

## 样品承认规格书

### PART SHEET FOR APPROVAL

|                              |                                                               |
|------------------------------|---------------------------------------------------------------|
| 制造商名称:<br>Manufacturer:      | TDK 股份有限公司<br>TDK Corporation                                 |
| 供应商名称<br>Supplier::          | 深圳市天河星供应链有限公司<br>Galaxy Holding International Co., Limited    |
| 产品名称:<br>Part Description:   | 天线<br>ANTENNA                                                 |
| 规格型号:<br>Model No:           | ANT(陶瓷),<br>ANT016008LCS2442MA2,2.4G,0603,DV6112G,ANT00166-CA |
| 制造商 P/N<br>Manufacturer P/N: | ANT016008LCS2442MA2                                           |
| 华曦达编码:<br>SDMC P/N:          | 360600002                                                     |
| 日期:<br>Issued Date:          | 2023.10.18                                                    |

#### 供应商确认 Supplier confirmation

|            |             |             |
|------------|-------------|-------------|
| 承办 Made By | 审核 Engineer | 批准 Approver |
| 李健飞        | 陈胜君         | 王应艳         |

#### 华曦达确认 SDMC confirmation

|                           |                                                                                    |        |             |
|---------------------------|------------------------------------------------------------------------------------|--------|-------------|
| 承认原因:<br>Approval Reason: | <input type="checkbox"/> 新物料 New Part <input type="checkbox"/> 替代料 Substitute Part |        |             |
| 承办 Made By                | 审核 Engineer                                                                        |        | 批准 Approver |
|                           | 品质 Quality                                                                         | 研发 R&D | 业务 Sales    |
|                           |                                                                                    |        |             |

备注: 签名表明提交样品获得承认, 图纸规格已经受控。Note: Signature indicates that the submitted sample is approved and the drawing/specification is now the controlling document.

地址: 深圳市南山区高新科技园科技南十二路 18 号长虹科技大厦 19 层  
Address: 19/F, Changhong Science & Technology Mansion, No.18, Keji South 12th Road, High-tech Industrial Park, Nanshan District, Shenzhen, China



May. 2020 Ver.6.0  
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## Multilayer Antenna

For 2.4GHz W-LAN & Bluetooth

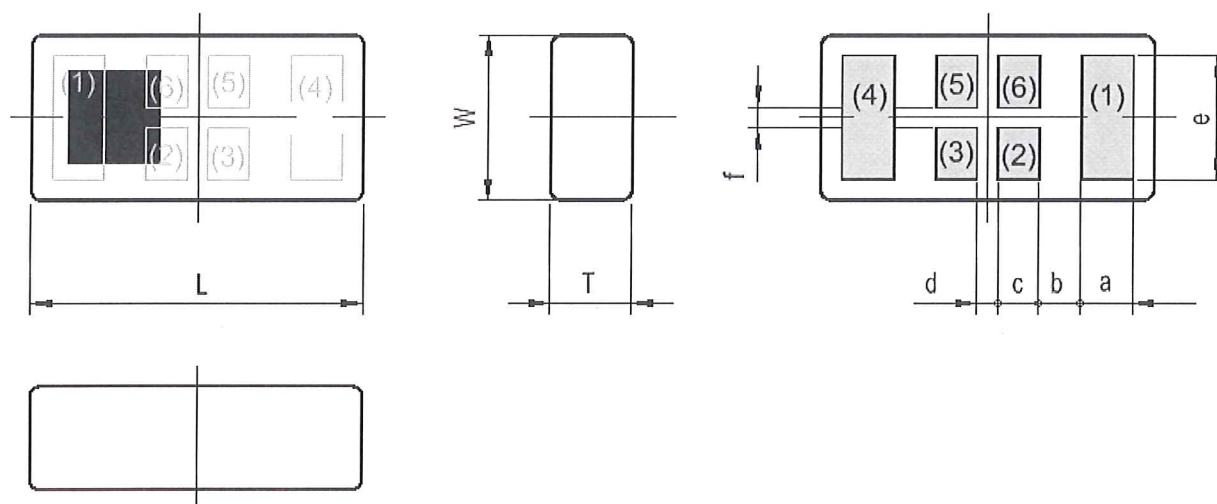
ANT Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **ANT016008LCS2442MA2**

