

## BAW Components

### BAW Filter

Cellular / LTE / n41-160MHz

Series type: QGBA2G59AASP1

Ordering code: QGBA2G59AASP1

Date: JANUARY 2024

Version: 1.1



These materials, including the information contained herein, may be used only for informational purposes by the customer. QuantGrav assume no responsibility for errors or omissions in these materials or the information contained herein. QuantGrav reserve the right to make changes to the product(s) or information contained herein without notice. The materials and information are provided on an AS IS basis, and QuantGrav assume no liability and make no warranty or representation, either expressed or implied, with respect to the materials, or any output or results based on the use, application, or evaluation of such materials, including, without limitation, with respect to the non-infringement of trademarks, patents, copyrights or any other intellectual property rights or other rights of third parties.

No use of this documentation or any information contained herein grants any license, whether express, implied, by estoppel or otherwise, to any intellectual property rights, including, without limitation, to any patents owned by Hubei QuantGrav Technology Co., Ltd.

Not to be used, copied, reproduced, or modified in whole or in part, nor its contents revealed in any manner to others without the express written permission of Hubei QuantGrav Technology Co., Ltd.

QuantGrav is trademarks of Hubei QuantGrav Technology Co., Ltd., registered in the people's Republic of China.

Contents

|      |                                        |   |
|------|----------------------------------------|---|
| 1    | Applications                           | 3 |
| 2    | Features                               | 3 |
| 3    | Package                                | 4 |
| 4    | Pin configuration                      | 4 |
| 5    | Matching circuit                       | 5 |
| 6    | Absolute Maximum Ratings               | 5 |
| 7    | Characteristics                        | 6 |
| 8    | Transmission coefficients              | 7 |
| 9    | Soldering profile                      | 8 |
| 10   | Tape and Reel                          | 9 |
| 10.1 | Tape . . . . .                         | 9 |
| 10.2 | Reel with diameter of 178 mm . . . . . | 9 |

## 1 Applications

- n41-160MHz Tx/Rx bandpass filter for HPUE
- Low insertion attenuation
- Low amplitude ripple

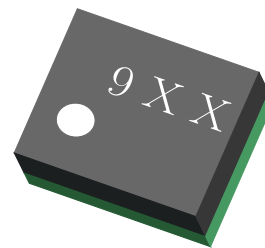


Figure 1: Picture of component with example of product marking.

## 2 Features

- Package size 1.4 mm x 1.1 mm
- Package height 0.5 mm (max.)
- RoHS compatible
- Package for Surface Mount Technology (SMT)
- Ni/Au-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitivity Level 3 (MSL3)

