



May. 2016 Ver.1.0
TDK Corporation

Multilayer Antenna

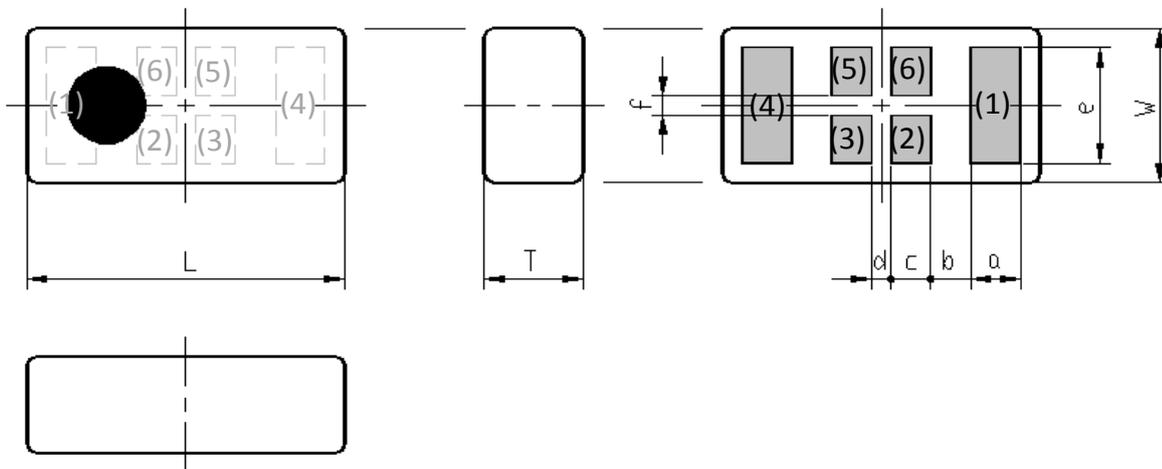
For 5GHz W-LAN,DSRC

ANT Series 1608 TYPE

P/N: **ANT165550ST-1003A1**

ANT165550ST-1003A1

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)	Dummy pad
(2)	Feed point
(3)	Feed point
(4)	Radiator electrode
(5)	Feed point

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

Note:

These samples are marked with trial sample identification.

In mass production, this sample marking will be changed to show in the TDK full specification.

TEMPERATURE RANGE

Operating temperature	Storage temperature
-40 to +85 °C	-40 to +85 °C

TERMINATION FINISH

Material
Au plate

ANT165550ST-1003A1

■ ELECTRICAL CHARACTERISTICS

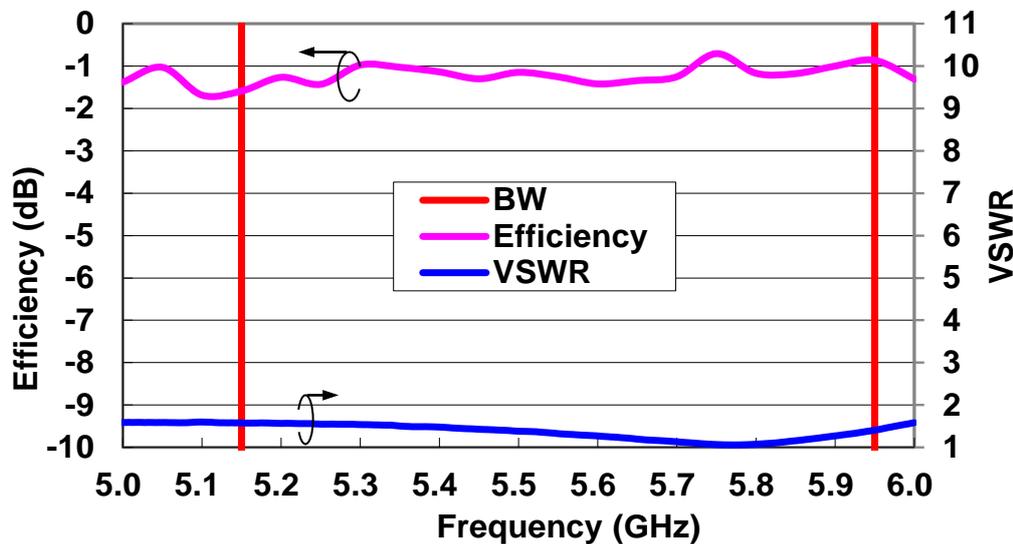
(Measurement)

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
VSWR	5150 to 5950	-	1.6	TBD
Polarization		Linear		
PCB Size (mm)		25 x 10		
Antenna keep-out Area (mm)		6x2.5		
Characteristic Impedance (ohm)		50 (Nominal)		

* This is typical antenna performance with the standard PCB.

