



Dec. 2024 Ver.8.0  
TDK Corporation

## Multilayer Antenna

For 2.4GHz W-LAN & Bluetooth

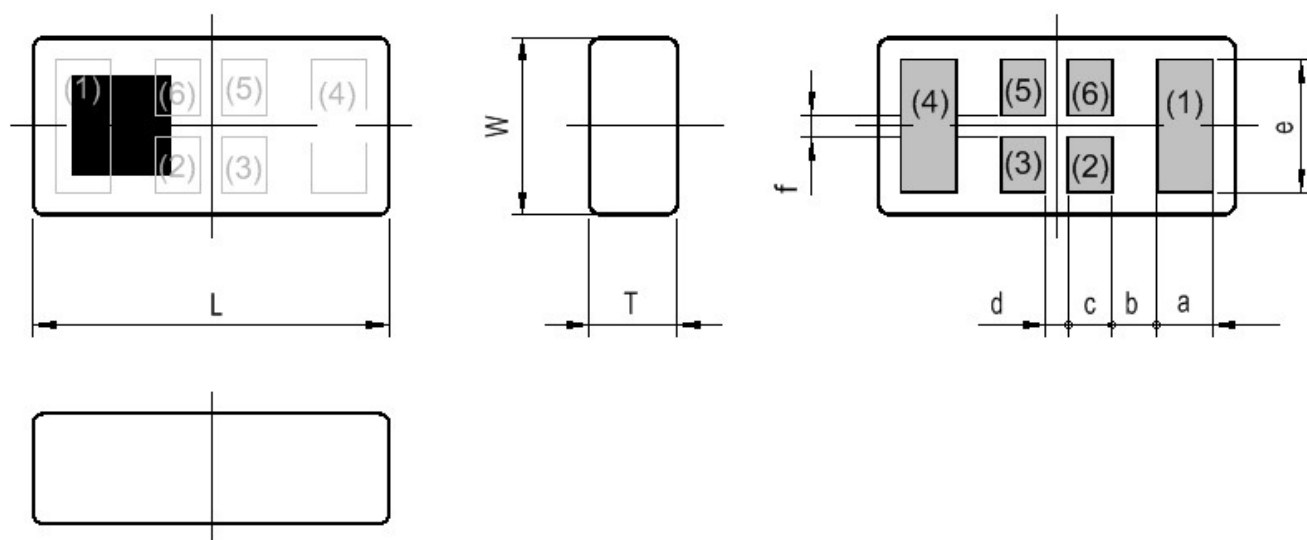
ANT Series 1.6x0.8mm [EIA 0603] TYPE

P/N: **ANT162442ST-1201AM1**

***AEC-Q200 (-40 ~ 85 [deg.C] )  
qualified component family***

## ANT162442ST-1201AM1

### ■ 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

## ANT162442ST-1201AM1

### ELECTRICAL CHARACTERISTICS

( Measurement )

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
VSWR (25° C)	2400 to 2484	-	1.60	3.0
VSWR (-40~+85° C)	2400 to 2484	-	-	4.0
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)		

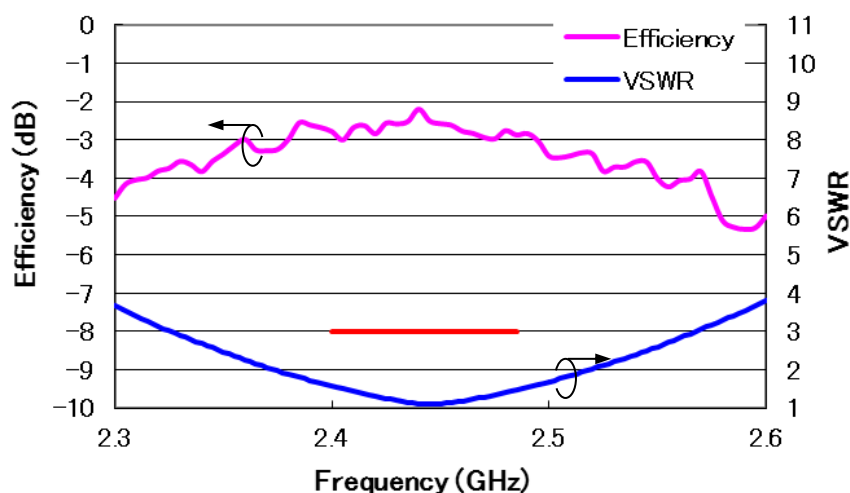
\* This is typical antenna performance with the standard PCB.

