ohmcraft APPLICATION NOTE

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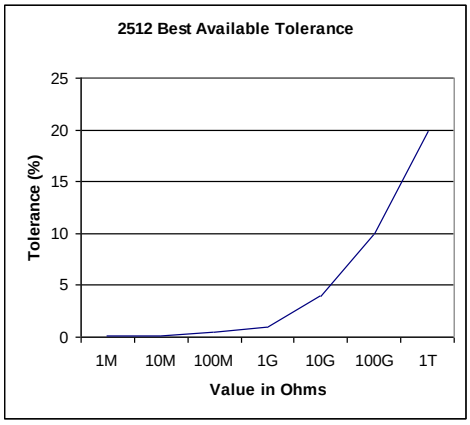
# Performance Specifications by Case Size

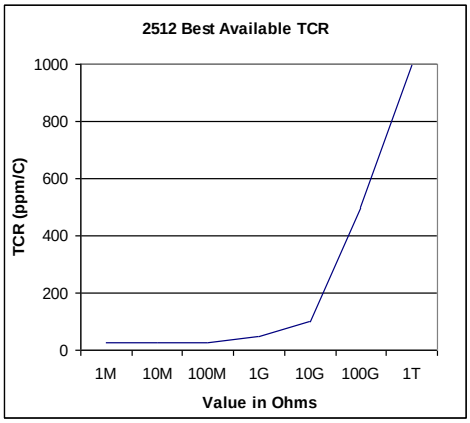
The physical size or case size of a resistor will strongly influence the performance specifications of a resistor or divider. For example, physically larger resistors will generally have, or be capable of holding a tighter tolerance than smaller ones. The following data outlines the relationships between case size and ohmic value, TCR, VCR and other tolerances. Please be aware that this data is published as guidelines only and specific tolerance combinations may not be available. Please contact Ohmcraft for additional information concerning your application.

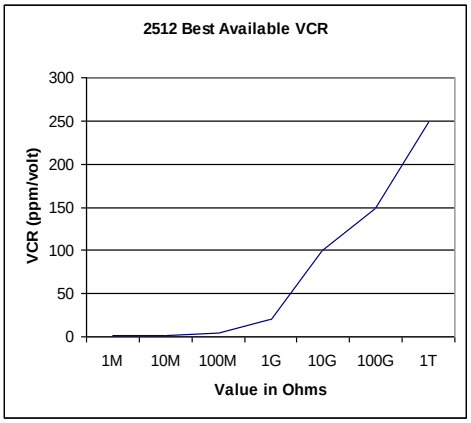
Please refer to the application notes Glossary of Resistor Terminology and the Specifying Resistors Tutorial for further details on the definition of the specification parameters discussed below.

