



Multilayer Antenna

For GPS/2.4GHz W-LAN & Bluetooth

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

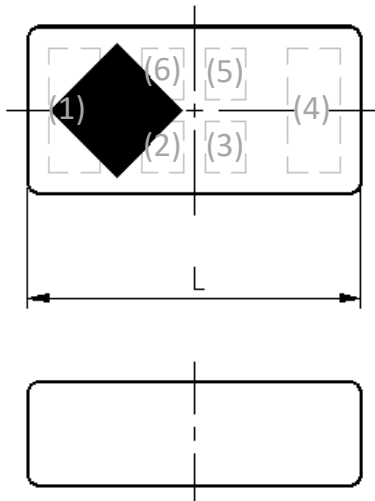
P/N: **ANT161575DT-2000AM1**

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

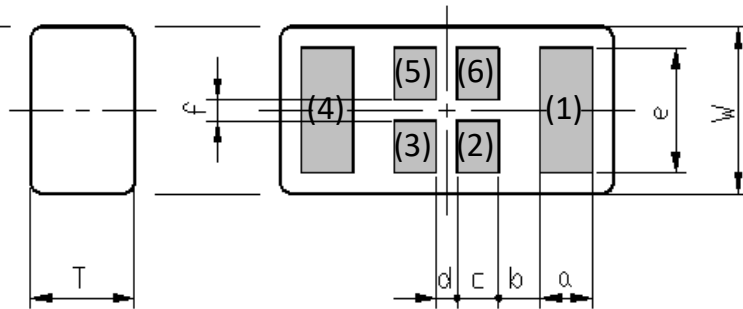
ANT161575DT-2000AM1

SHAPES AND DIMENSIONS

[Top View]



[Bottom View]



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 for GPS
(2)	Feed point
(3)	Feed point
(4)	Radiator electrode for 2.4GHz ISM
(5)	Feed point

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

TERMINATION FINISH

Material
Au plate

ANT161575DT-2000AM1

■ ELECTRICAL CHARACTERISTICS

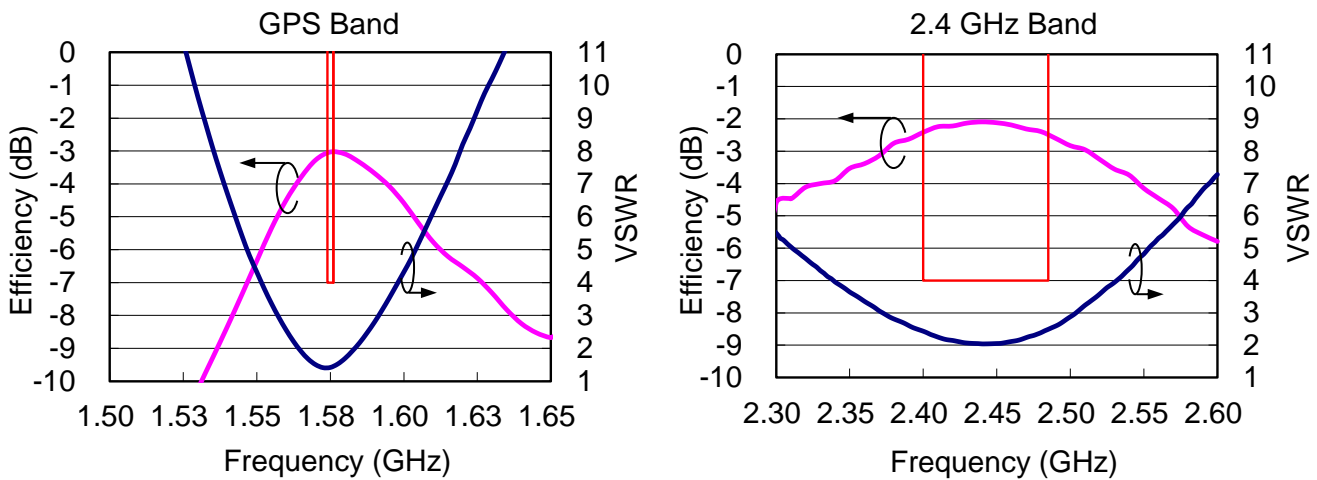
(Measurement)

Parameter	Frequency (MHz)	TDK Spec		
		Min.	Typ.	Max.
VSWR	1574 to 1576	-	1.50	4.0
	2400 to 2484	-	2.50	4.0
Polarization		Linear		
PCB Size (mm)		120x65		
Antenna keep-out Area (mm)		10.5x6		
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 120x65x1 mm.



