

SAW Duplexer

for B7 / Unbalanced / LR / 1612

Pinnacle PN: SA0716122G65AT

Key Feature:

✓ Band 7 LTE

✓ Low Insertion Loss

1 Description

SA0716122G65AT is a high-performance Surface Acoustic Wave (SAW) duplexer optimized for FDD LTE Band 7 applications operating in the range of 2500-2570 MHz / 2620-2690 MHz. It is designed to provide low insertion loss in Band 7, good isolation between TX and RX ports, and high rejection in the adjacent cellular bands for mobile devices.

SA0716122G65AT uses advanced Chip Scale Package (CSP) technology and is housed in an industry-standard, 8-pin 1.6 mm x 1.2 mm package with a low profile of 0.6 mm max.

2 Package & Dimensions:

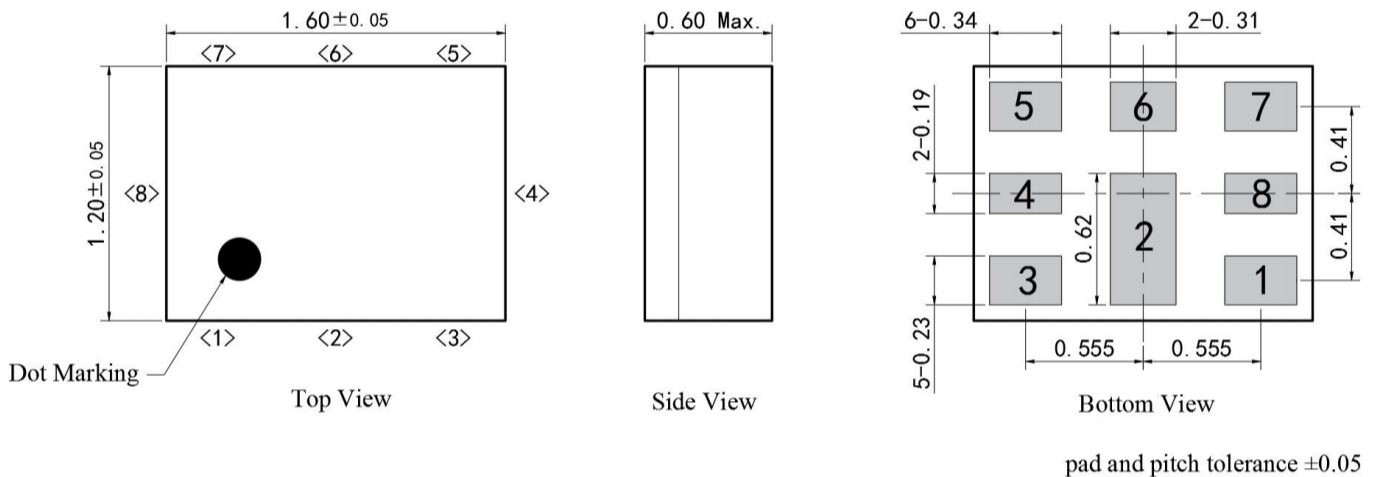


Figure 1: Drawing of Package with each tolerance range

3 Test Circuit

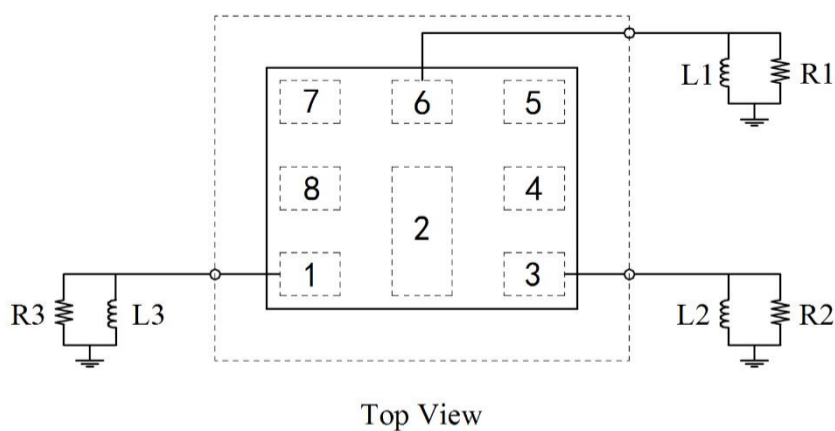


Figure 2: Schematic of matching circuit. External matching components required as below.

R1: 50 Ohm	L1: 3.0nH
R2: 50 Ohm	L2: 8.2nH
R3: 50 Ohm	L3: 7.5nH

4 Pin configuration

- 1 RX
- 3 TX
- 6 Ant
- 2, 4,5,7,8 To be grounded

5 Absolute Maximum Ratings

Parameter	Rating	Unit
Operating Temperature	-30 to +85	°C
Storage Temperature	-40 to +85	°C
Input Power@ input port	Pin=30dBm LTE, QPSK, 5MHz 1RB Ant, Rx Port: Loaded at 50Ω for 5000h@+50 °C	dBm
Approximate weight	2.8	mg
Moisture Sensitivity Levels	3	MSL
Maximum DC Voltage	3	V

6 Electrical Specifications

(At $T_a=25^{\circ}\text{C}$, unless otherwise specified, as measured on the evaluation board of SA0716122G65AT with feedline loss de-embedded.)