## Chip Resistors

### 2512 Case Size



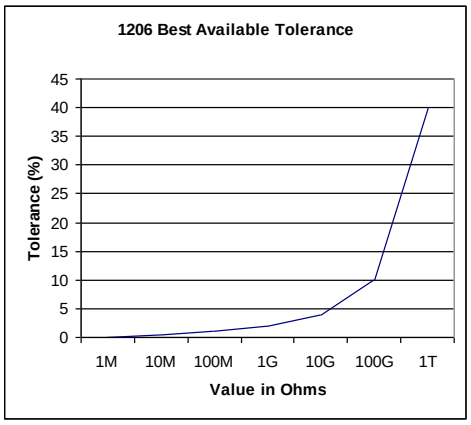



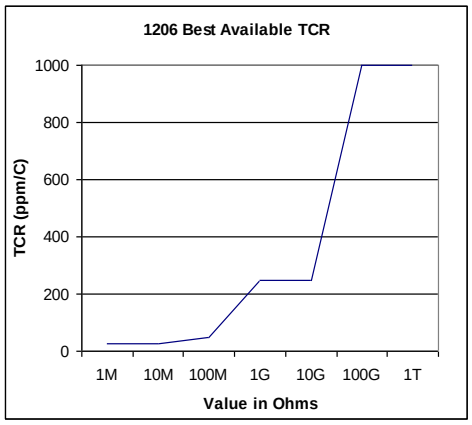



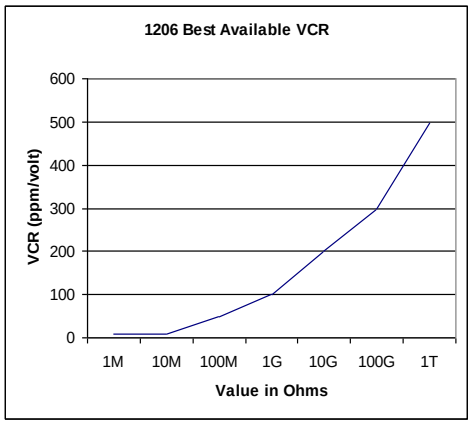

**2512 Case Size Chip Resistors**

| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 0.1 | 0.1 | 0.5 | 1 | 4 | 10 | 20 |
| Best available TCR (ppm/°C) ► | 25 | 25 | 25 | 50 | 100 | 500 | 1000 |
| Best available VCR (ppm/V) ► | 1 | 1 | 5 | 20 | 100 | 150 | 250 |

## 1206 Case Size




**1206 Case Size Chip Resistors**

| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 0.1 | 0.5 | 1 | 2 | 4 | 10 | 40 |
| Best available TCR (ppm/°C) ► | 25 | 25 | 50 | 250 | 250 | 1000 | 1000 |
| Best available VCR (ppm/V) ► | 10 | 10 | 50 | 100 | 200 | 300 | 500 |

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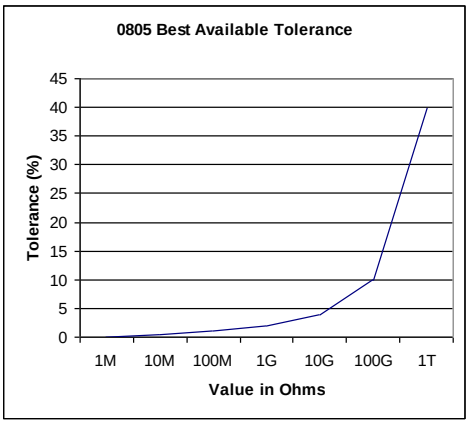
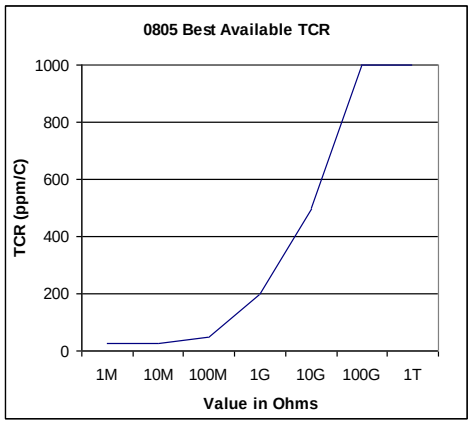
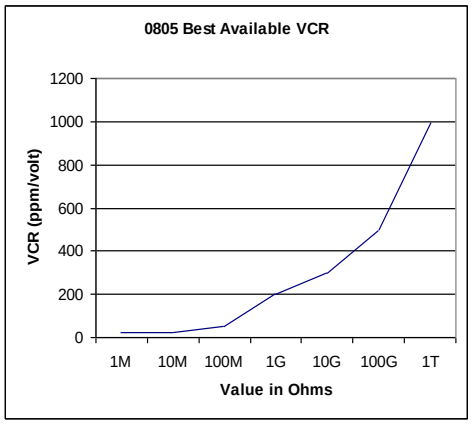
## 0805 Case Size