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## ANT016008LCS2442MA2

### ■ 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 |
| (2) | Dummy pad          |
| (3) | Dummy pad          |
| (4) | Feed point         |
| (5) | Dummy pad          |

|     |           |
|-----|-----------|
| (6) | Dummy pad |
|-----|-----------|

### ■ TERMINATION FINISH

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

**ANT016008LCS2442MA2****ELECTRICAL CHARACTERISTICS**

( Measurement )

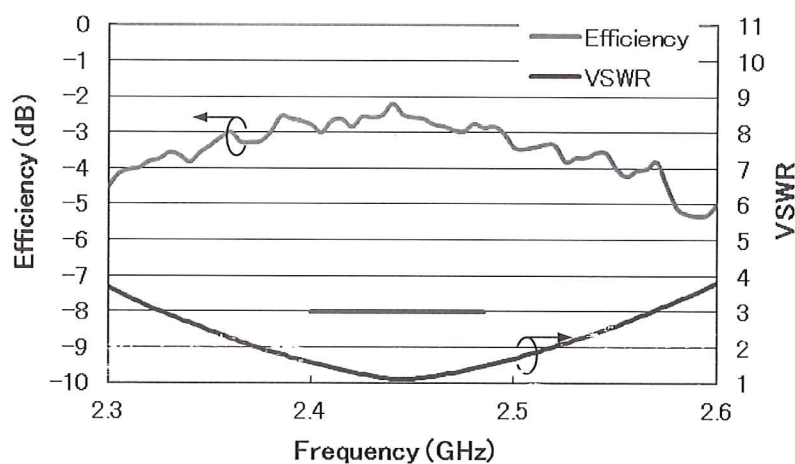
| Parameter                      | Frequency (MHz) | TDK Spec     |      |      |
|--------------------------------|-----------------|--------------|------|------|
|                                |                 | Min.         | Typ. | Max. |
| VSWR                           | 2400 to 2484    | -            | 1.60 | 3.0  |
| Antenna Gain (dBi)**           | 2400 to 2484    | -            | 2.5  | -    |
| Polarization                   |                 | Linear       |      |      |
| PCB Size (mm)                  |                 | 50 x 10      |      |      |
| Antenna keep-out Area (mm)     |                 | 6 x 2.5      |      |      |
| 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 50x10x1 mm.  
Efficiency and VSWR



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## ANT016008LCS2442MA2

### ■ MAXIMUM RATINGS

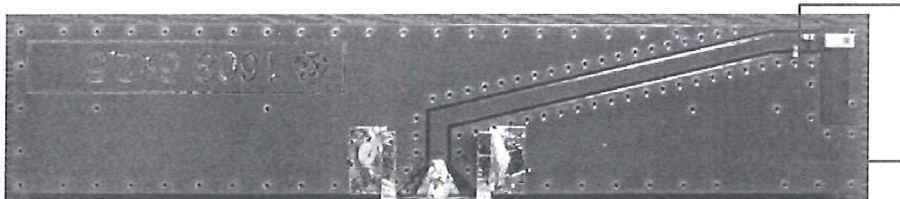
| Parameter                                 | TDK Spec      | Conditions           |
|-------------------------------------------|---------------|----------------------|
| Operating temperature (°C)                | −40 to +85 °C |                      |
| Storage temperature (°C)                  | −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

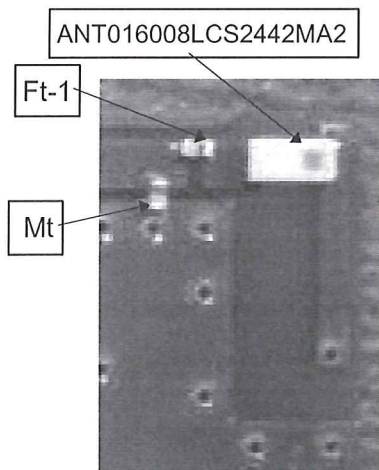
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## ANT016008LCS2442MA2

