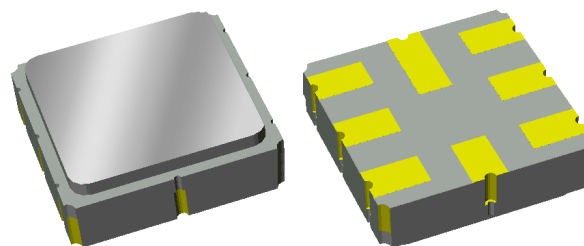


### Applications

- For broadband access applications



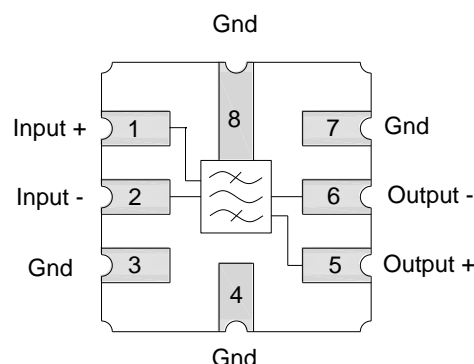
SMP-15, 3.8 x 3.8 x 1.27 mm

### Product Features

- Usable bandwidth 50 MHz
- Low loss
- High attenuation
- Balanced operation
- Small size: 3.8 x 3.8 x 1.27 mm
- Ceramic Surface Mount Package (SMP)
- Hermetically sealed
- RoHS (2002/95/EC) compliant, Pb-free



### Functional Block Diagram



Top View

### General Description

The 856598 is a high-performance IF SAW filter with a center frequency of 1220 MHz and a usable bandwidth of 50 MHz

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

### Pin Configuration

Pin No.	Label
1	Input +
2	Input -
5	Output +
6	Output -
3,4,7,8	Ground

### Ordering Information

Part No.	Description
856598	Packaged Part
856598-EVB	Evaluation board

Standard T/R size = 4000 units/reel

## Absolute Maximum Ratings

Parameter	Rating
Storage Temperature <sup>(1)</sup>	- 40 to + 85 °C
Operable Temperature <sup>(2)</sup>	0 to + 70 °C

1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions.

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

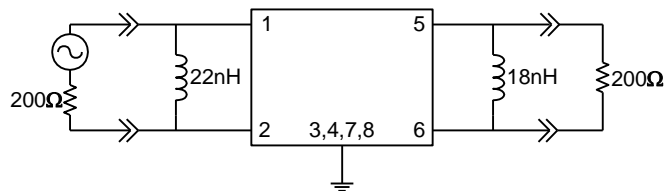
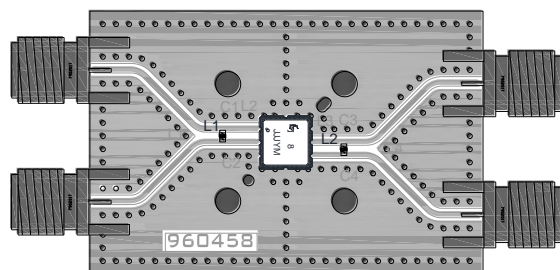
Test conditions unless otherwise noted: <sup>(2)</sup> Temperature Range 0 to + 70 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typical <sup>(4)</sup>	Max	Units
Center Frequency		-	1220	-	MHz
Maximum Insertion Loss	1195 – 1245 MHz	-	3.9	6.0	dB
Amplitude Variation <sup>(5)</sup>	1195 – 1245 MHz	-	1.1	2.2	dB p-p
	1195 – 1245 MHz (in any 8 MHz (channel))	-	1.0	2.0	
Group Delay Ripple <sup>(5)</sup>	1195 – 1245 MHz	-	26	60	ns p-p
	1195 – 1245 MHz (in any 8 MHz (channel))	-	15	24	
Absolute Attenuation <sup>(6)</sup>	500 – 1170 MHz	40	56	-	dB
	1170 – 1172 MHz	33	42	-	
	1268 – 1270 MHz	33	42	-	
	1270 – 1500	40	47	-	
Source/Load Impedance <sup>(7)</sup>	Balanced	-	200	-	Ω

### Notes:

1. All specifications are based on the TriQuint schematic reference design shown on page 3.
2. In production, devices will be tested at room temperature to a guard-banded 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. Total variation over the defined frequency range
6. Absolute attenuation measurements are referenced to zero dB.
7. This is the optimum impedance in order to achieve the performance shown

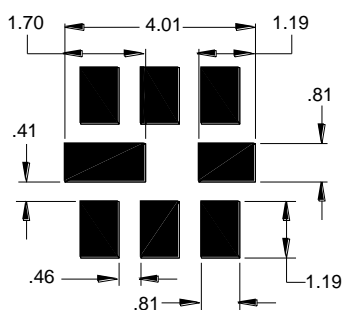
### Evaluation Board



#### Notes:

3-layers board - top, middle & bottom layer: 1 oz copper  
 Substrates: .031" thick FR4 dielectric.  
 Finish plating: Nickel: 3-8  $\mu\text{m}$  thick, Gold: .03-.2  $\mu\text{m}$  thick  
 Hole plating: Copper min .0008  $\mu\text{m}$  thick

