

Datasheet of SAW Device

SAW Quadplexer

for Band1_Band3 / Unbalanced / 2520

Murata PN: SAHRX1G74BA0B0A

Feature

- > LTE-A
- > Low Insertion Loss
- High Isolation



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 M



General Information

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

- Input Power : +29.0 dBm 5000 h +50 deg.C

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

- Minimum Resistance between the terminals : 0ohm (ANT. Terminal to GND)

1Mohm (Other Terminals to GND)

RoHS compliance : YesESD (ElectroStatic Discharge) sensitive device

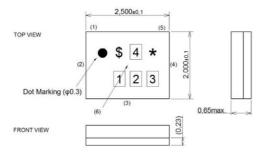
The input power shall be applied to Tx-port within own Tx passband frequency range.

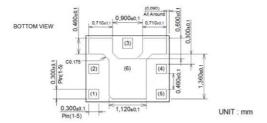


Package Dimensions & Recommended Land Pattern

unit: mm

Dimensions





Marking: Laser Printing

*: Month code

\$: Date code

1:S

2:2

3:1

4:0

Terminal Number

(3): ANT. Port (B1/3)

(1): TX Port (B1)

(5): RX Port (B3)

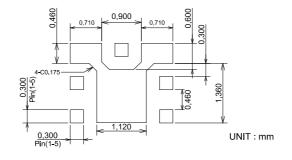
(2): TX Port (B3)

(4): RX Port (B1)

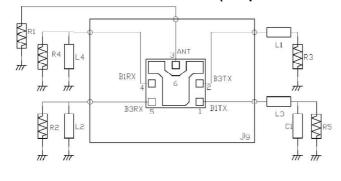
others : GND.

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

Land Pattern



Measurement Circuit (Top Thru View)



R1 : 50 ohm	
R2 : 50 ohm	L2 :8nH(Ideal inductor)
R3 : 50 ohm	L1 :3nH(Ideal inductor)
R4 : 50 ohm	L4 :12nH(Ideal inductor)
R5 : 50 ohm	L3 :2.5nH(Ideal inductor)
	C1 :1pF(Ideal capacitor)



Electrical Characteristic < Band1 TX→ANT. >

$TX \rightarrow ANT$.						racteri to +85 d	stics eg.C)	Unit	Note
					min.	typ.*	max.		
Center Frequency						1950		MHz	
Insertion Loss	1922.5	to	1977.5	MHz		2.3	2.7	dB _{INT}	Any 4.5MHz
Ripple Deviation	1920.	to	1980.	MHz		0.9	2.0	dB	l Tr
VSWR	1920.	to	1980.	MHz		1.4	2.0		TX
Absolute Attenuation	1920. 10.	to	1980. 1574.	MHz	30	1.5 36	2.0	dB	ANT.
Absolute Attenuation	420.	to to	494.	MHz MHz	44	52		dB	450MHz RX Att.
	815.	to to	830.	MHz	30	43		dB	B18 TX CA
	824.	to	849.	MHz	30	42		dB	B5 TX CA
	830.	to	845.	MHz	30	42		dB	B19 TX CA
	843.	to	894.	MHz	35	41		dB	JCDMA/CELL RX Att.
	880.	to	915.	MHz	30	41		dB	B8 TX CA
	925.	to	960.	MHz	35	40		dB	WLAN and DL CA
	1226.	to	1250.	MHz	30	36		dB	GPS L2
	1447.9	to	1462.9	MHz	30	39		dB	B21 TX CA
	1475.	to	1496.	MHz	35	40		dB	B11 RX band
	1496.	to	1511.	MHz	35	40		dB	B21 RX band
	1559.	to	1563.	MHz	38	44		dB	Compass
	1565.42		1573.37	MHz	38	44		dB	Wideband GPS lower side
	1573.37	to	1577.47	MHz	38	44		dB	Regular GPS main lobe
	1577.47	to	1585.42	MHz	40	47		dB	Wideband GPS upper side
	1597.55 1605.88	to.	1605.89 1805.	MHz MHz	40 25	48 41		dB dB	GLONASS
	1805.		1865.	MHz	25	56		dB	Protected DCS band
	1865.	to_	1880.	MHz	10	62		dB	Protected DCS band
	1880.	to to	1895.	MHz	5.0	16.0		dB	Flotected DCS balld
	2010.	to	2025.	MHz	20	38		dB	+15 to +85deg.C, B34
	2112.5	to	2167.5	MHz	44	55		dB _{INT}	Any 4.5MHz, RX
	2400.	to	2500.	MHz	36	45		dB	ISM2.4
	2620.	to	2690.	MHz	35	46		dB	Protected 2.6GHz band
	3840.	to	3960.	MHz	25	39		dB	2f
	4900.	to	5950.	MHz	20	27		dB	3f
	4905.	to	5845.	MHz	20	27		dB	WLAN 801.11a
	7680.	to	7920.	MHz	15	49		dB	4f
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^{*} Typical value at 25±2deg.C



