

# APPROVAL SHEET

**AMANT Series - 2012(0805) - RoHS Compliance**

**MULTILAYER CERAMIC ANTENNA**

**Halogens Free Product**

**2400 ~ 2500 MHz working frequency**

**Automotive  
Qualified to AEC-Q200**

**P/N: AMANT2012090A0T**

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

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## FEATURES

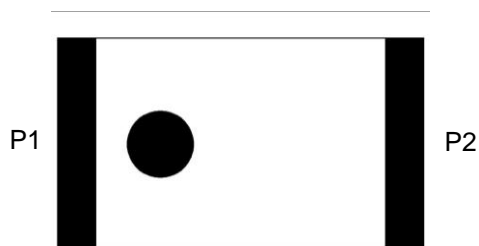
1. Surface Mounted Devices with a small dimension of  $2.0 \times 1.25 \times 0.9 \text{ mm}^3$  meet future miniaturization trend.
2. Embedded and LTCC (Low Temperature Co-fired Ceramic) technology is able to future integrate with system design as well as beautifying the housing of final product.
3. High Stability in Temperature / Humidity Change
4. Omni - directional in azimuth

## APPLICATIONS

1. 2400 ~ 2500 MHz working frequency
2. Bluetooth
3. Wireless LAN
4. HormRF

## CONSTRUCTION

Top view



PIN	Connection
P1	Feeding
P2	Soldering terminal

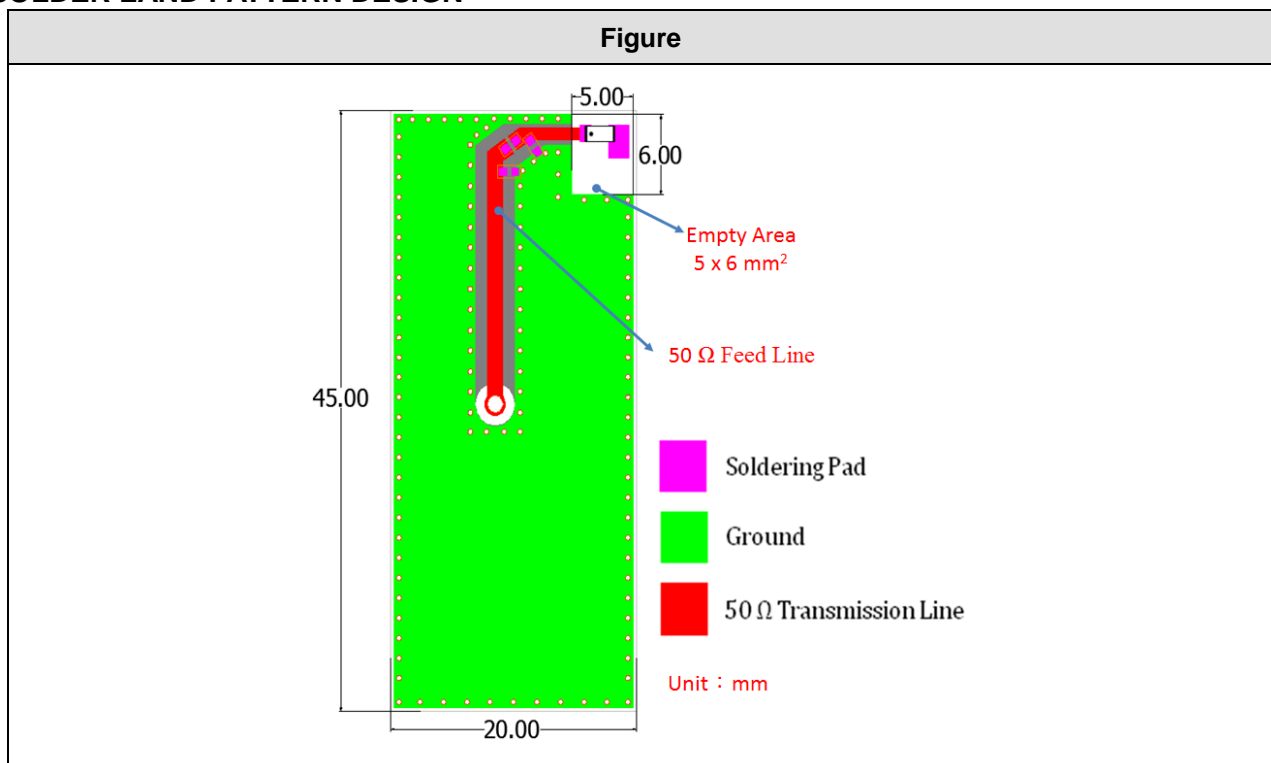
## DIMENSIONS

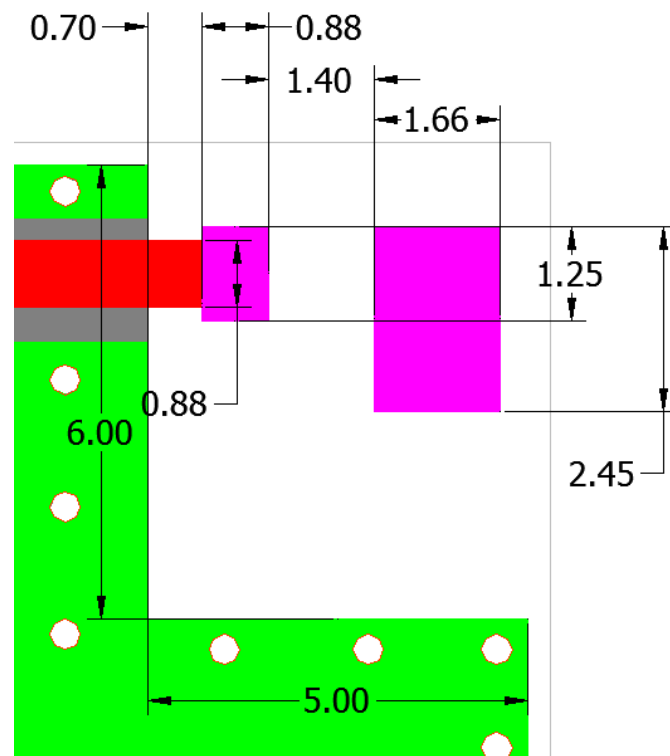
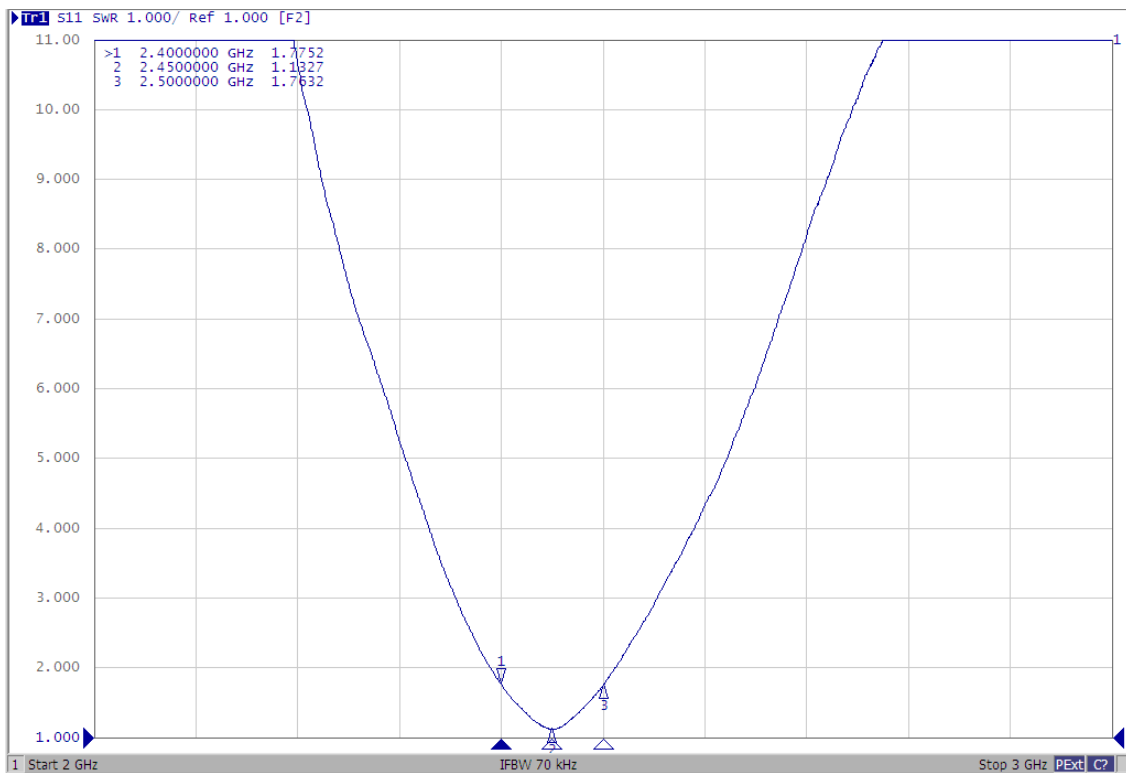
Figure	Symbol	Dimension (mm)
Top view	L	$2.0 \pm 0.20$
Side view	W	$1.25 \pm 0.20$
Bottom view	T	$0.90 \pm 0.10$
	A	$0.25 \pm 0.15$

