NGAW1206S6R050GSTRF

2.4, 4.9 & 5.85 GHz Multilayer Chip Antenna

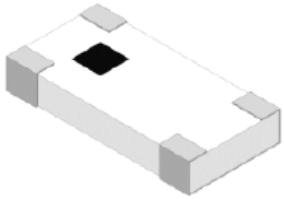
9001:2015 CERTIFIED

ROHS/REACH COMPLIANT HALOGEN FREE

NIC Components Corp.

Features

- Bluetooth/WIFI Protocols
- Support: 2.4, 4.9 & 5.85 GHz Frequency
- Small Case Size:1206 (3.2 x 1.6mm)
- RoHs Complaint



Applications

- Navigation
- Tracking
- Monitoring

Specifications

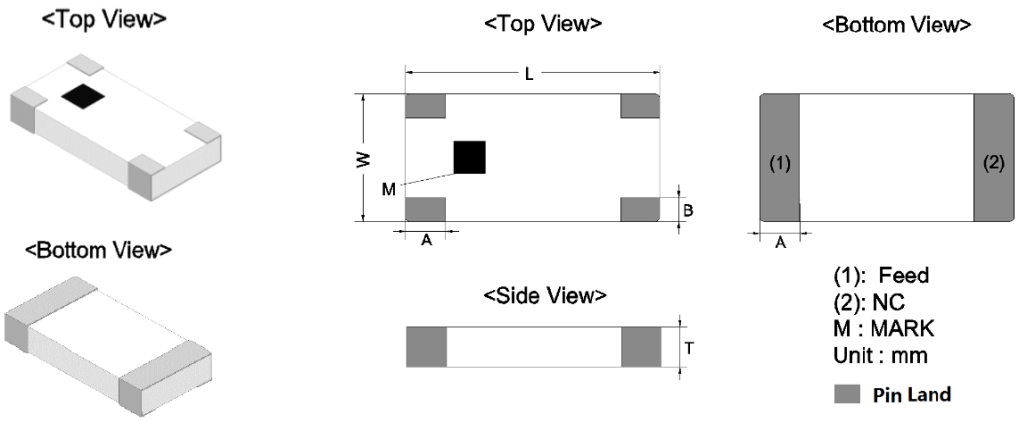
Electrical			
Frequency Range	2400~2500	4900~5850	5850~7200
Peak Gain	2.5 dBi	1.4 dBi	1.0 dBi
Return Loss	10 dB min		
Impedance	50Ω		
Power Capacity	3 W max.		
Environmental			
Operating Temperature -	-40°C~+85°C		
Storage Temperature	-10°C~ +40°C		
Relative Humidity	70% (Max)		
ROHS Compliant	Yes		

Part Number Breakdown

NGAW 1206S 6R050G S TR F

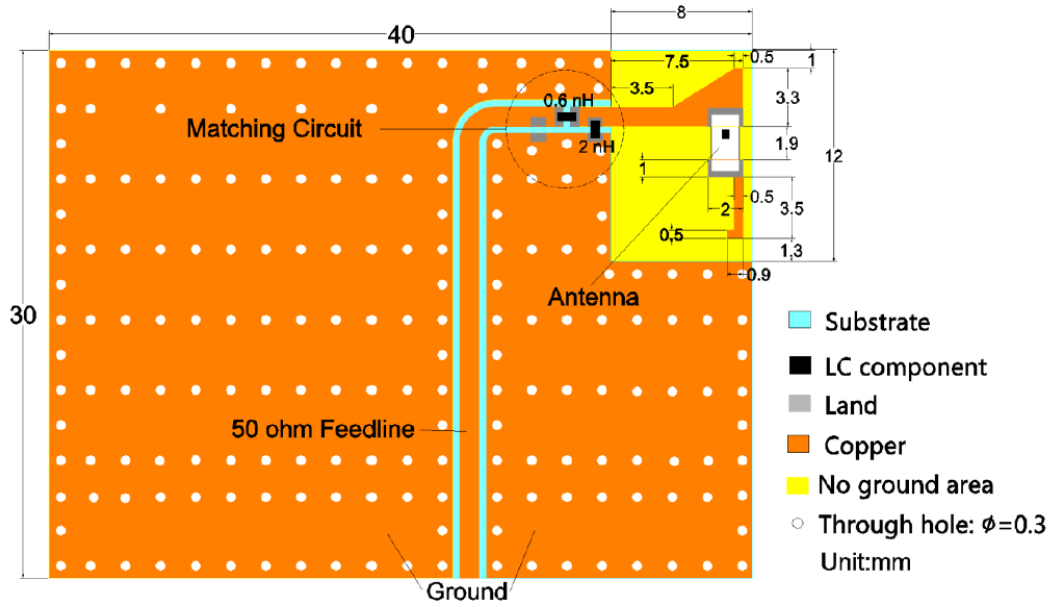
- F — RoHS Compliant
- TR = Tape & Reel Packaging
- S — Internal Performance Code
- 6R050G = Center Frequency
- 1206S = Case Size
- NGAW — Series

