Dec. 2024 Ver.4.0
TDK Corporation

Multilayer Antenna

For 5GHz W-LAN,DSRC

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

P/N: **ANT165550ST-1003AM1**

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

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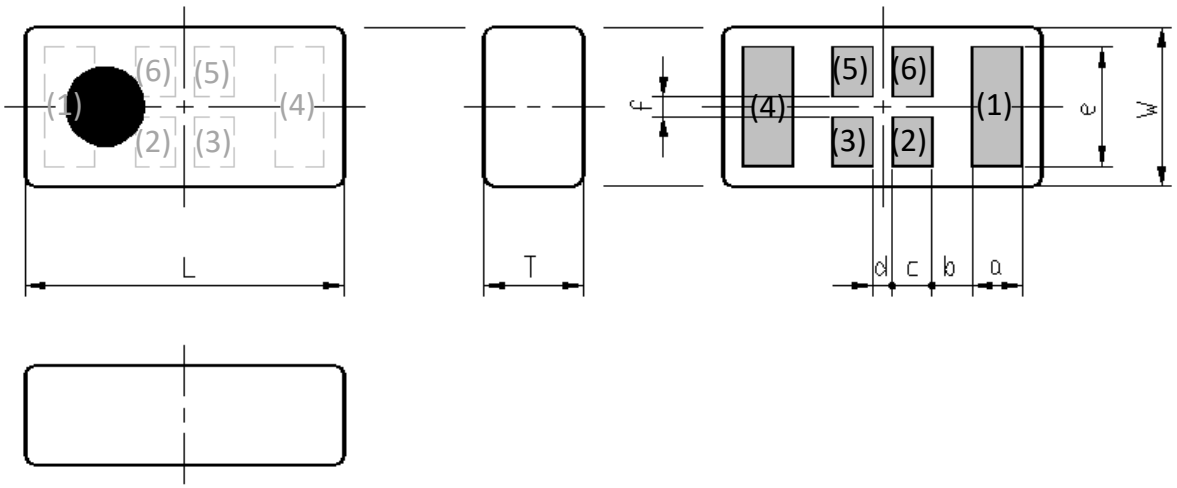
SHAPES AND DIMENSIONS



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

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

TERMINATION FINISH

Material
Au plate

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ELECTRICAL CHARACTERISTICS

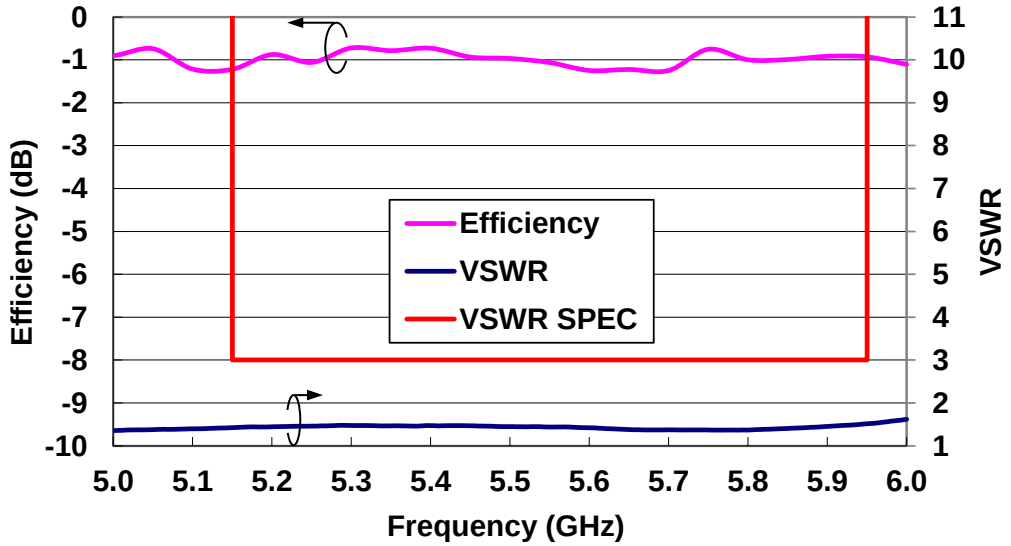
(Measurement)

