



Nov. 2016 Ver.5.0
TDK Corporation

Multilayer Antenna

For 2.4GHz W-LAN & Bluetooth

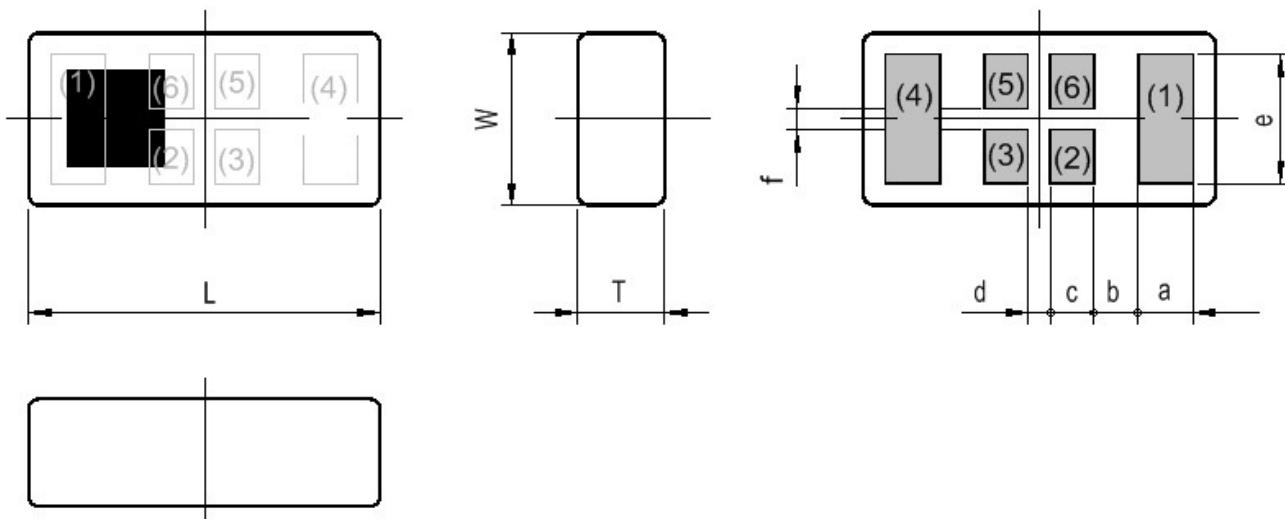
ANT Series

1608 TYPE

P/N: **ANT016008LCS2442MA1**

ANT016008LCS2442MA1

■ SHAPES AND DIMENSIONS



Dimensions (mm)

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

Terminal functions

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

(6)	Dummy pad
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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

■ TERMINATION FINISH

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

Material
Au plate

ANT016008LCS2442MA1

■ 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	-	1.6	-
Polarization		Linear		
PCB Size (mm)		50 x 20		
Antenna keep-out Area (mm)		5 x 3		
Characteristic Impedance (ohm)		50 (Nominal)		

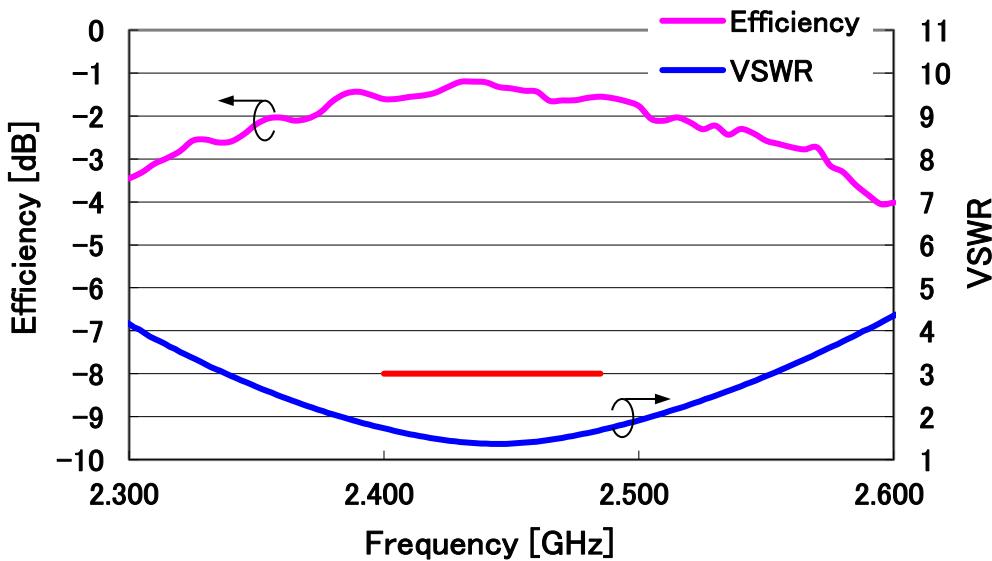
* This is typical antenna performance with the standard PCB.