TX→ANT						
Parameter	Conditions	Min	Typ.	Max	Unit	Note
Insertion Loss	2500 - 2570 MHz	-	1.8	2.6	dB	
Passband Ripple	2500 - 2570 MHz	-	0.8	1.2	dB	
Attenuation	10 - 718 MHz	48	52	-	dB	
	791 - 821 MHz	45	50	-	dB	
	1226 - 1250 MHz	38	42	-	dB	
	1559 - 1563 MHz	36	41	-	dB	
	1565 - 1586 MHz	36	41	-	dB	
	1597 - 1606 MHz	35	41	-	dB	
	1805 - 1880 MHz	33	37	-	dB	
	1930 - 1990 MHz	33	37	-	dB	
	2110 - 2170 MHz	33	37	-	dB	
	2401 - 2468 MHz	21	34	-	dB _{INT}	WLAN ch1-10 18MHz-BW
	2620 - 2690 MHz	50	54	-	dB	
	5000 - 5140 MHz	30	34	-	dB	
	4900 - 5950 MHz	24	28	-	dB	
VSWR(TX)	2500 - 2570 MHz	-	1.6	1.9	-	
VSWR(ANT)	2500 - 2570 MHz	-	1.6	1.9	-	

ANT→RX						
Parameter	Conditions	Min	Typ.	Max	Unit	Note
Insertion Loss	2620 - 2690 MHz	-	2	2.7	dB	
Passband Ripple	2620 - 2690 MHz	-	0.9	1.4	dB	
Attenuation	10 - 699 MHz	50	56	-	dB	
	703 - 748 MHz	50	55	-	dB	
	814 - 849 MHz	45	54	-	dB	
	832 - 862 MHz	45	52	-	dB	
	880 - 915 MHz	44	50	-	dB	
	1710 - 1785 MHz	32	36	-	dB	
	2401 - 2483 MHz	32	36	-	dB	
	2500 - 2570 MHz	50	56	-	dB	
	4900 - 5950 MHz	18	24	-	dB	
VSWR(ANT)	2620 - 2690 MHz	-	1.9	2.2	-	
VSWR(RX)	2620 - 2690 MHz	-	1.8	2.1	-	

TX→RX						
Parameter	Conditions	Min	Typ.	Max	Unit	Note
Isolation	2500 - 2570 MHz	50	53	-	dB	
	2620 - 2690 MHz	50	53	-	dB	
	5000 - 5140 MHz	46	53	-	dB	

7 Recommended Soldering Profile

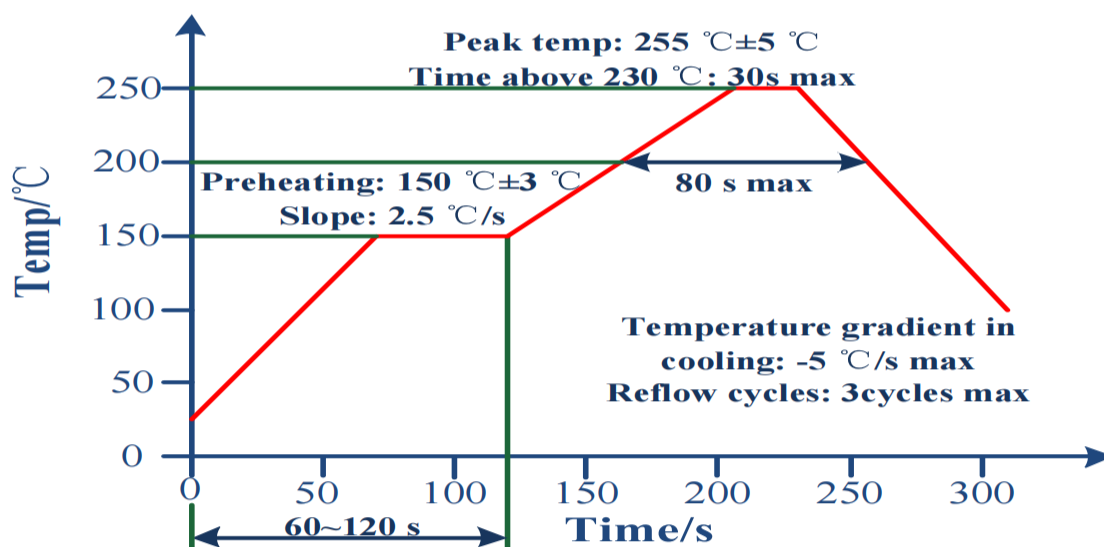


Figure 3 : Recommended Reflow profile for convection and infrared soldering-lead-free solder.

