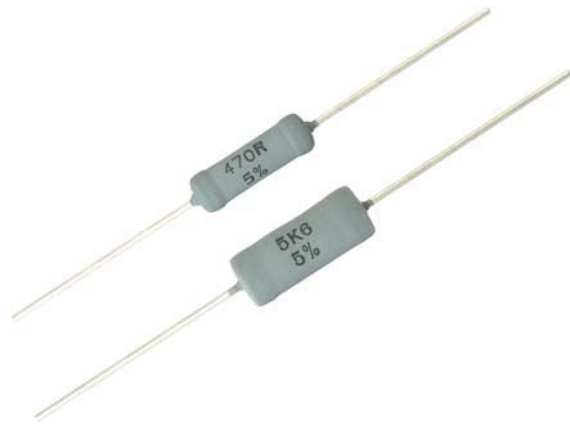


## High Surge Axial Cemented Wirewound Resistors



### 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2008)

### APPLICATIONS

- Energy meter
- Appliances
- Ballast

STANDARD ELECTRICAL SPECIFICATIONS				
MODEL	POWER RATING $P_{40}$ W	POWER RATING $P_{70}$ W	RESISTANCE RANGE $\Omega$ TCR <sup>(1)(2)</sup> = $\pm 200$ ppm/K	TOLERANCE <sup>(3)</sup> $\pm$ %
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

<sup>(1)</sup> Lower TCR products are available on request

<sup>(2)</sup> TCR of values <1R is  $\pm 400$ ppm/K

<sup>(3)</sup> Resistance value to be selected for  $\pm 10$  % tolerance from E12 and for  $\pm 5$  % from E24, 1 % tolerance available on request.



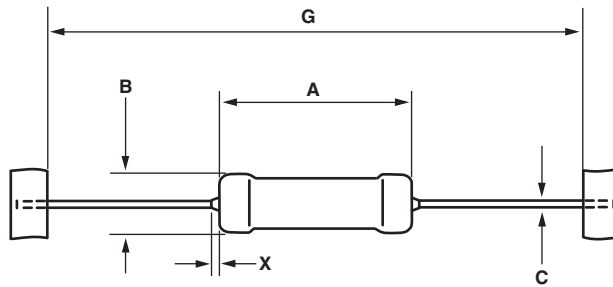
PART NUMBER AND PRODUCT DESCRIPTION																	
Part Number: Z34081834700J6DC10																	
Z	3	4	0	8	1	8	3	4	7	0	0	J	6	D	C	1	0
MODEL	TCR/MATERIAL		VALUE			TOLERANCE CODE		PACKAGING CODE		SPECIAL (1)							
Z310309 = Z301-C ZDA0411 = ZDA0411-C Z320414 = Z302-C Z330617 = Z303-C Z340818 = Z304-C Z350922 = Z305-C	1 = ± 100 ppm/K 3 = ± 200 ppm/K 4 = SWI (special winding)		3 digit value 1 digit multiplier MULTIPLIER 7 = *10 <sup>-3</sup> 8 = *10 <sup>-2</sup> 9 = *10 <sup>-1</sup> 0 = *10 <sup>0</sup> 1 = *10 <sup>1</sup> 2 = *10 <sup>2</sup>			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 μS 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