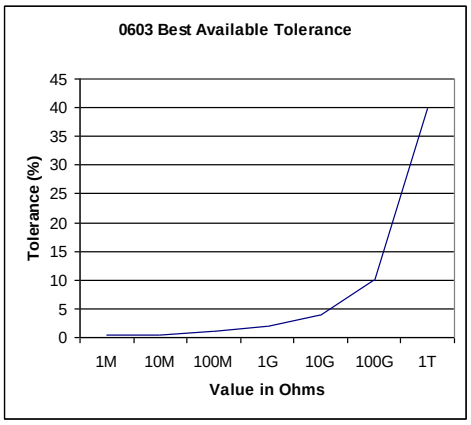



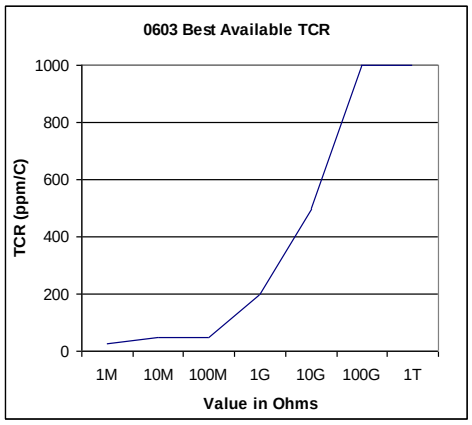



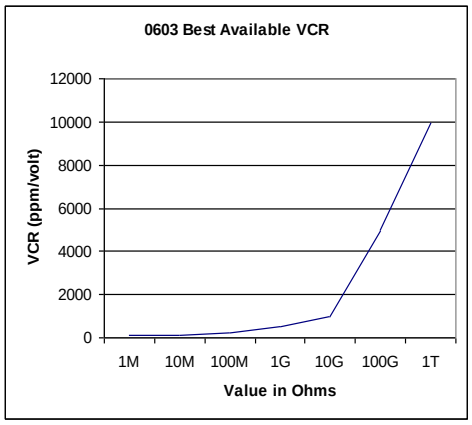

**0805 Case Size Chip Resistors**

| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 0.1 | 0.5 | 1 | 2 | 4 | 10 | 40 |
| Best available TCR (ppm/°C) ► | 25 | 25 | 50 | 200 | 500 | 1000 | 1000 |
| Best available VCR (ppm/V) ► | 25 | 25 | 50 | 200 | 300 | 500 | 1000 |

## 0603 Case Size




**0603 Case Size Chip Resistors**

| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 0.5 | 0.5 | 1 | 2 | 4 | 10 | 40 |
| Best available TCR (ppm/°C) ► | 25 | 50 | 50 | 200 | 500 | 1000 | 1000 |
| Best available VCR (ppm/V) ► | 100 | 100 | 250 | 500 | 1000 | 5000 | 10000 |

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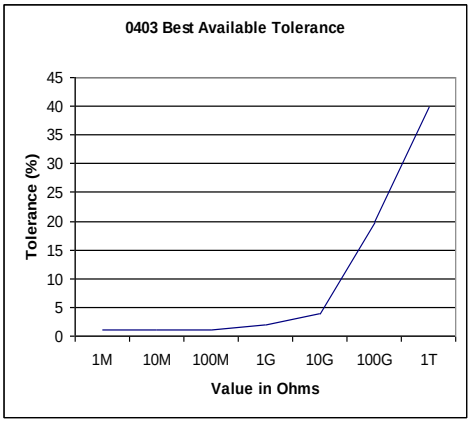
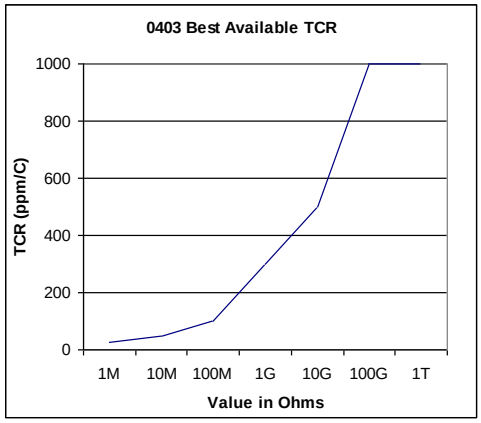
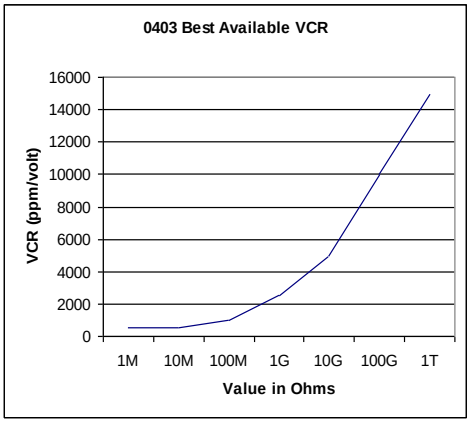
## 0403 Case Size



