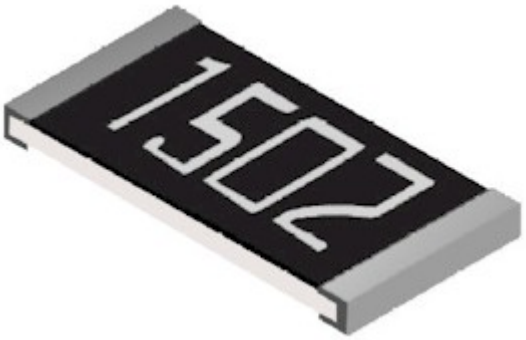
Tel: 82-32-817-4325
Fax: 82-32-817-4329

Resistors And
Resistive Applications

# HVTK
# High Voltage Thick Film Chip Resistor

## Features

- Highly reliable multilayer electrode construction
- Higher component and equipment reliability
- Excellent performance at high voltage
- Reduced size in final equipment




## Applications

- Inverters
- Outdoor Equipment
- Converters
- Automotive Industry
- High Pulse Equipment

## GENERAL SPECIFICATIONS

| Model | Power Rating | Operating Temp. Range | Max. Operation Voltage | Max. Overload Voltage | Resistance Range | | TCR[PPM/C] |
|---|---|---|---|---|---|---|---|
| | | | | | ±1% | ±5% | |
| HVTK02[0402] | 1/16W | -55 to +155C | 100V | 200V | 10Ω to 1MΩ<br>1.02MΩ to 10MΩ | | ±100<br>±200 |
| HVTK03[0603] | 1/10W | | 200V | 400V | | | |
| HVTK05[0805] | 1/8W | | 400V | 800V | | | |
| HVTK06[1206] | 1/4W | | 500V | 1000V | | | |
| HVTK10[2010] | 3/4W | | 2000V | 3000V | | | |
| HVTK12[2512] | 1W | | 3000V | 4000V | | | |

*Operating Voltage=√[P*R] or Max. operating voltage listed above, whichever is lower.
*Overload Voltage=2.5*√[P*R] or Max. overload voltage listed above, whichever is lower.

## CHARACTERISTICS

Values in [ ] mean charge in Ω after test

| Item | Requirement | | Test Method |
|---|---|---|---|
| | ±1% | ±5% | |
| Temp. Coefficient of Resistance | As Spec. | | -55Cto+125C is the reference temperature |
| Short Time Overload | ±[1.0%+0.05Ω] | ±[2.0%+0.05Ω] | RCWV*2.5 or Max. overload voltage for 5 sec. |
| Insulation Resistance | ≥10G | | Max. overload voltage for 1minute |
| Endurance Data | ±[2.0%+0.05Ω] | ±[3.0%+0.05Ω] | 70±2C, Max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5hrs "OFF" |
| Damp Heat with Load | ±[2.0%+0.05Ω] | ±[3.0%+0.05Ω] | 40±2C, 90to95% R.H. Max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5hrs "OFF" |
| Dry Heat | ±[1.0%+0.05Ω] | ±[1.5%+0.05Ω] | At +125C for 1000hrs |
| Bending Strength | ±[1.0%+0.05Ω] | ±[1.0%+0.05Ω] | Bending once for 5sec.<br>2010, 2512 sizes:2mm Other sizes:3mm |
| Soldering Ability | 95% min. coverage | | 245±5C for 3sec. |
| Resistance to Soldering Heat | ±[0.5%+0.05Ω] | ±[1.0%+0.05Ω] | 260±5C for 10sec. |
| Dielectric Withstand Voltage | No breakdown or flashover | | 1.42 times RCWV[RMS] for 1minute |
| Thermal Shock | Individual leaching area ≤5%<br>Total leaching area ≤10% | | 260±5C for 30sec. |
| Low Temperature Operation | ±[0.5%+0.05Ω] | ±[1.0%+0.05Ω] | -55C to +125C, 5 cycles |

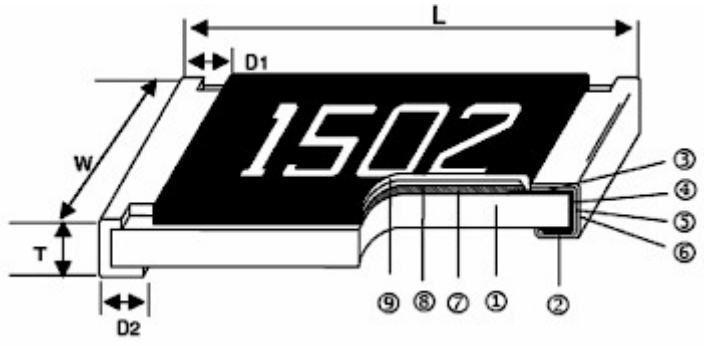
*Reference Standard: IEC 60115-1, 60068-2-58; JIS-C 5201-1
*Storage Temperature: 25±3C; Humidity < 80%RH