8 Frequency Characteristics



Figure 4: TX→ANT

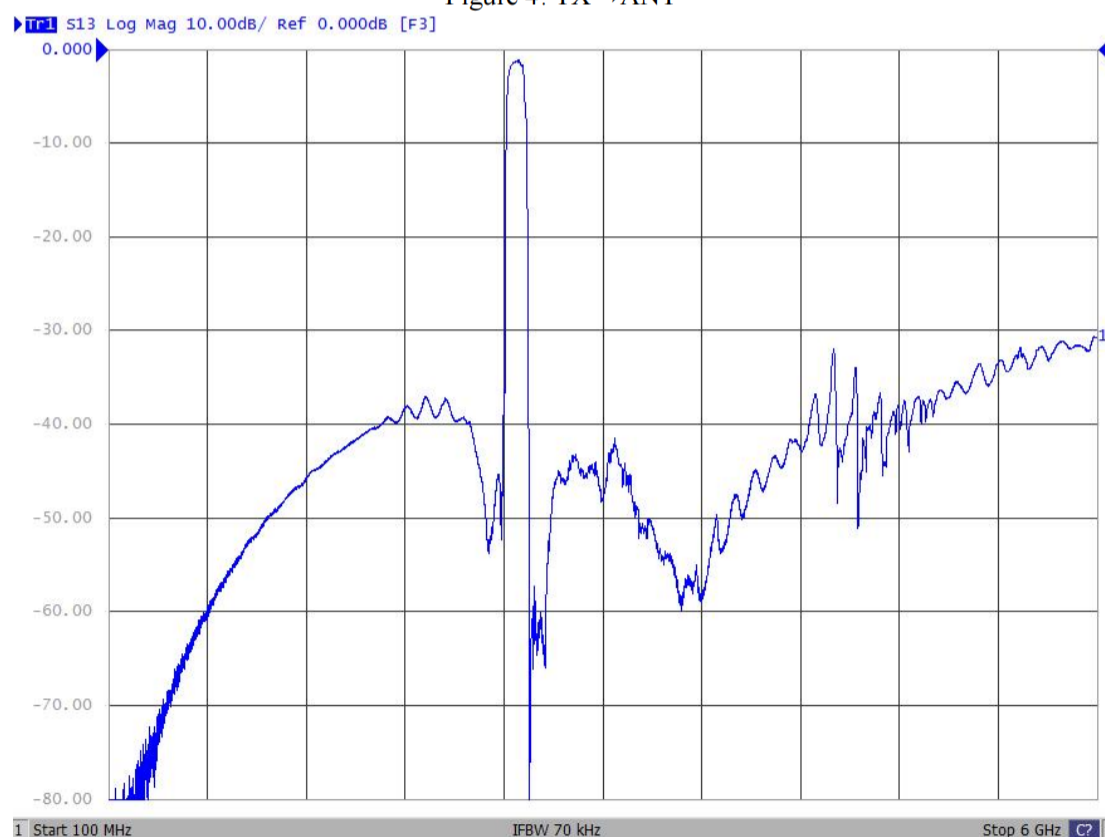


Figure 5: TX→ANT (Wide Band)

▶ Tr1 S11 Smith (R+jX) Scale 1.000U [F3]

>1	2.5000000	GHZ	51.775	Ω	15.376	Ω	978.85	pH
2	2.5350000	GHZ	57.014	Ω	9.3709	Ω	588.33	pH
3	2.5700000	GHZ	50.368	Ω	7.7475	Ω	479.79	pH

