Multilayer Ceramic Dipped Axial and Radial Capacitors for Automotive Applications

Capacitors - AEC-Q200 Approved

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MULTILAYER CERAMIC DIPPED AXIAL AND RADIAL CAPACITORS

for Automotive Applications

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MULTILAYER CERAMIC DIPPED AXIAL AND RADIAL CAPACITORS

for Automotive Applications

General Information

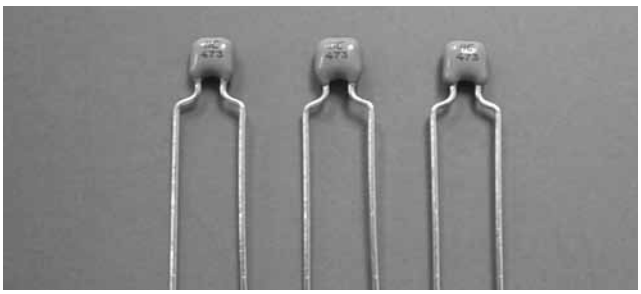
For more than 20 years, Vishay Vitramon has supported the automotive industry with robust, highly reliable MLCCs that have made it a leader in this segment. All Vishay Vitramon MLCCs are manufactured in precious metal technology (PMT/NME) with a wet build process. They are qualified according to AEC-Q200 with PPAP available on request.

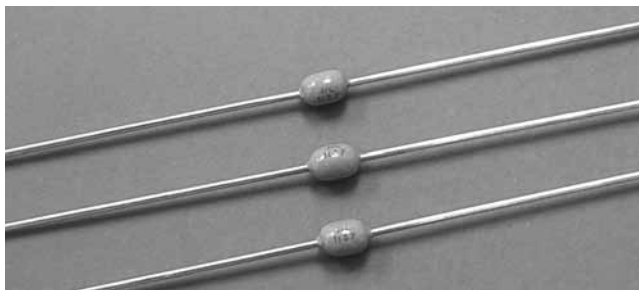
These chips are used in the automotive-grade Mono-Axial and Mono-Kap series from Vishay BCcomponents. They feature coppery steel wire lead terminations with a 100 % tin plate matte finish. Their epoxy coating provides mechanical strength for assembly extended-life environmental protection.

