
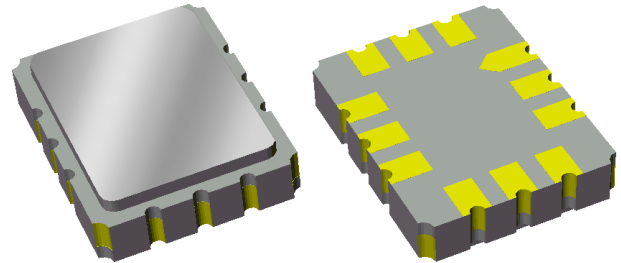


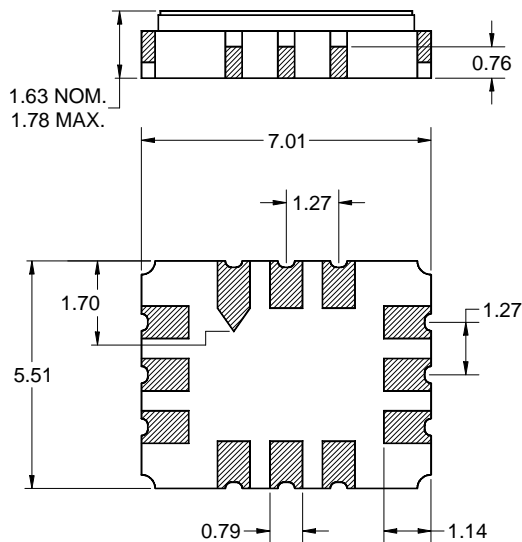
## Features

- For BTS Power Amplifier applications
- Usable bandwidth of 100 MHz
- Absolute delay of 450ns
- Low group delay variation
- 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

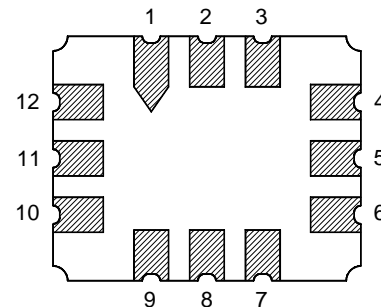


Dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.15$ mm except overall  
length and width  $\pm 0.13$ mm

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

## Pin Configuration

Bottom View



### Single-ended Configuration

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

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

Operating Temperature Range: <sup>(2)</sup> -35 to +85 °C

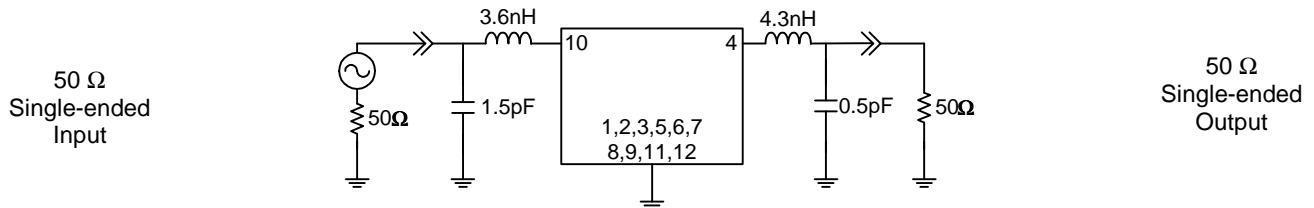
Parameter <sup>(3)</sup>	Minimum	Typical <sup>(4)</sup>	Maximum	Unit
<b>Center Frequency</b>	-	1960	-	MHz
<b>Minimum Insertion Loss</b>				
+25 °C	-	22	26	dB
-35 to +85 °C	-	23	27	dB
<b>Lower 1.2 dB Bandedge <sup>(5)</sup></b>	-	1884	1930	MHz
<b>Upper 1.2 dB Bandedge <sup>(5)</sup></b>	1990	2013	-	MHz
<b>Amplitude Variation</b>				
1950 – 1970 MHz	-	0.4	0.8	dB p-p
1930 – 1990 MHz	-	0.5	1.2	dB p-p
<b>Phase Linearity</b>				
1950 – 1970 MHz	-	3	7.0	degree
1930 – 1990 MHz	-	4	8.0	degree
<b>Absolute Group Delay</b>	445	450	455	ns
<b>Group Delay Variation</b>				
1930 – 1990 MHz	-	24	40	ns p-p
<b>Input VSWR</b>				
1950 – 1970 MHz	-	3.4	5.0:1	-
<b>Output VSWR</b>				
1950 – 1970 MHz	-	2.1	5.0:1	-
<b>Source Impedance (single-ended) <sup>(6)</sup></b>	-	50	-	Ω
<b>Load Impedance (single-ended) <sup>(6)</sup></b>	-	50	-	Ω