3 Package

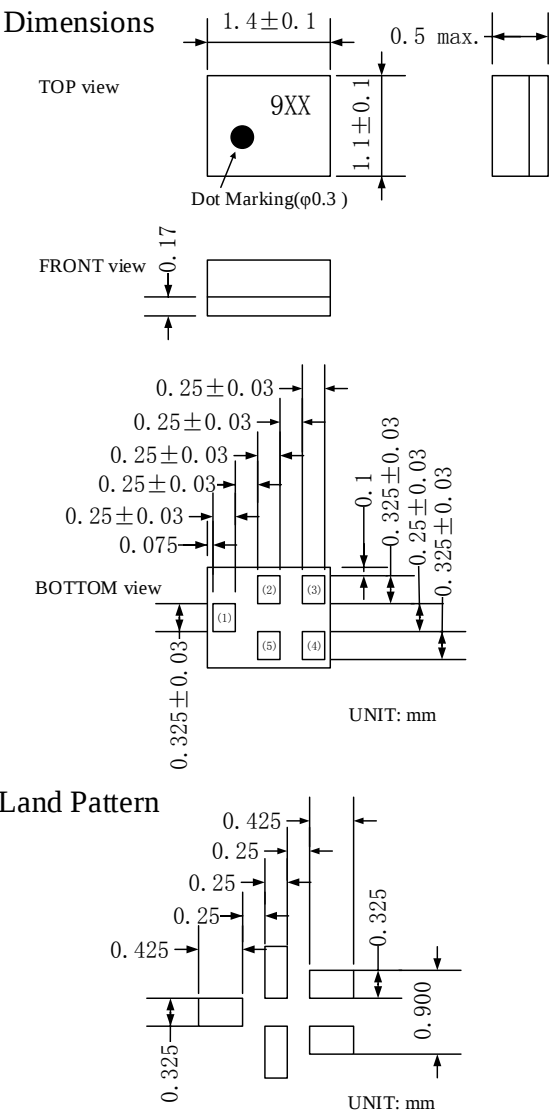


Figure 2: Drawing of package with package height A = 0.5 mm (max.)

4 Pin configuration

- 1 Input
- 4 Output
- 2,3,5 Ground

## 5 Matching circuit

- $R_1 : 50\Omega$   $R_2 : 50\Omega$
- $L_{p1} : 3.6nH$   $L_{p2} : 3.6nH$

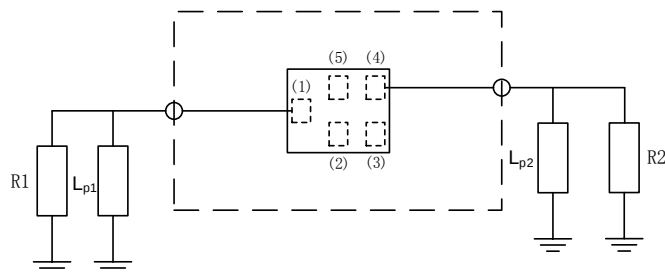


Figure 3: Schematic of matching circuit.

## 6 Absolute Maximum Ratings

Table 1: Absolute Maximum Ratings of Example Data Sheet

| Parameter                | Rating                                      |
|--------------------------|---------------------------------------------|
| Storage temperature      | $T_{STG} = -40^{\circ}C$ to $+85^{\circ}C$  |
| Operating temperature    | $T_{opt} = -30^{\circ}C$ to $+125^{\circ}C$ |
| DC voltage               | $V_{DC} = 3.0V(max)$                        |
| Input power <sup>1</sup> | $P_{IN} = +29dBm$ 5000h $+55^{\circ}C$      |

<sup>1</sup>Input signal shall be applied to TX port.

## 7 Characteristics

Temperature range for specification  $T_{SPEC} = -30^{\circ}C \dots +125^{\circ}C$

Input terminating impedance  $L_{p1} = 3.6nH$

Output terminating impedance  $L_{p2} = 3.6nH$

| Item                 |                      | min. | typ. | max. | Unit | Note         |
|----------------------|----------------------|------|------|------|------|--------------|
| Center Frequency     |                      | 2595 |      |      | MHz  |              |
| Insertion Loss       | 2515 to 2675 MHz     |      | 1.7  | 3.4  |      |              |
| Ripple Deviation     | 2515 to 2675 MHz     |      | 0.6  | 1.6  | dB   |              |
| VSWR                 | 2515 to 2675 MHz     |      | 1.5  | 2    |      | Ant          |
|                      | 2515 to 2675 MHz     |      | 1.5  | 2    |      | Tx           |
| Absolute Attenuation | 500 to 960 MHz       | 43   | 60   |      | dB   |              |
|                      | 1166 to 1254 MHz     | 37   | 45   |      | dB   | GPS L2+L5    |
|                      | 1559 to 1605 MHz     | 31   | 37   |      | dB   | GPS L1       |
|                      | 1710 to 1880 MHz     | 30   | 37   |      | dB   | B3 TX/RX     |
|                      | 1880 to 1920 MHz     | 30   | 37   |      | dB   | B39          |
|                      | 1920 to 1995 MHz     | 30   | 38   |      | dB   | B1 Tx/B25 RX |
|                      | 2110 to 2200 MHz     | 30   | 45   |      | dB   | B1 RX/B66 RX |
|                      | 2300 to 2400 MHz     | 40   | 50   |      | dB   | B40          |
|                      | 2402.5 to 2481.5 MHz | 38   | 50   |      | dB   | 2.4G Wifi    |
|                      | 3300 to 3800 MHz     | 35   | 43   |      | dB   | n78          |
|                      | 3800 to 4200 MHz     | 35   | 43   |      | dB   | n77          |
|                      | 4400 to 5000 MHz     | 35   | 42   |      | dB   | n79          |
|                      | 4992 to 5380 MHz     | 36   | 42   |      | dB   | 2f           |
|                      | 5150 to 5850 MHz     | 35   | 43   |      | dB   | 5G Wifi      |

