



Aug. 2022 Ver.8.1  
TDK Corporation

## Multilayer Antenna

For 2.4GHz W-LAN & Bluetooth / 5GHz W-LAN

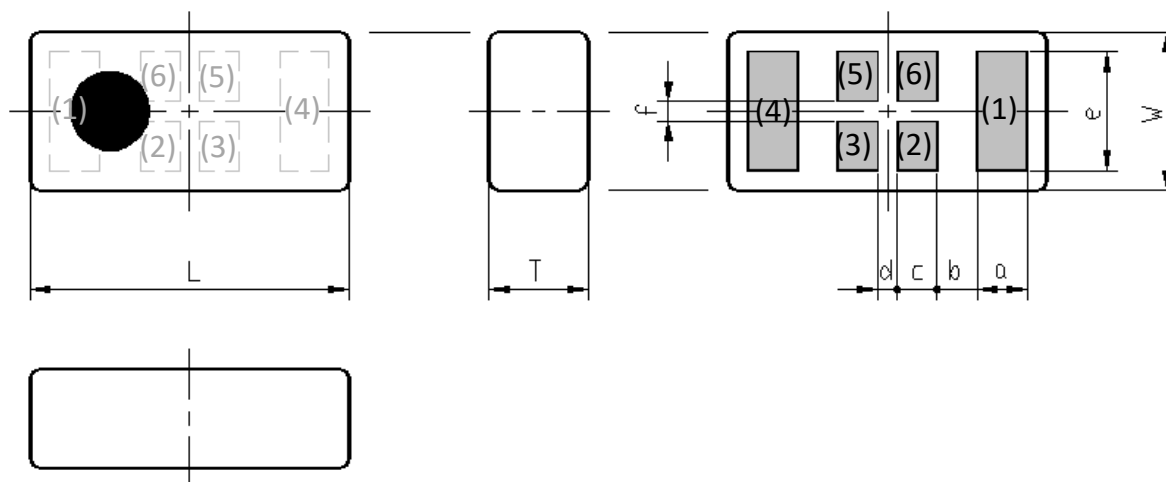
ANT Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **ANT162442DT-2001A2**

TDK Technology  
38th Floor, Da Baihui Plaza, No. 3086, Jintian Road, Futian District, Shenzhen City

## ANT162442DT-2001A2

### SHAPES AND DIMENSIONS



Dimensions (mm)

| L       | W       | T    | a       | b       | c       | d      | e       | f      |
|---------|---------|------|---------|---------|---------|--------|---------|--------|
| 1.60    | 0.80    | 0.40 | 0.215   | 0.25    | 0.20    | (0.10) | 0.63    | (0.10) |
| +/-0.10 | +/-0.10 | Max  | +/-0.10 | +/-0.10 | +/-0.10 |        | +/-0.10 |        |

Terminal functions

|     |                                   |
|-----|-----------------------------------|
| (1) | Radiator electrode for 2.4GHz ISM |
| (2) | Feed point                        |
| (3) | Feed point                        |
| (4) | Radiator electrode for 5.5GHz     |
| (5) | Feed point                        |

|     |            |
|-----|------------|
| (6) | Feed point |
|-----|------------|

\*Terminal (2),(3),(5) and (6) :Connected in inner structure

### TERMINATION FINISH

| Material |
|----------|
| Au plate |

## ANT162442DT-2001A2

### ELECTRICAL CHARACTERISTICS

( Measurement )