Electrical Characteristic < ANT.→Band1 RX >

Licetrical Oria		1111			1 1 1/	` '	<u>-</u>		
						Characteristics			
1A			(-20 to +85 deg.C)			Unit	Note		
					min.	typ.*	max.		
Center Frequency						2140		MHz	
Insertion Loss	2112.5	to	2167.5	MHz		2.8	3.0	dB _{INT}	Any 4.5MHz
Ripple Deviation	2110.	to	2170.	MHz		0.7	1.5	dB	
VŚWR	2110.	to	2170.	MHz		1.9	2.2		RX
	2110.	to	2170.	MHz		1.5	2.2		ANT.
Absolute Attenuation	1.	to	1920.	MHz	35	42		dB	
			190.	MHz	50	88		dB	RX-TX
	718.	to	748.	MHz	40	56		dB	B28-B TX CA
	814.	to	849.	MHz	40	54		dB	B26 TX CA
	880.	to	915.	MHz	40	53		dB	B8 TX CA
	1427.	to	1447.	MHz	40	48		dB	B11 TX CA
	1447.	to	1463.	MHz	40	48		dB	B21 TX CA
	1730.	to	1790.	MHz	40	53		dB	2TX-RX
	1710.	to	1785.	MHz	44	53		dB	B3 TX CA
	1922.5	to	1977.5	MHz	45	61		dB _{INT}	Any 4.5MHz, TX
	1980.	to	2015.	MHz	15	50		dB	
	2015.	to	2075.	MHz	9.0	14.0		dB	(RX+TX)/2
	2255.	to	6130.	MHz	25	32		dB	
	2400.	to	2500.	MHz	40	46		dB	ISM2.4
	2500.	to	2570.	MHz	40	50		dB	B7 TX CA
	4030.	to	4150.	MHz	35	40		dB	RX+TX
	4220.	to	4340.	MHz	35	39		dB	2f
	4340.	to	13025.	MHz	15	31		dB	
	4900.	to	5950.	MHz	25	32		dB	ISM 5G
	5950.	to	6130.	MHz	25	32		dB	RX+2TX
	6130.	to	6330.	MHz	25	31		dB	
	6330.	to	6510.	MHz	25	31		dB	3f
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^{*} Typical value at 25±2deg.C



