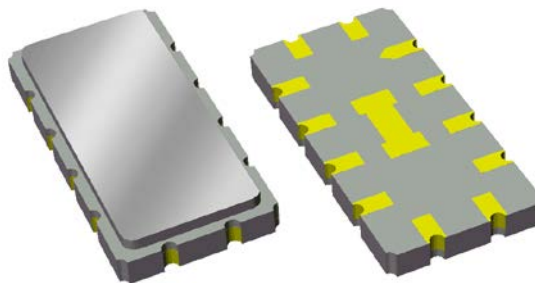


### Applications

- For Wideband Filter Applications



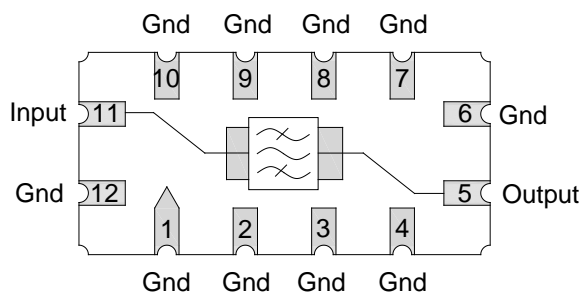
SMP-53, 13.30 x 6.50 x 1.75 mm

### Product Features

- Usable bandwidth 36 MHz
- Typical 3 dB bandwidth of 36.2 MHz
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small size: 13.30 x 6.50 x 1.75 mm
- Hermetic RoHS compliant, Pb-free



### Functional Block Diagram



### General Description

The 854678 is an IF SAW filter with a center frequency of 70 MHz and a minimum 3 dB bandwidth of 36 MHz. It features excellent passband response, very good rejection, and low group delay ripple. The small size of this surface mounted filter makes it an economical choice for demanding applications for high data rate communications standards.

### Pin Configuration - Single Ended

| Pin No.           | Label       |
|-------------------|-------------|
| 11                | Input       |
| 5                 | Output      |
| 6,12              | Ground      |
| 1,2,3,4,7,8, 9,10 | Case Ground |

### Ordering Information

| Part No.   | Description      |
|------------|------------------|
| 854678     | Packaged Part    |
| 854678-EVB | Evaluation board |

Standard T/R size = 2,000 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  |
| RF Input Power <sup>(3)</sup>       | +10 dBm      |

1. Operation of this device outside the parameter ranges given may cause permanent damage.
2. Specifications are not guaranteed over all operable conditions.
3. Input Power with applied CW signal at 55°C for 10,000 hours

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

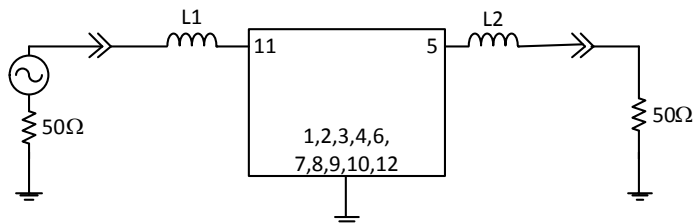
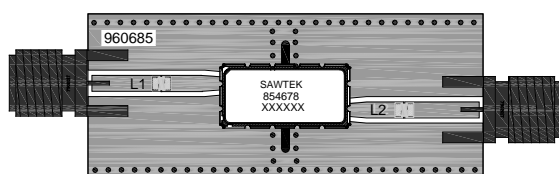
Specified Temperature Range: <sup>(2)</sup> +25 °C

