Data Sheet

Customer：	
Product :	Thin Film Chip Resistor - ARG Series
Size:	0402/0603/0805/1206
Issued Date:	9-Sep-26
Edition :	REV. B

RoHS Compliant

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9-Sep-26	9-Sep-26	9-Sep-26		
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Thin Film Chip Resistor
(ARG Series)



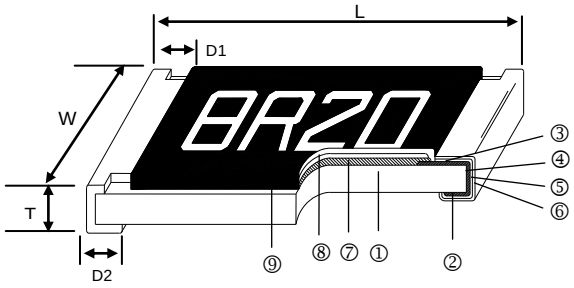
■Features

- Advanced thin film technology
- SMD Type designed for automatic insertion
- Wide resistance range 1ohm ~ 2.49Mega ohm
- Total Lead(Pb)-free without RoHS exemptions

■Applications

- Medical Equipment
- Testing / Measurement Equipment
- Printer Equipment
- Automatic Equipment Controller
- Converters
- Communication Device, Cell Phone, GPS, PDA

■Construction



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

■Dimensions

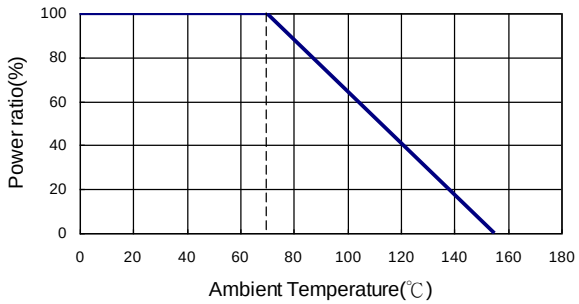
Unit: mm

Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
ARG02	0402	1.00±0.05	0.50±0.05	0.30±0.10	0.20±0.10	0.20±0.10	0.54
ARG03	0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20	1.83
ARG05	0805	2.00±0.15	1.25±0.15	0.50±0.10	0.30±0.20	0.40±0.20	4.71
ARG06	1206	3.10±0.15	1.55±0.15	0.55±0.10	0.42±0.20	0.35±0.25	9.02

■Part Numbering

ARG	03	F	T	C	1001	N
Product Type	Dimensions (L×W)	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Resistance	Marking Code
	02: 0402 03: 0603 05: 0805 06: 1206	B: ±0.1% C: ±0.25% D: ±0.5% F: ±1%	T: Taping Reel B: Bulk V:10"Taping Reel W:13"Taping Reel	C: ±25 D: ±50	0010: 1Ω 4R70: 4.7Ω 1001: 1KΩ 1004: 1MΩ	: Standard Marking for E96 / E24 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%	
ARG02 (0402)	1/16W	-55 ~ +155°C	50V	100V	4.7Ω – 255KΩ				±25 ±50
ARG03 (0603)	1/10W	-55 ~ +155°C	75V	150V	1Ω - 1MΩ				±25 ±50
ARG05 (0805)	1/8W	-55 ~ +155°C	150V	300V	1Ω - 2MΩ				±25 ±50
ARG06 (1206)	1/4W	-55 ~ +155°C	200V	400V	1Ω - 2.49MΩ				±25 ±50