** Reference value

■ FREQUENCY CHARACTERISTICS

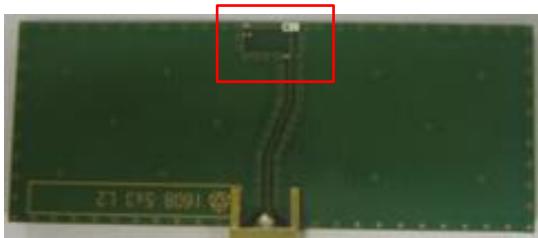
Note: Tested antenna has been soldered. Evaluation board size is 50x20x1 mm.

Efficiency and VSWR



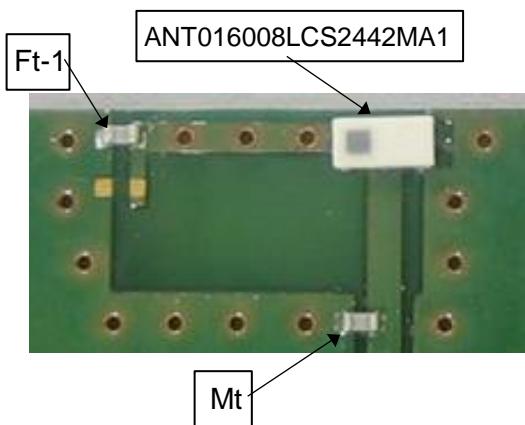
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■ EVALUATION BOARD



