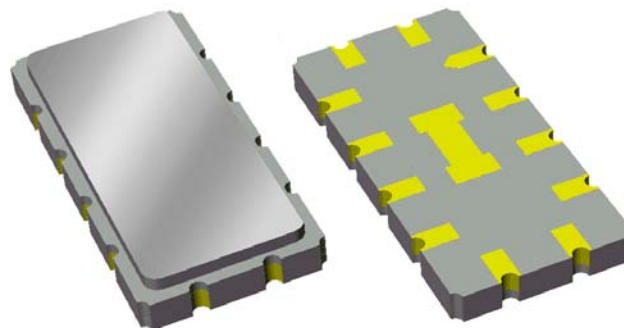


## Data Sheet

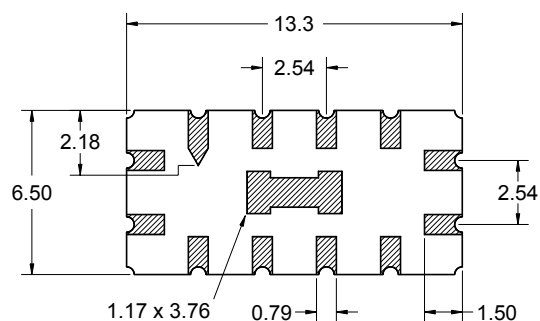
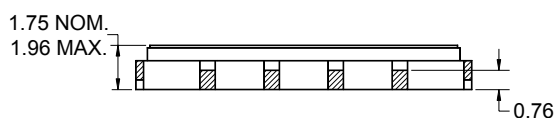
### Features

- For GSM/EDGE applications
- Usable bandwidth 400 KHz
- Single-ended and differential operation
- Ceramic Surface Mount Package (SMP)
- Hermetic
- RoHS compliant (2002/95/EC), Pb-free 



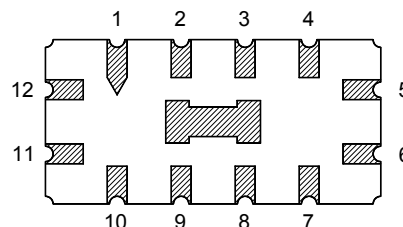
### Package

Surface Mount 13.3 x 6.50 x 1.75 mm



### Pin Configuration

Bottom View



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

Dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.15$ mm except overall  
length and width  $\pm 0.10$ 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> -10 to +85 °C