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
VSWR	5150 to 5950	-	1.6	3.0
Antenna Gain (dBi)**	5150 to 5950	-	2.6	-
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.
** Reference value

FREQUENCY CHARACTERISTICS

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



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■ 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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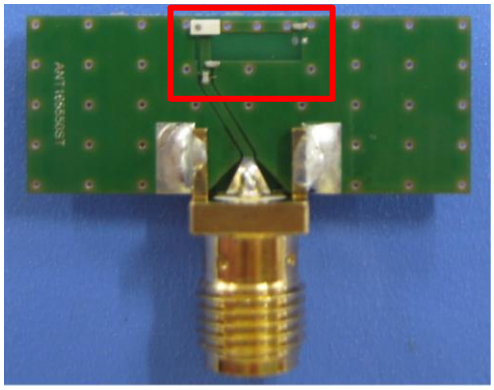
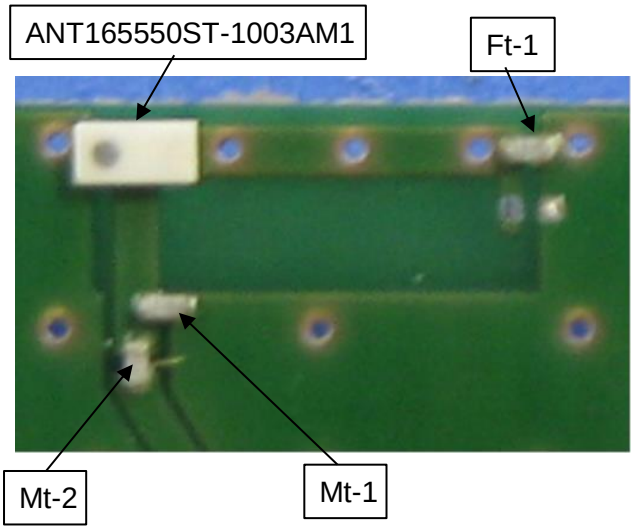
EVALUATION BOARD

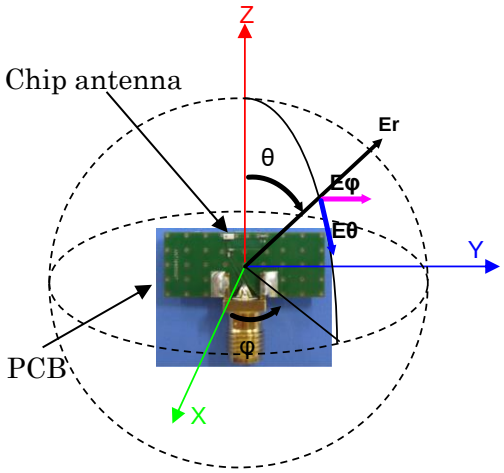




PCB size : 25mm x 10mm x 1mm
Antenna area : 6 x 2.5 mm

	Component P/N
Ft-1	0.9pF
Mt-1	0.1pF
Mt-2	0.5pF

Measurement condition for Radiation Pattern



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Radiation Pattern

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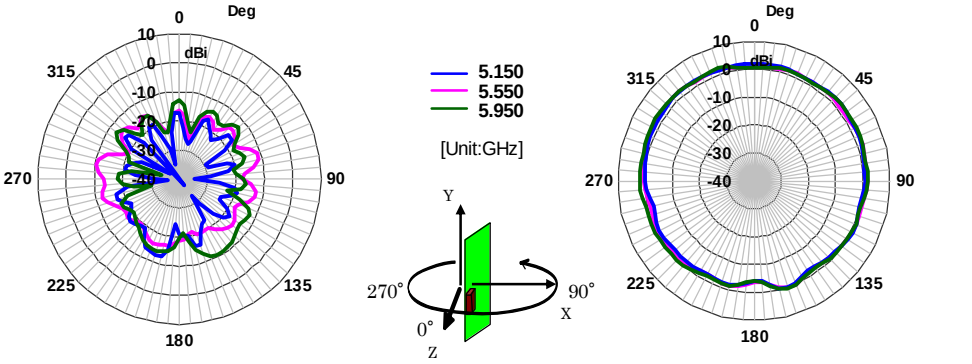
5GHz band