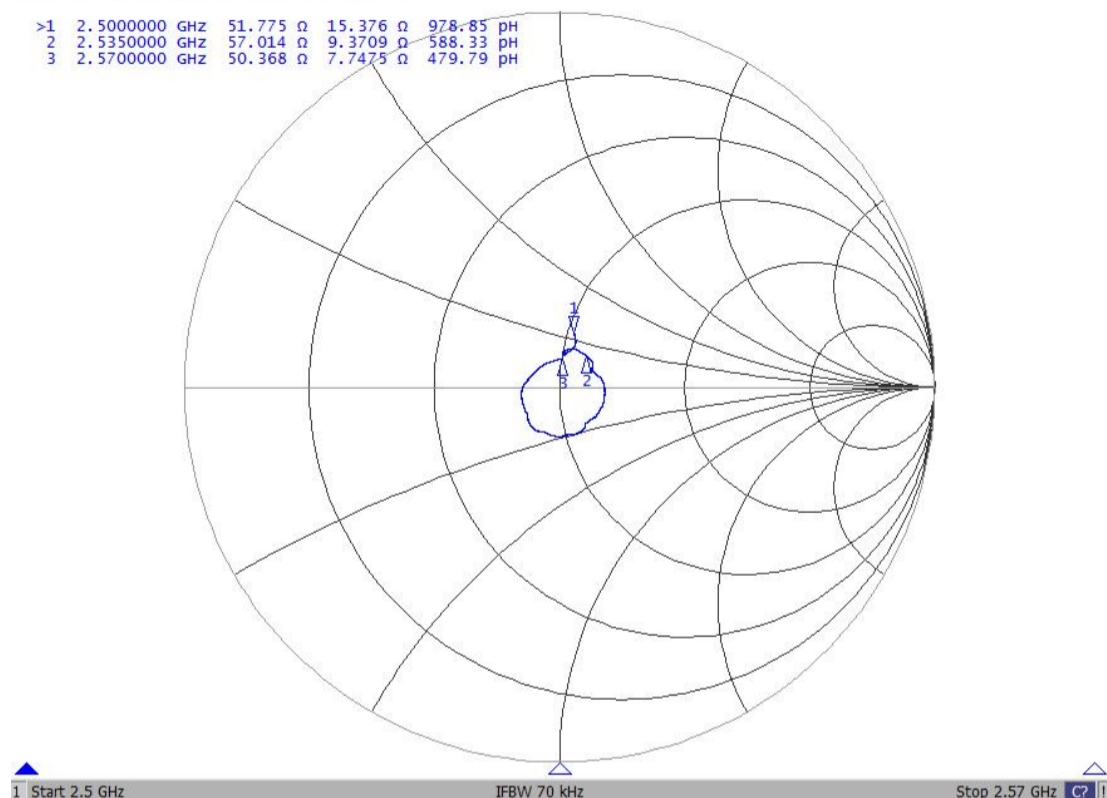


Figure 6: Smith for ANT

▶ Tr1 S33 Smith (R+jX) Scale 1.000U [F3]

>1	2.5000000	GHZ	51.161	Ω	9.6811	Ω	616.32	pH
2	2.5350000	GHZ	42.247	Ω	-6.8061	Ω	9.2246	pF
3	2.5700000	GHZ	44.227	Ω	-14.802	Ω	4.1837	pF

