NGAW5221S2R780GS1TRF

2.78 GHz Multilayer Chip Antenna

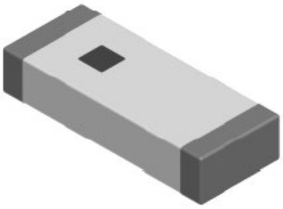
9001:2015
CERTIFIED

ROHS/REACH
COMPLIANT
HALOGEN FREE

NIC Components Corp.

Features

- Support: 2.78 GHz Frequency
- Case Size: 5221 (5.2 x 2.1 mm)
- RoHs Complaint



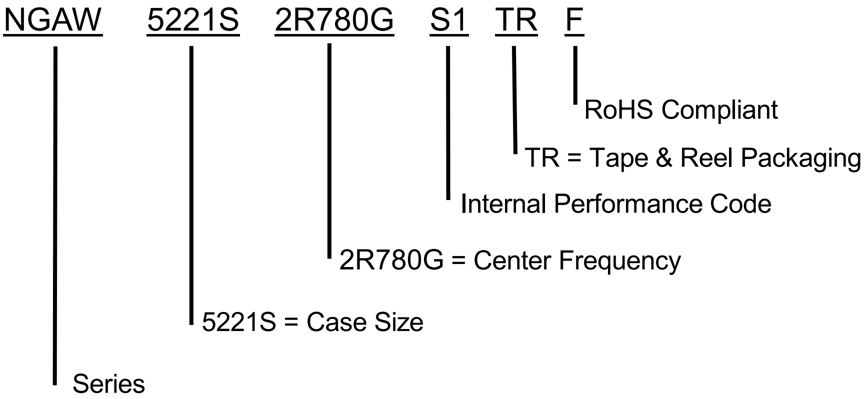
Applications

- Metering
- Tracking
- Monitoring

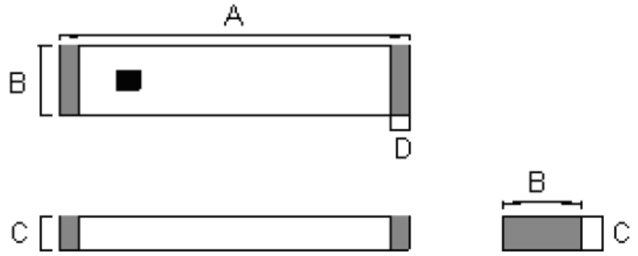
Specifications

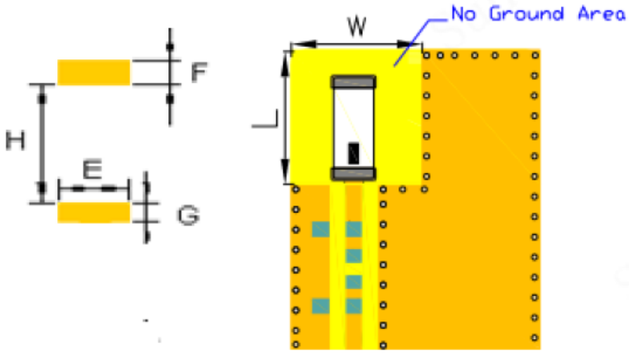
Electrical	
Frequency Range	2780 MHz
Bandwidth	≥ 200 MHz
Peak Gain	2.5 dBi typ.
Average Gain	0.5 dBi typ.
VSWR in BW	< 2
Impedance	50Ω
Power Capacity	3 W max.
Environmental	
Operating Temperature	-40℃~+85℃
Storage Temperature	-10℃~+40℃
Relative Humidity	70% Max.
ROHS Compliant	Yes

Part Number Breakdown



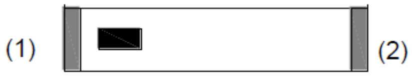
Dimension Drawing & Dimensions (mm)





Mark	A	B	C	D	E	F	G	H	I
Dimensions (mm)	5.2 ± 0.2	2.1 ± 0.2	1.0 ± 0.2	0.5 ± 0.2	2.0 ± 0.2	1.5 ± 0.2	1.0 ± 0.2	4.0 ± 0.2	1.4 ± 0.2

