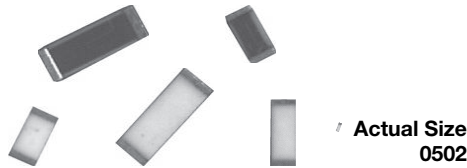
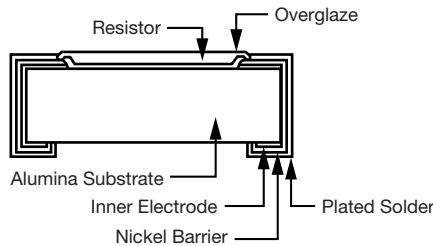


## High Reliability Thick Film Resistor, Surface Mount Chip



Utilizing proven expertise in thick and thin film resistors to satisfy your manufacturing needs, Vishay provides a high rel chip with the same reliability and stability found in military grade resistors. These chips are available in the widest range of sizes, values, and performance characteristics. And manufactured on the Mil-PRF-55342 qualified controlled production line. All product is 100 % electrical tested for tolerance and after thermal shock testing and typically meet the requirements of group A in MIL-PRF-55342 performance.

### CONSTRUCTION



### FEATURES

- High purity alumina substrate for high power dissipation (2 W max.)
- Wraparound terminations featuring a thin film adhesion layer covered with a leach resistant nickel barrier layer for +150 °C operating conditions
- High speed laser trimming for high volume requirements
- Ruthenium based cermet thick film for dependable performance
- Fired-on glass passivation
- Tape and reel packaging standard; static-free waffle pack available
- Active trim and 0 Ω chips
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
Available

**HALOGEN  
FREE**  
Available

**GREEN  
(5-2008)**  
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.

### TYPICAL PERFORMANCE

|      | ABSOLUTE |
|------|----------|
| ◆    |          |
| TCR  | 100      |
| TOL. | 1        |

### STANDARD ELECTRICAL SPECIFICATIONS

| TEST                                  | SPECIFICATIONS               | CONDITIONS        |
|---------------------------------------|------------------------------|-------------------|
| <b>Material</b>                       | Ruthenium                    | -                 |
| <b>Resistance Range</b>               | 10 Ω to 25 MΩ                | -                 |
| <b>TCR: Absolute</b>                  | ± 100 ppm/°C to ± 300 ppm/°C | -55 °C to +125 °C |
| <b>Tolerance: Absolute</b>            | ± 1 % to ± 10 %              | -                 |
| <b>Stability: Absolute</b>            | ΔR ± 0.15 %                  | -                 |
| <b>Stability: Ratio</b>               | -                            | -                 |
| <b>Voltage Coefficient</b>            | -                            | -                 |
| <b>Working Voltage</b>                | 25 V to 200 V                | -                 |
| <b>Operating Temperature Range</b>    | -55 °C to +155 °C            | -                 |
| <b>Storage Temperature Range</b>      | -55 °C to +155 °C            | -                 |
| <b>Noise</b>                          | < -35 dB (typical)           | -                 |
| <b>Shelf Life Stability: Absolute</b> | -                            | -                 |

### COMPONENT RATINGS

| CASE SIZE <sup>(1)</sup> | POWER RATING (mW) | WORKING VOLTAGE (V) | RESISTANCE RANGE (Ω) |
|--------------------------|-------------------|---------------------|----------------------|
| 0402                     | 100               | 25                  | 10 to 10M            |
| 0502                     | 100               | 25                  | 10 to 25M            |
| 0504                     | 125               | 40                  | 10 to 25M            |
| 0505                     | 125               | 40                  | 10 to 25M            |
| 0603                     | 150               | 40                  | 10 to 25M            |
| 0705                     | 200               | 50                  | 10 to 25M            |
| 0805                     | 200               | 50                  | 10 to 25M            |
| 1005                     | 250               | 75                  | 10 to 25M            |
| 1010                     | 500               | 75                  | 10 to 25M            |
| 1206                     | 330               | 100                 | 10 to 25M            |
| 1505                     | 350               | 100                 | 10 to 25M            |
| 2010                     | 1000              | 175                 | 10 to 25M            |
| 2208                     | 750               | 150                 | 10 to 25M            |
| 2512                     | 2000              | 200                 | 10 to 25M            |

### Notes

- Consult factory for nominals above 25 MΩ
- (1) 0705 and 0805 are the same (only use 0805 when ordering)

