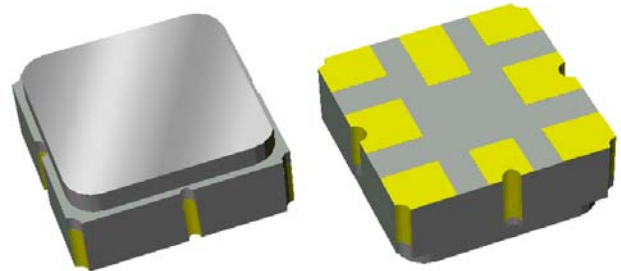


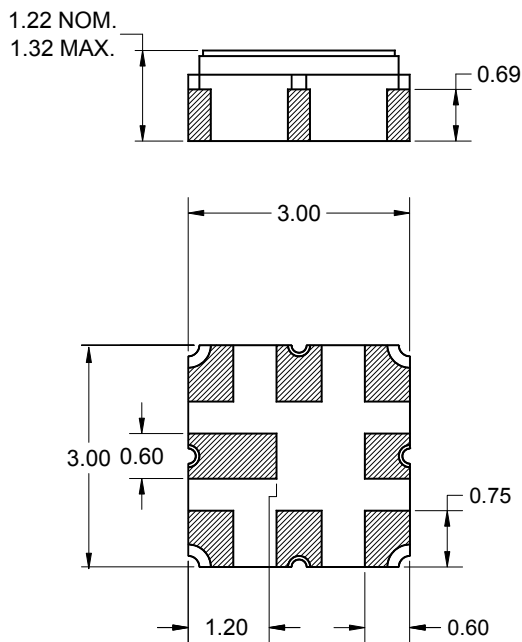
**Features**

- For broadband tuner applications
- Usable bandwidth 100 MHz
- High attenuation
- Balanced operation
- Ceramic Surface Mount Package (SMP)
- Hermetic
- RoHS compliant (2002/95/EC), Pb-free (Pb)



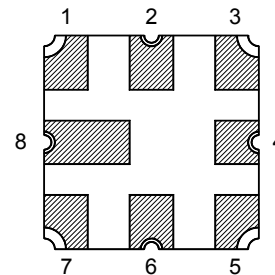
**Package**

Surface Mount 3.00 x 3.00 x 1.22 mm  
SMP-12D



**Pin Configuration**

Bottom View



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

Dimensions shown are nominal in millimeters  
All tolerances are  $\pm 0.15$ mm except overall  
length and width  $\pm 0.10$ 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> 0 to +70 °C

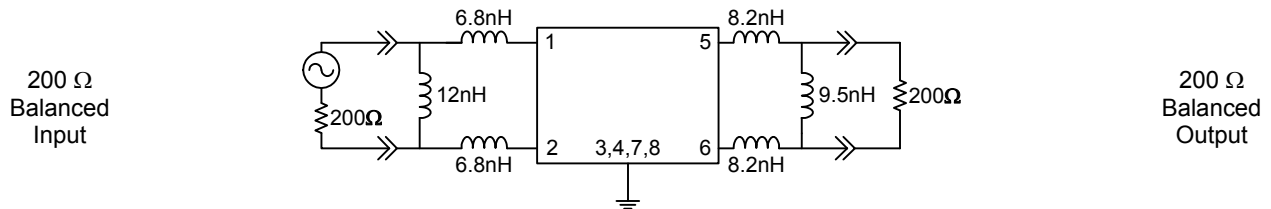
Parameter <sup>(3)</sup>	Minimum	Typical <sup>(4)</sup>	Maximum	Unit
<b>Center Frequency</b>	-	1250	-	MHz
<b>Maximum Insertion Loss</b>	-	6.8	8	dB
<b>Amplitude Variation</b>				
1200 – 1300 MHz	-	1.1	3.0	dB p-p
1200 – 1300 MHz (in any 8 MHz channel)	-	1.1	2.0	dB p-p
<b>Group Delay Ripple</b>				
1200 – 1300 MHz	-	18	60	ns
1200 – 1300 MHz (in any 8 MHz channel)	-	8	18	ns
<b>Attenuation <sup>(5)</sup></b>				
800 – 1052 MHz	45	55	-	dB
1052 – 1152 MHz	40	50	-	dB
1350 – 1450 MHz	20	25	-	dB
1450 – 2000 MHz	40	50	-	dB
<b>Input/Output Return Loss</b>	-	9	-	dB
<b>Source Impedance (balanced) <sup>(6)</sup></b>	-	200	-	Ω
<b>Load Impedance (balanced) <sup>(6)</sup></b>	-	200	-	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 zero dB
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