**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

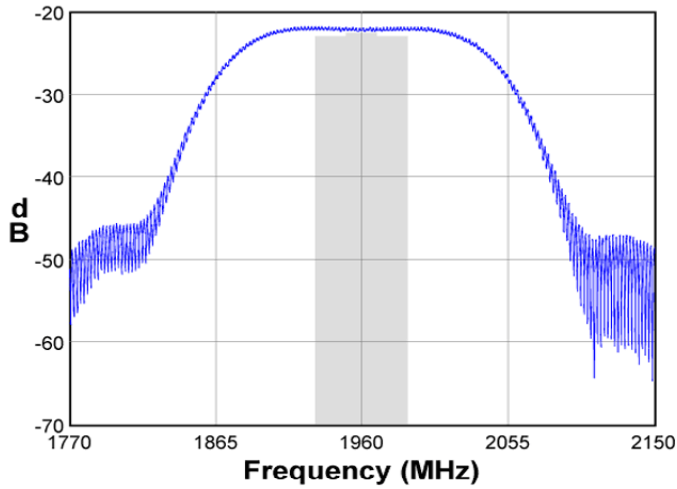
**Test Circuit:**

Actual matching values may vary due to PCB layout and parasitics

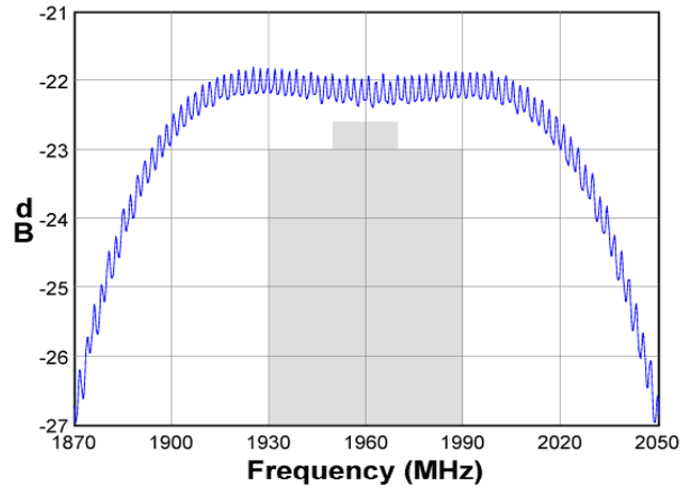


**Typical Performance (at room temperature)**

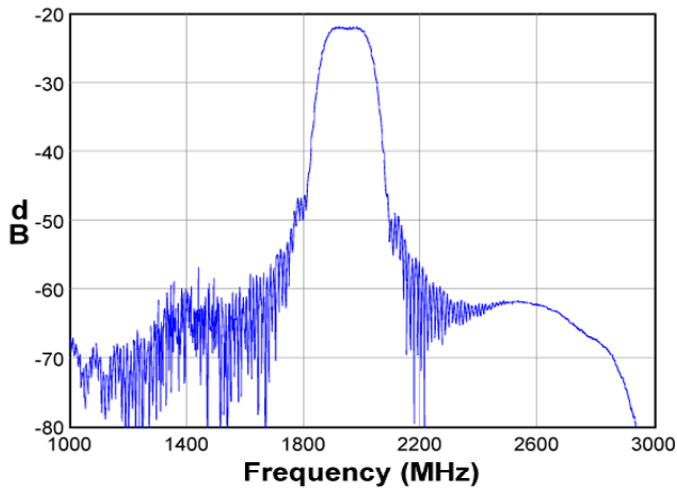
**Frequency Response**



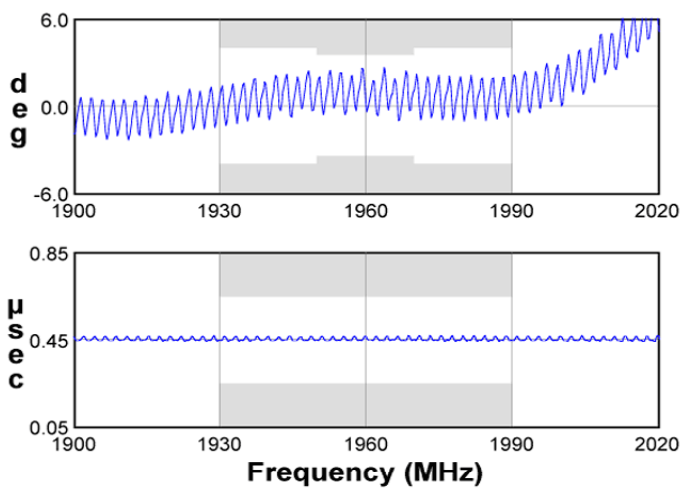
**Passband Response**



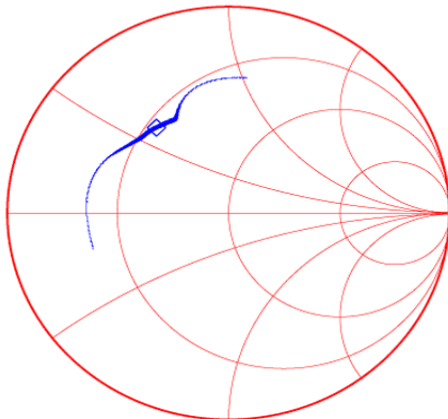
**Wideband Response**



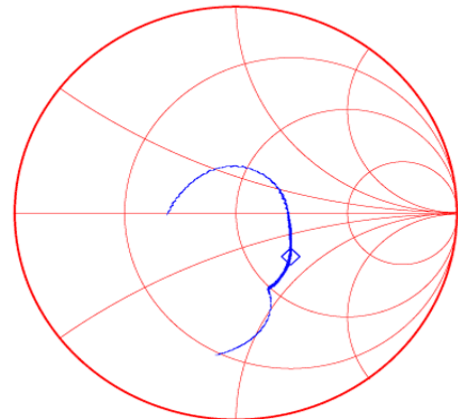
**Phase \ Group Delay**



**Input Smith Chart**

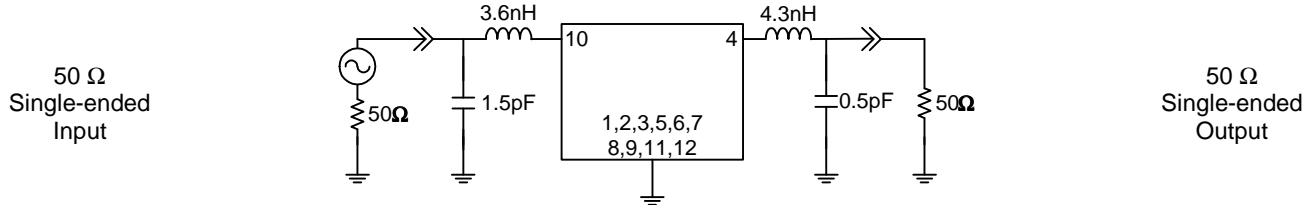