\*\* Reference value

### FREQUENCY CHARACTERISTICS

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

Efficiency and VSWR



## ANT162442ST-1201AM1

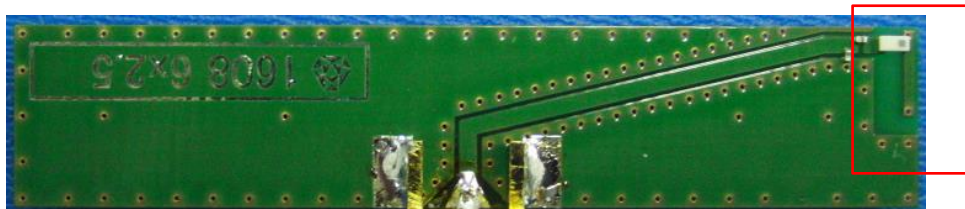
### ■ MAXIMUM RATINGS

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

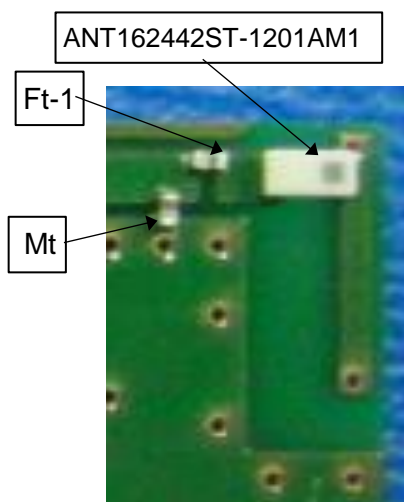
\*1 : Refer to 3GPP TS 38.101-1 V15.2.0

## ANT162442ST-1201AM1

### EVALUATION BOARD

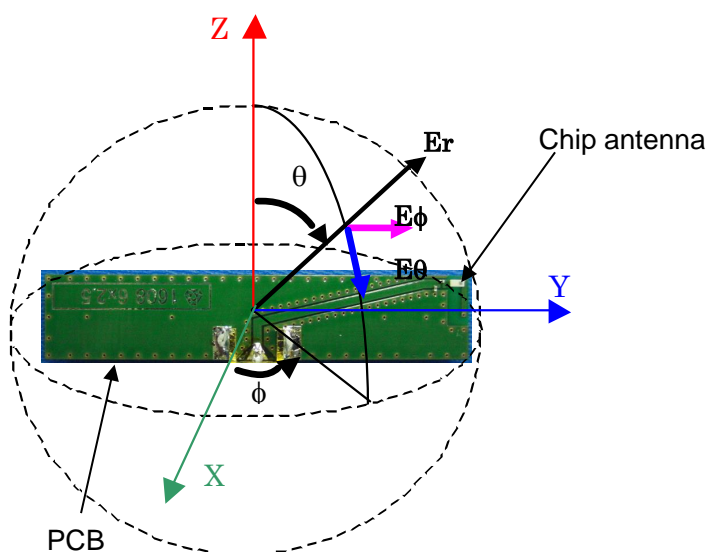


PCB size : 50mm x 10mm x 1mm  
Antenna area : 6 x 2.5 mm



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

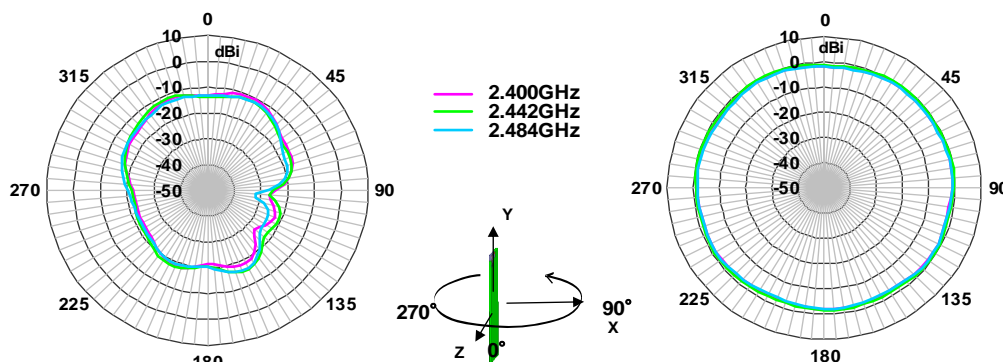
