

# **Datasheet of SAW Device**

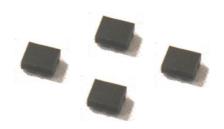
# **SAW Duplexer**

for Band1 / Balanced / LR /1814

Murata PN: SAYEY1G95HA0F0A

### Feature

- > Small size
- > LTE-A



Note: This Murata SAW Component is Consumer grade product and applicable for Cellular phone or similar end devices.

Please also read Important Notice at the end of this document.

Revision G



- Operating temperature : -20 to +85 deg.C - Storage temperature : -40 to +85 deg.C

- Input Power : +29 dBm 5000 h +55 deg.C

- D.C. Volatage between the terminals : 3V (25+/-2 deg.C)

Minimum Resistance between the terminals : 10M ohm
 RoHS compliance : Yes
 ESD (ElectroStatic Discharge) sensitive device

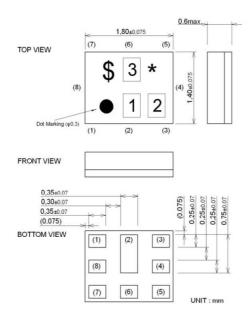
The input power shall be applied to Tx-port within own Tx passband frequency range.



### Package Dimensions & Recommended Land Pattern

unit: mm

#### **Dimensions**



Marking: Laser Printing

\*: Month code

\$: Date code

1:4

2: U

3:A

#### **Terminal Number**

(6): Ant

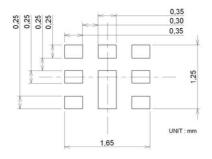
(3):TX

(1)(8):RX

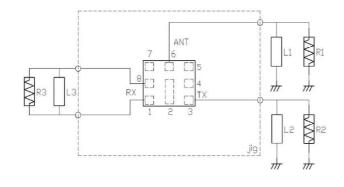
Others: GND

Notice) Please refer to Measurement Circuit for Port information in detail.

#### **Land Pattern**



# Measurement Circuit (Top Thru View)



R1 : 50 ohm	L1 :2.1nH(Ideal inductor)
	:2.5nH(LQP03TN2N5)
	<reference></reference>
R2 : 50 ohm	L2 :8nH(Ideal inductor)
R3 : 100 ohm	L3 :10nH(Ideal inductor)



## Electrical Characteristic < TX→ANT. >

$TX \rightarrow ANT$ .				Characteristics (-20 to +85 deg.C)			Unit	Note	
				min.	typ.*	max.			
Center Frequency						1950		MHz	
Insertion Loss		to	1980.	MHz		1.9	2.0	dB	
		to	1980.	MHz		1.9	2.0	dB	+23 to +27deg.C
		to	1977.6	MHz		1.8	1.9	dB <sub>INT</sub>	Any 3.84MHz
		to	1977.6	MHz		1.8	1.9	dB <sub>INT</sub>	+23 to +27deg.C, Any 3.84MHz
Ripple Deviation		to	1980.	MHz		0.6	1.2	dB	77
VSWR		to	1980.	MHz		1.4	2.0		TX
Absolute Attenuation		to	1980. 1574.	MHz MHz	30	1.4 40	2.0	dB	ANT.
Absolute Attenuation		to to	494.	MHz	44	63		dB	
		to	830.	MHz	30	51		dB	B18Tx
		to	849.	MHz	30	50		dB	B5Tx
	830.	to	845.	MHz	30	50		dB	B19Tx
	843.	to	894.	MHz	44	49		dB	BIOIX
		to	915.	MHz	30	48		dB	В8Тх
		to	960.	MHz	42	47		dB	
		to	1250.	MHz	37	42		dB	GPS L2
		to	1462.9	MHz	30	40		dB	B21Tx
		to	1496.	MHz	38	40		dB	B11Rx
		to	1511.	MHz	37	40		dB	B21Rx
	1559.	to	1563.	MHz	38	40		dB	Compass
	1565.42	to	1573.37	MHz	38	40		dB	Wideband GPS, lower side lobe
		to	1577.46	MHz	38	40		dB	Regular GPS, main lobe
	1577.46	to	1585.42	MHz	38	40		dB	Wideband GPS, upper side lobe
	1597.55		1605.88	MHz	38	41		dB	GLONASS
		to	1805.	MHz	25	37		dB	
		to	1865.	MHz	25	35		dB	
		to	1880.	MHz	10	34		dB	
		to	1895.	MHz	3.9	15.0		dB	
		to	2025.	MHz	4.7	28.0		dB	1.00 to 1.07do # C
		to	2025. 2170.	MHz MHz	20 44	28 49		dB dB	+23 to +27deg.C
		to	2500.	MHz	32	36		dB	2.4GHzISM
		to to	2690.	MHz	28	33		dB	2.4011210101
		to	3960.	MHz	23	29		dB	2f
		to	5950.	MHz	16	22		dB	3f
		to	5845.	MHz	17	22		dB	
		to	7920.	MHz	15	26		dB	4f
		to	9900.	MHz	15	25		dB	5f
	44500	to	11880.	MHz	15	25		dB	6f
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<sup>\*</sup> Typical value at 25±2deg.C



