

Data Sheet

Customer :

Product : High Power Thin Film Chip Resistors – ARTP Series

Size: 0805

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VIKING TECH CORPORATION
光韻科技股份有限公司

No.70, Guangfu N. Rad.,
Hsin Chu Industrial Park,
Hukou Hsiang, Hsin Chu Hsien,
303, Taiwan

TEL:886-3-5972931

FAX:886-3-5972935•886-3-5973494

E-mail:sales@viking.com.tw

VIKING TECH CORPORATION KAOHSIUNG BRANCH
光韻科技股份有限公司高雄分公司

No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,
806, Taiwan

TEL:886-7-8217999

FAX:886-7-8228229

E-mail:sales@viking.com.tw

Viking Electronics (WUXI) CO., LTD.
光韻電子(無錫)有限公司

No.1A,(Xixia Road),Machinery & Industry Park,
National Hi-Tech Industrial Development Zone of
Wuxi, Wuxi, Jiangsu Province, China

Zip Code:214028

TEL:86-510-85203339

FAX:86-510-85203667•86-510-85203977

E-mail:wuxisales@tmtec.com.tw

Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
18-Feb-21	18-Feb-21	18-Feb-21		
Chun	Ben Chang	Ben Chang		

High Power Thin Film Chip Resistors (ARTP Series)



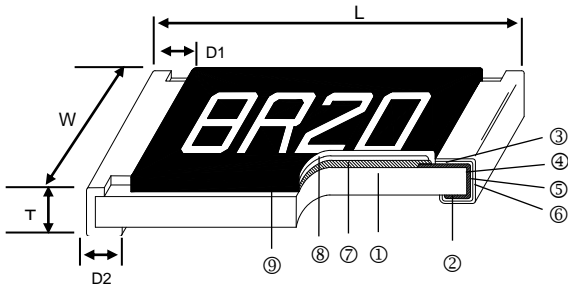
■ Features

- Operating temperature up to 175°C for 1000 hr
- Rated dissipation up to 0.4 W for size 0805
- AEC-Q200 Compliance
- Superior temperature cycling robustness
- Advanced sulfur resistance verified according to ASTM B 809

■ Applications

- Automotive
- Industrial
- High power and high temperature applications
- Replacement for larger case sizes

■ Construction



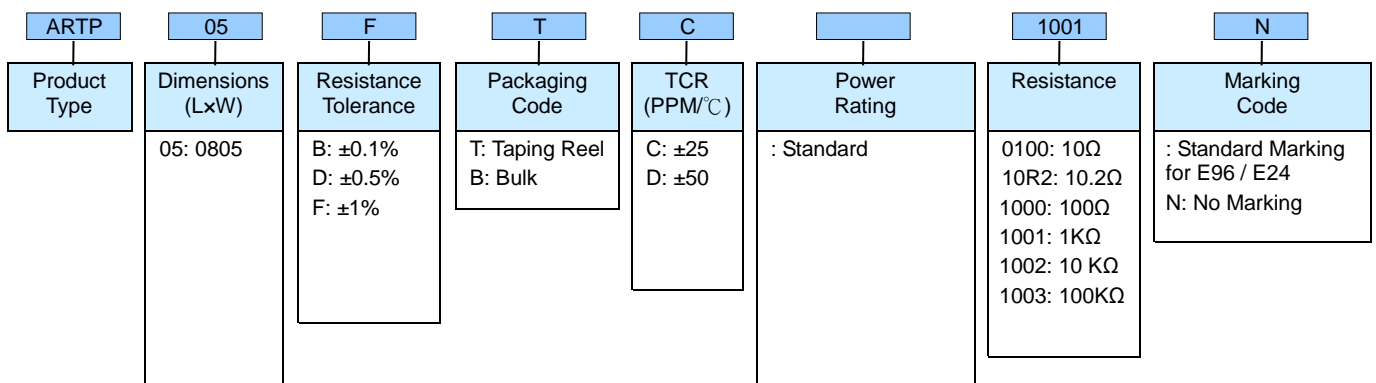
① Alumina Substrate	④ Edge Electrode	⑦ Resistor Layer
② Bottom Electrode	⑤ Barrier Layer	⑧ Overcoat
③ Top Electrode	⑥ External Electrode	⑨ Marking

