QuantGrav Technology Co., Ltd.

BAW Components

BAW Filter

Cellular / 5G / n77-300MHz

Series type: QGBA3G45AASP1

Ordering code: QGBA3G45AASP1

Date: JANUARY 2024

Version: 1.0

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1 Applications

- QGBA3G45AASP1 is a 3.5G band filter, which is designed with Film Bulk Acoustic Resonator (FBAR) technology
- Low insertion attenuation
- Low amplitude ripple

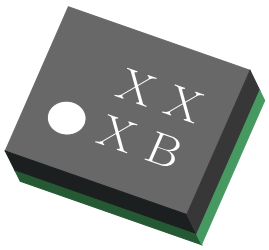


Figure 1: Picture of component with example of product marking.

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

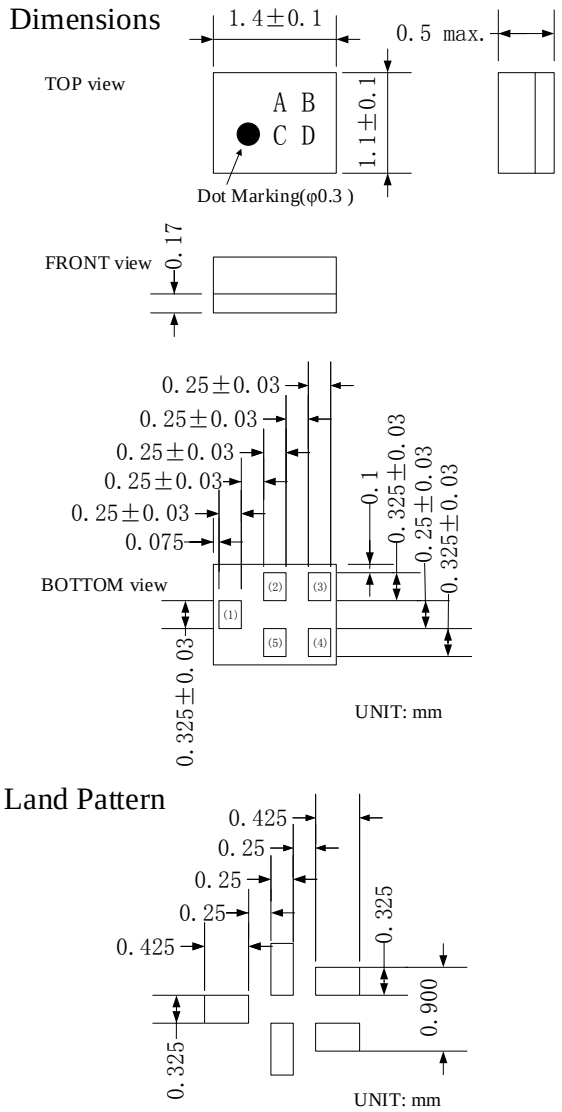


Figure 2: Drawing of package with package height A = 0.6 mm (max.)

4 Pin configuration

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

5 Matching circuit

- R_1 : 50Ω R_2 : 50Ω R_3 : 50Ω
- L_{p1} : 3.9nH L_{p2} : 3.9nH

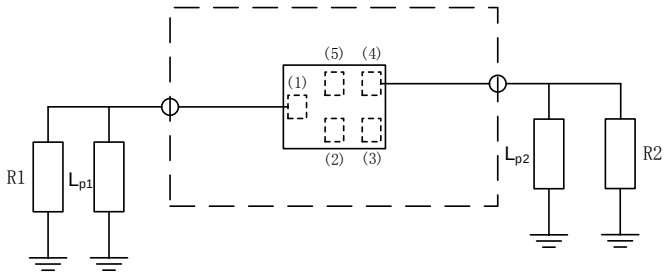


Figure 3: Schematic of matching circuit.

6 Absolute Maximum Ratings

Table 1: Absolute Maximum Ratings of Example Data Sheet

Parameter	**Rating**
Storage temperature	$T_{STG} = -40°C$ to $+125°C$
Operating temperature	$T_{opt} = -40°C$ to $+95°C$
DC voltage	$V_{DC} = 3.0V(max)$
Input power[1]	$P_{IN} = +30dBm$ 5000h $+55°C$

[1]Input signal shall be applied to TX port.

