# High Value, High Voltage Precision SIP Thin Film Resistor, Through Hole Network


## FEATURES

- High nominal precision resistors (value range 50K to 10M)
- Highly accurate resistance tolerance (up to ± 0.01 %)
- Conformal coating flame resistant (UL 94 V-0) rating
- Ultra low TCR (± 5 ppm/°C)
- High voltage
- Flame resistant (UL 94 V-0 rating)
- HVPS2 voltage rating up to 1800 V
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

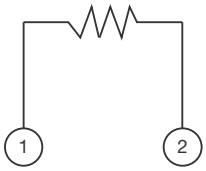
Pb-free Available

RoHS* Available

**Note**

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

## SCHEMATIC




## APPLICATIONS

- Precise instrumentation (medical, test etc.)
- Precision amplifiers

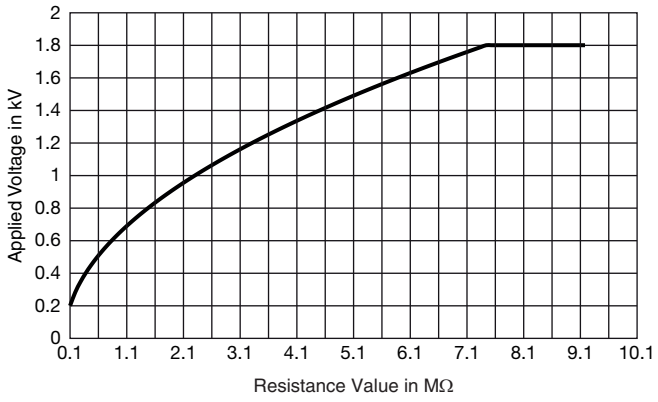
## STANDARD ELECTRICAL SPECIFICATIONS

| TEST | SPECIFICATIONS | CONDITIONS |
|---|---|---|
| **Material** | Passivated nichrome | - |
| **Pin/Lead Number** | 2 | - |
| **Resistance Range** | 50 000 Ω to 5000 kΩ (HVPS1)<br>100 000 Ω to 10 000 kΩ (HVPS2) | - |
| **TCR: Absolute** | 5 ppm/°C to 25 ppm/°C | -55 °C to +125 °C |
| **TCR: Tracking** | - | - |
| **Tolerance: Absolute** | ± 0.01 % to ± 1.0 % | Maximum at +70 °C |
| **Tolerance: Ratio** | - | - |
| **Power Rating: Resistor** | 125 mW (HVPS1)<br>400 mW (HVPS2) | - |
| **Power Rating: Package** | - | - |
| **Stability: Absolute** | $\Delta R$ ± 0.05 % | 2000 h at +70 °C |
| **Stability: Ratio** | - | - |
| **Voltage Coefficient** | < 1.0 ppm/V | - |
| **Working Voltage** | 250 V (HVPS1)<br>up to 1800 V (HVPS2) (1) | - |
| **Operating Temperature Range** | -55 °C to +125 °C | - |
| **Storage Temperature Range** | - | - |
| **Noise** | < - 30 dB | - |
| **Thermal EMF** | < 0.1 µV/°C | - |
| **Shelf Life Stability: Absolute** | $\Delta R$ ± 0.01 % | 1 year at +25 °C |
| **Shelf Life Stability: Ratio** | - | - |