■ Dimensions

Unit: mm

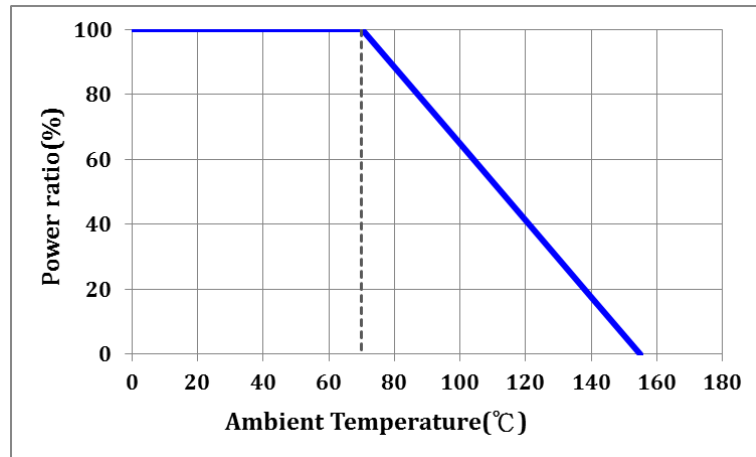
Type	Size (Inch)	L	W	T	D1	D2	Weight (g) (1000pcs)
ARTP05	0805	2.00±0.15	1.25±0.15	0.55±0.10	0.30±0.20	0.40±0.20	4.71

