

Commercial Thin Film Chip Resistor, Surface-Mount Chip


 Actual Size
1505

These chip resistors are available in both “top side” and “wraparound” termination styles in a variety of sizes. They incorporate self passivated, enhanced Tantalum Nitride films, to give superior performance on moisture resistance, voltage coefficient, power handling and resistance stability. The terminations consist of an adhesion layer, a leach resistant nickel barrier, and solder coating. This product will out-perform all requirements of characteristic E of MIL-PRF-55342.

CONSTRUCTION



FEATURES

- Moisture resistant
- High purity alumina substrate
- Non-standard values available
- Will pass +85 °C, 85 % relative humidity and 10 % rated power
- 100 % visual inspected per MIL-PRF-55342
- Non-inductive
- Very low noise and voltage coefficient (< -30 dB)
- Laser-trimmed tolerances to ± 0.05 %
- Wraparound resistance less than 10 m Ω
- Epoxy bondable termination available
- Sulfur resistant (per ASTM B809-95 humid vapor test)
- Material categorization: for definitions of compliance please see 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 | 10 |
| TOL. | 0.05 |

STANDARD ELECTRICAL SPECIFICATIONS

| TEST | SPECIFICATIONS | CONDITIONS |
|--------------------------------|-------------------------------------|-------------------|
| Material | Tantalum nitride | - |
| Resistance Range | 1.0 Ω to 3 M Ω | - |
| TCR: Absolute | ± 10 ppm/°C to ± 100 ppm/°C | -55 °C to +125 °C |
| Tolerance: Absolute | ± 0.05 % to ± 5 % | +25 °C |
| Stability: Absolute | $\Delta R \pm 0.03$ % | 2000 h at 70 °C |
| Stability: Ratio | - | - |
| Voltage Coefficient | 0.1 ppm/V | - |
| Working Voltage | 75 V to 200 V | - |
| Operating Temperature Range | -55 °C to +155 °C | - |
| Storage Temperature Range | -55 °C to +155 °C | - |
| Noise | < -30 dB | - |
| Shelf Life Stability: Absolute | - | - |

COMPONENT RATINGS

| CASE SIZE ⁽¹⁾ | POWER RATING (mW) | WORKING VOLTAGE (V) | RESISTANCE RANGE (Ω) |
|--------------------------|-------------------|---------------------|-------------------------------|
| 0402 | 50 | 75 | 1.5 to 51.1K |
| 0502 | 100 | 75 | 1.5 to 65K |
| 0505 | 150 | 75 | 10 to 130K |
| 0603 | 150 | 75 | 1.5 to 130K |
| 0705 | 200 | 100 | 1.0 to 310K |
| 0805 | 200 | 100 | 1.0 to 310K |
| 1005 | 250 | 100 | 1.5 to 360K |
| 1010 | 500 | 150 | 1.0 to 600K |
| 1206 | 400 | 200 | 1.5 to 1M |
| 1505 | 400 | 150 | 1.25 to 1M |
| 2208 | 750 | 150 | 2.0 to 1.75M |
| 2010 | 800 | 200 | 1.0 to 2M |
| 2512 ⁽²⁾ | 2000 | 200 | 1.5 to 3M |

Notes

- ⁽¹⁾ 0705 and 0805 are the same (only use 0805 when ordering)
⁽²⁾ Reference environmental tests table for short time overload test parameters

DIMENSIONS in inches


| CASE SIZE | L | W | T | D | E |
|---------------------------|---------------|---------------|----------------|-------------------------|-------------------------|
| 0402 | 0.042 ± 0.008 | 0.022 ± 0.005 | 0.012 to 0.033 | 0.010 ± 0.005 | 0.010 ± 0.005 |
| 0502 | 0.055 ± 0.006 | 0.025 ± 0.005 | 0.012 to 0.033 | 0.010 ± 0.005 | 0.015 ± 0.005 |
| 0505 | 0.055 ± 0.006 | 0.050 ± 0.005 | 0.012 to 0.033 | 0.010 ± 0.005 | 0.015 ± 0.005 |
| 0603 | 0.064 ± 0.006 | 0.032 ± 0.005 | 0.020 max. | 0.012 ± 0.005 | 0.015 ± 0.005 |
| 0705, 0805 ⁽¹⁾ | 0.080 ± 0.006 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.016 ± 0.008 | 0.015 ± 0.005 |
| 1005 | 0.105 ± 0.007 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005 | 0.015 ± 0.005 |
| 1010 | 0.105 ± 0.007 | 0.100 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005 | 0.015 ± 0.005 |
| 1206 | 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 | 0.155 ± 0.007 | 0.050 ± 0.005 | 0.015 to 0.033 | 0.015 ± 0.005 | 0.015 ± 0.005 |
| 2010 | 0.209 ± 0.009 | 0.098 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005 | 0.020 ± 0.005 |
| 2208 | 0.230 ± 0.007 | 0.075 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005 | 0.020 ± 0.005 |
| 2512 | 0.259 ± 0.009 | 0.124 ± 0.005 | 0.015 to 0.033 | 0.020 ± 0.005 | 0.020 ± 0.005 |