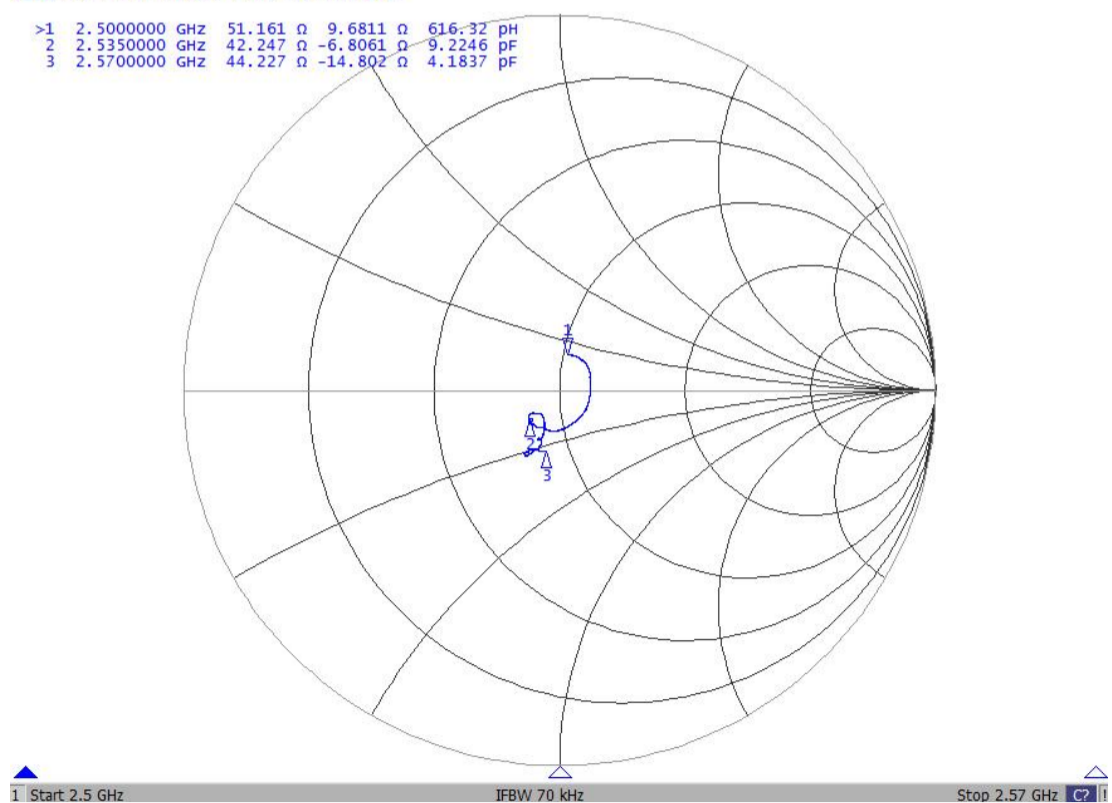


Figure 7: Smith for TX



Figure 8: ANT→RX

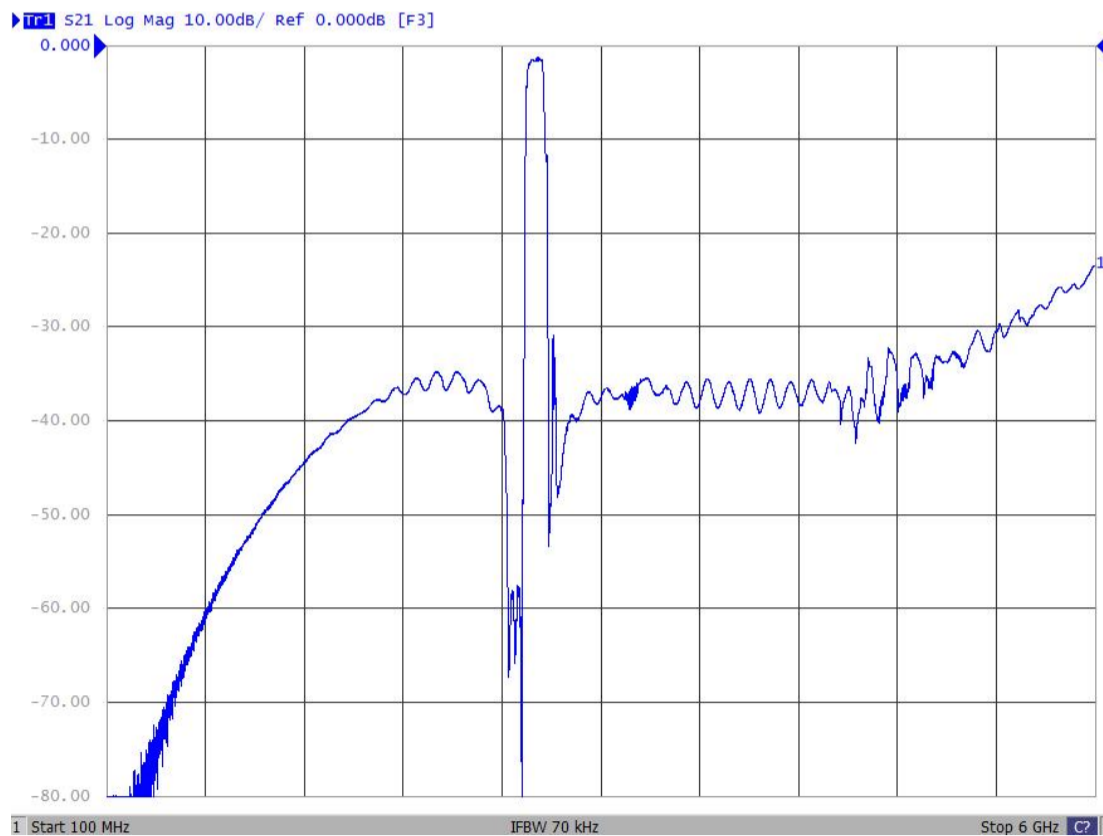


Figure 9: ANT→RX (Wide Band)