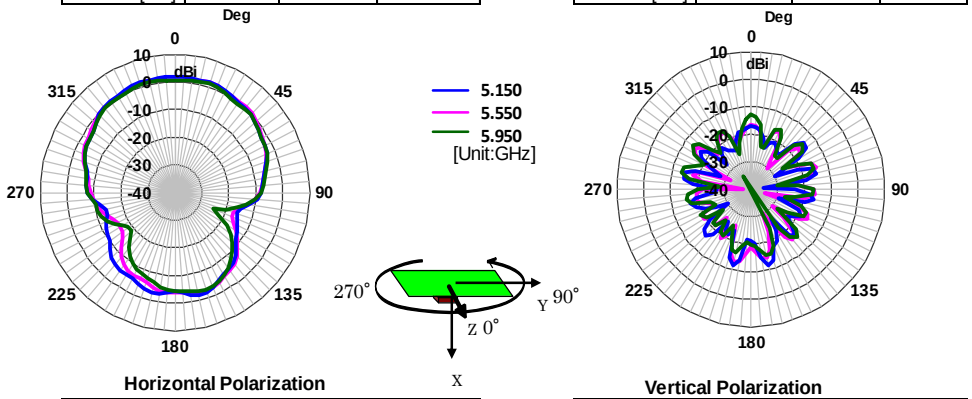


Horizontal Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-19.38	-15.74	-15.65
Maximum[dBi]	-12.40	-10.10	-10.57
Minimum[dBi]	-42.68	-26.86	-33.52

Vertical Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	0.49	0.61	0.97
Maximum[dBi]	2.26	2.21	2.59
Minimum[dBi]	-4.21	-3.75	-4.26

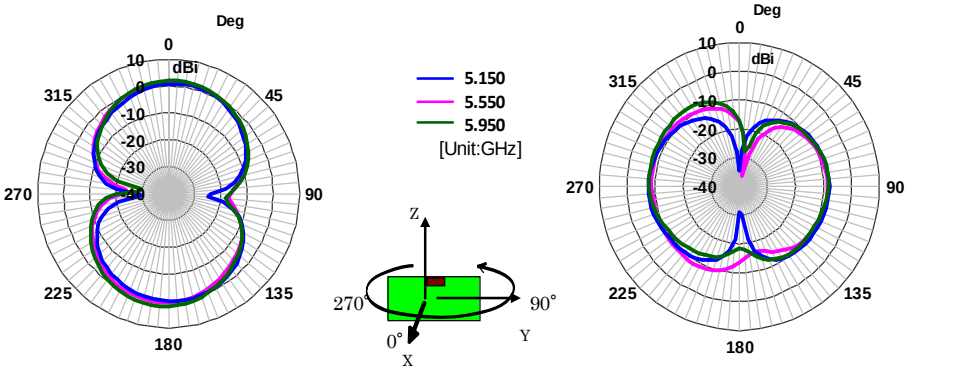


Horizontal Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-2.43	-2.73	-3.23
Maximum[dBi]	2.03	1.89	1.47
Minimum[dBi]	-15.86	-17.02	-24.38

Vertical Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-18.40	-18.63	-18.00
Maximum[dBi]	-11.36	-12.79	-12.78
Minimum[dBi]	-35.06	-37.14	-45.66



Horizontal Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-3.01	-2.49	-1.80
Maximum[dBi]	1.07	1.77	2.11
Minimum[dBi]	-29.47	-23.93	-29.47

Vertical Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-10.38	-10.35	-10.09
Maximum[dBi]	-7.61	-8.39	-7.22
Minimum[dBi]	-34.55	-36.44	-27.72