**ELECTRICAL CHARACTERISTICS**

AMANT2012090A0T	Specification
Working Frequency Range	2400 ~ 2500 MHz
Gain	1.5dBi (Typical)
VSWR	2.0 max.
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Impedance	50Ω
Rated Power (max.)	3 Watts
Maximum Input Power	5 Watts for 5 minutes
Moisture sensitivity levels	MSL is LEVEL 1 (Refer to : IPC/JEDEC J-STD-020)
HBM ESD	Pass 1KV on all pins (Base on AEC-Q200-002)
MM ESD	Pass 200V (Base on EIA/JESD22-A115)
<b>Operating &amp; Storage Condition (Component)</b>	
Operation Temperature Range: -55°C ~ +125°C	
Storage Temperature Range: -55°C ~ +125°C	
<b>Storage Condition before Soldering (Included packaging material)</b>	
Storage Temperature Range: +5 ~ +40 °C	
Humidity: 30 to 70% relative humidity	

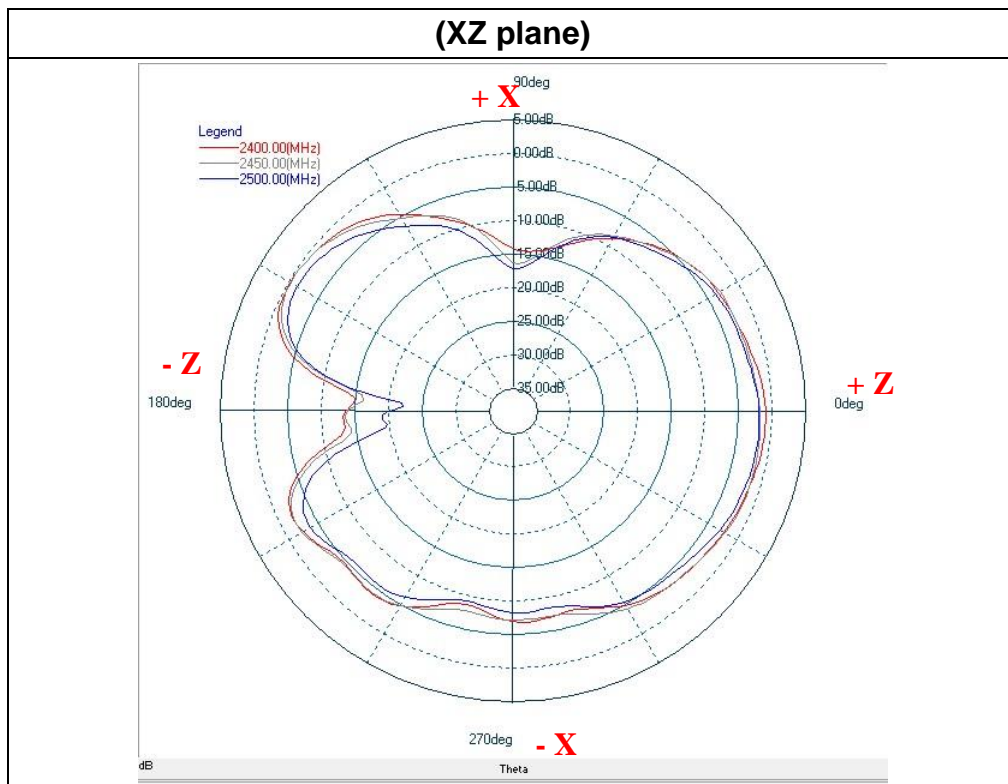
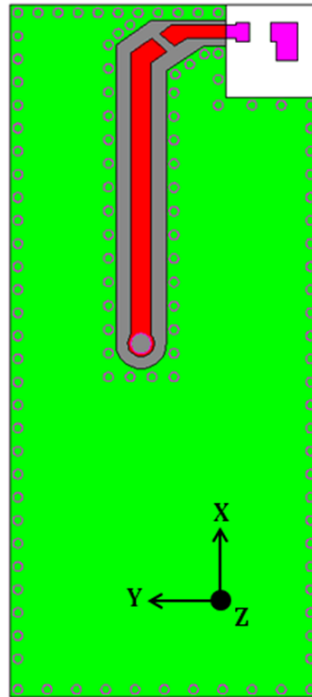
Remark: The specification is defined based on the test board dimension as in below