Terminal Configuration:



No.	Terminal Name	No.	Terminal Name
(1)	Feeding Point	(2)	NC

Test Conditions

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

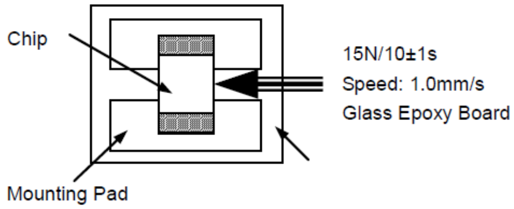
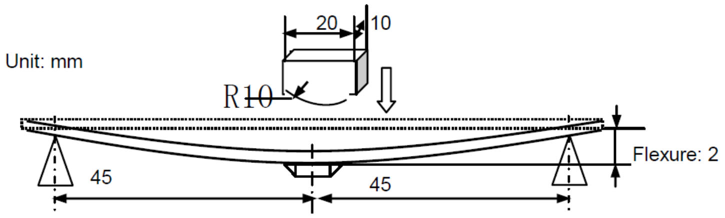
a. Ambient Temperature: 20±15℃
b. Relative Humidity: 65±20%
c. Air Pressure: 86 Pa to 106 KPa

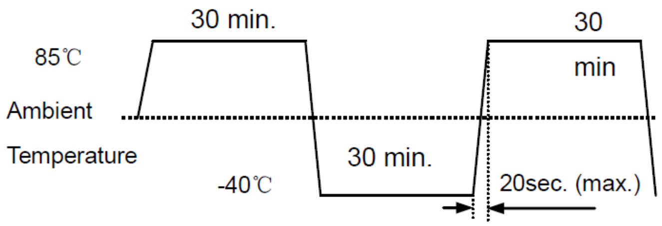
If any doubt on the results, measurements/tests should be made within the following limits:

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

Electrical Performance

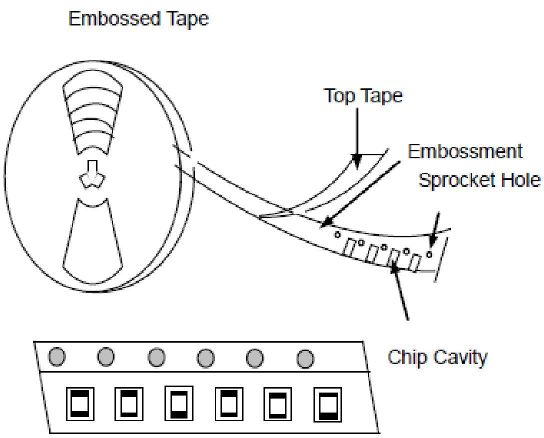
Reliability Test

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 eutectic solder. Then apply a force in the direction of the arrow 2. 10N force for 5221 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
		
Dropping	No visible mechanical damage	Drop the chip 5 times on a wood floor from the height of 50 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

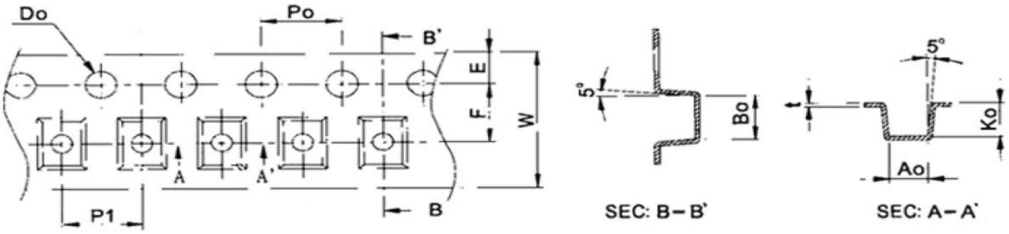
Thermal Shock	1) No visible mechanical damage 2) Satisfy electrical characteristic	1. Temperature and time: -40°C for 30 ± 3 min → 85°C for 30 ± 3 min 2. Transforming interval: Max. 20 sec 3. Tested cycle: 10 cycles 4. The chip shall be stabilized at normal condition for 1 ~ 2 hours before measuring 
Damp Heat (Steady States)	1) No visible mechanical damage 2) Satisfy electrical characteristic	1. Temperature: 60 ± 2°C 2. Humidity: 90% to 95% RH 3. Duration: 96^{+24} hours 4. 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: 96^{+24} hours 3. The chip shall be stabilized at normal condition for 1~2 hours before measuring

