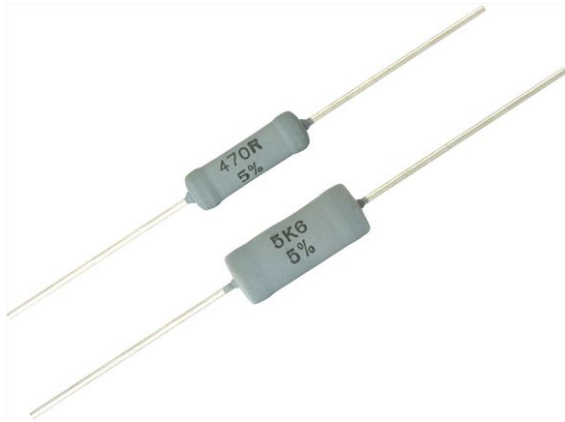


## High Surge Axial Cemented Wirewound Resistors



### FEATURES

- Standard version Z300-C00
- High voltage surge (up to 12 kV) for special version
- Non flammable cement coating
- High grade ceramic core
- Compliant to RoHS Directive 2002/95/EC



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

### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

- Energy meter
- Appliances
- Ballast

STANDARD ELECTRICAL SPECIFICATIONS				
MODEL	POWER RATING $P_{40}$ W	RESISTANCE RANGE $\Omega$ TCR <sup>(2)</sup> = - 10 ppm/K to - 80 ppm/K WM 50 (Class 1)	RESISTANCE RANGE $\Omega$ TCR <sup>(2)</sup> = 100 ppm/K to 180 ppm/K WM 110 (Class 3)	TOLERANCE <sup>(1)</sup> $\pm$ %
Z301	1	0.30 to 270	0.68 to 2K	10, 5
ZDA0411	2	0.47 to 560	1.50 to 4.30K	10, 5
Z302	3	0.10 to 510	1.80 to 3.30K	10
		0.10 to 510	24 to 3.30K	5
Z303	4	1 to 510	-	1
		0.10 to 1K	1.80 to 3.90K	10
Z304	5	0.10 to 1K	12 to 3.90K	5
		1 to 1K	-	1
Z305	6	0.10 to 910	10 to 5.6K	5
		0.10 to 2.4K	3.90 to 10K	10
		0.10 to 2.4K	10 to 10K	5
		0.62 to 2.4K	-	1

### Notes

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

<sup>(2)</sup> TCR mentioned is of resistive wire

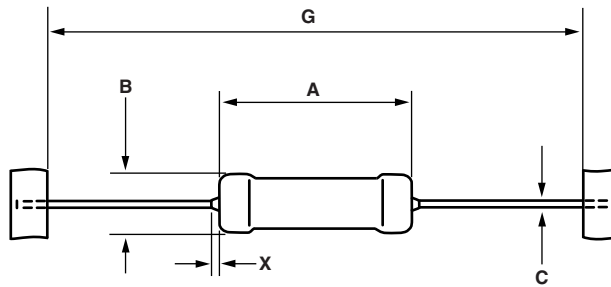


PART NUMBER AND PRODUCT DESCRIPTION																	
Part Number: Z34081834700J6DC10																	
Z	3	4	0	8	1	8	3	4	7	0	0	J	6	D	C	1	0
MODEL	TCR/MATERIAL		VALUE			TOLERANCE CODE		PACKAGING CODE		SPECIAL (1)							
Z310309 = Z301 ZDA0411 = ZDA0411 Z320414 = Z302 Z330617 = Z303 Z340818 = Z304 Z350922 = Z305	1 = - 10 ppm/K to - 80 ppm/K WM 50 Class 1 3 = 100 ppm/K to 180 ppm/K WM 110 Class 3 4 = SWI (special winding)		3 digit value 1 digit multiplier MULTIPLIER F = *10 <sup>-4</sup> 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>			F = ± 1.0 % G = ± 2.0 % 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-C10 3 470R 5 % AC G63 CD1278																	
Z303-C10	3	470R	5 %	AC G63	CD1278												
MODEL	TCR/MATERIAL	VALUE	TOLERANCE CODE	PACKAGING DESCRIPTION	Blank = Standard CDxxxx = Speciality												