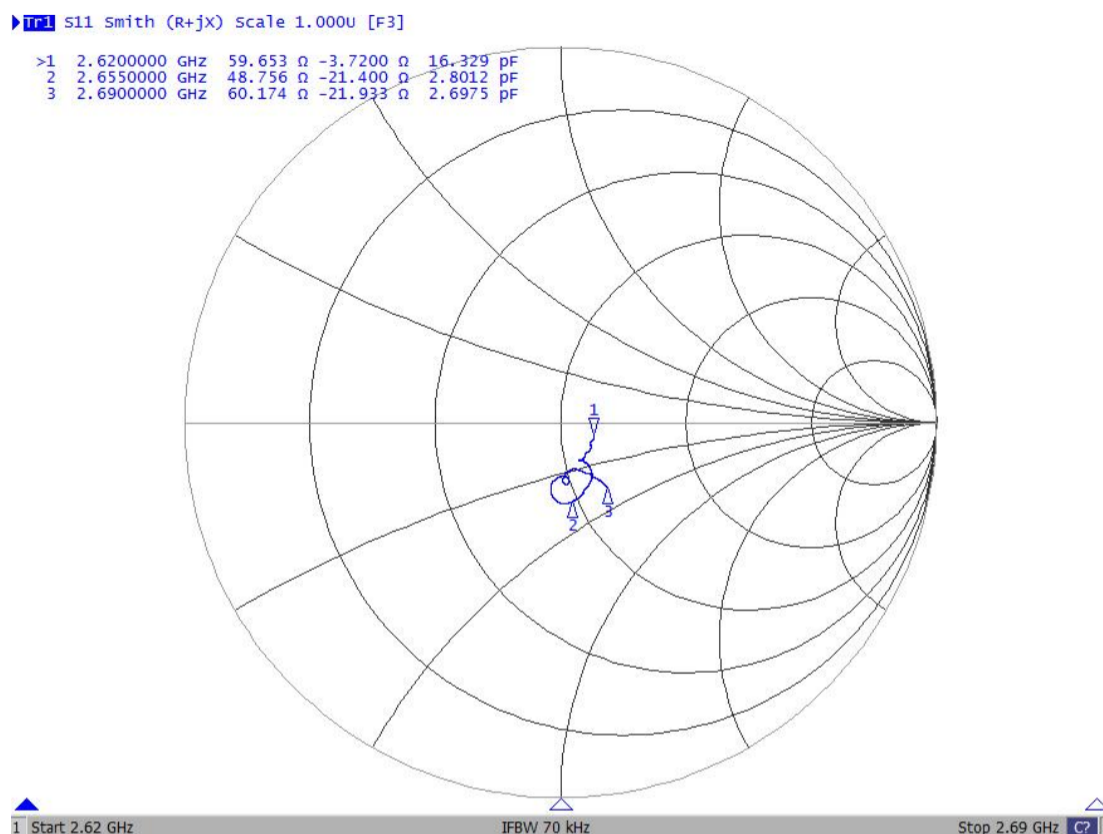


Figure 10 : Smith for ANT

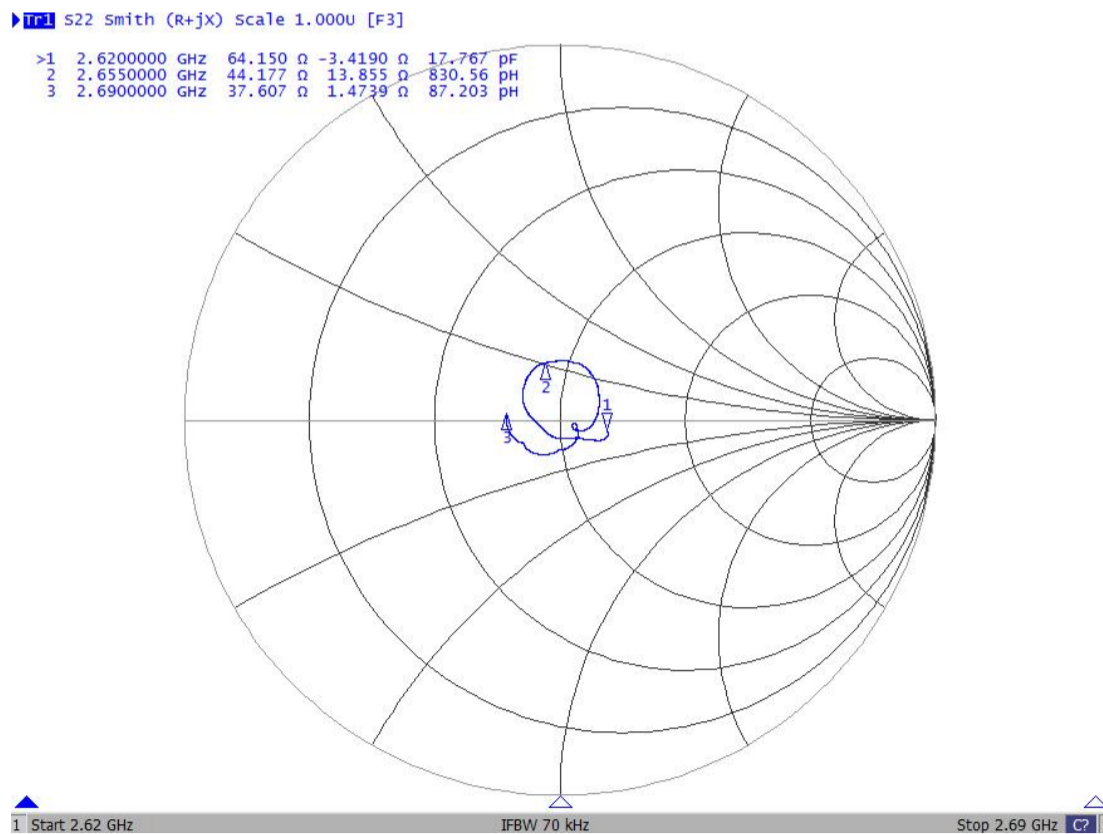


Figure 11: Smith for RX

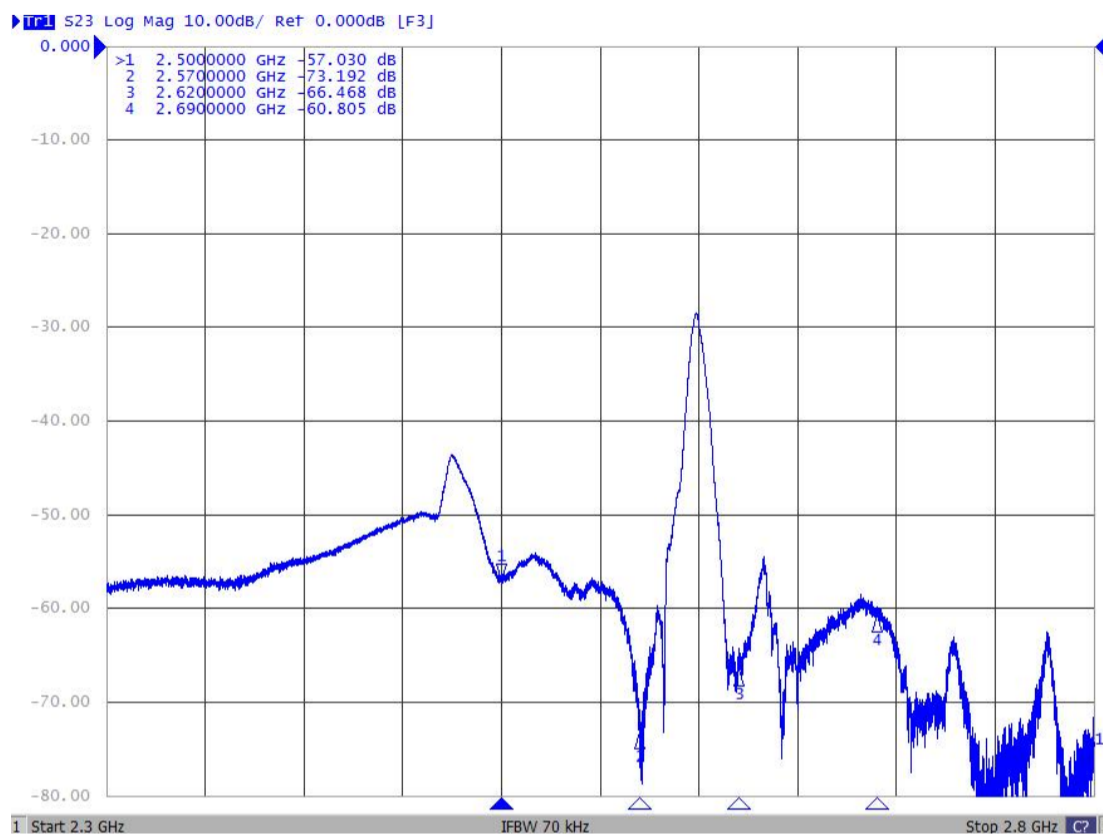


Figure 12:TX→RX

