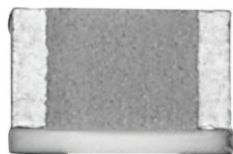


High Precision Wraparound Thin Film Chip Resistors

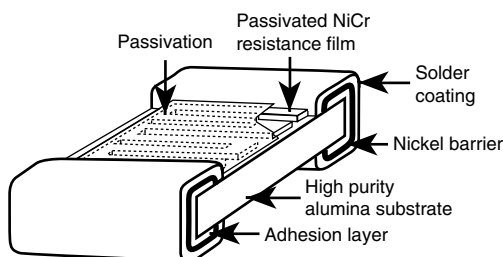


LINKS TO ADDITIONAL RESOURCES



Utilizing proven expertise in thin film resistors, Vishay provides a chip manufactured according to EN140401-804. These chips are available in a wide range of sizes, values, and performance characteristics. Typical applications include aeronautic, industrial, and medical equipment, as well as precision test and measuring equipment.

CONSTRUCTION



FEATURES

- Nickel barrier for high temperature operating conditions
- Tight TCR < 10 ppm/°C, and in lot tracking < 5 ppm/°C in (-55 °C, +155 °C temperature range)
- Very low noise < 35 dB and voltage coefficient 0.1 ppm/V
- Non-inductive
- Laser trimmed down to 0.1 %
- Wraparound resistance less than 0.01 Ω
- Antistatic waffle-pack or tape and reel packaging available
- High stability (0.05 % - 1000 h at Pn at +70 °C)
- Withstand moisture resistance test of AEC-Q200
- According to EN140401-804
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS*
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

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	SIZE	RESISTANCE RANGE ^{(1) (2)} Ω	RATED POWER Pn W	LIMITING ELEMENT VOLTAGE (UL) V	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RV	0505	100 to 260K	0.125	50	0.1, 0.5, 1, 2, 5	10, 25
RV	0603	100 to 260K	0.125	50	0.1, 0.5, 1, 2, 5	10, 25
RV	0805	100 to 300K	0.250	75	0.1, 0.5, 1, 2, 5	10, 25
RV	1206	100 to 1M	0.330	150	0.1, 0.5, 1, 2, 5	10, 25

Notes

- (1) Extended resistance range on request
(2) For ohmic range versus tolerance and TCR, see detailed table

CLIMATIC SPECIFICATIONS

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

MECHANICAL SPECIFICATIONS

Resistive material	Nichrome
Substrate material	Alumina
Plating	Tin lead over nickel or tin silver over nickel or gold over nickel

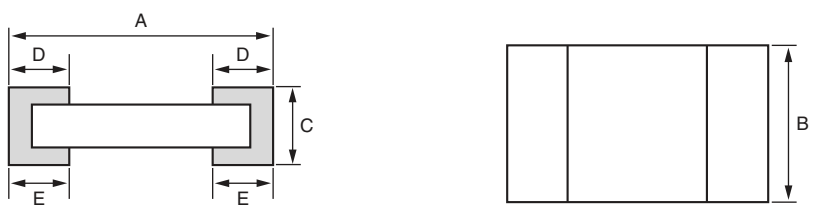
OHMIC RANGE VS. TOLERANCE AND TCR

CASE SIZE	OHMIC RANGE Ω	TOLERANCE %	TCR ppm/°C
0505	100 < 500	0.5; 1; 2; 5	10, 25
0505	500 to 260K	0.1; 0.5; 1; 2; 5	10, 25
0603	100 < 500	0.5; 1; 2; 5	10, 25
0603	500 to 260K	0.1; 0.5; 1; 2; 5	10, 25
0805	100 < 500	0.5; 1; 2; 5	10, 25
0805	500 to 300K	0.1; 0.5; 1; 2; 5	10, 25
1206	100 < 500	0.5; 1; 2; 5	10, 25
1206	500 to 1M	0.1; 0.5; 1; 2; 5	10, 25

TECHNICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Absolute TCR	E: $\pm 25 \text{ ppm}/^{\circ}\text{C}$ / Y: $\pm 10 \text{ ppm}/^{\circ}\text{C}$	-55 °C to +155 °C
Absolute tolerance	$\pm 0.1 \%, \pm 0.5 \%, \pm 1 \%, \pm 2 \%, \pm 5 \%$ ($R \geq 500 \Omega$)	
	$\pm 0.5 \%, \pm 1 \%, \pm 2 \%, \pm 5 \%$ ($R \geq 100 \Omega$)	
Voltage coefficient	0.1 ppm/V	
Noise	-35 dB typical	
Thermal EMF	< 0.1 $\mu\text{V}/^{\circ}\text{C}$	
Load life stability	$\pm (0.1 \% R_n^{(1)} \pm 0.05 \Omega)$	1000 h Pn at +70 °C

Note

(1) Rn: nominal resistance

DIMENSIONS in millimeters (inches)								
								
SERIES / CASE SIZES	A		B		D/E		C	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
RV 0505	1.198 (0.047)	1.502 (0.059)	1.143 (0.045)	1.397 (0.055)	0.250 (0.010)	0.510 (0.020)	0.373 (0.015)	0.627 (0.025)
RV 0603	1.368 (0.054)	1.672 (0.066)	0.623 (0.025)	0.877 (0.035)	0.250 (0.010)	0.510 (0.020)	0.373 (0.015)	0.627 (0.025)
RV 0805	1.758 (0.069)	2.062 (0.081)	1.143 (0.045)	1.397 (0.055)	0.250 (0.010)	0.510 (0.020)	0.373 (0.015)	0.627 (0.025)
RV 1206	2.908 (0.114)	3.212 (0.126)	1.473 (0.058)	1.727 (0.068)	0.250 (0.010)	0.510 (0.020)	0.373 (0.015)	0.627 (0.025)

ENVIRONMENTAL TEST			
TEST	CONDITIONS	VALUES AND DRIFTS ($\Delta R/R \pm \%$)	
		CECC REQUIREMENTS	TYPICAL PERFORMANCE
Overload	6.25 x rated power / 2 s (or 2 UL)	0.05 % Rn ⁽²⁾ + 0.01 Ω	0.01 % Rn ⁽²⁾
Climatic sequences ⁽¹⁾	-55 °C / +155 °C 5 moisture cycles	0.1 % Rn ⁽²⁾ + 0.05 Ω	0.02 % Rn ⁽²⁾
Rapid change of temperature ⁽¹⁾	-55 °C / +155 °C 5 cycles	0.05 % Rn ⁽²⁾ + 0.05 Ω	0.02 % Rn ⁽²⁾
Load life ⁽¹⁾	+70 °C/Pn 1000 h	0.1 % Rn ⁽²⁾ + 0.05 Ω	0.05 % Rn ⁽²⁾
Resistance to solder heat	+260 °C/ 10 s	0.05 % Rn ⁽²⁾ + 0.05 Ω	0.02 % Rn ⁽²⁾
Moisture resistance ⁽¹⁾	+40 °C / 93 % HR Pn/10	0.1 % Rn ⁽²⁾ + 0.05 Ω	0.01 % Rn ⁽²⁾
	AEC-Q200 ⁽³⁾ 85 °C / 85 % RH / Pn/10 1000 h	0.5 % + 0.05 Ω	Max. < 0.3 % + 0.05 Ω
High temperature storage	1000 h at + 155 °C	0.1 % Rn ⁽²⁾ + 0.05 Ω	0.05 % Rn ⁽²⁾
Bending ⁽¹⁾	10 bends / 2 mm / 5 s	0.05 % Rn ⁽²⁾ + 0.05 Ω	0.02 % Rn ⁽²⁾

Notes

- (1) Test requiring parts to be mounted on PCB will be performed with the requirement that termination alloy will be the same as solder paste alloy. Gold termination will be tested as B termination
- (2) Rn: nominal resistance
Pn: nominal power
- (3) Option to order: 0058