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

Operating Temperature Range: <sup>(2)</sup> -40 to +85 °C

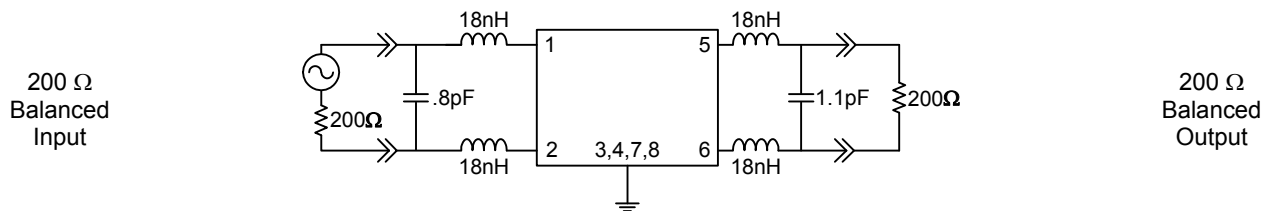
Parameter <sup>(3)</sup>	Minimum	Typical <sup>(4)</sup>	Maximum	Unit
<b>Center Frequency</b>	-	1250	-	MHz
<b>Maximum Insertion Loss</b>	-	6.8	8.5	dB
<b>Amplitude Variation</b>				
1200 – 1300 MHz	-	1.1	3.0	dB p-p
1200 – 1300 MHz (in any 8 MHz channel)	-	1.1	2.0	dB p-p
<b>Group Delay Ripple</b>				
1200 – 1300 MHz	-	18	60	ns
1200 – 1300 MHz (in any 8 MHz channel)	-	8	18	ns
<b>Attenuation <sup>(5)</sup></b>				
800 – 1052 MHz	45	55	-	dB
1052 – 1152 MHz	40	50	-	dB
1350 – 1450 MHz	20	25	-	dB
1450 – 2000 MHz	40	50	-	dB
<b>Input/Output Return Loss</b>	-	9	-	dB
<b>Source Impedance (balanced) <sup>(6)</sup></b>	-	200	-	Ω
<b>Load Impedance (balanced) <sup>(6)</sup></b>	-	200	-	Ω

**Notes:**

1. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
2. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
3. Typical values are based on average measurements at room temperature
4. Relative to zero dB
5. This is the optimum impedance in order to achieve the performance shown

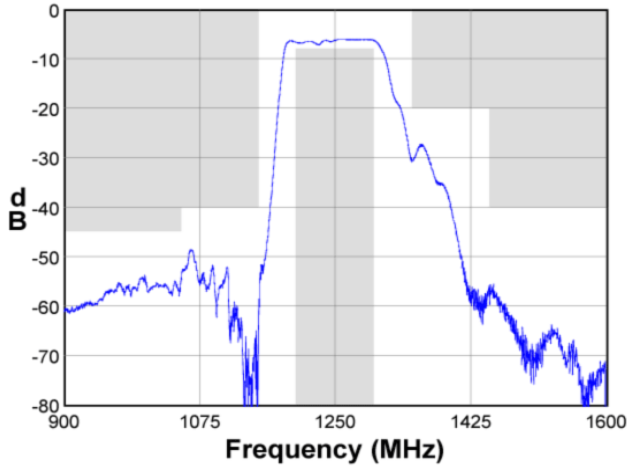
**Test Circuit:**

Actual matching values may vary due to PCB layout and parasitics  
Test circuit optimized for extended temp range