Electrical Characteristic < Band3 TX→ANT. >

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					Cha	racteri	stics		
T	$X \rightarrow ANT$.				(-20 to +85 deg.C)			Unit	Note
					min.	typ.*	max.		
Center Frequency						1747.5		MHz	
Insertion Loss		to	1782.5	MHz		2.3	2.8	dB _{INT}	Any 4.5MHz
Ripple Deviation		to	1785.	MHz		0.9	2.3	dB	
VSWR		to	1785.	MHz		1.7	2.0		TX
		to	1785.	MHz	0.5	1.5	2.0		ANT.
Absolute Attenuation		to	1565.42	MHz	35	43		dB	D00 77/04
		to	748.	MHz	30	51		dB	B28 TX CA
		<u>to</u>	756.	MHz	40	51		dB	B28 RX
		to	849. 849.	MHz MHz	30 30	49 49		dB dB	B26 TX CA B5 TX CA
		to	845.	MHz	30	49		dВ	B19 TX CA
		to	862.	MHz	30	48		dB	B20 TX CA
		to to	915.	MHz	30	48		dB	B8 TX CA
		to	960.	MHz	40	47		dB	WLAN and DL CA
		to to	1511.	MHz	40	46		dB	B21 RX band
		to	1563.	MHz	43	56		dB	Compass
	1565.42	to	1573.37	MHz	43	58		dB	Wideband GPS lower side
		to	1577.47	MHz	43	60		dB	Regular GPS main lobe
	1577.47	to	1585.42	MHz	43	59		dB	Wideband GPS upper side
	1597.55	to	1605.89		43	55		dB	GLONASS
	1605.88	to.	1680.	MHz	10	13		dB	02014/00
		to	1877.5	MHz	44	57		dB _{INT}	Any 4.5MHz, RX
		to	1980.	MHz	20	43		dB	, ,
		to	2170.	MHz	27	52		dB	
		to	2500.	MHz	35	51		dB	WLAN coexistence
		to	2494.	MHz	40	51		dB	
		to	2570.	MHz	30	50		dB	B7 TX CA
		to	2690.	MHz	35	48		dB	
		to	3570.	MHz	25	33		dB	2f
		to	5950.	MHz	18	23		dB	WLAN coexistence
	5100.	to	5385.	MHz	20	29		dB	
	5130.	to	5355.	MHz	20	31		dB	3f
	6840.	to	7140.	MHz	15	41		dB	4f
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^{*} Typical value at 25±2deg.C



Electrical Characteristic < ANT.→Band3 RX >

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ANT. o RX						Characteristics				
						(-20 to +85 deg.C)		Unit	Note	
					min.	typ.*	max.			
Center Frequency						1842.5		MHz		
Insertion Loss	1807.5	to	1877.5	MHz		2.9	3.7	dB _{INT}	Any 4.5MHz	
Ripple Deviation	1805.	to	1880.	MHz		1.6	4.5	dB	7 (ii) 1.0(iii) 12	
VSWR	1805.	to	1880.	MHz		1.6	2.5		RX	
	1805.	to	1880.	MHz		1.8	2.5		ANT.	
Absolute Attenuation	1.	to	1710.	MHz	35	42		dB	7	
			95.	MHz	50	108		dB	RX-TX	
	718.	to	748.	MHz	40	61		dB	B28-B TX CA	
	814.	to	849.	MHz	40	58		dB	B26 TX CA	
	832.	to	862.	MHz	40	58		dB	B20 TX CA	
	880.	to	915.	MHz	40	56		dB	B8 TX CA	
	1447.	to	1463.	MHz	40	45		dB	B21 TX CA	
	1615.	to	1690.	MHz	40	44		dB	2TX-RX	
	1712.5	to	1782.5	MHz	45	53		dB _{INT}	Any 4.5MHz, TX	
	1785.	to	1790.	MHz	15	56		dB	(RX+TX)/2	
	1920.	to	6000.	MHz	30	42		dB		
	2400.	to	2500.	MHz	35	44		dB	ISM2.4	
	2500.	to	2570.	MHz	35	42		dB	B7 TX	
	2570.	to	3515.	MHz	35	42		dB		
	3515.	to	3760.	MHz	40	52		dB	RX+TX and 2f	
	4900.	to	5950.	MHz	40	55		dB	ISM 5G	
	5205.	to	5660.	MHz	40	55		dB	WLAN and RX+2TX and 3f	
	7220.	to	7520.	MHz	40	58		dB	4f	
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^{*} Typical value at 25±2deg.C



