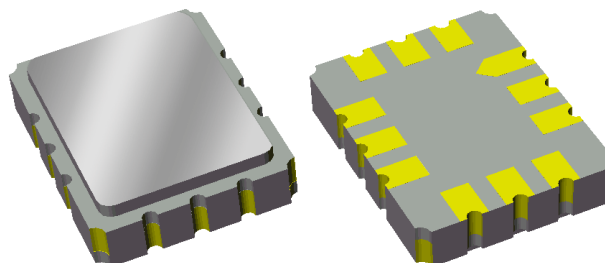


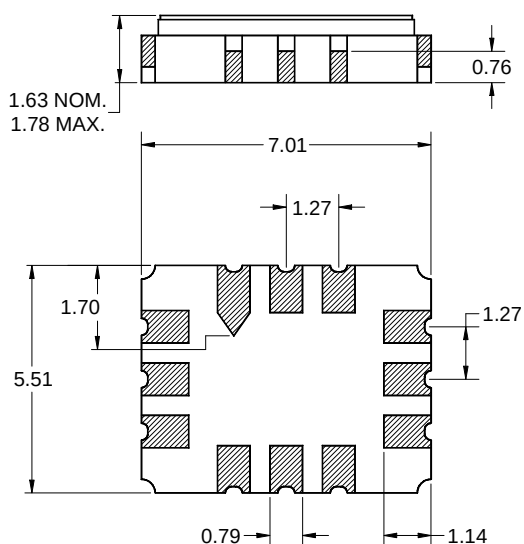
## Features

- For 3G applications
- 15 MHz bandwidth for high data rates
- High attenuation
- Single-ended operation at 50Ω
- Ceramic Surface Mount Package (SMP)
- Hermetic
- RoHS compliant (2002/95/EC), Pb-free 



