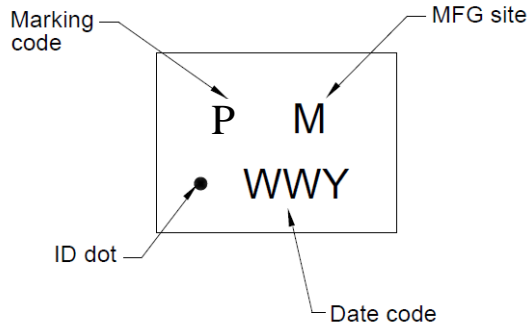


**Output Smith Chart**



## Mechanical Information

### Package Information, Dimensions and Marking

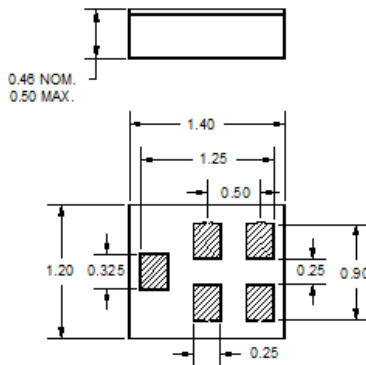


Package Style: CSP-5BT  
Dimensions: 1.40 x 1.20 x 0.46 mm

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

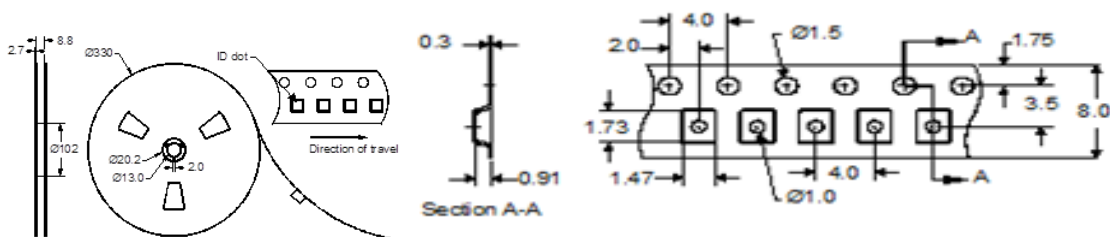
All dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.15$ mm except overall length and width :  $\pm 0.10$ mm

The date code consists of:  
WW = 2 digit week,  
Y = Last digit of year,  
M = Manufacturing site code



## Tape and Reel Information

Standard T/R size = 10,000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Information



#### Caution! ESD-Sensitive Device

ESD Rating: 3A

Value: TBD.

Test: Human Body Model (HBM)

Standard: JEDEC Standard JESD22-A114

ESD Rating: C

Value: TBD

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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