### Electrical Characteristic < ANT.→RX >

Electrical Characteristic < ANT					Cha	racteri	stics		
ANT. → RX					( -20 to +85 deg.C )			Unit	Note
0 / 5					min.	typ.*	max.	N AL I	
Center Frequency	2110		2470	NAL I		2140	2.4	MHz dB	
Insertion Loss	2110.	to	2170.	MHz		1.8	2.1		1.02 to 1.07do # C
	2110.	to	2170.	MHz		1.8	2.0	dB	+23 to +27deg.C
	2112.4	to	2167.6	MHz		1.8	2.1	dB <sub>INT</sub>	Any 3.84MHz
	2112.4	to	2167.6	MHz		1.8	2.0	dB <sub>INT</sub>	+23 to +27deg.C, Any 3.84MHz
Ripple Deviation	2110.	to	2170.	MHz		0.5	1.0	dB	
VSWR	2110.	to	2170.	MHz		1.5	2.0		RX
	2110.	to	2170.	MHz		1.5	2.0		ANT.
Amplitude Balance	2110.	to	2170.	MHz	-1.0	-0.3	1.0	dB	
Phase Balance	2110.	to	2170.	MHz	170	174	190	deg.	
Absolute Attenuation	1.	to	1920.	MHz	27	32		dB	
			190.	MHz	40	124		dB	Rx-Tx
	718.	to	748.	MHz	50	83		dB	B28Tx
	814.	to	849.	MHz	40	81		dB	B26Tx
	880.		915.	MHz	40	76		dB	B8Tx
	1427.	to	1447.		40	49		dВ	B11Tx
		to		MHz					
	1447.	to	1463.	MHz	40	49		dB	B21Tx
	1730.	to	1790.	MHz	40	45		dB	2Tx-Rx
	1710.	to	1785.	MHz	40	45		dB	ВЗТх
	1920.	to	1980.	MHz	45	59		dB	Tx
	1980.	to	2015.	MHz	15	50		dB	
	2015.	to	2050.	MHz	18	29		dB	(Rx+Tx)/2
	2050.	to	2075.	MHz	3.9	9.0		dB	,
	2255.	to	6130.	MHz	28	33		dB	
	2400.	to	2500.	MHz	28	34		dB	2.4GHzISM
	2500.		2570.	MHz	38	43		dB	B7Tx
	4030.	to	4150.		40	52		dB	Rx+Tx
		to		MHz					II.
	4220.	to	4340.	MHz	40	51		dB	2f
	4340.	to	13025.	MHz	15	39		dB	
	4900.	to	5950.	MHz	34	48		dB	5GHzISM
	5950.	to	6130.	MHz	30	47		dB	Rx+2Tx
	6130.	to	6330.	MHz	30	47		dB	
	6330.	to	6510.	MHz	30	45		dB	3f
	8440.	to	8680.	MHz	20	41		dB	4f
	10550.	to	10850.	MHz	20	41		dB	5f
	12660.	to	13020.	MHz	15	41		dB	l6f
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<sup>\*</sup> Typical value at 25±2deg.C



