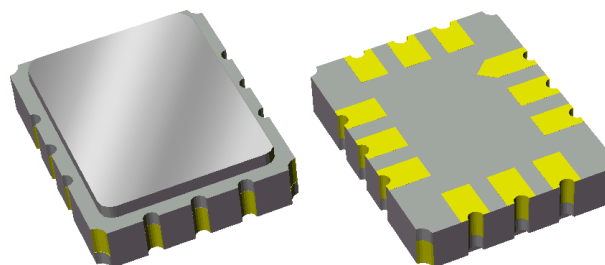


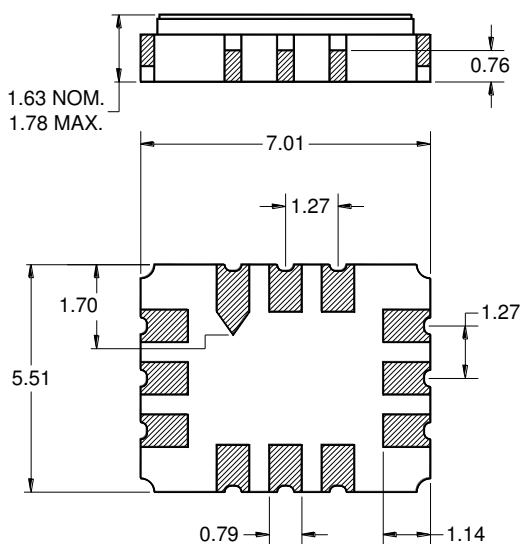
Features

- For Base Stations applications
- Usable Bandwidth of 21 MHz
- Balanced Operation
- 200 Ohm input / 150 Ohm Output
- Ceramic Surface Mount Package (SMP)
- Hermetic
- RoHS compliant (2002/95/EC), **Pb-free** 



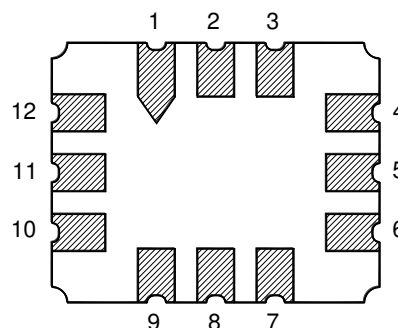
Package

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



Pin Configuration

Bottom View



Balanced Configuration

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

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

Body: Al_2O_3 ceramic
 Lid: Kovar, Ni plated
 Terminations: Au plating 0.5 - 1.0 μ m,
 over a 2 - 6 μ m Ni plating

Electrical Specifications ⁽¹⁾

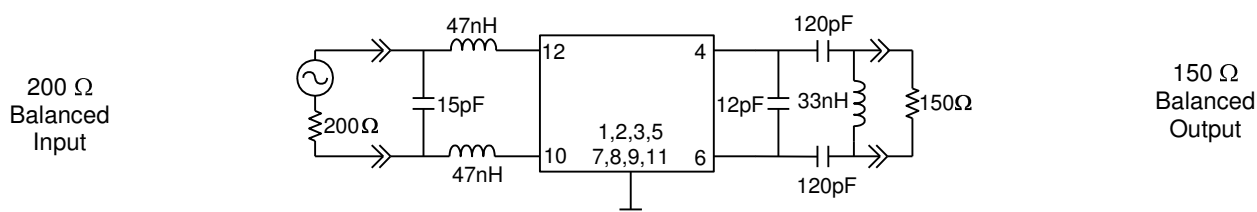
Operating Temperature Range: ⁽²⁾ -40 to +85 °C

Parameter ⁽³⁾	Minimum	Typical ⁽⁴⁾	Maximum	Unit
Center Frequency, F_o	-	172.8	-	MHz
Insertion Loss at Center Frequency, F_o	-	8.2	10	dB
1 dB Bandwidth ⁽⁶⁾	21	23.15	-	MHz
10 dB Bandwidth ⁽⁶⁾	-	27.83	-	MHz
Lower 1 dB Band Edge ⁽⁶⁾	-	160.81	162.3	MHz
Upper 1 dB Band Edge ⁽⁶⁾	183.3	183.96	-	MHz
Lower 10 dB Band Edge ⁽⁶⁾	153.5	-	-	MHz
Amplitude Ripple ⁽⁵⁾ 162.3 – 183.3 MHz	-	0.33	1.0	dB p-p
Group Delay at 172.8	-	580	-	ns
Group Delay Variation 162.3 – 183.3 MHz	-	38	100	ns p-p
Relative Attenuation ⁽⁶⁾ 10 – 145 MHz	50	57	-	dB
145 – 153.5 MHz	10	45	-	dB
200 – 290 MHz	50	63	-	dB
290 – 390 MHz	35	40	-	dB
390 – 1000 MHz	50	73	-	dB
Input Return Loss 162.3 – 183.3 MHz	8	14	-	dB
Output Return Loss 162.3 – 183.3 MHz	8	11	-	dB
Source Impedance (Balanced-ended) ⁽⁷⁾	-	200	-	Ω
Load Impedance (Balanced-ended) ⁽⁷⁾	-	150	-	Ω

