FEATURE

- RoHS Complaint
- Tiny and light.
- High reliability and stability.
- Wave and reflow soldering are all available.
- MSL class： MSL 1
- Applications:
  - Computer, laptop, workstation, tablet, and peripherals
  - Hard disk, DRAM
  - TV motherboard, Monitor board
  - etc.

MANUFACTURER PART NO.

For example: NA0202J100KT5G00 – NA0202 ±5% 100KΩ T/R-10000

Series	Size	Tol.	Nominal Resistance Value	PKG	SPQ	Feature	TCR
2 codes	4 codes	1 code	2~5 codes	1 code	1 code	1 code	2 codes
NA	0304	J	100K	T	5	G	00
Convex Termination Chip Resistors Array	0202=0402×2 0204=0402×4 0302=0603×2 0304=0603×4	F=±1% J=±5%	0R=Jumper(<50mΩ) 1R①=1Ω 4R7=4.7Ω 4K7②=4.7KΩ 100K=100KΩ 1M③=1MΩ R1=R2=R3=R4	T=T/R④	5=5K A=10K	G=Std. S=P.C.⑤	00=Refer to table as below.

Note: ① R=Radix, 10^0, Ω ② K=Kilo, 10^3, KΩ ③ M=Mega, 10^6, MΩ
④ T/R=Taping in reel package type ⑤ P.C.=Personal and Customized.

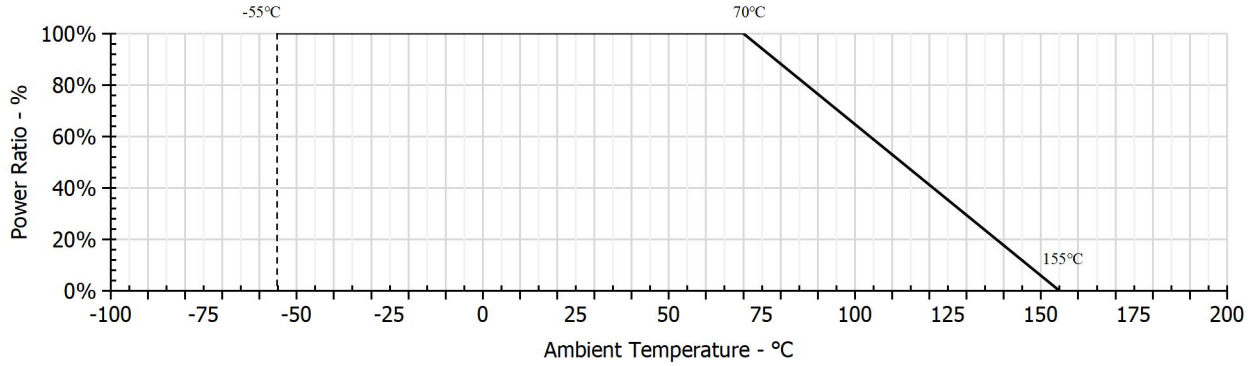
CHARACTERISTIC

Series	Rated Power	MWV①	MOV②	Tolerance	Resistance Range	TCR PPM/℃	Jumper (0Ω)	
							Max Value	MOC③
NA0202 0402×2	1/16W	50V	100V	±1%, ±5%	10Ω-1MΩ	±200	50 mΩ	1A
NA0204 0402×4	1/16W	50V	100V	±1%, ±5%	10Ω-1MΩ	±200	50 mΩ	1A
NA0302 0603×2	1/16W	50V	100V	±1%, ±5%	10Ω-1MΩ	±200	50 mΩ	1A
NA0304 0603×4	1/16W	50V	100V	±1%, ±5%	1Ω-9.99Ω	±400	50 mΩ	1A
				±1%, ±5%	10Ω-1MΩ	±200	50 mΩ	1A

Note: ① MWV=Max. Working Voltage ② MOV=Max. Overload Voltage ③ MOC=Max. Overload Current.

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POWER DERATING CURVE



Note: Operating Temperature Range: -55 ~ +155℃

RATED VOLTAGE

Resistors should have a Rated Voltage DC or AC corresponding to Rated Power which can be calculated by formula as below.