Note

⁽¹⁾ 0705 and 0805 are the same (only use 0805 when ordering)

ENVIRONMENTAL TESTS (Vishay Performance vs. MIL-PRF-55342 Requirements)

| ENVIRONMENTAL TEST | LIMITS MIL-PRF-55342 CHARACTERISTIC "E" | TYPICAL VISHAY PERFORMANCE |
|---|---|----------------------------|
| Resistance Temperature Characteristic | ± 25 ppm/°C | ± 15 ppm/°C |
| Max. Ambient Temp. at Rated Wattage | +70 °C | +70 °C |
| Max. Ambient Temp. at Power Derating | +150 °C | +150 °C |
| Thermal Shock ΔR | ± 0.1 % | ± 0.040 % |
| Low Temperature Operation ΔR | ± 0.1 % | ± 0.001 % |
| Short Time Overload ⁽¹⁾ ΔR | ± 0.10 % | ± 0.002 % |
| High Temperature Exposure ΔR | ± 0.1 % | ± 0.04 % |
| Resistance to Soldering Heat ΔR | ± 0.2 % | ± 0.008 % |
| Moisture Resistance ΔR | ± 0.2 % | ± 0.004 % |
| Life +70 °C at 1000 h ΔR | ± 0.50 % | ± 0.02 % |
| Insulation Resistance | 10 000 Ω minimum | > 100 000 M Ω |

Note

⁽¹⁾ 2512 short time overload test is based on 1 W power level below critical value of 20 k Ω

FILM LOAD LIFE STABILITY (at +125 °C)

DERATING CURVE




GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: **PTN1206E1002BBT1**

| | | | | | | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| P | T | N | 1 | 2 | 0 | 6 | E | 1 | 0 | 0 | 2 | B | B | T | 1 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|

| GLOBAL MODEL | CASE SIZE | TCR CHARACTERISTIC | RESISTANCE | TOLERANCE | TERMINATION | PACKAGING |
|--------------|--|--|--|--|--|---|
| PTN | 0402 0502 0505 0603 0805 1005 1010 1206 1505 2208 2010 2512 | D = ± 15 ppm/°C ⁽¹⁾ E = ± 25 ppm/°C ⁽²⁾ H = ± 50 ppm/°C ⁽²⁾ K = ± 100 ppm/°C L = ± 200 ppm/°C Y = ± 10 ppm/°C ⁽³⁾ | The first 3 digits are significant figures and the last digit specifies the number of zeros to follow. "R" designates the decimal point. Example: 10R0 = 10 Ω 1000 = 100 Ω 1001 = 1 kΩ | A = ± 0.05 % ⁽⁴⁾ B = ± 0.1 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 % | B = wraparound Sn/Pb solder Sn63 w/nickel barrier G = wraparound Au over Ni (gold) termination epoxy bondable RoHS-compliant - e4 S = wraparound electroplated 100 % pure matte tin RoHS-compliant - e3 | BS = BULK 100 min., 1 mult. WO = WAFFLE 100 min., 100 mult. WS = WAFFLE 100 min., 1 mult. WI = 100 min., 1 mult. (item single lot date code) WP = 100 min., 1 mult. (package unit single lot date code) TAPE AND REEL T0 = 100 min., 100 mult. T1 = 1000 min., 1000 mult. ⁽⁵⁾ T3 = 300 min., 300 mult. T5 = 500 min., 500 mult. TF = full reel TS = 100 min., 1 mult. TI = 100 min., 1 mult. (item single lot date code) TP = 100 min., 1 mult. (package unit single lot date code) |

Historical Part Number example: PTN0805H8801BBT (for reference purposes only)

| | | | | | | |
|------------|-------------|--------------------|-------------|-----------|-------------|-----------|
| PTN | 0805 | H | 8801 | B | B | T |
| STYLE | CASE SIZE | TCR CHARACTERISTIC | OHMIC VALUE | TOLERANCE | TERMINATION | PACKAGING |

Notes

- (1) Not available below 50 Ω
- (2) Not available below 10 Ω
- (3) Not available below 100 Ω
- (4) Only available in ≥ 1 kΩ
- (5) Preferred packaging code

| RESISTANCE | TCR (ppm/°C) | TOLERANCE (%) |
|----------------|--------------------------|-------------------------|
| 10 Ω to 49.9 Ω | 25, 50, 100, 200 | 0.1, 0.5, 1, 2, 5 |
| 50 Ω to 99 Ω | 15, 25, 50, 100, 200 | 0.1, 0.5, 1, 2, 5 |
| 100 Ω to 999 Ω | 10, 15, 25, 50, 100, 200 | 0.1, 0.5, 1, 2, 5 |
| 1 kΩ to 3 MΩ | 10, 15, 25, 50, 100, 200 | 0.05, 0.1, 0.5, 1, 2, 5 |
| 5 Ω to 10 Ω | 100, 200 | 1, 2, 5 |
| 1.0 Ω to 5 Ω | 200 | 1, 2, 5 |



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.



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

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