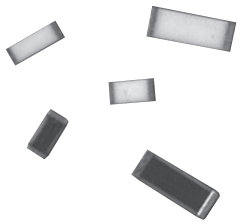
Precision Thin Film Chip Resistor, Surface-Mount Chip



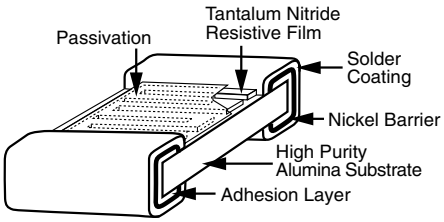
Actual Size
1505

LINKS TO ADDITIONAL RESOURCES

3D Models | Packages | Footprints | Product Page | Order Samples

These chip resistors are available in “wraparound” termination style 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



ATTENTION!
Observe Precautions for
Handling Electrostatic Sensitive Devices!

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 mΩ
- 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

Pb-free Available

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 MΩ	-
TCR: Absolute	± 10 ppm/°C to ± 100 ppm/°C	-55 °C to +125 °C
Tolerance: Absolute	± 0.05 % to ± 5 %	+25 °C
Stability: Absolute	ΔR ± 0.03 %	2000 h at 70 °C
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	-

For technical questions, contact: thinfilm@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

COMPONENT RATINGS

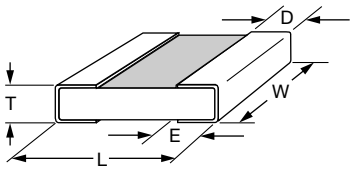
CASE SIZE [1]	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE (Ω)
0402	65	75	1.0 to 51.1K
0502	100	75	1.5 to 65K
0505	150	75	10 to 130K
0603	150	75	1.5 to 130K
0705	200	100	1.0 to 310K
0805	200	100	1.0 to 310K
1005	250	100	1.5 to 360K
1010	500	150	1.0 to 600K
1206	400	200	1.5 to 1M
1505	400	150	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	WEIGHT (gm)
0402	0.042 ± 0.008	0.022 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.010 ± 0.005	0.002
0502	0.055 ± 0.006	0.025 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005	0.002
0505	0.055 ± 0.006	0.050 ± 0.005	0.012 to 0.033	0.010 ± 0.005	0.015 ± 0.005	0.004
0603	0.064 ± 0.006	0.032 ± 0.005	0.020 max.	0.012 ± 0.005	0.015 ± 0.005	0.003
0705, 0805 [1]	0.080 ± 0.006	0.050 ± 0.005	0.015 to 0.033	0.016 ± 0.008	0.015 ± 0.005	0.005
1005	0.105 ± 0.007	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005	0.006
1010	0.105 ± 0.007	0.100 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005	0.011
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	0.009
1505	0.155 ± 0.007	0.050 ± 0.005	0.015 to 0.033	0.015 ± 0.005	0.015 ± 0.005	0.011
2010	0.209 ± 0.009	0.098 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005	0.022
2208	0.230 ± 0.007	0.075 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005	0.017
2512	0.259 ± 0.009	0.124 ± 0.005	0.015 to 0.033	0.020 ± 0.005	0.020 ± 0.005	0.033

Note

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

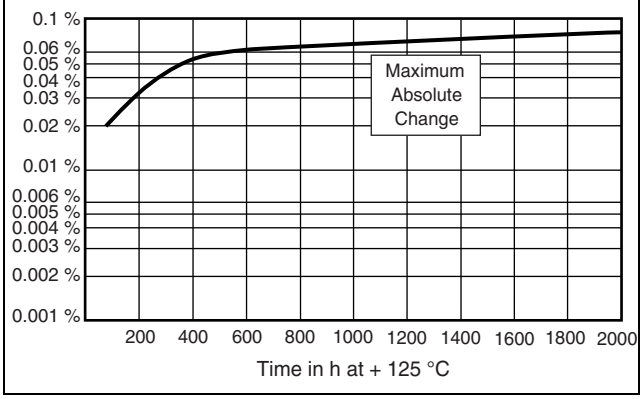
For technical questions, contact: thinfilm@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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 MΩ

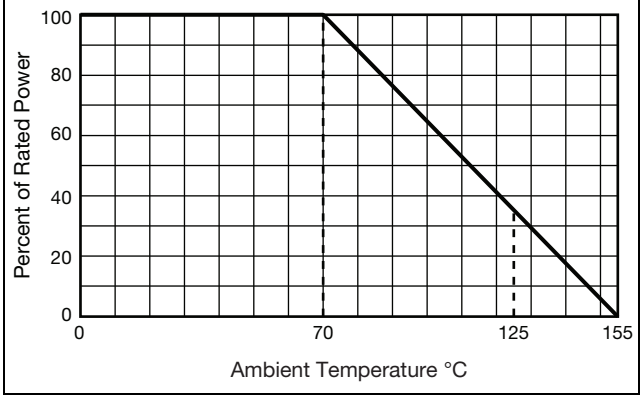
Note

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

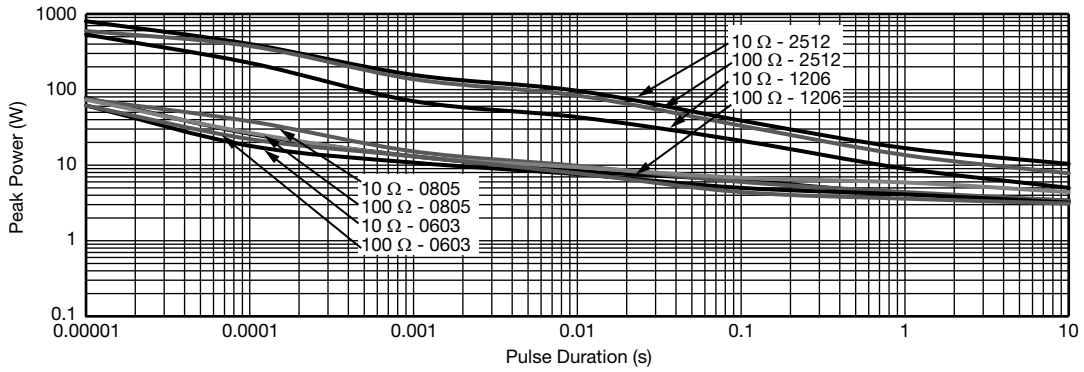
FILM LOAD LIFE STABILITY (at +125 °C)



DERATING CURVE



PULSE CURVE



For technical questions, contact: thinfilm@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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. **W0** = 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

For technical questions, contact: thinfilm@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. 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.

© 2025 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000