Dimension Drawing & Dimensions (mm)



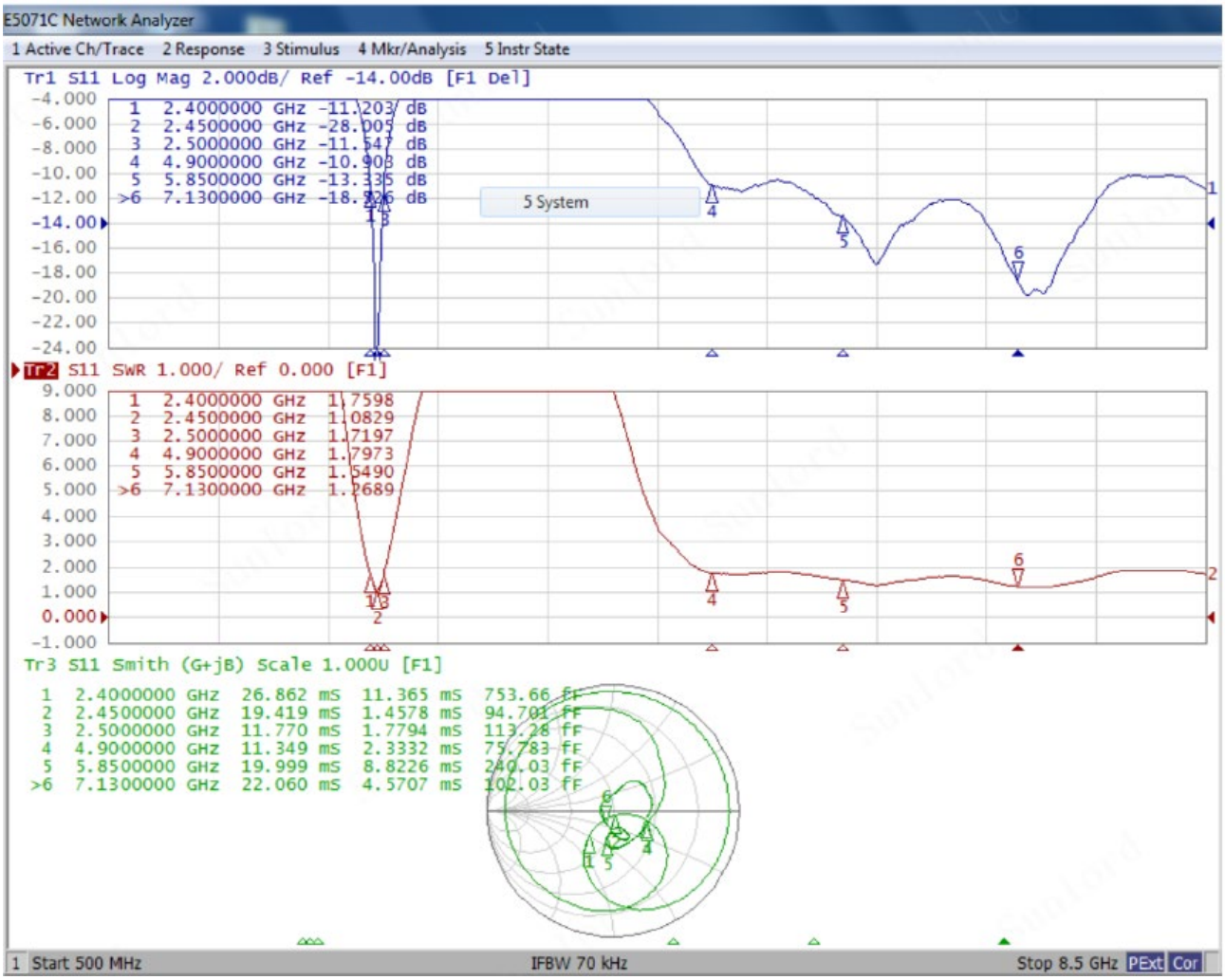
Mark	L	W	T	A	B
Dimensions (mm)	3.2 ± 0.2	1.6 ± 0.2	0.5 ± 0.1	0.5 ± 0.1	0.3 +0.1/-0.3