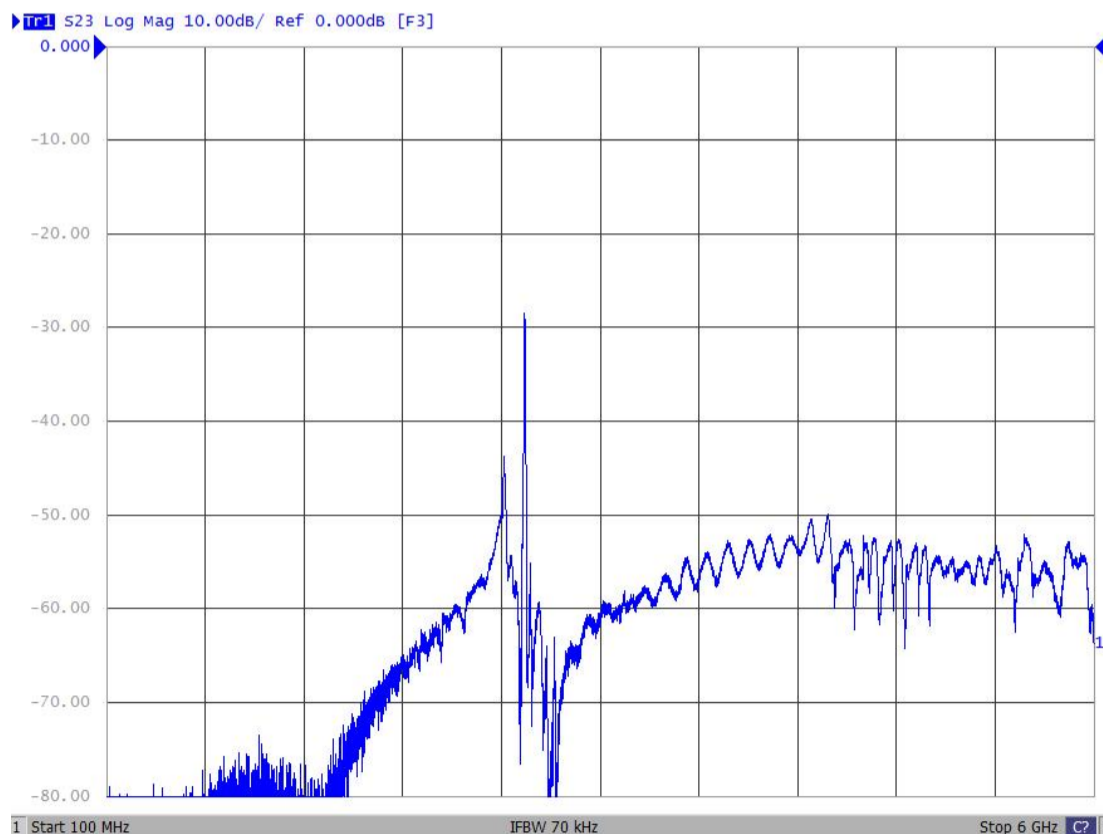


Figure 13:TX→RX (Wide Band)

9 Packaging

9.1 Tape

Tensile Strength of Carrier Tape: Carrier tape 10N or more; Cover tape 5N or more. Packaging quantities: 5000 PCS / Reel.

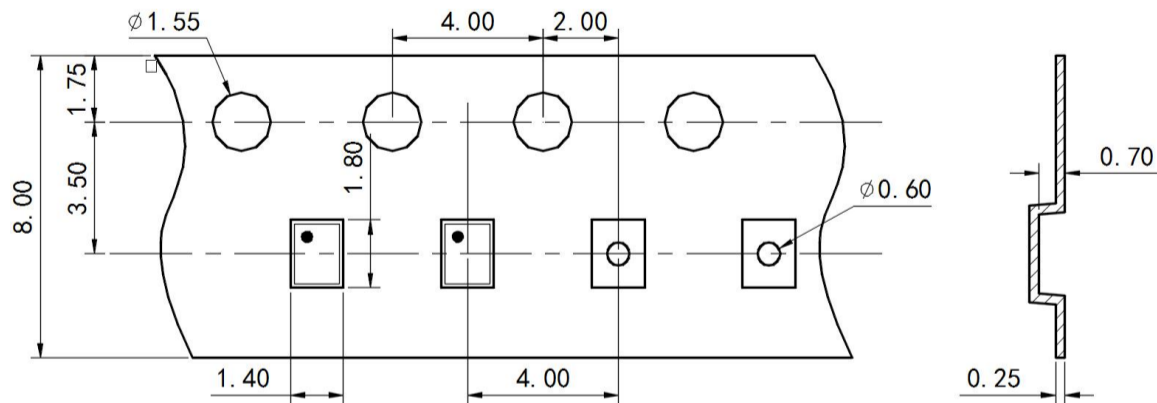