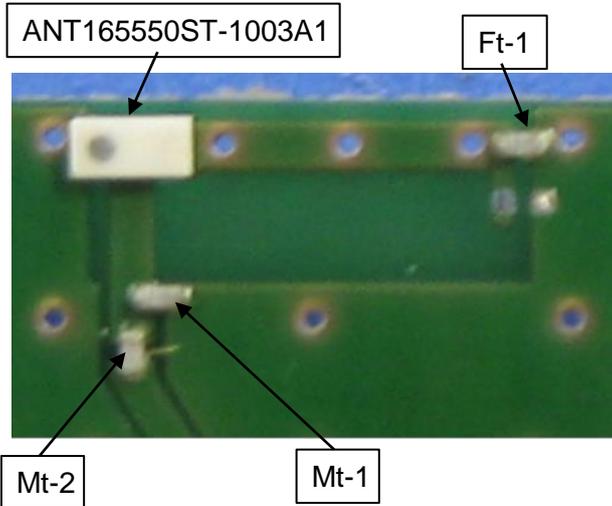
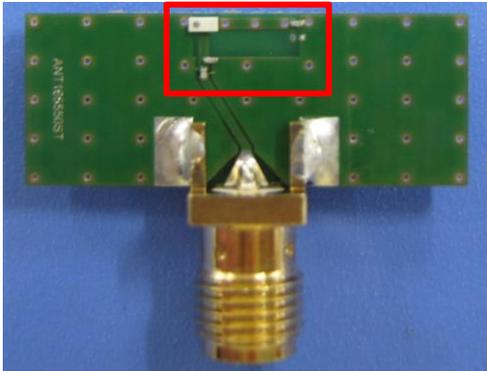
■ FREQUENCY CHARACTERISTICS

Note: Tested antenna has been soldered. Evaluation board size is 25x10x1 mm.



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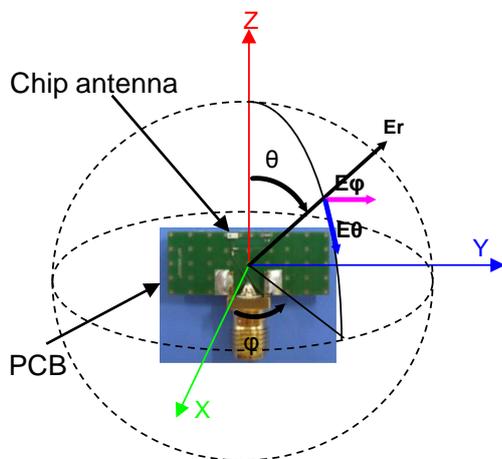
EVALUATION BOARD



PCB size : 25mm x 10mm x 1mm
Antenna area : 6 x 2.5 mm

	Element Value
Ft-1	0.9pF
Mt-1	0.1pF
Mt-2	0.6pF

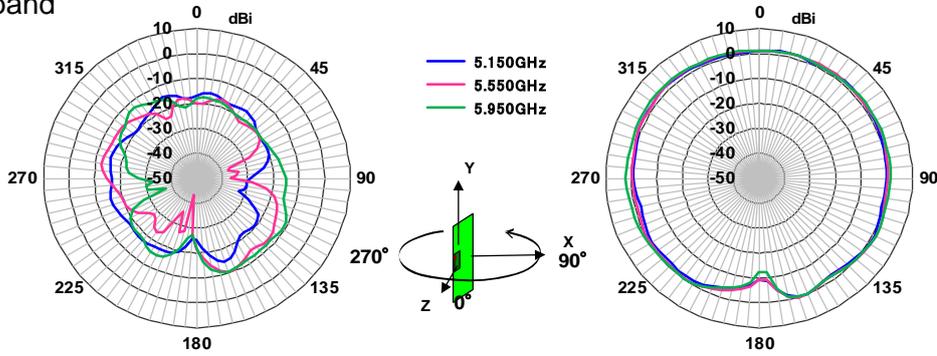
Measurement condition for Radiation Pattern