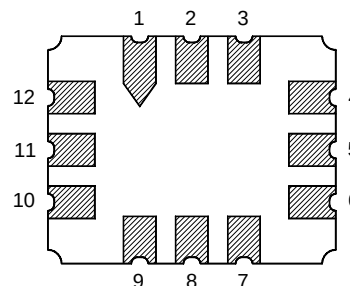
## Package

Surface Mount 7.01 x 5.51 x 1.63 mm  
SMP-28B



## Pin Configuration

Bottom View



### Single-ended Configuration

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

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

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

Operating Temperature Range: <sup>(2)</sup> -10 to +85 °C

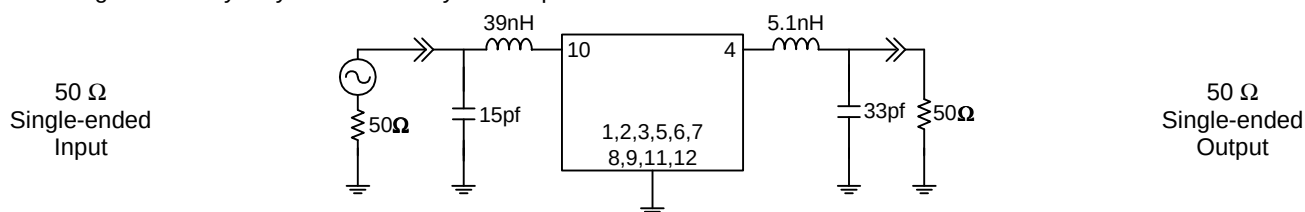
| Parameter <sup>(3)</sup>            | Minimum | Typical <sup>(4)</sup> | Maximum | Unit     |
|-------------------------------------|---------|------------------------|---------|----------|
| Center Frequency                    | -       | 326.4                  | -       | MHz      |
| Minimum Insertion Loss              | -       | 12.61                  | 17      | dB       |
| 2 dB Lower Frequency                | -       | 317.77                 | 318.9   | MHz      |
| 2 dB Upper Frequency                | 333.9   | 335.18                 | -       | MHz      |
| 2 dB Bandwidth                      | 15      | 17.4                   | -       | MHz      |
| 40 dB Lower Frequency               | 313.9   | 314.62                 | -       | MHz      |
| 40 dB Upper Frequency               | -       | 338.31                 | 338.9   | MHz      |
| 40 dB Bandwidth                     | -       | 23.69                  | 25      | MHz      |
| Relative Attenuation <sup>(5)</sup> |         |                        |         |          |
| 10 - 276.4 MHz                      | 50      | 60                     | -       | dB       |
| 276.4 - 306.4 MHz                   | 45      | 51                     | -       | dB       |
| 346.4 - 376.4 MHz                   | 45      | 56                     | -       | dB       |
| 376.4 - 450 MHz                     | 50      | 64                     | -       | dB       |
| Amplitude Ripple                    |         |                        |         |          |
| 323.9 - 328.9 MHz                   | -       | 0.2                    | 0.5     | dB p-p   |
| Group Delay Variation               |         |                        |         |          |
| 318.9 - 333.9 MHz                   | -       | 24                     | 50      | nsec     |
| Input VSWR                          |         |                        |         |          |
| 318.9 - 333.9 MHz                   | -       | 1.33:1                 | 2.0:1   | -        |
| Output VSWR                         |         |                        |         |          |
| 318.9 - 333.9 MHz                   | -       | 1.34:1                 | 2.0:1   | -        |
| Source Impedance <sup>(6)</sup>     | -       | 50                     | -       | $\Omega$ |
| Load Impedance <sup>(6)</sup>       | -       | 50                     | -       | $\Omega$ |

### Notes:

1. All specifications are based on the TriQuint 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. Typical values are based on average measurements at room temperature
5. Relative to minimum insertion loss
6. This is the optimum impedance in order to achieve the performance shown

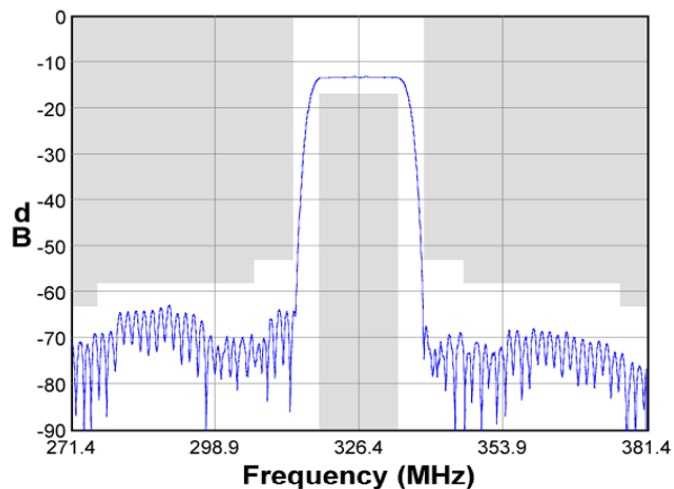
### Test Circuit:

Actual matching values may vary due to PCB layout and parasitics

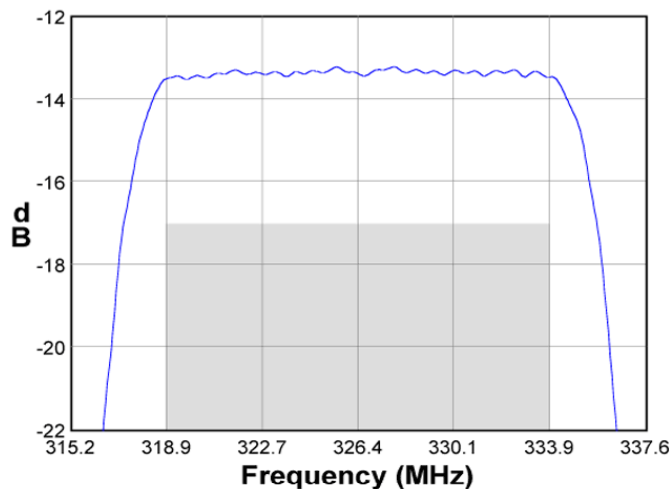


**Typical Performance (at room temperature)**

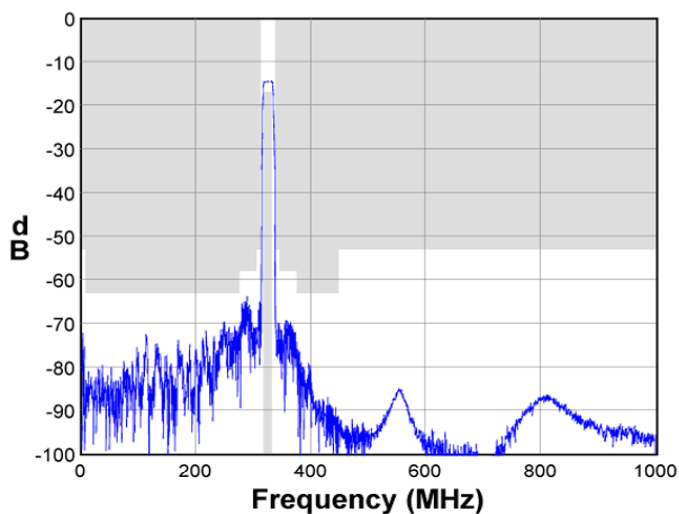
**Frequency Response**



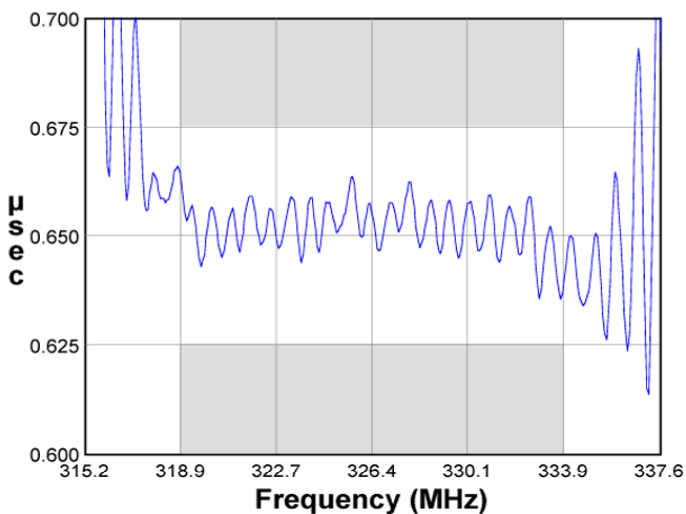
**Passband Response**



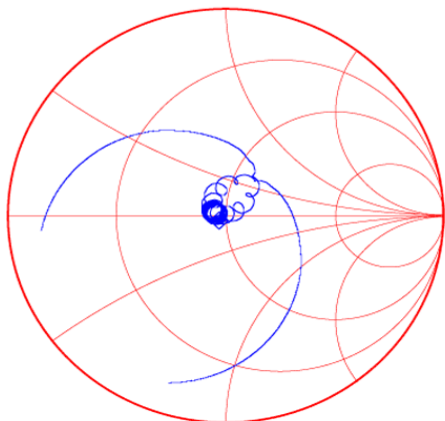
**Wideband Response**



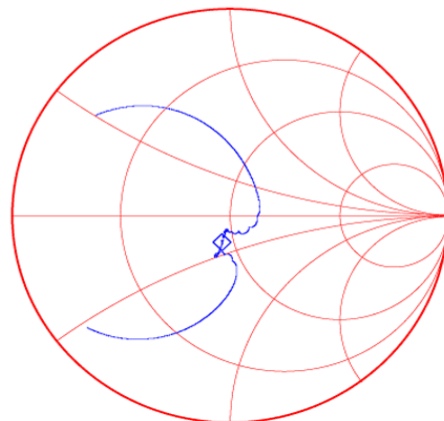
**Group Delay Response**



**Input Smith Chart**

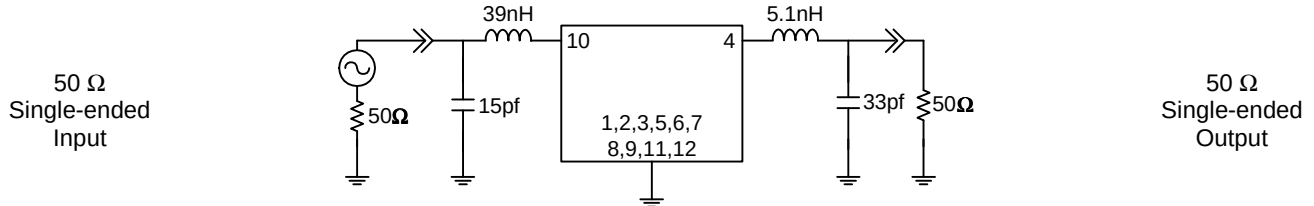


**Output Smith Chart**



## Matching Schematics

Actual matching values may vary due to PCB layout and parasitics

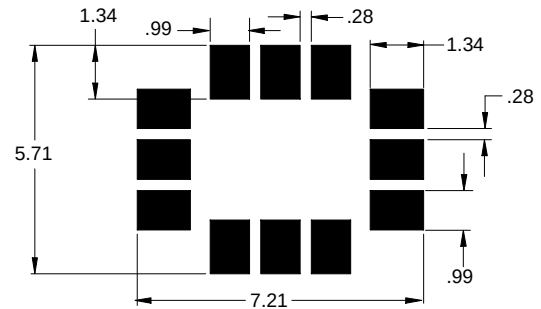


## Marking



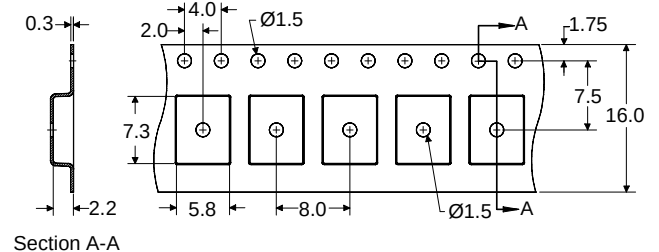
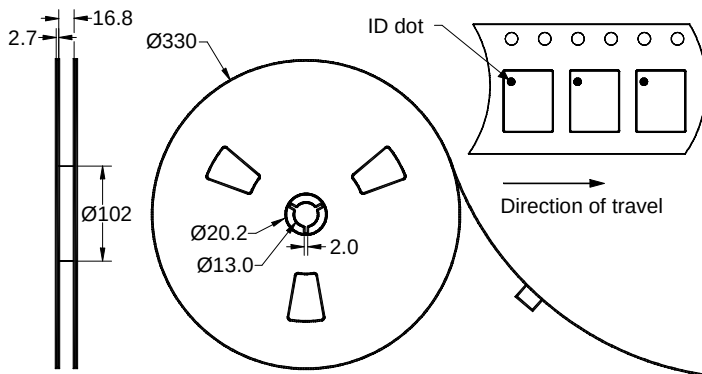
The date code consists of: day of the current year (Julian, 3 digits), last digit of the year (1 digit) and hour (2 digits)

## 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: 3000 units/reel

## Maximum Ratings

| Parameter                   | Symbol           | Minimum | Maximum | Unit |
|-----------------------------|------------------|---------|---------|------|
| Operating Temperature Range | T                | -10     | +85     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40     | +85     | °C   |
| Input Power                 | P <sub>in</sub>  | -       | +15     | 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 JESD22-B102, Pb-free process, 260C 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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