RoHS COMPLIANT

AUTOMOTIVE GRADE

Capacitors - AEC-Q200 Approved

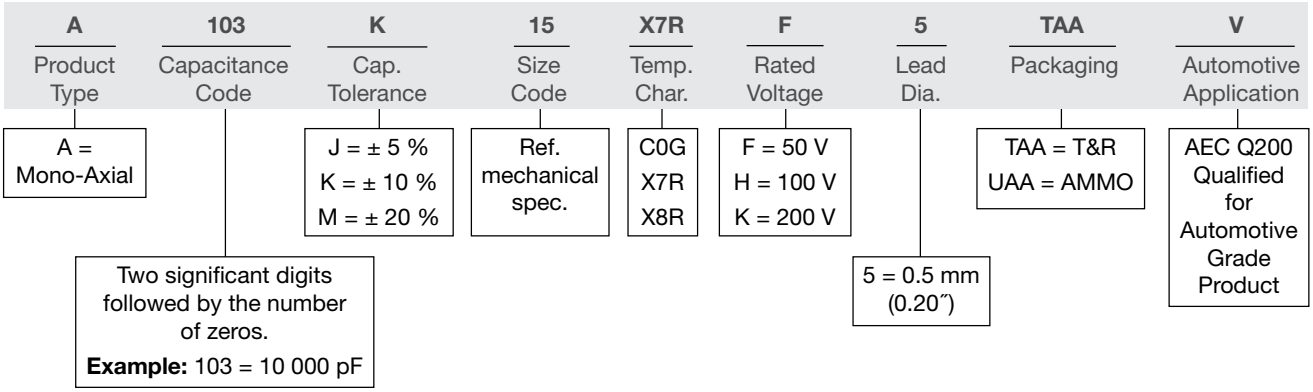




General Specifications	
C0G (NP0) Dielectric	**X7R, X8R Dielectric**
Note: Electrical characteristics at + 25 °C unless otherwise specified	**Note:** Electrical characteristics at +25 °C unless otherwise specified
Operating Temperature: – 55 °C to + 160 °C (above +150 °C, 50 % rated voltage)	**Operating Temperature:** – 55 °C to + 160 °C (above +150 °C, 50 % rated voltage)
Capacitance Range: 100 pF to 10 nF	**Capacitance Range:** 470 pF to 1.0 µF
Temperature Coefficient of Capacitance (TCC): ± 30 ppm/°C from – 55 °C to + 125 °C	**Temperature Coefficient of Capacitance (TCC):** X7R: ± 15 % from – 55 °C to + 125 °C, with 0 Vdc applied + 15 %/– 30 % from – 55 °C to + 150 °C, with 0 Vdc applied X8R: ± 15 % from – 55 °C to + 150 °C, with 0 Vdc applied
Dissipation Factor (DF): 0.1 % maximum at 1.0 Vrms and 1 kHz for values > 1000 pF and 1 MHz for values ≤ 1000 pF	**Dissipation Factor (DF):** 2.5 % maximum at 1.0 Vrms and 1 kHz
Voltage Range: 50 Vdc, 100 Vdc, and 200 Vdc	**Voltage Range:** 50 Vdc, 100 Vdc, and 200 Vdc
Insulating Resistance: At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less Test condition: rated voltage within 2 minutes of charging	**Insulating Resistance:** At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less
Aging: 0 % maximum per decade	**Aging Rate:** Typical 1 % maximum per decade
Dielectric Withstanding Voltage (DWV): This is the maximum voltage the capacitors are tested for a 1-s to 5-s period and the charge/discharge current does not exceed 50 mA DWV: 50 V to 100 V, at 250 % of rated voltage 200 V, at 200 % of rated voltage	**Dielectric Withstanding Voltage (DWV)**: This is the maximum voltage the capacitors are tested for a 1-s to 5-s period and the charge/discharge current does not exceed 50 mA DWV: 50 V to 100 V, at 250 % of rated voltage 200 V, at 200 % of rated voltage