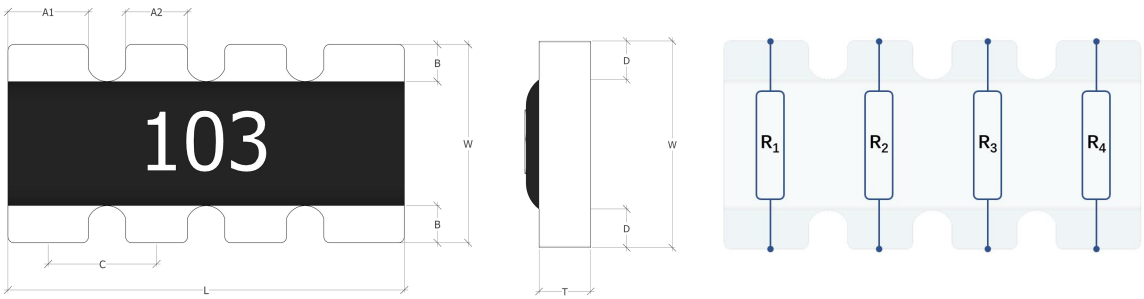
The Rated Voltage of certain resistance value should be the calculated result or Max. Working Voltage of product series whichever less.

Formula:

$$E = \sqrt{P \times R}$$

E=Rated voltage(V)
P=Rated power(W)
R=Nominal resistance(Ω)

DIMENSIONS



Unit: mm

Type	L	W	H	A1	A2	B	C	D
NA0202 0402×2	1.00±0.10	1.00±0.10	0.35±0.10	0.33±0.10	/	0.15±0.05	0.65±0.05	0.25±0.10
NA0204 0402×4	2.00±0.10	1.00±0.10	0.45±0.10	0.40±0.05	0.30±0.05	0.20±0.15	0.50±0.05	0.30±0.15
NA0302 0603×2	1.60±0.15	1.60±0.15	0.50±0.10	0.60±0.15	/	0.30±0.10	0.80±0.05	0.25±0.10
NA0304 0603×4	3.20±0.20	1.60±0.20	0.50±0.10	0.60±0.15	/	0.30±0.15	0.80±0.10	0.30±0.15

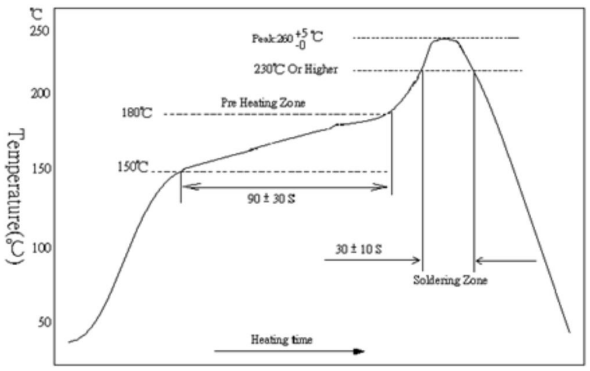
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RELIABILITY