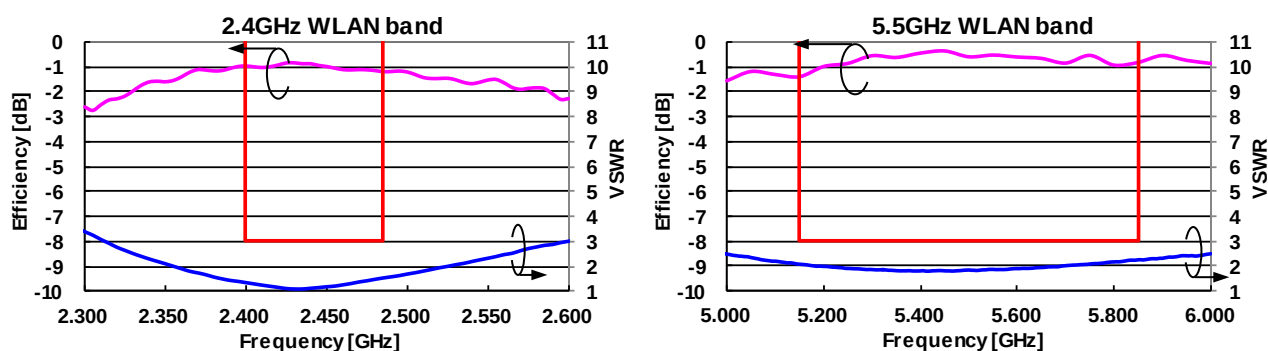
| Parameter                      | Frequency (MHz) | TDK Spec     |      |      |
|--------------------------------|-----------------|--------------|------|------|
|                                |                 | Min.         | Typ. | Max. |
| VSWR                           | 2400 to 2484    | -            | 1.54 | 3.0  |
|                                | 5150 to 5850    | -            | 1.58 | 3.0  |
| Antenna Gain (dBi)**           | 2400 to 2484    | -            | 2.13 | -    |
|                                | 5150 to 5850    | -            | 2.30 | -    |
| Polarization                   |                 | Linear       |      |      |
| PCB Size (mm)                  |                 | 50 x 20      |      |      |
| Antenna keep-out Area (mm)     |                 | 8x5          |      |      |
| Characteristic Impedance (ohm) |                 | 50 (Nominal) |      |      |

\* This is typical antenna performance with the standard PCB.

\*\* Reference value

### FREQUENCY CHARACTERISTICS

Note: Tested antenna has been soldered. Evaluation board size is 50x20x1 mm.



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## ANT162442DT-2001A2

### ■ MAXIMUM RATINGS

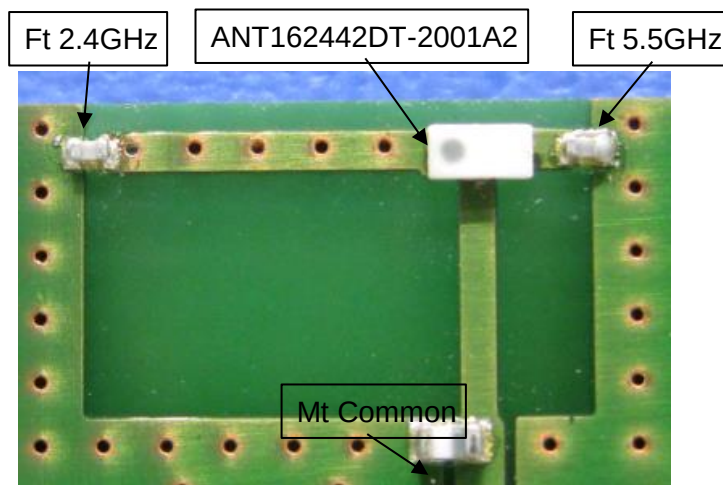
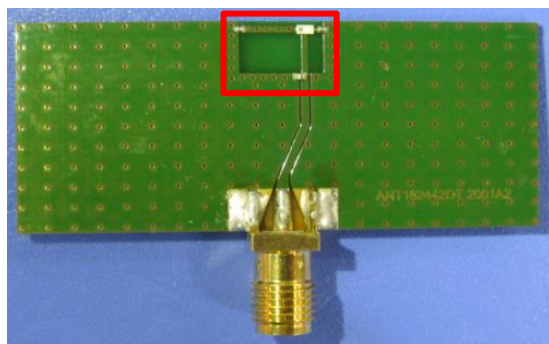
| Parameter                                 | TDK Spec      | Conditions           |
|-------------------------------------------|---------------|----------------------|
| Operating temperature (°C)                | −40 to +85 °C |                      |
| Storage temperature (°C)                  | −40 to +85 °C |                      |
| Power Handling (W) *1                     | 0.8           | CW                   |
| Human Body Model : HBM @Each Port (V)     | +/-1000       | 100pF / 1500ohm      |
| Machine Model : MM @Each Port (V)         | +/-150        | 200pF / 0ohm         |
| Charged Device Model : CDM @Each Port (V) | +/-500        | Humidity : 60%RH max |

