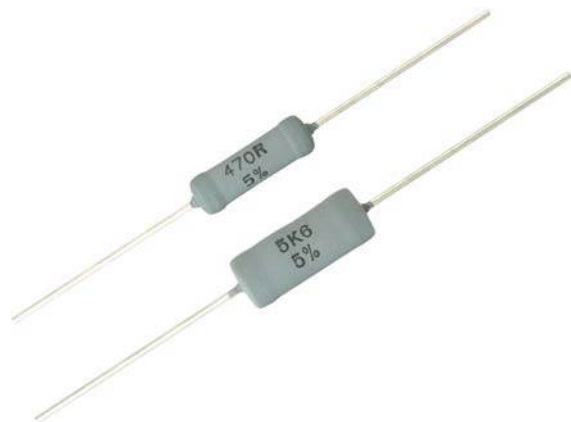


High Surge Axial Cemented Wirewound Resistors



FEATURES

- Standard version Z300-C00
- High voltage surge (up to 12 kV) for special version
- Non flammable cement coating
- High grade ceramic core
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Energy meter
- Appliances
- Ballast

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	POWER RATING P_{40} W	POWER RATING P_{70} W	RESISTANCE RANGE Ω TCR ⁽¹⁾⁽²⁾ = ± 200 ppm/K	TOLERANCE ⁽³⁾ \pm %
Z301-C	1	0.9	0.30 to 2K	10, 5
ZDA0411-C	2	1.8	0.47 to 4.3K	10, 5
Z302-C	3	2.5	0.22 to 3.3K	10, 5
Z303-C	4	3.5	0.47 to 3.9K	10, 5
Z304-C	5	4.7	0.62 to 5.6K	10, 5
Z305-C	6	5.4	0.15 to 10K	10, 5

Notes

- ⁽¹⁾ Lower TCR products are available on request
⁽²⁾ TCR of values < 1R is ± 400 ppm/K
⁽³⁾ Resistance value to be selected for ± 10 % tolerance from E12 and for ± 5 % from E24, 1 % tolerance available on request.

**PART NUMBER AND PRODUCT DESCRIPTION**

Part Number: Z34081834700J6DC10

Z	3	4	0	8	1	8	3	4	7	0	0	J	6	D	C	1	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

MODEL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING CODE	SPECIAL ⁽¹⁾
Z310309 = Z301-C ZDA0411 = ZDA0411-C Z320414 = Z302-C Z330617 = Z303-C Z340818 = Z304-C Z350922 = Z305-C	1 = ± 100 ppm/K 3 = ± 200 ppm/K 4 = SWI (special winding)	3 digit value 1 digit multiplier MULTIPLIER 7 = $\times 10^{-3}$ 8 = $\times 10^{-2}$ 9 = $\times 10^{-1}$ 0 = $\times 10^0$ 1 = $\times 10^1$ 2 = $\times 10^2$	J = ± 5.0 % K = ± 10.0 %	(see Packaging Table)	C00 = standard C04 = 4 kV surge C06 = 6 kV surge C08 = 8 kV surge C10 = 10 kV surge C12 = 12 kV surge

Product Description: Z304-C 3 470R 5 % AC G63 CD1278

Z304-C	3	470R	5 %	AC G63	CD1278
MODEL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING DESCRIPTION	Blank = standard CDxxxx = speciality

MINIMUM RESISTANCE VALUE FOR HANDLING SURGE VOLTAGE AS PER IEC61000-4-5 (1.2/50 μ S PULSE)

POWER	TYPE	4 kV SURGE	6 kV SURGE	8 kV SURGE	10 kV SURGE	12 kV SURGE
1 W	Z301-C	430R	1K5	-	-	-
2 W	ZDA0411-C	180R	510R	1K1	2K2	3K3
3 W	Z302-C	62R	330R	680R	1K8	2K2
4 W	Z303-C	27R	91R	220R	470R	820R
5 W	Z304-C	15R	43R	82R	100R	330R
6 W	Z305-C	4.7R	18R	27R	68R	130R