Horizontal Polarization **Vertical Polarization**

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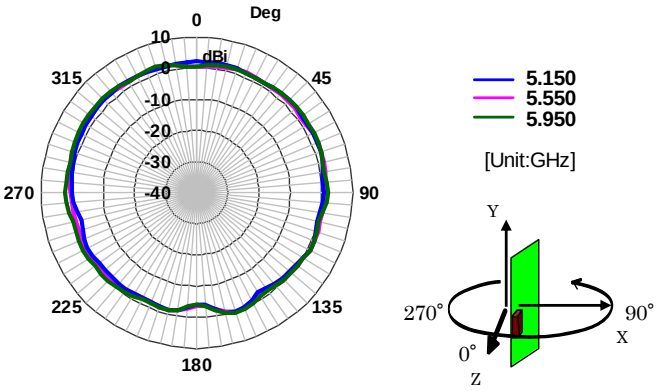
Radiation Pattern (Total Power)

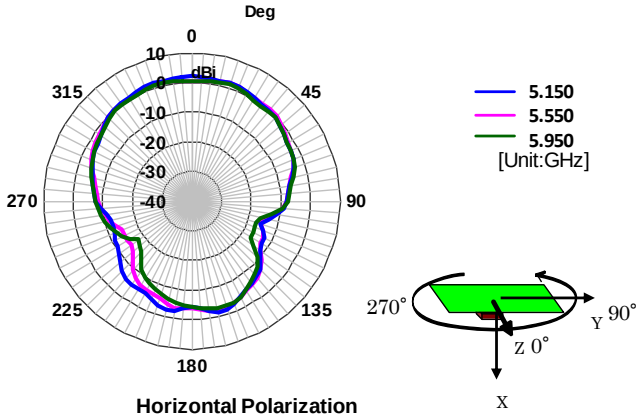
Note: Tested antenna has been soldered. Evaluation board size is 25x10x1 mm.

5GHz Band



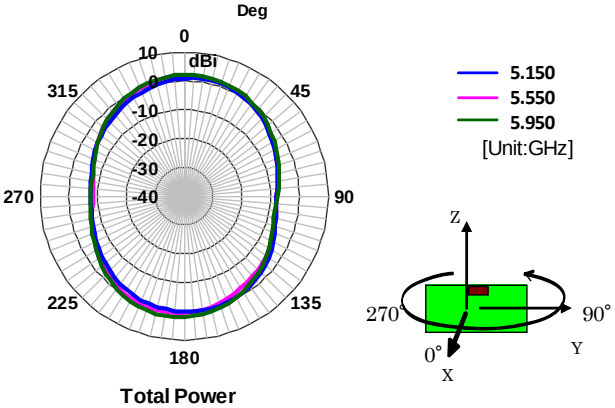
Horizontal Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	0.54	0.71	1.06
Maximum[dBi]	2.28	2.29	2.68
Minimum[dBi]	-4.11	-3.61	-4.14



Horizontal Polarization

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-2.32	-2.62	-3.09
Maximum[dBi]	2.08	1.91	1.48
Minimum[dBi]	-15.67	-15.89	-17.99



Total Power

Frequency[GHz]	5.15	5.55	5.95
Average[dBi]	-2.28	-1.83	-1.20
Maximum[dBi]	1.09	1.79	2.15
Minimum[dBi]	-7.87	-8.59	-8.02

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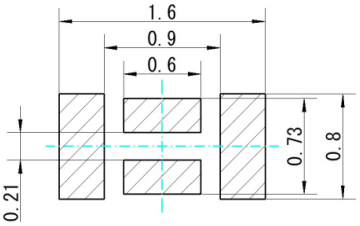
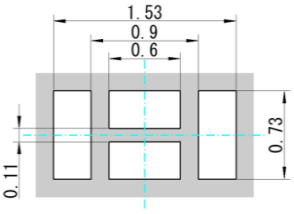
■ RECOMMENDED LAND PATTERN

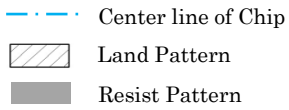
Recommend land pattern and solder resist pattern