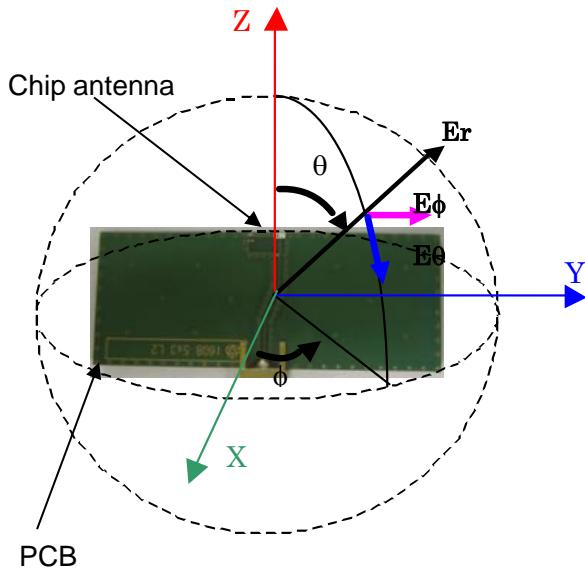
PCB size : 50mm x 20mm x 1mm

Antenna area : 5 x 3 mm



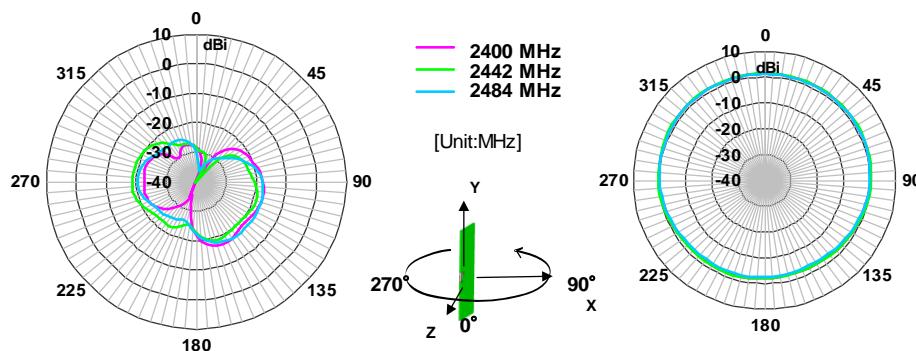
	Element Value
Ft-1	6.2pF
Mt	0.8pF

Measurement condition for Radiation pattern



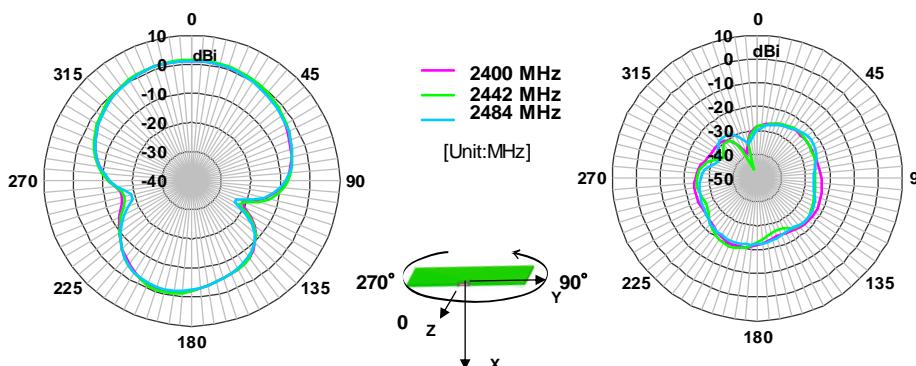
ANT016008LCS2442MA1**■ Radiation Pattern**

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



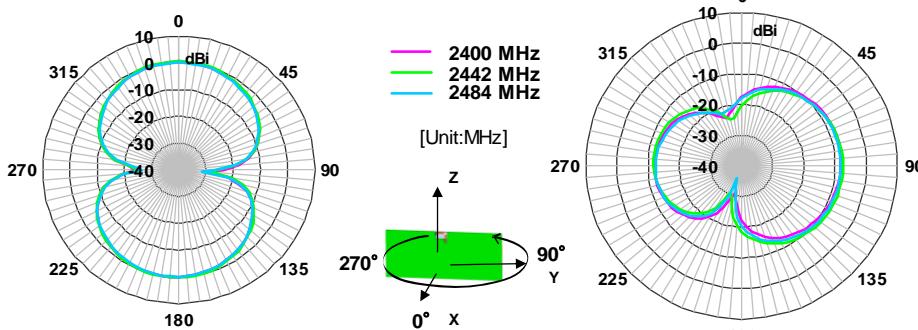
Frequency [MHz]	2400	2442	2484
Average[dBi]	-21.5	-21.5	-21.3
Maximum[dBi]	-16.9	-18.5	-17.2
Minimum[dBi]	-46.0	-40.8	-36.4

Frequency [MHz]	2400	2442	2484
Average[dBi]	0.0	0.3	-0.2
Maximum[dBi]	1.3	1.6	1.2
Minimum[dBi]	-2.4	-2.2	-3.0



Frequency [MHz]	2400	2442	2484
Average[dBi]	-2.9	-2.6	-3.1
Maximum[dBi]	1.3	1.6	1.2
Minimum[dBi]	-21.5	-21.9	-23.6

Frequency [MHz]	2400	2442	2484
Average[dBi]	-24.1	-24.7	-24.8
Maximum[dBi]	-20.2	-19.1	-21.5
Minimum[dBi]	-39.2	-46.1	-34.9



Frequency [MHz]	2400	2442	2484
Average[dBi]	-3.1	-2.7	-3.2
Maximum[dBi]	0.2	0.6	0.1
Minimum[dBi]	-29.8	-28.5	-31.3

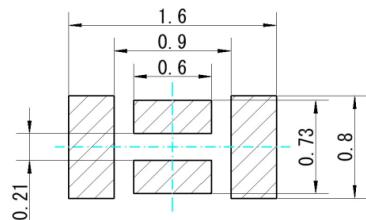
Frequency [MHz]	2400	2442	2484
Average[dBi]	-12.2	-11.8	-12.3
Maximum[dBi]	-8.0	-7.5	-8.2
Minimum[dBi]	-31.2	-30.5	-35.8