Measurement condition for Radiation pattern



# ANT162442ST-1201AM1

## Radiation Pattern

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

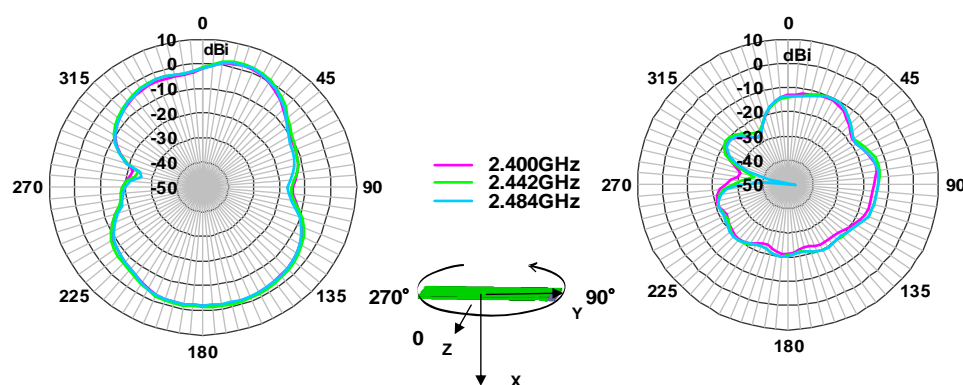


Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-16.1	-16.0	-16.4
Maximum[dBi]	-10.5	-11.3	-11.7
Minimum[dBi]	-26.9	-26.5	-31.9

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-1.4	-0.8	-1.6
Maximum[dBi]	-0.5	0.0	-0.9
Minimum[dBi]	-2.4	-2.1	-3.0

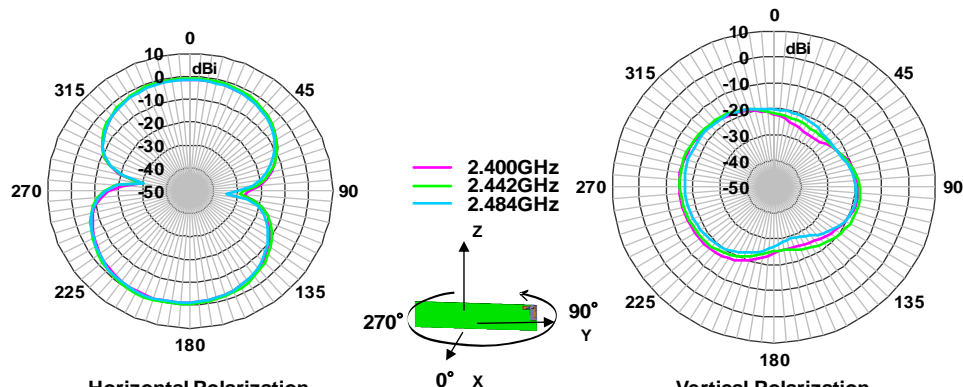


Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-4.3	-3.6	-4.2
Maximum[dBi]	1.6	2.5	2.0
Minimum[dBi]	-21.9	-24.0	-25.5