ANT161575DT-2000AM1

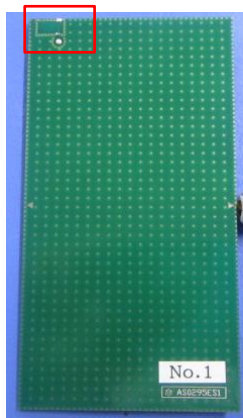
■ MAXIMUM RATINGS

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

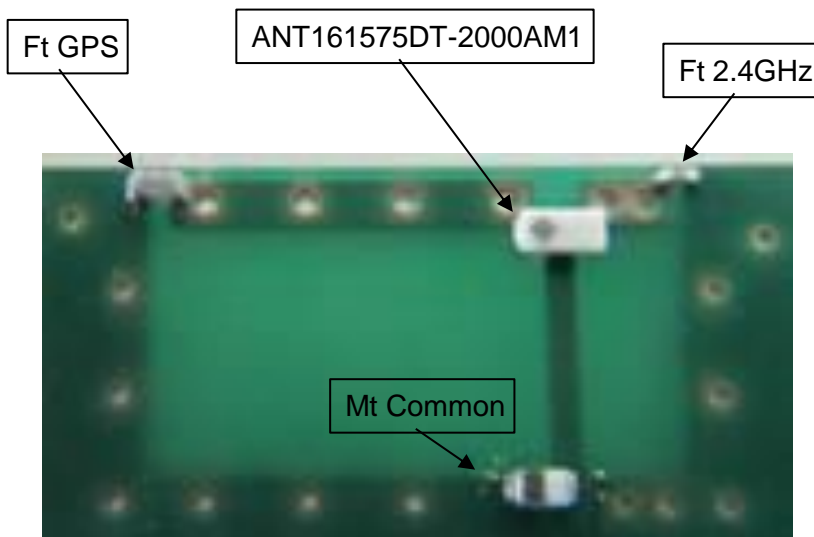
*1 : Refer to 3GPP TS 38.101-1 V15.2.0

ANT161575DT-2000AM1

EVALUATION BOARD

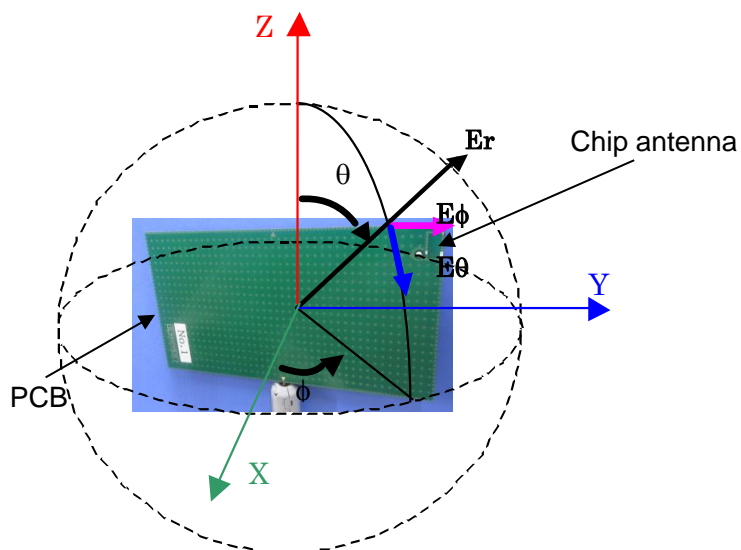


PCB size : 120mm x 65mm x 1mm
Antenna area : 10.5 x 6 mm



	Element Value
Ft GPS	15pF
Ft 2.4GHz	2.2pF
Mt Common	1.5nH(MHQ1005P1N5B:TDK)

