Data Sheet

Customer：	
Product :	Aluminum Nitride Thin Film Precision Chip Resistor – ARN Series
Size:	1206/2512
Issued Date:	08-JUL-20
Edition :	REV.A1

RoHS Compliant

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Aluminum Nitride Thin Film Precision Chip Resistor
(ARN Series)

■ Features

- High thermal conductivity aluminum nitride substrate
- Power rating up to 6.0W
- Resistance 50Ω ~ 30.1KΩ
- Resistor tolerance to ± 0.1%
- TCR to ± 25ppm/ ° C

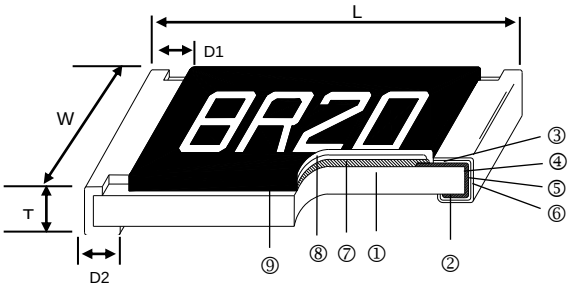
■ Applications

- Power Supplies
- Power Switching
- Braking System

■ Typical Performance

- TCR. 25 ppm/℃
- TOL. 0.1 %

■Construction



①	Alumina Nitride Substrate	④	Edge Electrode	⑦	Resistor Layer
②	Bottom Electrode	⑤	Barrier Layer	⑧	Overcoat
③	Top Electrode	⑥	External Electrode	⑨	Marking

■Dimensions

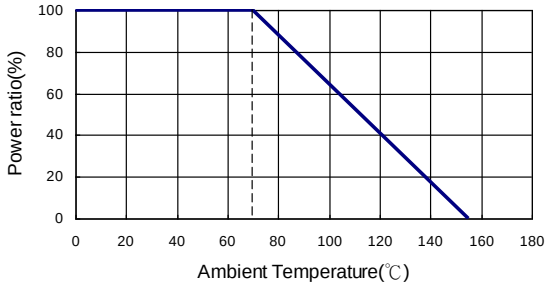
Unit: mm

Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
ARN06	1206	3.05±0.20	1.55±0.20	0.43±0.15	0.50±0.15	1.20±0.20	10.98
ARN12	2512	6.30±0.20	3.10±0.20	0.43±0.15	0.70±0.25	1.60±0.25	42.32

■Part Numbering

ARN	06	C	T	C	S	1000	N
Product Type	Dimensions (L×W)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance	Marking Code
	06: 1206 12: 2512	B: ±0.1% C: ±0.25% D: ±0.5% F: ±1%	T: Taping Reel B: Bulk	C: ±25 D: ±50	S : 2W I : 6W	1000: 100Ω 5000: 500Ω 1002: 10KΩ	:Standard Marking N: No Marking

■Derating Curve



■Standard Electrical Specifications

Item / Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overload Voltage	Resistance Range				TCR (PPM/°C)
					±0.1%	±0.25%	±0.5%	±1%	
ARN06 (1206)	2W (1)	-55°C ~ +150°C	100V	200V	50Ω~30.1KΩ				±25 ±50
ARN12 (2512)	6W (1)	-55°C ~ +150°C	100V	200V	100Ω~30.1KΩ				±25 ±50

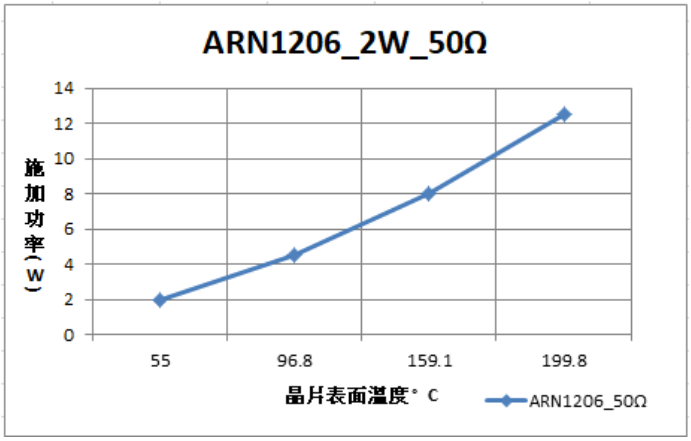
(1) Dependant on component mounting by user.
Operating Voltage=√(P*R) or Max. operating voltage listed above, whichever is lower.
■Viking is capable of manufacturing the optional spec based on customer's requirement.