\*1 : Refer to 3GPP TS 38.101-1 V15.2.0

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### EVALUATION BOARD



PCB size : 50mm x 20mm x 1mm  
Antenna area : 8 x 5 mm

| Element Value |                         |
|---------------|-------------------------|
| Ft 2.4GHz     | 6.2pF                   |
| Ft 5.5GHz     | 0.4pF                   |
| Mt Common     | 1.3nH(MLG1005S1N3C:TDK) |

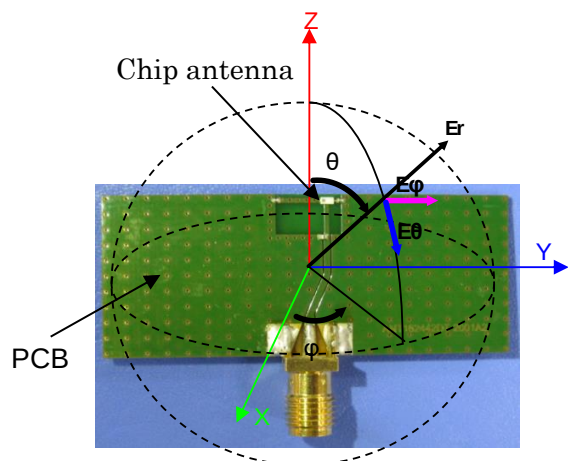
This evaluation board layout example is defined based on TDK standard.  
Other board layouts can be used by optimizing their design.  
Matching element values can be selected depending on the board layouts.  
Getting more support, please access our website.

<https://mytdk.tdk.com/ja/login>

The following URL is a link to TDK's simple antenna simulator.