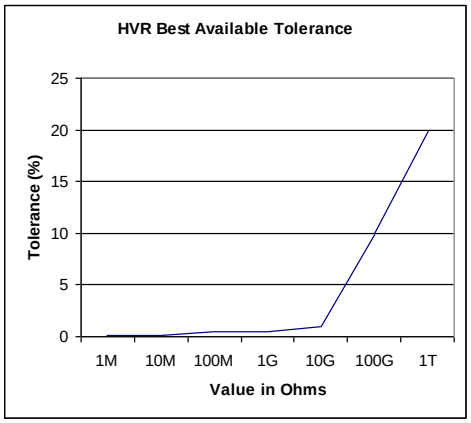



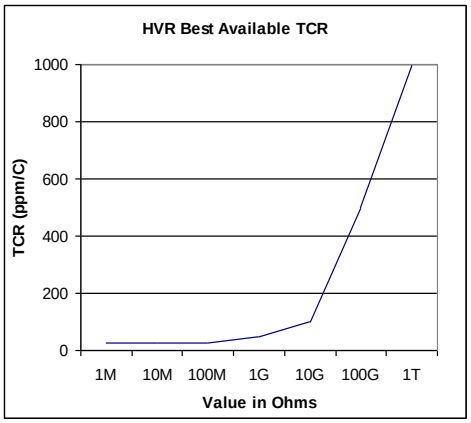

**0403 Case Size Chip Resistors**

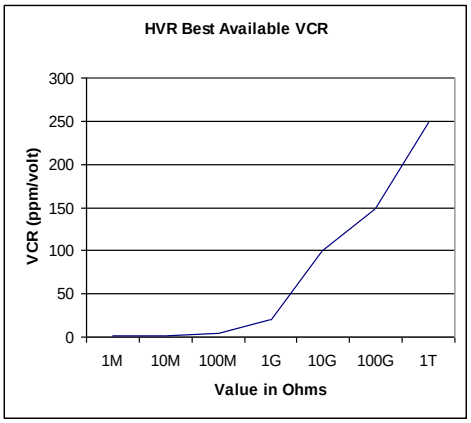
| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 1 | 1 | 1 | 2 | 4 | 20 | 40 |
| Best available TCR (ppm/°C) ► | 25 | 50 | 100 | 300 | 500 | 1000 | 1000 |
| Best available VCR (ppm/V) ► | 500 | 500 | 1000 | 2500 | 5000 | 10000 | 15000 |