■ Part Numbering

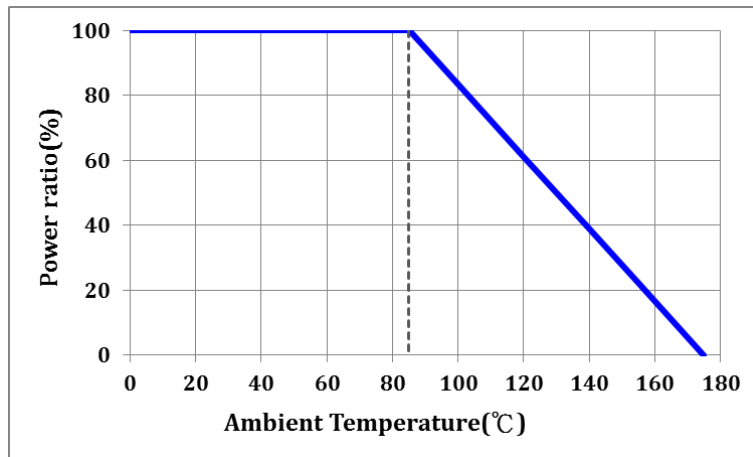


■ Functional Performance

Derating- Power Operation

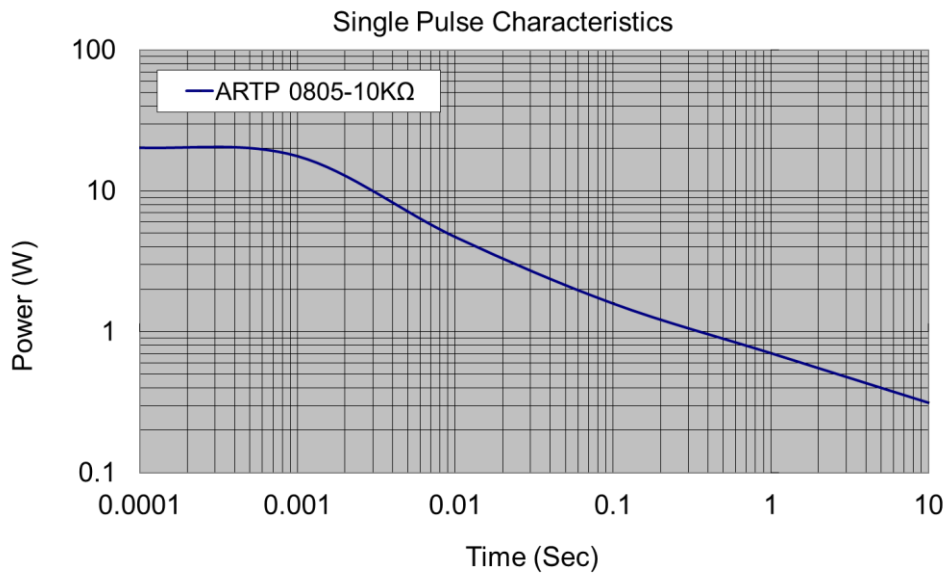


Derating- Advanced Power Operation

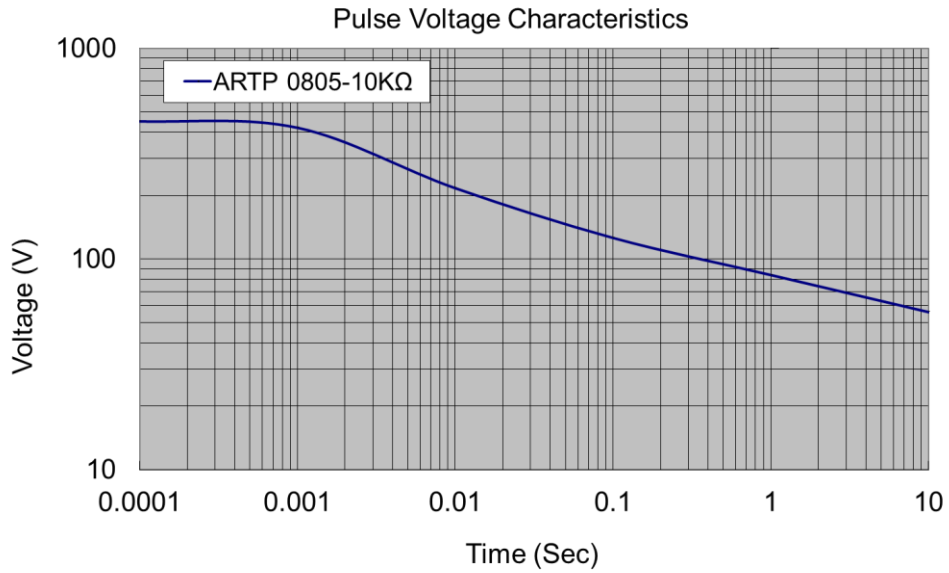


Functional Performance

Single pulse



Pulse Voltage



■ Standard Electrical Specifications

Type	Item	Power Rating at 85°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range			TCR (PPM/°C)
						±0.1%	±0.5%	±1%	
ARTP05		2/5W	-55 ~ +175°C	150V	300V	47Ω - 100KΩ	10Ω - 100KΩ		±25
						—	1Ω - 100KΩ		±50

■ Maximum Resistance Change at Rated Dissipation

Operation Mode		Power P ₇₀	Advanced Temperature P ₈₅	
ARTP05	Power Rating	2/5W	2/5W	
	Operating temperature range	-55 ~ +155°C	-55 ~ +175°C	
	Permissible film temperature	+155°C	+175°C	
	Max. resistance change at rated dissipation for resistance range, ΔR/R after:	Resistance range	1Ω - 100KΩ	1Ω - 100KΩ
		1000hrs	≤ 0.2%	≤ 0.3%
		8000hrs	≤ 0.4%	—

Operating Voltage= $\sqrt{P \cdot R}$ or Max. operating voltage listed above, whichever is lower.
 Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. overload voltage listed above, whichever is lower.
 ■ Viking is capable of manufacturing the optional spec based on customer's requirement.