**Output Smith Chart**



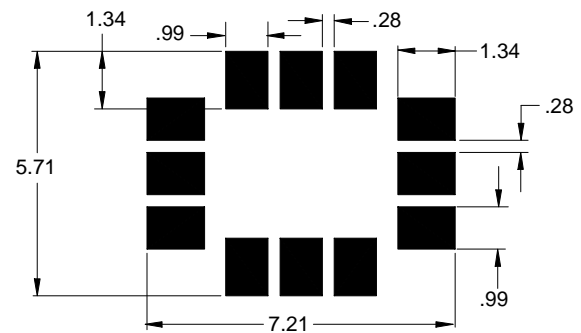
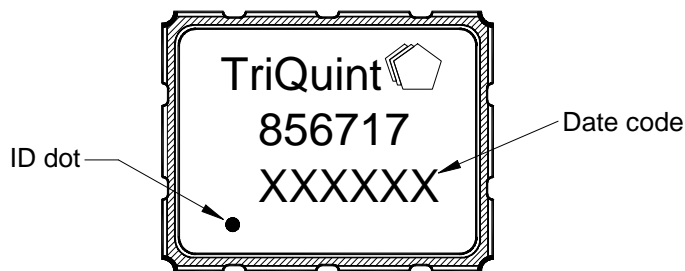
**Matching Schematics**

Actual matching values may vary due to PCB layout and parasitics



**Marking**

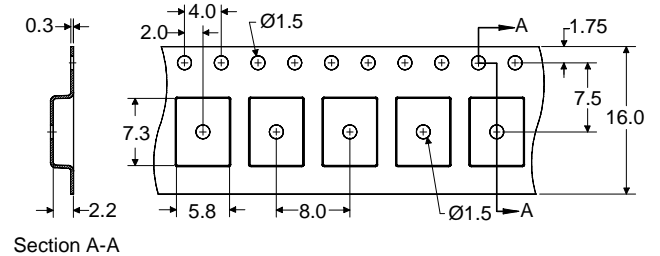
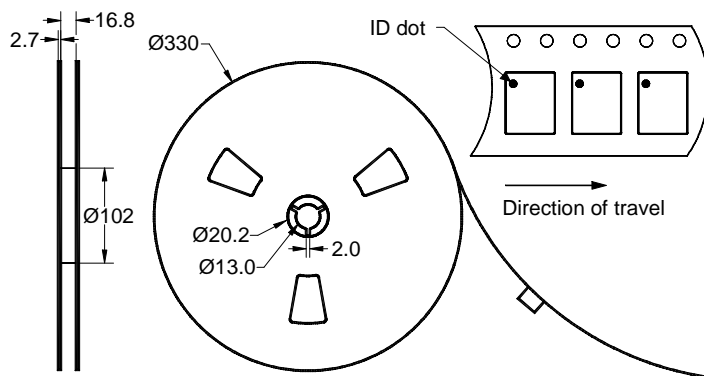
**PCB Footprint**



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: 3000 units/reel

### Maximum Ratings


Parameter	Symbol	Minimum	Maximum	Unit
Operating Temperature Range	T	-35	+85	°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 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](#)

TriQuint's liability is limited only to the Surface Acoustic Wave (SAW) component(s) described in this data sheet. TriQuint does not accept any liability for applications, processes, circuits or assemblies, which are implemented using any TriQuint component described in this data sheet.

### Contact Information

**TriQuint**   
SEMICONDUCTOR

PO Box 609501  
Orlando, FL 32860-9501  
USA

Phone: +1 (407) 886-8860  
Fax: +1 (407) 886-7061  
Email: [info-product@tqs.com](mailto:info-product@tqs.com)  
Web: [www.triquint.com](http://www.triquint.com)

Or contact one of our worldwide  
Network of [sales offices](#),  
[Representatives or distributors](#)