

SAW Components

SAW Filter

Cellular / LTE / GPS

Series type: QGSA1G56GASP2

Ordering code: QGSA1G56GASP2

Date: JULY 2021

Version: 2.1



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.

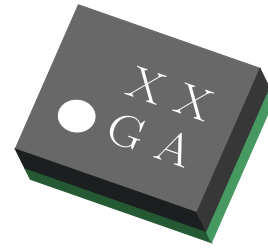
QuantGrav is trademarks of Hubei QuantGrav Technology Co., Ltd., registered in the people's Republic of China.

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

- SAW filter for GPS GLONASS BEIDOU



2 Features

- Package size 1.1 mm x 0.9 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)

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

3 Package

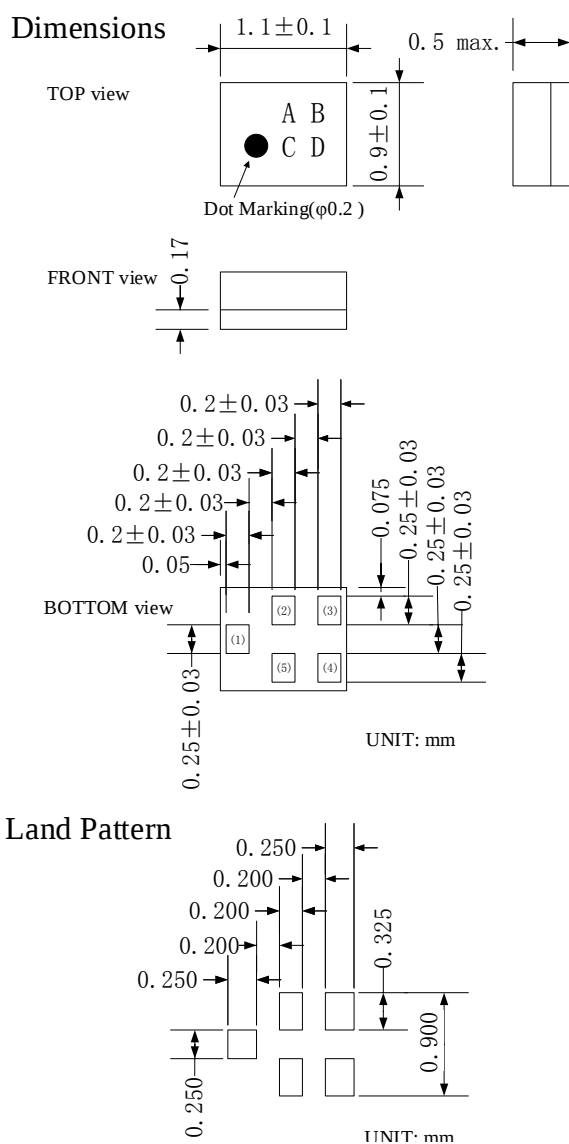


Figure 2: Drawing of package with package height A = 0.6 mm (max.)

4 Pin configuration

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

5 Matching circuit

- $R_1 : 50\Omega$ $R_2 : 50\Omega$

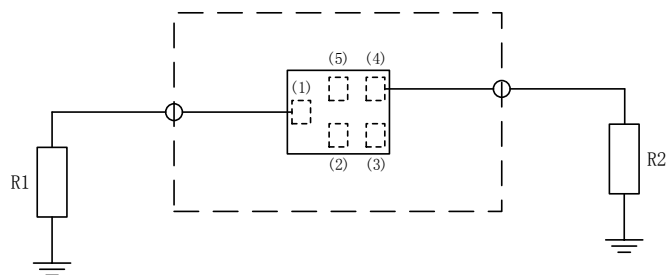


Figure 3: Schematic of matching circuit.

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 $+85^{\circ}C$
DC voltage	$V_{DC} = 3.0V(max)$
Input power ¹	$P_{IN} = +13dBm$ 2000h

¹Input signal shall be applied to TX port.