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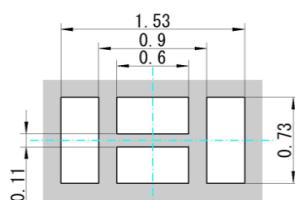
RECOMMENDED LAND PATTERN

Recommend land pattern and solder resist pattern

< Land pattern >

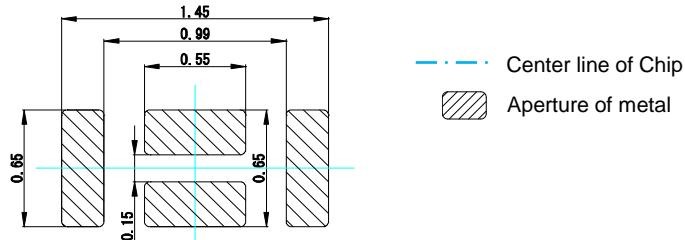


< Solder resist pattern >



- - - Center line of Chip
 Land Pattern
 Resist Pattern

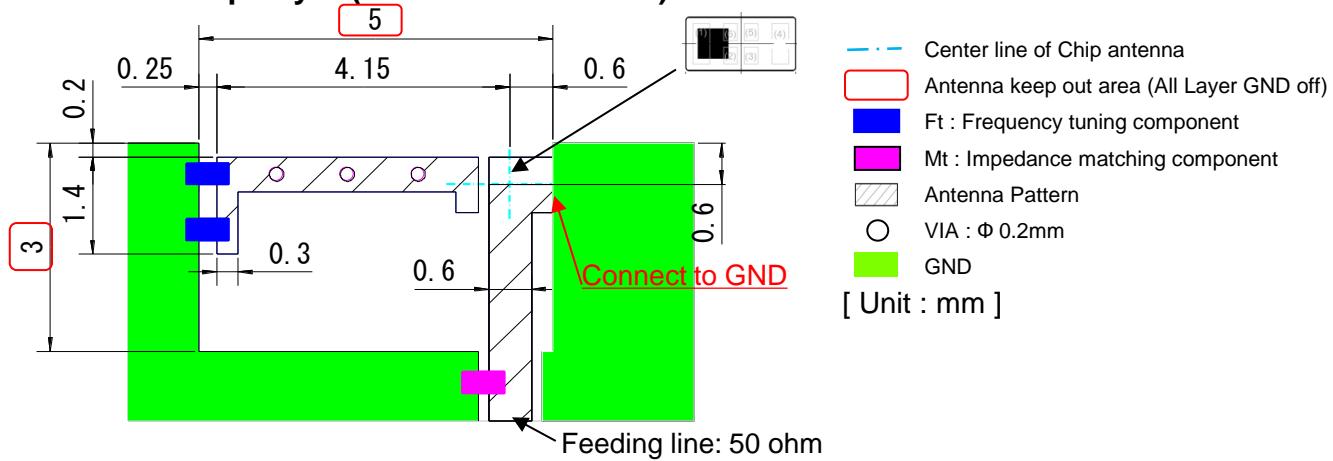
Recommend aperture size of metal mask for solder