7 Characteristics

Temperature range for specification $T_{SPEC} = -40°C \ldots +95°C$

Input terminating impedance $Z_{IN} = 50\Omega$ *with par.* L_{p1}

Output terminating impedance $Z_{OUT} = 50\Omega$ *with par.* L_{p2}

Item		min.	typ.	max.	Unit	Note
Center Frequency			3450		MHz	
Insertion Loss	3300 to 3600 MHz		1.4	2.8		
Ripple Deviation	3300 to 3600 MHz		0.6	1.2	dB	
VSWR	3300 to 3600 MHz		1.0	1.6		
	3300 to 3600 MHz		1.5	2.2		
Absolute Attenuation	10 to 1800 MHz	37	50		dB	
	1805 to 2170 MHz	35	40		dB	
	2170 to 2403 MHz	35	45		dB	
	2403 to 2483 MHz	35	45		dB	
	3200 to 3250 MHz	33	35		dB	
	3650 to 3800 MHz	20	40		dB	
	3800 to 5925 MHz	25	30		dB	

8 Transmission coefficients

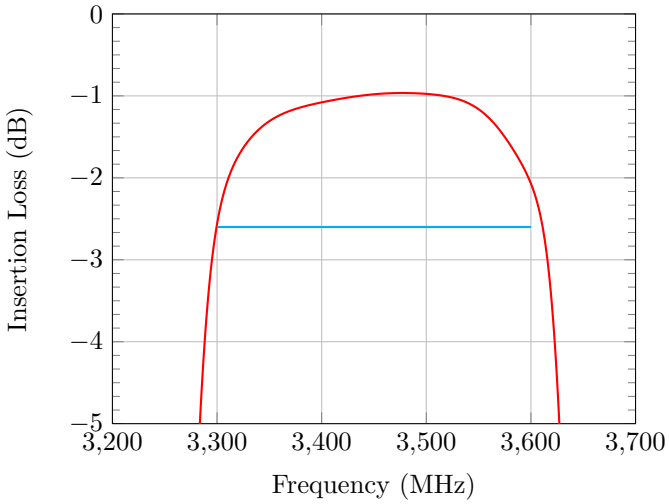


Figure 4: Passband

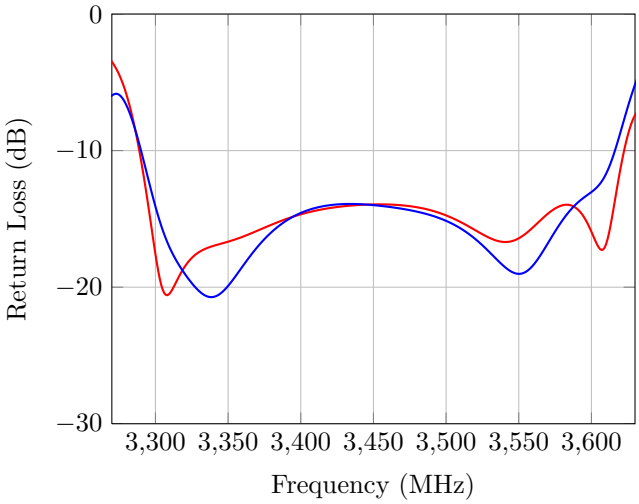


Figure 5: Input/Output Return Loss

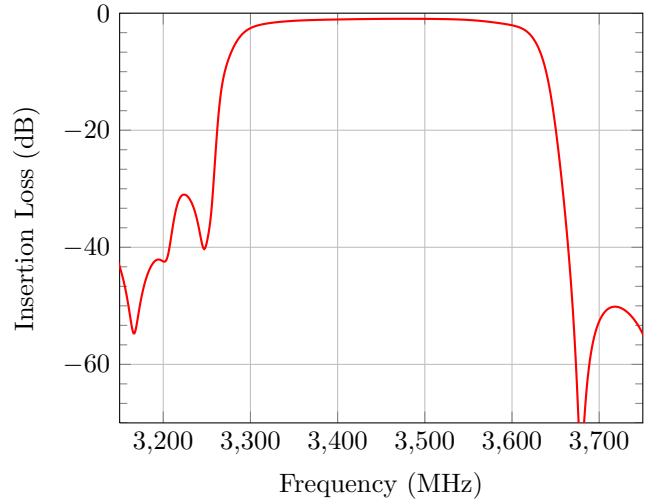


Figure 6: Narrowband

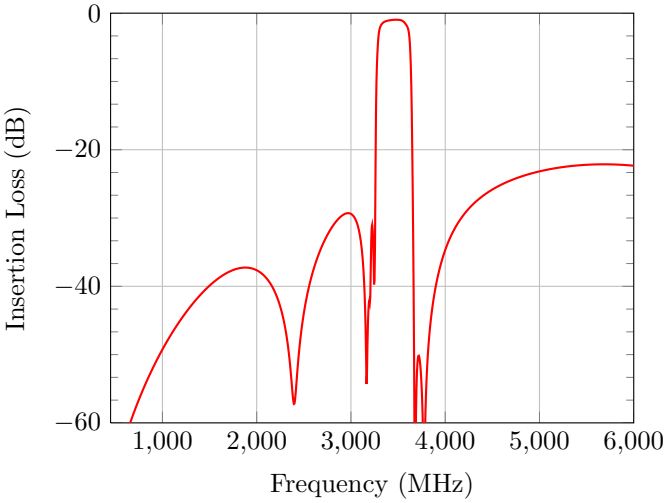


Figure 7: Wideband

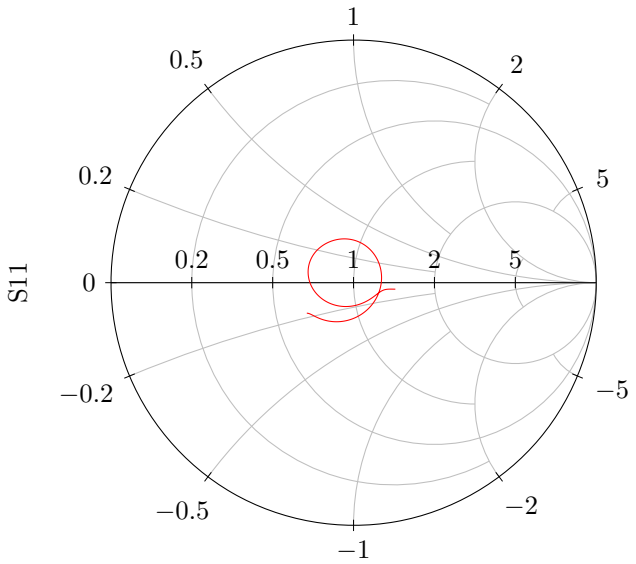


Figure 8: Input Smith Chart ($Z0 = 50\Omega$)

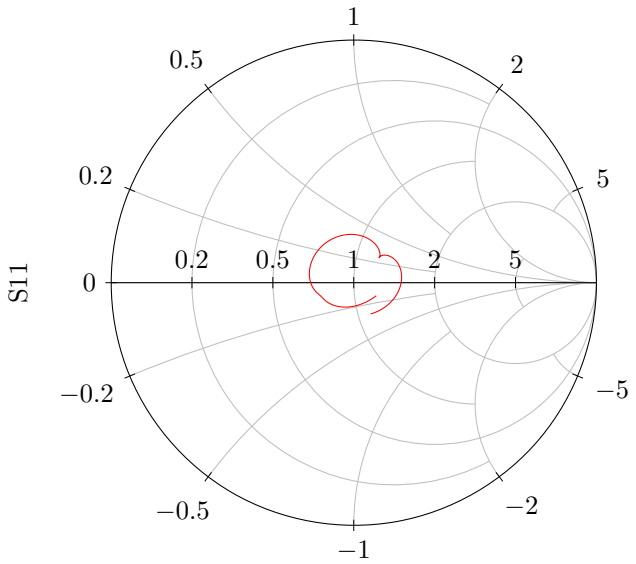


Figure 9: Output Smith Chart ($Z0 = 50\Omega$)