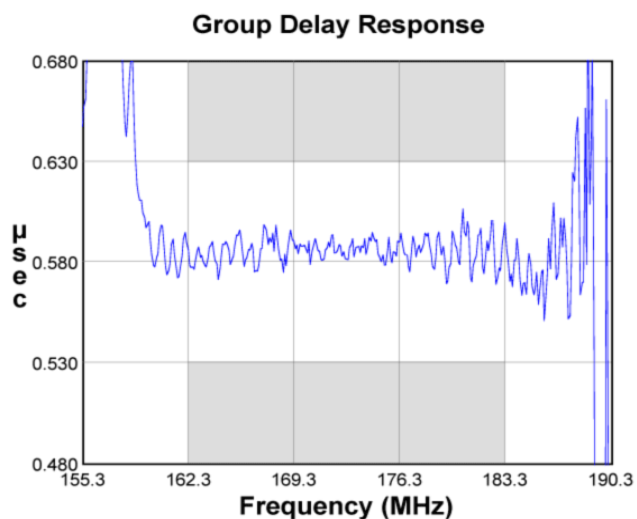
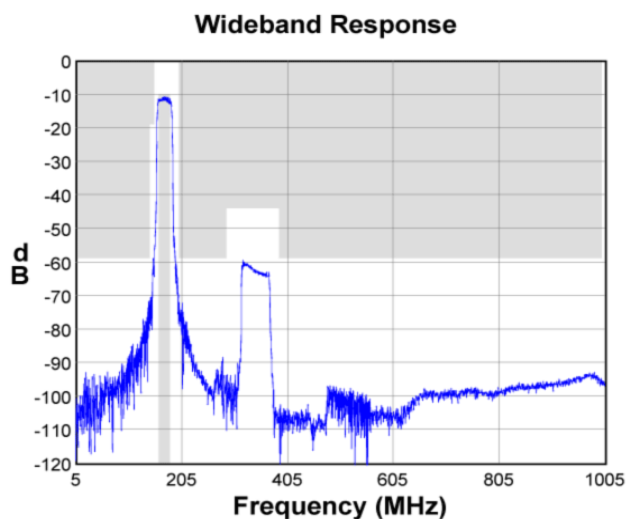
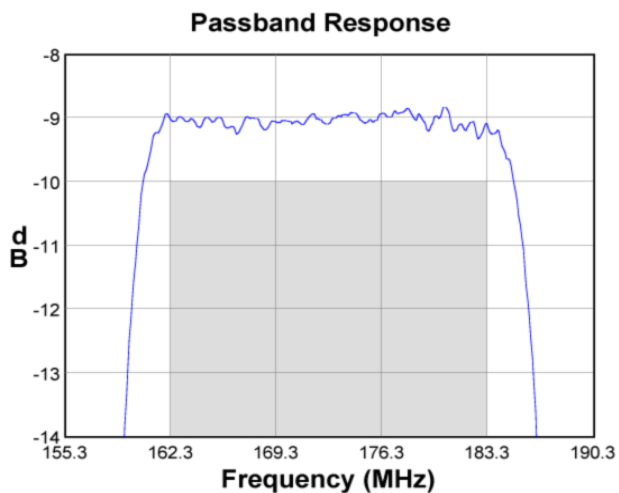
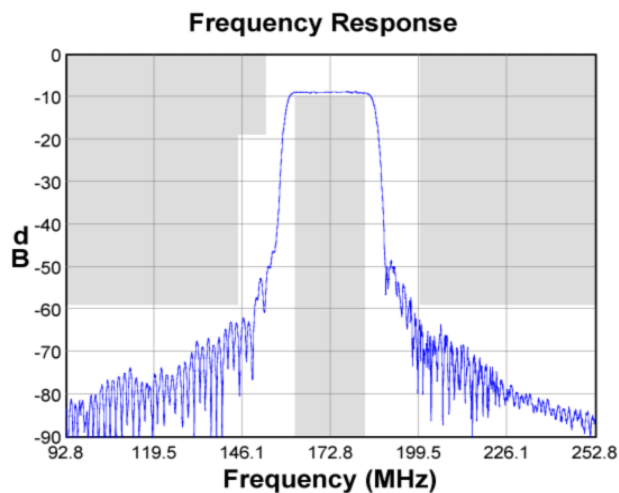
Notes:

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 an average of 12 pieces measured at room Temperature
5. Amplitude Ripple is defined as the worst case difference between a peak and an adjacent valley within defined frequency points
6. Relative to insertion loss at center frequency
7. This is the optimum impedance in order to achieve the performance shown