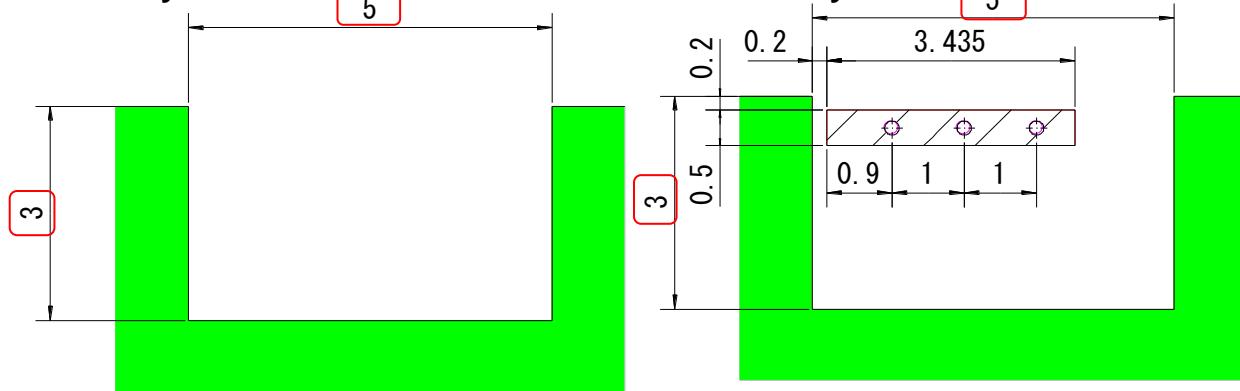
- - - Center line of Chip
 Aperture of metal

Example of Antenna pattern layout (TDK Standard PCB)

<Top Layer (Parts mounted side) >



<Inner Layer >



<Bottom Layer >

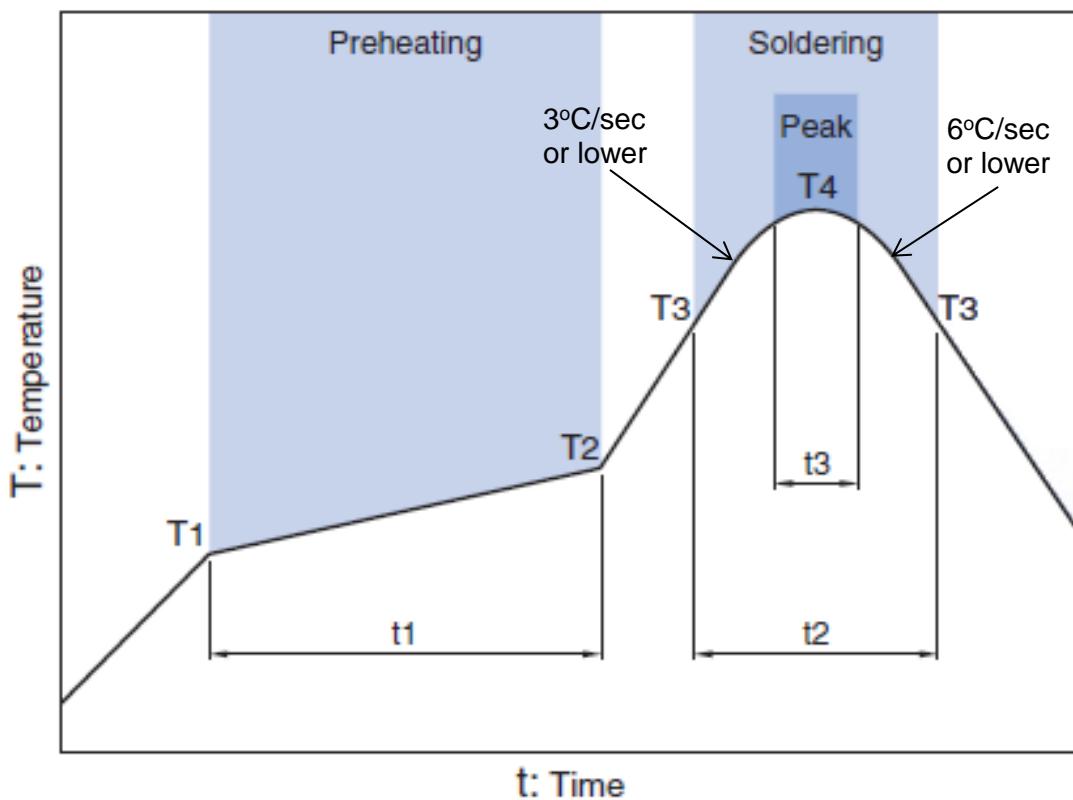
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■ ENVIRONMENT INFORMATION