### Electrical Characteristic < TX→RX. >

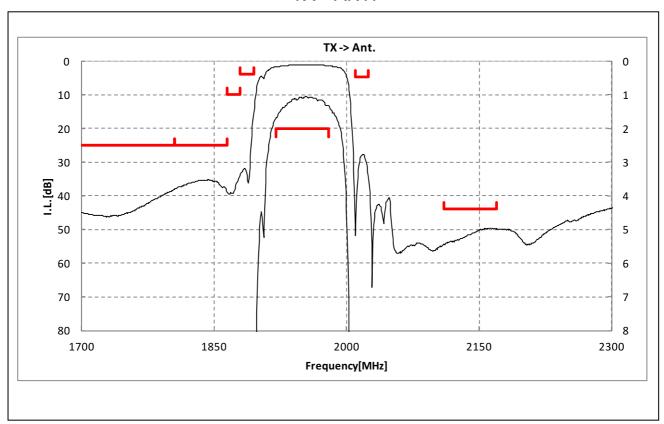
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$TX \to RX$			(-20	racteri to +85 d	SUCS	l lmit	Note	
	IV → KY			min.		max.	Unit	Note
Isolation				min.	ιyp.	шах.		<u> </u>
Differential Mode	1574. to	1577.	MHz	40	70		dB	
Dillororitial Wode	1920. to	1980.	MHz	55	58		dB	
	1922.4 to	1977.6	MHz	55	58		dB <sub>INT</sub>	Any 3.84MHz
	2110. to	2170.	MHz	52	59		dB	
	2112.4 to	2167.6	MHz	52	60		dB <sub>INT</sub>	Any 3.84MHz
	3830. to	3970.	MHz	30	58		dB	
	5750. to	5950.	MHz	30	56		dB	
Common Mode	1920. to	1980. 1977.6	MHz MHz	48 48	51 51		dB dB <sub>INT</sub>	Any 2 94ML
	1922.4 to	1977.0	IVITIZ	40	51		UDINT	Any 3.84MHz
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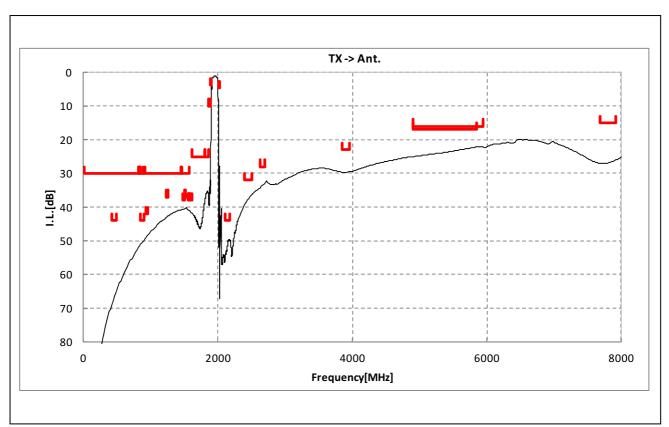
<sup>\*</sup> Typical value at 25±2deg.C