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Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 25x10x1 mm.
5GHz band

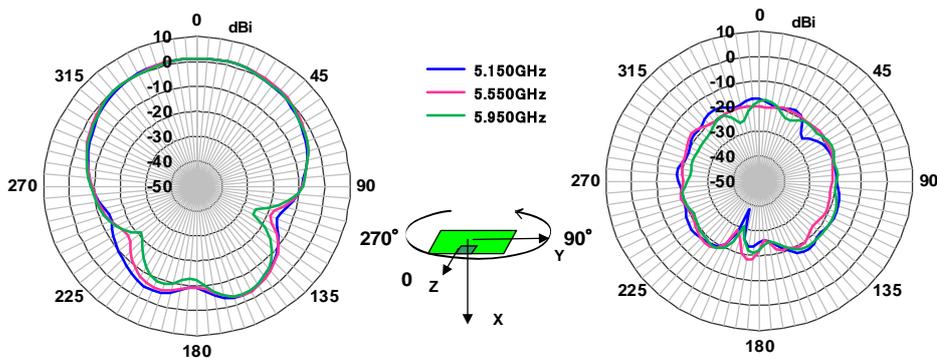


Horizontal Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-18.1	-16.9	-15.7
Maximum[dBi]	-14.9	-10.5	-10.6
Minimum[dBi]	-32.7	-43.0	-37.1

Vertical Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-0.1	0.3	0.8
Maximum[dBi]	1.8	2.1	2.5
Minimum[dBi]	-9.1	-9.3	-12.4

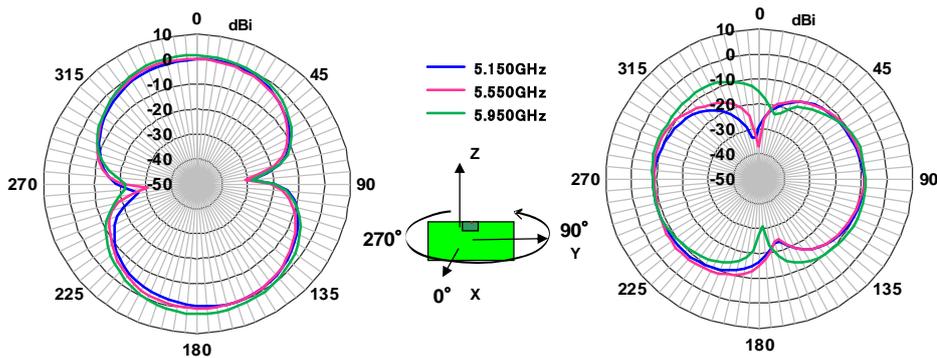


Horizontal Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-3.0	-2.9	-3.3
Maximum[dBi]	1.5	1.7	1.7
Minimum[dBi]	-16.0	-19.0	-25.3

Vertical Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-19.0	-19.9	-20.1
Maximum[dBi]	-16.4	-17.3	-17.5
Minimum[dBi]	-38.2	-28.6	-31.2



Horizontal Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-3.6	-3.2	-1.7
Maximum[dBi]	0.1	0.5	2.2
Minimum[dBi]	-28.4	-30.9	-28.2

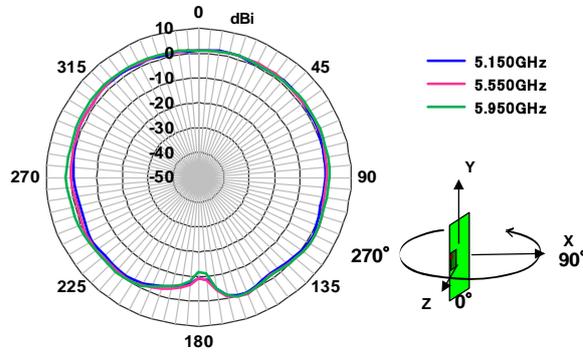
Vertical Polarization

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-11.5	-10.8	-10.1
Maximum[dBi]	-8.4	-7.3	-7.5
Minimum[dBi]	-33.3	-36.8	-31.1