Measurement condition for Radiation Pattern



ANT161575DT-2000AM1

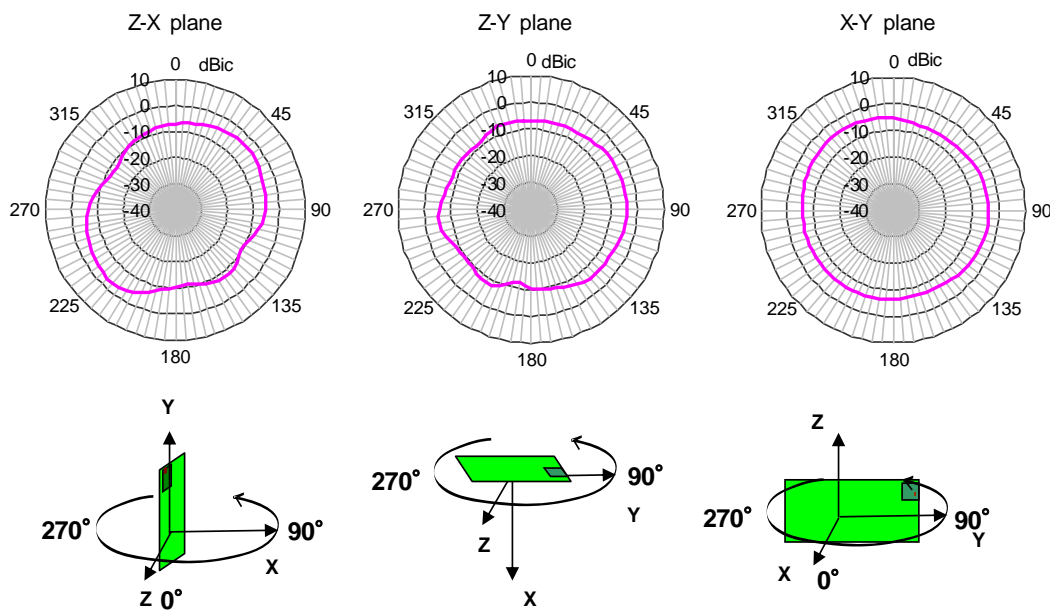
Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 120x65x1 mm.

GPS Band

RHCP Radiation Pattern

1.5755 GHz



Frequency[MHz]	1575.5
Average[dBic]	-6.3
Maximum[dBic]	-2.9
Minimum[dBic]	-12.2

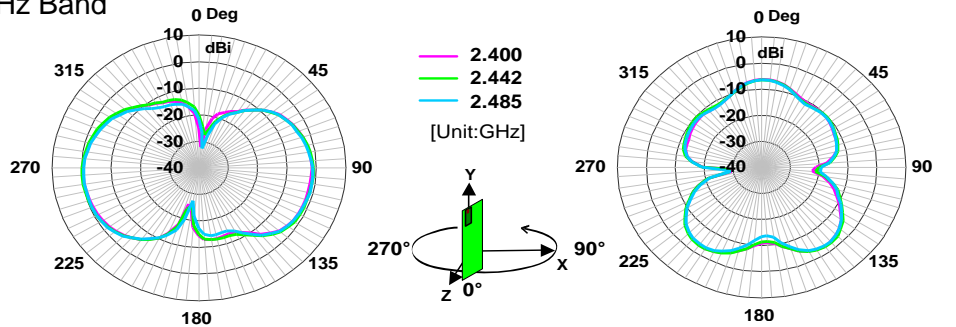
Frequency[MHz]	1575.5
Average[dBic]	-6.5
Maximum[dBic]	-3.7
Minimum[dBic]	-12.1

Frequency[MHz]	1575.5
Average[dBic]	-5.3
Maximum[dBic]	-3.7
Minimum[dBic]	-6.7

ANT161575DT-2000AM1

Radiation Pattern

Note: Tested antenna has been soldered. Evaluation board size is 120x65x1 mm.
2.4GHz Band

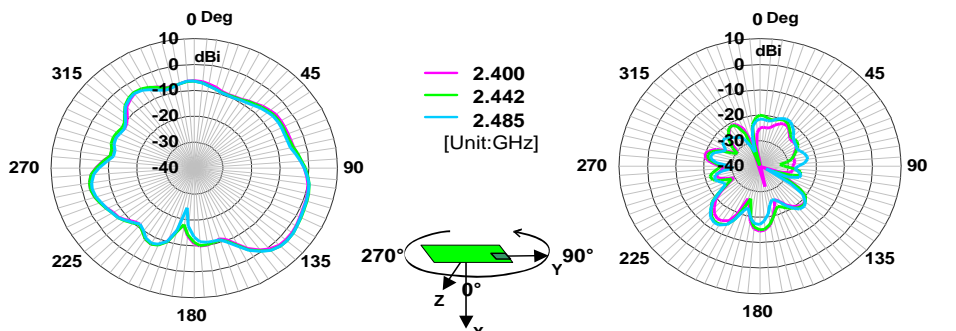


Horizontal Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-4.93	-4.55	-4.89
Maximum[dBi]	-0.51	-0.17	-0.54
Minimum[dBi]	-32.16	-27.46	-32.81