### ■ EVALUATION BOARD

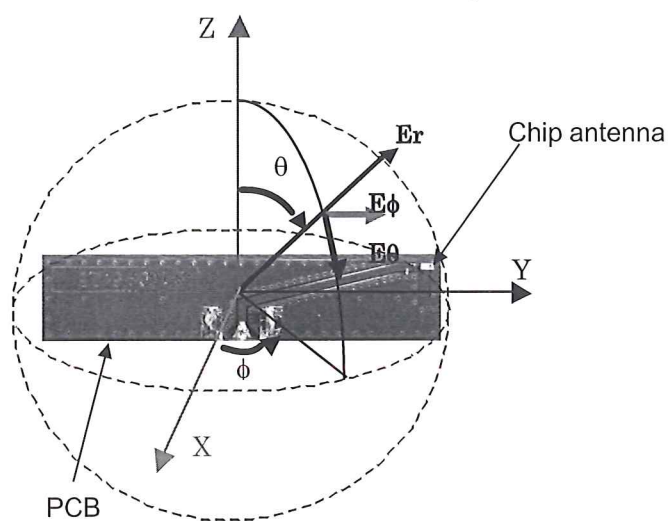


PCB size : 50mm x 10mm x 1mm  
Antenna area : 6 x 2.5 mm



|      | Component P/N          |
|------|------------------------|
| Ft-1 | 2.0nH(MLG0603P2N0:TDK) |
| Mt   | 3.0nH(MLG0603P3N0:TDK) |

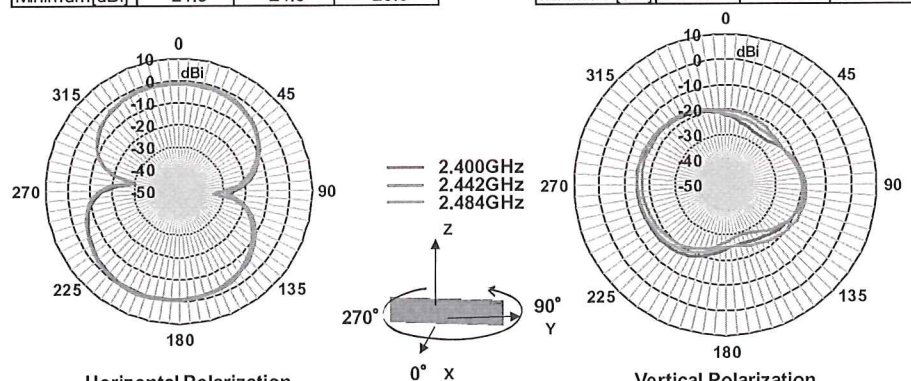
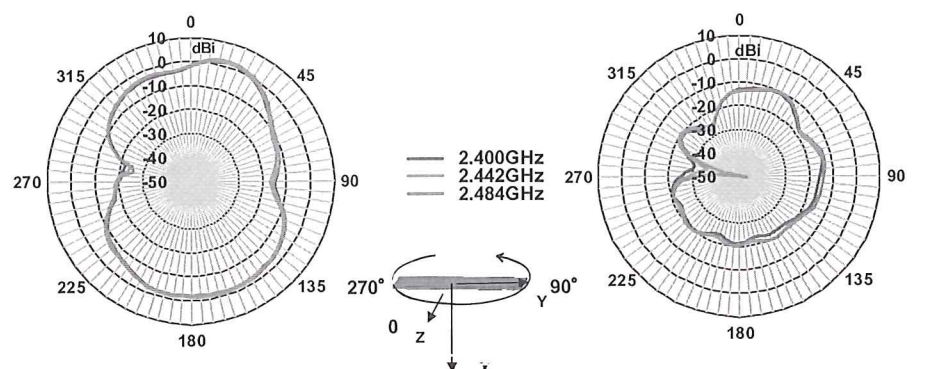
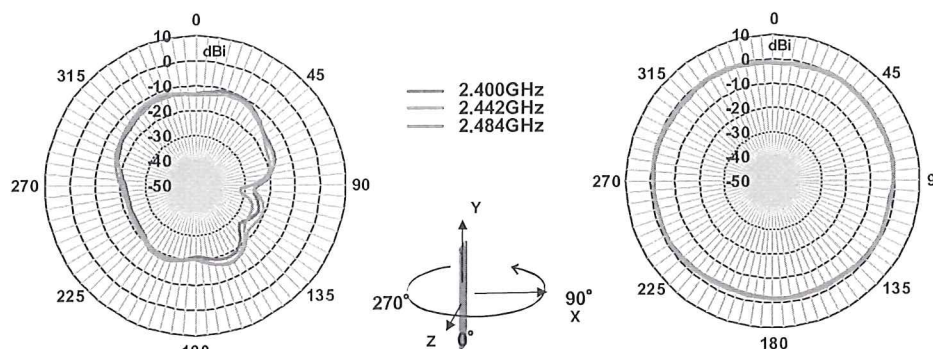
Measurement condition for Radiation pattern



