

# **Datasheet of SAW Device**

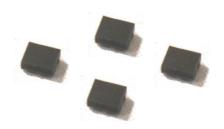
# SAW Duplexer

for Band21 / Unbalanced / LR /1814

Murata PN: SAYEY1G45BA0F0A

## Feature

- > LTE-A
- > For NS 09
- 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 F



#### **General Information**

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

- Input Power : +29 dBm 5000 h +50 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

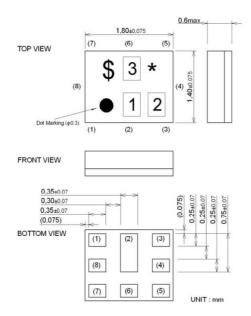
The input power shall be applied to Tx-port within own Tx passband frequency range.



### Package Dimensions & Recommended Land Pattern

unit: mm

#### **Dimensions**



Marking: Laser Printing

\*: Month code

\$: Date code

1:7

2:A

3 : A

#### **Terminal Number**

(6): Ant

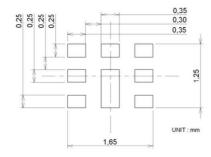
(3):TX

(1): RX

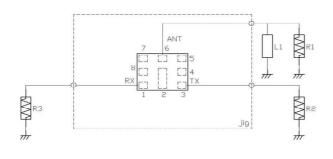
Others: GND

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

#### **Land Pattern**



# Measurement Circuit (Top Thru View)



R1 : 50 ohm	L :5.8nH(Ideal inductor)
	:6.8nH(LQP03TN6N8)
	<reference></reference>
R2 : 50 ohm	
R3 : 50 ohm	



## Electrical Characteristic < TX→ANT. >

Tx→ ANT.			Characteristics (-20 to +85 deg.C) min. typ.* max.			Unit	Note		
							max.		
Center Frequency	4447.0		1 100 0			1455		MHz	
Insertion Loss		to	1462.9	MHz		1.5	2.3	dB	
Dinale Deviation		to	1462.9 1462.9	MHz		1.5 0.6	2.1 1.5	dB dB	+23 to +27deg.C
Ripple Deviation		to	1462.9	MHz MHz		0.6	1.5	dВ	Any 5MHz
VSWR		to to	1462.9	MHz		1.3	1.8	uБ	ANT.
VSVII		to	1462.9	MHz		1.4	1.8		TX
Absolute Attenuation		to	1409.	MHz	29	35		dB	
		to	845.	MHz	32	37		dB	B19 TX
		to	890.	MHz	32	36		dB	B19 RX
	1475.9	to	1495.9	MHz	6.5	16.0		dB	+15 to +70deg.C
		to	1510.9	MHz	45	57		dB	B21 RX
	1559.	to	1563.	MHz	35	40		dB	COMPASS
	1565.42		1573.38	MHz	36	40		dB	Lower GPS
	1573.37	to	1577.47	MHz	37	41		dB	Regular GPS
	1577.46	to	1585.42	MHz	37	41		dB	Upper GPS
	1597.55 1607.		1605.89 1680.	MHz	36 36	40 40		dB dB	GLONASS
		to to	1880.	MHz MHz	33	40		dB	B3 TX
		to	1879.9	MHz	33	43		dB	B9 Tx
		to	1919.6	MHz	33	42		dB	
	1920.	to	1980.	MHz	32	40		dB	B1 TX
		to	2025.	MHz	32	39		dB	B34
		to	2170.	MHz	32	39		dB	B1 RX
		to	2484.	MHz	25	34		dB	ISM2.4G
		to	2925.8	MHz	25	30		dB	2f
		to	4388.7	MHz	12	29		dB	3f
		to	5950.	MHz	7.0	13.0		dB	ISM 5G
	5761.	to	5832.	MHz	7.0	14.0		dB	WLAN co-ex
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						-			