| Parameter <sup>(3)</sup>                       | Conditions      | Min  | Typ <sup>(4)</sup> | Max  | Units     |
|--|-----------------|------|--------------------|------|-----------|
| Center Frequency                               |                 | 69.8 | 70                 | 70.2 | MHz       |
| Insertion Loss                                 | 70 MHz          | -    | 20.2               | 21.5 | dB        |
| 1 dB Bandwidth <sup>(5)</sup>                  |                 | 35.1 | 35.7               | -    | MHz       |
| 3 dB Bandwidth <sup>(5)</sup>                  |                 | 36   | 36.2               | -    | MHz       |
| 40 dB Bandwidth <sup>(5)</sup>                 |                 | -    | 43.3               | 45   | MHz       |
| Passband Ripple                                | 53.8 – 86.2 MHz | -    | 1.25               | 2    | dB p-p    |
| Phase Linearity                                | 53.8 – 86.2 MHz | -    | 9.0                | 13.0 | deg p-p   |
| Group Delay Variation                          | 53.8 – 86.2 MHz | -    | 52                 | 80   | ns p-p    |
| Absolute Delay                                 |                 | -    | 1.08               | -    | µs        |
| Temperature Coefficient                        |                 | -    | -94                | -    | ppm/deg C |
| Source Impedance (single-ended) <sup>(6)</sup> |                 | -    | 50                 | -    | Ω         |
| Load Impedance (single-ended) <sup>(6)</sup>   |                 | -    | 50                 | -    | Ω         |

#### Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. All specifications are tested at room temperature only
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. This is the optimum impedance in order to achieve the performance shown

### Evaluation Board



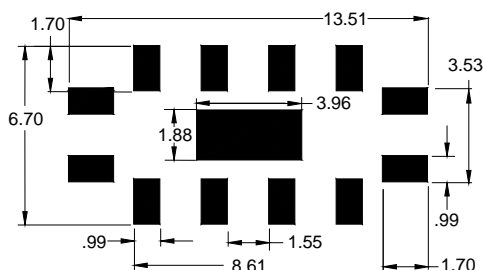
#### Notes:

1. Impedance matching required.
2. PCB: 1.500 x .625 x .063; Construction: ½ oz Cu Top Layer; TLY-5A (.0075) ½ oz Cu Middle Layer, FR4; ½ oz Cu Bottom Layer. (dimensions are in inches)

### Bill of Material

| Reference Des. | Value  | Description       | Manufacturer     | Part Number   |
|----------------|--------|-------------------|------------------|---------------|
| U1             | N/A    | 70 MHz SAW filter | TriQuint         | 854678        |
| L1             | 120 nH | Chip inductor     | Coilcraft        | N/A           |
| L2             | 180 nH | Chip inductor     | Coilcraft        | N/A           |
| SMA            | N/A    | SMA connector     | Radiall USA Inc. | 9602-1111-018 |
| PCB            | N/A    | 3-layer           | multiple         | 960685        |