Recommended Land Pattern



*The matching circuits and LC component values are based on our evaluation board. The actual matching circuits need to be adjusted when the antenna is applied in the customer's design, because the antenna impedance is easily affected by PCB layout

Electrical Performance



Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

a. Ambient Temperature: 20±15℃
b. Relative Humidity: 65±20%
c. Air Pressure: 86 KPa to 106 KPa

If any doubt on the results, measurements/tests should be made within the following limits:

a. Ambient Temperature: 20±2℃
b. Relative Humidity: 65±5%
c. Air Pressure: 86 KPa to 106 KPa

Gain and Efficiency at 2400 – 2500 MHz

Frequency (MHz)	Efficiency (%)	Gain (dBi)
2400	46.32	1.87
2410	48.19	2.14
2420	49.91	2.34
2430	49.31	2.34
2440	50.06	2.48
2450	48.73	2.42
2460	47.90	2.42
2470	48.18	2.54
2480	46.43	2.42
2490	43.68	2.23
2500	42.01	2.16

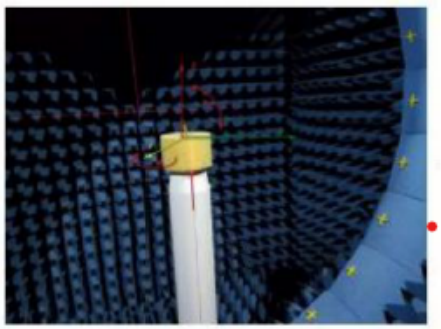
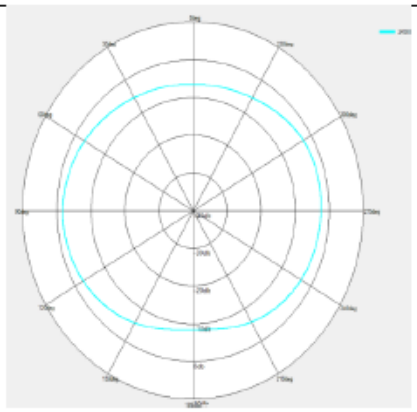
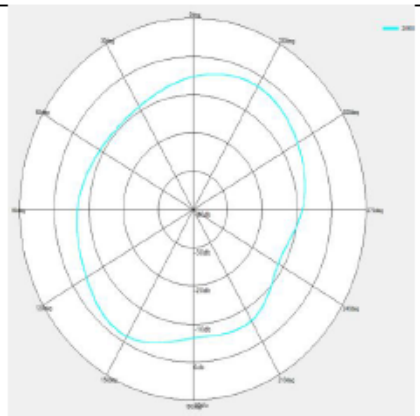
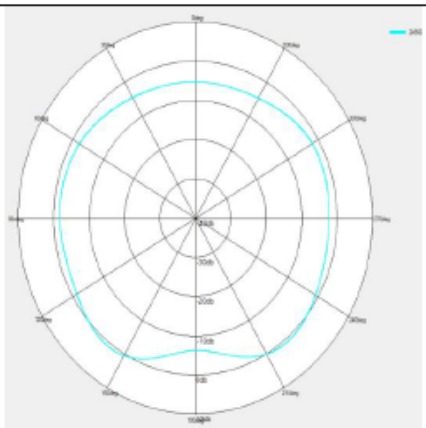
Gain and Efficiency @ 4900 – 5850 MHz

Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)
4900	56.51	1.35	5400	60.63	1.02
4950	56.77	1.42	5450	61.48	1.21
5000	54.58	1.16	5500	63.15	1.35
5050	56.22	1.16	5550	64.67	1.34
5100	56.16	1.06	5600	62.82	1.05
5150	57.06	1.07	5650	63.87	1.26
5200	58.58	1.28	5700	62.86	1.39
5250	57.61	1.16	5750	62.67	1.44
5300	57.60	0.95	5800	61.39	1.23
5350	58.27	0.77	5850	63.43	1.27