7 Characteristics

Temperature range for specification $T_{SPEC} = -30^{\circ}C \dots +85^{\circ}C$

Input terminating impedance $Z_{IN} = 50\Omega$

Output terminating impedance $Z_{OUT} = 50\Omega$

Item		min.	typ.	max.	Unit	Note
Center Frequency		1574.4			MHz	
Insertion Loss	1559.05 to 1563.15 MHz		1.4	1.9		
	1573.42 to 1577.42 MHz		0.9	1.2		
	1597.55 to 1605.89 MHz		1.4	2.0		
Ripple Deviation	1559.05 to 1563.15 MHz		0.3	1.3		
	1573.42 to 1577.42 MHz		0.1	1.3		
	1597.55 to 1605.89 MHz		0.5	1.3		
VSWR	1559.05 to 1563.15 MHz		1.3	2.0		
	1573.42 to 1577.42 MHz		1.4	2.0		
	1597.55 to 1605.89 MHz		1.4	2.0		
Absolute Attenuation	777 to 798 MHz	34	38		dB	
	824 to 915 MHz	34	37		dB	
	10 to 925 MHz	34	37		dB	
	925 to 960 MHz	34	37		dB	
	1427 to 1463 MHz	37	41		dB	
	1710 to 1785 MHz	35	38		dB	
	1850 to 1980 MHz	35	39		dB	
	2400 to 2570 MHz	35	42		dB	
	2570 to 3000 MHz	30	44		dB	
	4900 to 5950 MHz	32	35		dB	