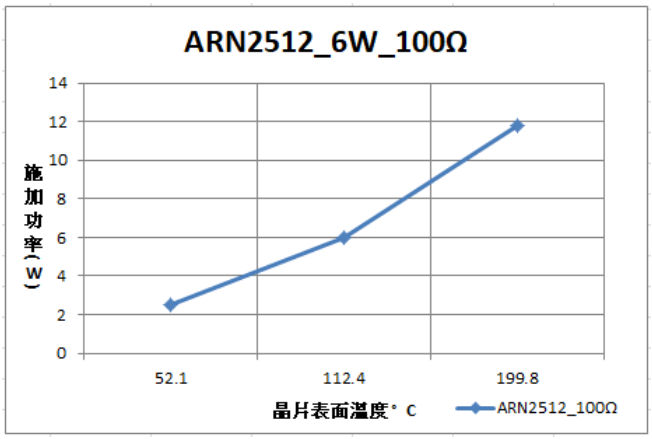
■Environmental Characteristics

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	**MIL-STD-202 Method 304** +25/-55/+25/+125/+25°C
Short Time Overload(2)	ΔR ± 0.5 %	Actual power handling capability is limited by the end user mounting process. As with any high power chip resistor the ability to remove the heat is critical to the overall performance of the device
Insulation Resistance	>9999MΩ	**MIL-STD-202 Method 302** Apply 100V_{DC} for 1 minute
Endurance	ΔR ± 1%	**MIL-STD-202 Method 108A** 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load	ΔR ± 0.4 %	**MIL-STD-202 Method 103B** 40±2°C, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Solderability	95% min. coverage	**MIL-STD-202 Method 208H** 245±5°C for 3 seconds
Resistance to Soldering Heat	ΔR ± 0.2 %	**MIL-STD-202 Method 210E** 260±5°C for 10 seconds
Low Temperature Operation	ΔR ± 0.2 %	**JIS-C-5201-1 4.36** 1 hour ,-65°C, followed by 45 minutes of RCWV
High Temperature Exposure	ΔR ± 0.2 %	**MIL-STD-202 Method 108** At + 155°C for 1000hrs
Thermal Shock	ΔR ± 0.2 %	**MIL-STD-202F Method 107G** -55°C ~150°C, 100 cycles

RCWV(Rated continuous working voltage)= √(P*R) or Max. Operating voltage whichever is lower
■ **Reference Standards: MIL-STD-202, JIS-C 5201**
■ **Storage Temperature: 15~28°C; Humidity < 80%RH**

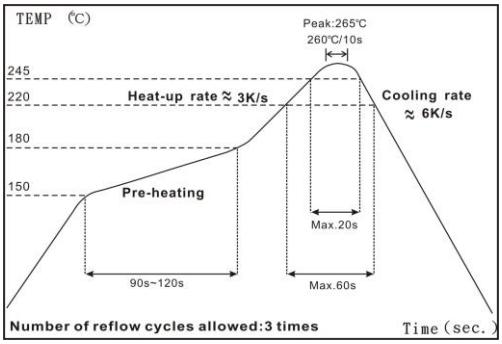
■ Chip Temp Vs. APPLIED POWER

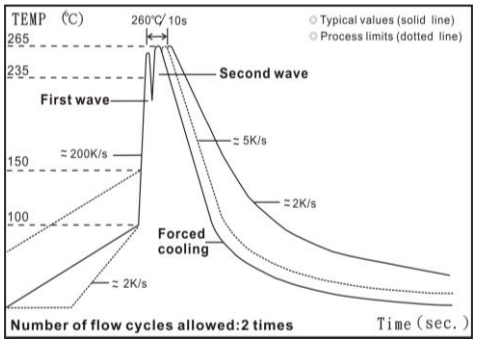




(2) Chip surface temperature measured using FLIR ETS-320 thermal imaging system with an approximate test card surface temperature