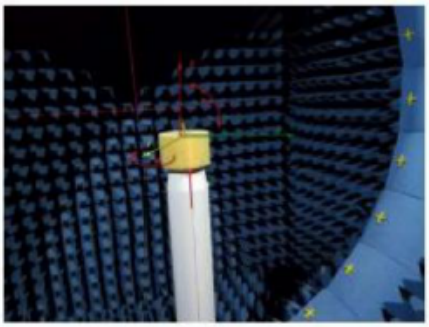
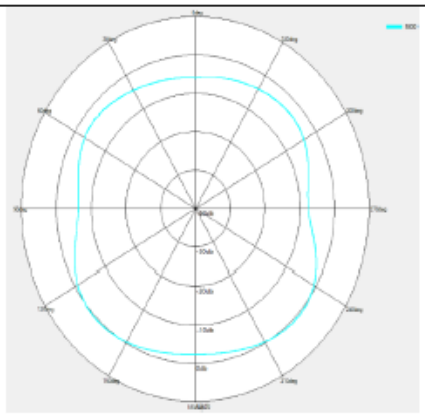
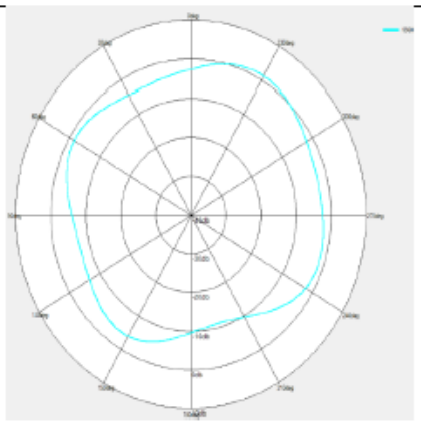
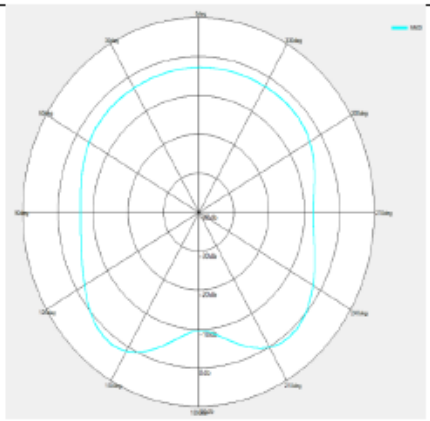
Gain and Efficiency @ 5900-7200 MHz:

Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)
5900	63.40	1.17	6550	53.85	0.49
5950	59.54	0.72	6600	52.94	0.59
6000	60.66	0.79	6650	53.78	0.79
6050	59.46	0.76	6700	53.57	0.87
6100	62.18	0.98	6750	52.09	0.79
6150	61.51	0.89	6800	51.73	0.82
6200	62.29	0.93	6850	50.82	0.70
6250	60.14	0.68	6900	46.31	0.21
6300	58.05	0.57	6950	42.44	-0.22
6350	58.87	0.83	7000	45.24	0.34
6400	56.44	0.73	7050	50.82	0.95
6450	54.61	0.61	7100	50.81	0.98
6500	53.25	0.64	7150	52.69	1.09
			7200	50.20	0.80