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-17.5	-16.8	-17.0
Maximum[dBi]	-11.1	-10.4	-10.4
Minimum[dBi]	-30.4	-36.3	-53.3

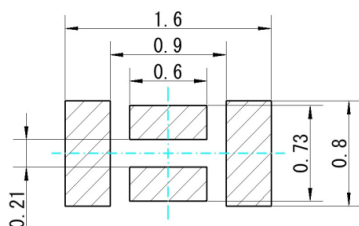
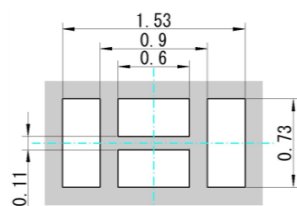


Horizontal Polarization

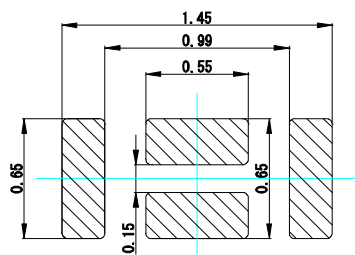
Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-3.9	-3.3	-4.0
Maximum[dBi]	-0.5	0.2	-0.3
Minimum[dBi]	-29.4	-28.7	-34.7

Vertical Polarization

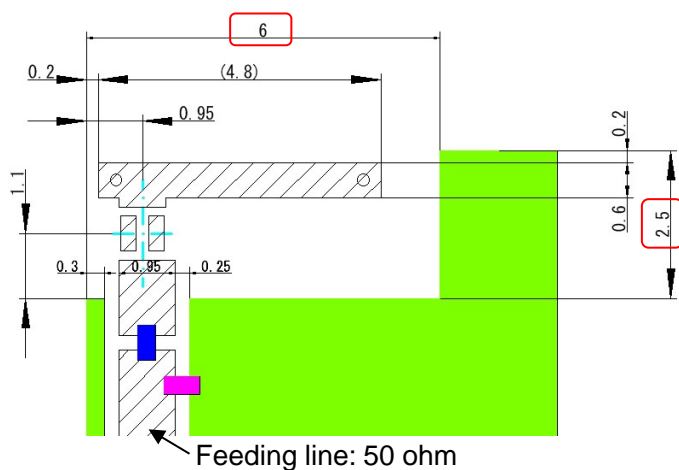
Frequency(GHz)	2.4	2.442	2.484
Average[dBi]	-18.7	-18.6	-19.8
Maximum[dBi]	-14.8	-15.0	-16.7
Minimum[dBi]	-26.3	-25.3	-29.1

**ANT162442ST-1201AM1****RECOMMENDED LAND PATTERN****Recommend land pattern and solder resist pattern****< Land pattern >****< Solder resist pattern >**

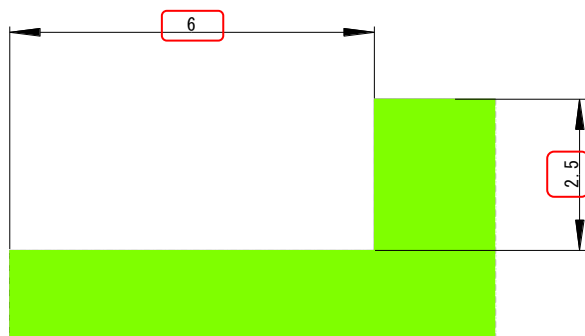
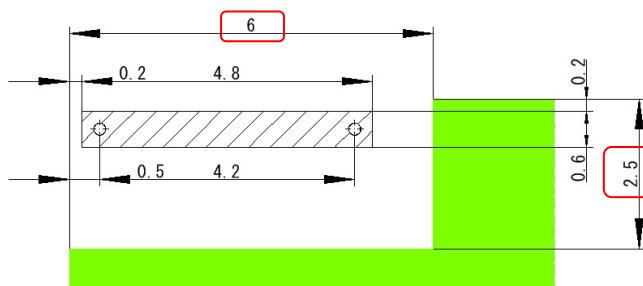
- Center line of Chip
- Land Pattern
- Resist Pattern

