
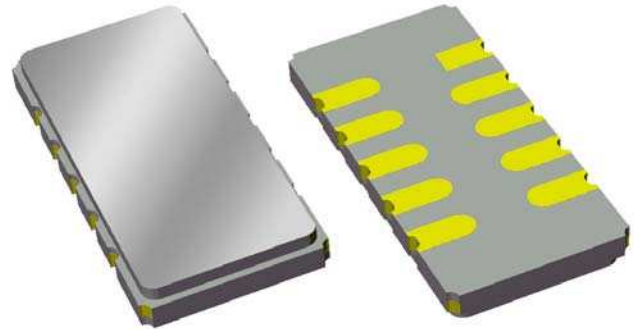


**Features**

- Usable bandwidth 32 MHz
- High attenuation
- Impedance matching required
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Hermetic
- RoHS compliant (2002/95/EC), Pb-free 

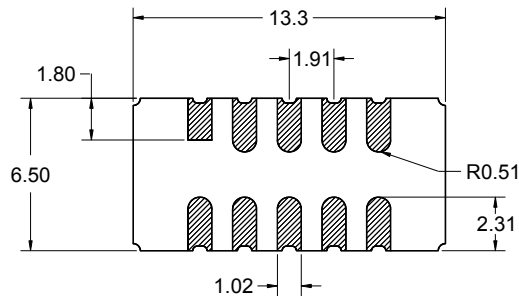
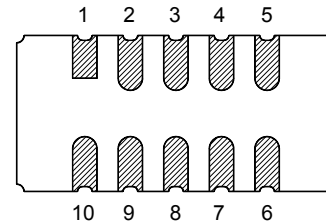
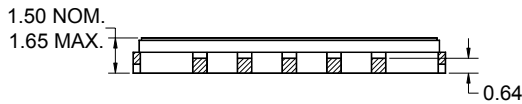


**Package**

Surface Mount 13.3 x 6.50 x 1.50 mm

**Pin Configuration**

Bottom View



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

Dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.15\text{mm}$  except overall  
length and width  $\pm 0.10\text{mm}$

Body:  $\text{Al}_2\text{O}_3$  ceramic  
Lid: Kovar, Ni plated  
Terminations: Au plating 0.5 - 1.0 $\mu\text{m}$ ,  
over a 2 - 6 $\mu\text{m}$  Ni plating

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

Operating Temperature Range: <sup>(2)</sup> -40 to +80 °C

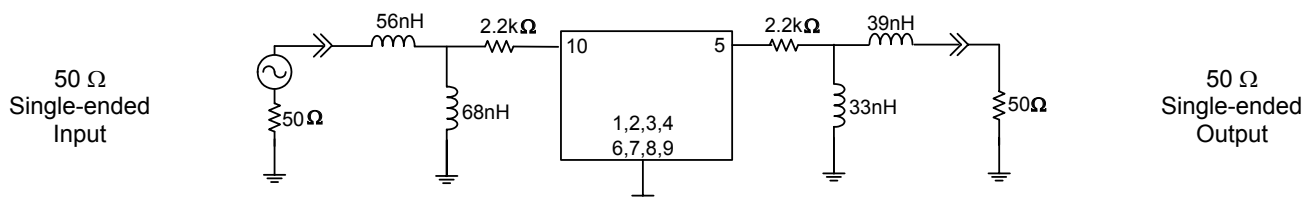
Parameter <sup>(3)</sup>	Minimum	Typical	Maximum	Unit
Center Frequency	-	153.6	-	MHz
Insertion Loss at Fc	-	13	15	dB
1 dB Lower Frequency <sup>(4)</sup>	-	136.1	137.6	MHz
1 dB Upper Frequency <sup>(4)</sup>	169.6	171.1	-	MHz
Stopband Attenuation <sup>(4)</sup>				
70 - 125 MHz	40	52	-	dB
275 - 350 MHz	35	55	-	dB
400 - 1000 MHz	40	45	-	dB
1000 - 2000 MHz	30	40	-	dB
Amplitude Variation <sup>(5)</sup>				
137.6 - 169.6 MHz	-	0.7	1.2	dB p-p
Phase Ripple (p-p)				
136.6 - 169.6 MHz	-	5	12	deg
Phase Ripple (RMS)				
137.6 - 169.6 MHz	-	1	2.5	deg
Absolute Group Delay at 153.6 MHz				
137.6 - 169.6 MHz	-	0.7	0.8	μs
Group Delay Variation				
137.6 - 169.6 MHz	-	50	100	ns
Input Return Loss <sup>(6)</sup>				
137.6 - 169.6 MHz	8	10	-	dB
Output Return Loss <sup>(6)</sup>				
137.6 - 169.6 MHz	9	11	-	dB
Source/Load Impedance <sup>(7)</sup>	-	50	-	Ω