### PCB Mounting Pattern



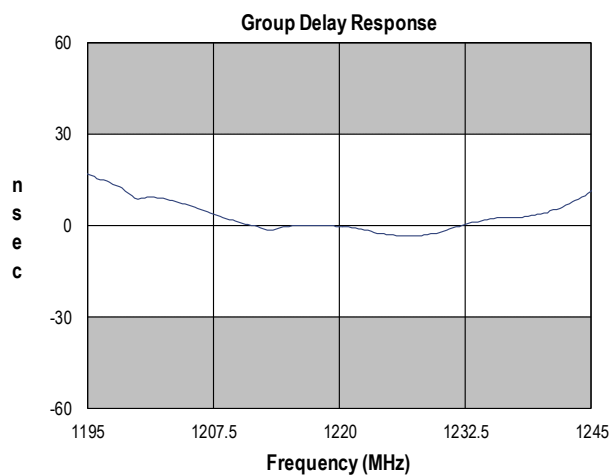
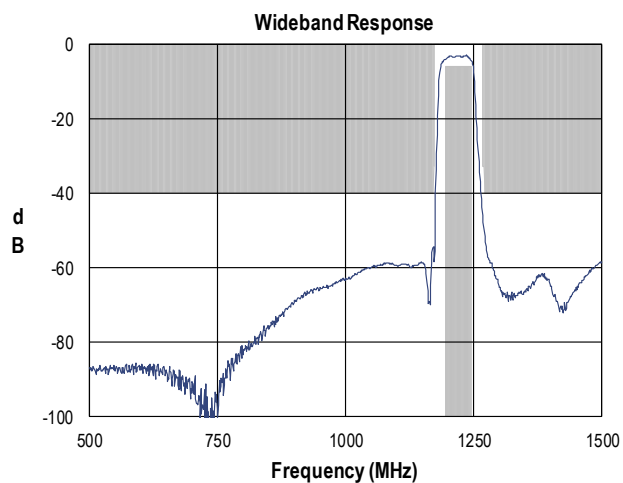
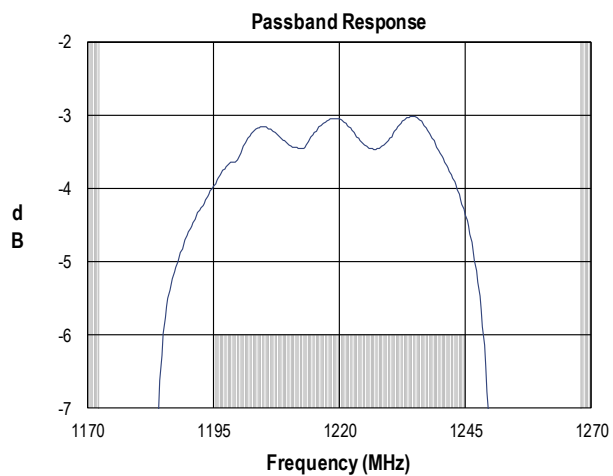
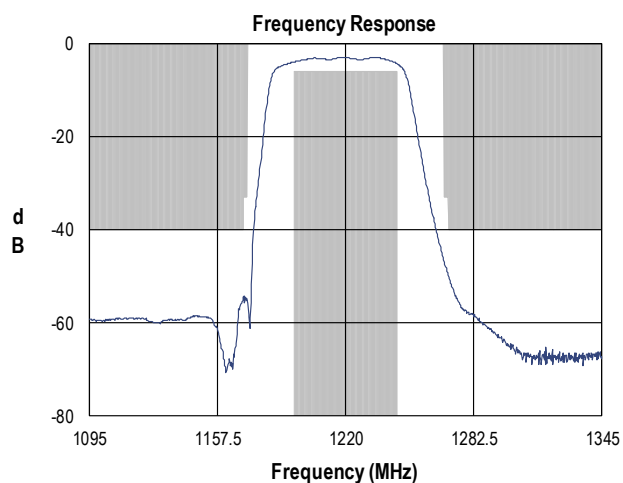
#### Notes:

1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

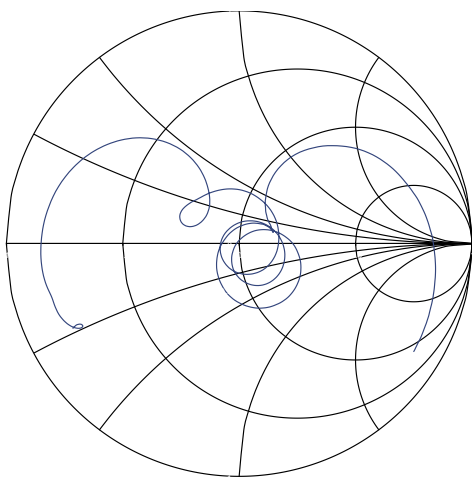
### Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
L1	22 nH	Coil Wire-wound, 0402, $\pm 5\%$	Murata	LQW15AN22NJ00
L2	18 nH	Coil Wire-wound, 0402, $\pm 5\%$	Murata	LQW15AN18NJ00
Port 1 & 2 Offset	85 ps	-	-	-
Port 3 & 4 Offset	82 ps	-	-	-
SMA	N/A	SMA connector	Johnson Components	142-0701-801
PCB	N/A	3-layer	Multiple	960458

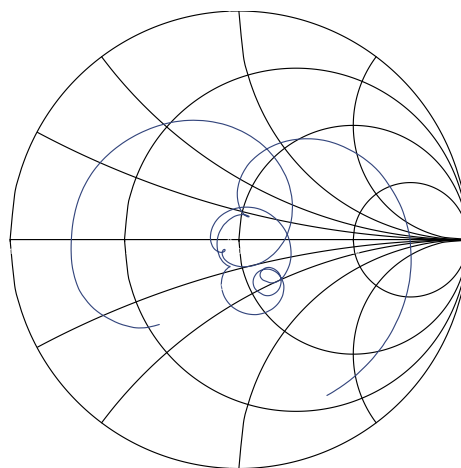
### Performance Plots (Test conditions unless otherwise noted: Temp.= +25 °C)



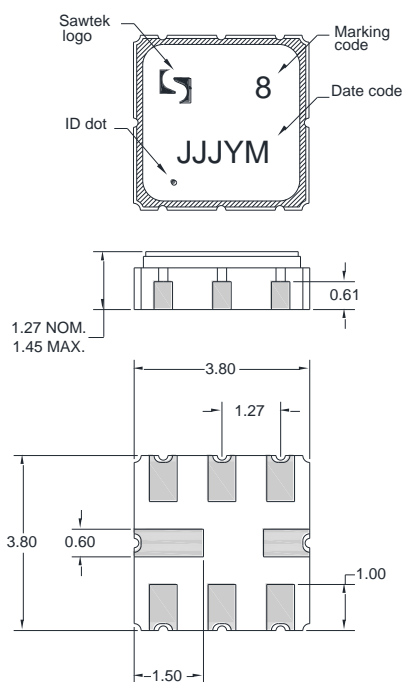
**Input Smith Chart**



**Output Smith Chart**



### Mechanical Information



Package Style: SMP-15  
Dimensions: 3.8 x 3.8 x 1.27 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  $\pm 0.10 mm$

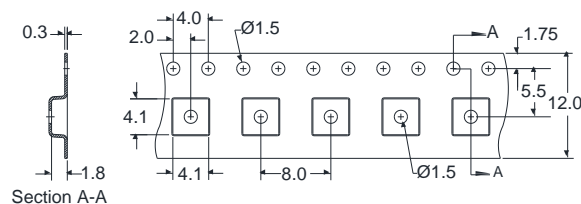
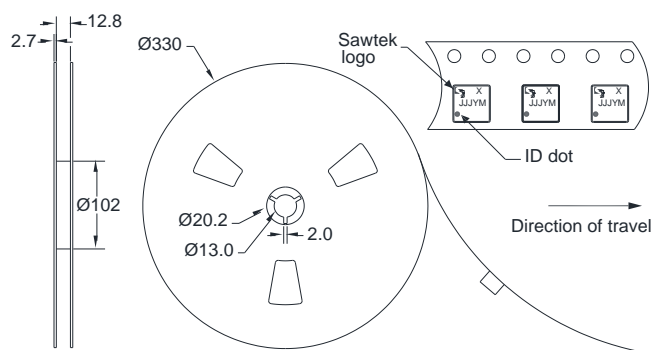
The date code consists of: day of the current year (Julian, 3 digits), Y = last digit of the year, and M = manufacturing site code

#### Notes:

1. All dimensions shown are typical in millimeters
2. An asterisk (\*) in front of the marking code indicates prototype.

### Tape and Reel information

Standard T/R size = 4000 units / reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: 1A

Value: Passes  $\geq 400$  V min.  
Test: Human Body Model (HBM)  
Standard: ESDA/JEDEC JS-001-2012

ESD Rating: B

Value: Passes  $\geq 200$  V min.  
Test: Machine Model (MM)  
Standard: JEDEC Standard JESD22-A115

### MSL Rating

Not applicable. Hermetic package.

### Solderability

Compatible with both lead-free (260 °C maximum reflow temperature) and tin/lead (245 °C maximum reflow temperature) soldering processes.

Refer to [Soldering Profile](#) for recommended guidelines.

### RoHS Compliance

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:

- Lead Free
- 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

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

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