



## **RFANT Series – RoHS Compliance**

### MULTILAYER CERAMIC ANTENNA

### Halogens Free Product

# 2.4 GHz ISM Band RF Application

# P/N: RFANT3216120A5T

\*Contents in this sheet are subject to change without prior notice.

#### **Approval sheet**



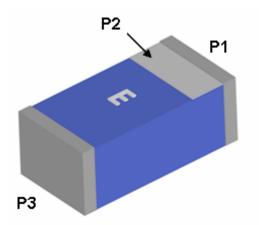
#### FEATURES

- 1. Surface Mounted Devices with a small dimension of 3.2 X 1.6 X1.2 mm<sup>3</sup> meet future miniaturization trend.
- 2. LTCC process
- 3. High stability in Temperature / Humidity Change

#### APPLICATIONS

- 1. 2.4GHz ISM band RF applications
- 2. Bluetooth, Wireless, HomeRF

#### CONSTRUCTION



	PIN	Connection		
	1 Feeding			
2 Identification Ma		Identification Mark		
	3	Soldering terminal		

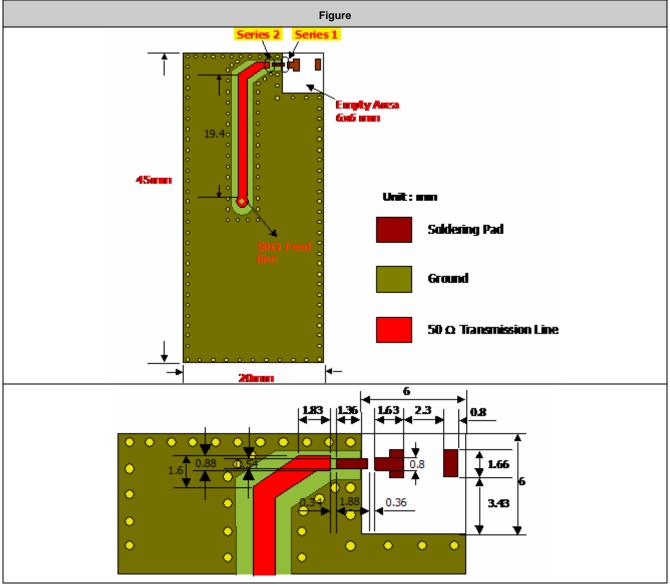
DIMENSIONS

Figure	Symbol	Dimension (mm)
	L	3.20 ± 0.20
	W	1.60 ± 0.10
E	Т	1.20 ± 0.10
	A	0.25 ± 0.15

#### **ELECTRICAL CHARACTERISTICS**

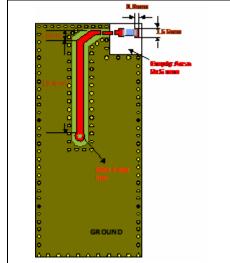
RFANT3216120A5T		Specification	
Working Frequence	cy Range	2450 ± 50 MHz	
Fc (GHz)		2.9	
Gain (dBi	)	2 (Typical)	
VSWR		2 max.	
Matching component value	Series 1	6.8nH	
Matching component value	Series 2	-	
Power Capac	city	3 W max.	
Maximum Input	Power	5 Watts for 5 minutes	
Operation Tempe	erature	-40°C ~ +85°C	
Polarization	1	Linear	
Azimuth Beamy	width	Omni-directional	

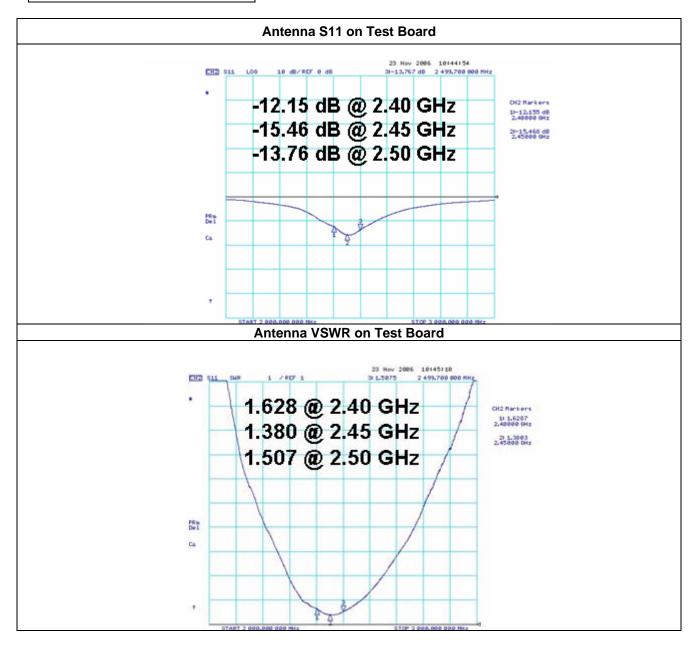
\* This frequency must be adjusted to 2.45GHz with matching circuit. SOLDER LAND PATTERN DESIGN





