APPROVAL SHEET

FREE ANTENNA

RGFRA Pb free Series - RoHS Compliance

2.4 GHz ISM Band Working Frequency

P/N: RGFRA1903041A0T

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

FEATURES

- ☐ Surface Mounted Devices with a small dimension of 19.0 x 3.0 x 3.8 mm^3 .
- ☐ Able to be placed above/on ground plane. No external keep-out zone (empty space) required, which relatively save more space on PC board.
- ☐ Allow placing other components besides antenna or on the backside of PCB right underneath antenna.
- ☐ Low sensitive to environmental includes hand effects. Ideal for Handheld devices application.

APPLICATIONS

- ☐ Bluetooth, ISM 2.4GHz in samrt phone, PDA and other handheld devices.
- ☐ ISM band 2.4GHz applications

DESCRIPTION

Walsin Technology Corporation develops a new antenna specified for 2.4 GHz ISM Band application, as shown in below "CONSTRUCTION". It's application typically located on this unlicensed frequency band which range covers from 2.4GHz to 2.4835GHz. To fulfill the friendly usage for antenna, this antenna has been designed to no empty space required and no sensitive to environmental through Walsin's superior product design via 3D EM Simulation Skill.

CONSTRUCTION

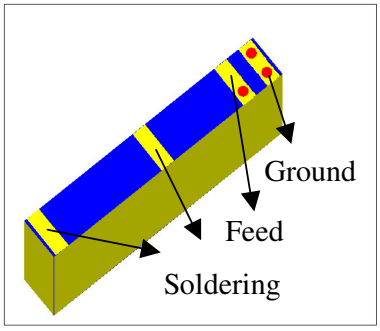
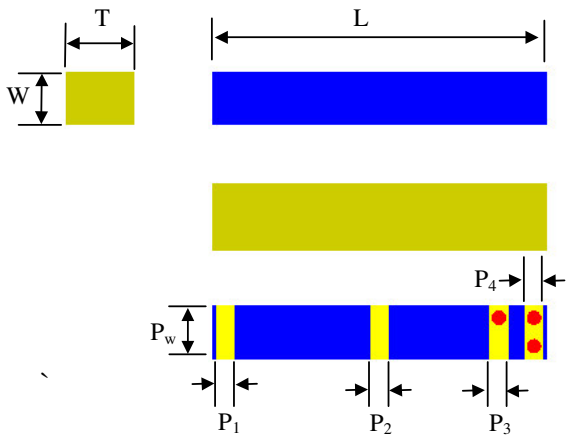


Fig 1. Outline of Free Antenna – RGFRA1403041A0T

DIMENSIONS

Figure		Dimension	Port definition
	L	19.0 ± 0.15 mm	-
	W	3.0 ± 0.15 mm	-
	T	3.8 ± 0.20 mm	-
	P_w	3.0 ± 0.10 mm	Pad width
	P_1	1.0 ± 0.10 mm	Soldering terminal
	P_2	1.0 ± 0.10 mm	Soldering terminal
	P_3	1.0 ± 0.10 mm	Feed terminal
	P_4	1.0 ± 0.10 mm	Ground terminal