## 8 Transmission coefficients

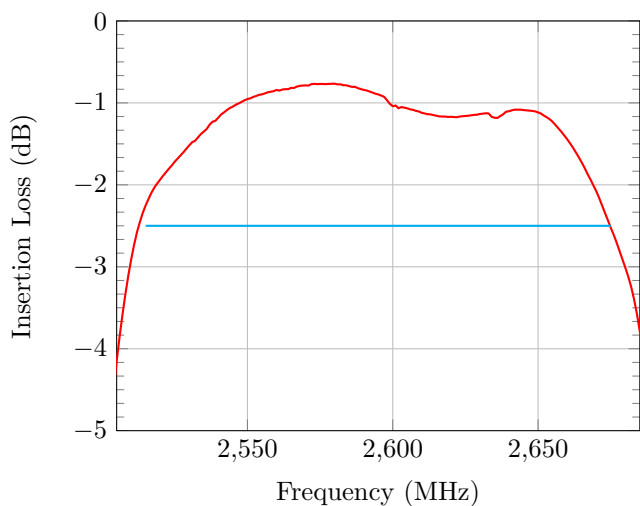


Figure 4: Passband

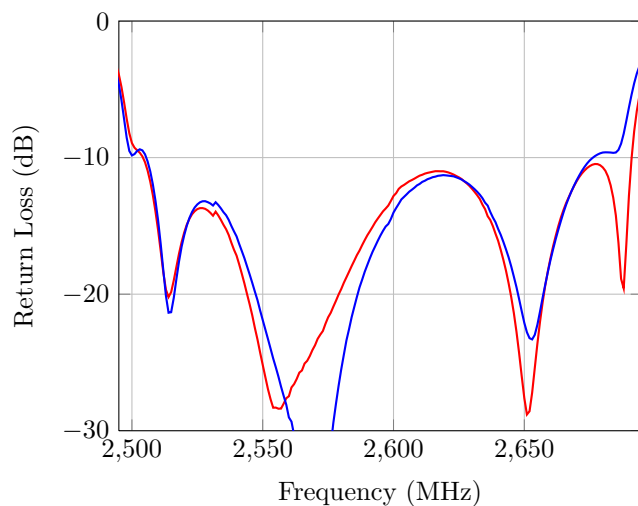


Figure 5: Input/Output Return Loss