**Note**

(1) See chart

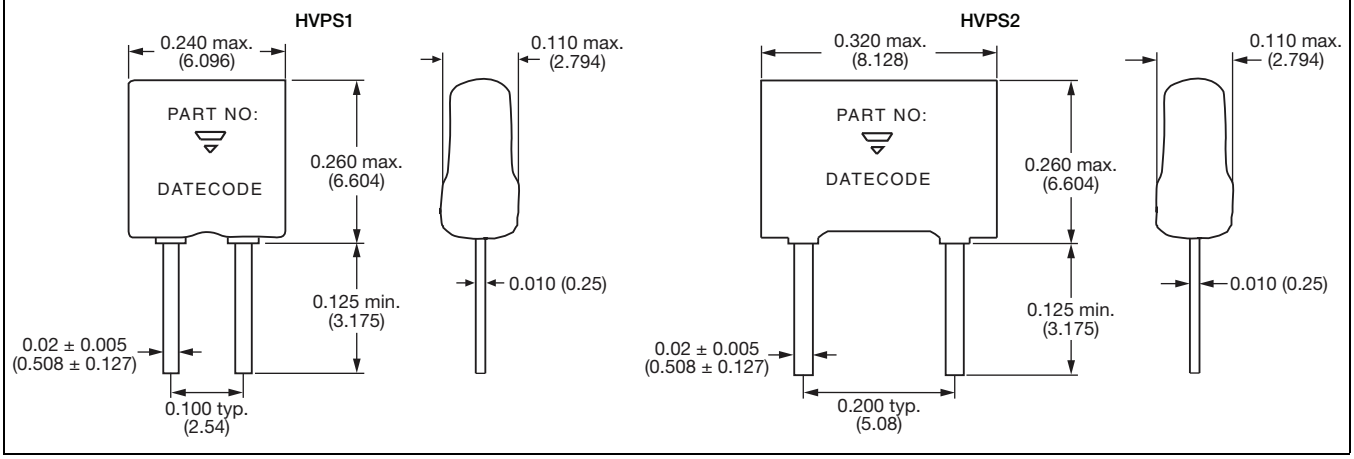
## HVPS2 MAX. APPLIED VOLTAGE AT 0.400 W VERSUS RESISTANCE VALUE




## HVPS2 VOLTAGE RATING BY VALUE

| WORKING VOLTAGE | RESISTANCE RANGE |
|---|---|
| 200 | 100K to 400K |
| 400 | 401K to 900K |
| 600 | 901K to 1.6M |
| 800 | 1.6M to 2.5M |
| 1000 | 2.5M to 3.6M |
| 1200 | 3.6M to 4.9M |
| 1400 | 4.9M to 6.4M |
| 1600 | 6.4M to 8.1M |
| 1800 | 8.1M to 10M |

## DIMENSIONS AND IMPRINTING in inches (millimeters)



## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| **Resistive Element** | Passivated nichrome |
| **Substrate Material** | Alumina |
| **Body** | Epoxy coated |
| **Terminals** | Copper alloy |
| **Tin/Lead Option** | Sn60 - Sn63 |
| **Lead (Pb)-free Option** | Sn96.5, Ag3.0, Cu0.5 |
| **Tin/Lead and Lead (Pb)-free Finish** | Hot solder dip |

## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: HVPS1E1003QUF**

| H | V | P | S | 1 | | E | 1 | 0 | 0 | 3 | Q | U | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | V | P | S | 2 | S | Y | 2 | 0 | 0 | 3 | T | U | F |

| GLOBAL MODEL (3 or 4 digits) | TCR | RESISTANCE | TOLERANCE | PACKAGING |
|---|---|---|---|---|
| **HVPS1**<br>**HVPS2**<br>(tin lead)<br><br>**HVPS1S**<br>**HVPS2S**<br>(lead (Pb)-free)<br>(e1) | **E** = 25 ppm/°C<br>**D** = 15 ppm/°C<br>**Y** = 10 ppm/°C<br>**Z** = 5 ppm/°C | First 3 digits are significant figures. Last digit specifies the number of zeros to follow.<br>e.g.: 1001 = 1K<br>1002 = 10K<br>1005 = 10M | **A** = 0.05 %<br>**B** = 0.1 %<br>**D** = 0.5 %<br>**F** = 1.0 %<br>**Q** = 0.02 %<br>**T** = 0.01 % | **UF** = tubed |

**Historical Part Number example: HVPS1E5004B (for reference purposes only)**

| **HVPS1** | E | **5004** | **B** |
|---|---|---|---|
| SERIES | TCR CHARACTERISTICS | RESISTANCE | TOLERANCE |

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