

## High Ohmic Chip Resistor



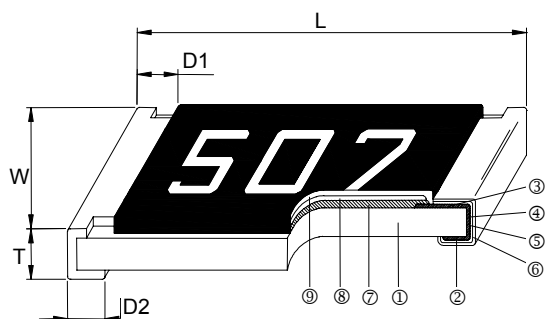
### Scope

- This specification applies to all sizes of rectangular-type fixed chip resistors with Ruthenium-base as material.

### Features

- Extended resistance range(110MΩ ~ 1GΩ )
- Surface mount package
- Highly reliable multilayer electrode construction

### Construction



### Applications

- Voltage dividers and hybrids
- X-Ray equipment
- Low signal detection or amplification circuits
- High input impedance quartz amplifiers
- Testing devices

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

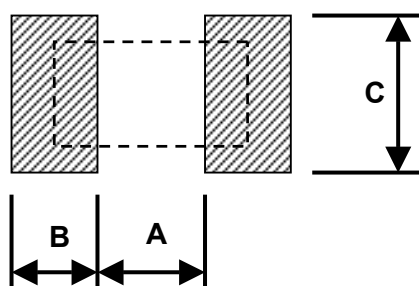
### Dimensions

Type	Size (Inch)	L (mm)	W (mm)	T (mm)	D1 (mm)	D2 (mm)	Weight (g) (1000pcs)
HMR05	0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	4.368
HMR06	1206	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.25	0.50±0.20	8.947

### Part Numbering

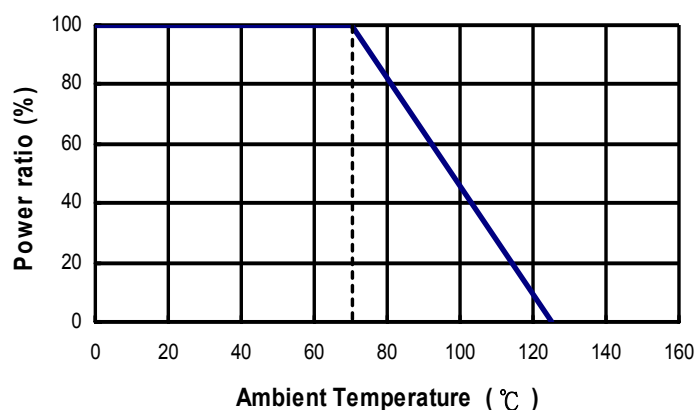
HMR	05	J	L	7	--200M
Product Type	Dimensions	Resistance Tolerance	Function Code	Packaging Code	Resistance
	05: 0805 06: 1206	J: ±5%	L: Standard	7: 7" Reel 5Kpcs A: 10" Reel 10Kpcs D: 13" Reel 20Kpcs F: Bulk	-- 200M: 200MΩ --- 1G: 1GΩ " " to fill up 6 spaces

## Recommend Land Pattern

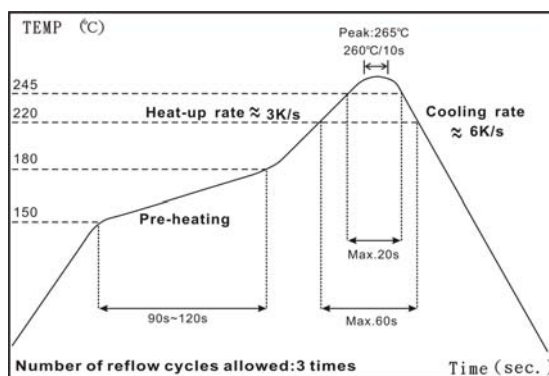


Type	A (mm)	B (mm)	C (mm)
HMR05	1.20	0.70	1.30
HMR06	2.00	0.90	1.60

## Derating Curve



## Soldering Condition



IR Reflow Soldering

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

## Standard Electrical Specifications

Type	Item	Power Rating at 70°C	Operating Temp. Range	Max. Operating Voltage	Max. Overload Voltage	Resistance Range	TCR (PPM/°C)
						±5%	
HMR05 (0805)	1/8W		-55 ~ +125°C	150V	300V	110MΩ ~ 500MΩ	±500
						510MΩ ~ 1GΩ	±1000
HMR06 (1206)	1/4W			200V	400V	110MΩ ~ 500MΩ	±500
						510MΩ ~ 1GΩ	±1000

