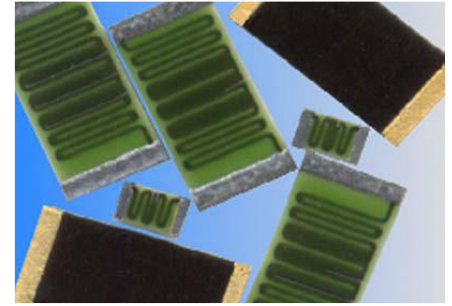


### Features:

- Available with wire bondable terminations
- Utilizes fine film resistor deposition technology
- Superior pulse handling capabilities
- Low TCR to 25 ppm/°C
- Low VCR to 1 ppm/volt
- Very low noise
- Ultra-high stability
- Higher (up to 1TΩ) or lower resistance values may be available (contact Stackpole)
- RoHS compliant, REACH compliant, and halogen free



### Electrical Specifications

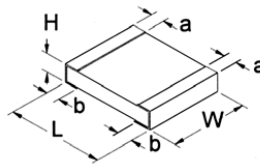
| Type / Code | Power Rating (W) @ 70°C | Maximum Working Voltage <sup>(V)</sup> <sub>(1)</sub> | TCR (ppm/°C) | Ohmic Range (Ω) and Tolerance |             |             |            |           |           |            |     |
|-------------|-------------------------|-------------------------------------------------------|--------------|-------------------------------|-------------|-------------|------------|-----------|-----------|------------|-----|
|             |                         |                                                       |              | 0.1%                          | 0.25%       | 0.5%        | 1%         | 2%        | 5%        | 10%        | 20% |
| HVC0603     | 0.06                    | 400                                                   | ±50          | -                             | 10K - 10M   | 10K - 100M  | 10K - 500M |           |           |            |     |
|             |                         |                                                       | 10K - 500M   |                               |             | 10K - 1G    |            | 10K - 1G  |           |            |     |
|             |                         |                                                       |              |                               |             |             |            | 10K - 10G | 10K - 50G |            |     |
| HVC0805     | 0.2                     | 600                                                   | ±50          | -                             | 10K - 10M   | 10K - 500M  |            |           |           |            |     |
|             |                         |                                                       | 10K - 1G     |                               |             | 10K - 1G    |            |           |           |            |     |
|             |                         |                                                       |              |                               |             | 10K - 10G   |            | 10K - 50G |           |            |     |
| HVC1206     | 0.33                    | 1500                                                  | ±25          | 1M - 100M                     | 1M - 100M   |             |            |           |           |            |     |
|             |                         |                                                       | ±50          | 100K - 100M                   | 100K - 100M | 100K - 500M |            |           |           |            |     |
|             |                         |                                                       | ±100         | 10K - 100M                    | 10K - 100M  | 10K - 500M  | 10K - 1G   | 10K - 1G  |           |            |     |
|             |                         |                                                       | ±200         |                               |             |             |            | 10K - 10G |           | 10K - 50G  |     |
| HVC2010     | 1                       | 2000                                                  | ±25          | 1M - 100M                     | 1M - 100M   |             |            |           |           |            |     |
|             |                         |                                                       | ±50          | 100K - 100M                   | 100K - 100M | 100K - 500M |            |           |           |            |     |
|             |                         |                                                       | ±100         | 10K - 100M                    | 10K - 100M  | 10K - 500M  | 10K - 1G   | 10K - 1G  |           |            |     |
|             |                         |                                                       | ±200         |                               |             |             |            | 10K - 10G |           | 10K - 50G  |     |
| HVC2512     | 2                       | 3000                                                  | ±25          | 1M - 100M                     | 1M - 500M   |             |            |           |           |            |     |
|             |                         |                                                       | ±50          | 100K - 100M                   | 100K - 500M | 100K - 1G   |            |           |           |            |     |
|             |                         |                                                       | ±100         | 10K - 100M                    | 10K - 500M  | 10K - 1G    | 10K - 10G  |           |           | 100K - 10G |     |
|             |                         |                                                       | ±200         |                               |             |             | 100K - 50G |           |           |            |     |
| HVC3512     | 3                       | 3500                                                  | ±25          | 1M - 100M                     | 1M - 500M   |             |            |           |           |            |     |
|             |                         |                                                       | ±50          | 100K - 100M                   | 100K - 500M | 100K - 1G   |            |           |           |            |     |
|             |                         |                                                       | ±100         | 10K - 100M                    | 10K - 500M  | 10K - 1G    | 10K - 10G  |           |           | 100K - 10G |     |
|             |                         |                                                       | ±200         |                               |             |             | 100K - 50G |           |           |            |     |

Proper terminal isolation is required to achieve the voltage ratings for each given size.