Item	Test Method	Acceptable Criterion
Temperature Coefficient of Resistance (T.C.R.)	$TCR(PPM/℃)=\frac{(R_2-R_1)}{R_1\times(T_2-T_1)}\times10^6$ R_1= Value in room temperature R_2= Value in test temperature T_1= Room temperature T_2= Test temperature **Reference: JIS-C5201-1 4.8**	R≥10Ω:±200 PPM/℃ R < 10Ω:±400 PPM/℃
Short Time Overload	Voltage: 2.5 times of voltage rating within 5 seconds. Test the change rate after testing 30 minutes. **Reference: JIS-C5201-1 4.13**	△R/R: ±(2.0%+0.05Ω) Jumper: ＜50mΩ
Solderability	Hold resistors in a furnace at 235 ± 5 ℃ for 2 seconds, take it out and observe the solder area under a microscope. **Reference: JIS-C5201-1 4.17**	Coverage must be 95% minimum.
Resistance to Soldering Heat	Hold resistors in 260 ℃ tin furnace for 10 seconds, take it out and stand for 60 minutes, and measure the change rate. **Reference: JIS-C5201-1 4.18**	△R/R: ±(1.0%+0.05Ω) Jumper: ＜50mΩ
Leaching	Hold resistor the tin furnace at 260 ° C for 30 seconds, take it out and observe the appearance of the resistance. **Reference: JIS-C5201-1 4.18**	No visible damage.
Board Flex/ Bending	The resistance is welded in PCB, placed on the bending test machine, pressed in the center of PCB, and the change rate of resistance value is measured under load. Pressing depth (D): 5mm **Reference: JIS-C5201-1 4.33**	△R/R: ±(1.0%+0.05Ω) Jumper: ＜50mΩ
High Temperature Exposure	Store at the maximum temperature for 1000 hours without power, take it out and stand for 60 minutes, and then measure the change rate. **Reference: JIS-C5201-1 4.25**	△R/R: ±(3.0%+0.05Ω) Jumper: ＜50mΩ
Thermal Shock	Place the product in the cold and hot shock box at - 55 ℃ for 15 minutes and + 125 ℃ for 15 minutes. Take it out after 300 cycles, stand for 60 minutes, and then measure the resistance change rate. **Reference: MIL-STD-202 Method 107G**	△R/R: ±(1.0%+0.05Ω) Jumper: ＜50mΩ
Loading Life in Moisture	Place it in a constant temperature and humidity box with a temperature of 40 ℃ and a relative humidity of 90 ~ 95%, and apply the rated voltage, on for 90 minutes and off for 30 minutes, a total of 1000 hours. Take it out and stand for 60 minutes, and then measure the change rate **Reference: JIS-C5201-1 4.24**	△R/R: ±(3.0%+0.05Ω) Jumper: ＜100mΩ
Load Life	Place in an oven at 70 ℃ and apply the rated voltage for 90 minutes on and 30 minutes off for 1000 hours. Take it out and stand for 60 minutes, and then measure the change rate of resistance value. **Reference: JIS-C5201-1 4.25**	△R/R: ±(3.0%+0.05Ω) Jumper: ＜100mΩ

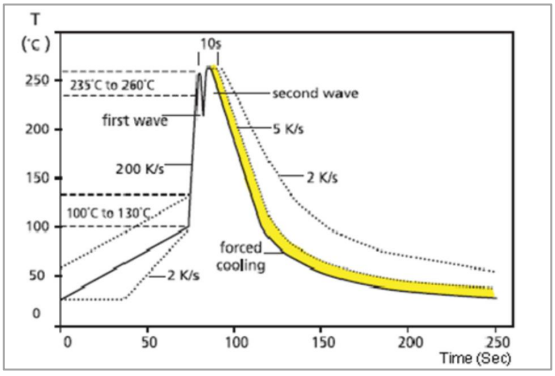
SOLDERING

Lead Free IR Reflow Soldering Profile



- Top temperature should be under 260 +5/-0 ℃ ,10Sec.
- Reference: J-STD-020D

Lead Free Double-Wave Soldering Profile



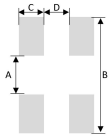
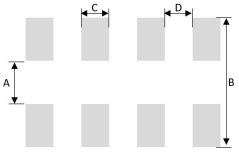
- 350±10℃ within 3 Sec. if soldering iron.

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SOLDERING PAD

Resistance value would be lower than nominal value because of joint with soldering material, so designing circuit should adjust the pad size.

Unit: mm

Figure	Series	A	B	C	D
	NA0202 0402×2	0.50	2.00	0.33	0.34
	NA0204 0402×4	1.00	2.60	0.40	0.40
	NA0302 0603×2	0.50	2.00	0.28	0.22
	NA0304 0603×4	1.00	2.60	0.40	0.40

WORKING ENVIRONMENT

If user intends to use products in special environments or states (including but not limited to the following), it is necessary to approve special characteristics and reliability for the following or other application environments.

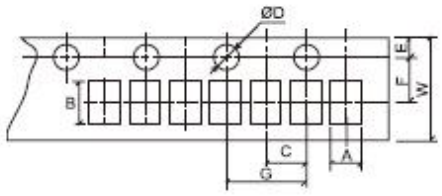
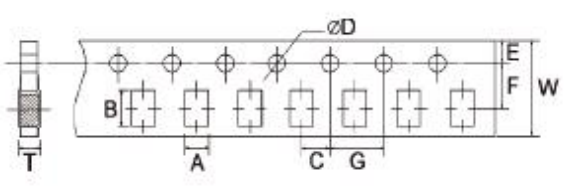
A. High temperature.
B. Near the sea, or corrosive gas, such as Cl_2, H_2S, NH_3, SO_2 and NO_2, etc.
C. Unverified liquids, such as water, oil, chemical or organic solvent.
D. Unverified resin or paint to cover products.
E. Products should be washed with water soluble cleaner even if non cleaning flux.