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**

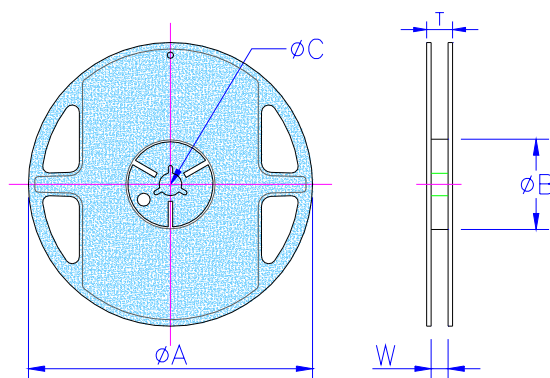
Item	Requirement	Test Method
	±5%	
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	JIS-C-5201-1 4.8 IEC-60115-1 4.8 -55°C~+125, 25°C is the reference temperature
Short Time Overload	±(2.0%+0.05Ω)	JIS-C-5201-1 4.13 IEC-60115-1 4.13 RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	≥10G	JIS-C-5201-1 4.6 IEC-60115-1 4.6 Max. Overload Voltage for 1 minute
Endurance	±(3.0%+0.10Ω)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1 70±2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Damp Heat with Load	±(3.0%+0.10Ω)	JIS-C-5201-1 4.24 IEC-60115-1 4.24 40±2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Dry Heat	±(1.5%+0.10Ω)	JIS-C-5201-1 4.23 IEC-60115-1 4.23.2 at +125 °C for 1000 hrs
Bending Strength	±(1.0%+0.05Ω)	JIS-C-5201-1 4.33 IEC-60115-1 4.33 Bending once for 5 seconds 0805, 1206 sizes: 3mm
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	±(1.0%+0.05Ω)	JIS-C-5201-1 4.18 IEC-60115-1 4.18 260±5°C for 10 seconds
Voltage Proof	No breakdown or flashover	JIS-C-5201-1 4.7 IEC-60115-1 4.7 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area ≤ 5% Total leaching area ≤ 10%	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1 260±5°C for 30 seconds
Rapid Change of Temperature	±(1.0%+0.05Ω)	JIS-C-5201-1 4.19 IEC-60115-1 4.19 -55°C to +125°C, 5 cycles

 RCWV(Rated Continuous Working Voltage)= $\sqrt{P \cdot R}$  or Max. Operating Voltage whichever is lower.

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

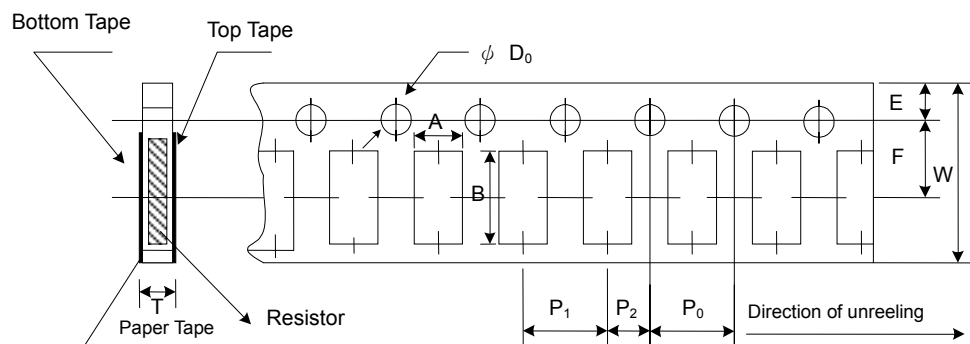
## ■ Packaging

### Reel Specifications & Packaging Quantity



Type	Packaging Quantity	Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)	T (mm)
HMR05 HMR06	Paper	5K	8mm	7 inch	178.5±1.5	60 <sup>+1/-0</sup>	13.0±0.2	9.0±0.5
		10K	8mm	10 inch	254±1.0	100±0.5	13.0±0.2	9.5±0.5
		20K	8mm	13 inch	330±1.0	100±0.5	13.0±0.2	9.5±0.5

### Paper Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P <sub>0</sub> (mm)	P <sub>1</sub> (mm)	P <sub>2</sub> (mm)	ΦD <sub>0</sub> (mm)	T (mm)
HMR05	1.60±0.10	2.40±0.20	8.0±0.20	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.10
HMR06	1.90±0.10	3.50±0.20	8.0±0.20	1.75±0.10	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.10

## ■ Marking

5% for 0805/1206: 3 digits marking in E24

Example: 101=100Ω 102=1KΩ (1<sup>st</sup> and 2<sup>nd</sup> are E24 code and 3<sup>rd</sup> code is multiplier)

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

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version A2	Jun 03, 2014	-	- Environmental Characteristics updated
Version A3	Jul 15, 2016	-	- Remove Material Description - Modify Storage Temperature