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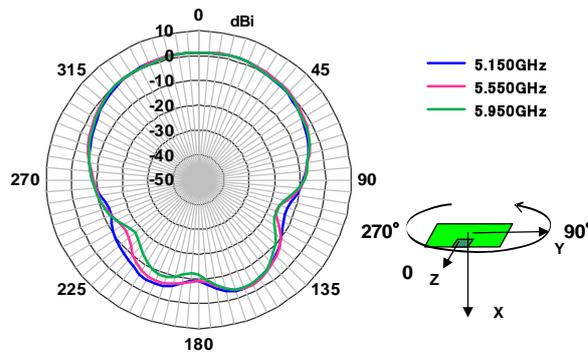
Radiation Pattern (Total Power)

Note: Tested antenna has been soldered. Evaluation board size is 25x10x1 mm.
5GHz Band



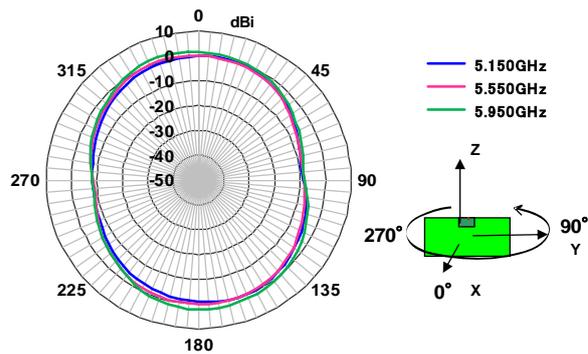
Total Power

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	0.0	0.4	0.9
Maximum[dBi]	1.8	2.2	2.6
Minimum[dBi]	-9.0	-9.1	-12.0



Total power

Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-2.9	-2.8	-3.2
Maximum[dBi]	1.5	1.7	1.7
Minimum[dBi]	-13.5	-16.9	-17.2



Total power

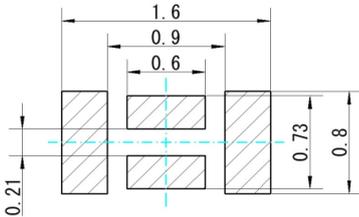
Frequency(GHz)	5.15	5.55	5.95
Average[dBi]	-3.0	-2.5	-1.1
Maximum[dBi]	0.1	0.5	2.2
Minimum[dBi]	-9.2	-9.0	-8.5

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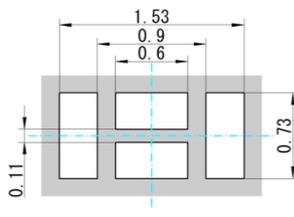
RECOMMENDED LAND PATTERN

Recommend land pattern and solder resist pattern

< Land pattern >

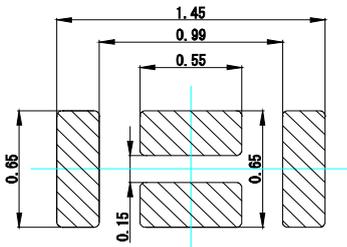


< Solder resist pattern >



- Center line of Chip
- Land Pattern
- Resist Pattern

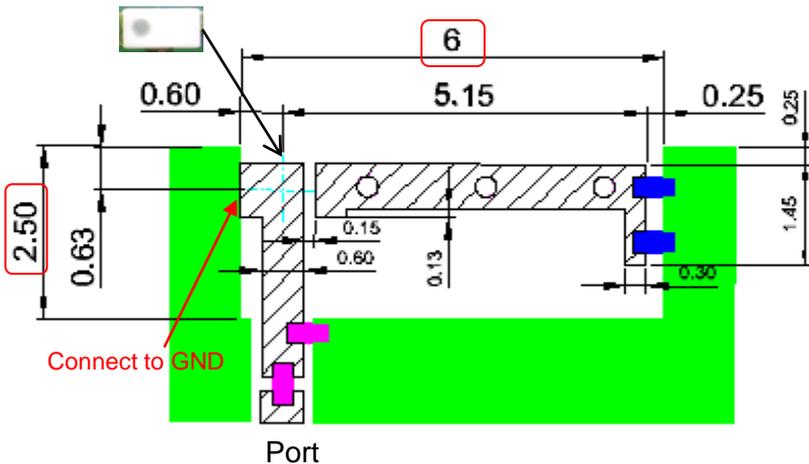
Recommend aperture size of metal mask for solder printing