Operating Voltage=$\sqrt{}$(P*R) or Max. operating voltage listed above, whichever is lower.
Overload Voltage=2.5*$\sqrt{}$(P*R) or Max. overload 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	ΔR±0.2%	**JIS-C-5201-1 4.13** RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds
Insulation Resistance	>9999 MΩ	**MIL-STD-202 Method 302** Apply 100V_{DC} for 1 minute
Endurance	ΔR±0.5%	**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±0.5%	**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"
Bending Strength	ΔR±0.1%	**JIS-C-5201-1 4.33** Bending amplitude 3 mm for 10 seconds
Solderability	95% min. coverage	**MIL-STD-202 Method 208H** 245±5°C for 3 seconds
Resistance to Soldering Heat	ΔR±0.1%	**MIL-STD-202 Method 210E** 260±5°C for 10 seconds
Dielectric Withstand Voltage	By Type	**MIL-STD-202 Method 301** Max. overload voltage for 1 minute
Thermal Shock	ΔR±0.2%	**MIL-STD-202 Method 107G** -55°C ~150°C, 100 cycles

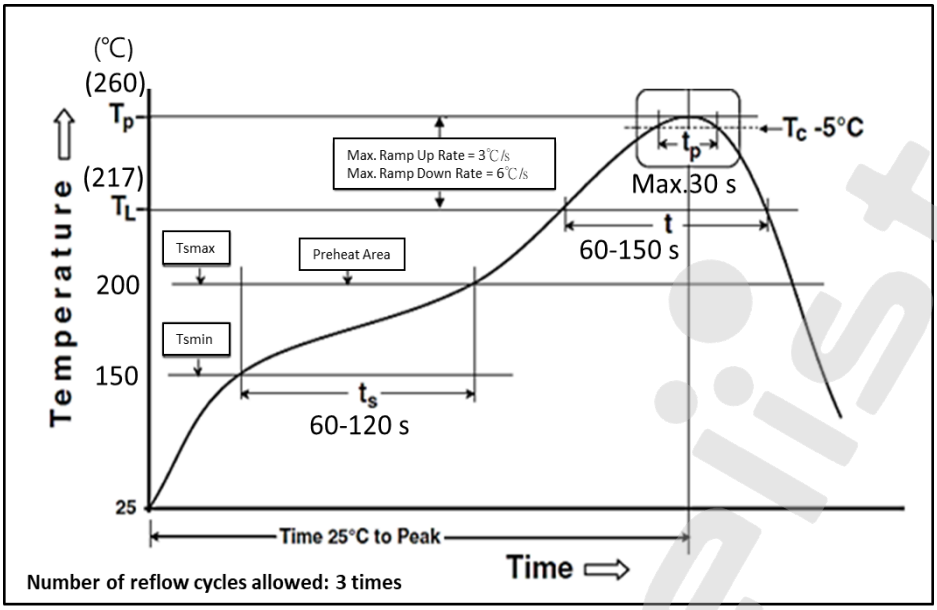
Low Temperature Operation	ΔR±0.5%	**JIS-C-5201-1 4.36** 1 hour, -65°C, followed by 45 minutes of RCWV
High Temperature Exposure	ΔR±0.5%	**MIL-STD-202 Method 108** at +155°C for 1000 hrs

RCWV(Rated continuous working voltage)= √(P*R) or Max. Operating voltage whichever is lower

■ **Storage Temperature: 15~28℃; Humidity < 80%RH**

■ **Shelf Life: 2 years from production date.**

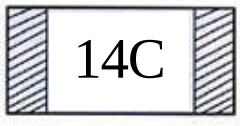
■Soldering Condition(IPC/JEDEC J-STD-020)



Reflow Profiles	
Profile Feature	**Pb-Free Assembly**
Preheat Min. Temperature (T_{smin}) Max Temperature (T_{smax}) Preheating time (t_s) from (T_{smin} to T_{smax})	 150 °C 200 °C 60-120 seconds
Ramp-up rate (T_L to Tp)	3 °C/second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L	217 °C 60-150 seconds
Min. Peak temperature (Tp min)	235°C
Max. Peak temperature (Tp max)	260°C
Time (tp) within 5 °C of the specified classification temperature (Tc)	30 seconds max.
Ramp-down rate (Tp to T_L)	6 °C/second max.
Time 25 °C to peak temperature	8 minutes max.