Figure 14: Drawing of tape with tape dimensions according above (mm.).

9.2 Reel with diameter of 178mm

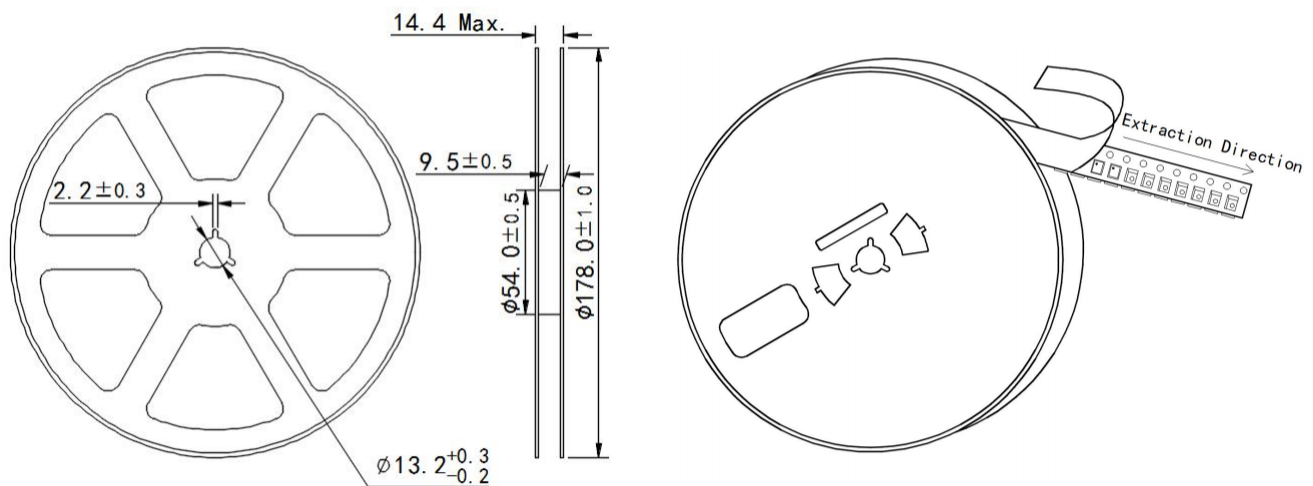


Figure 15: Drawing of reel with diameter of 178mm.