**SOLDER LAND PATTERN DESIGN**

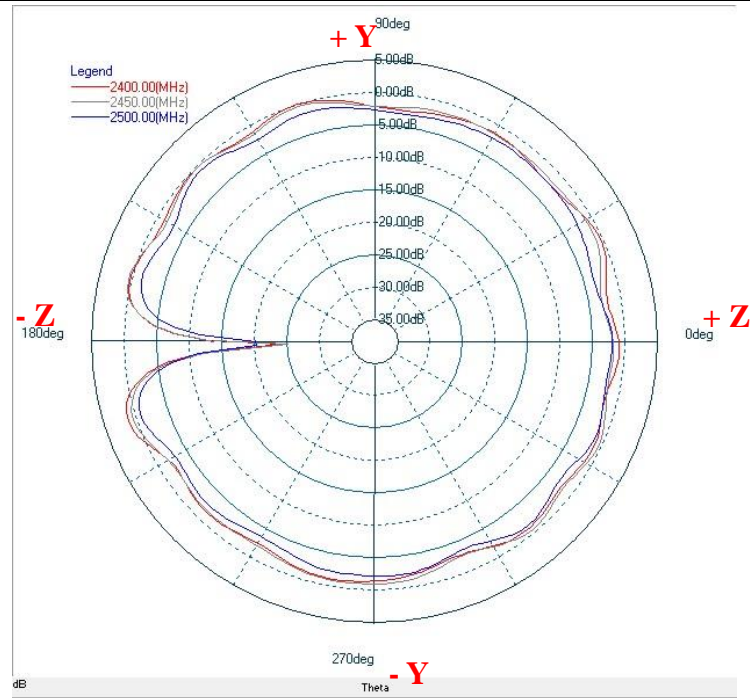
**Antenna on Test Board ( FR4 Thickness 0.8mm)****Antenna VSWR on Test Board**

**RADIATION PATTERN**

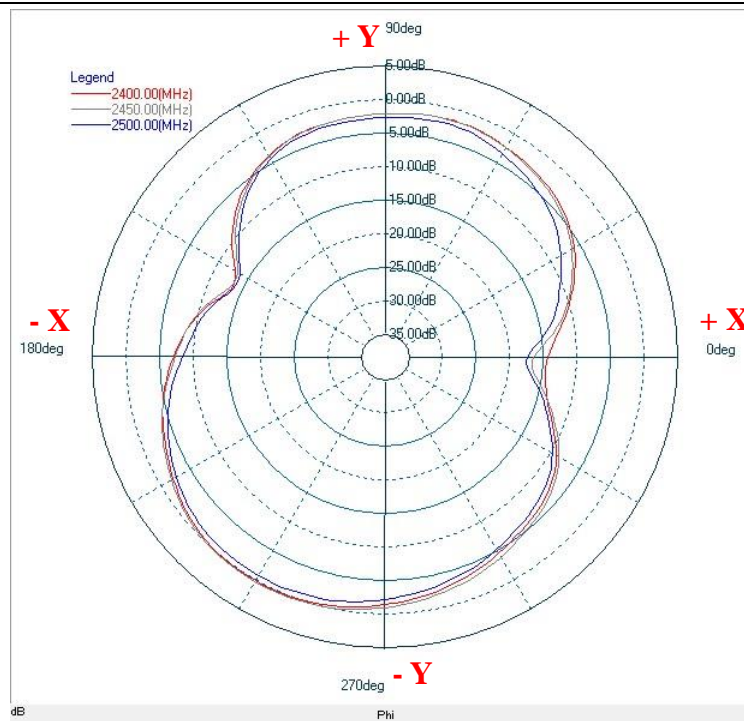
Radiation Pattern and Gain were dependent on measurement board design. The specification of AMANT2012090A0T antenna was measured based on the PCB size and installation position as shown in the below figure Test Board