<sup>\*</sup> Typical value at 25±2deg.C



### Electrical Characteristic < ANT.→RX >

ANT. → RX    Characteristics   Color + 85 deg C)   Color + 85 deg	Licetifical Offa	Idoloik	Otic		/I /I I		·/\ -		1	
Min.   Typ.*   max.   MHz			Characteristics		Unit	Note				
Min.	ANT. $\rightarrow$ RX			( -20 to +85 deg.C )						
1503   MHz   MHz				min.	typ.*	max.				
1495.9 to 1510.9 MHz	Center Frequency	T							MHz	
1495.9 to 1510.9 MHz		1495.9	to	1510.9	MHz			2.0		
1495.9 to 1510.9 MHz	linacition 2033									+23 to +27dea C
1495.9 to 1510.9 MHz	Ripple Deviation									120 to 127 deg.0
Table   Tabl	Tripple Deviation									Any 5MHz
Absolute Attenuation  10. to 1447.9 MHz 30 43 dB  48. MHz 60 93 dB RX - TX  830. to 845. MHz 40 48 dB B19 TX  1447.9 to 1462.9 MHz 1.5 6.0 dB (RX + TX) / 2  1596. to 6044. MHz 32 44 dB B3 TX  1920. to 1980. MHz 32 44 dB B1 TX  1920. to 1980. MHz 32 49 dB B1 TX  2400. to 2500. MHz 32 57 dB ISM2.4  4487.7 to 4532.7 MHz 15 54 dB ISM2.4  4487.7 to 4532.7 MHz 15 54 dB ISM2.4  4487.7 to 4532.7 MHz 35 50 dB ISM 5G  7480. to 7555. MHz 30 46 dB 5f  8975. to 9065. MHz 15 25 dB 6f  10471. to 10575. MHz 8.0 16.0 dB 7f  11967. to 12087. MHz 7.0 15.0 dB 8f	\/\$\M/B								uБ	
Absolute Attenuation  10. to 1447.9 MHz 30 43 dB  48. MHz 60 93 dB RX - TX  830. to 845. MHz 40 48 dB B19 TX  1447.9 to 1462.9 MHz 45 61 dB TX  1472. to 1480. MHz 1.5 6.0 dB (RX + TX) / 2  1596. to 6044. MHz 32 44 dB  1710. to 1785. MHz 32 44 dB B3 TX  1920. to 1980. MHz 32 49 dB B1 TX  1920. to 1980. MHz 32 49 dB B1 TX  2400. to 2500. MHz 32 57 dB ISM2.4  4487.7 to 4532.7 MHz 15 54 dB 3f  4900. to 5950. MHz 35 50 dB ISM 5G  7480. to 7555. MHz 30 46 dB 5f  8975. to 9065. MHz 15 25 dB 6f  10471. to 10575. MHz 8.0 16.0 dB 7f  11967. to 12087. MHz 7.0 15.0 dB 8f	VSVIK									
48. MHz 60 93 dB RX-TX  830. to 845. MHz 40 48 dB B19 TX  1447.9 to 1462.9 MHz 45 61 dB TX  1472. to 1480. MHz 1.5 6.0 dB (RX+TX) / 2  1596. to 6044. MHz 32 44 dB  1710. to 1785. MHz 32 44 dB B3 TX  1920. to 1980. MHz 32 49 dB B1 TX  2400. to 2500. MHz 32 57 dB ISM2.4  4487.7 to 4532.7 MHz 15 54 dB 3f  4900. to 5950. MHz 35 50 dB ISM 5G  7480. to 7555. MHz 30 46 dB 5f  8975. to 9065. MHz 15 25 dB 6f  10471. to 10575. MHz 8.0 16.0 dB 7f  11967. to 12087. MHz 7.0 15.0 dB 8f	Absolute Attenuation					30		1.0	٩B	T.X.
830.         to         845.         MHz         40         48         dB         B19 TX           1447.9         to         1462.9         MHz         45         61         dB         TX           1472.         to         1480.         MHz         1.5         6.0         dB         (RX + TX) / 2           1596.         to         6044.         MHz         32         44         dB           1710.         to         1785.         MHz         32         44         dB         B3 TX           1920.         to         1980.         MHz         32         49         dB         B1 TX           2400.         to         2500.         MHz         32         57         dB         ISM2.4           4487.7         to         4532.7         MHz         15         54         dB         3f           4900.         to         5950.         MHz         35         50         dB         ISM 5G           7480.         to         7555.         MHz         30         46         dB         5f           8975.         to         9065.         MHz         15         25         dB         6f<	Absolute Attenuation	10.	ιο							DV TV
