



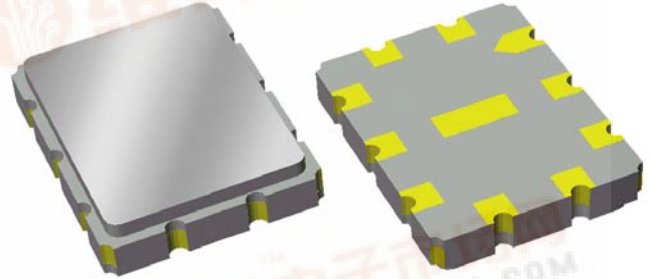
# Part Number 856073

## 140 MHz SAW Filter

### Preliminary Data Sheet

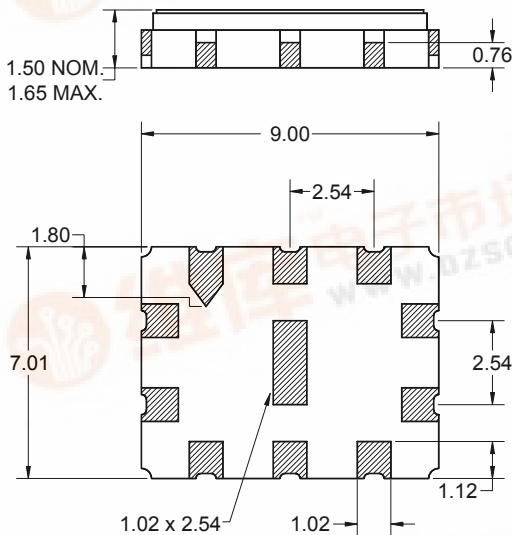
#### Features

- For broadband applications
- Typical 3dB bandwidth of 44.0 MHz
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small size
- Replaces Sawtek P/N 851943 (BW 3dB=44 MHz)



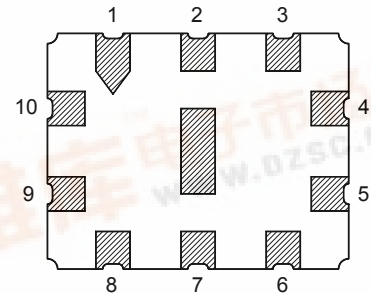
#### Package

Surface Mount 9.00 x 7.01 x 1.50 mm



#### Pin Configuration

Bottom View



| Pin No.     | Description   |
|-------------|---------------|
| 4           | Output        |
| 5           | Output return |
| 9           | Input         |
| 10          | Input return  |
| 1,2,3,6,7,8 | Case ground   |

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



# Preliminary Data Sheet

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

Operating Temperature Range: <sup>(2)</sup> 0 to +70 °C

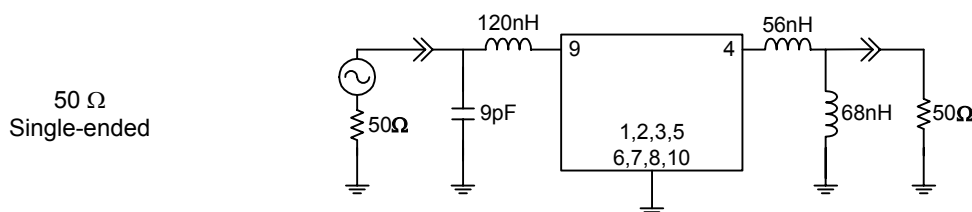
| Parameter <sup>(3)</sup>                    | Minimum | Typical                | Maximum | Unit    |
|---|---------|------------------------|---------|---------|
| Center Frequency                            | -       | 140                    | -       | MHz     |
| Minimum Insertion Loss                      | -       | 21.75                  | 22.5    | dB      |
| Lower 1 dB Bandedge <sup>(4)</sup>          | -       | 119.4                  | 122.0   | MHz     |
| Upper 1 dB Bandedge                         | 158.0   | 160.8                  | -       | MHz     |
| Lower 3 dB Bandedge <sup>(4)</sup>          | -       | 118.0                  | 119.1   | MHz     |
| Upper 3 dB Bandedge                         | 160.9   | 162.0                  | -       | MHz     |
| Lower 40 dB Bandedge <sup>(4)</sup>         | 112.95  | 113.6                  | -       | MHz     |
| Upper 40 dB Bandedge                        | -       | 166.3                  | 167.05  | MHz     |
| Amplitude Variation<br>122.0 - 158.0 MHz    | -       | 0.5                    | 1.5     | dB p-p  |
| Phase Linearity<br>122.0 - 158.0 MHz        | -       | 2.55                   | 5.5     | deg p-p |
| Group Delay Variation<br>122.0 - 158.0 MHz  | -       | 10.62                  | 30      | ns p-p  |
| Absolute Delay                              | -       | 0.768                  | -       | µsec    |
| Relative Attenuation <sup>(4)</sup>         |         |                        |         |         |
| 10 - 60 MHz                                 | 57      | 64                     | -       | dB      |
| 60 - 112 MHz                                | 48      | 57                     | -       | dB      |
| 168 - 250 MHz                               | 43      | 56                     | -       | dB      |
| 250 - 300 MHz                               | 52      | 57                     | -       | dB      |
| Terminating Source Impedance <sup>(5)</sup> | -       | 50                     | -       | Ω       |
| Terminating Load Impedance <sup>(5)</sup>   | -       | 50                     | -       | Ω       |
| Substrate Material                          | -       | 128 LiNbO <sub>3</sub> | -       | -       |
| Temperature Coefficient of Frequency        | -       | -74                    | -       | ppm/°C  |