## ANT016008LCS2442MA2

### Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 50x10x1 mm.  
2.4GHz band



All specifications are subject to change without notice.

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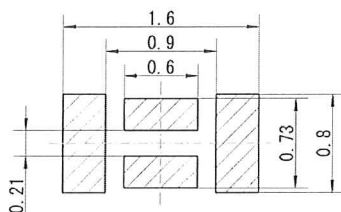
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## ANT016008LCS2442MA2

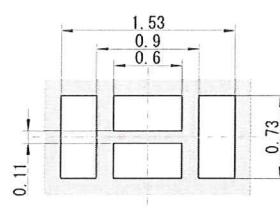
### RECOMMENDED LAND PATTERN

Recommend land pattern and solder resist pattern

< Land pattern >

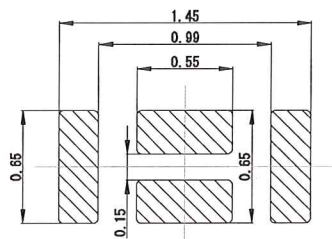


< Solder resist pattern >



- Center line of Chip
- Land Pattern
- Resist Pattern

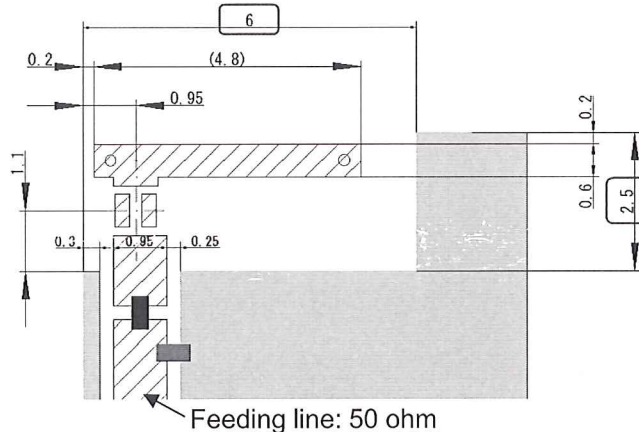
Recommend aperture size of metal mask for solder



- Center line of Chip
- Aperture of metal

Example of Antenna pattern layout (TDK Standard PCB)