< Land pattern >

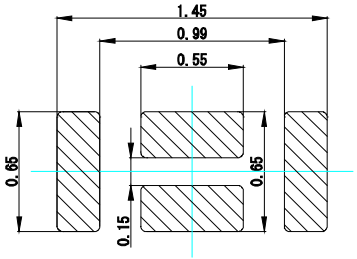


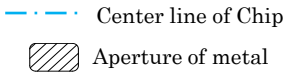
< Solder resist pattern >





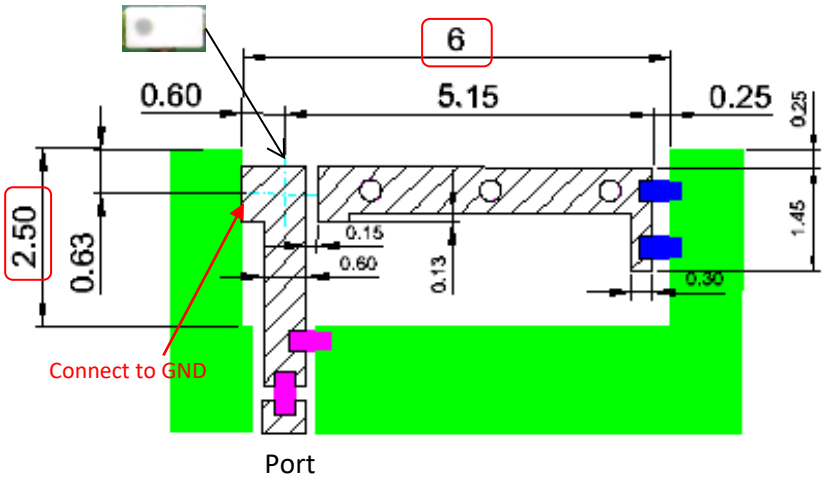
Recommend aperture size of metal mask for solder printing

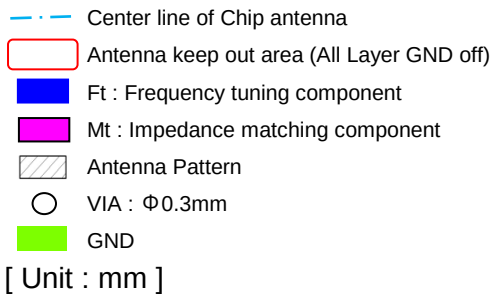




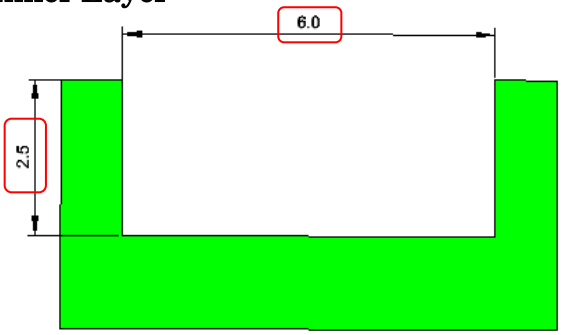
Example of Antenna pattern layout (TDK Standard PCB)