Vertical Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-8.22	-8.02	-8.47
Maximum[dBi]	-2.59	-2.31	-2.68
Minimum[dBi]	-29.47	-29.14	-29.11

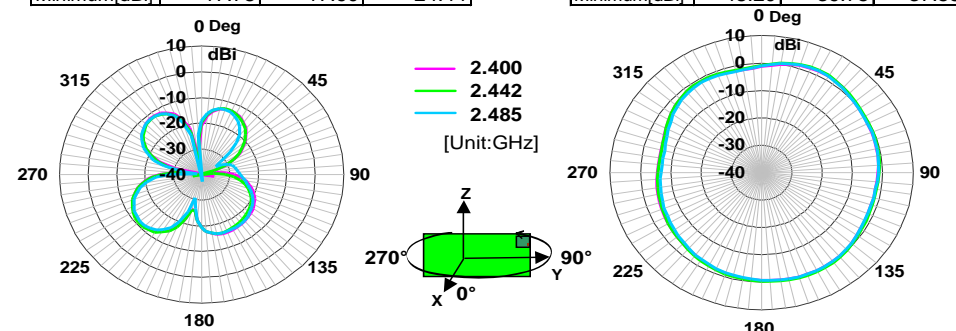


Horizontal Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-4.18	-3.87	-4.13
Maximum[dBi]	2.41	2.97	2.95
Minimum[dBi]	-17.78	-17.90	-24.44

Vertical Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-21.39	-20.54	-20.87
Maximum[dBi]	-14.42	-12.97	-12.63
Minimum[dBi]	-48.20	-39.75	-37.58

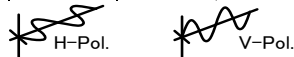


Horizontal Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-16.26	-16.42	-16.73
Maximum[dBi]	-11.34	-11.01	-11.71
Minimum[dBi]	-44.47	-43.07	-42.83

Vertical Polarization

Frequency[GHz]	2.400	2.442	2.485
Average[dBi]	-1.40	-1.12	-1.54
Maximum[dBi]	1.44	1.79	1.55
Minimum[dBi]	-6.03	-6.19	-7.17

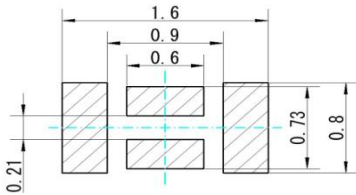


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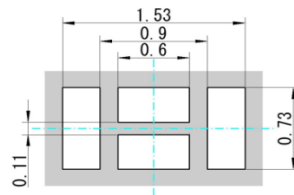
RECOMMENDED LAND PATTERN

Recommend land pattern and solder resist pattern

< Land pattern >

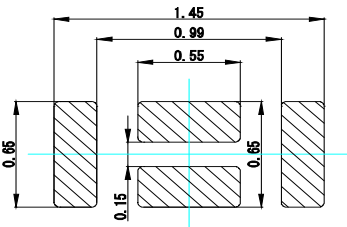


< Solder resist pattern >



- Center line of Chip
- Land Pattern
- Resist Pattern

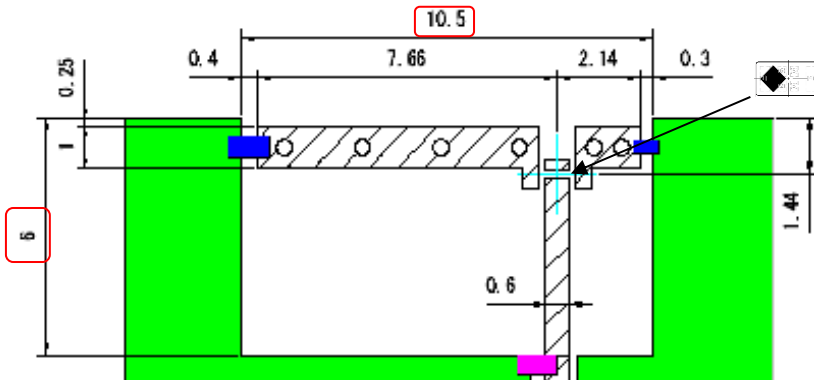
Recommend aperture size of metal mask for solder printing



- Center line of Chip
- Aperture of metal

Example of Antenna pattern layout (TDK Standard PCB)