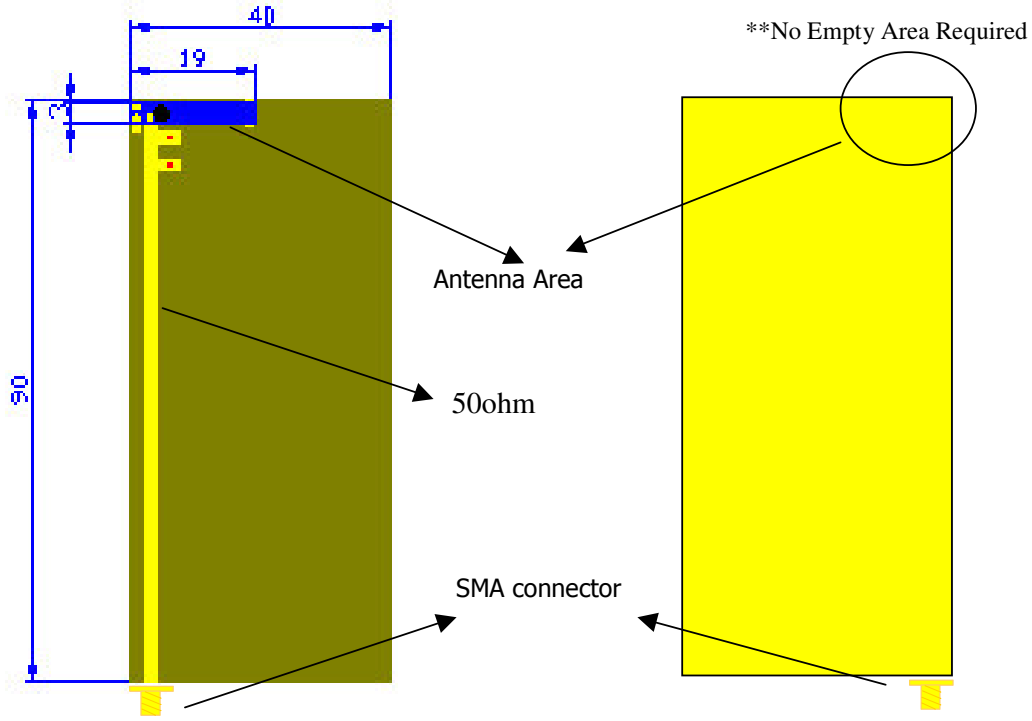
ELECTRICAL CHARACTERISTICS

Item	Specification
Working Frequency Range	2.4 GHz ~ 2.5GHz
Gain	2 dBi (Typical)
VSWR	2 max.
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Impedance	50Ω
Rated Power (max.)	1 W
Operation Temperature	-40°C ~ +85°C

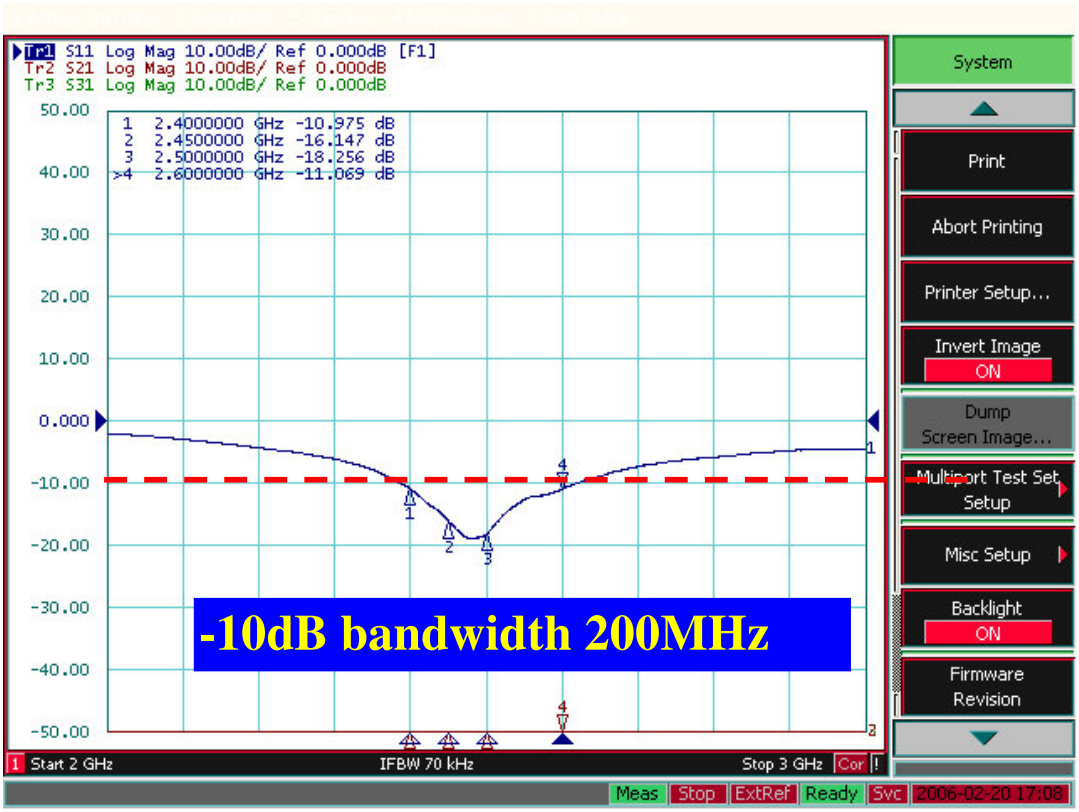
Remark: The specification is defined based on the test board dimension as in below

