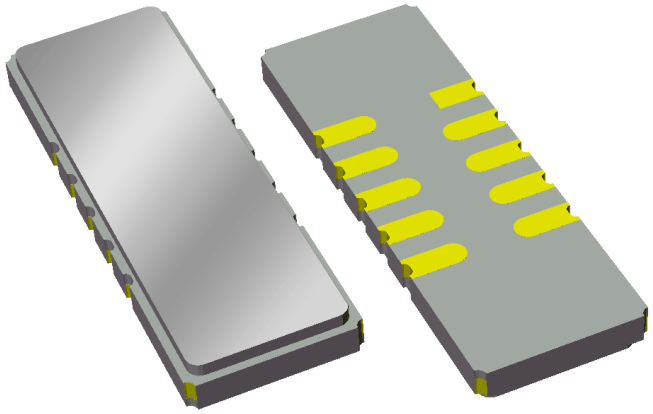
SAWTEK a TriQuint company

# Preliminary Data Sheet

## Part Number 856064
## 140 MHz SAW Filter

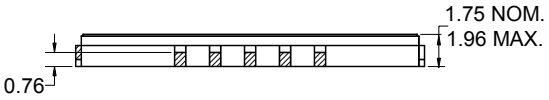
## Features

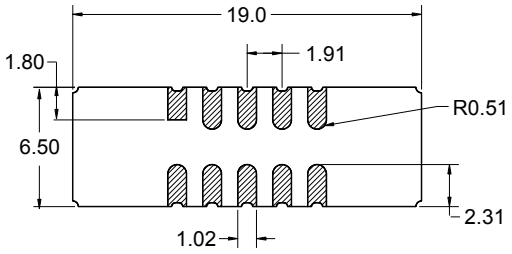
- For IF applications
- Typical 3 dB bandwidth of 2 MHz
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Replaces Sawtek P/N 851905 (BW 3dB = 2.0MHz)



## Package

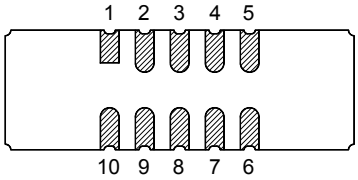
Surface Mount 19.00 x 6.50 x 1.75 mm




## Pin Configuration

Bottom View




| Pin No. | Description |
|---|---|
| 5 | RF output |
| 10 | RF input |
| 1,6 | Ground |
| 2,3,4 | Case ground |
| 7,8,9 | Case ground |

Dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width +0.15mm/-0.10mm

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

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## 140 MHz SAW Filter

## Electrical Specifications [1]

**Operating Temperature Range:** [2] 0 to +70 °C

| Parameter [3] | Minimum | Typical | Maximum | Unit |
|---|---|---|---|---|
| **Center Frequency** | - | 140 | - | MHz |
| **Minimum Insertion Loss** | - | 21.5 | 22.186 | dB |
| **Lower 1 dB Bandedge** [4] | - | 139.06 | 139.155 | MHz |
| **Upper 1 dB Bandedge** | 140.845 | 140.94 | - | MHz |
| **Lower 3 dB Bandedge** [4] | - | 138.91 | 138.978 | MHz |
| **Upper 3 dB Bandedge** | 141.022 | 141.09 | - | MHz |
| **Lower 40 dB Bandedge** [4] | 138.272 | 138.31 | - | MHz |
| **Upper 40 dB Bandedge** | - | 141.67 | 141.726 | MHz |
| **Amplitude Variation** 139.15 - 140.85 MHz | - | 0.5 | 1.0 | dB p-p |
| **Phase Linearity** 139.15 - 140.85 MHz | - | 1.8 | 3.5 | deg p-p |
| **Group Delay Variation** 139.15 - 140.85 MHz | - | 85 | 180 | ns p-p |
| **Relative Attenuation** [4] | | | | |
| 15 - 136 MHz | 60 | 64 | - | dB |
| 144 - 220 MHz | 45 | 56 | - | dB |
| 220 - 230 MHz | 38 | 46 | - | dB |
| 230 - 250 MHz | 45 | 65 | - | dB |
| 250 - 260 MHz | 26 | 31 | - | dB |
| 260 - 350 MHz | 45 | 65 | - | dB |
| **Terminating Source Impedance:** [5] | - | 50 | - | Ω |
| **Terminating Load Impedance:** [5] | - | 50 | - | Ω |
| **Substrate Material** | - | Quartz | - | - |

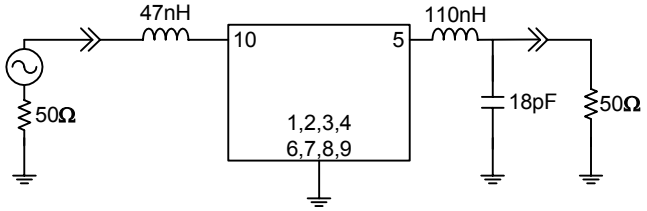
### Notes:

1. All specifications are based on the 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 and manufacturing tolerances
4. All attenuation measurements are measured relative to minimum insertion loss
5. This is the optimum impedance in order to achieve the performance shown

### Test Circuit:

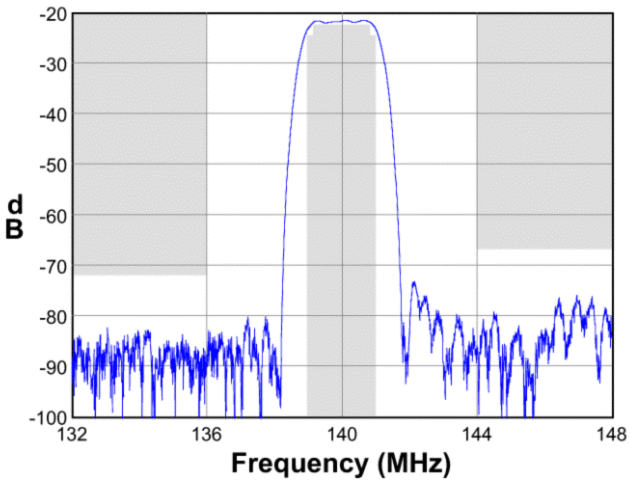
Actual matching values may vary due to PCB layout and parasitics