RoHS Statement
RoHS Compliance

■ RECOMMENDED REFLOW PROFILE



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

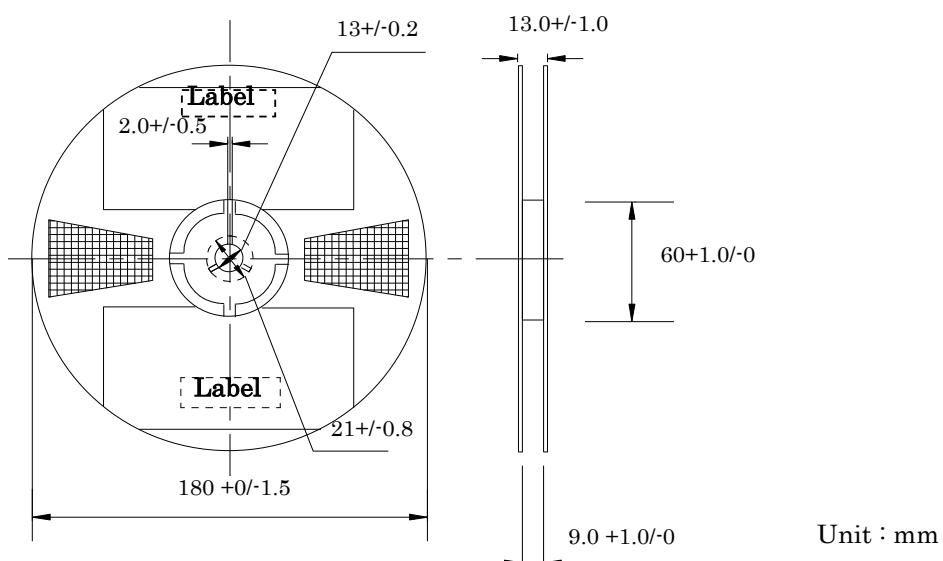
* t3 : Time within 5°C of actual peak temperature

The maximum number of reflow is 3.

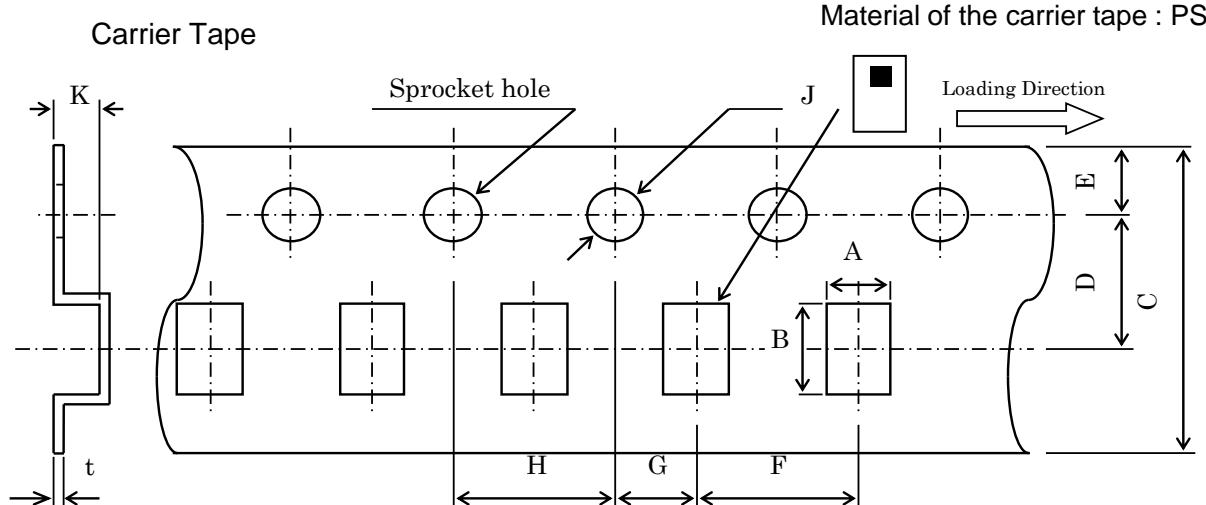
Note: Lead free solder is recommended.
Recommended solder is Sn-3.0Ag-0.5Cu. (M705 by Senju Metal Industry)

ANT016008LCS2442MA1**■ PACKAGING STYLE**

Reel Dimensions



Carrier Tape



Dimensions (mm)

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