### PCB Mounting Pattern

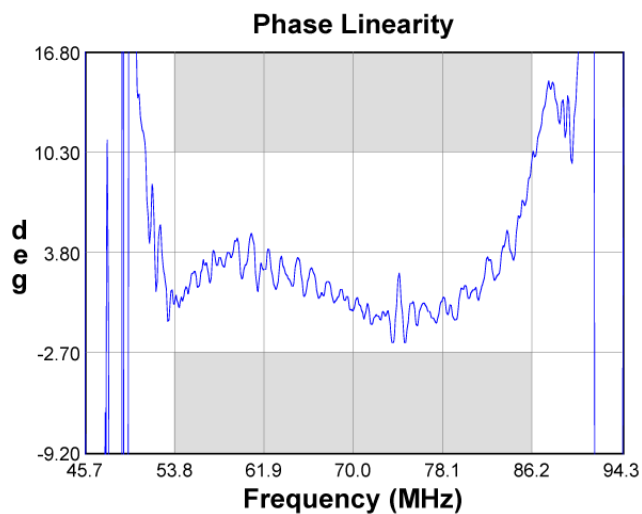
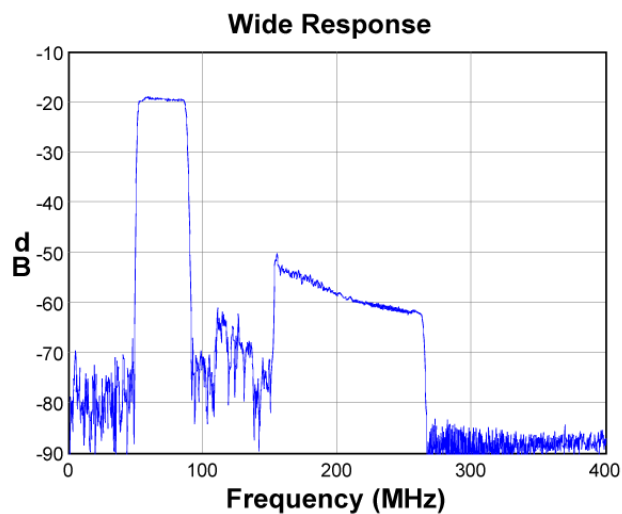
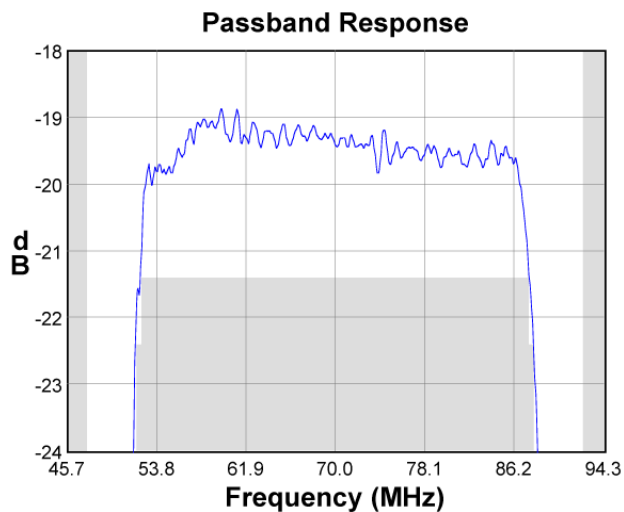
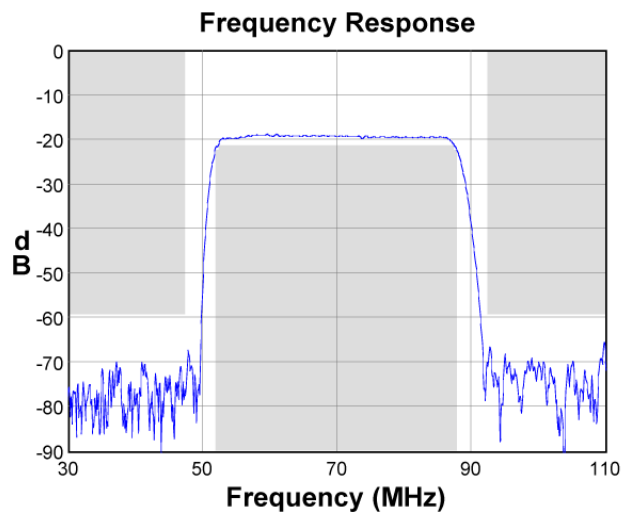


#### Notes:

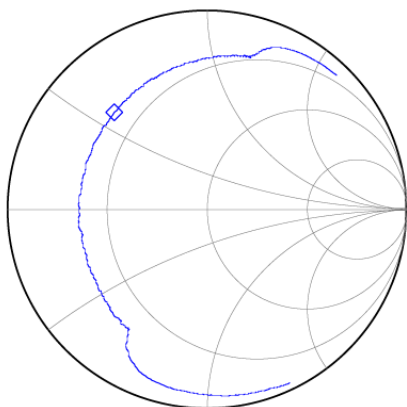
1. All dimensions are in millimeters. Angles are in degrees.
2. This drawing specifies the mounting pattern used on the TriQuint evaluation board for this product. Some modification may be necessary to suit end user assembly materials and processes.