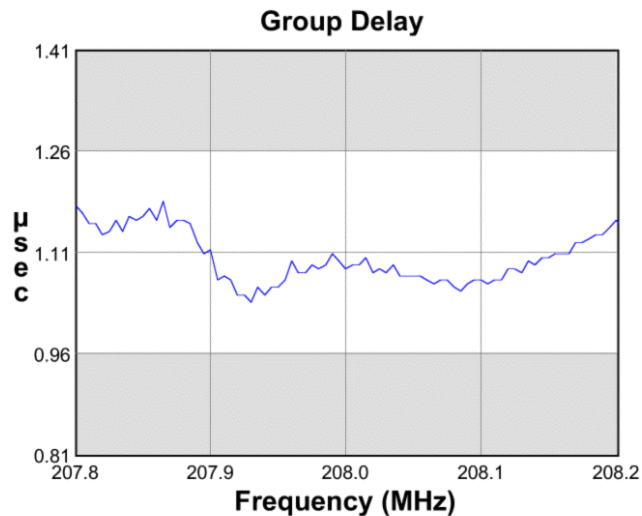
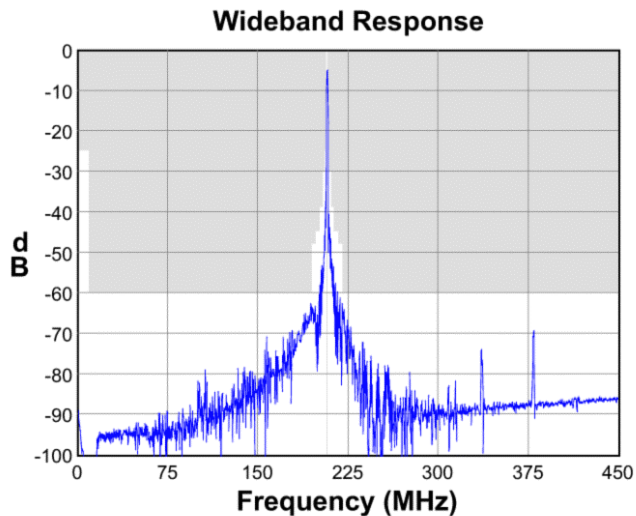
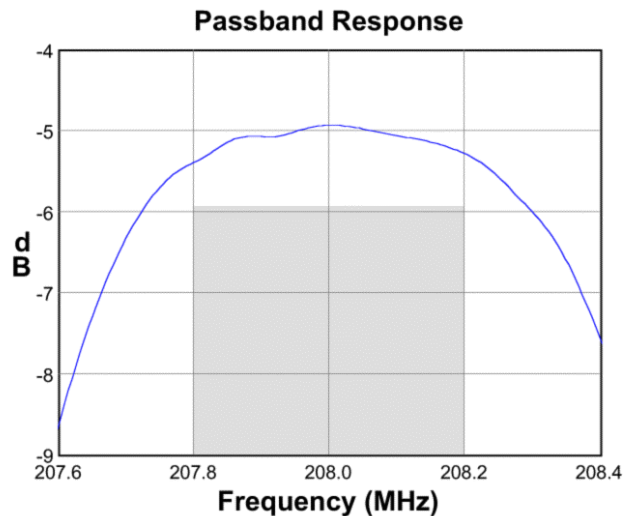
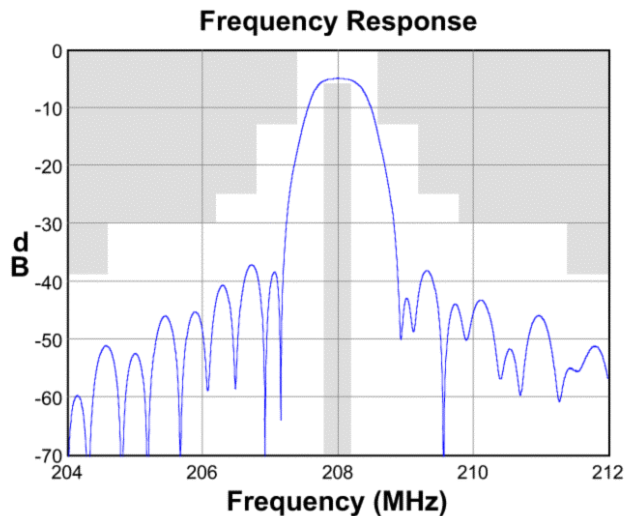
| Parameter <sup>(3)</sup>                   | Minimum | Typical   | Maximum | Unit   |
|--------------------------------------------|---------|-----------|---------|--------|
| Center Frequency                           | -       | 208       | -       | MHz    |
| Insertion Loss at Fo                       | 4       | 5.0       | 7       | dB     |
| 1 dB Lower Frequency                       | -       | 207.724   | 207.8   | MHz    |
| 1 dB Upper Frequency                       | 208.2   | 208.340   | -       | MHz    |
| 8 dB Lower Frequency                       | 207.4   | 207.498   | -       | MHz    |
| 8 dB Upper Frequency                       | -       | 208.571   | 208.6   | MHz    |
| 20 dB Lower Frequency                      | 206.8   | 207.294   | -       | MHz    |
| 20 dB Upper Frequency                      | -       | 208.774   | 209.2   | MHz    |
| Amplitude Variation<br>207.8 - 208.2 MHz   | -       | 0.38      | 1       | dB p-p |
| Group Delay Variation<br>207.8 - 208.2 MHz | -       | 172       | 300     | nsec   |
| Absolute Delay<br>207.8 - 208.2 MHz        | 0.99    | 1.09      | 1.19    | μsec   |
| Absolute Attenuation<br>10 - 195 MHz       | 55      | 63        | -       | dB     |
| 195.0 - 198.5 MHz                          | 43      | 62        | -       | dB     |
| 198.5 - 202.0 MHz                          | 40      | 51        | -       | dB     |
| 202.0 - 204.6 MHz                          | 34      | 45        | -       | dB     |
| 204.6 - 206.2 MHz                          | 25      | 39        | -       | dB     |
| 206.2 - 206.8 MHz                          | 20      | 31        | -       | dB     |
| 209.2 - 209.8 MHz                          | 20      | 33        | -       | dB     |
| 209.8 - 211.4 MHz                          | 25      | 37        | -       | dB     |
| 211.4 - 214.0 MHz                          | 34      | 45        | -       | dB     |
| 214.0 - 217.5 MHz                          | 40      | 53        | -       | dB     |
| 217.5 - 221.0 MHz                          | 43      | 55        | -       | dB     |
| 221.0 - 450.0 MHz                          | 55      | 60        | -       | dB     |
| Input/Output VSWR<br>207.8 - 208.2 MHz     | -       | 1.46/1.54 | 2.3     | -      |
| Source Impedance <sup>(4)</sup>            | -       | 50        | -       | Ω      |
| Load Impedance <sup>(4)</sup>              | -       | 50        | -       | Ω      |

### Notes:

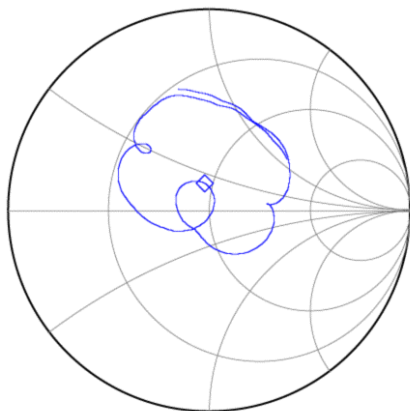
1. All specifications are based on the test circuit shown on page 4
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. This is the optimum impedance in order to achieve the performance shown