50 Ω
Single-ended

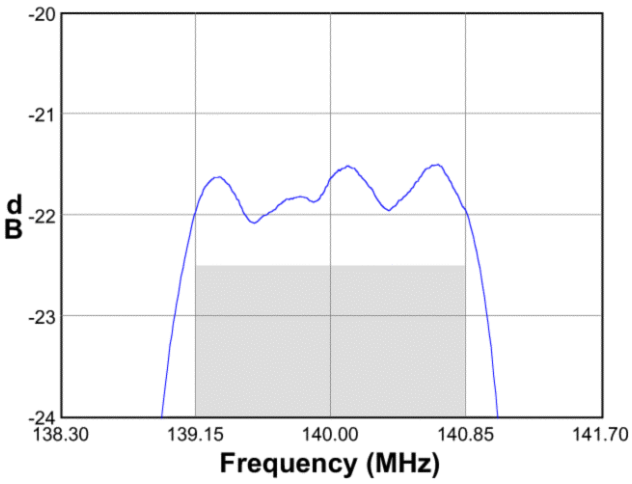


## Typical Performance (at +25°C)

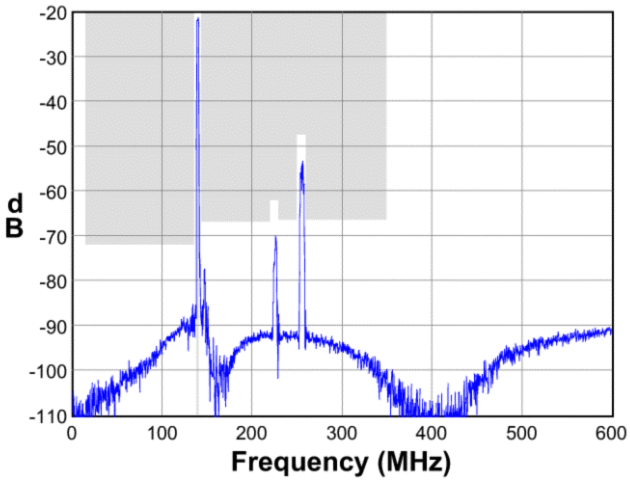
### Frequency Response



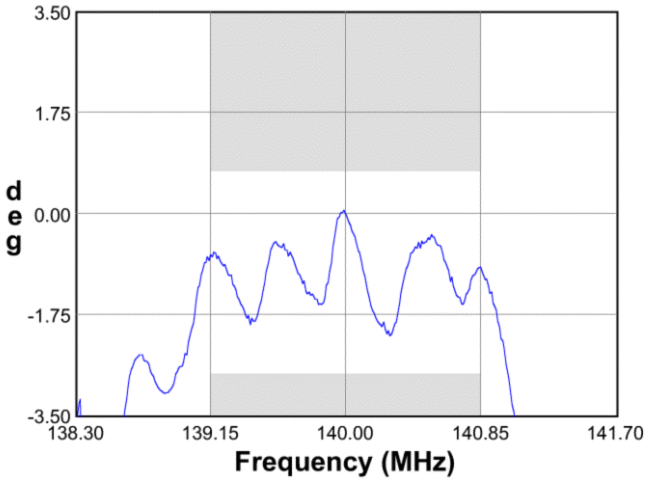

### Passband Response



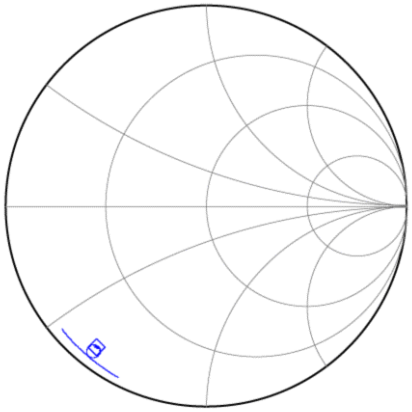

### Wideband Response



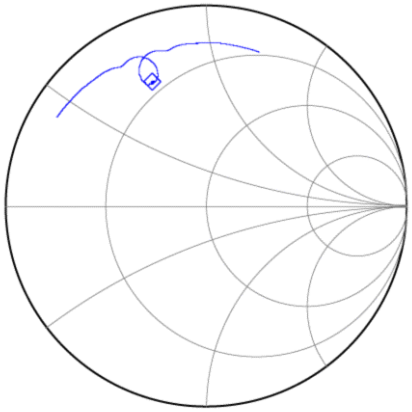

### Phase Linearity




### Input Smith Chart

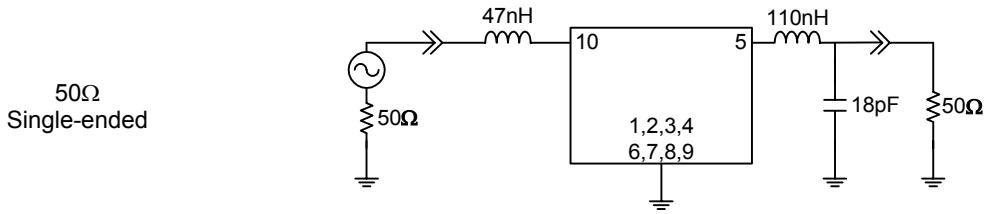


### Output Smith Chart

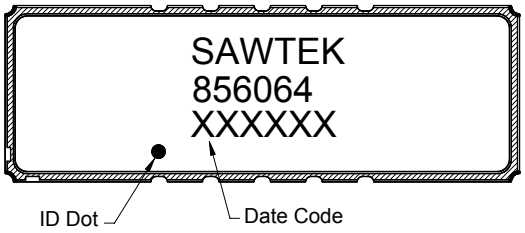


## Matching Schematics

Actual matching values may vary due to PCB layout and parasitics

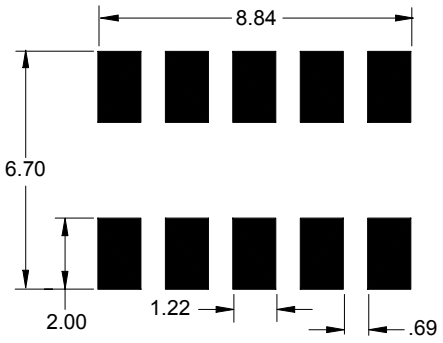



## Marking



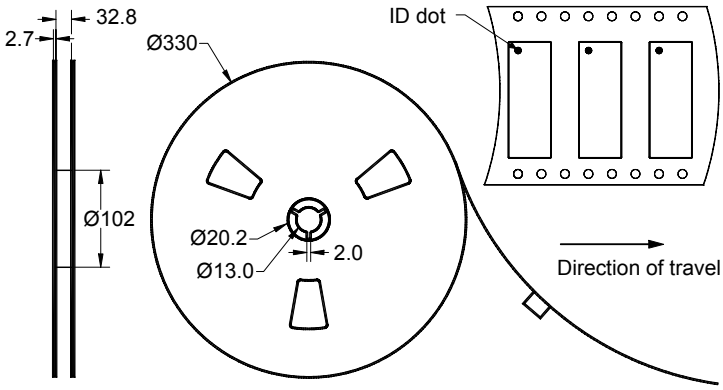

The date code consists of: day of the current year (Julian, 3 digits), last digit of the year (1 digit) and hour (2 digits)

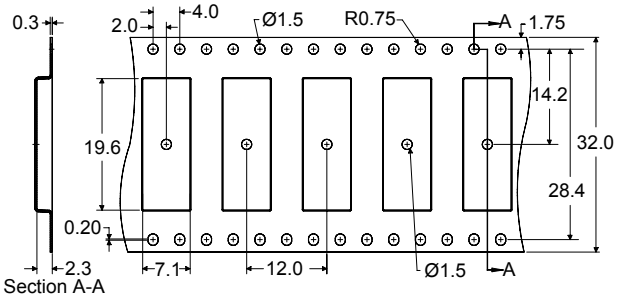
## PCB Footprint




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

## Tape and Reel




Dimensions shown are nominal in millimeters
Packaging quantity: 2000 units/reel

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## Part Number 856064
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## Maximum Ratings

| Parameter | Symbol | Minimum | Maximum | Unit |
|---|---|---|---|---|
| Operating Temperature Range | T | 0 | +70 | °C |
| Storage Temperature Range | $T_{stg}$ | -40 | +85 | °C |

**Warnings**

- Electrostatic Sensitive Device (ESD) 
- Avoid ultrasonic exposure

## Links to Additional Technical Information

PCB Layout Tips | Qualification Flowchart | Soldering Profile

S-Parameters | Other Technical Information

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