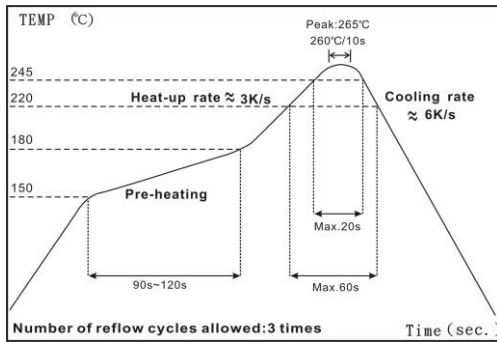
Environmental Characteristics

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 (Power operation mode)	ΔR±0.25%			JIS-C-5201-1 4.13 RCWV*2.5 or Max. overload voltage whichever is lower for 5 seconds
Insulation Resistance	>1000 MΩ			MIL-STD-202 Method 302 Apply 100V _{DC} for 1 minute
Endurance	Power at 70 °C	1000hrs	ΔR±0.20%	MIL-STD-202 Method 108 RCWV with 1.5 hrs "ON" and 0.5 hrs "OFF" 1000 hrs
		8000hrs	ΔR±0.40%	
	Advanced temperature at 85°C	1000hrs	ΔR±0.30%	
High Temperature Exposure	ΔR±0.20%	+155°C		MIL-STD-202 Method 108 1000 hrs
	ΔR±0.30%	+175°C		
Damp Heat with Load	ΔR±0.1%			MIL-STD-202 Method 103 40±2°C, 90~95% R.H. RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
Biased Humidity	ΔR±0.5%			MIL-STD-202 Method 103 1000 hrs 85°C/85%RH 10% of operating power
Temperature Cycling	ΔR±0.25%			JESD22 Method JA-104 -55°C to +155°C, 1000 cycles
Bending Strength (Board Flex)	ΔR±0.1%			JIS-C-5201-1 4.33 Bending once for 60 seconds Bending displacement: 0805 sizes: 3 mm
Solderability	95% min. coverage			JIS-C-5201-1 4.17 IEC-60115-1 4.17 245±5°C for 3 seconds
Resistance to Soldering Heat	ΔR±0.1%			JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Terminal strength	No broken			AEC-Q200-006 Force of 1.8kg for 60 seconds.
Mechanical Shock	ΔR±0.1%			MIL-STD-202 Method 213 Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration (D) is 6.
Vibration	ΔR±0.1%			MIL-STD-202 Method 204 5 g's for 20 min., 12 cycles each of 3 orientations, 10-2000 Hz
ESD	ΔR±0.5%			AEC-Q200-002 Human body model 0805 : 1KV
Resistance to solvents	Marking Unsmearred			MIL-STD-202 Method 215 Add Aqueous wash chemical - OKEM Clean or equivalent. Do not use banned solvents.
Flammability	No ignition of the tissue paper or scorching or the pinewood board			UL-94 V-0 or V-1 are acceptable. Electrical test not required.

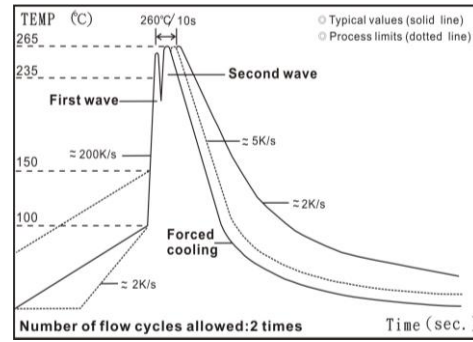
RCWV(Rated continuous working voltage)= √(P*R) or Max. Operating voltage whichever is lower