<Top Layer (Parts mounted side) >

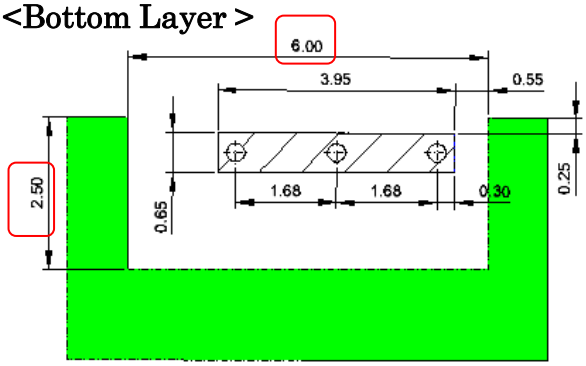




<Inner Layer >



<Bottom Layer >



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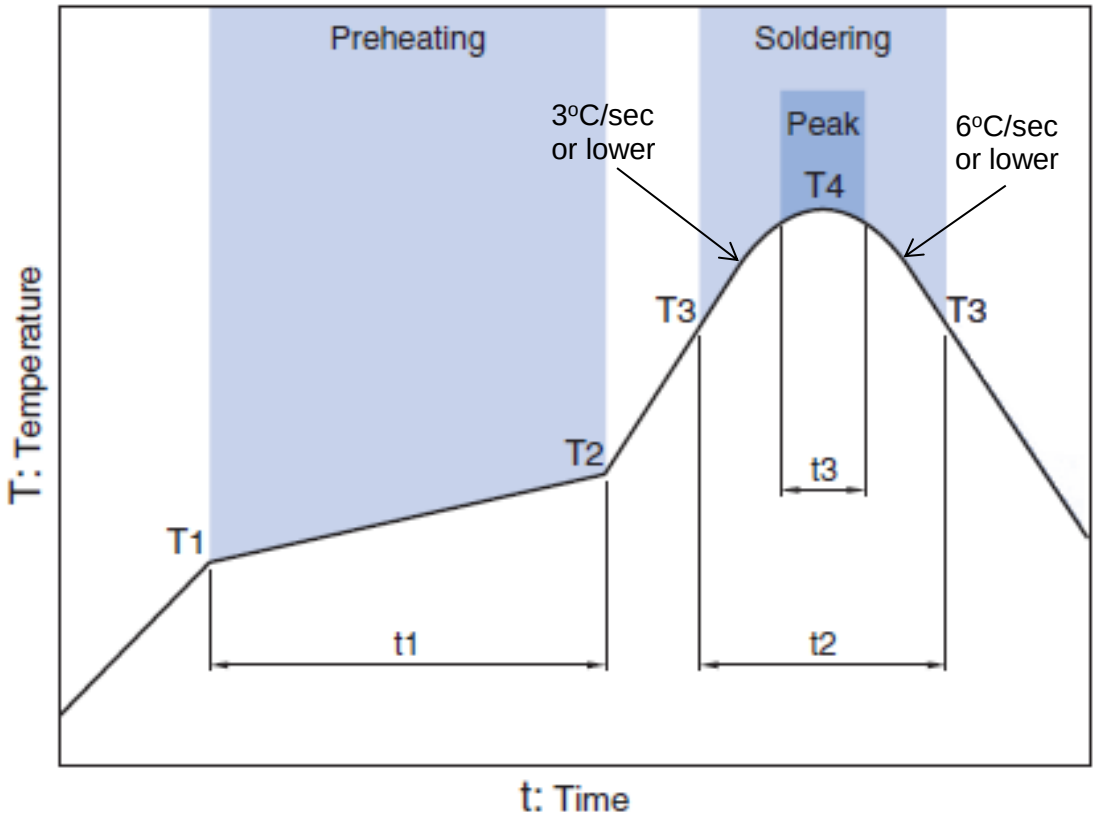
RECOMMENDED REFLOW PROFILE



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°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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■ ENVIROMENT INFORMATION

RoHS Statement
RoHS Compliance

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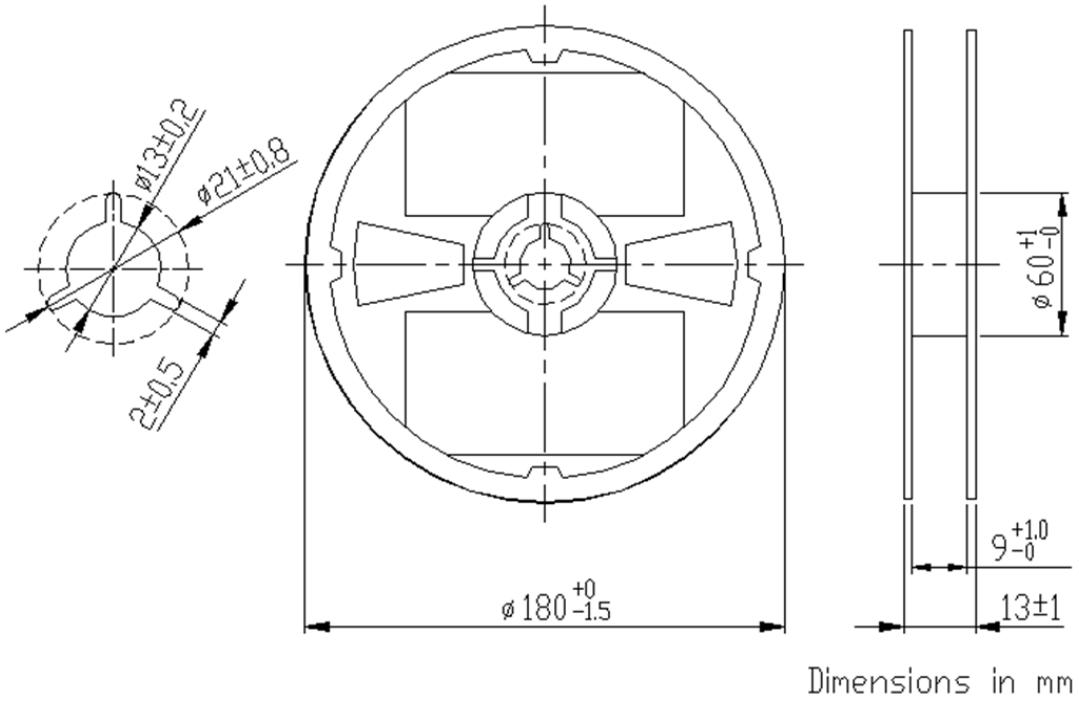
■ PACKAGING STYLE