1447.9       to       1462.9       MHz       45       61       dB       TX         1472.       to       1480.       MHz       1.5       6.0       dB       (RX + TX) / 2         1596.       to       6044.       MHz       32       44       dB         1710.       to       1785.       MHz       32       44       dB       B3 TX         1920.       to       1980.       MHz       32       49       dB       B1 TX         2400.       to       2500.       MHz       32       57       dB       ISM2.4         4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB		930	1 -							D10 TV
1472.       to       1480.       MHz       1.5       6.0       dB       (RX + TX) / 2         1596.       to       6044.       MHz       32       44       dB         1710.       to       1785.       MHz       32       44       dB       B3 TX         1920.       to       1980.       MHz       32       49       dB       B1 TX         2400.       to       2500.       MHz       32       57       dB       ISM2.4         4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB       8f										
1596.       to       6044.       MHz       32       44       dB         1710.       to       1785.       MHz       32       44       dB       B3 TX         1920.       to       1980.       MHz       32       49       dB       B1 TX         2400.       to       2500.       MHz       32       57       dB       ISM2.4         4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB       8f										
1710.       to       1785.       MHz       32       44       dB       B3 TX         1920.       to       1980.       MHz       32       49       dB       B1 TX         2400.       to       2500.       MHz       32       57       dB       ISM2.4         4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB       8f										(RA + IA) / 2
1920. to 1980. MHz 32 49 dB B1 TX 2400. to 2500. MHz 32 57 dB ISM2.4 4487.7 to 4532.7 MHz 15 54 dB 3f 4900. to 5950. MHz 35 50 dB ISM 5G 7480. to 7555. MHz 30 46 dB 5f 8975. to 9065. MHz 15 25 dB 6f 10471. to 10575. MHz 8.0 16.0 dB 7f 11967. to 12087. MHz 7.0 15.0 dB 8f										DO TV
2400.       to       2500.       MHz       32       57       dB       ISM2.4         4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB       8f										
4487.7       to       4532.7       MHz       15       54       dB       3f         4900.       to       5950.       MHz       35       50       dB       ISM 5G         7480.       to       7555.       MHz       30       46       dB       5f         8975.       to       9065.       MHz       15       25       dB       6f         10471.       to       10575.       MHz       8.0       16.0       dB       7f         11967.       to       12087.       MHz       7.0       15.0       dB       8f										
4900.     to     5950.     MHz     35     50     dB     ISM 5G       7480.     to     7555.     MHz     30     46     dB     5f       8975.     to     9065.     MHz     15     25     dB     6f       10471.     to     10575.     MHz     8.0     16.0     dB     7f       11967.     to     12087.     MHz     7.0     15.0     dB     8f										ISM2.4
7480.     to     7555.     MHz     30     46     dB     5f       8975.     to     9065.     MHz     15     25     dB     6f       10471.     to     10575.     MHz     8.0     16.0     dB     7f       11967.     to     12087.     MHz     7.0     15.0     dB     8f										
8975. to 9065. MHz 15 25 dB 6f 10471. to 10575. MHz 8.0 16.0 dB 7f 11967. to 12087. MHz 7.0 15.0 dB 8f										
10471. to 10575. MHz 8.0 16.0 dB 7f 11967. to 12087. MHz 7.0 15.0 dB 8f			to							
11967. to 12087. MHz 7.0 15.0 dB 8f			to						dB	
11967. to 12087. MHz 7.0 15.0 dB 8f		10471.	to ´			8.0			dB	7f
6044. to 12750. MHz 7.0 16.0 dB		11967.	to ´	12087.	MHz	7.0	15.0		dB	8f
		6044.	to	12750.	MHz	7.0	16.0		dB	
		-								
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<sup>\*</sup> Typical value at 25±2deg.C