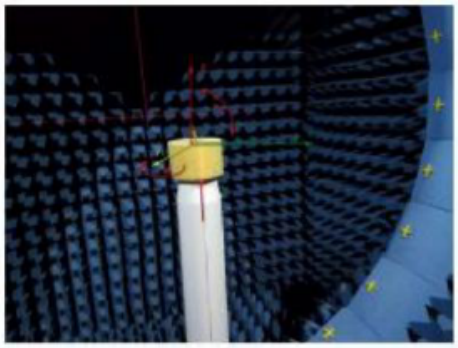
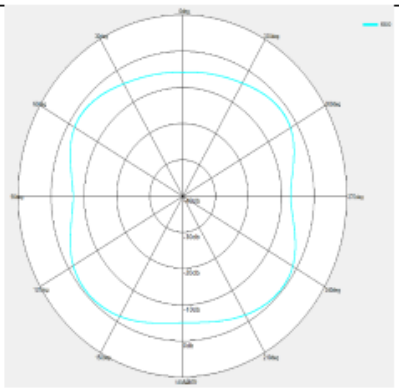
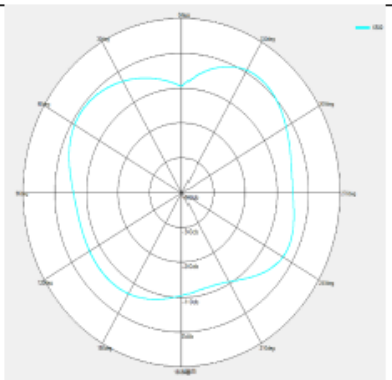
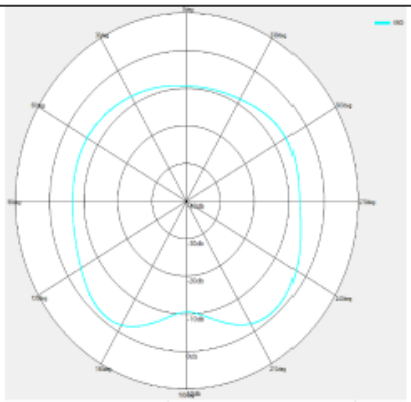
2D Radiation Patterns @ 2450 MHz

	Direction	
	XOY Plane	
	XOZ Plane	
	YOZ Plane	

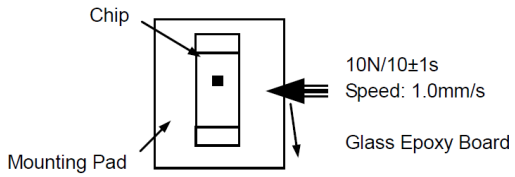
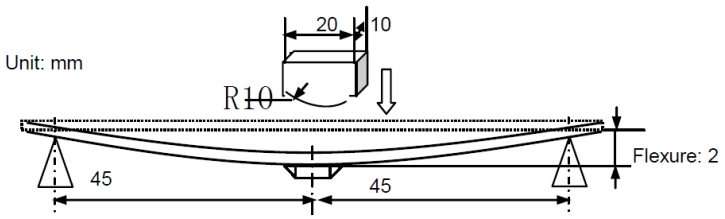
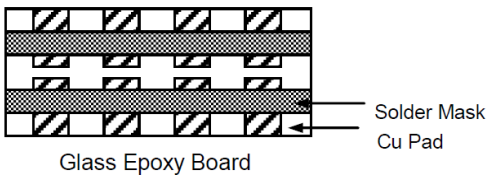
2D Radiation Patterns @ 5500 MHz

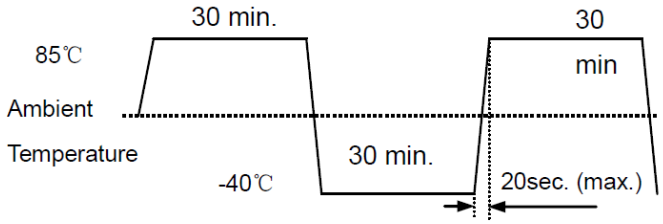
	Direction	
	XOY Plane	
	XOZ Plane	
	YOZ Plane	

2D Radiation Patterns @ 6500 MHz

	Direction	
	XOY Plane	
	XOZ Plane	
	YOZ Plane	

Reliability Test

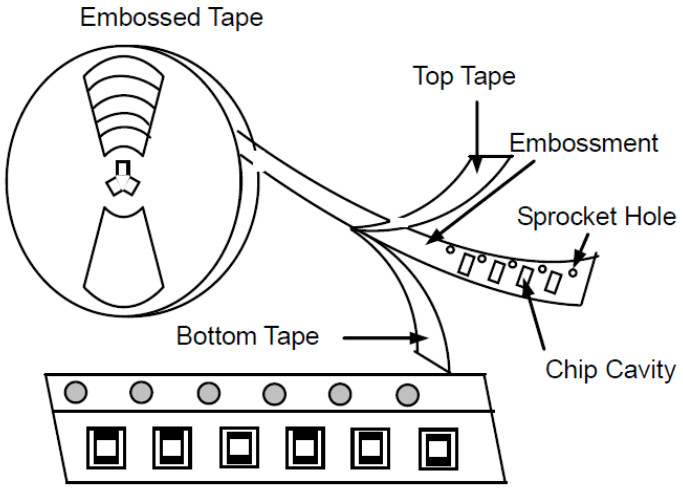
Items	Requirements	Test Methods and Remarks
Terminal Strength	No visible mechanical damage	1. Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using leadfree solder. Then apply a force in the direction of the arrow 2. 10N force for 1206 series 3. Keep time: 10± 1 sec 
Resistance to Fixture	No visible mechanical damage	1. Solder the chip to the test jig (glass epoxy board) using a leadfree solder. Then apply a force in the direction shown as the following figure. 2. Flexure: 2 mm 3. Pressurizing Speed: 0.5mm/sec 4. Keep time: ≥ 30 sec
		
