
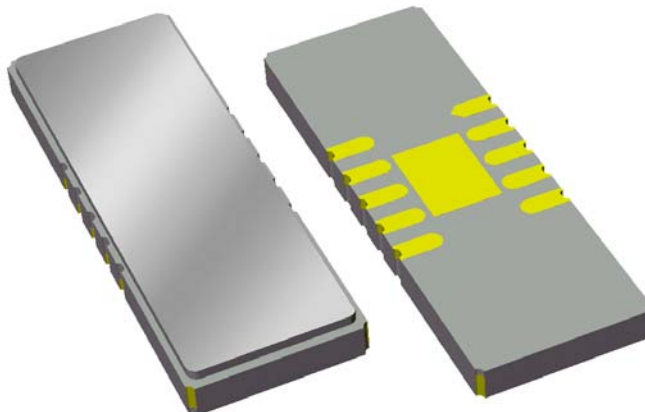


# Data Sheet

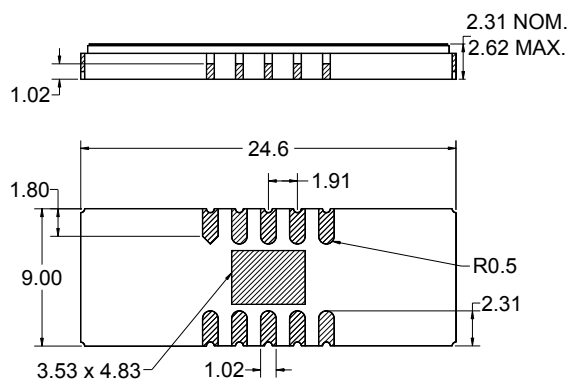
## Features

- For broadband applications
- Typical 3dB bandwidth of 1 MHz
- High attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Replaces Sawtek P/N 851544 (BW 3dB=1 MHz)
- Hermetic
- RoHS compliant (2002/95/EC), Pb-free 



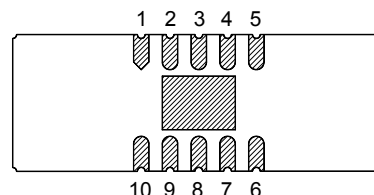
## Package

Surface Mount 24.60 x 9.00 x 2.31 mm



## Pin Configuration

Bottom View



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

Dimensions shown are nominal in millimeters  
 All tolerances are  $\pm 0.15$ mm except overall  
 length  $\pm 0.20$ mm and width  $+0.13/-0.20$ 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

# Data Sheet

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

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

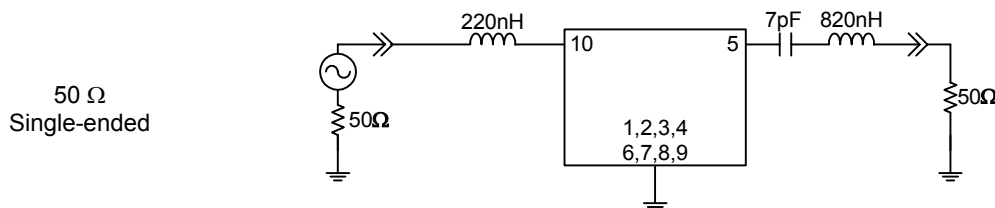
| Parameter <sup>(3)</sup>                   | Minimum | Typical | Maximum | Unit    |
|--|---------|---------|---------|---------|
| Center Frequency                           | -       | 70      | -       | MHz     |
| Minimum Insertion Loss                     | -       | 22.2    | 23      | dB      |
| Lower 1 dB Bandedge <sup>(4)</sup>         | -       | 69.47   | 69.54   | MHz     |
| Upper 1 dB Bandedge                        | 70.46   | 70.50   | -       | MHz     |
| Lower 3 dB Bandedge <sup>(4)</sup>         | -       | 69.37   | 69.41   | MHz     |
| Upper 3 dB Bandedge                        | 70.59   | 70.62   | -       | MHz     |
| Lower 40 dB Bandedge <sup>(4)</sup>        | 68.91   | 68.95   | -       | MHz     |
| Upper 40 dB Bandedge                       | -       | 71.06   | 71.09   | MHz     |
| Amplitude Variation<br>69.54 - 70.46 MHz   | -       | 0.55    | 1       | dB p-p  |
| Phase Linearity<br>69.54 - 70.46 MHz       | -       | 2.2     | 5       | deg p-p |
| Group Delay Variation<br>69.54 - 70.46 MHz | -       | 100     | 190     | nsec    |
| Relative Attenuation <sup>(4)</sup>        |         |         |         |         |
| 10 - 68.5 MHz                              | 48      | 53      | -       | dB      |
| 68.5 - 68.91 MHz                           | 40      | 45      | -       | dB      |
| 71.09 - 75 MHz                             | 40      | 45      | -       | dB      |
| 75 - 110 MHz                               | 50      | 55      | -       | dB      |
| 110 - 122 MHz                              | 35      | 37      | -       | dB      |
| 122 - 135 MHz                              | 36      | 40      | -       | dB      |
| 135 - 200 MHz                              | 50      | 65      | -       | dB      |
| Source Impedance <sup>(5)</sup>            | -       | 50      | -       | Ω       |
| Load Impedance <sup>(5)</sup>              | -       | 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 drift 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:

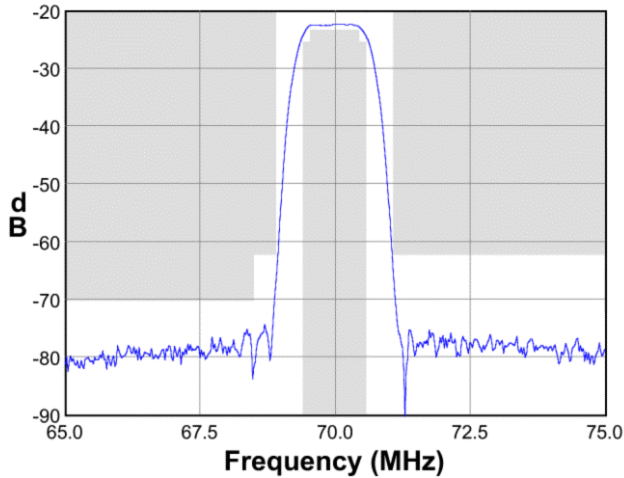
Actual matching values may vary due to PCB layout and parasitics



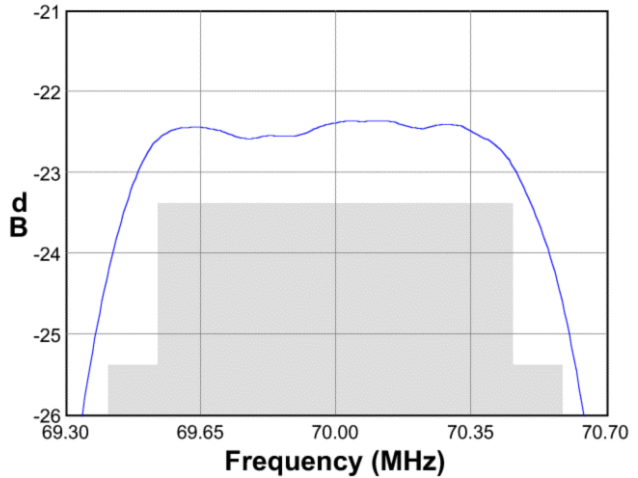
**Data Sheet**

**Typical Performance (at +25°C)**

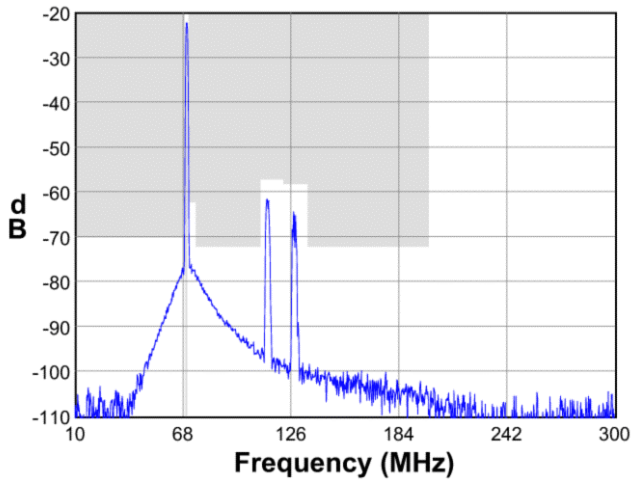
**Frequency Response**



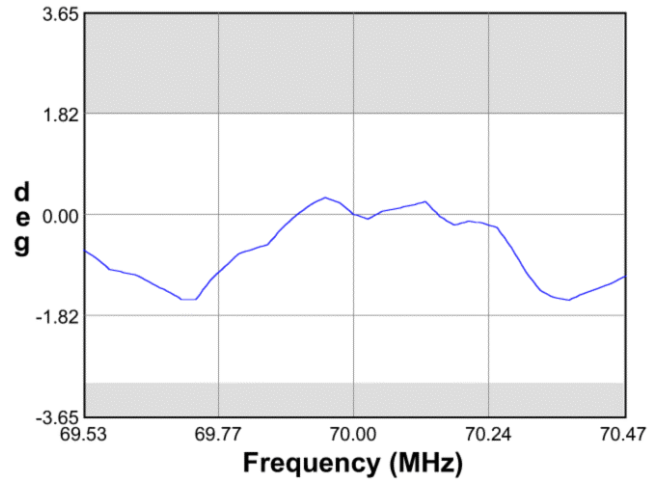
**Passband Response**



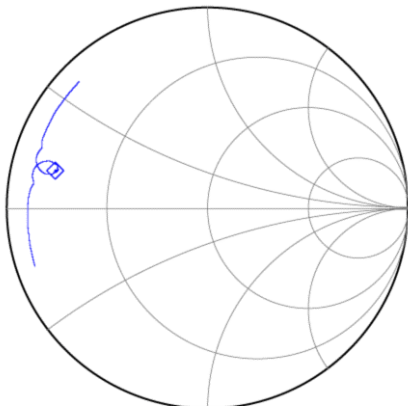
**Wideband Response**



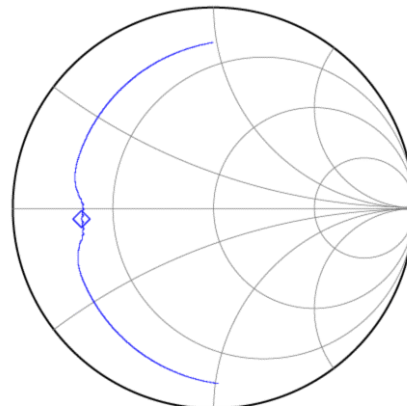
**Phase Linearity**



**Input Smith Chart**

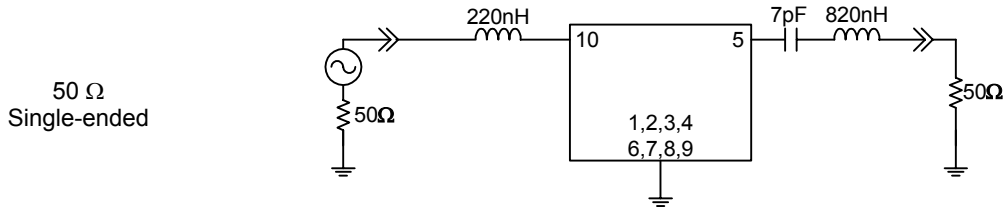


**Output Smith Chart**

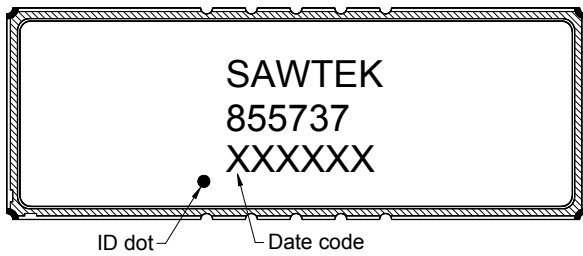


**Data Sheet**

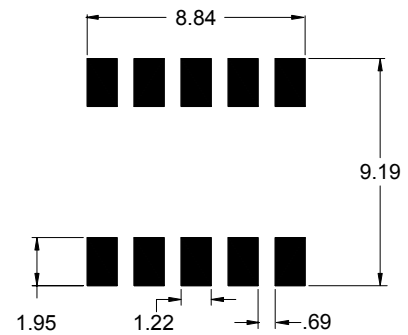
**Matching Schematic**



**Marking**



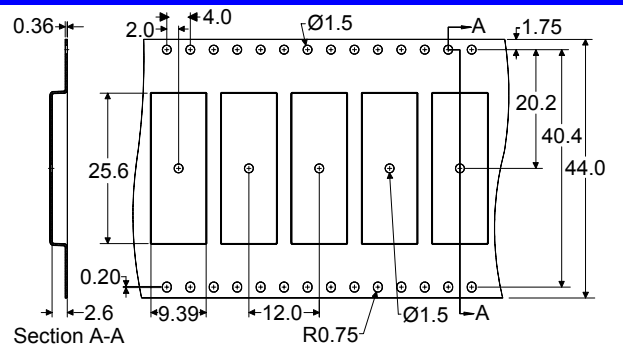