**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 ]

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

Dec. 2024 Ver.8.0  
TDK Corporation

## ANT162442ST-1201AM1

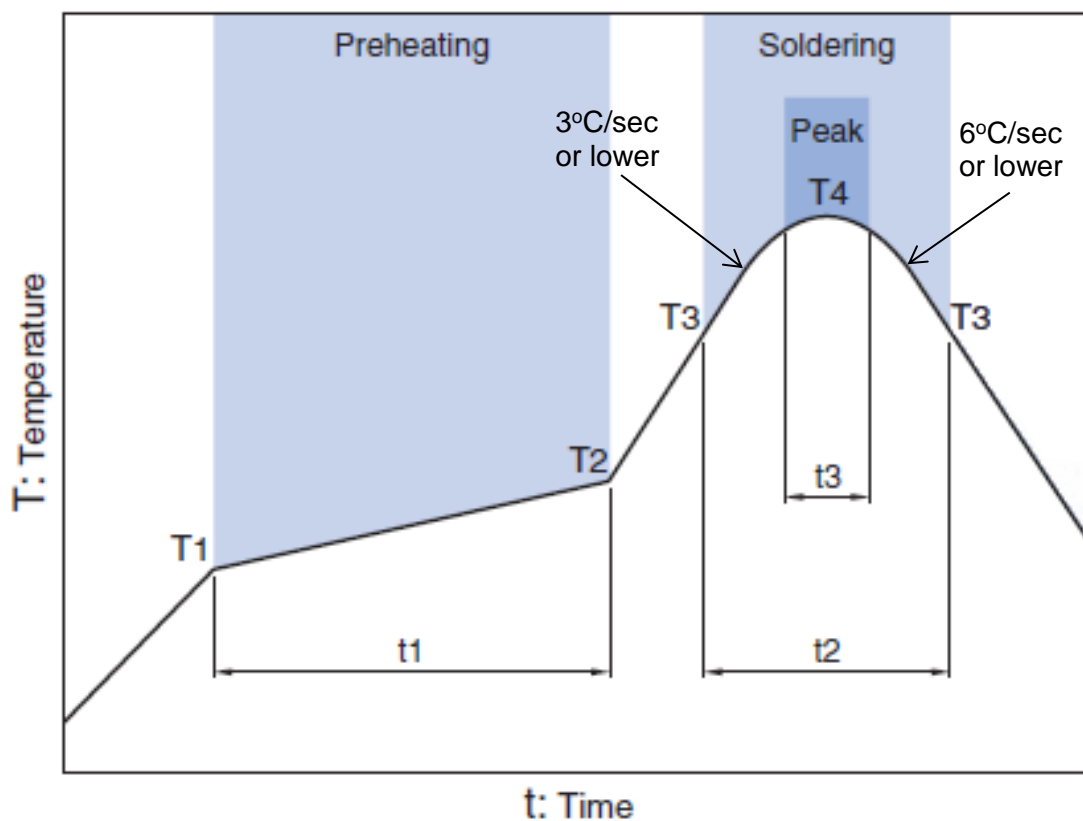
### ■ ENVIROMENT INFORMATION

RoHS Statement  
RoHS Compliance



TDK Corporation

## RECOMMENDED REFLOW PROFILE



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

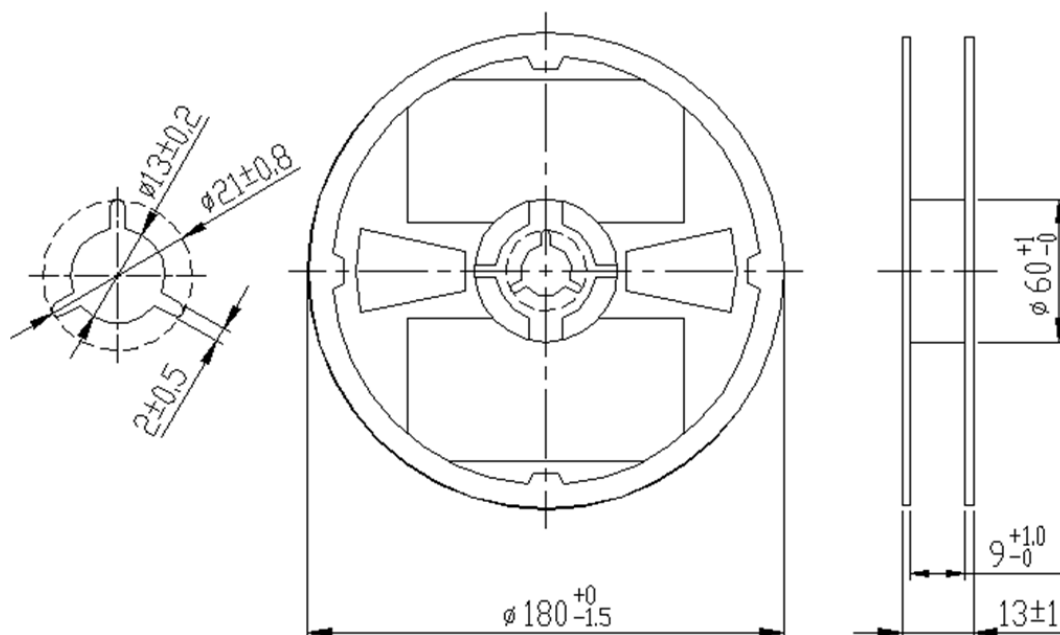
\* t3 : Time within  $5^\circ\text{C}$  of actual peak temperature