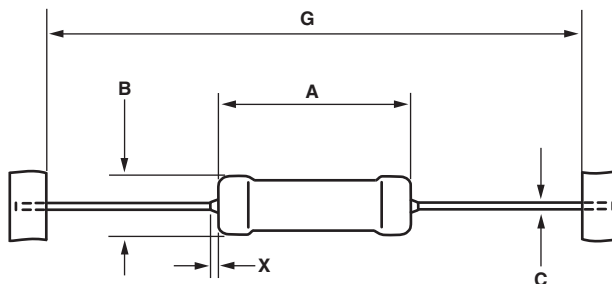
Example: for a Z304-C, 5 W resistor to withstand 10 kV surge, minimum ohmic value should be 100 Ω . So the part number will be Z34081831000J6DC10

Note

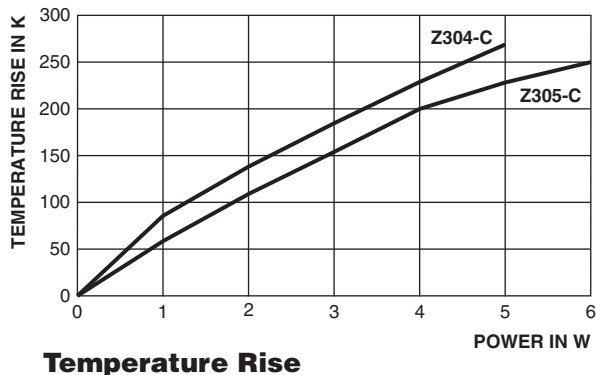
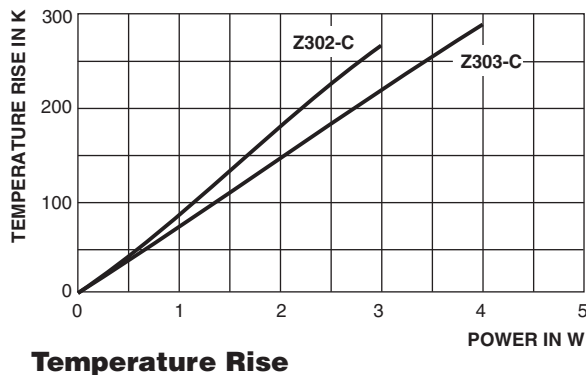
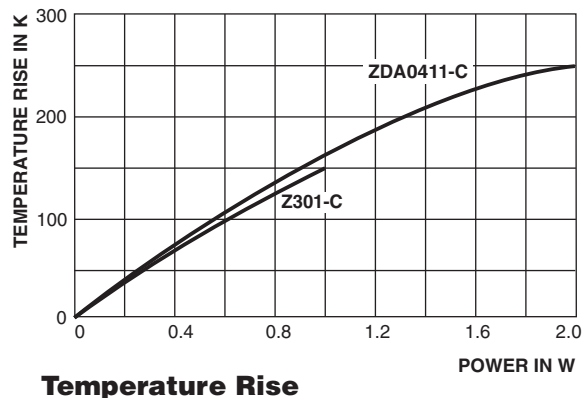
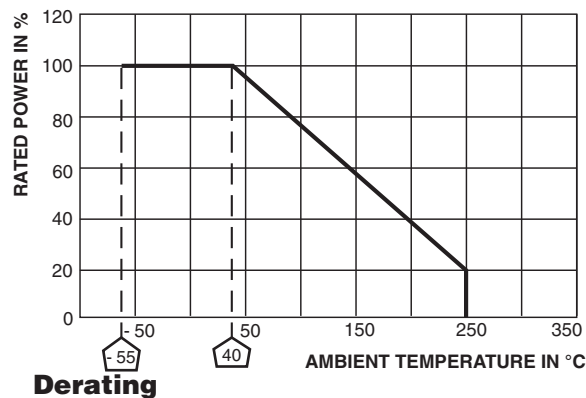
⁽¹⁾ As surge handling capacity depends upon resistor model and ohmic value, please check feasibility of resistor model, ohmic value and desired surge handling voltage with factory. (ww1resistors@vishay.com)

PACKAGING TABLE

MODEL	TAPE LENGTH (G) (mm)	AMMO PACK		
		PIECES	PACKAGING CODE	PACKAGING DESCRIPTION
Z301-C, ZDA0411-C	53	1000	21	A1 G53
Z302-C	53	500	2C	AC G53
	73	500	4C	AC G73
	83	250	6C	AC G83
Z303-C	53	500	2C	AC G53
	83	500	6C	AC G83
Z304-C	63	250	6D	AC G63
	83	250	6E	AB G83
Z305-C	83	250	6B	AB G83

