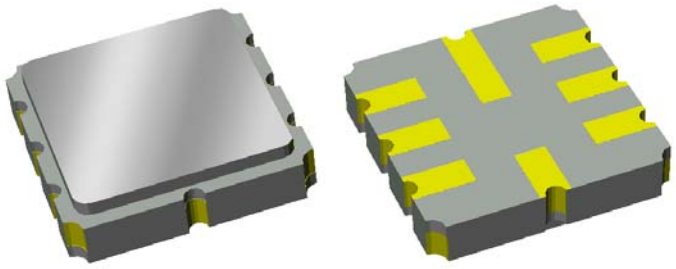
TriQuint SEMICONDUCTOR

Data Sheet

Part Number 856802
172.8 MHz SAW Filter

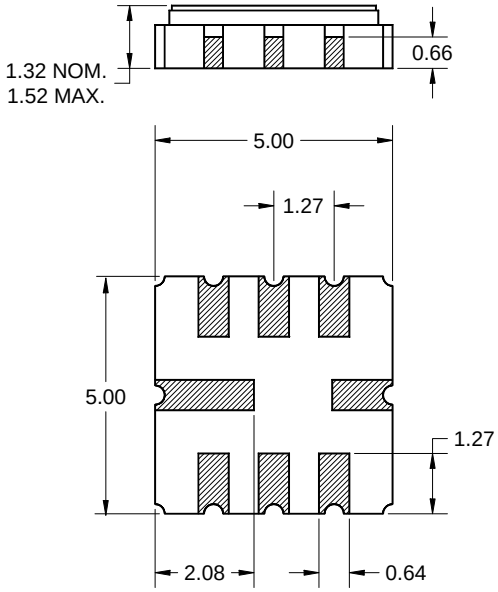
Features

- Usable 1 dB bandwidth of 20 MHz
- Small Size
- Low Loss
- Single Ended Operation at 50 Ω
- Single-ended input \ balanced output at 200 Ω
- Ceramic Surface Mount Package (SMP)
- Hermetic
- **RoHS** compliant (2002/95/EC), **Pb**-free



Package

Surface Mount 5.00 x 5.00 x 1.32 mm
SMP-20

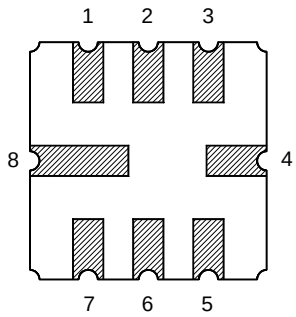


Dimensions shown are nominal in millimeters
All tolerances are ±0.15mm except overall length and width ±0.10mm

Body: Al_2O_3 ceramic
Lid: *Kovar*, *Ni* plated
Terminations: *Au* plating 0.5 - 1.0µm, over a 2 – 6µm *Ni* plating

Pin Configuration

Bottom View



Single-Ended Configuration

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

SE-Balanced Configuration

Pin No.	Description
7	Input +
3	Output +
2	Output -
1,6,5	Ground
4,8	Case Ground

Electrical Specifications [1]

Operating Temperature Range: [2] -20 to +80 °C

Parameter [3]	Minimum	Typical [4]	Maximum	Unit
Center Frequency	-	172.8	-	MHz
Minimum Insertion Loss				
162.80 – 182.80 MHz	-	8.0	9.0	dB
1.0 dB Bandwidth [5]	20	25.9	-	MHz
Amplitude Variation [6]				
162.80 – 182.80 MHz	-	0.6	1.0	dB
Group Delay Ripple [6, 7]				
162.80 – 182.80 MHz	-	22	40	nsec
Relative Attenuation [5, 6]				
10 – 100.00 MHz	50	50	-	dB
100.00 – 153.30 MHz	33	39	-	dB
153.30 – 154.80 MHz	20	33	-	dB
154.80 – 157.80 MHz	3	6	-	dB
187.80 – 190.80 MHz	2	4	-	dB
190.80 – 194.30 MHz	19	28	-	dB
194.30 – 198.30 MHz	30	34	-	dB
198.30 – 250.00 MHz	33	40	-	dB
250.00 – 310.00 MHz	40	59	-	dB
310.00 – 410.00 MHz	50	60	-	dB
410.00 – 1000.0 MHz	55	60	-	dB
Input /Output Return Loss				
162.8 – 182.8 MHz	10	14	-	dB
EVM				
162.8 – 167.8 MHz	-	1.0	2.7	%
167.8 – 172.8 MHz	-	1.1	2.7	%
172.8 – 177.8 MHz	-	1.3	2.7	%
177.8 – 182.8 MHz	-	1.6	2.7	%
Source Impedance (single-ended) [8]	-	50	-	Ω
Load Impedance (single-ended) [8]	-	50	-	Ω
Load Impedance (balanced) [8]	-	200	-	Ω