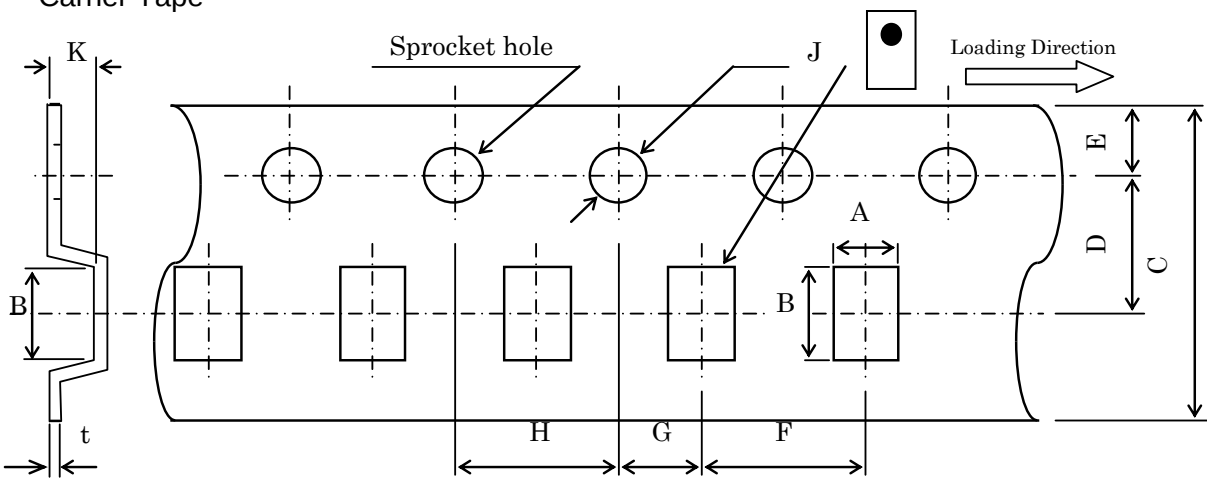
Reel Dimensions



Dimensions in mm

Material of the carrier tape : PS

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

使用注意事项

在使用本产品前，请务必随附采购规格书。

安全注意事项

使用本产品时，请注意安全事项。

⚠ 注 意

本产品目录中记载的产品是指在通用标准用途意义上使用于一般电子设备 （AV 设备，通信设备，家电产品，娱乐设备，计算机设备，个人设备，办公设备，计测设备，工业机器人），并且该一般电子设备要在通常的操作和使用方法下使用。
对于需要高度安全性和可靠性的，或者设备的故障，误动作，运转不良可能会给人的生命，身体及财产等造成损害，以及有可能产生莫大社会影响的以下用途 （以下称 ‘ 特定用途 ’）中的适用性，性能发挥，品质，本公司不予保证。
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(1) 航天航空设备
(2) 交通运输设备 （电动火车，船舶等）
(3) 医疗设备
(4) 发电控制设备
(5) 原子能源相关设备
(6) 海底设备
(7) 交通控制设备
(8) 公共信息处理设备
(9) 军事设备
(10) 电加热设备、燃烧设备
(11) 防灾 / 预防犯罪设备
(12) 安全设备
(13) 其他不被视为常规用途的用途

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