### **Electrical Characteristic**

< TX→ANT. >

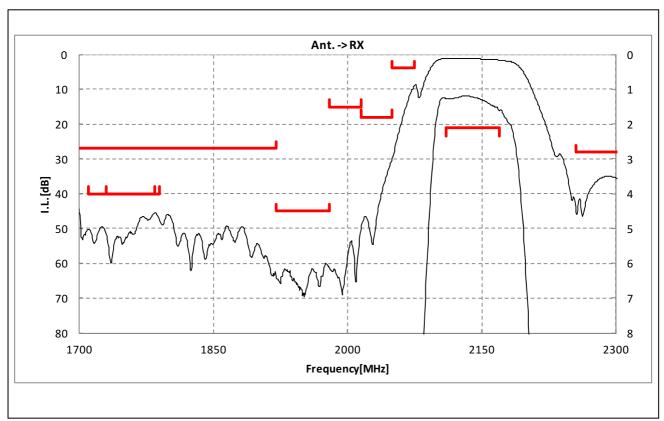


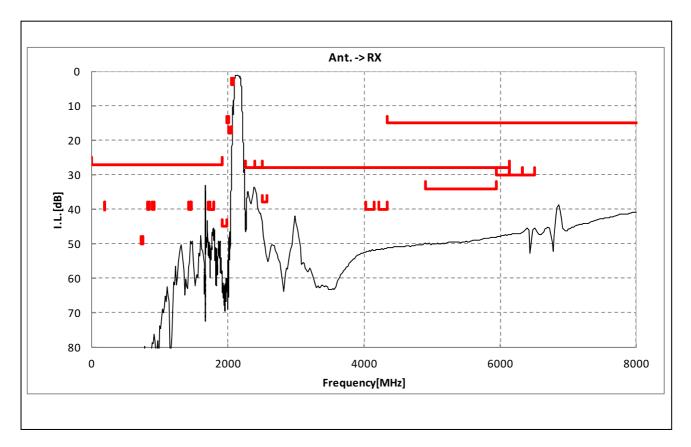




### **Electrical Characteristic**

### < ANT.→RX >

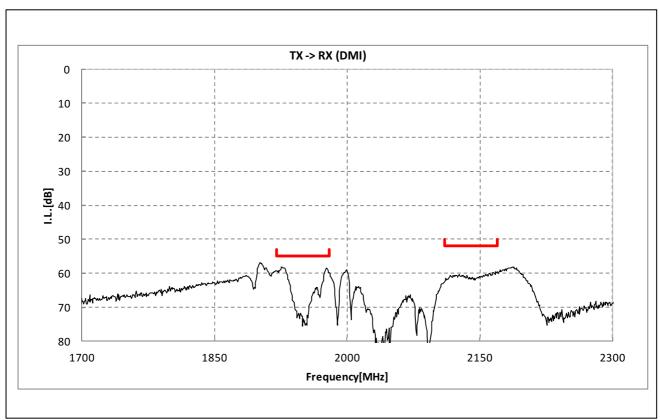


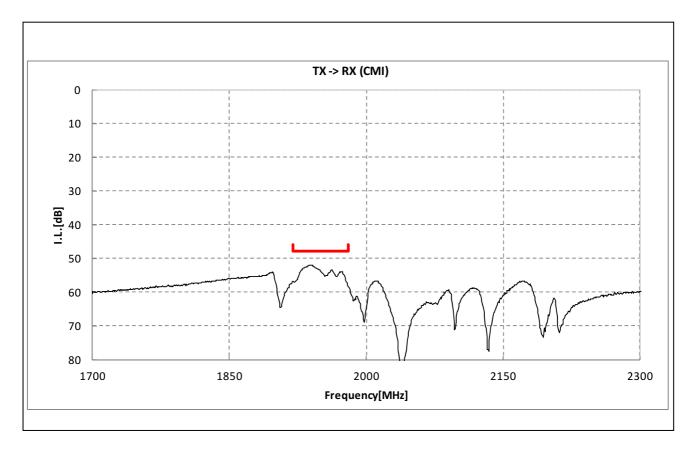




### **Electrical Characteristic**

< TX→RX. >

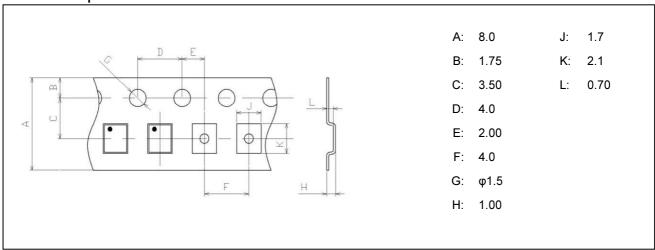




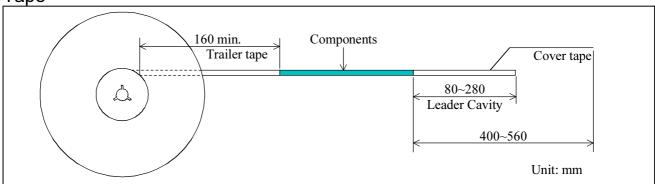


### Dimensions of Tape & Reel unit: mm

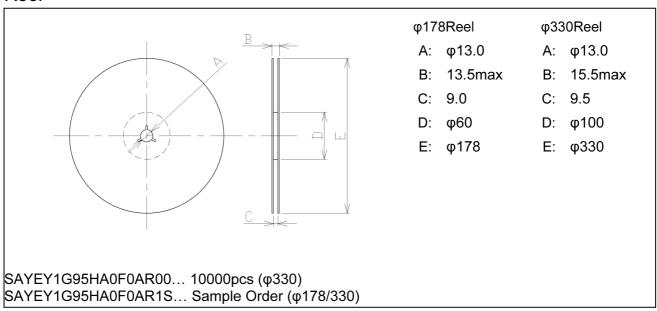
### **Carrier Tape**



#### Tape



#### Reel





### Important Notice (1/2)

#### PLEASE READ THIS NOTICE BEFORE USING OUR PRODUCTS.

Please make sure that your product has been evaluated and confirmed from the aspect of the fitness for the specifications of our product specified in the front page of this product specifications (the "Product" or "Products") when our Product is mounted to your product. All the items and parameters in this product specification/datasheet/catalog have been prescribed on the premise that our Product is used for the purpose, under the condition and in the environment specified in this specification. You are requested not to use our Product deviating from the condition and the environment specified in this specification.