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)

**ANT162442ST-1201AM1****PACKAGING STYLE**

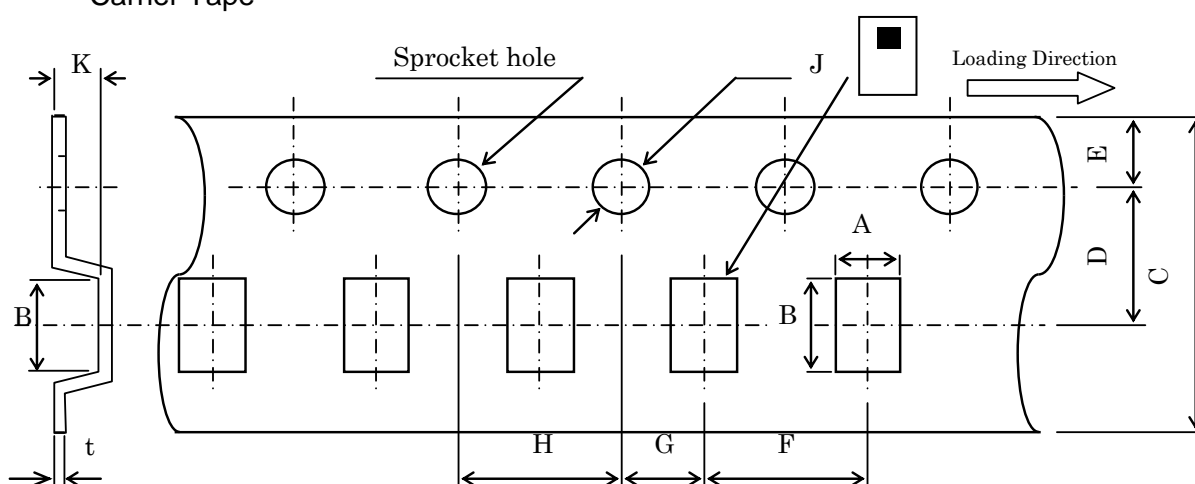
Reel Dimensions



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

## 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 catalog 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 catalog.

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

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.