Electrical Characteristic < Isolation >

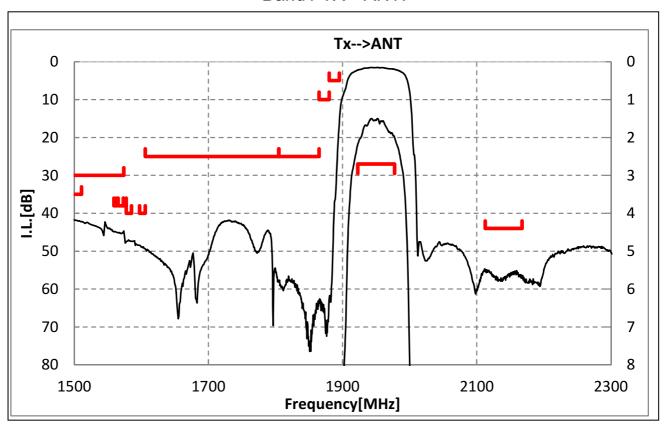
_	acten		<u> </u>	10010	Cha	racteri to +85 d	stics	l lait	Note
1.	$X \rightarrow RX$				min.	1	max.	Unit	
					1111111.	17 1	max.		
Isolation B1	1574.	to	1577.	MHz	40	81		dB	
	1922.5	to	1977.5	MHz	55	61		dB _{INT}	Any 4.5MHz, TX
	2112.5	to	2167.5	MHz	51	57		dB _{INT}	Any 4.5MHz, RX
	3830.	to	3970.	MHz	20	70		dB	TX 2nd harmonic Att.
	5750.	to	5950.	MHz	20	52		dB	TX 3rd harmonic Att.
Isolation B3	1712.5	to	1782.5	MHz	52	54		dB _{INT}	Any 4.5MHz, TX
ISOIALION DS	1807.5	to	1877.5	MHz	55	62		dB _{INT}	Any 4.5MHz, RX
		lo							, ,.
Isolation B1->B3	1807.5	to	1877.5	MHz	53	59		dB _{INT}	Any 4.5MHz, B3 RX
	1922.5	to	1977.5	MHz	50	54		dB _{INT}	Any 4.5MHz, B1 TX
Isolation B3->B1	1712.5	to	1782.5	MHz	52	56		dB _{INT}	Any 4.5MHz, B3 TX
isolation bo-> b i	2112.5	to	2167.5	MHz	50	55		dB _{INT}	Any 4.5MHz, B1 RX
		ιυ		1411 12				· IIVI	7 (1) 1.5((1)2, D110)
							-		