**DIMENSIONS** in inches


| CASE SIZE                 | TERM | L             | W             | T              | D                       | E                       |
|---------------------------|------|---------------|---------------|----------------|-------------------------|-------------------------|
| 0402                      | B    | 0.042 ± 0.006 | 0.022 ± 0.005 | 0.010 to 0.033 | 0.010 ± 0.005           | 0.010 ± 0.005           |
| 0502                      | B    | 0.055 ± 0.005 | 0.025 ± 0.005 | 0.020 max.     | 0.010 ± 0.005           | 0.015 ± 0.005           |
| 0504                      | B    | 0.055 ± 0.005 | 0.040 ± 0.005 | 0.020 ± 0.005  | 0.010 ± 0.005           | 0.010 ± 0.005           |
| 0505                      | B    | 0.055 ± 0.006 | 0.050 ± 0.005 | 0.012 to 0.033 | 0.010 ± 0.005           | 0.015 ± 0.005           |
| 0603                      | B    | 0.064 ± 0.006 | 0.032 ± 0.005 | 0.010 to 0.033 | 0.012 ± 0.005           | 0.015 ± 0.005           |
| 0705, 0805 <sup>(1)</sup> | B    | 0.080 ± 0.006 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           |
| 1005                      | B    | 0.105 ± 0.007 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           |
| 1010                      | B    | 0.105 ± 0.007 | 0.100 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           |
| 1206                      | B    | 0.126 ± 0.008 | 0.063 ± 0.005 | 0.015 to 0.033 | 0.020 + 0.005 / - 0.010 | 0.020 + 0.005 / - 0.010 |
| 1505                      | B    | 0.155 ± 0.007 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           |
| 2010                      | B    | 0.197 ± 0.006 | 0.098 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           |
| 2208                      | B    | 0.230 ± 0.007 | 0.075 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005           | 0.015 ± 0.005           |
| 2512                      | B    | 0.250 ± 0.006 | 0.124 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005           | 0.020 ± 0.005           |

**Note**

<sup>(1)</sup> 0705 and 0805 are the same (only use 0805 when ordering)

**ENVIRONMENTAL TESTS**

| ENVIRONMENTAL TEST        | 10 Ω ΔR ± (%) | 100 kΩ ΔR ± (%) |
|---------------------------|---------------|-----------------|
| Thermal Shock             | 0.02          | 0.03            |
| Short Term Overload       | 0.02          | 0.02            |
| Low Temperature Operation | 0.03          | 0.04            |
| Resistance to Solder Heat | 0.06          | 0.02            |
| Moisture Resistance       | 0.10          | 0.08            |
| High Temperature Exposure | 0.02          | 0.02            |

**DERATING CURVE**




**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: M-1206K5001GBT1

M - 1 2 0 6 K 5 0 0 1 G B T 1

| GLOBAL MODEL                               | CASE SIZE  | TCR CHARACTERISTIC                                 | RESISTANCE  | TOLERANCE  | TERMINATION  | PACKAGING   |
|--|--|--|---|--|--|---|
| M- = High rel cermet thick film wraparound | 0402<br>0502<br>0504<br>0505<br>0603<br>0805<br>1005<br>1010<br>1206<br>1505<br>2010<br>2208<br>2512 | K = 100 ppm/°C<br>M = 300 ppm/°C<br>X = 0 Ω jumper | First 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point.<br><br>Example:<br>10R0 = 10 Ω<br>1002 = 10 kΩ | F = 1 %<br>G = 2 %<br>J = 5 %<br>K = 10 %<br><br>N = Not trimmed | B = Wraparound nickel barrier with plated tin/lead solder<br>S = Wraparound nickel barrier with plated matte tin lead (pb)-free solder<br>G = Epoxy bondable | BS = BULK<br>100 min., 1 mult<br>WS = WAFFLE<br>100 min., 1 mult<br><br>TAPE AND REEL<br>T0 = 100 min., 100 mult<br>T1 = 1000 min., 1000 mult <sup>(1)</sup><br>T3 = 300 min., 300 mult<br>T5 = 500 min., 500 mult<br>TF = Full reel<br>TS = 100 min., 1 mult |

Historical Part Number example: M0505K1003JBT (for reference purposes only)

|       |           |                    |             |           |             |           |
|-------|-----------|--------------------|-------------|-----------|-------------|-----------|
| M     | 0505      | K                  | 1003        | J         | B           | T         |
| STYLE | CASE SIZE | TCR CHARACTERISTIC | OHMIC VALUE | TOLERANCE | TERMINATION | PACKAGING |

**Note**

(1) Preferred packaging code



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.