Tel: 82-32-817-4325
Fax: 82-32-817-4329

Resistors And
Resistive Applications

## STRUCTURE

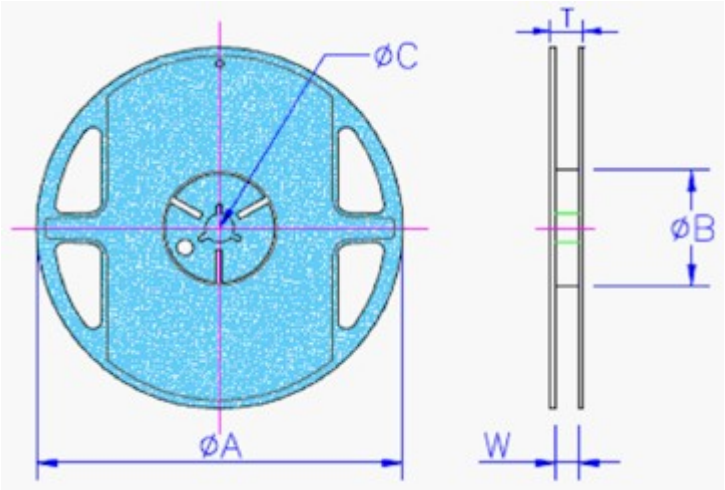



1 Alumina Substrate
2 Bottom Electrode(Ag-Pb)
3 Top Electrode(Ag)
4 Edge Electrode(NiCr)
5 Barrier Layer(Ni)
6 External Electrode(Sn)
7 Resistor Layer(RuO2/Ag)
8 Primary Overcoat(Glass)
9 Secondary Overcoat(Epoxy)

## DIMENSIONS

| Model | Size(Inch) | L | W | T | D1 | D2 | Weight(g) (1000pcs) |
|---|---|---|---|---|---|---|---|
| HVTK02 | 0402 | 1.00±0.05 | 0.50±0.05 | 0.32±0.05 | 0.25±0.10 | 0.20±0.10 | 0.620 |
| HVTK03 | 0603 | 1.60±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 | 0.30±0.20 | 2.042 |
| HVTK05 | 0805 | 2.00±0.15 | 1.25±0.15 | 0.55±0.10 | 0.30±0.20 | 0.40±0.20 | 4.368 |
| HVTK06 | 1206 | 3.10±0.15 | 1.55±0.15 | 0.55±0.10 | 0.50±0.25 | 0.50±0.20 | 8.947 |
| HVTK0A | 2010 | 5.00±0.20 | 2.50±0.15 | 0.55±0.15 | 0.60±0.25 | 0.50±0.20 | 24.241 |
| HVTK12 | 2512 | 6.35±0.20 | 3.20±0.15 | 0.55±0.10 | 0.60±0.25 | 0.55±0.20 | 39.448 |

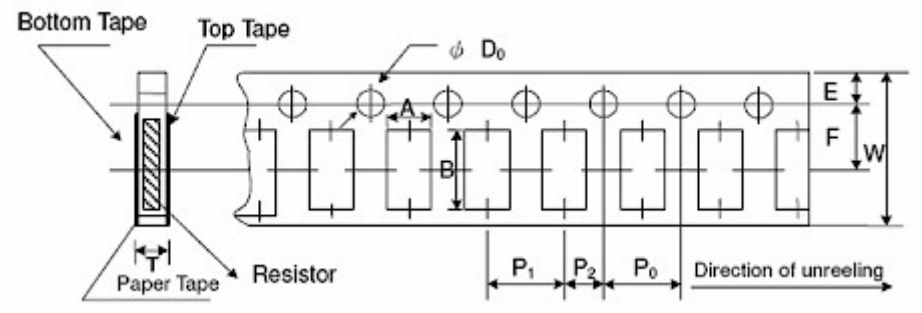
## REEL SPECIFICATIONS




| Model | Packaging Quantity | | Tape width | Reel Diameter | ΦA | ΦB | ΦC | W | T |
|---|---|---|---|---|---|---|---|---|---|
| HVTK02 | Paper | 10K | 8mm | 7 inch | 178.5±1.5 | 60+1/-0 | 13.0±0.2 | 9.0±0.5 | 12.5± 0.5 |
| | | 20K | | | | | | | |
| | | 40K | | 10 inch | 254±1 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| HVTK03 | | 5K | | | | | | | |
| HVTK05 | | 10K | | 13 inch | 330±1 | 100±0.5 | 13.0±0.2 | 9.5±0.5 | 13.5±0.5 |
| HVTK06 | | 20K | | | | | | | |
| HVTK0A | Embossed | 4K | 12mm | 7 inch | 178.5±1.5 | 60+1/-0 | 13.0±0.5 | 13.0±0.5 | 15.5±0.5 |
| HVTK12 | | 8K | | 10 inch | 250±1 | 62±0.5 | 13.0±0.5 | 12.5±0.5 | 16.5±0.5 |