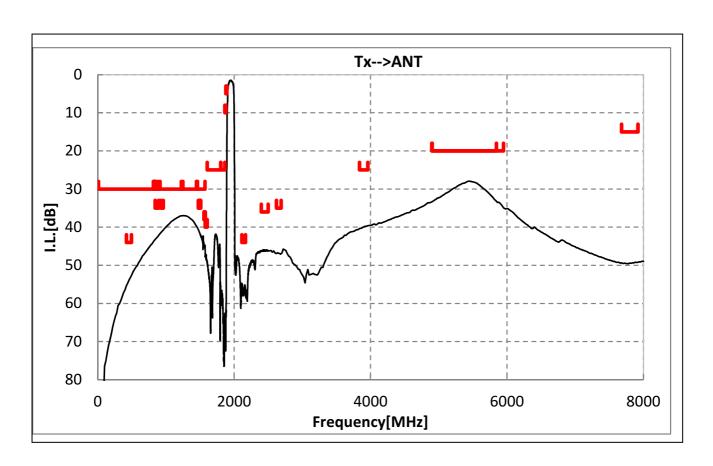
^{*} Typical value at 25±2deg.C



Electrical Characteristic

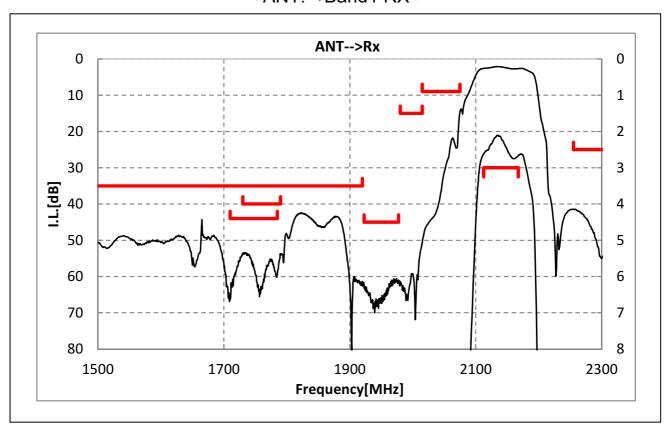
< Band1 TX→ANT. >

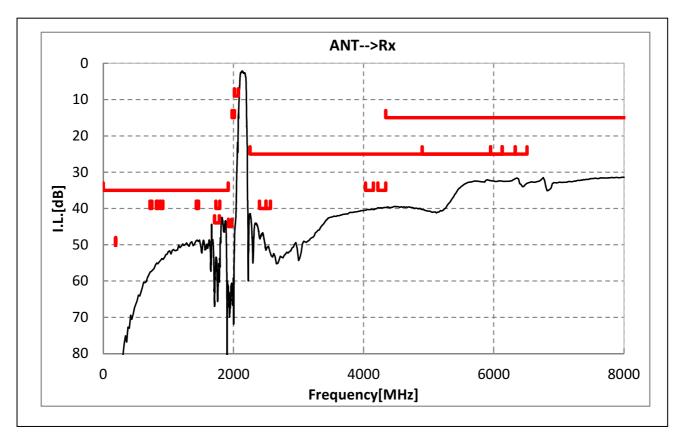






Electrical Characteristic < ANT.→Band1 RX >

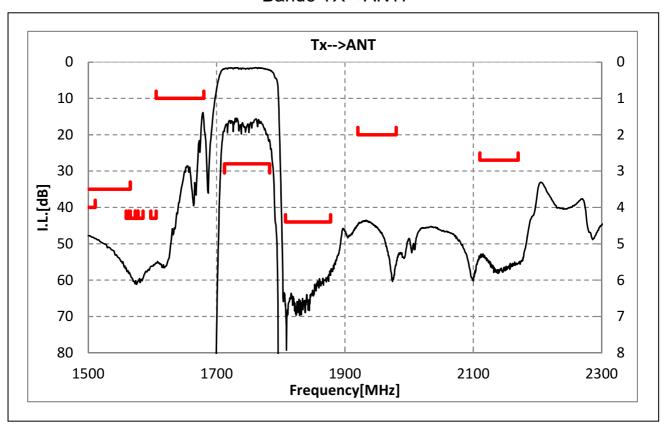


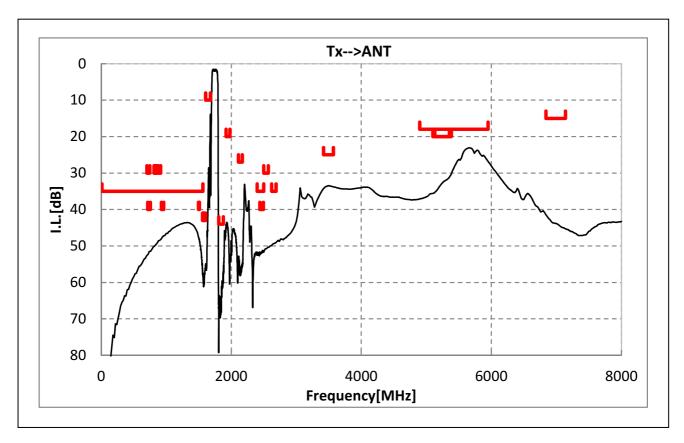




Electrical Characteristic