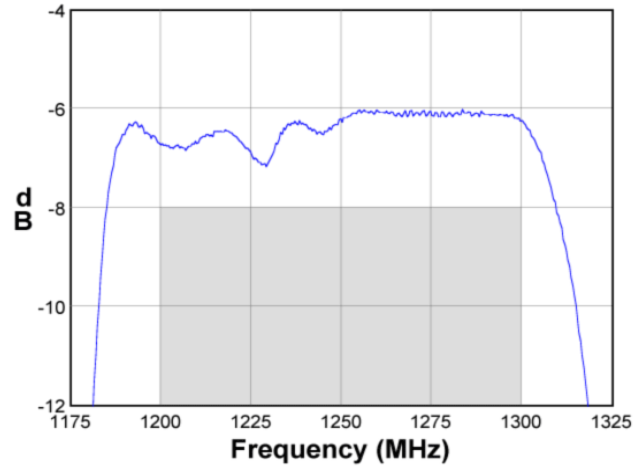


**Typical Performance (at room temperature)**

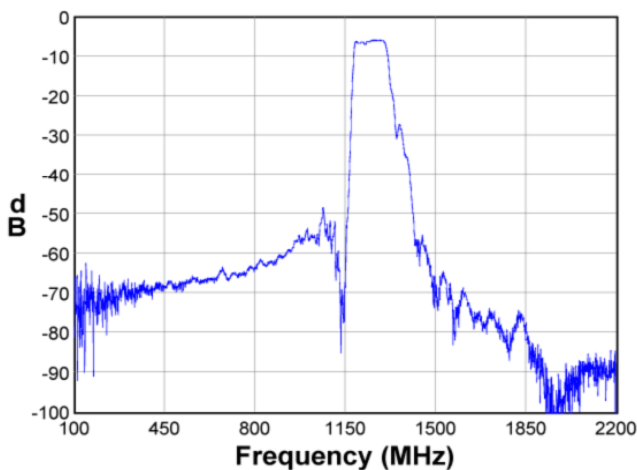
**Frequency Response**



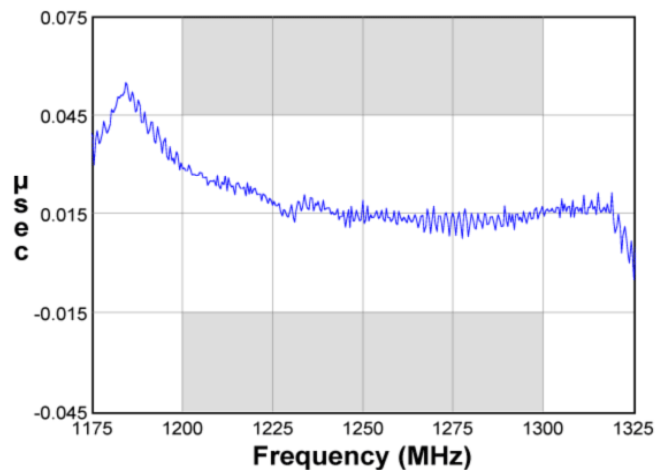
**Passband Response**



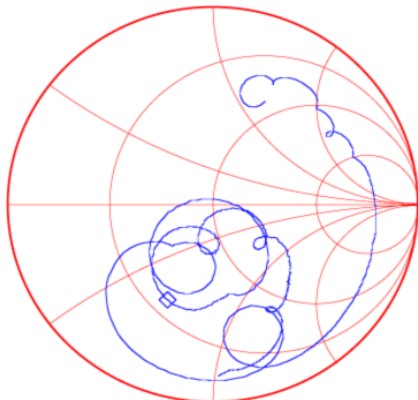
**Wideband Response**



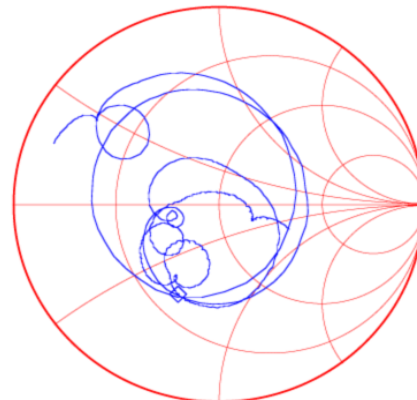
**Group Delay Response**



**Input Smith Chart**

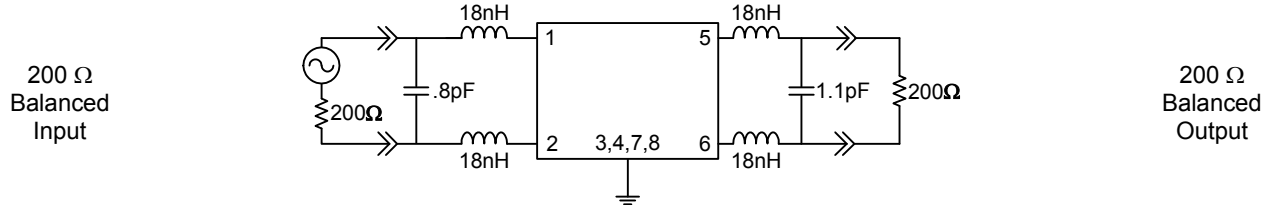


**Output Smith Chart**

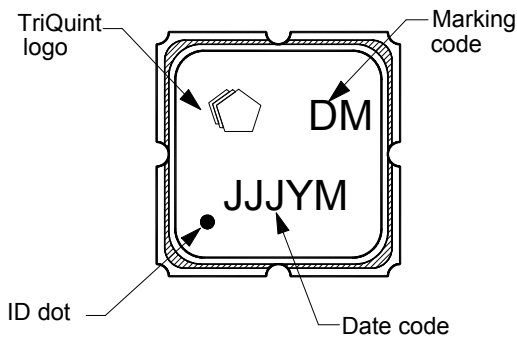


**Matching Schematics**

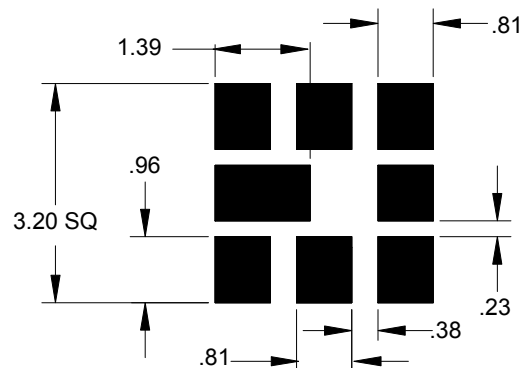