(YZ plane)



(XY plane)



	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
2400	-0.23	-4.23	1.29	-1.46	0.04	-3.84
2450	-0.31	-4.40	0.52	-1.49	0.19	-3.72
2500	-1.39	-5.35	-0.79	-2.53	-0.83	-4.69

**RELIABILITY TEST**

TEST	PROCEDURE / TEST METHOD	REQUIREMENT
Resistance to soldering heat (R.S.H) <b>MIL-STD-202 method 210</b>	Un-mounted chips completely immersed for 10±1second in a SAC solder bath at 270°C±5°C	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C. Loss of metallization on the edges of each electrode shall not exceed 25
Solderability <b>J-STD-002</b>	* Condition A Un-mounted chips 4hrs / 155°C*dry then completely immersed for 5±0.5 sec in solder bath at 235±5°C. * Condition B Un-mounted chips steam 8 hrs then completely immersed for 10±1 sec. in solder bath at 260+0/-5°C..	All terminations shall exhibit a continuous solder coating free from defects from a minimum of 95% of the critical surface area of any individual termination.
Temperature cycling <b>JESD22 method JA-104</b>	1000 cycles, -55°C ~ +125°C, dwell time 30min	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
Humidity MIL-STD-202 method 103	1000+48/-0 hours; 85 °C, 85% RH	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
High Temperature Exposure <b>MIL-STD-202 method 108</b>	1000+48/-0 hours; without load in a temperature chamber controlled 125±3°C	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
Mechanical Shock <b>MIL-STD-202 method 213</b>	1/2 Sine Pulse / 100g Peak / Velocity 12.3ft/sec	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
Board Flex <b>AEC-Q200-005</b>	RF component mounted on a 90mm glass epoxy resin PCB(FR4), bending 2mm for 60sec	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
Adhesive Strength of Termination <b>AEC-Q200-006</b>	*Pressurizing force : 5N for 60 sec	No remarkable damage or removal of the termination.
Vibration <b>MIL-STD-202 method 204</b>	Test 5g's for 20min., 12 cycles each of 3 orientations	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.
ESD <b>AEC-Q200-002</b>	Test contact 1.0KV ( 0.5KV for 1005 only)	No mechanical damage. Electrical specification shall satisfy the descriptions in electrical characteristics under the operational temperature range within -55 ~ 125°C.

## SOLDERING CONDITION

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

This product could sustain by reflow process three times, and the temperature below 260°C.