Notes:

1. All specifications are based on the TriQuint test circuit matching schematics 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. Typical values are based on average measurements at room temperature
5. All attenuation measurements are referenced to Minimum Insertion Loss
6. Bandedge frequency points include manufacturing and temperature variation.
7. Describes the maximum peak to adjacent valley variation over the defined frequency range.
8. This is the optimum impedance in order to achieve the performance shown

Electrical Specifications [1]

Operating Temperature Range: [2] -40 to +85 °C

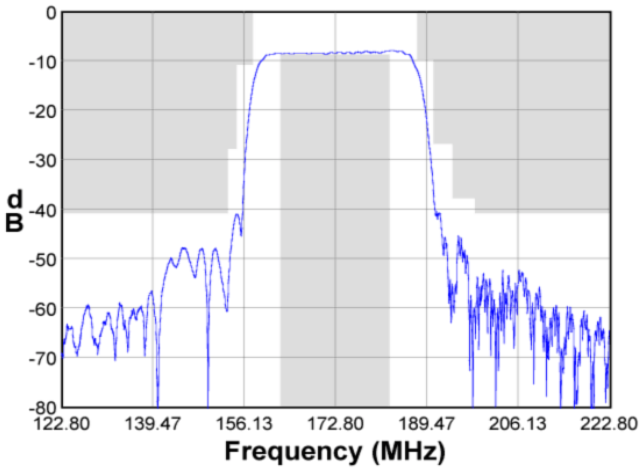
Parameter [3]	Minimum	Typical [4]	Maximum	Unit
Center Frequency	-	172.8	-	MHz
Minimum Insertion Loss				
162.8 – 182.8 MHz	-	8.0	9.0	dB
1.0 dB Bandwidth [5]	20	25.9	-	MHz
Amplitude Variation [6]				
162.8 – 182.8 MHz	-	0.6	1.2	dB
Group Delay Ripple [6, 7]				
162.8 – 182.8 MHz	-	22	50	nsec
Relative Attenuation [5, 6]				
10 – 100.00 MHz	50	50	-	dB
100.00 – 153.30 MHz	33	39	-	dB
153.30 – 154.80 MHz	19	33	-	dB
154.80 – 157.80 MHz	2.5	6	-	dB
187.80 – 190.80 MHz	1.5	4	-	dB
190.80 – 194.30 MHz	14	28	-	dB
194.30 – 198.30 MHz	29	34	-	dB
198.30 – 250.00 MHz	33	40	-	dB
250.00 – 310.00 MHz	40	59	-	dB
310.00 – 410.00 MHz	50	60	-	dB
410.00 – 1000.0 MHz	55	60	-	dB
Input /Output Return Loss				
162.8 – 182.8 MHz	10	14	-	dB
EVM				
162.8 – 167.8 MHz	-	1.0	3.5	%
167.8 – 172.8 MHz	-	1.1	3.5	%
172.8 – 177.8 MHz	-	1.3	3.5	%
177.8 – 182.8 MHz	-	1.6	3.5	%
Source Impedance (single-ended) [8]	-	50	-	Ω
Load Impedance (single-ended) [8]	-	50	-	Ω
Load Impedance (balanced) [8]	-	200	-	Ω

Notes:

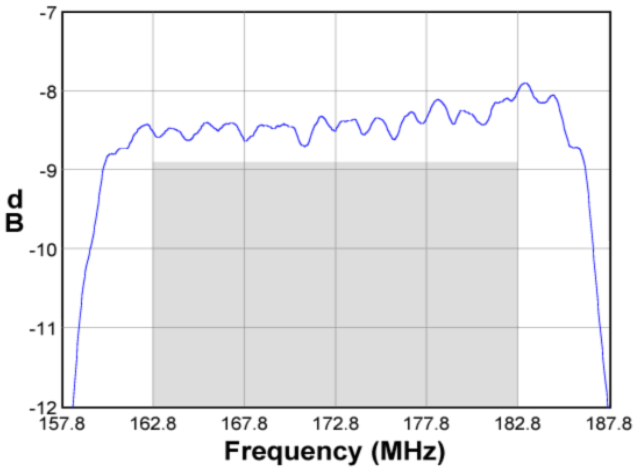
1. All specifications are based on the TriQuint test circuit matching schematics shown on page 4
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
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5. All attenuation measurements are referenced to Minimum Insertion Loss
6. Bandedge frequency points include manufacturing and temperature variation.
7. Describes the maximum peak to adjacent valley variation over the defined frequency range.
8. This is the optimum impedance in order to achieve the performance shown

Typical Performance (at room temperature)