<https://product.tdk.com/ja/search/rf/rf/antenna/simulation?pid=1000000249778>

Measurement condition for Radiation Pattern

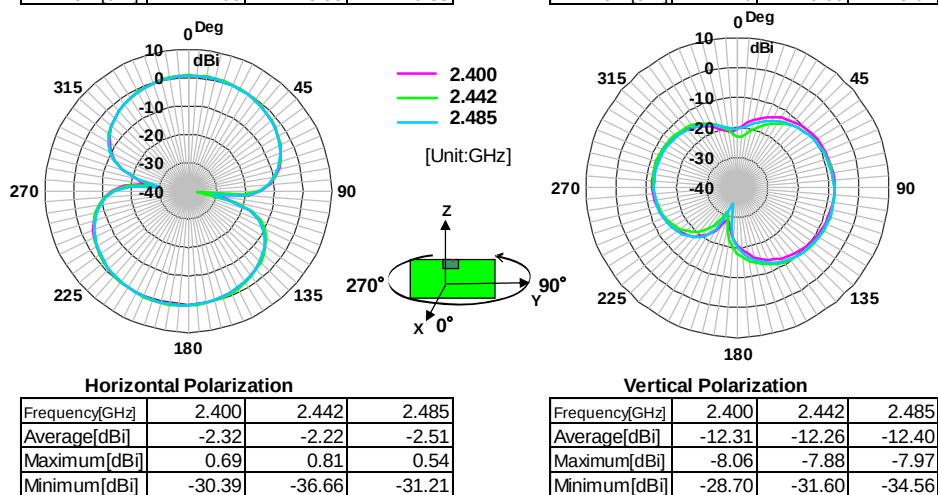
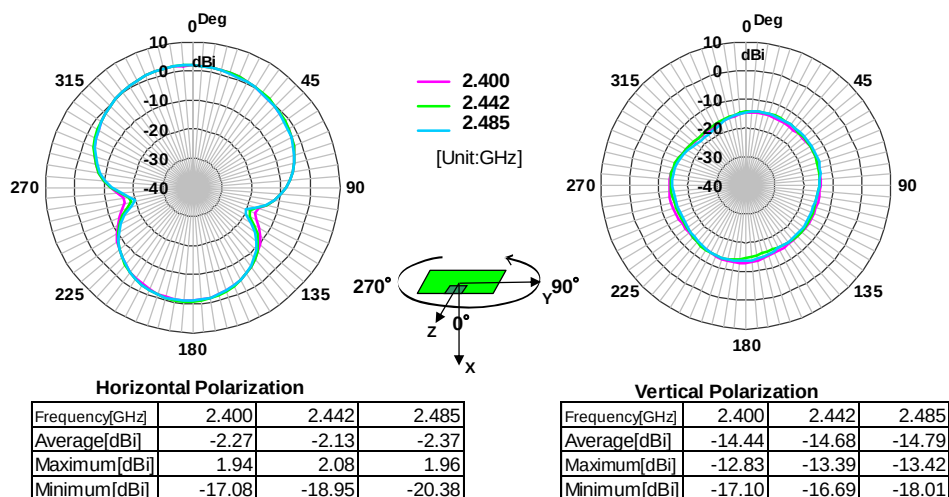
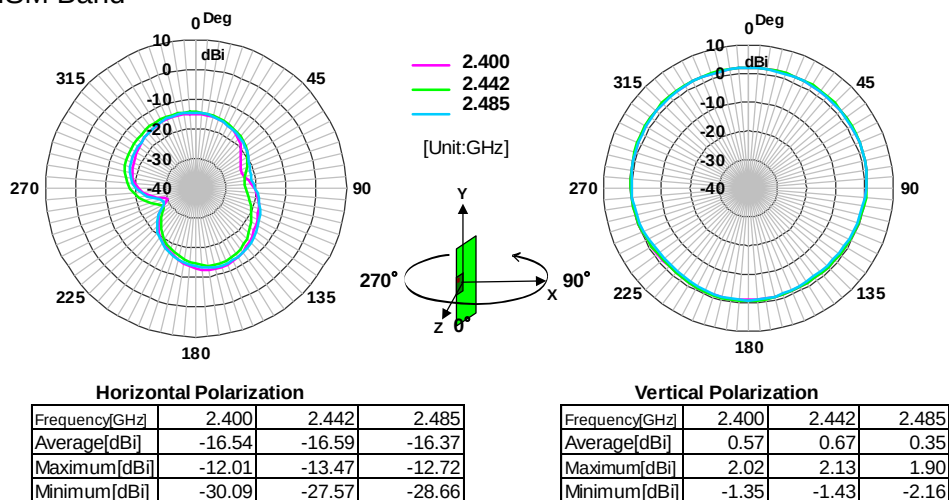


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## ANT162442DT-2001A2

### Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 50x20x1 mm.  
2.4GHz ISM Band



H-Pol.