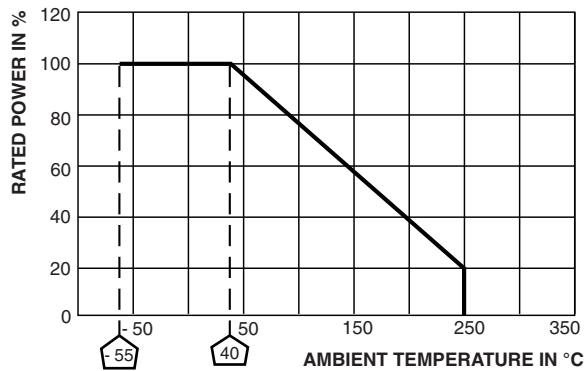
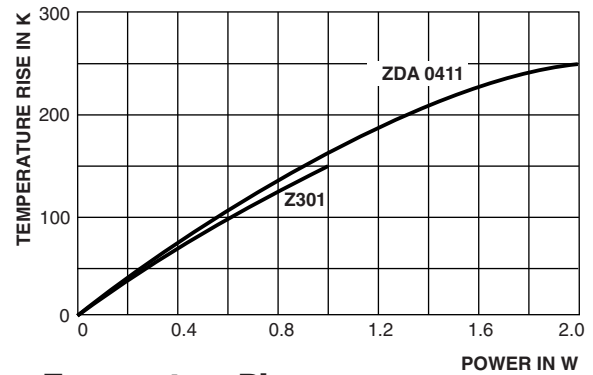
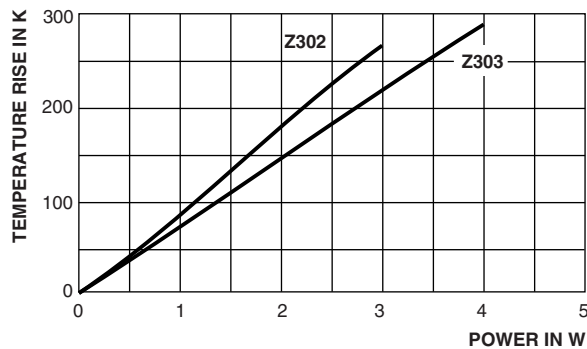
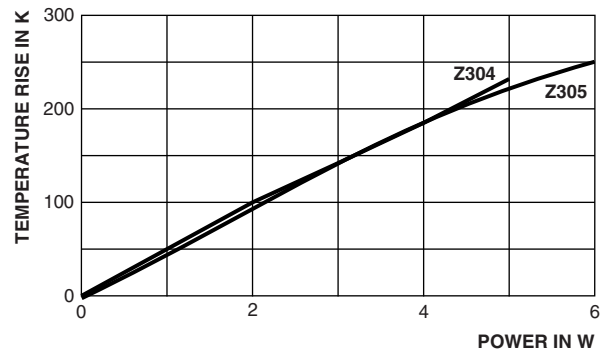
**Note**

(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, ZDA0411	53	1000	21	A1 G53
Z302	53	500	2C	AC G53
	73	500	4C	AC G73
	83	500	6C	AC G83
Z303	53	500	2C	AC G53
	83	500	6C	AC G83
Z304	63	250	6D	AC G63
Z305	83	250	6B	AB G83
	83	100	6A	A4 G83

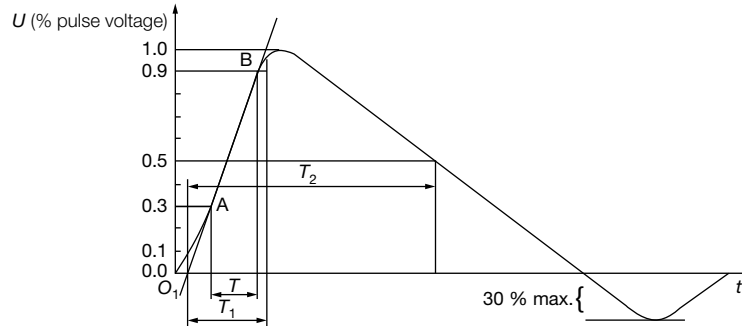
**DIMENSIONS**


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	8.5 (0.355)	3 (0.118)	0.7 (0.027)	53 ± 1 (2.087 ± 0.039)	2 (0.079)	0.5
ZDA0411	11 (0.433)	4 (0.157)	0.7 (0.027)	53 ± 1 (2.087 ± 0.039)	2 (0.079)	0.8
Z302	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	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	18 (0.709)	7.5 (0.295)	0.8 (0.031)	63 ± 1 (2.48 ± 0.039)	3 (0.118)	1.9
Z305	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 voltages 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 $P_{25}$ 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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