**SPECIFIC CONDITIONS DUE TO TERMINATION TYPE**

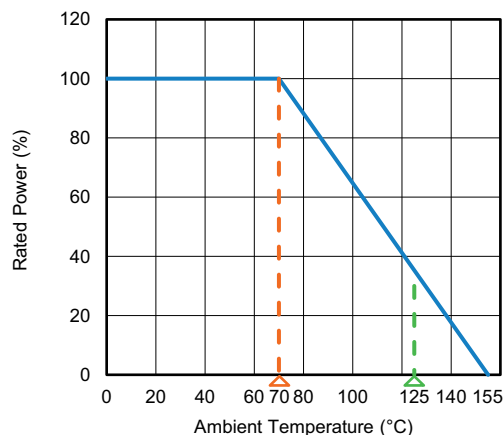
TEST	CONDITIONS		VALUES AND DRIFTS	
	B; G	N	VISHAY REQUIREMENTS	TYPICAL PERFORMANCE
Solderability	+235 °C/2 s Sn60Pb40 alloy	+245 °C/3 s Sn97Ag3 alloy	VISUAL INSPECTION	
High T° reflow profile	N/A	+255 °C/40 s (on parts)	0.02 % Rn ⁽¹⁾ + 0.05 Ω	0.01 % Rn ⁽¹⁾ + 0.05 Ω

Note

- ⁽¹⁾ Rn: nominal resistance
Pn: nominal power

PACKAGING INFORMATION

SIZE	NUMBER OF PIECES PER PACKAGE		TAPE WIDTH
	WAFFLE PACK (2" x 2")	TAPE AND REEL MIN. MAX.	
0505	100	4000	8 mm (0.315")
0603		5000	
0805	100	4000	
1206	140		

DERATING CURVE**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: RV0505E1001DBT0099

R	V	0	5	0	5	E	1	0	0	1	D	B	T	0	0	9	9
GLOBAL MODEL	SIZE	TCR	VALUE	TOLERANCE	TERMINATION	PACKAGING	OPTION										
	0505 0603 0805 1206	E = ± 25 ppm/°C Y = ± 10 ppm/°C	The first 3 digits (2 digits are enough for tolerance G and J) are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point 10R0 = 10 Ω 3901 = 3900 Ω 1004 = 1 MΩ	B = ± 0.1 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 %	B: SnPb over nickel barrier N: SnAg over nickel barrier G: gold over nickel barrier B: lead bearing version N and G: lead (Pb)-free / RoHS version	For more information see "Codification of packaging" table	Leave blank if no option										

Historical Part Number Example: RV 0505 25 ppm 1K 0.5 % B TR R1016

PART NUMBER DESCRIPTION (for information only)

RV	0505	25 ppm	1K	0.5 %	B	TR	R1016
MODEL	SIZE	TCR	OHMIC VALUE	TOLERANCE	TERMINATION	PACKAGING	OPTION



CODIFICATION OF PACKAGING	
CODE 18	PACKAGING
WAFFLE PACK	
W	100 min., 1 mult.
WA	100 min., 100 mult. (available only in size 1206)
PLASTIC TAPE (Standard for all sizes.)	
T	100 min., 1 mult.
TA	100 min., 100 mult.
TB	250 min., 250 mult.
TC	500 min., 500 mult.
TD	1000 min., 1000 mult.
TE	2500 min., 2500 mult.
TF	Full tape (quantity depending on size of chips)
PAPER TAPE (Available for 0603, 0805, and 1206. Please consult Vishay Sfernice for other sizes.)	
PT	100 min., 1 mult.
PA	100 min., 100 mult.
PB	250 min., 250 mult.
PC	500 min., 500 mult.
PD	1000 min., 1000 mult.
PE	2500 min., 2500 mult.
PF	Full tape (quantity depending on size of chips)



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.