Antenna on Test Board

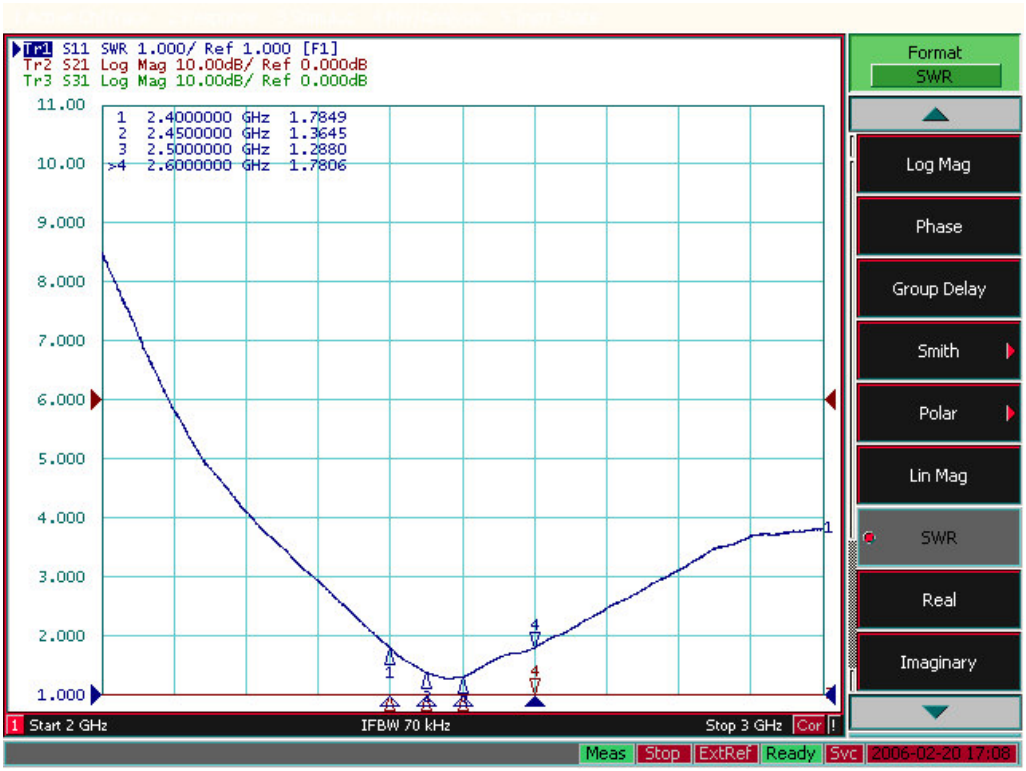
Top View **Bottom View**



Antenna S11 on Test Board



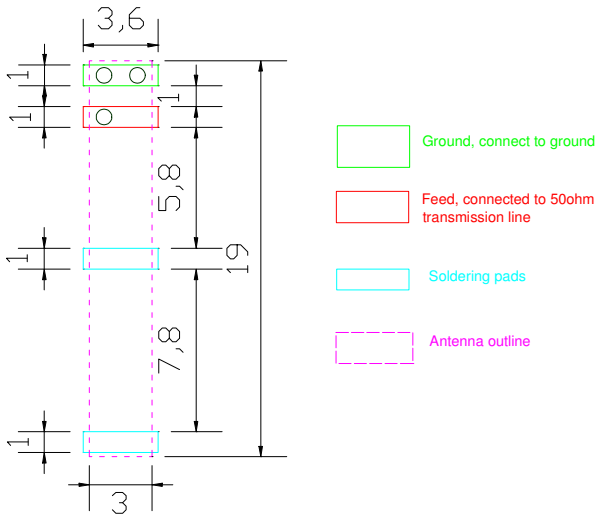
VSWR:



SOLDER LAND PATTERN DESIGN

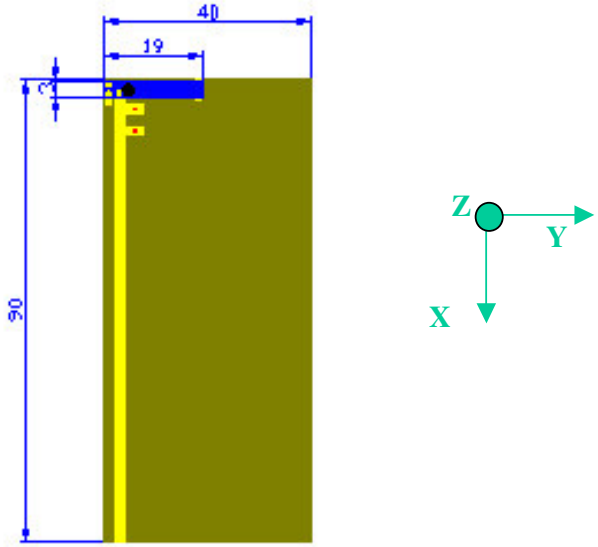
Figure	Symbol	Dimension

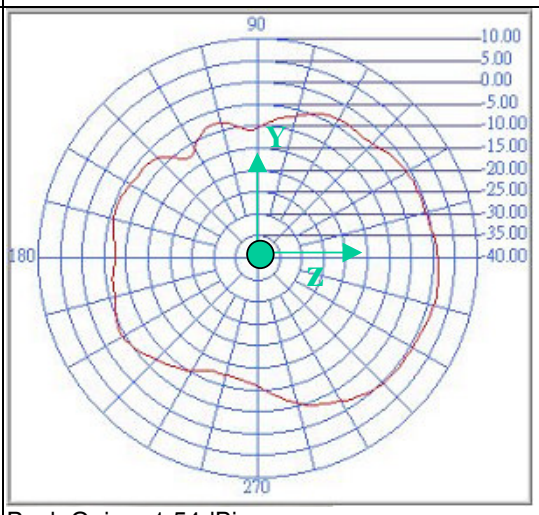
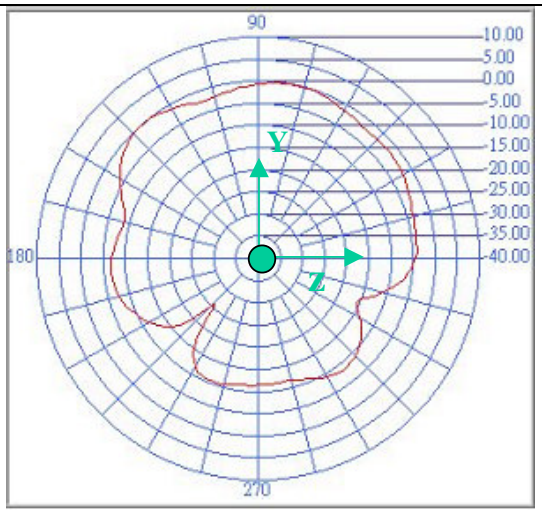
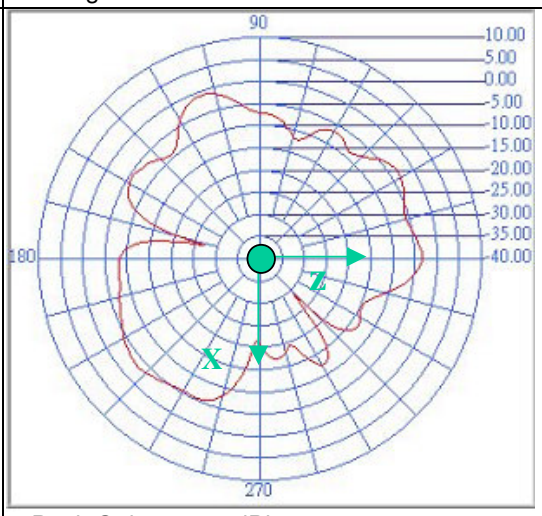
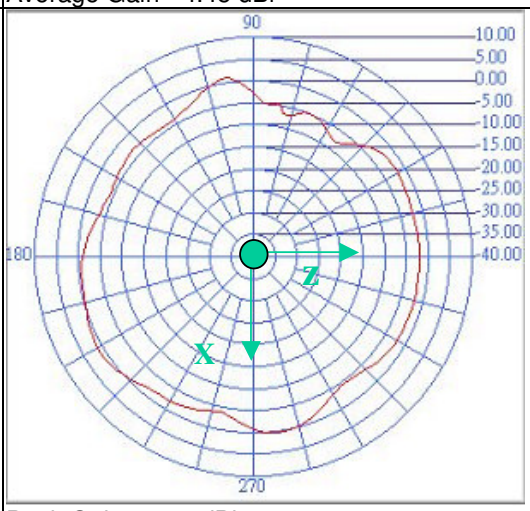
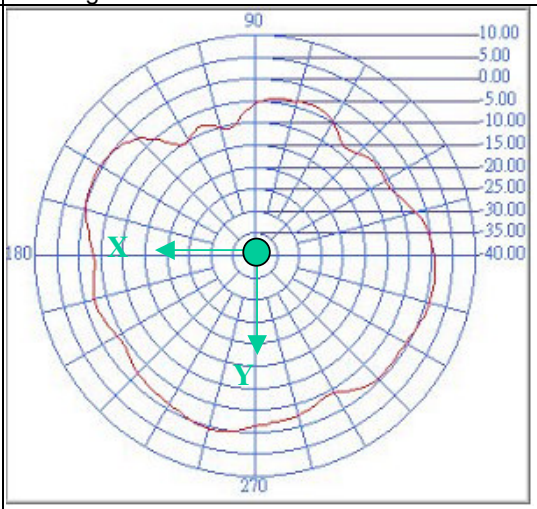
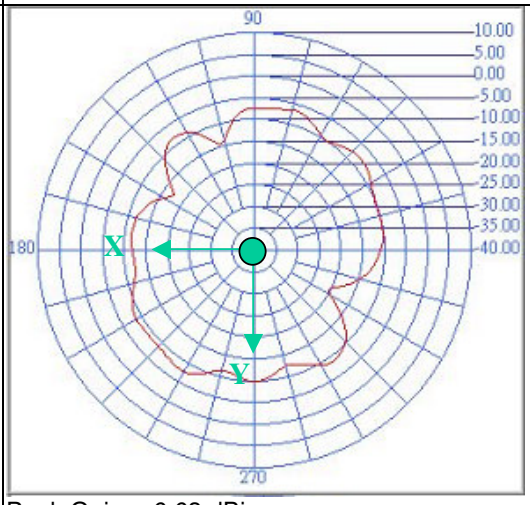
Unit: mm