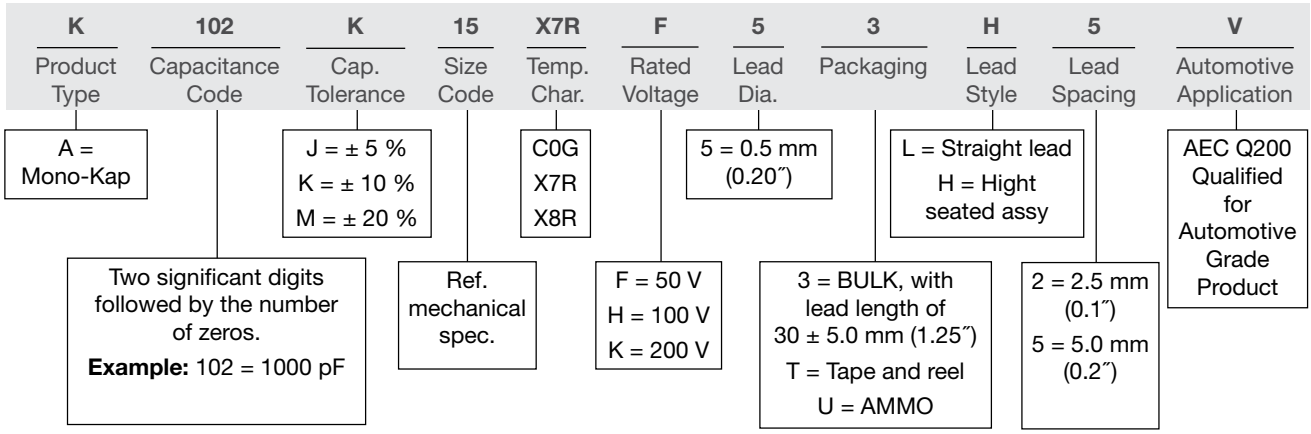
Ordering Information

Mono-Axial



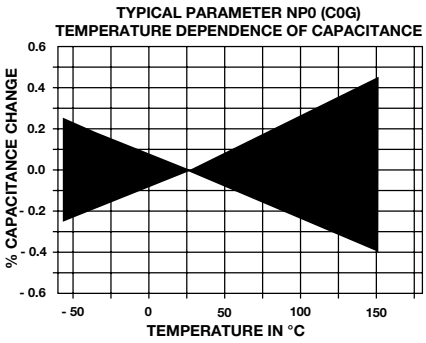
Ordering Example: A-103-K-15-X7R-F-5-TAA-V

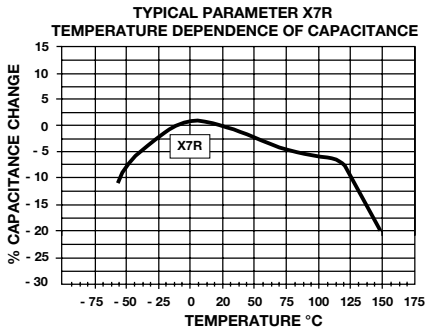
Mono-Kap

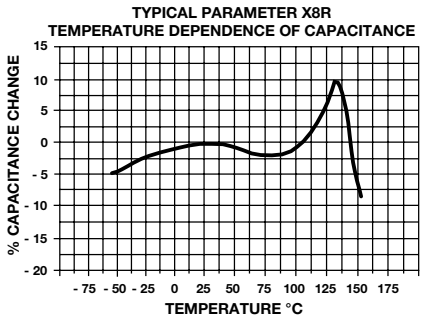


Ordering Example: K-473-K-15-X7R-F-5-3-H-5-V

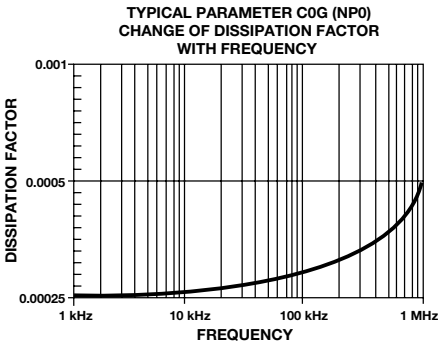
Electrical Data and Dielectric Characteristics