■Marking

0603 3digit marking in E96



3digit marking for Example: 14C=13K7Ω 13C=13K3Ω

68B=4K99Ω 68X=49.9Ω

Marking Table

Code	E96	Code	E96	Code	E96	Code	E96
01	100	**25**	178	**49**	316	**73**	562
02	102	**26**	182	**50**	324	**74**	576
03	105	**27**	187	**51**	332	**75**	590
04	107	**28**	191	**52**	340	**76**	604
05	110	**29**	196	**53**	348	**77**	619
06	113	**30**	200	**54**	357	**78**	634
07	115	**31**	205	**55**	365	**79**	649
08	118	**32**	210	**56**	374	**80**	665
09	121	**33**	215	**57**	383	**81**	681
10	124	**34**	221	**58**	392	**82**	698
11	127	**35**	226	**59**	402	**83**	715
12	130	**36**	232	**60**	412	**84**	732
13	133	**37**	237	**61**	422	**85**	750
14	137	**38**	243	**62**	432	**86**	768
15	140	**39**	249	**63**	442	**87**	787
16	143	**40**	255	**64**	453	**88**	806
17	147	**41**	261	**65**	464	**89**	825
18	150	**42**	267	**66**	475	**90**	845
19	154	**43**	274	**67**	487	**91**	866
20	158	**44**	280	**68**	499	**92**	887
21	162	**45**	287	**69**	511	**93**	909
22	165	**46**	294	**70**	523	**94**	931
23	169	**47**	301	**71**	536	**95**	953
24	174	**48**	309	**72**	549	**96**	976

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^{-1}	10^{-2}	10^{-3}

0603 3digit marking for E24, but when E24 and E96 share the same resistance, E96 marking shall take priority

Example:

Resistance	100Ω	11KΩ	12KΩ	27KΩ
Marking	01A	05C	123	273

E24	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91

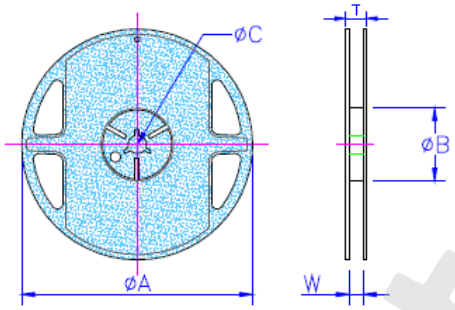
0805~2512 4digit marking

Example

Resistance	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
marking	1000	2201	1002	4992	1003

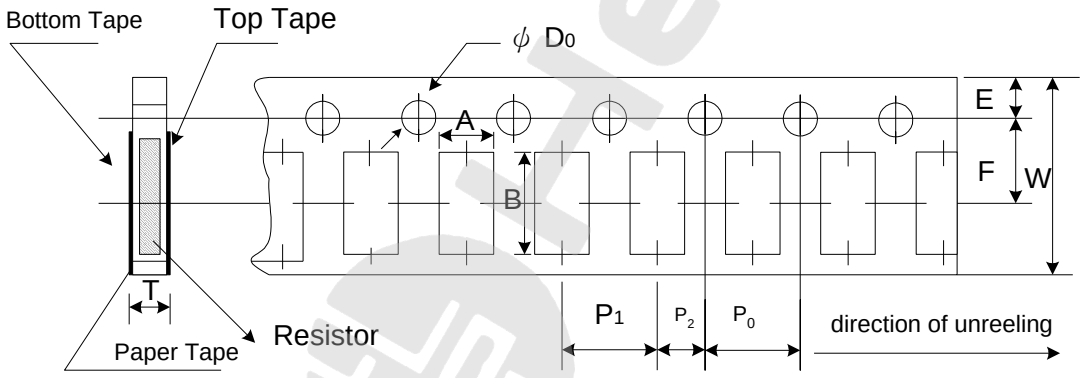
■Packaging

Packing Quantity & Reel Specifications



Type	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
ARG02	Paper	10K	8mm	7 inch	178.0±1.0	60.0+1.0	13.5±0.7	9.5±1.0	11.5±1.0
		20K	8mm	10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
		40K	8mm	13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
ARG03 ARG05 ARG06	Paper	5K	8mm	7 inch	178.0±1.0	60.0+1.0	13.5±0.7	9.5±1.0	11.5±1.0
		10K	8mm	10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5
		20K	8mm	13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5	13.5±0.5