RADIATION PATTERN

Radiation Pattern and Gain were dependent on measurement board design. The specification of RGFRA1903041A0T antenna was measured based on the test board size and the antenna installation position as shown in the below:



	Horizontal	Vertical
Y - Z Plane Average Gain= -0.889 dBi	 Peak Gain = 1.54dBi Average Gain = -3.41 dBi	 Peak Gain= -0.02dBi Average Gain=-4.45 dBi
X - Z Plane Average Gain= -0.738 dBi	 Peak Gain= -0.88 dBi Average Gain= -6.69dBi	 Peak Gain= 1.21 dBi Average Gain= -2.01 dBi
X - Y Plane Average Gain= -1.437 dBi	 Peak Gain= 1.02 dBi Average Gain= -2.09 dBi	 Peak Gain= -6.63 dBi Average Gain= -9.99 dBi

RELIABILITY TEST

■ Mechanical performance

Test item	Test condition / Test method	Specification
Solderability	Solder temp. : 235 ± 5°C Immersion time: 2 ± 1 sec Solder: SN63	95% min. coverage of all metabolised area
Resistance to soldering heat	Solder: Sn63 Preheating temperature: 150 ± 10°C Solder Temperature: 260 ± 5°C Immersion time: 10 ± 1 sec Measurement to be made after keeping at room temp. for 24±2 hrs.	No mechanical damage. Ceramic surface shall not be exposed in the middle of the termination or on the terminated product edge by leaching.
Drop test	Height : 75 cm Times : 3 times	No mechanical damage. Samples shall satisfy electrical specification after test..