Actual matching values may vary due to PCB layout and parasitics



**Marking**



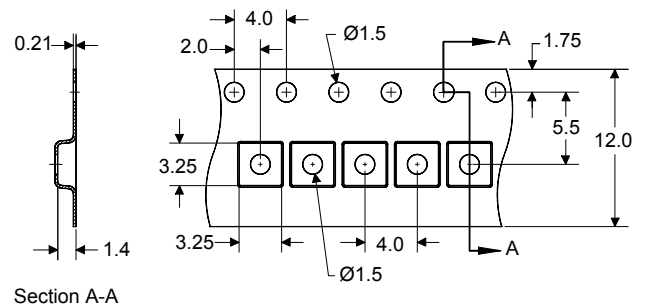
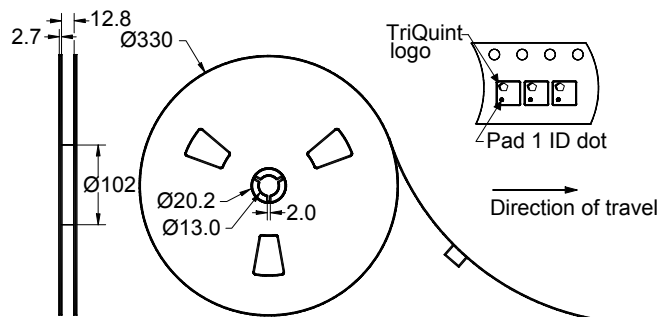
**PCB Footprint**



The date code consists of: day of the current year (Julian 3 digits), Y, last digit of the year and M, manufacturing site code

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

**Tape and Reel**




Dimensions shown are nominal in millimeters  
Packaging quantity: 5000 units/reel

**Maximum Ratings**


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

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