#### Antenna on Test Board (Thickness 1.2mm)

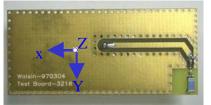


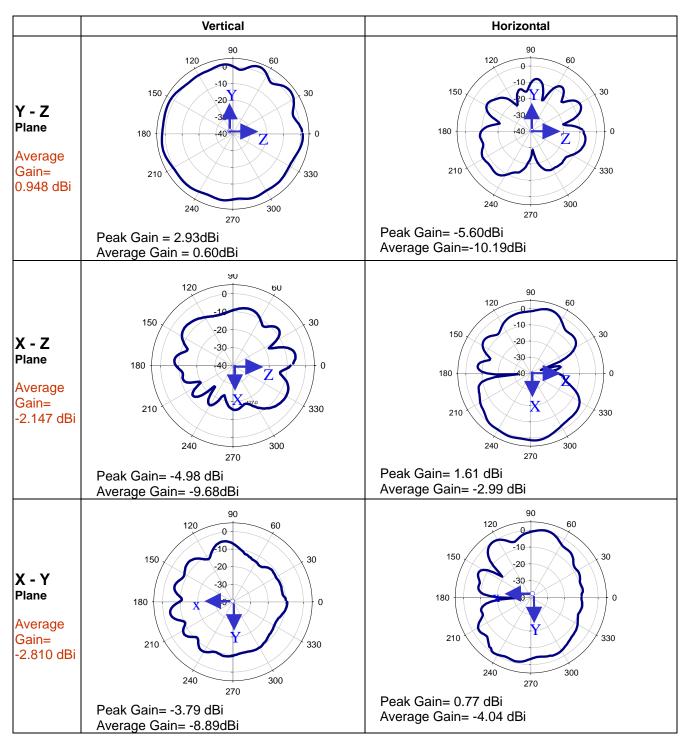




#### **RADIATION PATTERN**

Radiation Pattern and Gain were dependent on measurement board design. The specification of RFANT3216120A5T antenna was measured based on the PCB size and installation position as shown in the below figure Test Board





#### **RELIABILITY TEST**

Test item	Test condition / Test method	Specification		
Solderability	*Solder bath temperature : $235 \pm 5^{\circ}C$	At least 95% of a surface of each terminal		
JIS C 0050-4.6	*Immersion time $: 2 \pm 0.5$ sec	electrode must be covered by fresh solder.		
JESD22-B102D	Solder:Sn3Ag0.5Cu for lead-free			
Leaching	*Solder bath temperature : $260 \pm 5^{\circ}C$	Loss of metallization on the edges of each		
(Resistance to	*Leaching immersion time $:$ 30 $\pm$ 0.5 sec	electrode shall not exceed 25%.		
dissolution of	Solder : SN63A			
metallization)				
IEC 60068-2-58				
Resistance to soldering	*Preheating temperature : $120 \sim 150^{\circ}$ C,	No mechanical damage.		
heat JIS C 0050-5.4	1 minute.	Electrical specification shall satisfy the		
515 C 0050-5.4	*Solder temperature : 270±5°C	descriptions in electrical characteristics under		
		the operational temperature range within -40		
	*Immersion time : 10±1 sec	~ 85°C.		
	Solder : Sn3Ag0.5Cu for lead-free	Loss of metallization on the edges of each		
	Measurement to be made after keeping at	electrode shall not exceed 25%.		
	room temperature for 24±2 hrs	electique shall not exceed 25%.		
Drop Test	*Height:75 cm	No mechanical damage.		
JIS C 0044	*Test Surface : Rigid surface of concrete or	Electrical specification shall satisfy the		
Customer's specification.	steel.	descriptions in electrical characteristics under		
	*Times: 6 surfaces for each units; 2 times for	the operational temperature range within -40		
	each side.	~ 85°C.		
Vibration	*Frequency : 10Hz~55Hz~10Hz(1min)	No mechanical damage.		
JIS C 0040	*Total amplitude : 1.5mm	Electrical specification shall satisfy the		
	*Test times : 6hrs.(Two hrs each in three	descriptions in electrical characteristics under		
	mutually perpendicular directions)	the operational temperature range within -40		
	matually perpendicular directions)	~ 85°C.		
Adhesive Strength	*Pressurizing force :	No remarkable damage or removal of the		
of Termination	5N(≦0603);10N(>0603)	termination.		
JIS C 0051- 7.4.3	*Test time : 10±1 sec			
Bending test	The middle part of substrate shall be	No mechanical damage.		
JIS C 0051- 7.4.1	pressurized by means of the pressurizing rod	Electrical specification shall satisfy the		
	at a rate of about 1 mm/s per second until the	descriptions in electrical characteristics under		
	deflection becomes 1mm/s and then pressure	the operational temperature range within -40		
	shall be maintained for $5\pm1$ sec.	~ 85°C.		
	Measurement to be made after keeping at			
	room temperature for 24±2 hours			