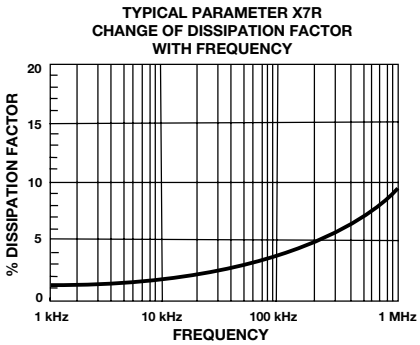


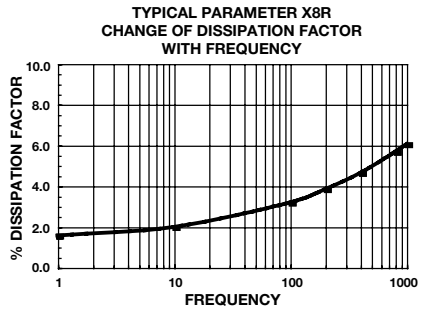


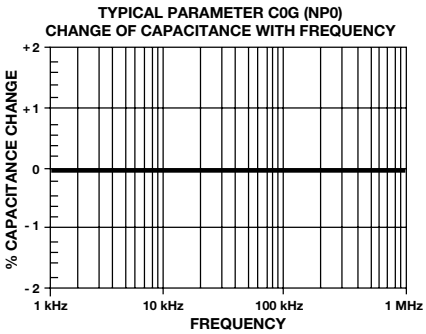


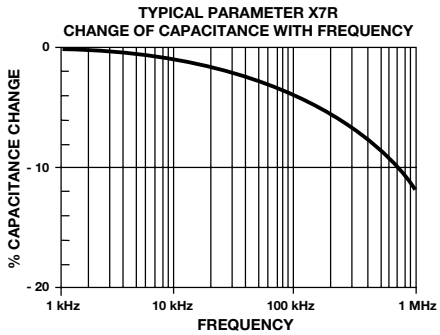
Remark: NP0 and X7R are defined temperature up to + 125 °C

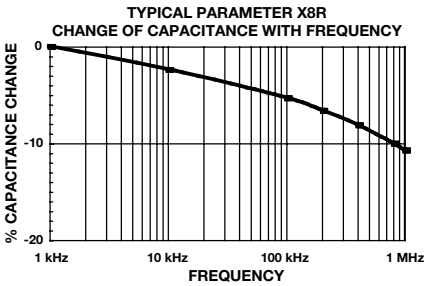






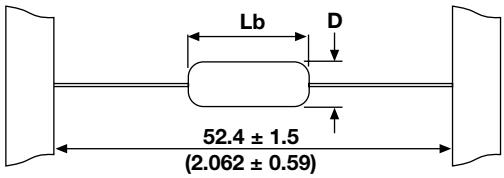






Dimensions Data

Mono-Axial

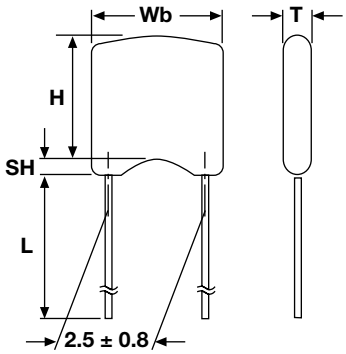


Capacitor Dimensions and Weight				
Size Code	**Lb_{max} (1)**	**$ØD_{max}$ (1)**	**Lead diameter (mm)**	**Weight (g)**
15	0.15 (3.8)	0.10 (2.5)	0.5 ± 0.05	≈ 0.14
20	0.20 (5.0)	0.12 (3.0)	0.5 ± 0.05	≈ 0.15

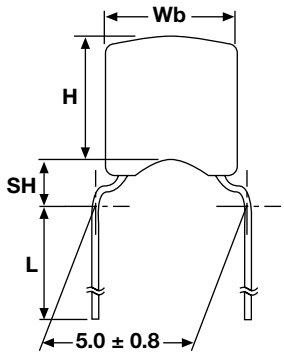
Note: 1. Dimensions between parentheses are in millimeters.
2. If inserted with 1210 chip, then $Ød_{max}$ is 4.5 mm (0.18").

Mono-Kap

L2
Component outline for
Lead spacing 2.5 ± 0.8 mm
(straight leads)

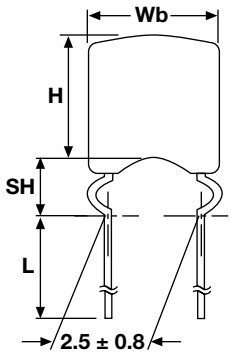


H5
Component outline for
Lead spacing 5.0 ± 0.8 mm
(flat bent leads)

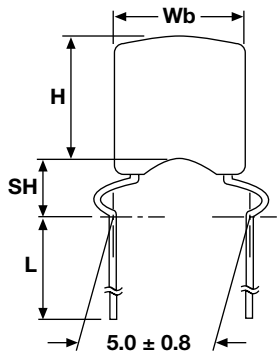


L2 and H5 are preferred styles

K2
Component outline for
Lead spacing 2.5 ± 0.8 mm
(outside kink)