Vibration	No visible mechanical damage	1. Solder the chip to the testing jig (glass epoxy board shown as the following figure) using leadfree solder. 2. The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz 3. The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hrs. in each 3 mutually perpendicular directions (total of 6 hrs.) 

Dropping	No visible mechanical damage	Drop the chip 10 times on a concrete floor from the height of 100 cm.
Solderability	1) No visible mechanical damage 2) Wetting shall be exceeded 75% coverage	1. Solder temperature: 240 ± 2°C 2. Duration: 3 sec 3. Solder: Sn/3.0Ag/0.5Cu 4. Flux: 25% Resin and 75% ethanol in weight
Resistance to Soldering Heat	No visible mechanical damage	1. Solder temperature: 260 ± 5°C 2. Duration: 5 sec 3. Solder: Sn/3.0Ag/0.5Cu 4. Flux: 25% Resin and 75% ethanol in weight 5. The chip shall be stabilized at normal condition for 1 ~ 2 hrs before measuring
Thermal Shock	1) No visible mechanical damage 2) Satisfy electrical characteristic	1. Temperature and time: -40°C for 30 ± 3 min → 85°C for 30 ± 3 min 2. Transforming interval: Max. 20 sec 3. Tested cycle: 100 cycles 4. The chip shall be stabilized at normal condition for 1 ~ 2 hours before measuring 
Damp Heat (Steady States)	1) No visible mechanical damage 2) Satisfy electrical characteristic	1. Temperature: 60 ± 2°C 2. Duration: 500^{+24} hours 3. The chip shall be stabilized at normal condition for 1~2 hours before measuring
Resistance to High Temperature	1) No visible mechanical damage 2) Satisfy electrical characteristic	1. Temperature: 85 ± 2°C 2. Duration: 500^{+24} hours 3. The chip shall be stabilized at normal condition for 1~2 hours before measuring

Packaging

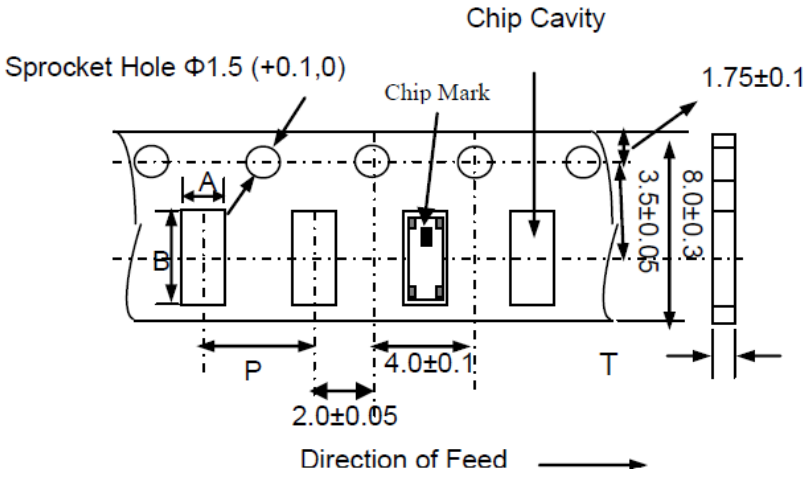
Type	3216[1206]
Tape	Embossed Tape
Quantity	3K

Taping Drawings (Unit: mm)