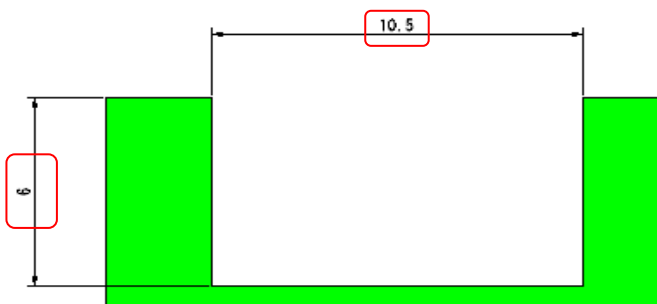
<Top Layer (Parts mounted side) >



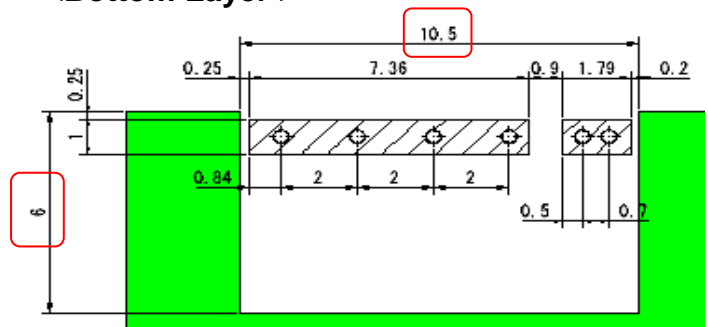
- Center line of Chip antenna
 - Antenna keep out area (All Layer GND off)
 - Ft : Frequency tuning component
 - Mt : Impedance matching component
 - Antenna Pattern
 - VIA : $\Phi 0.4\text{mm}$
 - GND
- [Unit : mm]

50ohm line feeding

<Inner Layer >



<Bottom Layer >

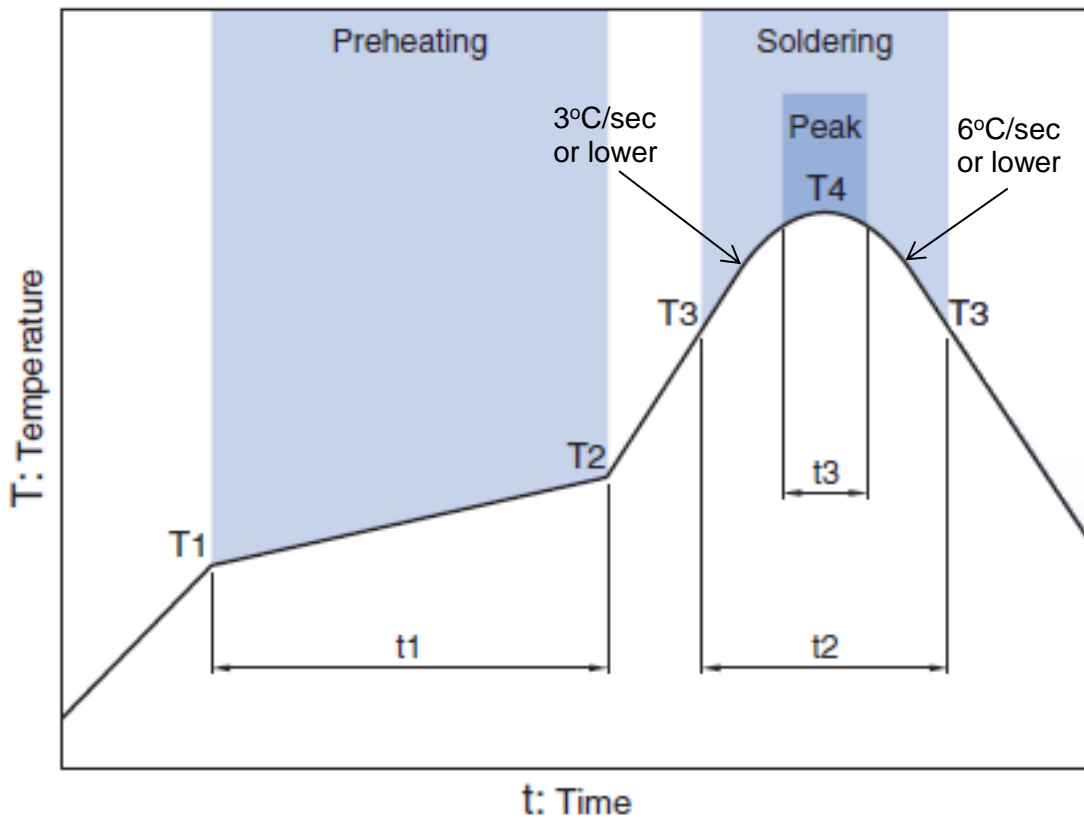


ANT161575DT-2000AM1

■ ENVIROMENT INFORMATION

RoHS Statement
RoHS Compliance

RECOMMENDED REFLOW PROFILE



Preheating			Soldering			
			Critical zone (T3 to T4)		Peak	
Temp.	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