K5
Component outline for
Lead spacing 2.5 ± 0.8 mm
(outside kink)



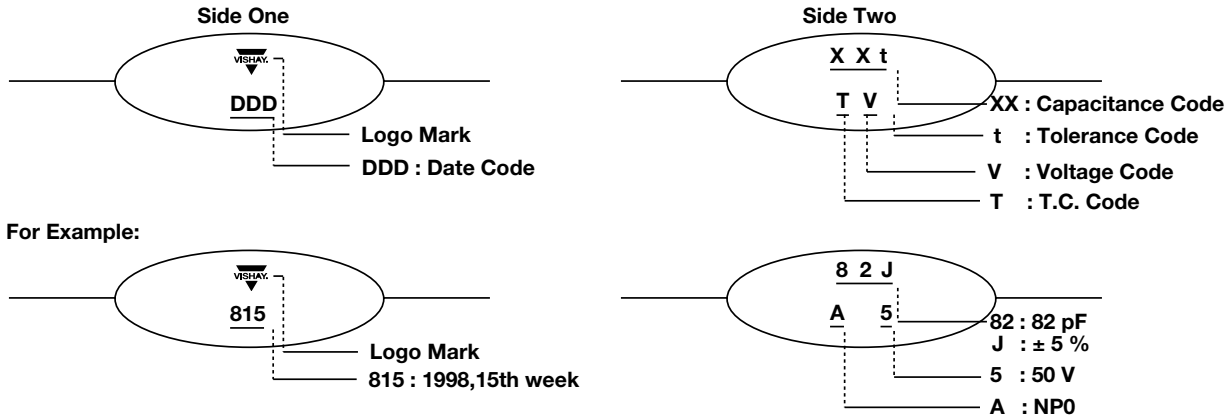
CAPACITOR DIMENSIONS (Unit: mm)								
SIZE CODE	**Wb**	**H**	**T**	**Lead Diameter**	**MAX. SEATING HEIGHT (SH)**			
					L2	**H5**	**K2**	**K5**
15	3.0-3.8	2.0-3.8	1.6-2.6	0.5±0.05	1.6	2.6	3.5	3.5
20	4.3-5.1	2.5-5.1	1.9-3.2	0.5±0.05	1.6	2.6	3.5	3.5