< Band3 TX→ANT. >

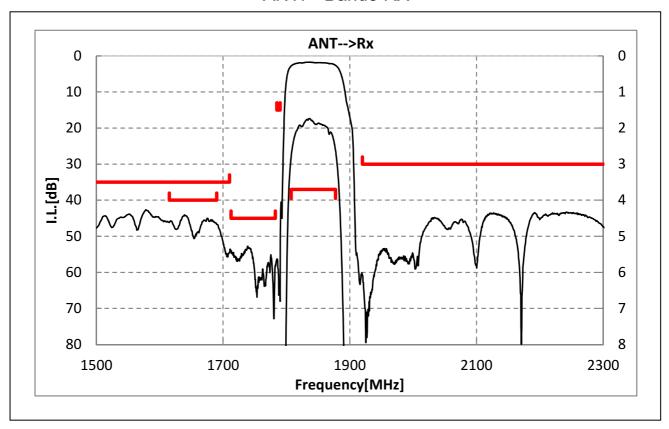


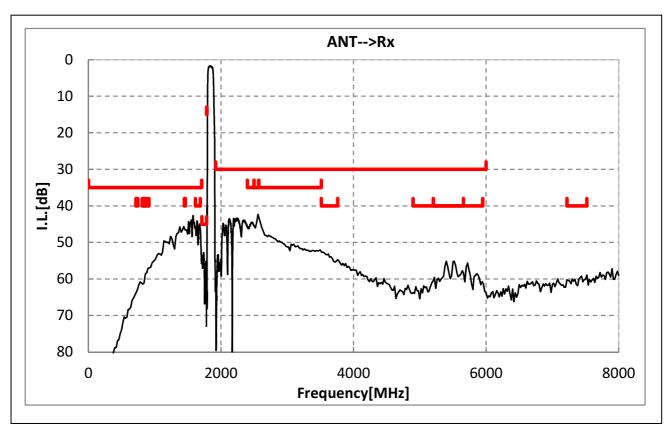




Electrical Characteristic

< ANT.→Band3 RX >

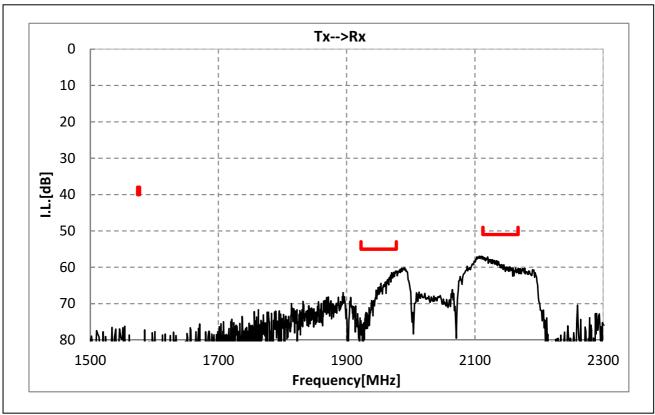




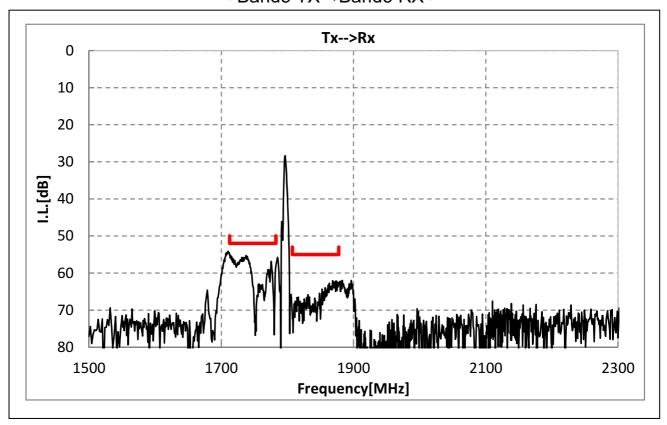


Electrical Characteristic

< Band1 TX→Band1 RX >



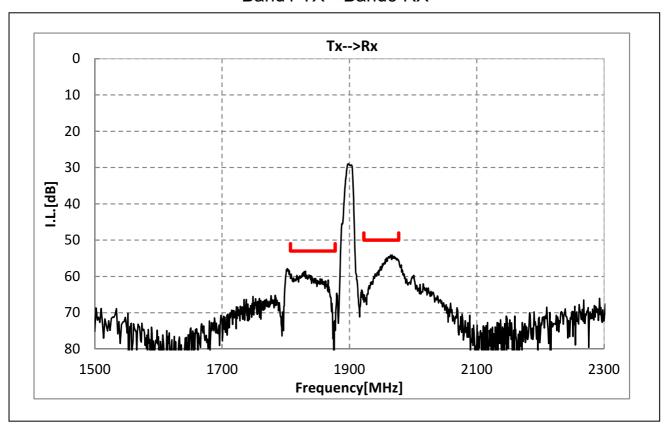
< Band3 TX→Band3 RX >