(1) The continuous maximum voltage applied cannot exceed the maximum power rating and is ohmic value dependent.

Note: Other case sizes and tolerances are available.

### Mechanical Specifications



| Type / Code | L<br>Body Length | W<br>Body Width | H<br>Body Height (Max.) | a<br>Top Termination | b<br>Bottom Termination | Unit   |
|-------------|------------------|-----------------|-------------------------|----------------------|-------------------------|--------|
| HVC0603     | 0.063 ± 0.01     | 0.031 ± 0.005   | 0.020                   | 0.010 ± 0.005        | 0.012 ± 0.008           | inches |
|             | 1.60 ± 0.25      | 0.79 ± 0.13     | 0.51                    | 0.25 ± 0.13          | 0.30 ± 0.20             | mm     |
| HVC0805     | 0.079 ± 0.01     | 0.050 ± 0.005   | 0.025                   | 0.010 ± 0.005        | 0.013 ± 0.008           | inches |
|             | 2.01 ± 0.25      | 1.27 ± 0.13     | 0.64                    | 0.25 ± 0.13          | 0.33 ± 0.20             | mm     |
| HVC1206     | 0.126 ± 0.01     | 0.063 ± 0.005   | 0.030                   | 0.010 ± 0.005        | 0.020 ± 0.010           | inches |
|             | 3.20 ± 0.25      | 1.60 ± 0.13     | 0.76                    | 0.25 ± 0.13          | 0.51 ± 0.25             | mm     |

### Mechanical Specifications (cont.)

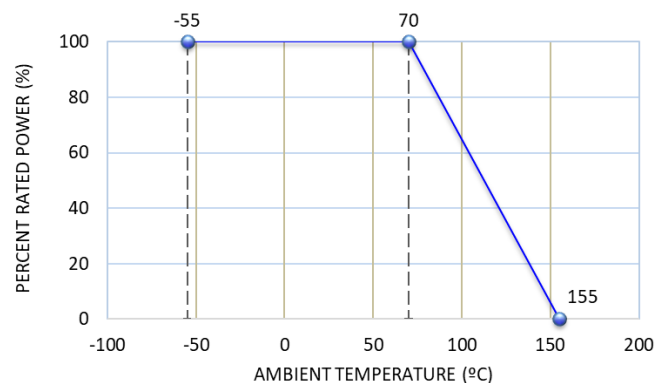
| Type / Code | L<br>Body Length | W<br>Body Width | H<br>Body Height (Max.) | a<br>Top Termination | b<br>Bottom Termination | Unit   |
|-------------|------------------|-----------------|-------------------------|----------------------|-------------------------|--------|
| HVC2010     | 0.200 ± 0.01     | 0.100 ± 0.005   | 0.030                   | 0.018 ± 0.010        | 0.020 ± 0.010           | inches |
|             | 5.08 ± 0.25      | 2.54 ± 0.13     | 0.76                    | 0.46 ± 0.25          | 0.51 ± 0.25             | mm     |
| HVC2512     | 0.250 ± 0.01     | 0.125 ± 0.005   | 0.030                   | 0.020 ± 0.010        | 0.024 ± 0.010           | inches |
|             | 6.35 ± 0.25      | 3.18 ± 0.13     | 0.76                    | 0.51 ± 0.25          | 0.61 ± 0.25             | mm     |
| HVC3512     | 0.350 ± 0.01     | 0.125 ± 0.005   | 0.030                   | 0.020 ± 0.010        | 0.024 ± 0.010           | inches |
|             | 8.89 ± 0.25      | 3.18 ± 0.13     | 0.76                    | 0.51 ± 0.25          | 0.61 ± 0.25             | mm     |

### Performance Characteristics

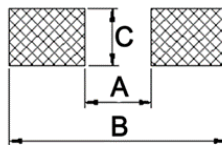
| Test                            | Typical Performance                                                  |
|---------------------------------|----------------------------------------------------------------------|
| Short Time Overload             | 0.1%                                                                 |
| Load Life                       | 0.1%                                                                 |
| Temperature Cycle               | 0.1%                                                                 |
| Moisture Resistance             | 0.1%                                                                 |
| Shock                           | 0.05%                                                                |
| Vibration                       | 0.05%                                                                |
| Dielectric Withstanding Voltage | 0.05%                                                                |
| Resistance to Soldering Heat    | 0.05%                                                                |
| Parameter                       | Typical                                                              |
| TCR                             | measured from 25°C to 75°C                                           |
| Pulse Capability                | 10X rated wattage<br>Consult Stackpole for custom pulse applications |
| Resistance Value                | Measured at 100V<br>Consult Stackpole for custom test voltages       |