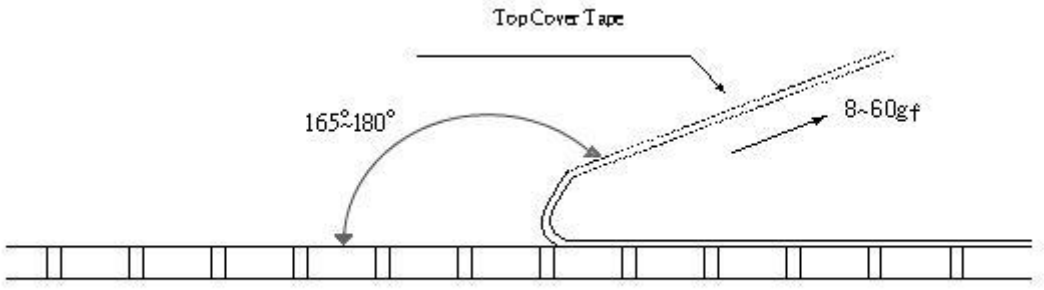
Paper Tape Specifications



Unit: mm

Type	A	B	W	E	F	P_0	P_1	P_2	ΦD_0	T
ARG02	0.70±0.05	1.16±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	2.00±0.05	2.00±0.05	1.55±0.05	0.40±0.03
ARG03	1.10±0.05	1.90±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	0.60±0.03
ARG05	1.60±0.05	2.37±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
ARG06	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

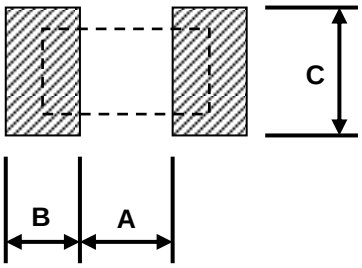
■ Peel force of top cover tape
■ The peel speed shall be about 300mm/min±5%
■ The peel force of top cover tape shall be between 8gf to 60gf



Unit: mm

■Recommend Land Pattern

Unit: mm



Type	A	B	C
ARG02	0.50	0.50	0.60±0.2
ARG03	0.80	1.00	0.90±0.2
ARG05	1.00	1.00	1.35±0.2
ARG06	2.00	1.15	1.70±0.2

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A1	May 08, 2015	-	- Correct the element of Top Electrode.
Version A2	May 02, 2016	-	- Modify Storage Temperature. - Remove Material Description.
Version A3	July 19, 2016	-	- Add Resistance Range (±0.1% and 0.25%) - Update requirements of Environmental Characteristics.
Version A4	Nov 10, 2016	-	- Correct the reference standard in Environmental Characteristics.
Version A5	May 22, 2019	-	- Add High Temperature Exposure in Environmental Characteristics.
Version A6	Jan 26, 2022	-	- Add shelf life description. - Modify IR reflow profile to comply IPC/JEDEC J-STD-020.
Version A7	Feb 24, 2026	-	- Delete the wrong sentence “(Lower Resistance:1~10Ω ; High Power Rating)” under the table of Standard Electrical Specifications. - Add Reflow Profiles.
Version A8	Jun 01, 2026	-	- Add new rule for 0603 3digit marking: When E24 and E96 share the same resistance, E96 marking shall take priority.
Version A9	Jul 15,2026	-	- Add new description “Total Lead(Pb)-free without RoHS exemptions” to Features.

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version B	Sep.09, 2026	-	- Add V:10”Taping Reel and W:13”Taping Reel to the Packaging Code in Part Numbering. -Update the Packing Quantity & Reel Specifications table in Packaging.