■ Soldering Condition





IR Reflow Soldering　　Wave Soldering (Flow Soldering)

(1) Time of IR reflow soldering at maximum temperature point 260°C：10s
(2) Time of wave soldering at maximum temperature point 260°C：10s
(3) Time of soldering iron at maximum temperature point 410°C：5s

■Marking

1206~2512 4digit marking

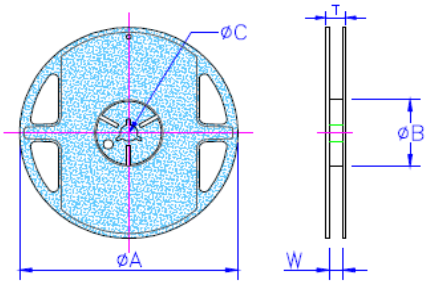
Example

Resistance	500Ω	2.2KΩ	10KΩ	12.5KΩ
marking	5000	2201	1002	1252

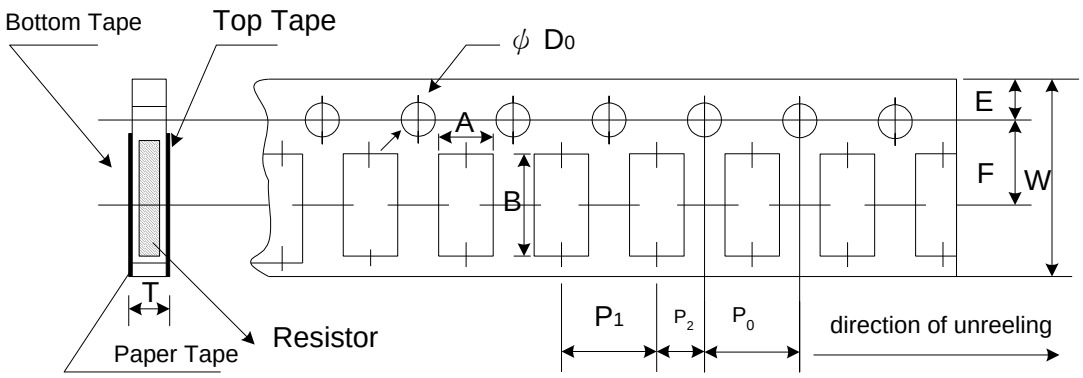
■Packaging

Packing Quantity & Reel Specifications　　Unit :mm

Type	ØA	ØB	ØC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
ARN06	178.0±1.0	60.0+1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-
ARN12	178.0±1.0	60.0+1.0	13.5±0.7	13.5±1.0	15.5±1.0		4,000