8 Transmission coefficients

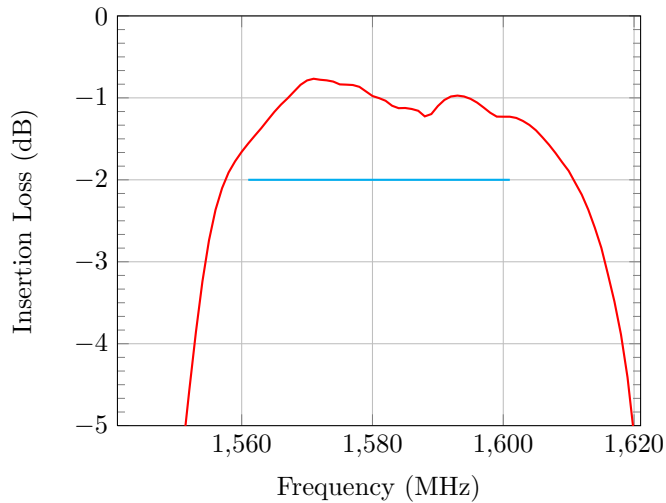


Figure 4: Passband

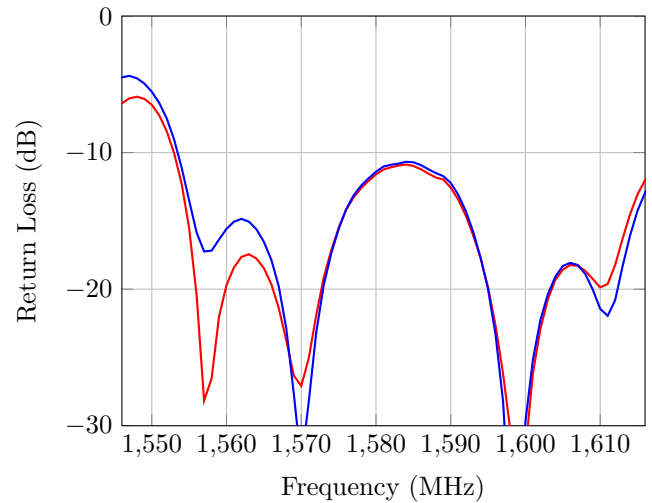


Figure 5: Input/Output Return Loss

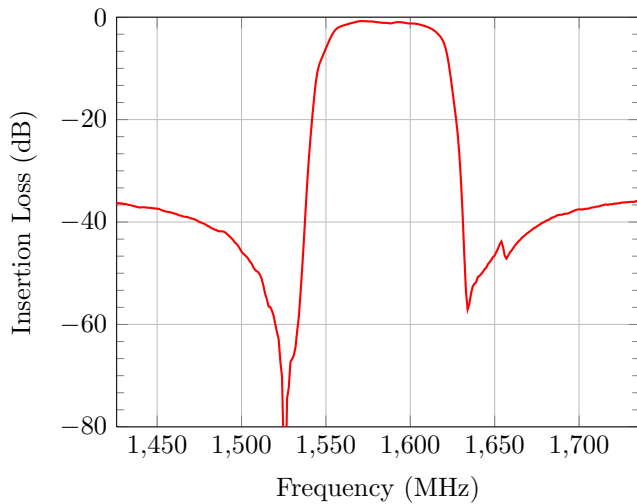


Figure 6: Narrowband

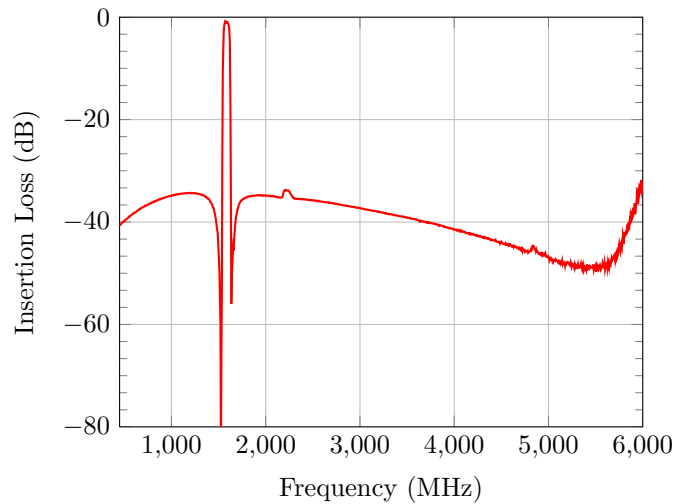
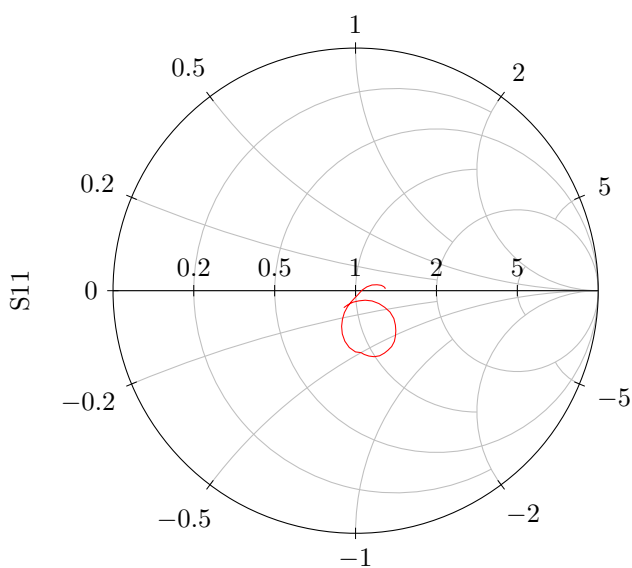
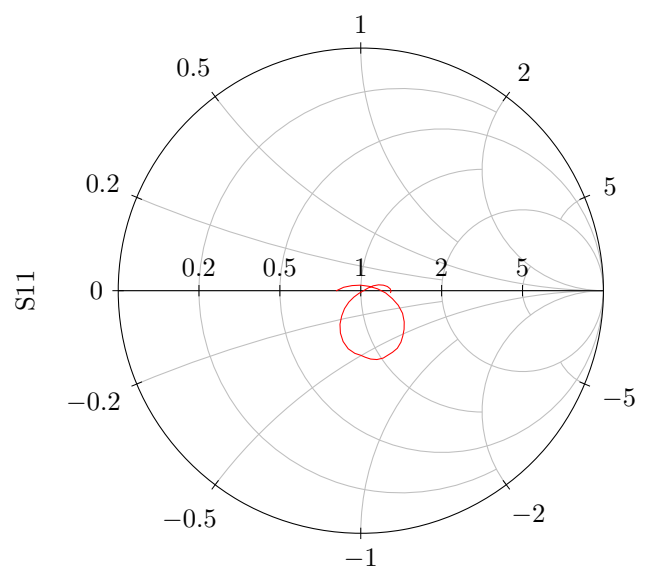


Figure 7: Wideband

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	≥ 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	≥ 3 K/s
Soldering temperature T	Measured at solder pads

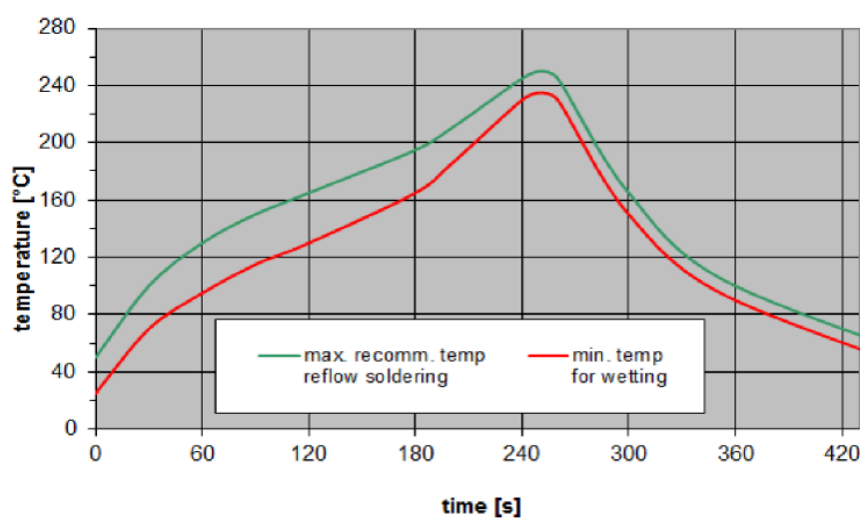


Figure 10: Drawing of reel (Recommended reflow profile for convection and infrared soldering – lead-free solder)