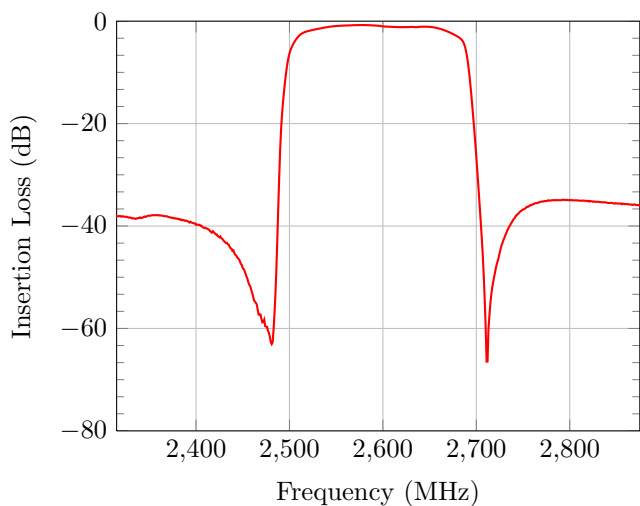


Figure 6: Narrowband

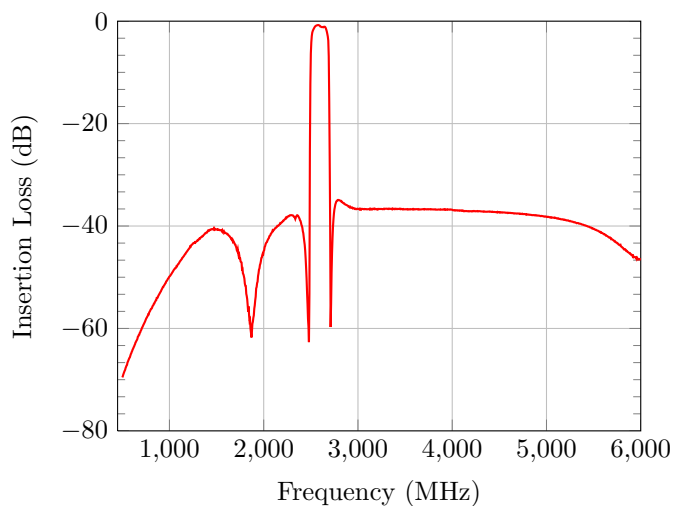
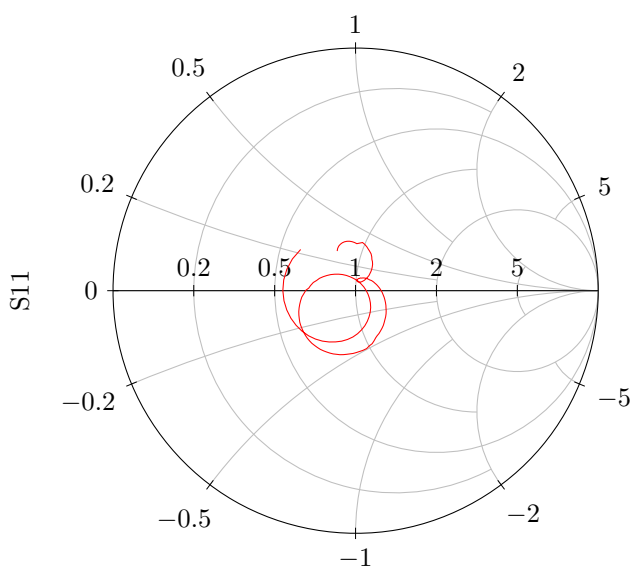
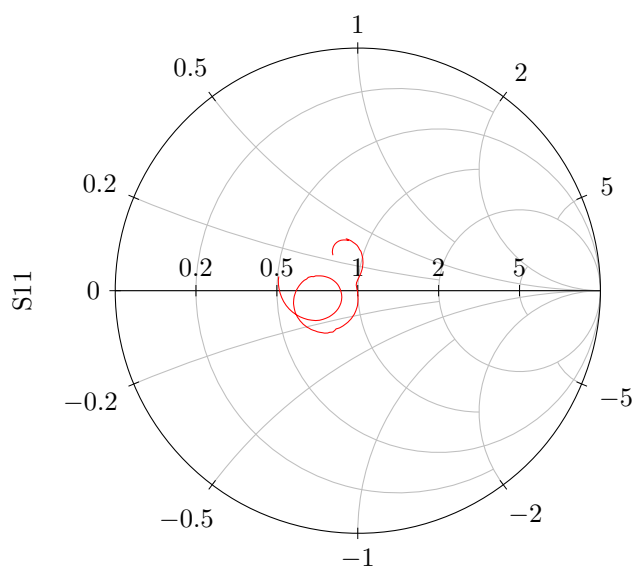