<Top Layer (Parts mounted side) >

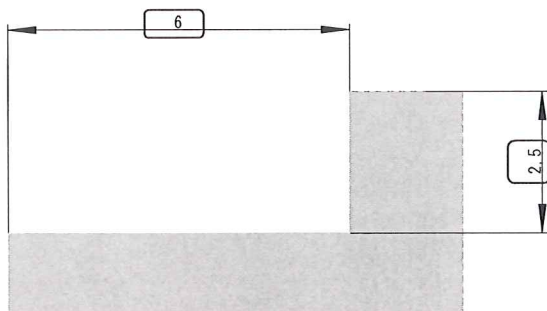


- Center line of Chip antenna
- Antenna keep out area (All Layer GND off)
- Ft : Frequency tuning component
- Mt : Impedance matching component
- Antenna Pattern
- VIA :  $\Phi 0.2\text{mm}$
- GND

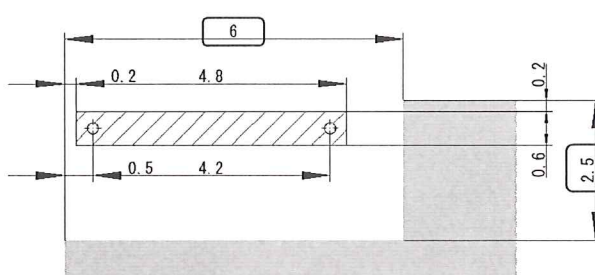
[ Unit : mm ]

Feeding line: 50 ohm

<Inner Layer >



<Bottom Layer >



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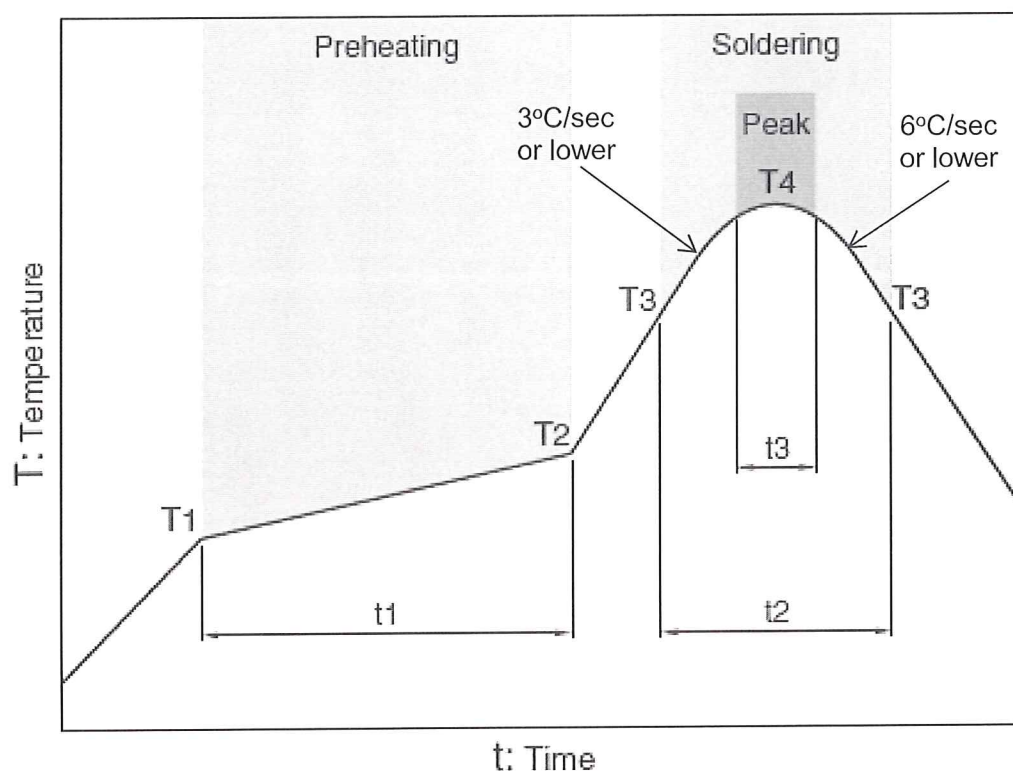
## ANT016008LCS2442MA2