# Data Sheet

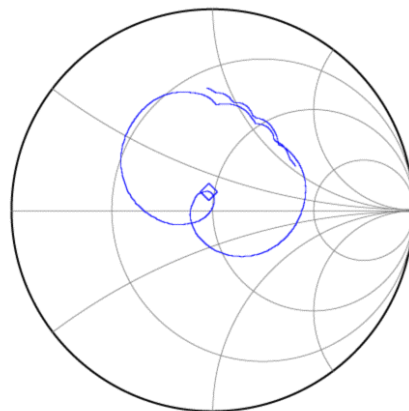
## Typical Performance (at +25°C)



**Input Smith Chart**



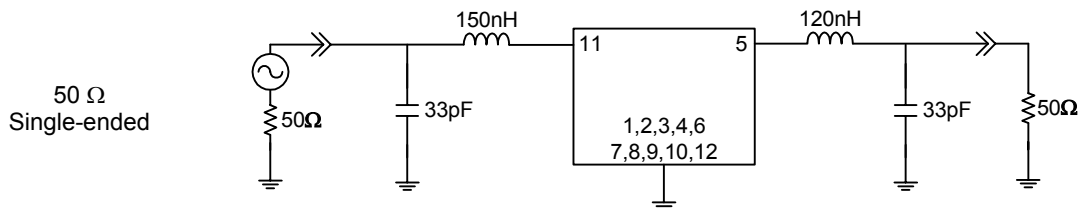
**Output Smith Chart**



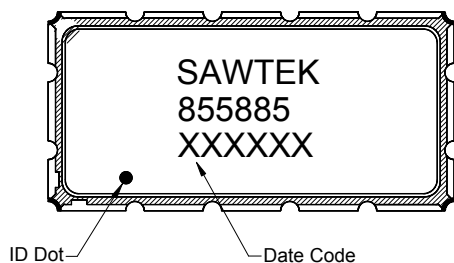
# Data Sheet

## Matching Schematics

Actual matching values may vary due to PCB layout and parasitics

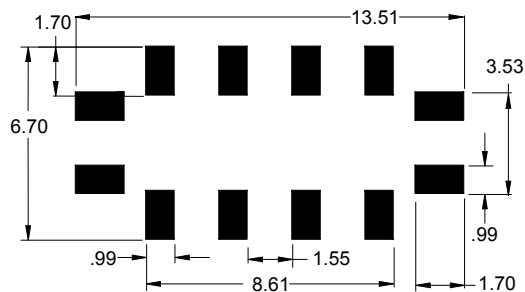


## Marking



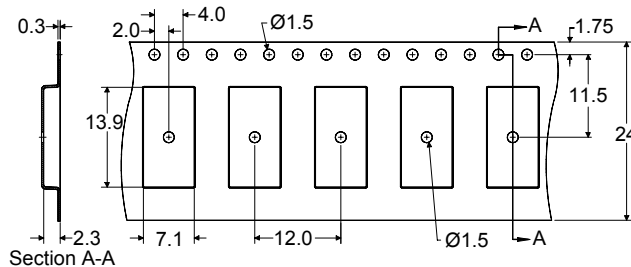
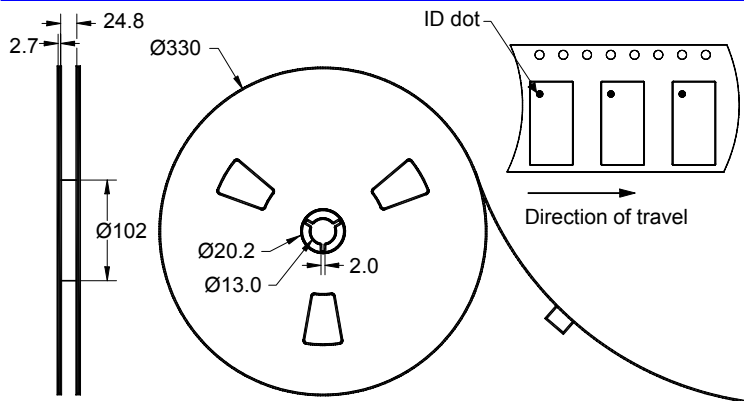
The date code consists of: day of the current year (Julian, 3 digits), last digit of the year (1 digit) and hour (2 digits)

## 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

# Data Sheet

## Maximum Ratings

| Parameter                   | Symbol           | Minimum | Typical | Maximum | Unit |
|-----------------------------|------------------|---------|---------|---------|------|
| Operating Temperature Range | T                | -10     | +25     | +85     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40     | -       | +125    | °C   |
| Input Power                 | P <sub>in</sub>  | -       | -       | 10      | dBm  |

## 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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