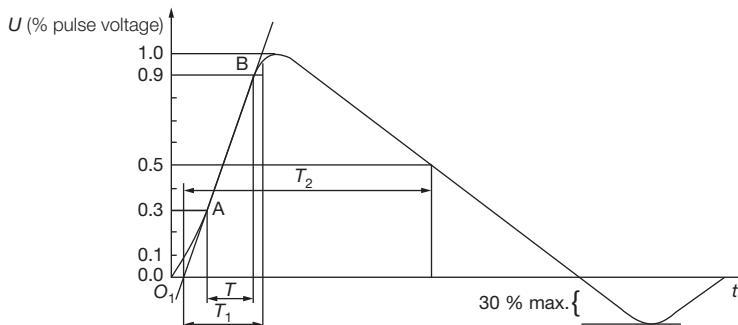
DIMENSIONS


MODEL	DIMENSIONS in millimeters (inches)					
	A _{MAX.}	B _{MAX.}	C _{MAX.}	G	X _{MAX.}	MASS (g)
Z301-C	8.5 (0.355)	3 (0.118)	0.7 (0.027)	53 ± 1 (2.087 ± 0.039)	2 (0.079)	0.5
ZDA0411-C	11 (0.433)	4 (0.157)	0.7 (0.027)	53 ± 1 (2.087 ± 0.039)	2 (0.079)	0.8
Z302-C	13 (0.512)	4.8 (0.189)	0.8 (0.031)	53 ± 1 (2.087 ± 0.039) 73 ± 1 (2.87 ± 0.039) 83 ± 1 (3.268 ± 0.039)	2 (0.079)	1.1
Z303-C	15.8 (0.622)	5.5 (0.217)	0.8 (0.031)	53 ± 1 (2.087 ± 0.039) 83 ± 1 (3.268 ± 0.039)	2 (0.079)	1.4
Z304-C	18 (0.709)	7.5 (0.295)	0.8 (0.031)	63 ± 1 (2.48 ± 0.039)	2 (0.079)	1.9
Z305-C	22.3 (0.878)	8.7 (0.343)	0.8 (0.031)	83 ± 1 (3.268 ± 0.039)	2 (0.079)	3.7



HIGH VOLTAGE SURGE

The specially designed Z300-C high surge wirewound resistors are tested for surge handling capability by applying surge voltage as per the 1.2 μ s/50 μ s exponential open circuit voltage waveform according to IEC 61000-4-5 standard as shown below:



Front time: $T_1 = 1.67 \times T = 1.2 \mu\text{s} \pm 30 \%$

Time to half-value: $T_2 = 50 \mu\text{s} \pm 20 \%$

Waveform of open-circuit voltage (1.2 μ s/50 μ s) at the output of pulse generator

PERFORMANCE	
TEST	PERMISSIBLE CHANGE
Climatic category (LCT/UCT/days)	40/200/56
Damp heat, steady state, IEC 60115-1, 4.24 (40 \pm 2) $^{\circ}$ C, 56 days, (93 \pm 3) % RH	$\Delta R = \pm (3 \% R + 0.1 \Omega)$
Climatic sequence IEC 60115-1 4.23	$\Delta R = \pm (3 \% R + 0.1 \Omega)$
Endurance at room temperature (116 % P_{70}), 1000 h, IEC 60115-1, 4.25.2	$\Delta R = \pm (3 \% R + 0.1 \Omega)$
Endurance at UCT, 200 $^{\circ}$ C (30 % P_{70}), 1000 h, IEC 60115-1, 4.25.3	$\Delta R = \pm (3 \% R + 0.1 \Omega)$
Short time overload, IEC 60115-1, 4.13 10 x rated power P_{40} for 5 s	$\Delta R = \pm (2 \% R + 0.05 \Omega)$
Resistance to soldering heat, IEC 60115-1, 4.18 (260 \pm 5) $^{\circ}$ C, (10 \pm 1) s	$\Delta R = \pm (1 \% R + 0.05 \Omega)$
Robustness of termination, IEC 60115-1, 4.16	$\Delta R = \pm (0.5 \% R + 0.05 \Omega)$
1.2 μ s/50 μ s surge test (impedance of surge tester is 2 Ω) as per IEC 61000-4-5; 10 pulses at 30 s interval	$\Delta R = \pm (5 \% R + 0.1 \Omega)$



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.