STORAGE / CARRY CONDITIONS

A. Temperature: 25±5℃
B. Humidity: 60±15%RH
C. Storage life: 2 years. FIFO
D. Please hold box correct orientation when storing and carrying. It is strictly prohibited to fall or squeeze the box, otherwise the product electrode or body may be damaged.

TAPING SPECIFICATIONS

A. Taping drawing

Carrier Taping A	Carrier Taping B
	

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B. Taping Dimensions unit: mm

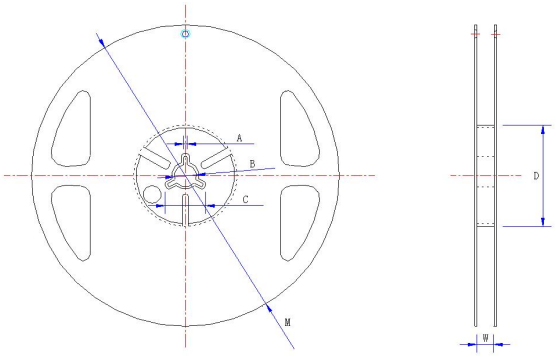
Type or Size		A±0.2	B±0.2	C±0.05	ØD$^{+0.1}_{-0}$	E±0.1	F±0.05	G±0.1	W±0.2	T±0.1
Carrier Taping A	0204	1.25	2.25	2.0	1.5	1.75	3.5	4.0	8.0	0.67
Carrier Taping B	0304	1.90	3.45	2.0	1.5	1.75	3.5	4.0	8.0	0.81

STANDARD PACKING

Series	0204	0304
SPQ, PCS/Reel	5,000	5,000
Taping material	Carrier	Carrier

REEL SPECIFICATION

A. Reel drawing



B. Reel dimension unit: mm

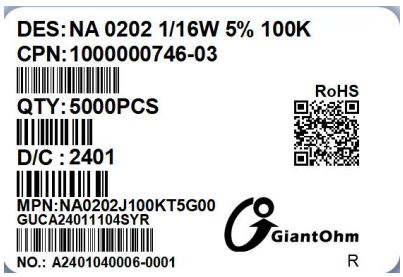
Type	SPQ PCS/Rl.	A±0.5	B±0.5	C±0.5	D±1	M±2	W±1
0204	5,000	2.0	13.0	21.0	60.0	178.0	10.0
0304	5,000	2.0	13.0	21.0	60.0	178.0	10.0

LABEL SPECIFICATION

A. Produce Label



B. Customer Label



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PACKING BOX

A. Packing Type

Taping in reel / Bulk in plastic bag.

B. Inner box

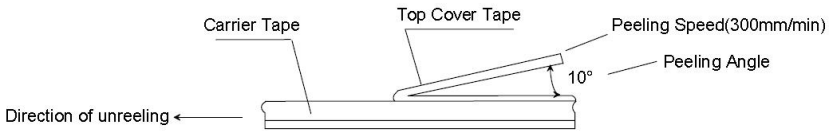
The inner box has several capacities hold 1 reel, 2 reels, 3 reels, 4 reels, 5 reels and 10 reels.

C. Out box

The out box has two capacities hold 6- or 8-pieces inner box.

NOTE OF COVER TAPE PEEL OFF

A. Figure of cover tape peel off.



B. Please keep peeling speed under 300mm per minute.

C. Please keep the angle between cover tape and direction of unreeling narrower than 10 degree.

D. There is limit of adhesive force between cover tape and carrier tape or embossed tape shown as following table.

Size of chip resistors	0204、0304
Adhesive force limit	10~70gf

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VERSION HISTORY

Version	Date	Change Item(s)	Description
A	2022/05/25	-	First version
B	2024/07/16	Full	Add Packing Specifications Add Jumper Description in MPN Add Jumper test acceptable criterion. Add Moisture sensitivity level description.

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