### 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

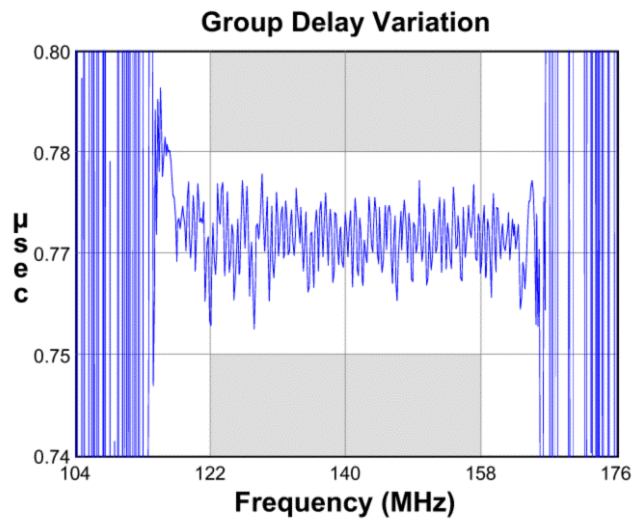
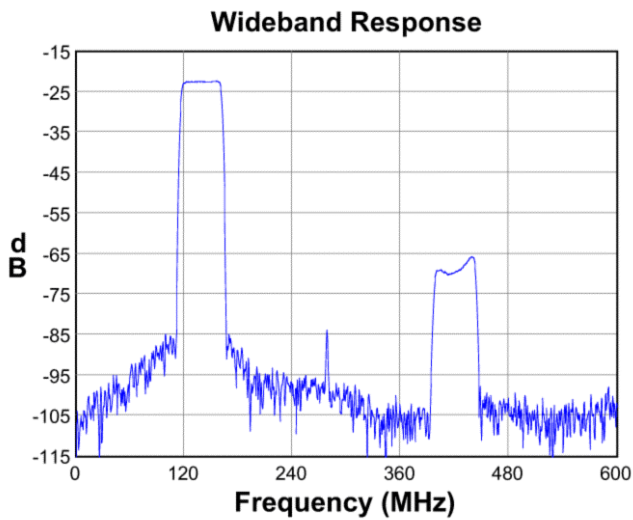
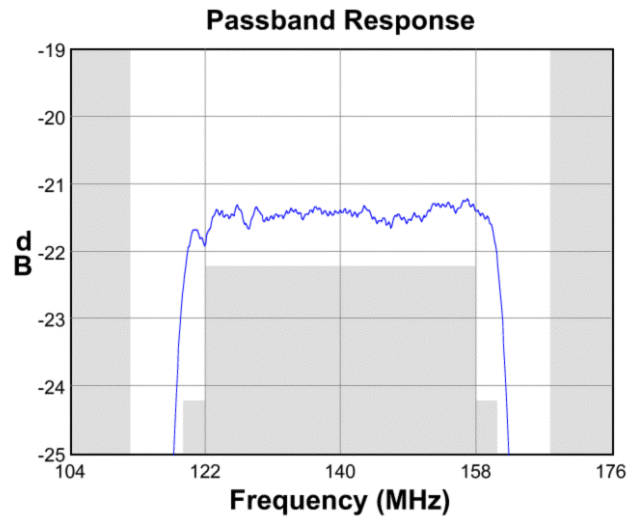
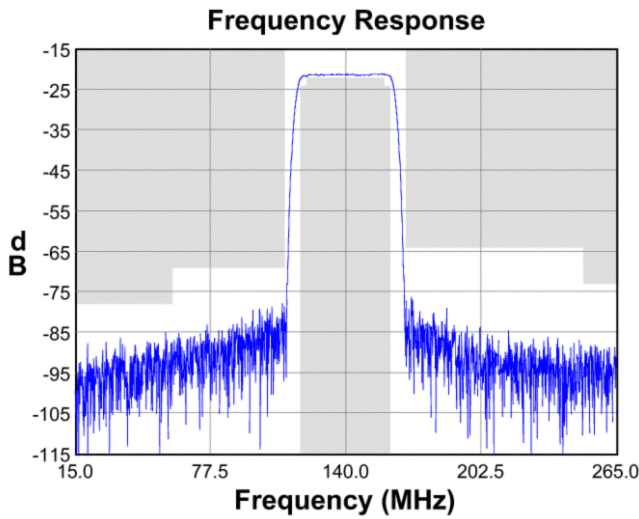
### Test Circuit:

Actual matching values may vary due to PCB layout and parasitics

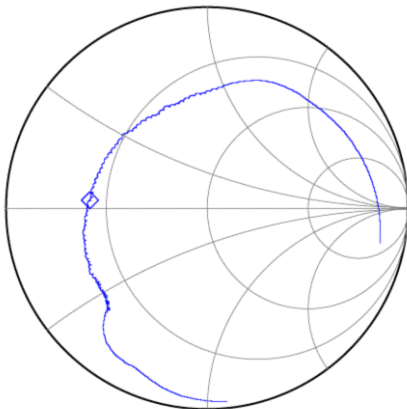


**Preliminary Data Sheet**

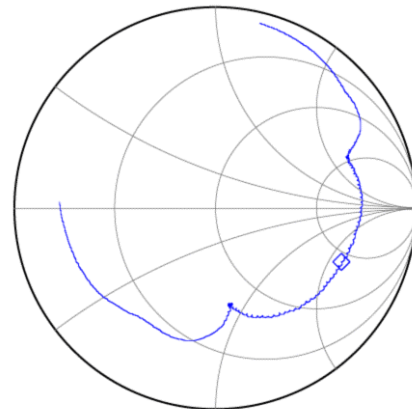
**Typical Performance (at +25°C)**



**Input Smith Chart**



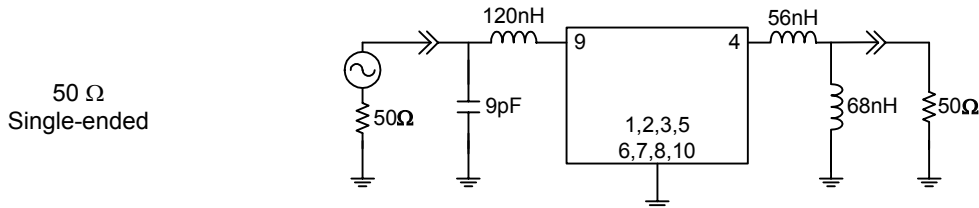
**Output Smith Chart**



**Preliminary Data Sheet**

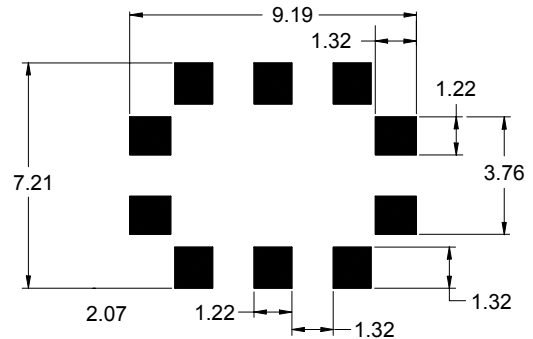
**Matching Schematics**

Actual matching values may vary due to PCB layout and parasitics



**Marking**

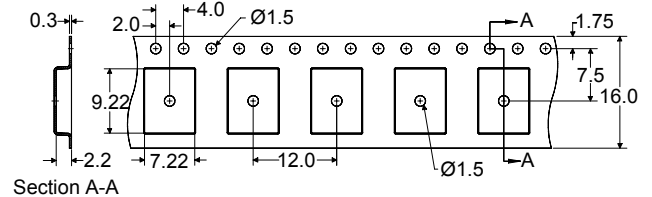
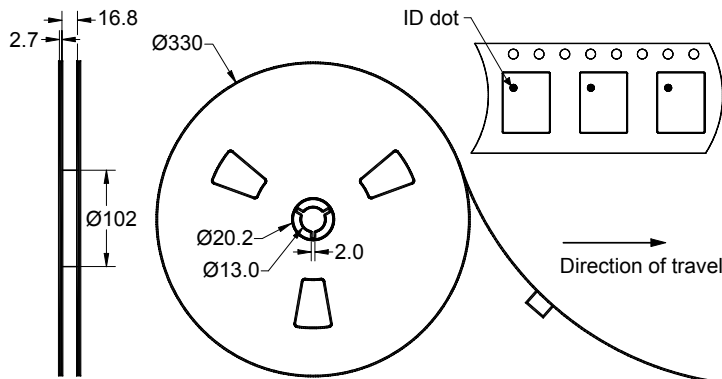
**PCB Footprint**



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

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

# Preliminary Data Sheet

## Maximum Ratings

| Parameter                   | Symbol           | Minimum | Typical | Maximum | Unit |
|-----------------------------|------------------|---------|---------|---------|------|
| Operating Temperature Range | T                | 0       | +25     | +70     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -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](#)

[Reel and Packaging Label](#)

[Other Technical Information](#)

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