Marking

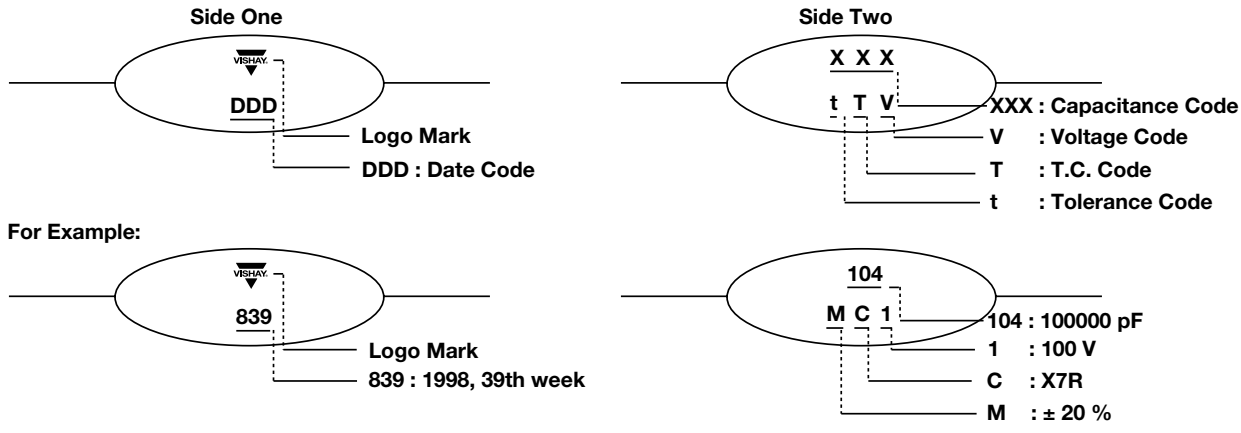
Mono-Axial Marking Code Description

DDD Date Code	XXX Capacitance Code	t Tolerance Code	V Voltage Code	T T.C. Code
The first digit is the year, the last two digits are the week **Examples:** 309 = 2003, 9th week 317 = 2003, 17th week	Two significant digits followed by one digit for the multiplier as given below. 0=x 1 2=x 100 4=x 10 000 1=x 10 3=x 1000 5=x 100 000	J = ± 5 % K = ± 10 % M = ± 20 %	1 = 100 V 2 = 200 V 5 = 50 V	A = C0G(NP0) C = X7R R = X8R

Capacitance Value < 100 pF



Capacitance Value ≥ 100 pF



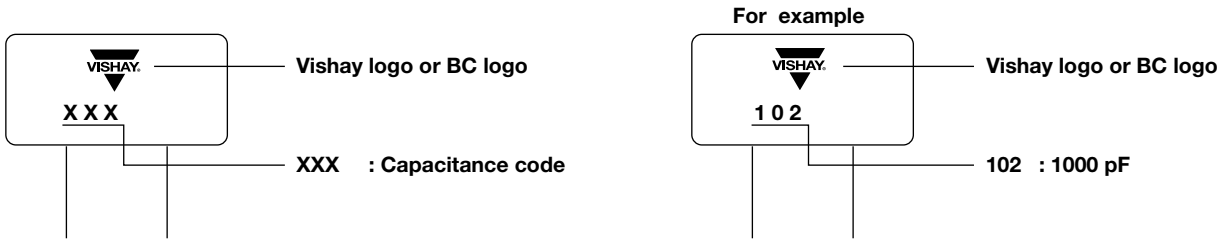
Note: VISHAY or BCcomponents logo can be marked on the products body.

Marking

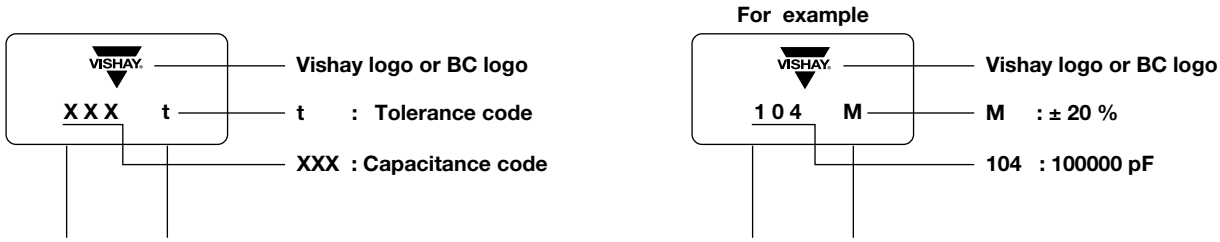
Mono-Kap

Size 15 Capacitance Value < 100 pF

Size 15 Capacitance Value ≥ 100 pF



Size 20 Capacitance Value ≥ 100 pF



Packaging

Mono-Axial

Reel Data

- A maximum of 0.5 % of the total number of capacitors per reel may be missing.
- A maximum of 1 consecutive vacant positions is followed by 6 consecutive components.
- Tape begins and ends with a minimum of 4 empty positions (50 mm tape).
- Maximum of 5 splicers per reel.