Figure 7: Wideband

Figure 8: Input Smith Chart ( $Z_0 = 50\Omega$ )Figure 9: Output Smith Chart ( $Z_0 = 50\Omega$ )

## 9 Soldering profile

The recommended soldering process is in accordance with IEC 60068-2-58-3rd edit and IPC/JEDECJ-STD-020B.

Table 2: Characteristics of recommended soldering profile for lead-free solder (Sn95.5Ag3.8Cu0.7).

| Parameter                     | Rating                                               |
|-------------------------------|------------------------------------------------------|
| Ramp rate                     | $\geq 3$ K/s                                         |
| Preheat                       | 125 °C to 220 °C, 150 s to 210 s, 0.4 K/s to 1.0 K/s |
| T >220 °C                     | 30 s to 70 s                                         |
| T >230 °C                     | Min. 10 s                                            |
| T >245 °C                     | Max. 20 s                                            |
| T $\leq$ 255 °C               | -                                                    |
| Peak temperature $T_{peak}$   | 220 °C $\pm$ 5°C                                     |
| Wetting temperature $T_{min}$ | 230 °C $\pm$ 5°C for 10s $\pm$ 1s                    |
| Cooling rate                  | $\geq 3$ K/s                                         |
| Soldering temperature T       | Measured at solder pads                              |

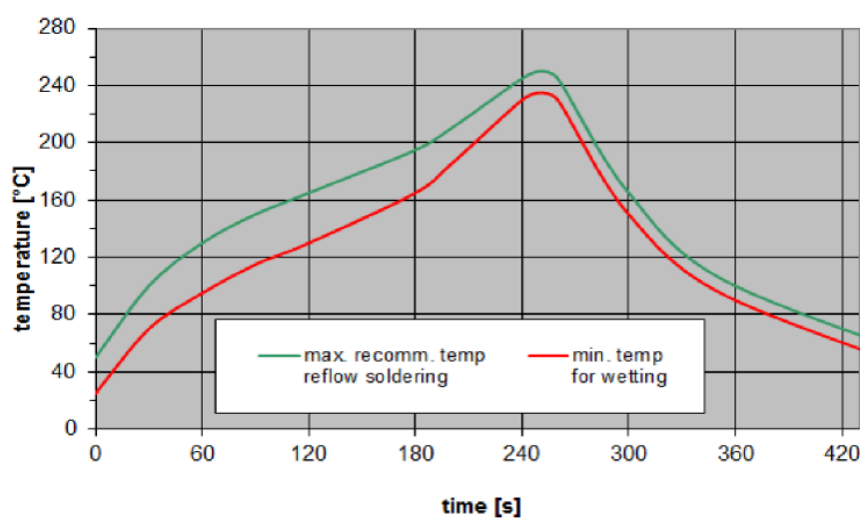


Figure 10: Drawing of reel (Recommended reflow profile for convection and infrared soldering – lead-free solder)