### ■ 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.

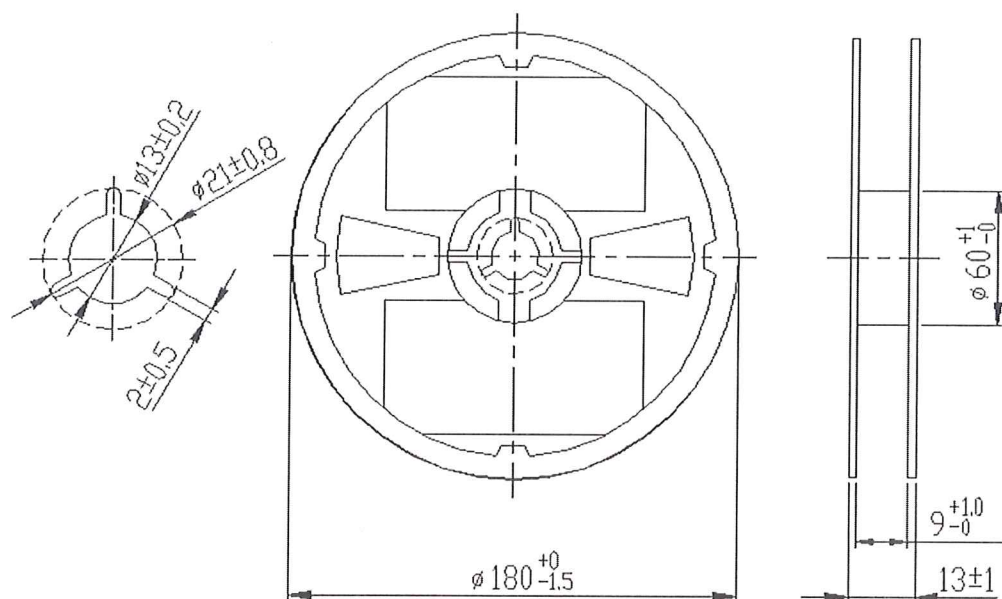
Note: Lead free solder is recommended.  
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

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## ANT016008LCS2442MA2

### PACKAGING STYLE

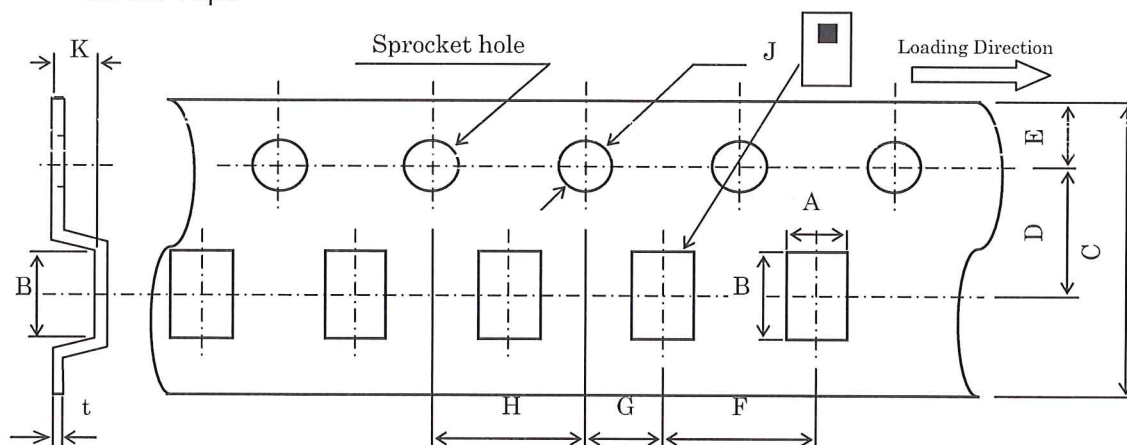
Reel Dimensions



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    |
| +/-0.05 | +/-0.05 | +/-0.2 | +/-0.05 | +/-0.1 | +/-0.1 | +/-0.05 | +/-0.1 | +0.1/-0 | MAX  | +/-0.05 |

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

4,000

## 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.