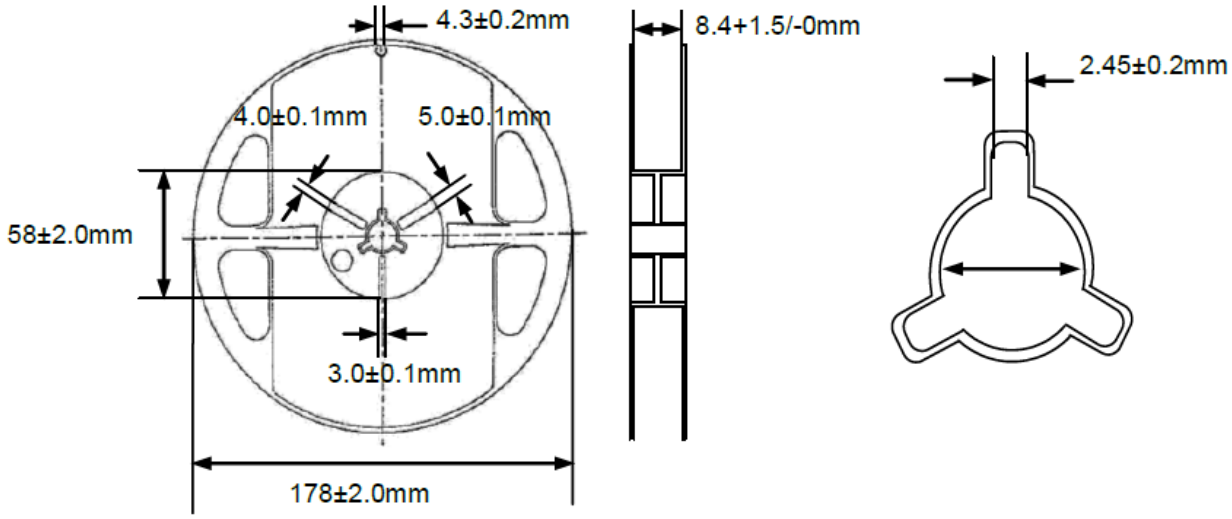
Remark: The sprocket holes are to the right as the tape is pulled toward the user.

Taping Dimensions (Unit: mm)



Type	Chip Thickness	A	B	P	T max
Dimensions (mm)	0.5 ± 0.1	1.85 ± 0.1	3.5 ± 0.1	4.0 ± 0.1	0.75

Reel Dimensions (Unit: mm)



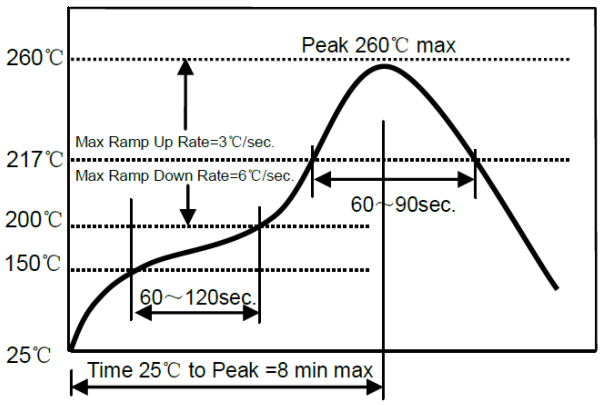
a. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at 40°C or less and 70 % RH or less
b. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H_2S)
c. Packaging material may be deformed if package stored where they are exposed to heat of direct sunlight
d. Resistance to Soldering heat shall be guaranteed for 12 months from the date of delivery on condition that they are stored at the environment specified in the testing conditions. For those parts, which passed more than 12 months shall be checked solder-ability before use.

Recommended Soldering Technologies

Re-flowing Profile

- Preheat condition: 150 ~ 200°C / 60 ~120 sec.
- Allowed time above 217 °C: 60 ~ 90 sec.
- Max temp: 260 °C
- Max time at max temp: 10 sec.
- Solder paste: Sn/3.0Ag/0.5Cu
- Allowed Reflow time: 2x max

[Note: the reflow profile in the above table is only for qualification and is not meant to specify board assembly profiles. Actual board assembly profiles must be based on the customer's specific board design. Solder paste and process, and should not exceed the parameters as the Reflow profile shows]



Iron Soldering Profile

- Iron soldering power: Max 30W
- Pre-heating: 150 °C / 60 sec.
- Soldering Tip temperature: 350 °C max.
- Soldering time: 3 sec max
- Solder paste: Sn/3.0Ag/0.5Cu
- Max.1 time for iron soldering

[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]