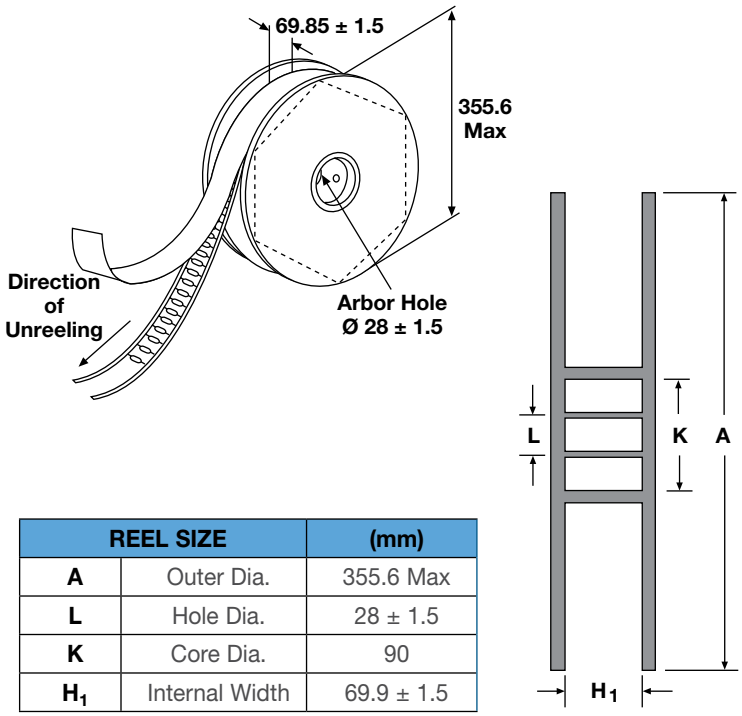
Ammopack Data

- A maximum of 0.5 % of the total number of capacitors per reel may be missing.
- A maximum of 1 consecutive vacant positions is followed by 6 consecutive components.
- Tape begins and ends with a minimum of 4 empty positions (180 mm tape).
- Maximum of 5 splicers per reel.
- The cumulative pitch tolerance over 20 consecutive units is not to excessed ± 1.0 mm.
- Lead space (F) shall be measured at (3.6 ± 0.5) mm from the capacitor seating plane.

Labelling

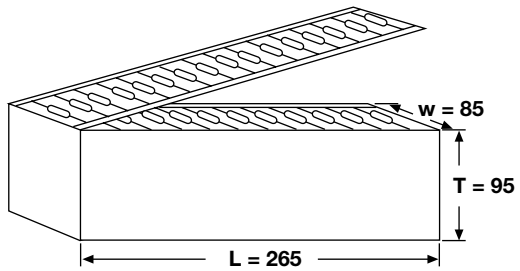
- Each reel is provided with a label showing the following details:
- Manufacturer, A style, capacitance, tolerance, batch number, quantity of components, rated voltage, dielectric.
- On special request other designations can be shown.
- See example.

Reel and Reel Dimensions



REEL SIZE		(mm)
A	Outer Dia.	355.6 Max
L	Hole Dia.	28 ± 1.5
K	Core Dia.	90
H_1	Internal Width	69.9 ± 1.5

Ammopack



Labelling Example

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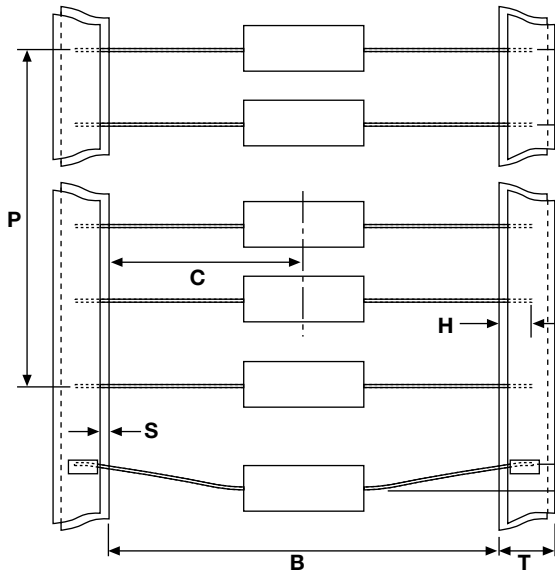
Packaging