## Leaded Resistors

## High Voltage Resistors



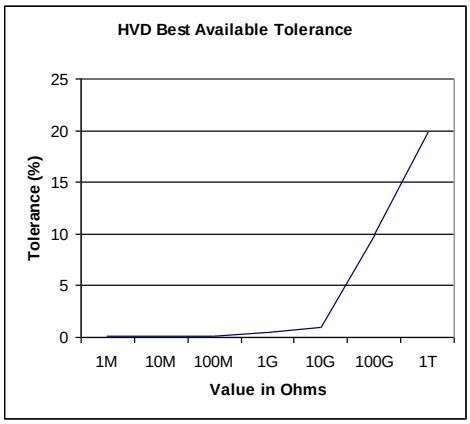



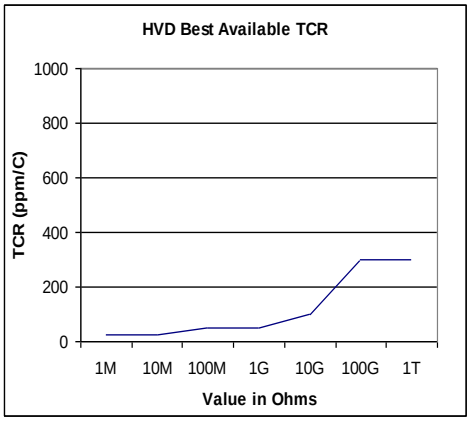



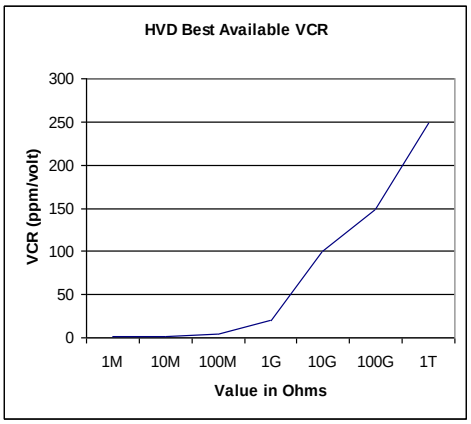

**High Voltage Resistors**

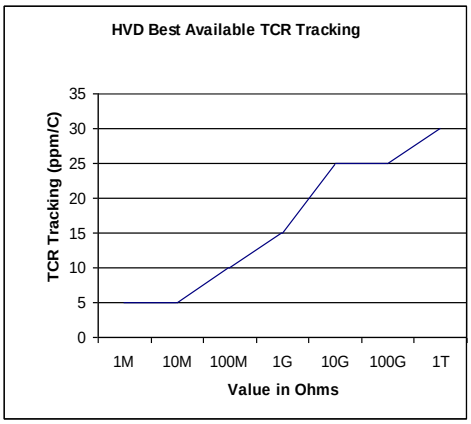
| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available ohmic tolerance (%) ► | 0.1 | 0.1 | 0.5 | 0.5 | 1 | 10 | 20 |
| Best available TCR (ppm/°C) ► | 25 | 25 | 25 | 50 | 100 | 500 | 1000 |
| Best available VCR (ppm/V) ► | 0.5 | 0.5 | 5 | 20 | 100 | 150 | 250 |

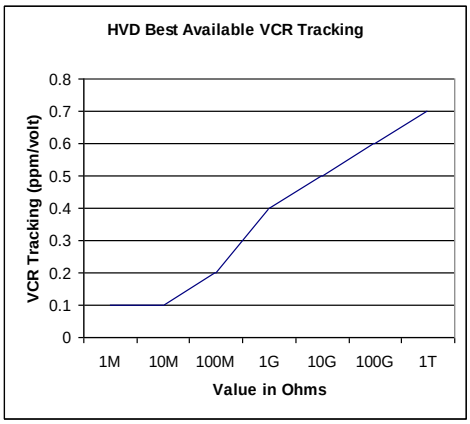
## HIGH VOLTAGE DIVIDERS




**High Voltage Dividers**

| Value in Ohms ► | 1M | 10M | 100M | 1G | 10G | 100G | 1T |
|---|---|---|---|---|---|---|---|
| Best available absolute tolerance (%) ► | 0.1 | 0.1 | 0.5 | 0.5 | 1 | 10 | 20 |
| Best available ratio tolerance (%) ► | 0.1 | 0.1 | 0.1 | 0.5 | 1 | 10 | 20 |
| Best available absolute TCR (ppm/°C) ► | 25 | 25 | 50 | 50 | 100 | 300 | 300 |
| Best available TCR tracking (ppm/°C) ► | 5 | 5 | 10 | 15 | 25 | 25 | 30 |
| Best available VCR (ppm/V) ► | 0.9 | 0.9 | 5 | 20 | 100 | 150 | 250 |
| Best available VCR tracking (ppm/V) ► | 0.1 | 0.1 | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 |