Packaging

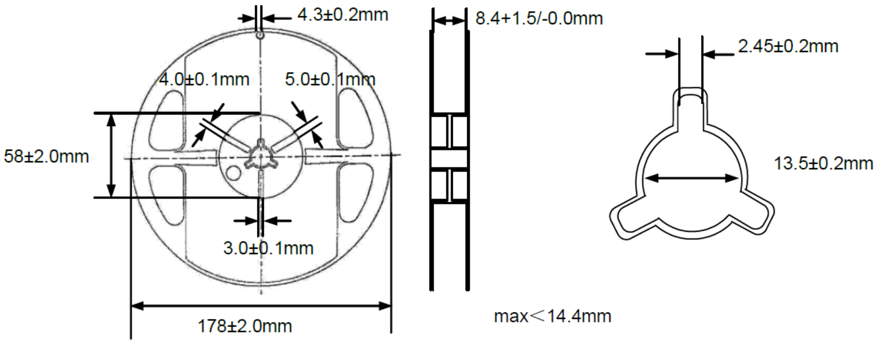
Type	5020
Tape	Embossed Tape
Quantity	4K



Taping Dimensions (Unit: mm)

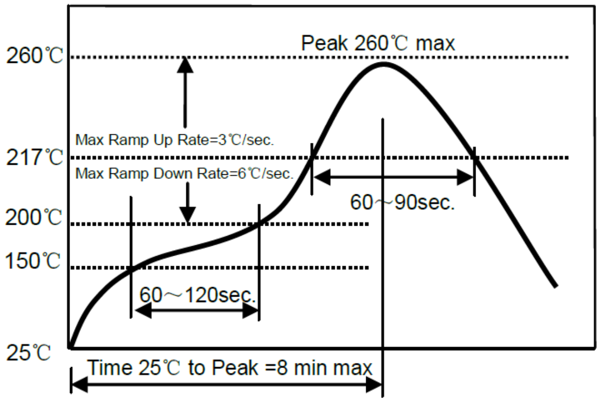


Type	W	P1	E	F	D0	P0	K0	A0	B0	t
Dimensions (mm)	12 ± 0.1	8 ± 0.1	1.75 ± 0.1	5.5 ± 0.15	1.5 +0.1/-0.0	4 ± 0.1	1.2 ± 0.1	2.35 ± 0.1	5.5 ± 0.1	0.3 ± 0.15



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. Solderability shall be guaranteed for 6 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 6 months shall be checked solder-ability before use.

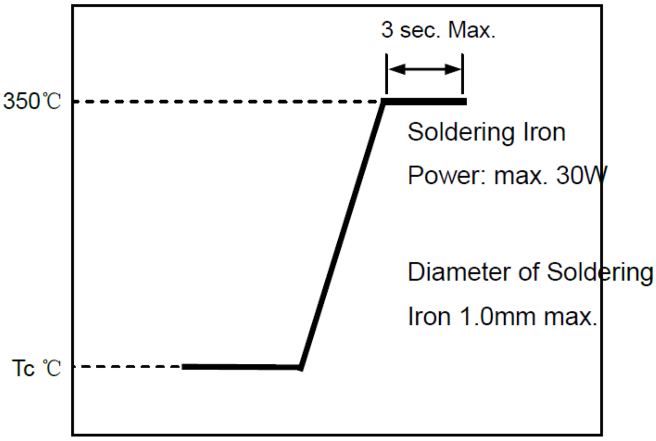
Recommended Soldering Technologies



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.]