10 Tape and Reel

10.1 Tape

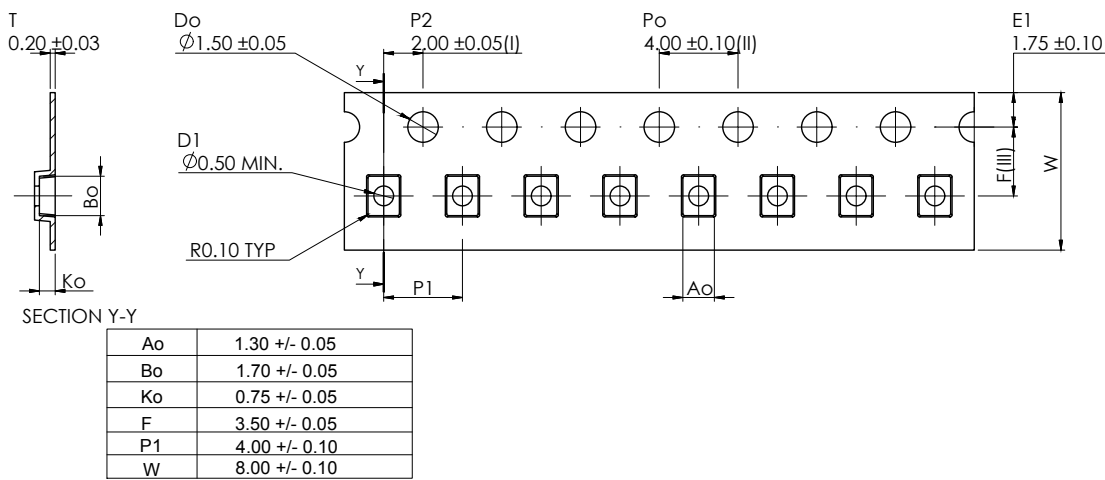


Figure 11: Drawing of tape (first-angle projection) with tape dimensions

10.2 Reel with diameter of 178 mm

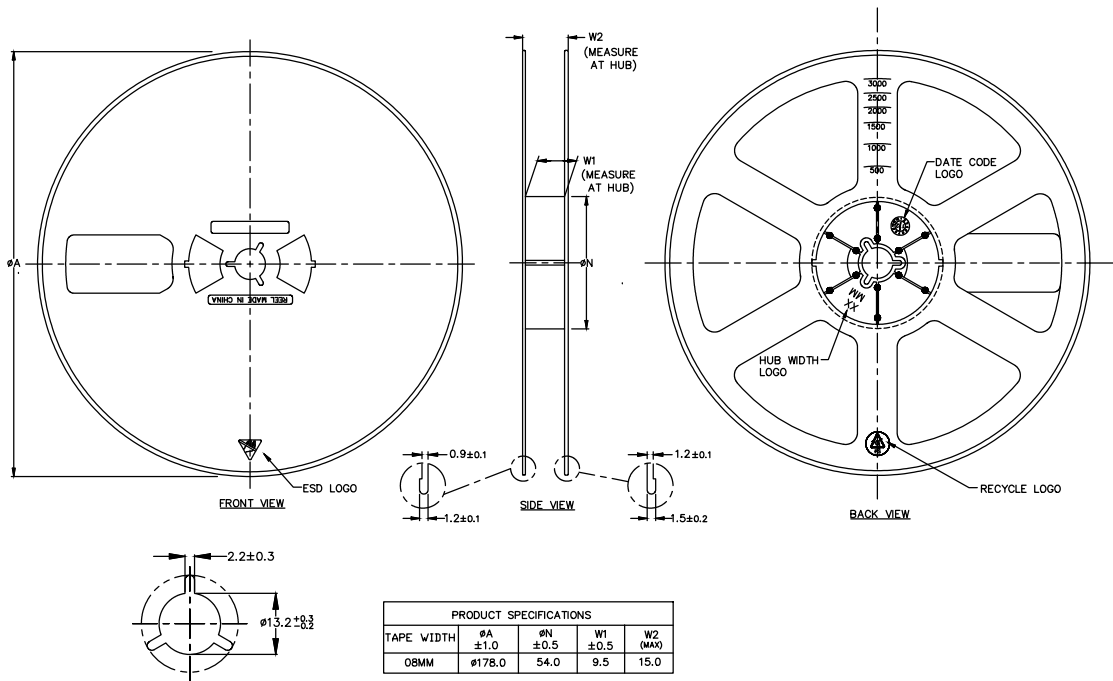


Figure 12: Drawing of reel (first-angle projection) with diameter of 180 mm