Operating temperature range is -55°C to +155°C

### Power Derating Curve:



### Recommended Pad Layouts



| Type / Code | A     | B     | C     | Unit   |
|-------------|-------|-------|-------|--------|
| HVC0603     | 0.031 | 0.083 | 0.035 | inches |
|             | 0.80  | 2.10  | 0.90  | mm     |
| HVC0805     | 0.047 | 0.118 | 0.051 | inches |
|             | 1.20  | 3.00  | 1.30  | mm     |

**Recommended Pad Layouts (cont.)**

| Type/Code | A     | B     | C     | Unit   |
|-----------|-------|-------|-------|--------|
| HVC1206   | 0.087 | 0.165 | 0.063 | inches |
|           | 2.20  | 4.20  | 1.60  | mm     |
| HVC2010   | 0.138 | 0.240 | 0.110 | inches |
|           | 3.50  | 6.10  | 2.80  | mm     |
| HVC2512   | 0.193 | 0.315 | 0.138 | inches |
|           | 4.90  | 8.00  | 3.50  | mm     |
| HVC3512   | 0.290 | 0.415 | 0.138 | inches |
|           | 7.37  | 10.54 | 3.50  | mm     |

**Recommended Solder Profile**

This information is intended as a reference for solder profiles for Stackpole resistive components. These profiles should be compatible with most soldering processes. These are only recommendations. Actual numbers will depend on board density, geometry, packages used, etc., especially those cells labeled with “\*”.

**100% Matte Tin / RoHS Compliant Terminations**

Soldering iron recommended temperatures: 330°C to 350°C with minimum duration.

Maximum number of reflow cycles: 3.

**Wave Soldering**

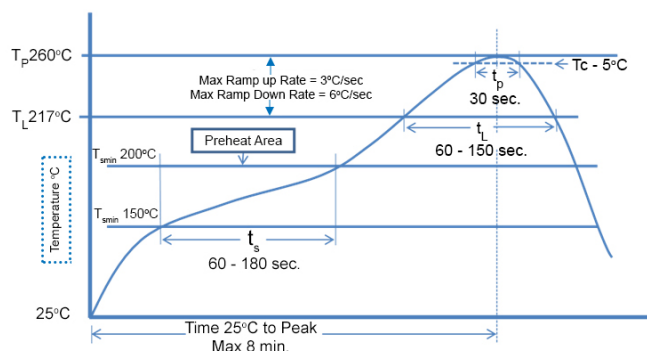
| Description       | Maximum    | Recommended | Minimum    |
|-------------------|------------|-------------|------------|
| Preheat Time      | 80 seconds | 70 seconds  | 60 seconds |
| Temperature Diff. | 140°C      | 120°C       | 100°C      |
| Solder Temp.      | 260°C      | 250°C       | 240°C      |
| Dwell Time at Max | 10 seconds | 5 seconds   | *          |
| Ramp DN (°C/sec)  | N/A        | N/A         | N/A        |

Temperature Diff. = Difference between final preheat stage and soldering stage.

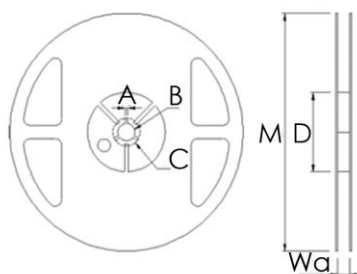
**Convection IR Reflow**

| Description        | Maximum     | Recommended | Minimum    |
|--------------------|-------------|-------------|------------|
| Ramp Up (°C/sec)   | 3°C/sec     | 2°C/sec     | *          |
| Dwell Time > 217°C | 150 seconds | 90 seconds  | 60 seconds |
| Solder Temp.       | 260°C       | 245°C       | *          |
| Dwell Time at Max. | 30 seconds  | 15 seconds  | 10 seconds |
| Ramp DN (°C/sec)   | 6°C/sec     | 3°C/sec     | *          |