### Performance Plots

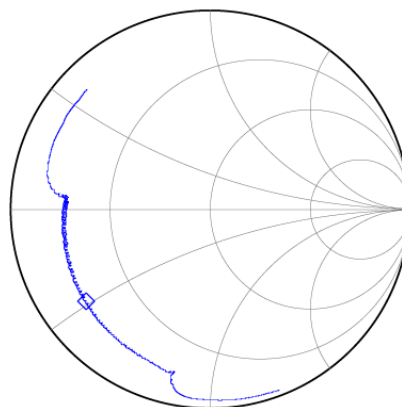
Test conditions unless otherwise noted: Temp= +25°C



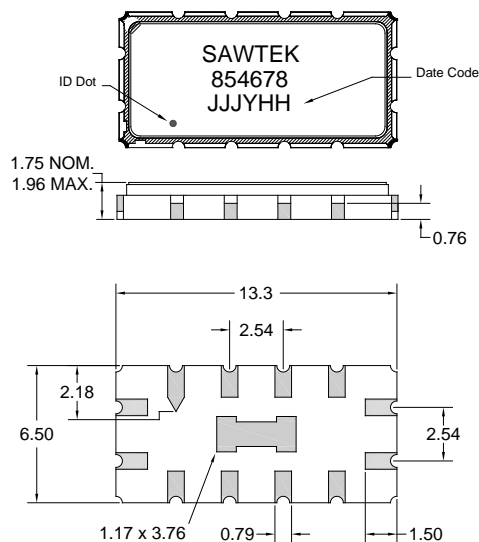
#### Input Smith Chart



#### Output Smith Chart



### Package Information, Marking and Dimensions



Package Style: SMP-53  
Dimensions: 13.30 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

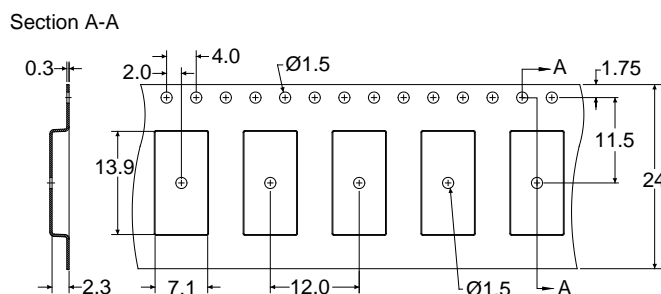
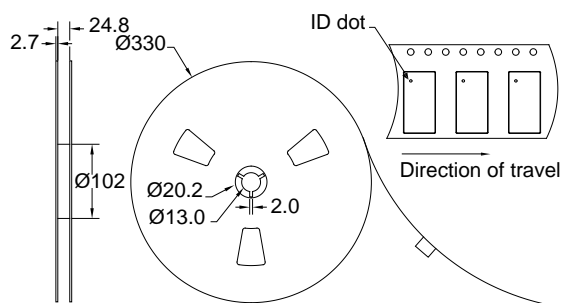
The date code consists of: day of the current year (Julian, 3 digits), last digit of the year (1 digit) and hour (2 digits)

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 = 2000 units/reel



## Product Compliance Information

### ESD Sensitivity Ratings



Caution! ESD-Sensitive Device

ESD Rating: Class 1A  
Value: Passes  $\geq 300$  V to  $< 350$  V  
Test: Electrostatic Discharge Sensitivity Testing,  
Human Body Model (HBM) - component level  
Standard: ESDA/JEDEC JS-001-2012

ESD Rating: Class B  
Value: Passes  $\geq 200$  V to  $250$  V  
Test: Machine Model (MM)  
Standard: JEDEC Standard JESD22-A115

### MSL Rating

Not applicable. Hermetic package.

### Solderability

Compatible with both lead-free ( $260^{\circ}\text{C}$  maximum reflow temperature) and tin/lead ( $245^{\circ}\text{C}$  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 ( $\text{C}_{15}\text{H}_{12}\text{Br}_4\text{O}_2$ ) Free
- PFOS Free
- SVHC Free

## Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

Web: [www.triquint.com](http://www.triquint.com)  
Email: [info-sales@tqs.com](mailto:info-sales@tqs.com)

Tel: +1.407.886.8860  
Fax: +1.407.886.7061

For technical questions and application information: Email: [flapplication.engineering@tqs.com](mailto:flapplication.engineering@tqs.com)

## Important Notice

The information contained herein is believed to be reliable. TriQuint makes no warranties regarding the information contained herein. TriQuint assumes no responsibility or liability whatsoever for any of the information contained herein. TriQuint assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for TriQuint products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

TriQuint products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.