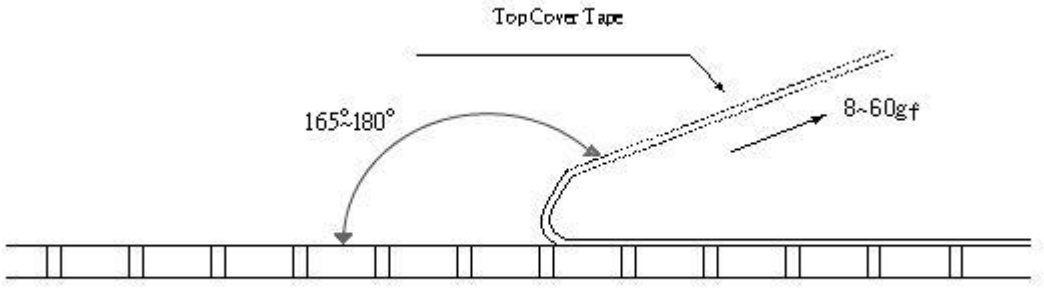
Paper Tape Specifications



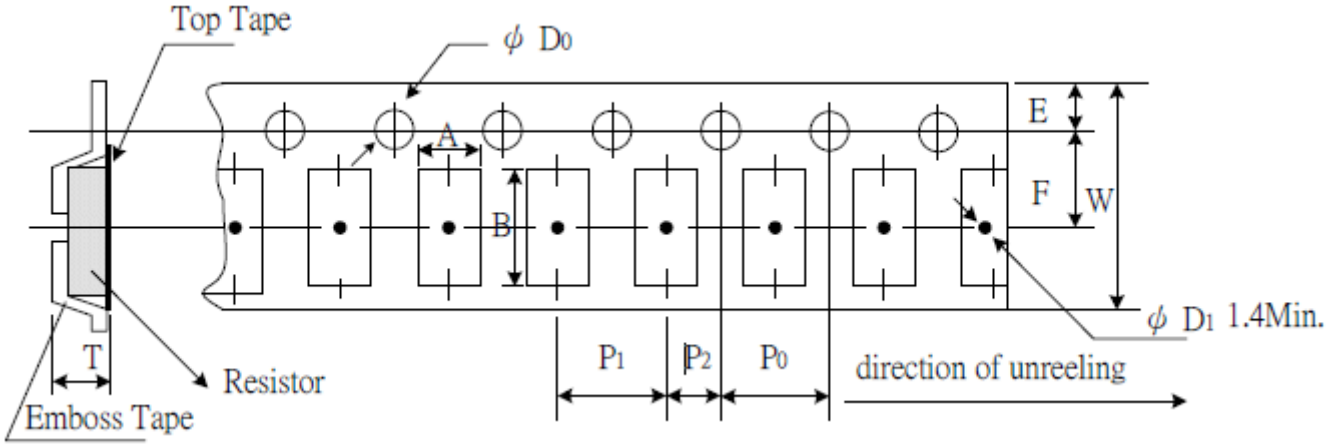
Unit: mm

Type	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
ARN06	2.00±0.05	3.55±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05

■ Peel force of top cover tape
■ The peel speed shall be about 300mm/min±5%
■ The peel force of top cover tape shall be between 8gf to 60gf

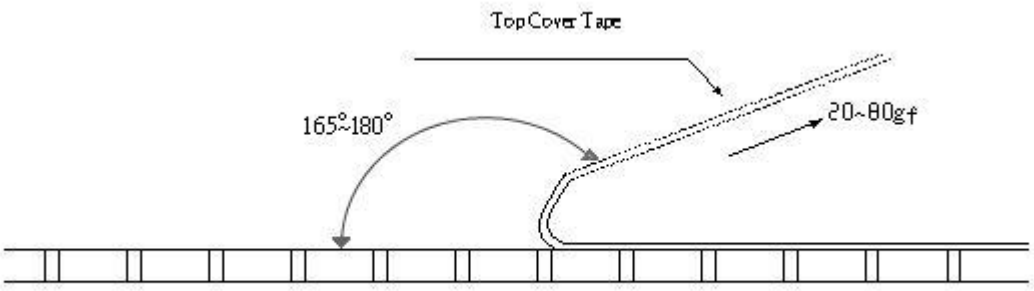


Emboss Plastic Tape Specifications

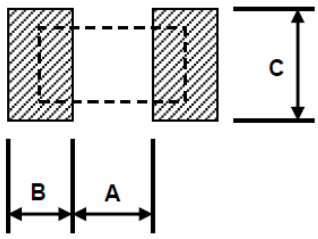


Type	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
ARN12	3.40±0.10	6.65±0.10	12.0±0.10	1.75±0.10	5.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.50±0.10	1.00±0.20

■ Peel force of top cover tape
■ The peel speed shall be about 300mm/min±5%
■ The peel force of top cover tape shall be between 20gf to 80gf



■Recommend Land Pattern



Unit: mm

Type	A	B	C
ARN06	0.60	1.90	1.80±0.1
ARN12	2.77	2.31	3.20±0.2