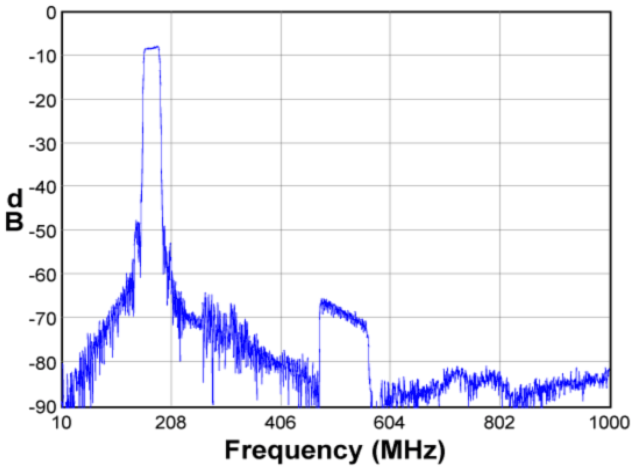
Frequency Response



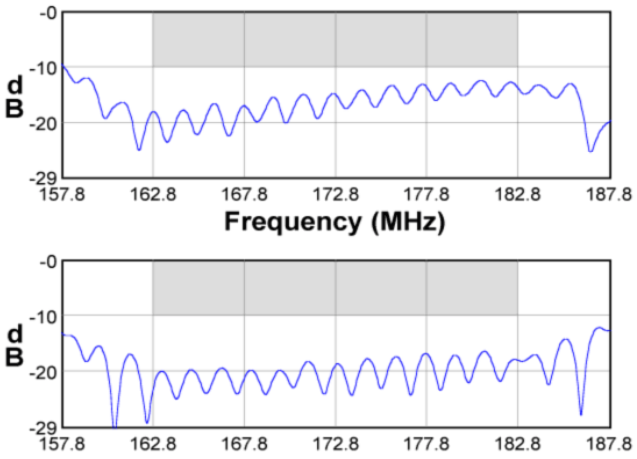
Passband Response



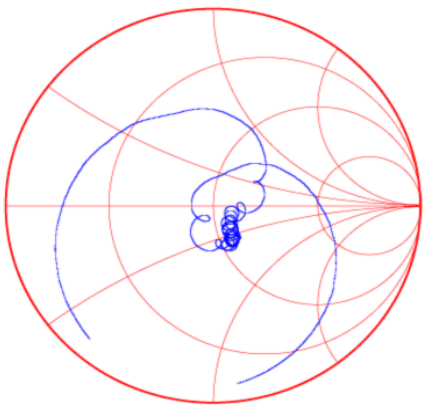
Wideband Response



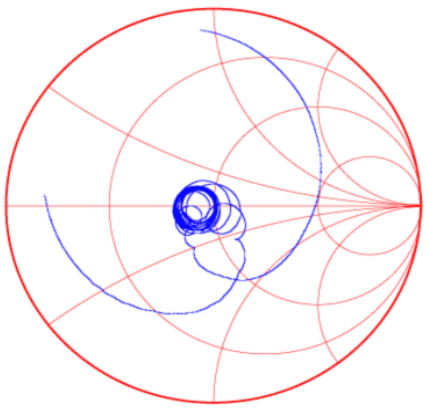
Input/Output Return Loss



Input Smith Chart



Output Smith Chart



TriQuint SEMICONDUCTOR

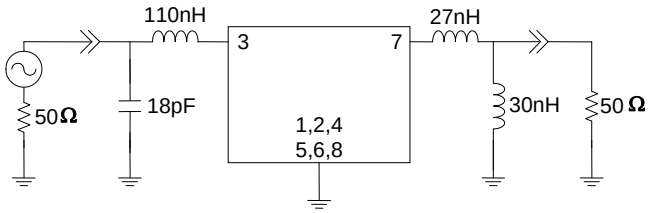
Data Sheet

Part Number 856802
172.8 MHz SAW Filter

Matching Schematics

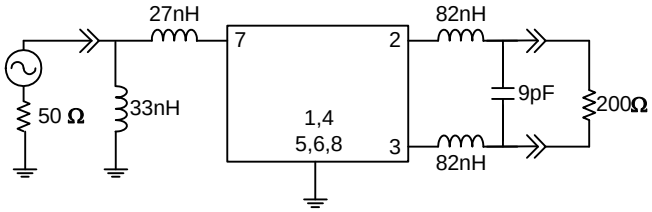
Actual matching values may vary due to PCB layout and parasitics

50Ω Single-ended Input



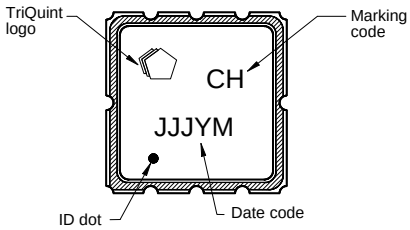
50Ω Single-ended Input

50 Ω Single-ended Input



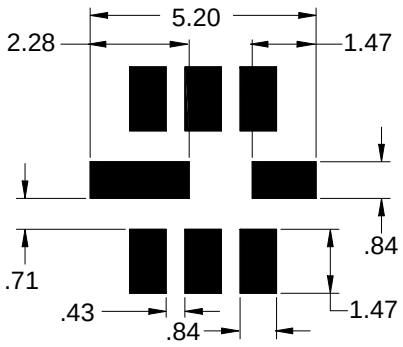
200 Ω Balanced Output

Marking



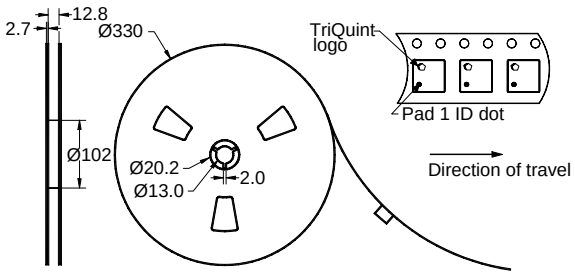
The date code consists of: JJJ = Julian day,
Y = last digit of year, M = manufacturing site code

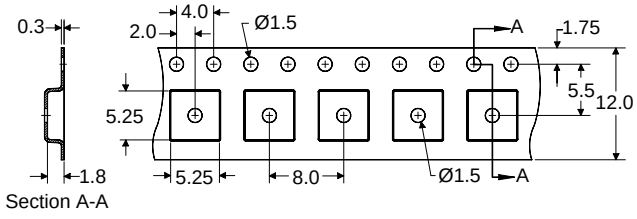
PCB Footprint



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

Tape and Reel





Dimensions shown are nominal in millimeters
Packaging quantity: 4000 units/reel

TriQuint SEMICONDUCTOR

Data Sheet

Part Number 856802
172.8 MHz SAW Filter

Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Unit
Operating Temperature Range	T	-40	+85	^{o}C
Storage Temperature Range	T_{stg}	-40	+85	^{o}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.

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