- Center line of Chip
- Aperture of metal

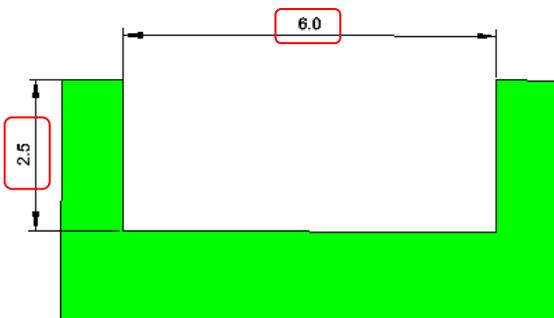
Example of Antenna pattern layout (TDK Standard PCB)

<Top Layer (Parts mounted side) >

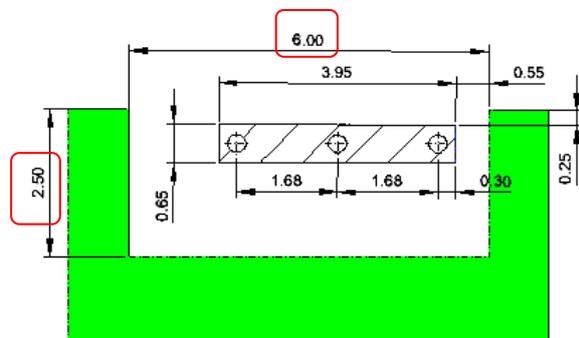


- Center line of Chip antenna
 - Antenna keep out area (All Layer GND off)
 - Ft : Frequency tuning component
 - Mt : Impedance matching component
 - Antenna Pattern
 - VIA : Φ 0.3mm
 - GND
- [Unit : mm]

<Inner Layer >



<Bottom Layer >



All specifications are subject to change without notice.

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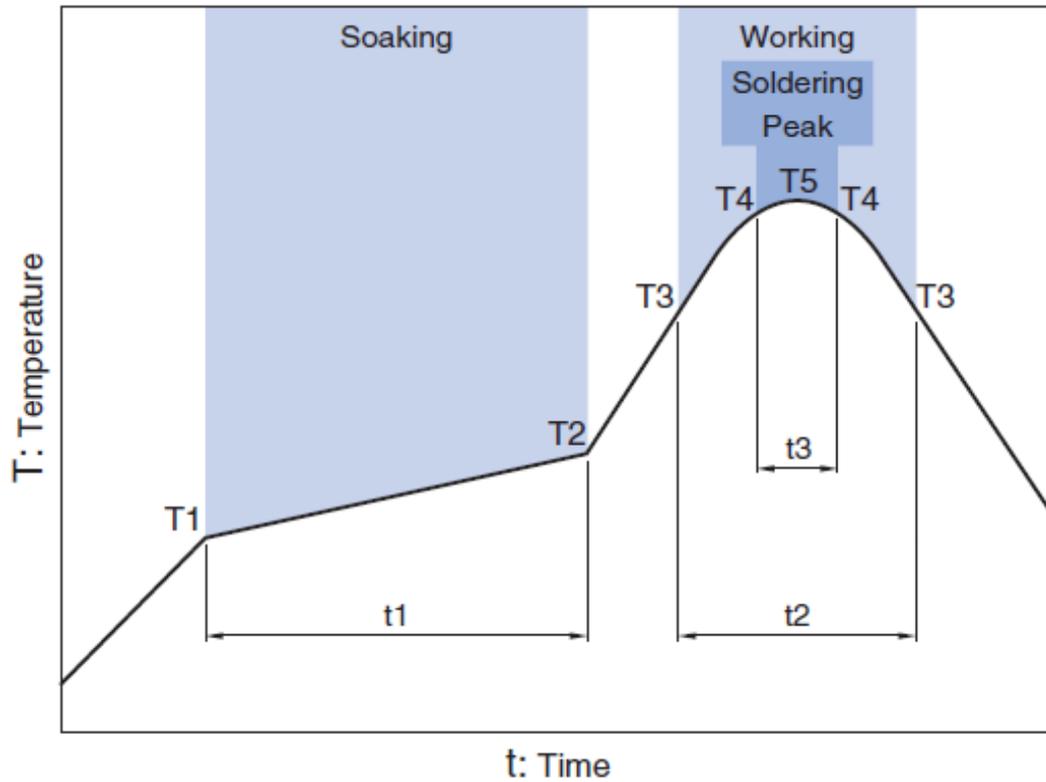
■ ENVIROMENT INFORMATION