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

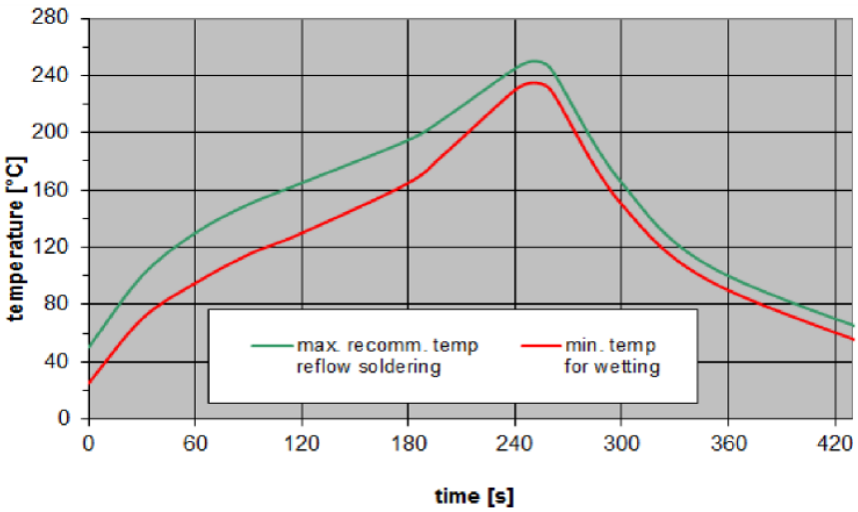
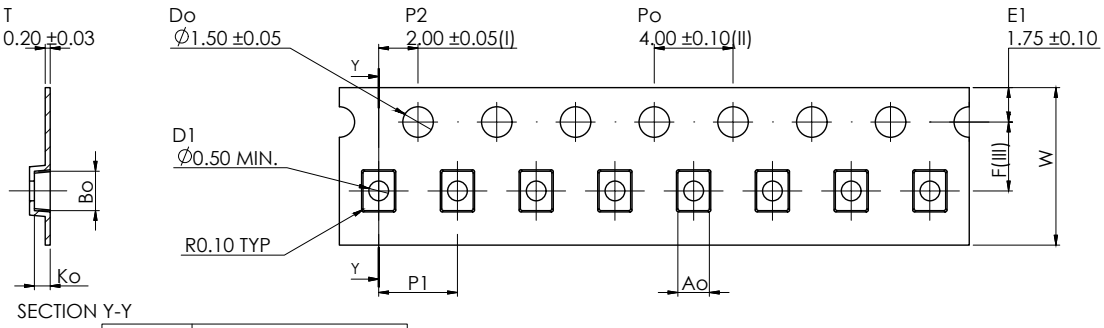


Figure 10: Drawing of reel (Recommended reflow profile for convection and infrared soldering – lead-free solder

10 Tape and Reel

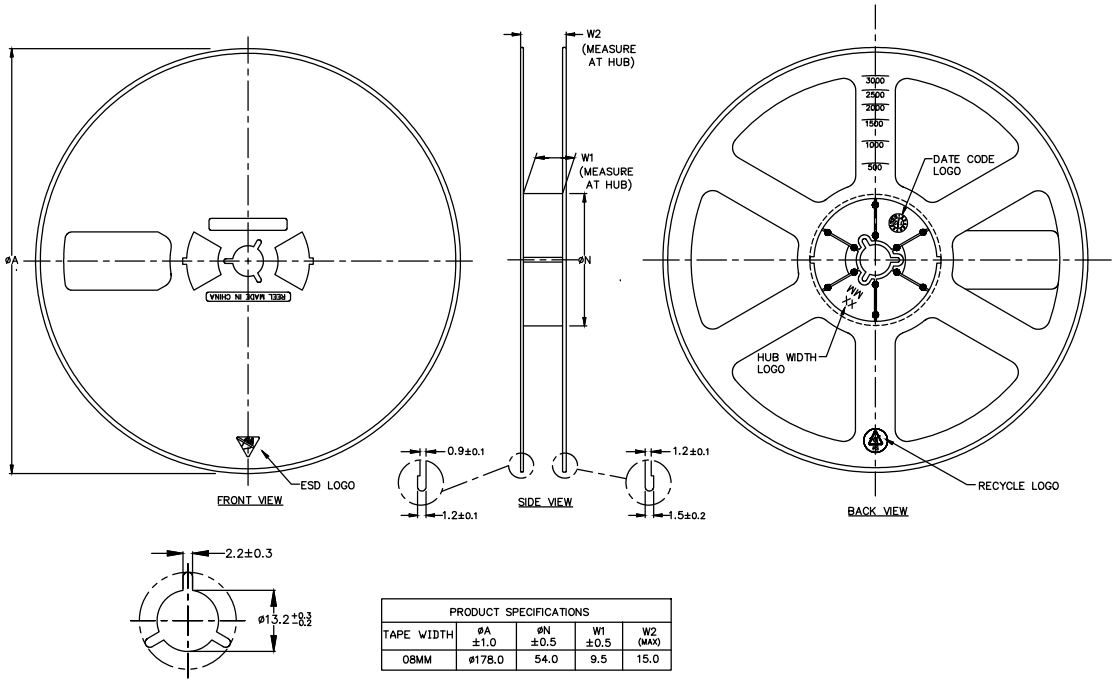
10.1 Tape



Ao	1.30 +/- 0.05
Bo	1.70 +/- 0.05
Ko	0.75 +/- 0.05
F	3.50 +/- 0.05
P1	4.00 +/- 0.10
W	8.00 +/- 0.10

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

10.2 Reel with diameter of 178 mm



PRODUCT SPECIFICATIONS				
TAPE WIDTH	øA ±1.0	øN ±0.5	W1 ±0.5	W2 (MAX)
08MM	ø178.0	54.0	9.5	15.0

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