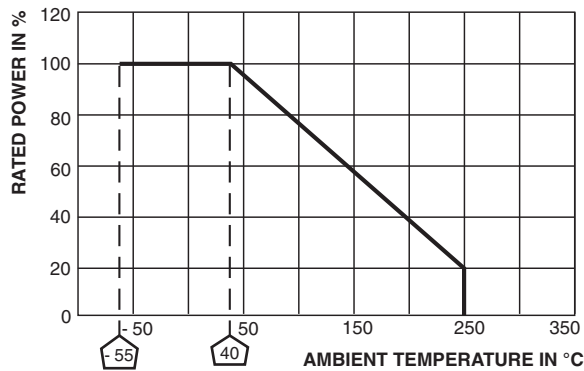
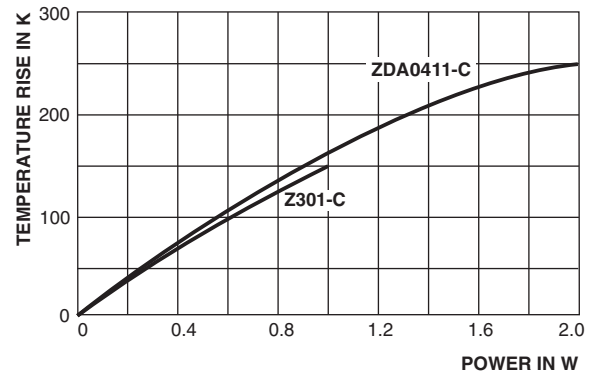
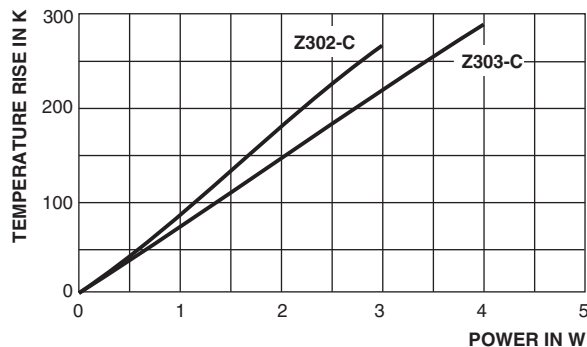
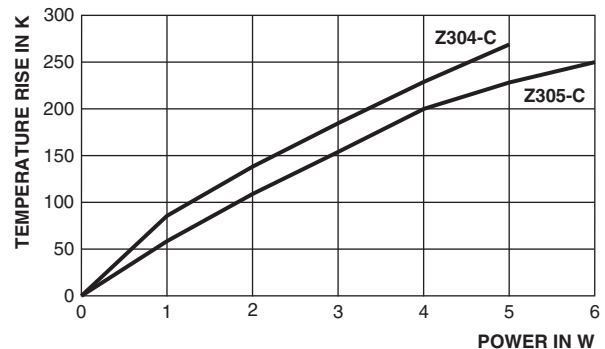
**Note**

(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](mailto: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

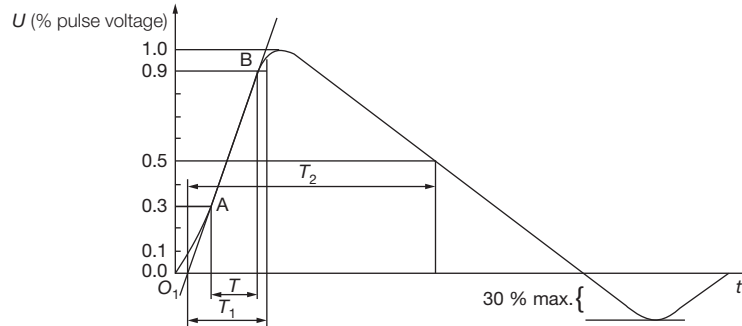
**DIMENSIONS**


MODEL	DIMENSIONS in millimeters (inches)					
	A <sub>MAX.</sub>	B <sub>MAX.</sub>	C <sub>MAX.</sub>	G	X <sub>MAX.</sub>	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)	3 (0.118)	1.4
Z304-C	18 (0.709)	7.5 (0.295)	0.8 (0.031)	63 ± 1 (2.48 ± 0.039)	3 (0.118)	1.9
Z305-C	22.3 (0.878)	8.7 (0.343)	0.8 (0.031)	83 ± 1 (3.268 ± 0.039)	3 (0.118)	3.7


**Derating**

**Temperature Rise**

**Temperature Rise**

**Temperature Rise**

## 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  $\mu$ s/50  $\mu$ 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  $\mu$ s/50  $\mu$ 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	$\Delta R = \pm (0.5 \% R + 0.05 \Omega)$



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