### Recommended Lead Free Resistor Reflow Profile

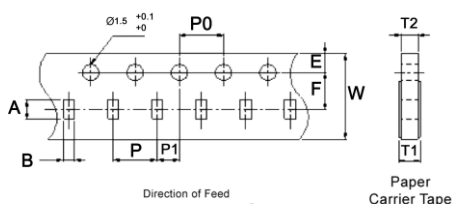


### Reel Specifications



| Reel Type             | Wa                           | M                              | A                            | B                             | C                             | D                             | Unit         |
|-----------------------|------------------------------|--------------------------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------|
| 7" reel for 8 mm tape | 0.354 ± 0.020<br>9.00 ± 0.50 | 7.008 ± 0.079<br>178.00 ± 2.00 | 0.079 ± 0.020<br>2.00 ± 0.50 | 0.531 ± 0.020<br>13.50 ± 0.50 | 0.827 ± 0.020<br>21.00 ± 0.50 | 2.362 ± 0.039<br>60.00 ± 1.00 | inches<br>mm |

### Paper Tape Specifications



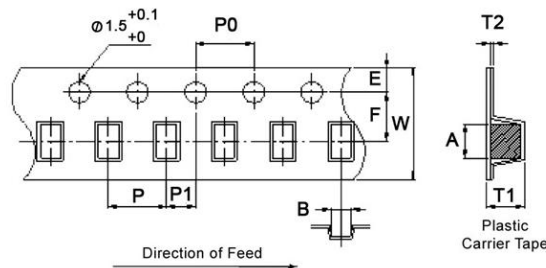
| Type/Code | 7" Reel Quantity <sup>(1)</sup> | Typical Full Reel Weight (g) | Tape Width    | A                            | B                            | W                            | E                            | Unit   |
|-----------|---------------------------------|------------------------------|---------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|
| HVC0603   | 5000                            | 118.3 ± 11.0                 | 0.315<br>8.00 | 0.071 ± 0.008<br>1.80 ± 0.20 | 0.041 ± 0.008<br>1.05 ± 0.20 | 0.315 ± 0.008<br>8.00 ± 0.20 | 0.069 ± 0.004<br>1.75 ± 0.10 | inches |
| HVC0805   | 5000                            | 139.2 ± 13.0                 |               | 0.093 ± 0.010<br>2.35 ± 0.25 | 0.063 ± 0.010<br>1.60 ± 0.25 |                              |                              | mm     |
| HVC1206   | 4000                            | 151.4 ± 15.0                 |               | 0.140 ± 0.010<br>3.55 ± 0.25 | 0.077 ± 0.010<br>1.95 ± 0.25 |                              |                              | mm     |

(1) Quantities shown here are for T packaging only.

### Paper Tape Specifications (cont.)

| Type/Code | F                            | T1                           | T2                           | P                            | P0                           | P1                           | Unit   |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|
| HVC0603   | 0.138 ± 0.002<br>3.50 ± 0.05 | 0.024 ± 0.008<br>0.60 ± 0.20 | 0.024 ± 0.004<br>0.60 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.002<br>2.00 ± 0.05 | inches |
| HVC0805   |                              | 0.030 ± 0.008<br>0.75 ± 0.20 | 0.030 ± 0.004<br>0.75 ± 0.10 |                              |                              |                              | mm     |
| HVC1206   |                              | 0.030 ± 0.008<br>0.75 ± 0.20 | 0.030 ± 0.004<br>0.75 ± 0.10 |                              |                              |                              | inches |
| HVC2010   |                              | 0.030 ± 0.008<br>0.75 ± 0.20 | 0.030 ± 0.004<br>0.75 ± 0.10 |                              |                              |                              | mm     |

### Plastic Tape Specifications



| Type/Code | 7" Reel Quantity <sup>(*)</sup> | Typical Full Reel Weight (g) | Tape Width     | A                            | B                            | W                             | E                            | F                             | Unit         |
|-----------|---------------------------------|------------------------------|----------------|------------------------------|------------------------------|-------------------------------|------------------------------|-------------------------------|--------------|
| HVC2010   | 4000                            | 183.1 ± 18.0                 | 0.472<br>12.00 | 0.217 ± 0.012<br>5.50 ± 0.30 | 0.110 ± 0.008<br>2.80 ± 0.20 | 0.472 ± 0.008<br>12.00 ± 0.20 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.002<br>5.50 ± 0.05  | inches<br>mm |
| HVC2512   | 2000                            | 255.3 ± 25.0                 |                | 0.264 ± 0.008<br>6.70 ± 0.20 | 0.134 ± 0.008<br>3.40 ± 0.20 | 0.472 ± 0.008<br>12.00 ± 0.20 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.217 ± 0.002<br>5.50 ± 0.05  | inches<br>mm |
| HVC3512   | 1000                            | 255.3 ± 25.0                 |                | 0.370 ± 0.004<br>9.40 ± 0.10 | 0.154 ± 0.004<br>3.90 ± 0.10 | 0.945 ± 0.012<br>24.00 ± 0.30 | 0.069 ± 0.004<br>1.75 ± 0.10 | 0.453 ± 0.004<br>11.50 ± 0.10 | inches<br>mm |