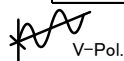
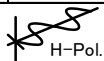
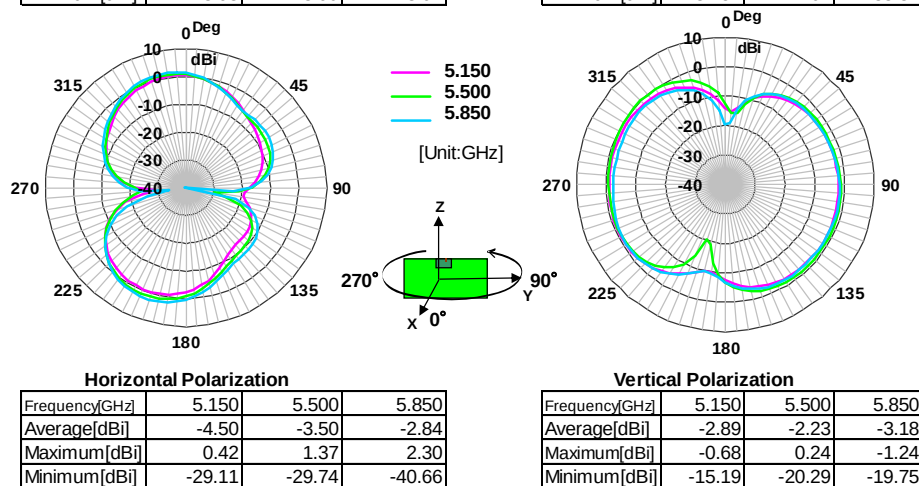
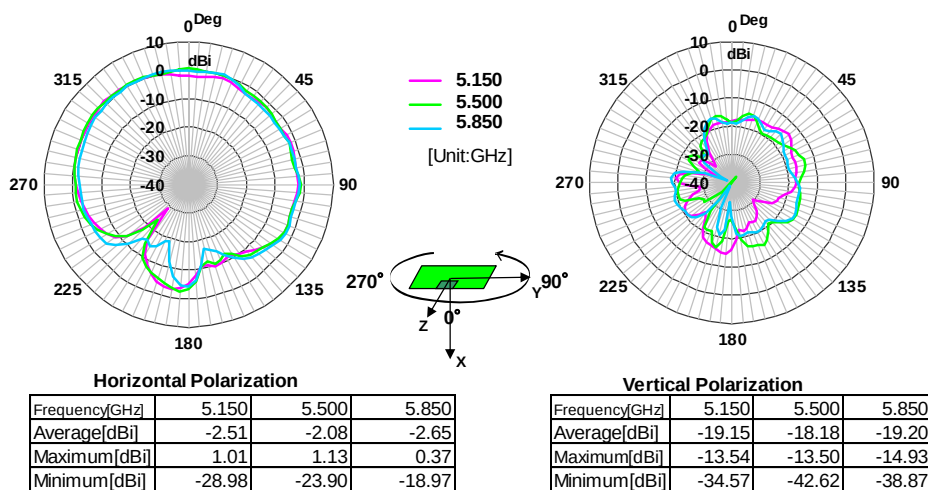
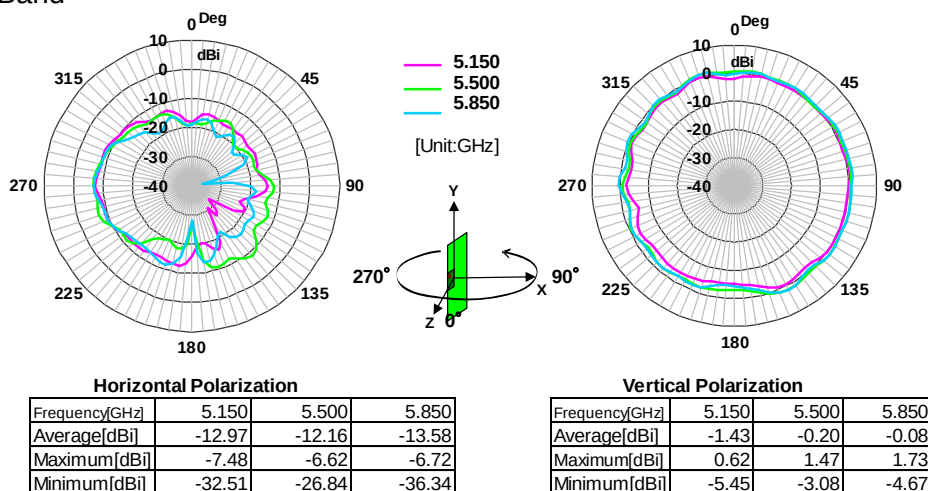
V-Pol.

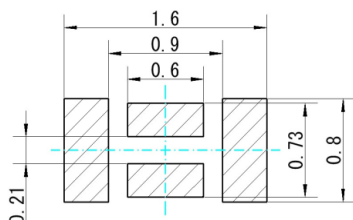
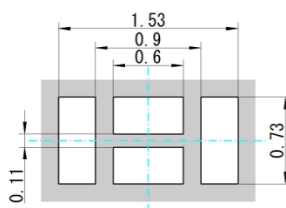
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## ANT162442DT-2001A2

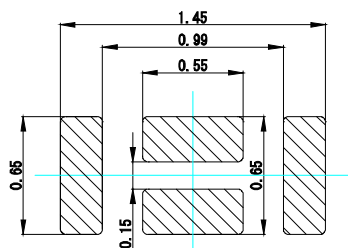
### Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 50x20x1 mm.  
5.5GHz Band