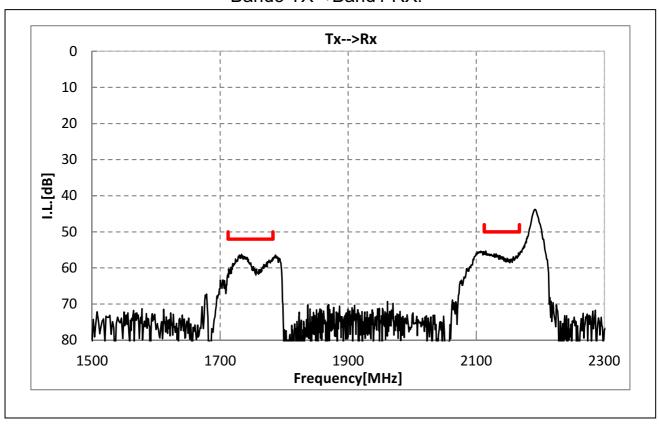


Electrical Characteristic

< Band1 TX→Band3 RX >



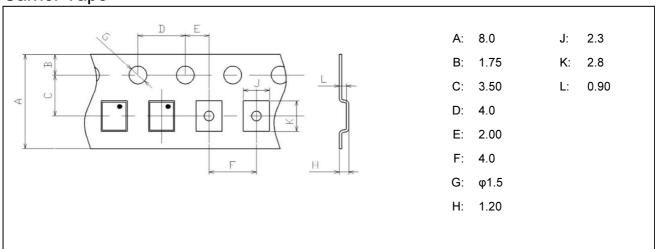
< Band3 TX→Band1 RX. >



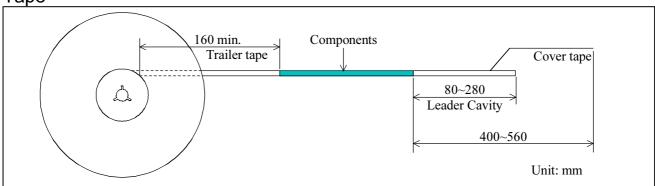


Dimensions of Tape & Reel unit: mm

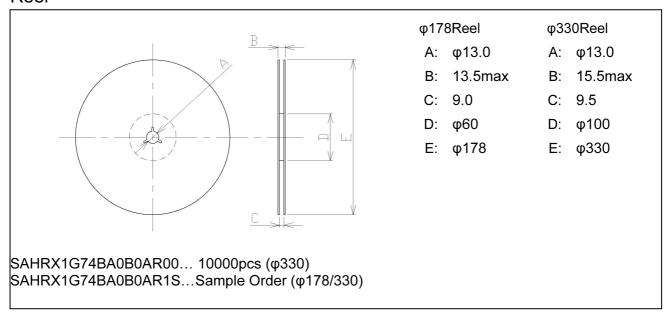
Carrier Tape



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.