RoHS Statement
RoHS Compliance

ANT165550ST-1003A1

■ RECOMMENDED REFLOW PROFILE

Pb free solder

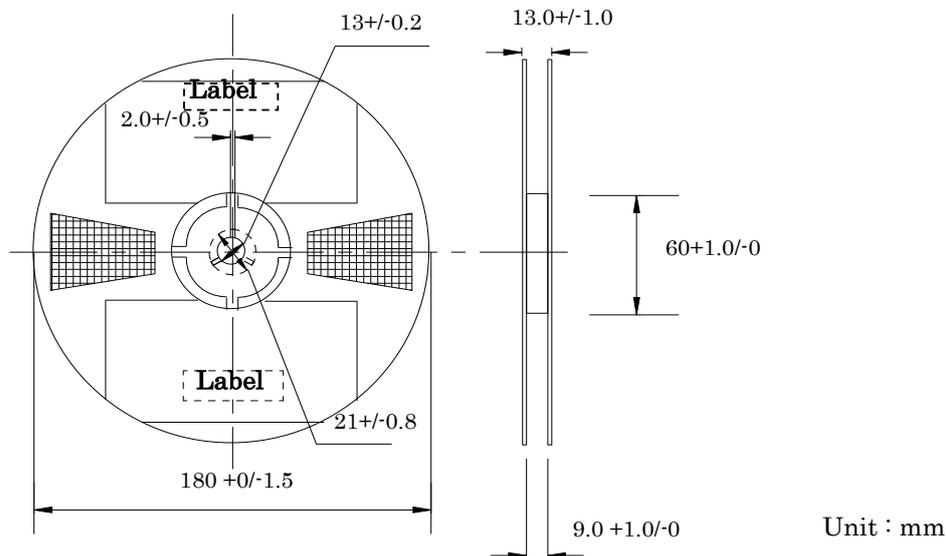


Soaking			Working		Soldering		Peak
Temp.	Temp.	Time	Temp.	Time	Temp.	Time	Temp.
T1	T2	t1	T3	t2	T4	t3	T5
150°C	180°C	60 to 120sec	230°C	30 to 60sec	247 to 253°C	within 10sec	260°C Max.

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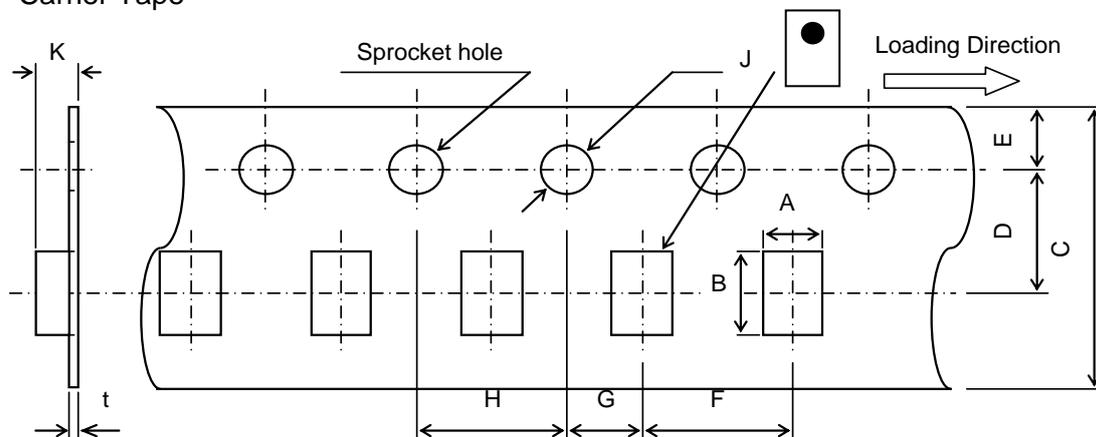
PACKAGING STYLE

Reel Dimensions



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.