10 Tape and Reel

10.1 Tape

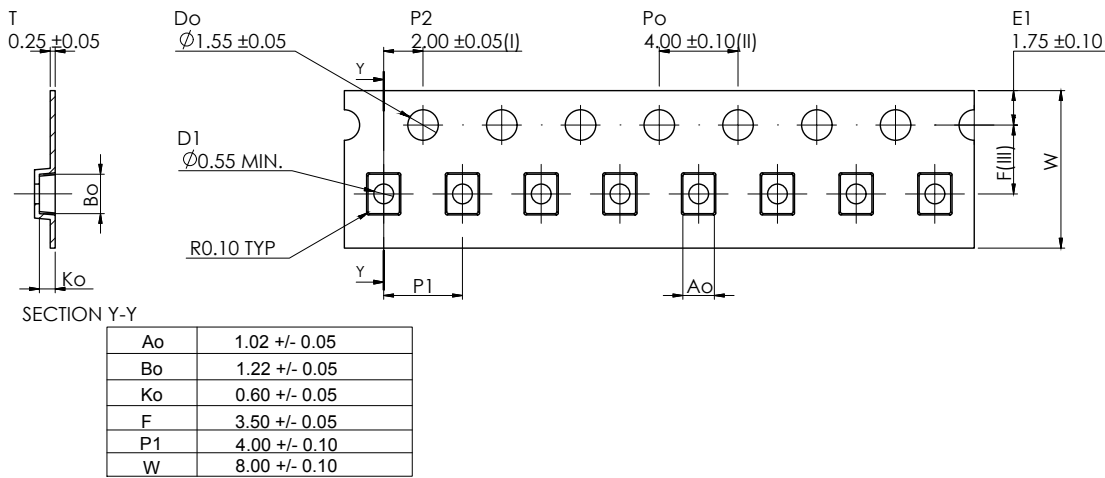


Figure 11: Drawing of tape (first-angle projection) with tape dimensions

10.2 Reel with diameter of 178 mm

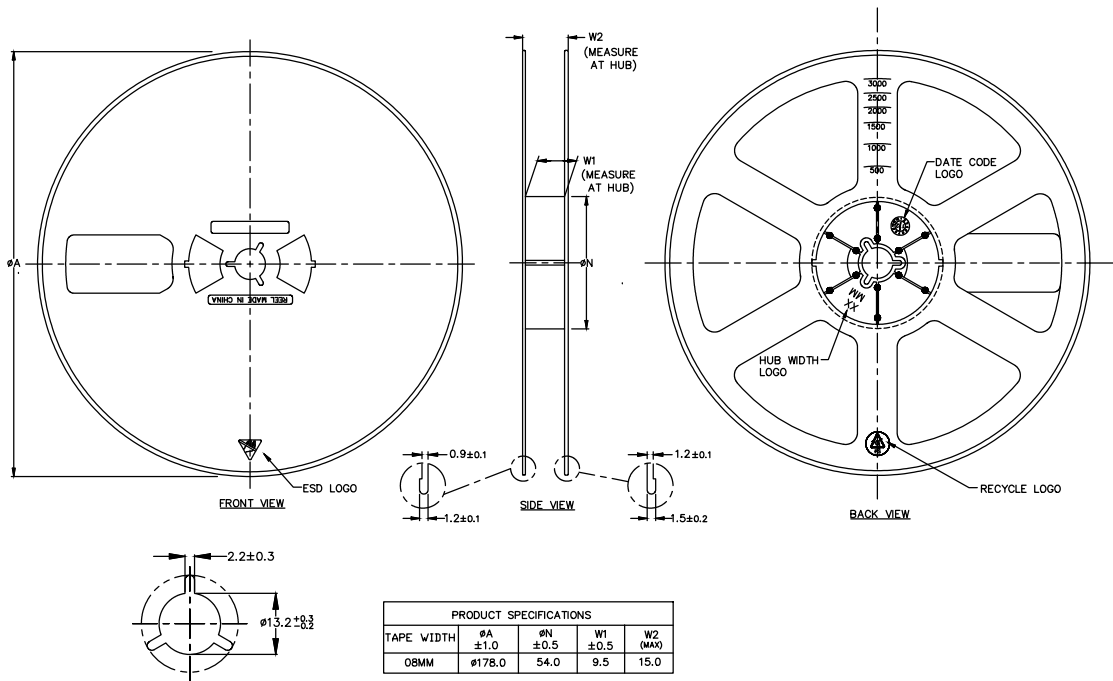


Figure 12: Drawing of reel (first-angle projection) with diameter of 180 mm