(\*) Quantities shown here are for T packaging only.

| Type/Code | T1                           | T2                           | P                            | P0                           | P1                           | Unit   |
|-----------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|--------|
| HVC2010   | 0.041 ± 0.008<br>1.05 ± 0.20 | 0.009 ± 0.006<br>0.23 ± 0.15 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.157 ± 0.004<br>4.00 ± 0.10 | 0.079 ± 0.002<br>2.00 ± 0.05 | inches |
| HVC2512   |                              |                              |                              |                              |                              | mm     |
| HVC3512   |                              |                              |                              |                              |                              | mm     |

### Part Marking

Parts are unmarked.

## RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

| RoHS Compliance Status  |                                                     |                            |                                |                                   |                                                    |                                       |
|-------------------------|-----------------------------------------------------|----------------------------|--------------------------------|-----------------------------------|----------------------------------------------------|---------------------------------------|
| Standard Product Series | Description                                         | Package / Termination Type | Standard Series RoHS Compliant | Lead-Free Termination Composition | Lead-Free Mfg. Effective Date (Std Product Series) | Lead-Free Effective Date Code (YY/WW) |
| HVC                     | High Voltage Thick Film Surface Mount Chip Resistor | SMD                        | YES(1)                         | 100% Matte Sn ("T")               | Always                                             | Always                                |

Note (1): RoHS Compliant by means of exemption 7c-l.

## "Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

## Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

## Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

## How to Order

| <div> <div>H</div> <div>V</div> <div>C</div> <div>B</div> <div>2</div> <div>5</div> <div>1</div> <div>2</div> <div>F</div> <div>K</div> <div>C</div> <div>1</div> <div>0</div> <div>M</div> <div>0</div> </div> |                                            |      |      |           |       |           |                        |                  |          |      |                  |                                                                 |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------|------|-----------|-------|-----------|------------------------|------------------|----------|------|------------------|-----------------------------------------------------------------|--|
| Product Series                                                                                                                                                                                                  |                                            | Size |      | Tolerance |       | Packaging |                        |                  | TCR      |      | Resistance Value |                                                                 |  |
| Code                                                                                                                                                                                                            | Description                                | Code | W    | Code      | Tol   | Code      | Description            | Size             | Quantity | Code | ppm              | Four characters with the multiplier used as the decimal holder. |  |
| HVCB                                                                                                                                                                                                            | Solderable wraparound (100% matte tin)     | 0603 | 0.06 | B         | 0.1%  | T         | 7" Reel - Paper Tape   | 0603, 0805       | 5000     | E    | 25               |                                                                 |  |
| HVCG                                                                                                                                                                                                            | Wire bondable (gold)                       | 0805 | 0.2  | C         | 0.25% |           |                        | 1206             | 4000     | C    | 50               | 10 Kohm = 10K0<br>1 Mohm = 1M00<br>10 Gohm = 10G0               |  |
| HVCS                                                                                                                                                                                                            | Solderable single surface (Sn/Pb)          | 1206 | 0.33 | D         | 0.5%  |           | 7" Reel - Plastic Tape | 2010             | 4000     | D    | 100              |                                                                 |  |
|                                                                                                                                                                                                                 |                                            | 2010 | 1    | F         | 1%    |           |                        | 2512             | 2000     | L    | 200              |                                                                 |  |
|                                                                                                                                                                                                                 |                                            | 2512 | 2    | G         | 2%    | K         | 7" Reel - Paper Tape   | 3512             | 1000     | M    | 300              |                                                                 |  |
| HVCZ                                                                                                                                                                                                            | Solderable single surface (100% matte tin) | 3512 | 3    | J         | 5%    |           |                        | 0603, 0805, 1206 | 1000     |      |                  |                                                                 |  |
|                                                                                                                                                                                                                 |                                            |      |      | K         | 10%   |           | 7" Reel - Plastic Tape | 2010, 2512       | 1000     |      |                  |                                                                 |  |
|                                                                                                                                                                                                                 |                                            |      |      | M         | 20%   |           |                        | 0603, 0805, 1206 | 500      |      |                  |                                                                 |  |
|                                                                                                                                                                                                                 |                                            |      |      |           |       | D         | 7" Reel - Paper Tape   | 2010, 2512       | 500      |      |                  |                                                                 |  |
|                                                                                                                                                                                                                 |                                            |      |      |           |       |           | 7" Reel - Plastic Tape |                  |          |      |                  |                                                                 |  |