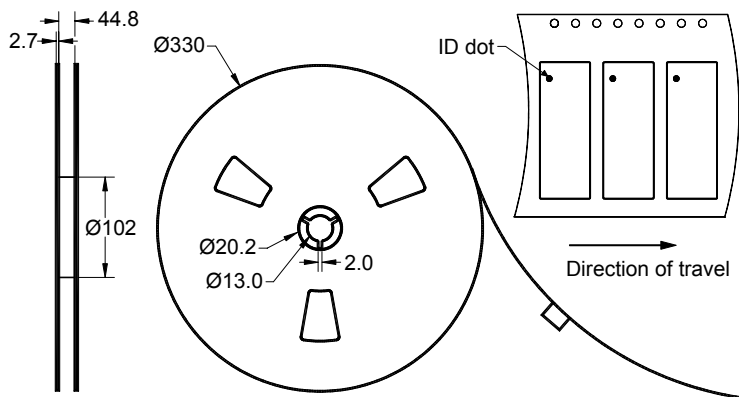
**PCB Footprint**



Date code is the day of the current year in Julian format, last digit of the year, and hour of the day

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

**Tape and Reel**



Dimensions shown are nominal in millimeters  
Packaging quantity: 1000 units/reel


# Data Sheet

## Maximum Ratings


| Parameter                   | Symbol           | Minimum | Maximum | Unit |
|-----------------------------|------------------|---------|---------|------|
| Operating Temperature Range | T                | 0       | +70     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40     | +85     | °C   |

## Important Notes

### Warnings

- Electrostatic Sensitive Device (ESD) 
- Avoid ultrasonic exposure

### RoHS Compliance

- This product complies with EU directive 2002/95/EC (RoHS) 

### Solderability

- Compatible with JEDEC J-STD-020C **Pb**-free process, **260°C** peak reflow temperature ([see soldering profile](#))

## Links to Additional Technical Information

[PCB Layout Tips](#)
[Qualification Flowchart](#)
[Soldering Profile](#)
[S-Parameters](#)
[RoHS Information](#)
[Other Technical Information](#)

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## Contact Information



PO Box 609501  
Orlando, FL 32860-9501  
USA

Phone: +1 (407) 886-8860  
Fax: +1 (407) 886-7061  
Email: [custservice@sawtek.com](mailto:custservice@sawtek.com)  
Web: [www.sawtek.com](http://www.sawtek.com)

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