### Electrical Characteristic < TX→RX. >

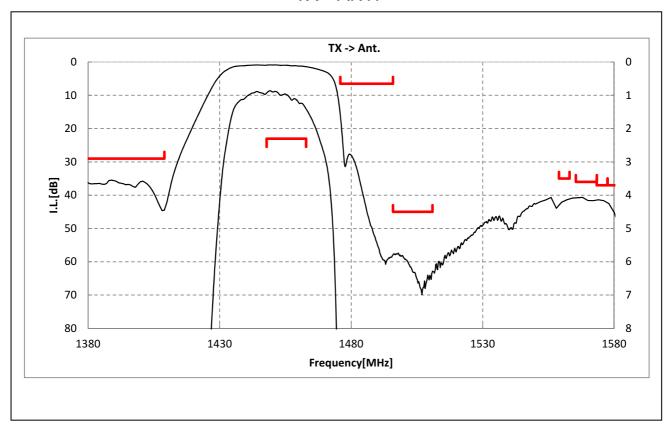
	TV DV			istics leg.C)	1 1 ''	N. A
	$TX \rightarrow RX$		typ.*		Unit	Note
				I III CA.		
Isolation		Hz 55	58		dB	TX
		Hz 53	59		dB	RX
		Hz 45	67		dB	
		Hz 45	55		dB	
	4283.7 to 4358.7 M	Hz 45	52		dB	
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				<u> </u>		1
				1		

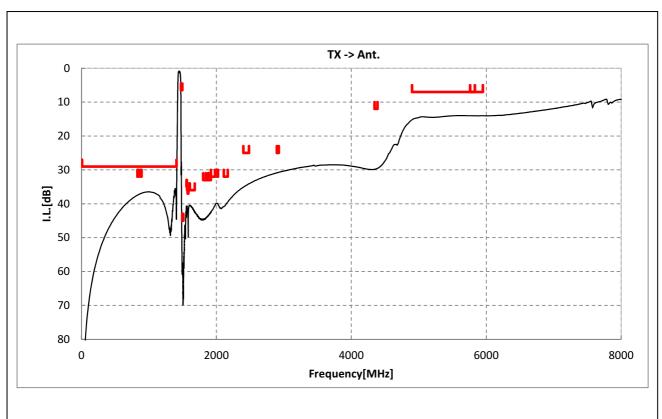
<sup>\*</sup> Typical value at 25±2deg.C