Please note that the only warranty that we provide regarding the Product is its conformance to the specifications provided herein. Accordingly, we shall not be responsible for any defects in products or equipment incorporating such Products, which are caused under the conditions other than those specified in this specification.

WE HEREBY DISCLAIMS ALL OTHER WARRANTIES REGARDING THE PRODUCTS, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, THAT THEY ARE DEFECT-FREE, OR AGAINST INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS.

The Product shall not be used for any application which requires especially high reliability or accuracy in order to prevent defect which incurs high possibility of damage to the third party's life, body or property such as the applications listed below as item (a) to (j) (the "Prohibited Application"). You acknowledge and agree that, if you use our Products in the Prohibited Applications, we will not be responsible for any damage caused by such use.

Furthermore, YOU AGREE TO INDEMNIFY AND DEFEND US AND OUR AFFILIATES AGAINST ALL CLAIMS, DAMAGES, COSTS, AND EXPENSES THAT MAY BE INCURRED, INCLUDING WITHOUT LIMITATION, ATTORNEY FEES AND COSTS, DUE TO THE USE OF OUR PRODUCTS IN THE PROHIBITED APPLICATIONS.

- (a) Aircraft equipment.
- (b) Aerospace equipment
- (c) Undersea equipment.
- (d) Power plant control equipment
- (e) Medical equipment.
- (f) Transportation equipment (vehicles, automotive, trains, ships, etc.).
- (g)Traffic signal equipment.
- (h)Disaster prevention / crime prevention equipment.
- (i) Burning / explosion control equipment
- (j) Application of similar complexity and/ or reliability requirements to the applications listed in the above.

For the avoidance of doubt, the Product is not automotive grade, and will not support such requests for automotive as below, also not support other specific requests for automotive.

- AEC-Q200
- PPAP
- IATF16949, VDA6.3
- Zero Defect program
- Long product life cycle
- Automotive 8D failure analysis and report



### Important Notice (2/2)

We expressly prohibit you from analyzing, breaking, Reverse-Engineering, remodeling altering, and reproducing our product. Our product cannot be used for the product which is prohibited from being manufactured, used, and sold by the regulations and laws in the world.

Please do not use the Product in molding condition.

This product is ESD (ElectroStatic Discharge) sensitive device.

When you install or measure this, you should be careful not to add antistatic electricity or high voltage. Please be advised that you had better check anti serge voltage.

We do not warrant or represent that any license, either express or implied, is granted under any our patent right, copyright, mask work right, or our other intellectual property right relating to any combination, machine, or process in which our Products or services are used. Information provided by us regarding third-party products or services does not constitute a license from us to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from us under our patents or other intellectual property.

Please do not use our Products, our technical information and other data provided by us for the purpose of developing of mass-destruction weapons and the purpose of military use.

Moreover, you must comply with "foreign exchange and foreign trade law", the "U.S. export administration regulations", etc.

Please note that we may discontinue the manufacture of our products, due to reasons such as end of supply of materials and/or components from our suppliers.

Customer acknowledges that Murata will, if requested by you, conduct a failure analysis for defect or alleged defect of Products only at the level required for consumer grade Products, and thus such analysis may not always be available or be in accordance with your request (for example, in cases where the defect was caused by components in Products supplied to Murata from a third party).

The Product shall not be used in any other application/model than that of claimed to Murata.

Customer acknowledges that engineering samples may deviate from specifications and may contain defects due to their development status.

We reject any liability or product warranty for engineering samples.

In particular we disclaim liability for damages caused by

- •the use of the engineering sample other than for evaluation purposes, particularly the installation or integration in the Product to be sold by you,
  - deviation or lapse in function of engineering sample,
  - ·improper use of engineering samples.

We disclaim any liability for consequential and incidental damages.

If you can't agree the above contents, you should inquire our sales.

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>>Murata(村田)