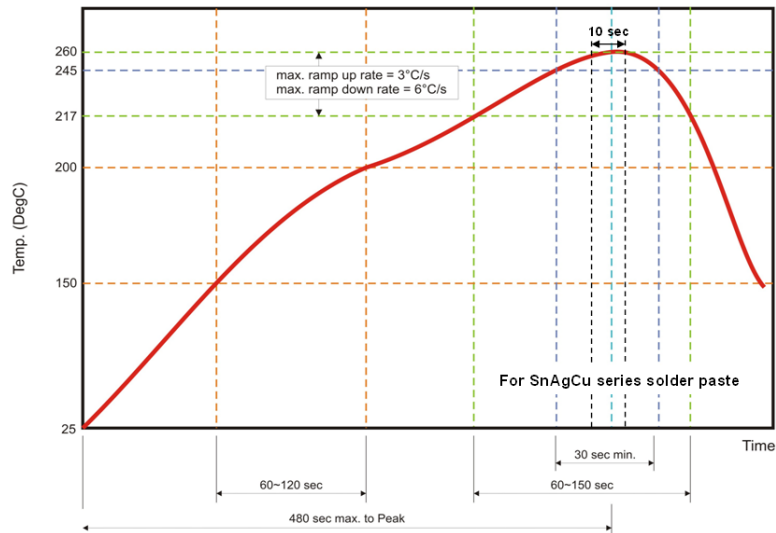


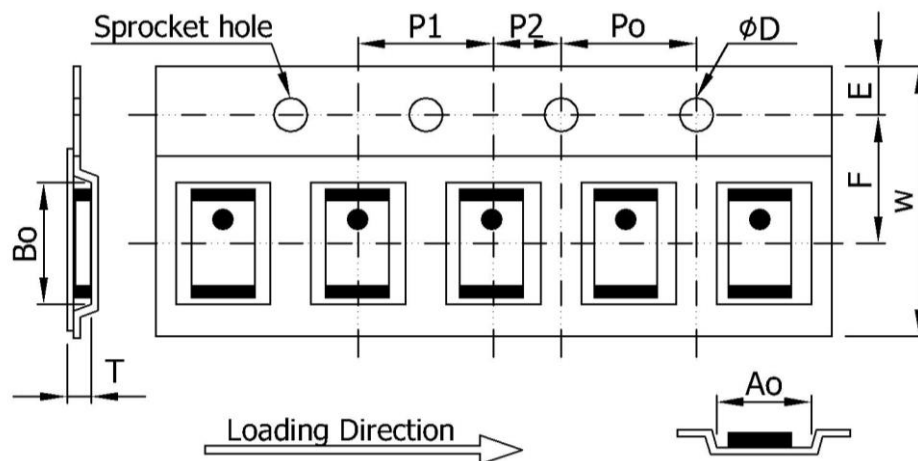
Fig 2. Infrared soldering profile

## ORDERING CODE

AM	ANT	201209	0	A	0	T
<b>Walsin</b> Automotive device	<b>Product code</b> ANT : Antenna	<b>Dimension code</b> Per 2 digits of Length, Width, Thickness : e.g. : 201209 = Length 20, Width 12, Thickness 09.	<b>Unit of dimension</b> 0 : 0.1 mm 1 : 1.0 mm	<b>Application</b> A : 2400~2500 MHz	<b>Specification</b> Design Code	<b>Packing</b> T : Reeled

Minimum Ordering Quantity: 2000 pcs per reel.

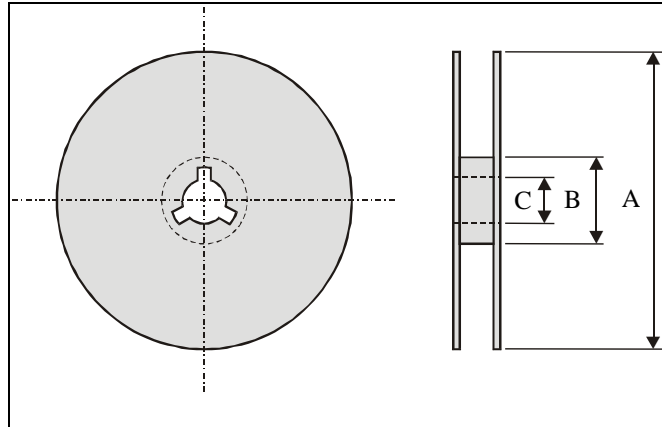
## PACKAGING



Black conductive Tape specifications (unit :mm)

Index	Ao	Bo	$\Phi D$	T	W
Dimension (mm)	$1.30 \pm 0.10$	$2.25 \pm 0.10$	$1.55 \pm 0.05$	$1.10 \pm 0.10$	$8.00 \pm 0.10$
Index	E	F	Po	P1	P2
Dimension (mm)	$1.75 \pm 0.10$	$3.50 \pm 0.05$	$4.00 \pm 0.10$	$4.00 \pm 0.10$	$2.00 \pm 0.05$



**Reel dimensions**

Index	A	B	C
Dimension (mm)	Φ178	Φ60.0	Φ13.0

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 so 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.