Temperature cycle	1 $20+2$ minutes at $40^{\circ}C+2^{\circ}C$	No mochanical domago
JIS C 0025	1. 30±3 minutes at -40°C±3°C,	No mechanical damage.
	2. 10~15 minutes at room	Electrical specification shall satisfy the
	temperature,	descriptions in electrical characteristics under
	3. 30±3 minutes at +85°C±3°C,	the operational temperature range within -40 ~ 85°C.
	4. 10~15 minutes at room	~ 65 C.
	temperature,	
	Total 100 continuous cycles	
	Measurement to be made after keeping at	
	room temperature for 24±2 hrs	
High temperature	*Temperature : 85°C±2°C	No mechanical damage.
JIS C 0021	*Test duration : 1000+24/-0 hours	Electrical specification shall satisfy the
	Measurement to be made after keeping at	descriptions in electrical characteristics under
	room temperature for 24±2 hrs	the operational temperature range within -40
		~ 85°C.
Humidity	*Humidity ÷ 90% to 95% R.H.	No mechanical damage.
(steady conditions)	*Temperature:40±2°C	Electrical specification shall satisfy the
JIS C 0022	*Time:1000+24/-0 hrs.	descriptions in electrical characteristics under the operational temperature range within -40
	Measurement to be made after keeping	
	at room temperature for $24\pm2$ hrs	~ 85°C.
	※ 500hrs measuring the first data then	
	1000hrs data	
Low temperature	*Temperature : -40°C±2°C	No mechanical damage.
JIS C 0020	*Test duration : 1000+24/-0 hours	Electrical specification shall satisfy the
	Measurement to be made after keeping at	descriptions in electrical characteristics under
	room temperature for 24±2 hrs	the operational temperature range within -40
		~ 85°C.

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#### **SOLDERING CONDITION**

Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 2

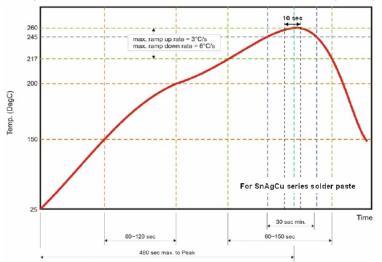
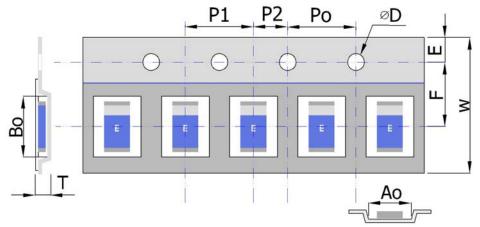


Fig 2. Infrared soldering profile

#### **ORDERING CODE**

RF	ANT	321612	0	Α	5	Т
Walsin	Product code	Dimension code	Unit of	Application	Specification	Packing
RF device	ANT : Antenna	Per 2 digits of Length, Width, Thickness : e.g. : 321612 = Length 32, Width 16, Thickness 12	dimension 0 : 0.1 mm 1 : 1.0 mm	A : 2.4GHz ISM Band	Design Code	T : 7" Reeled

Minimum Ordering Quantity: 2000 pcs per reel. **PACKAGING** 

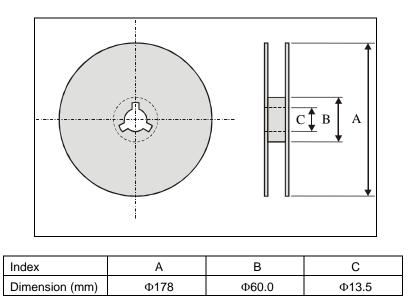


#### Plastic Tape specifications (unit :mm)

Index	Ao	Во	ΦD	Т	W
Dimension (mm)	$1.81 \pm 0.10$	$\textbf{3.42}\pm\textbf{0.10}$	$1.55\pm0.05$	$1.26\pm0.10$	8.20 +0.10
					-0.30
Index	E	F	Po	P1	P2
Dimension (mm)	$1.75\pm0.10$	$3.50\pm0.05$	$4.00\pm0.10$	$4.00\pm0.10$	$2.00\pm0.10$



#### **Reel dimensions**



Typing Quantity: 2000 pieces per 7" reel

#### **CAUTION OF HANDLING**

#### Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property.

- (1) Aircraft equipment
- (2) Aerospace equipment
- (3) Undersea equipment
- (4) Medical equipment
- (5) Disaster prevention / crime prevention equipment
- (6) Traffic signal equipment
- (7) Transportation equipment (vehicles, trains, ships, etc.)
- (8) Applications of similar complexity and /or reliability requirements to the applications listed in the above.

#### Storage condition

- (1) Products should be used in 6 months from the day of WALSIN outgoing inspection.
- (2) Storage environment condition.
  - Products should be storage in the warehouse on the following conditions.
    - Temperature : +5 to +40°C
  - Humidity : 30 to 70% relative humidity
  - Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.
  - Products should be storage on the palette for the prevention of the influence from humidity, dust and son on.
  - Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.
  - Products should be storage under the airtight packaged condition.