Environmental characteristics

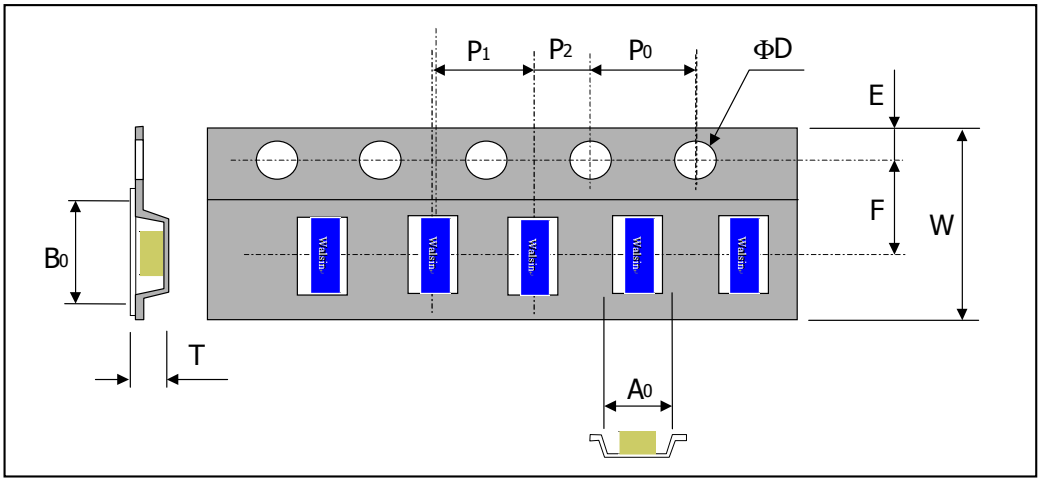
Test item	Test condition / Test method	Specification
Humidity Resistance	Humidity:85% to 90% R.H. Tempertaure:85±2°C Time: 500±24 hours. Measurement: After placing for 24 hours Minimum.	No mechanical damage. Samples shall satisfy electrical specification after test.
Temperature shock	1. 15+3/-0 minutes at -55°C±3°C, 2. 15+3/-0 minutes at +125°±3°C, Total 100 continuous cycles Measurement after placing for 48±2 hrs min.	No mechanical damage. Samples shall satisfy electrical specification after test.

ORDERING CODE

RG	FRA	190304	1	A	0	-	T
Walsin RG: RF /Pb free device	**Product code** FRA : Antenna	**Dimension code** Per 2 digits of Length, Width, Thickness : e.g. : 190304= Length 19.0, Width 3.0, Thickness 3.8	**Unit of dimension** 0 : 0.1 mm 1 : 1.0 mm	**Application** A : 2.4GHZ ISM Band	**Specification** Code from 0 ~ 9 dependent on different electrical specification		**Packing** T : Reeled

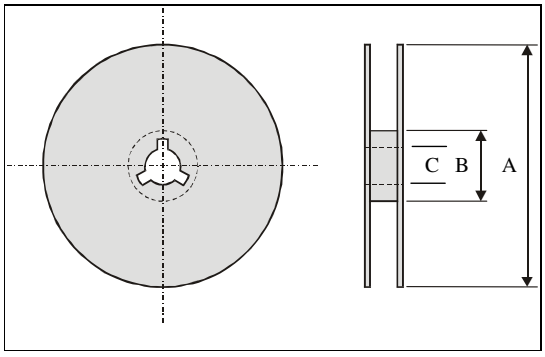
PACKAGING

Plastic Tape specifications (unit :mm)



Index	Ao	Bo	ΦD	T	W
Dimension (mm)	3.25 ± 0.1	19.35 ± 0.1	1.55 ± 0.05	4.05 ± 0.1	32 ± 0.3
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.1	14.2 ± 0.1	4.0 ± 0.1	12.0 ± 0.1	2.0 ± 0.1

Reel dimensions



Index	A	B	C
Dimension (mm)	Φ330±1	Φ99 ±1	Φ17.4 ± 0.5

Typing Quantity: 1000 pieces per 13" 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, which can be confirmed.
(2) Storage environment condition.

- Products should be storage in the warehouse on the following conditions.
- Temperature : -10 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.