■ Storage Temperature: 15~28°C; Humidity < 80%RH

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

0805 4digit marking

Example

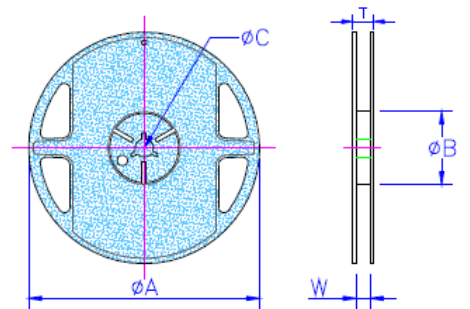
Resistance	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
marking	1000	2201	1002	4992	1003

Packaging

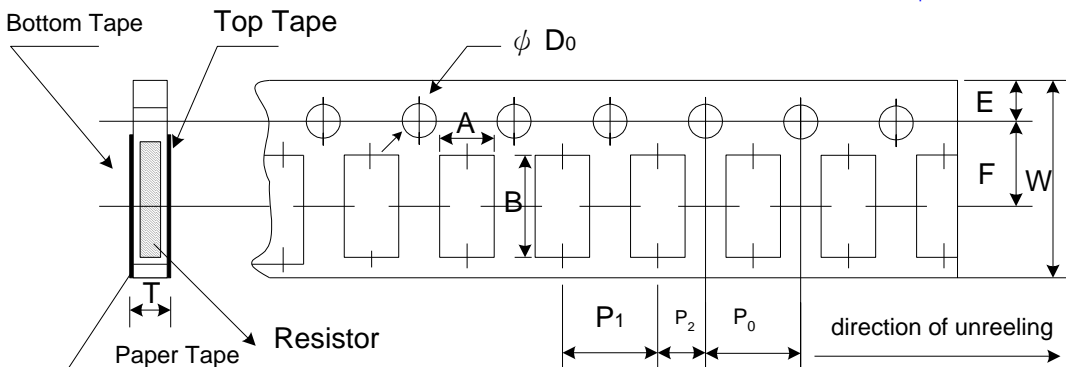
Packing Quantity & Reel Specifications

Unit :mm

Type	ØA	ØB	ØC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
ARTP05	178.0±1.0	60.0±1.0	13.5±0.7	9.5±1.0	11.5±1.0	5,000	-

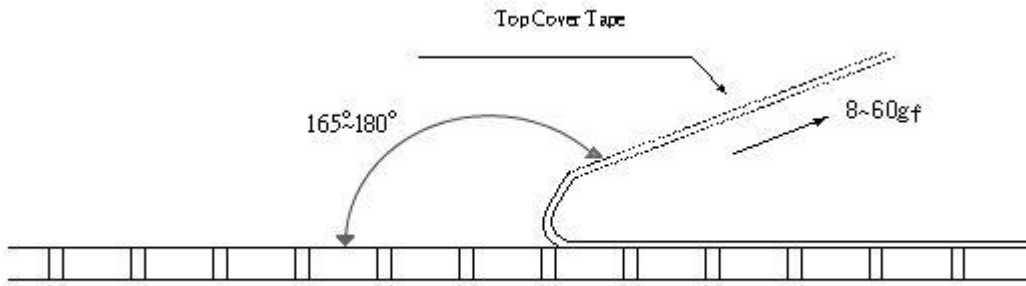


Paper Tape Specifications



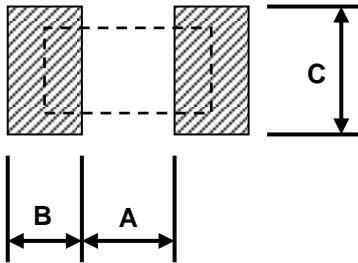
Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
ARTP05	1.60±0.05	2.37±0.05	8.00±0.10	1.75±0.05	3.5±0.05	4.00±0.10	4.00±0.10	2.00±0.05	1.55±0.05	0.75±0.05

- 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



Recommend Land Pattern

Unit: mm



Type	A	B	C
ARTP05	1.00	1.00	1.35±0.2