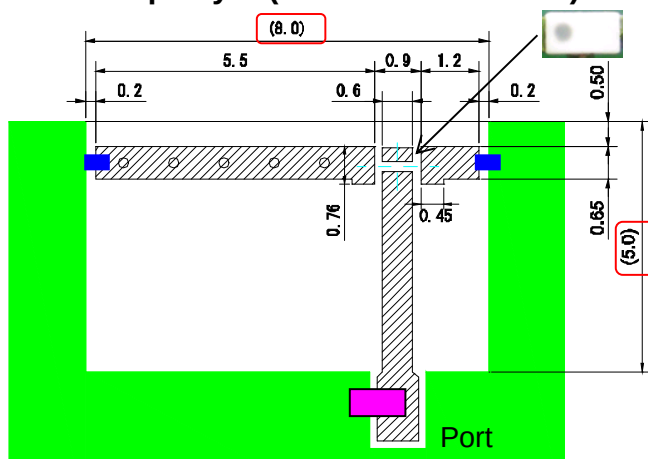


**ANT162442DT-2001A2****RECOMMENDED LAND PATTERN****Recommend land pattern and solder resist pattern****< Land pattern >****< Solder resist pattern >**

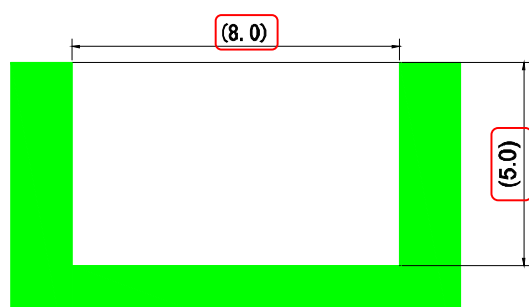
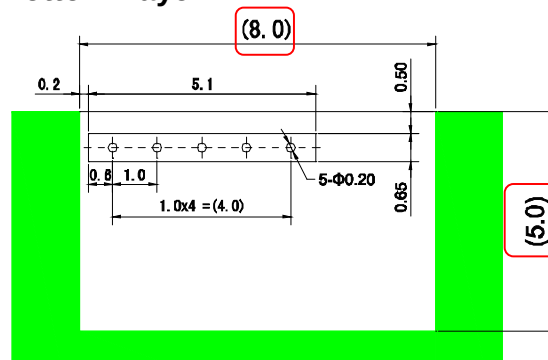
- Center line of Chip
- Land Pattern
- Resist Pattern

**Recommend aperture size of metal mask for solder printing**

- Center line of Chip
- Aperture of metal

**Example of Antenna pattern layout (TDK Standard PCB)****<Top Layer (Parts mounted side) >**

- Center line of Chip antenna
  - Antenna keep out area (All Layer GND off)
  - Ft : Frequency tuning component
  - Mt : Impedance matching component
  - Antenna Pattern
  - VIA :  $\Phi 0.2\text{mm}$
  - GND
- [ Unit : mm ]