**Notes:**

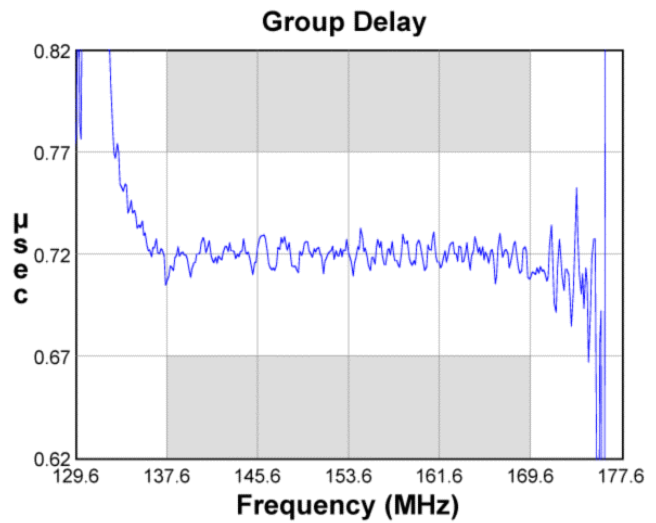
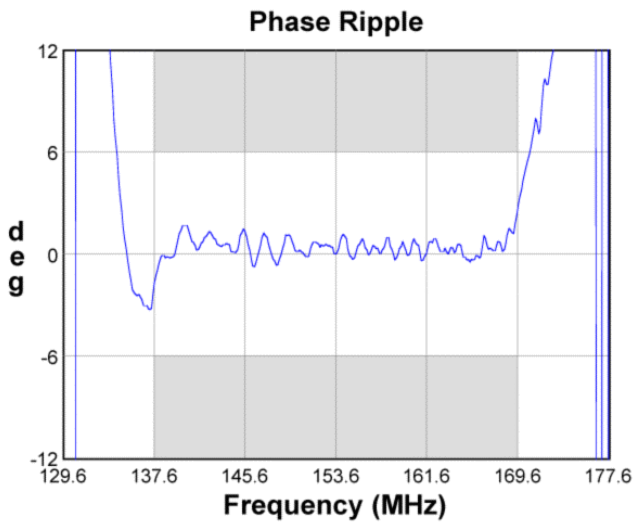
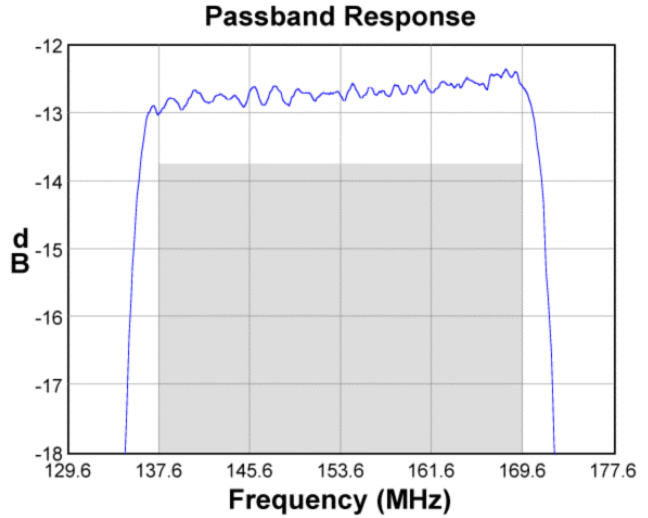
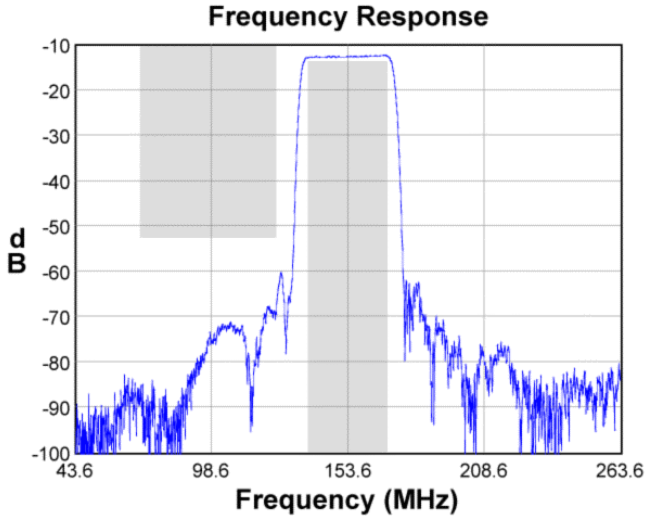
1. All specifications are based on the test circuit shown below
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Referenced to insertion loss at Fc.
5. Amplitude Variation is defined as the difference between the lowest loss and the highest loss within defined frequency points.
6. An external impedance matching network with +/- 2% tolerance will be necessary to achieve proposed return loss.
7. This is the optimum impedance in order to achieve the performance shown

**Test Circuit:**

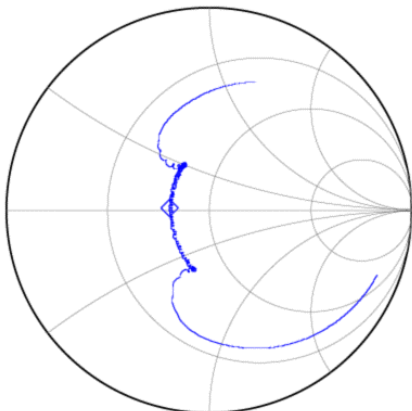
Actual matching values may vary due to PCB layout and parasitics



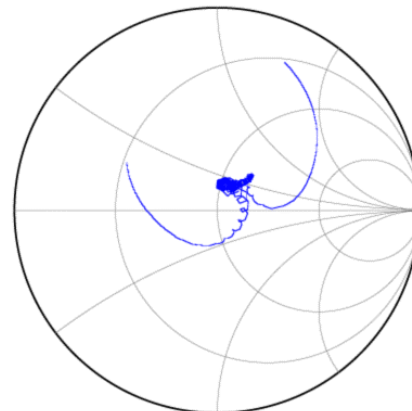
**Typical Performance (at +25°C)**



**Input Smith Chart**



**Output Smith Chart**






**Maximum Ratings**


Parameter	Symbol	Minimum	Maximum	Unit
Operating Temperature Range	T	-40	+80	°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](#)

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**



PO Box 609501  
Orlando, FL 32860-9501  
USA

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

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