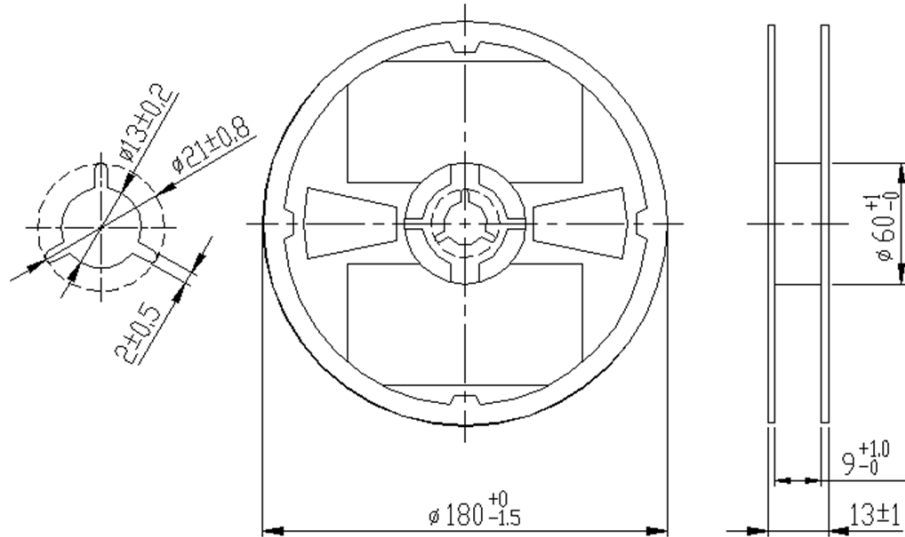
The maximum number of reflow is 3.

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

ANT161575DT-2000AM1

PACKAGING STYLE

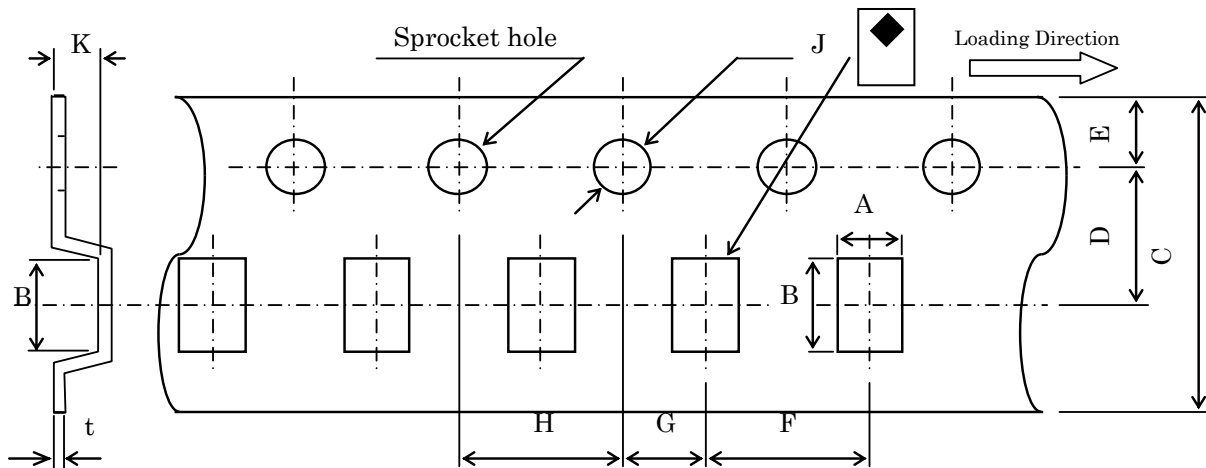
Reel Dimensions



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

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。

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- | | |
|----------------------|--------------------|
| (1) 航天航空设备 | (8) 公共信息处理设备 |
| (2) 交通运输设备（电动火车，船舶等） | (9) 军事设备 |
| (3) 医疗设备 | (10) 电加热设备、燃烧设备 |
| (4) 发电控制设备 | (11) 防灾 / 预防犯罪设备 |
| (5) 原子能源相关设备 | (12) 安全设备 |
| (6) 海底设备 | (13) 其他不被视为常规用途的用途 |
| (7) 交通控制设备 | |

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