**<Inner Layer >****<Bottom Layer >**

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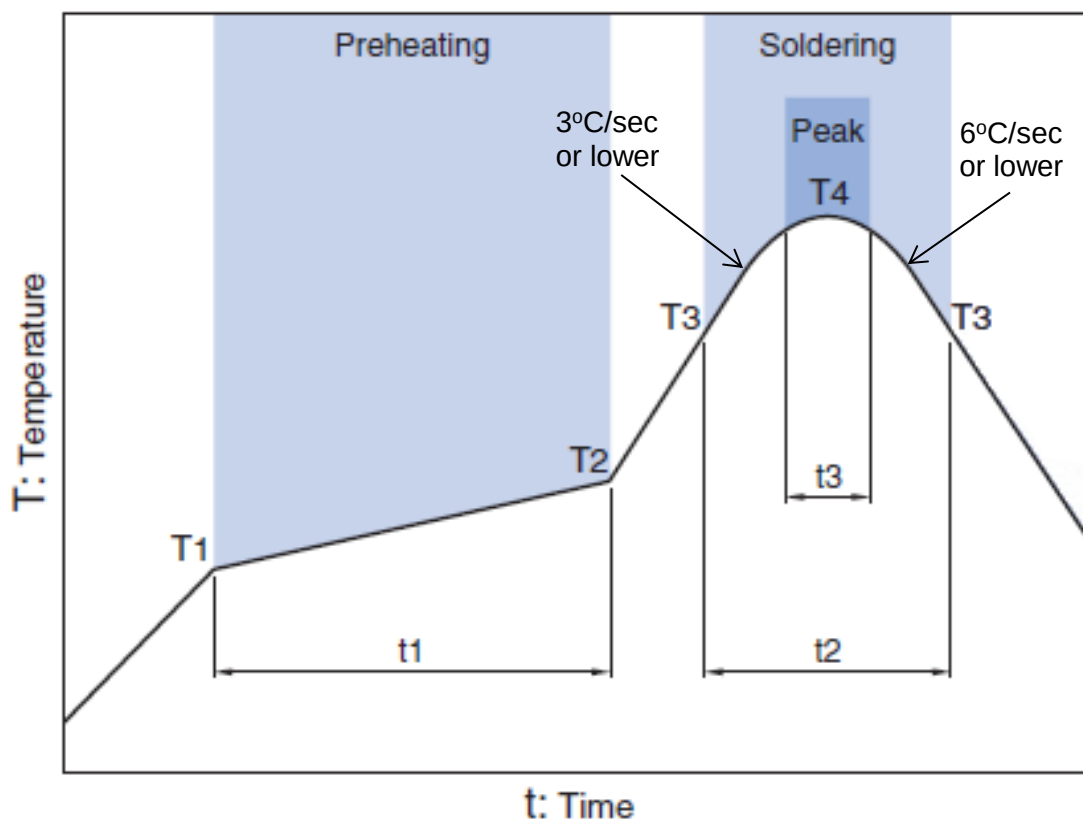
## ANT162442DT-2001A2

### ■ ENVIROMENT INFORMATION

RoHS Statement  
RoHS Compliance

TDK Corporation

## RECOMMENDED REFLOW PROFILE



| Preheating |       |              | Soldering                |              |              |            |
|------------|-------|--------------|--------------------------|--------------|--------------|------------|
|            |       |              | Critical zone (T3 to T4) |              | Peak         |            |
| Temp.      |       | Time         | Temp.                    | Time         | Temp.        | Time       |
| T1         | T2    | t1           | T3                       | t2           | T4           | t3 *       |
| 150°C      | 200°C | 60 to 120sec | 217°C                    | 60 to 120sec | 240 to 260°C | 30 sec Max |

\* t3 : Time within  $5^\circ\text{C}$  of actual peak temperature

The maximum number of reflow is 3.

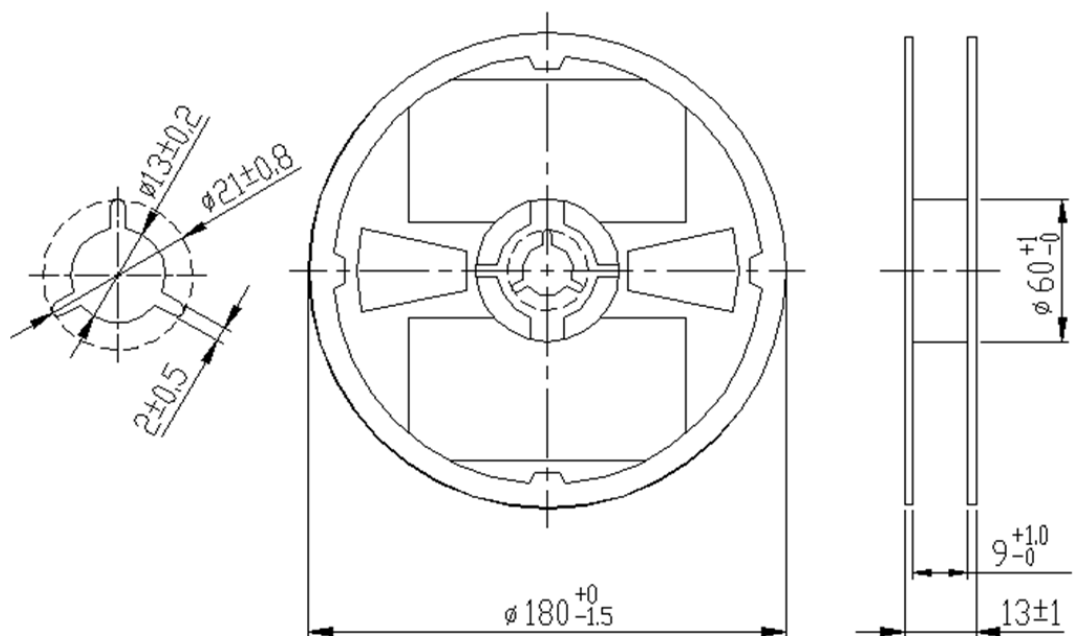
Note: Lead free solder is recommended.  
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