#### **Electrical Characteristic**

#### < TX→ANT. >

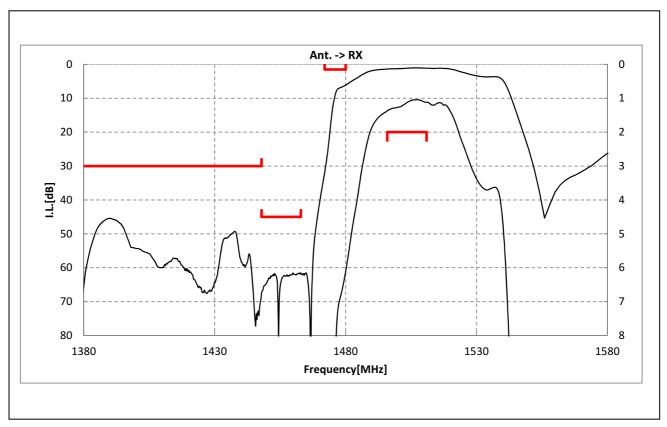


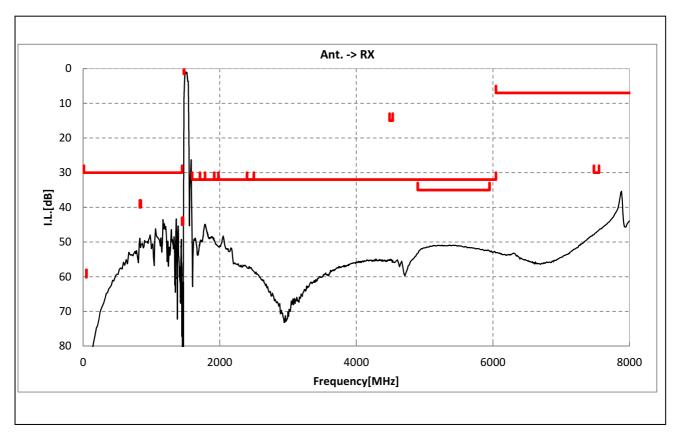




#### **Electrical Characteristic**

#### < ANT.→RX >

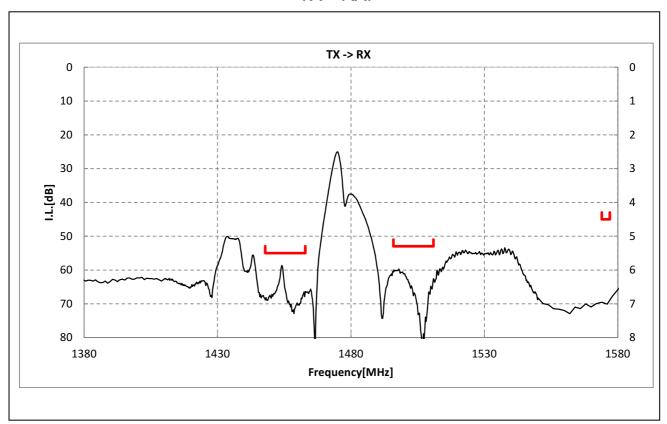


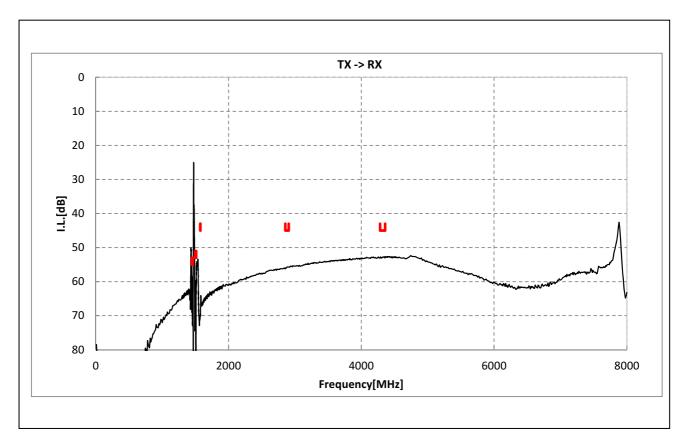




#### **Electrical Characteristic**

< TX→RX. >

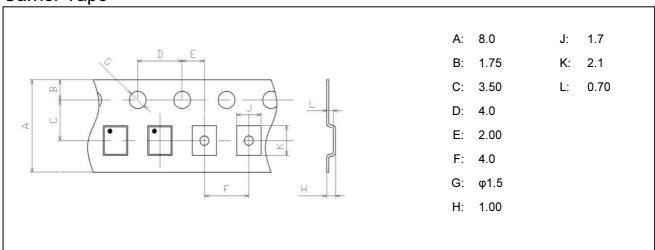




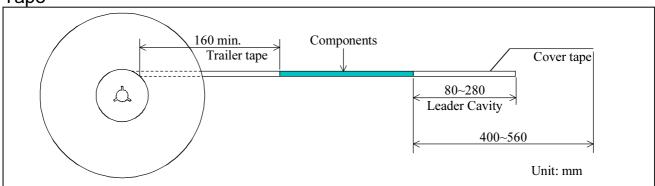


### Dimensions of Tape & Reel unit: mm

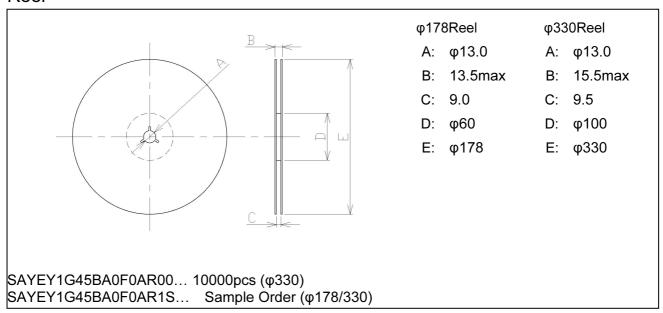
#### **Carrier Tape**



#### 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.