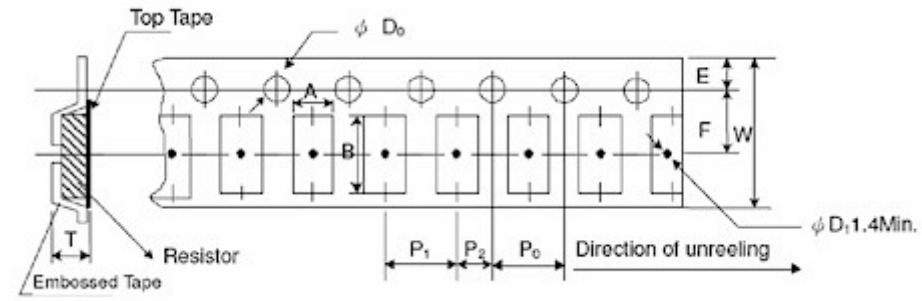
 

## PAPER TAPE SPECIFICATIONS



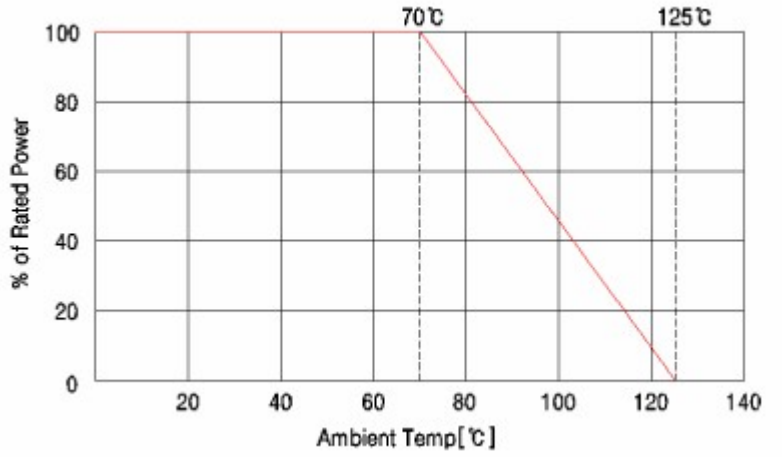

| Model | Dimensions[mm] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | W | E | F | P0 | P1 | P2 | ΦD0 | T |
| HVTK02 | 0.65±0.10 | 1.15±0.1 | 8.00±0.2 | 1.75±0.1 | 3.5±0.05 | 4.00±0.10 | 2.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.45±0.1 |
| HVTK03 | 1.10±0.10 | 1.90±0.1 | 8.00±0.2 | 1.75±0.1 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.70±0.1 |
| HVTK05 | 1.60±0.10 | 2.40±0.2 | 8.00±0.2 | 1.75±0.1 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.1 |
| HVTK06 | 1.90±0.10 | 3.50±0.2 | 8.00±0.2 | 1.75±0.1 | 3.5±0.05 | 4.00±0.10 | 4.00±0.05 | 2.00±0.05 | 1.50+0.1,-0 | 0.85±0.1 |

## EMBOSSED TAPE SPECIFICATIONS



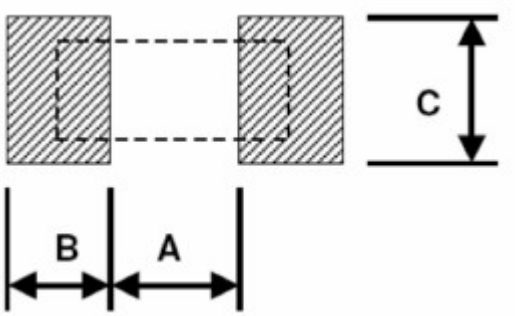

| Model | Dimensions[mm] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | W | E | F | P0 | P1 | P2 | ΦD0 | T |
| HVTK0A | 2.8±0.20 | 5.5±0.20 | 12.0±0.3 | 1.75±0.1 | 5.5±0.05 | 4.00±0.1 | 4.00±0.1 | 2.00±0.05 | 1.50+0.1,-0 | 1.2+0 |
| HVTK12 | 3.5±0.20 | 6.7±0.20 | 12.0±0.3 | 1.75±0.1 | 5.5±0.05 | 4.00±0.1 | 4.00±0.1 | 2.00±0.05 | 1.50+0.1,-0 | 1.2+0 |

## DERATING CURVE



## RECOMMENDED LAND PATTERN




| Model | A | B | C |
|---|---|---|---|
| HVR02 | 0.50 | 0.45 | 0.60 |
| HVR03 | 0.90 | 0.60 | 0.60 |
| HVR05 | 1.20 | 0.70 | 1.30 |
| HVR06 | 2.00 | 0.90 | 1.60 |
| HVR0A | 3.80 | 0.90 | 2.80 |
| HVR12 | 3.80 | 1.60 | 3.50 |

## ORDERING PROCEDURE EXAMPLE