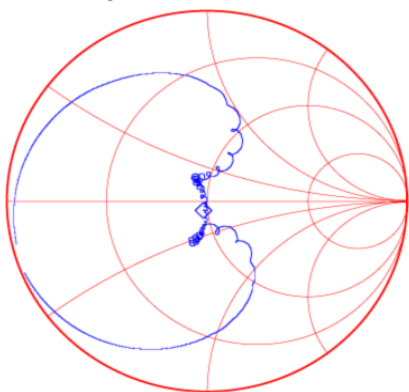
Test Circuit: Actual matching values may vary due to PCB layout and parasitics



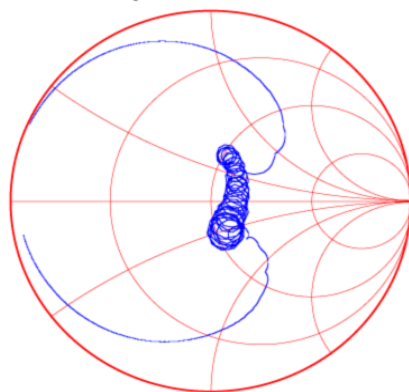
Typical Performance (at room temperature)



Input Smith Chart

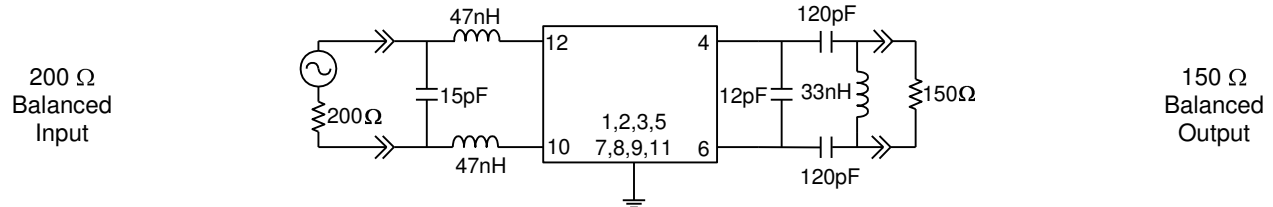


Output Smith Chart

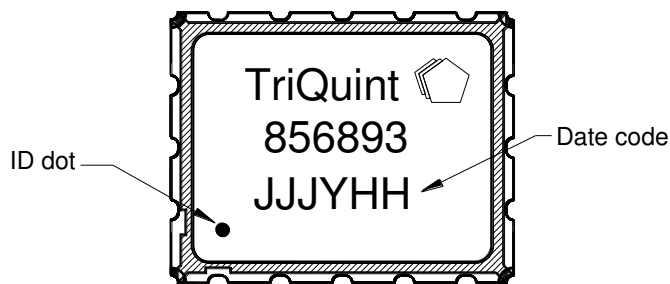


Matching Schematics

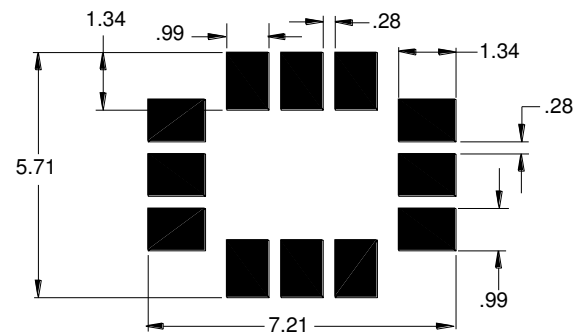
Actual matching values may vary due to PCB layout and parasitics



Marking



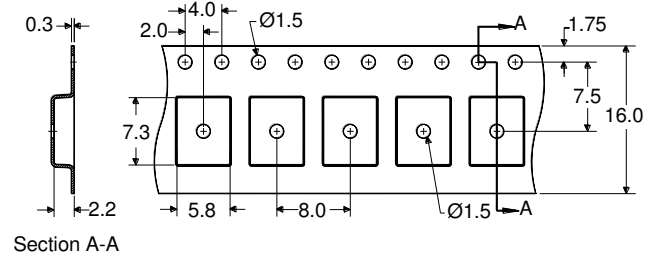
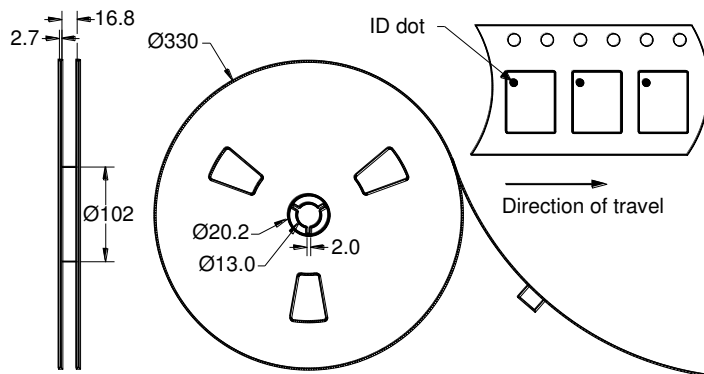
PCB Footprint



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	-40	+85	°C
Storage Temperature Range	T _{stg}	-40	+85	°C
Input Power (at +55°C for 100 hours max)	P _{in}	-	+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 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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