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### PACKAGING STYLE

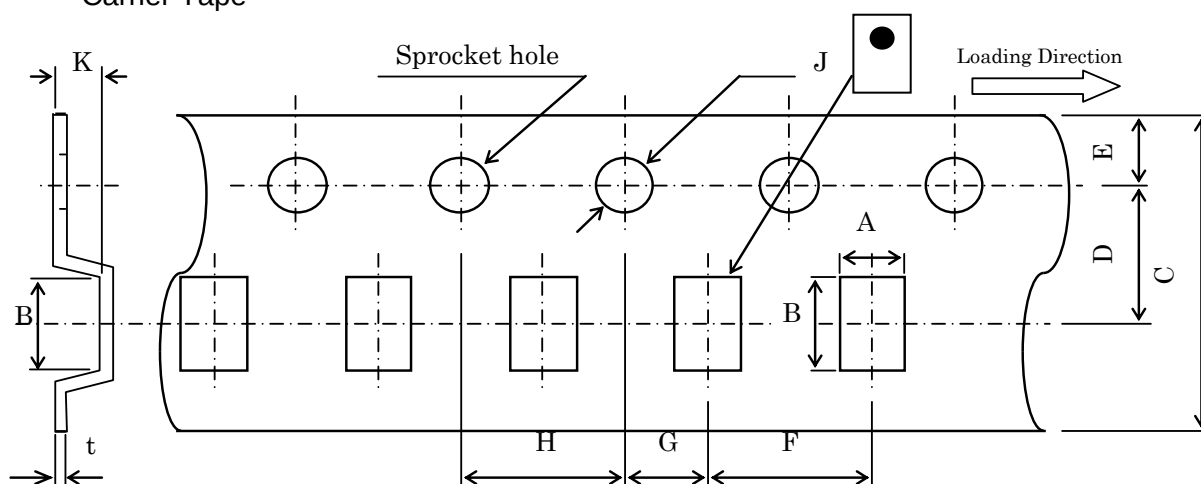
Reel Dimensions



Dimensions in mm

Carrier Tape

Material of the carrier tape : PS



Dimensions (mm)

| A          | B          | C         | D          | E         | F         | G          | H         | J            | K    | t          |
|------------|------------|-----------|------------|-----------|-----------|------------|-----------|--------------|------|------------|
| 0.97       | 1.8        | 8.0       | 3.5        | 1.75      | 4.0       | 2.0        | 4.0       | 1.5          | 0.55 | 0.25       |
| $\pm 0.05$ | $\pm 0.05$ | $\pm 0.2$ | $\pm 0.05$ | $\pm 0.1$ | $\pm 0.1$ | $\pm 0.05$ | $\pm 0.1$ | $\pm 0.1/-0$ | MAX  | $\pm 0.05$ |

**STANDARD PACKAGE QUANTITY**  
( pieces/reel )

4,000

All specifications are subject to change without notice.

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## REMINDERS FOR USING THESE PRODUCTS

Before using these products, be sure to request the delivery specifications.

### SAFETY REMINDERS

Please pay sufficient attention to the warnings for safe designing when using these products.



#### REMINDERS

The products listed on this specification sheet are intended for use in general electronic equipment (AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.

The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1. Aerospace/Aviation equipment
2. Transportation equipment (cars, electric trains, ships, etc.)
3. Medical equipment
4. Power-generation control equipment
5. Atomic energy-related equipment
6. Seabed equipment
7. Transportation control equipment
8. Public information-processing equipment
9. Military equipment
10. Electric heating apparatus, burning equipment
11. Disaster prevention/crime prevention equipment
12. Safety equipment
13. Other applications that are not considered general-purpose applications

When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.