Mono-Axial (continued)

Packaging Quantities and Box Dimensions

Packaging	Size Code	Smallest Packaging Quantity (SPQ)	Box Dimensions L x W x H (mm)
Tape on reel	15; 20	7000	370 x 370 x 90
Ammopack	15; 20	4000	265 x 85 x 95

Capacitors on Bandolier



Symbol	Parameter	Dimensions	
		mm	inch
B[1]	Inside tape spacing	52.4 ± 1.5	2.062 ± 0.059
C	Centre to tape spacing	± 0.8	± 0.031
P	Cumulative pitch, 6 consecutive components	± 1.5	± 0.059
A	Components pitch	5 ± 0.5	0.197 ± 0.015
M	Lead bend	< 1.2	< 0.047
S	Exposed adhesive	< 0.51	> 0.020
T	Tape width	6.35	0.25
H	Lead sandwich	> 3.96	> 0.156

Note:
1. Inside tape spacing 26.0 + 1.51/– 0.0 is available on request

Packaging

Mono-Kap

Reel Data

- A maximum of 0.5 % of the total number of capacitors per reel may be missing.
- A maximum of 1 consecutive vacant positions is followed by 6 consecutive components.
- Tape begins and ends with a minimum of 4 empty positions (50 mm tape).
- Maximum of 5 splicers per reel.

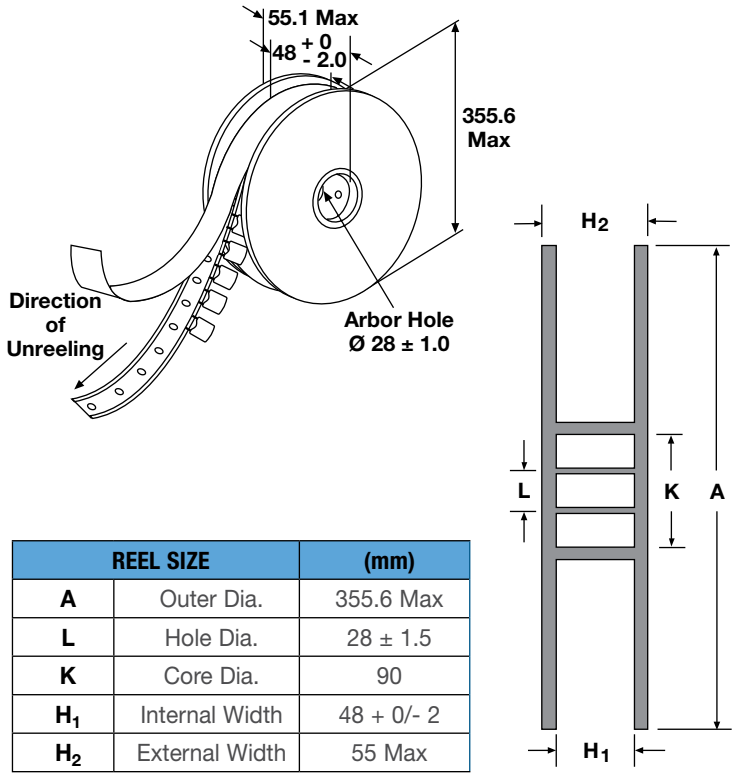
Ammopack Data

- A maximum of 0.5 % of the total number of capacitors per reel may be missing.
- A maximum of 1 consecutive vacant positions is followed by 6 consecutive components.
- Tape begins and ends with a minimum of 4 empty positions (50 mm tape).
- Maximum of 5 splicers per reel.
- The cumulative pitch tolerance over 20 consecutive units is not to excessed ± 1.0 mm.
- Lead space (F) shall be measured at (3.6 ± 0.5) mm from the capacitor seating plane.

Labelling

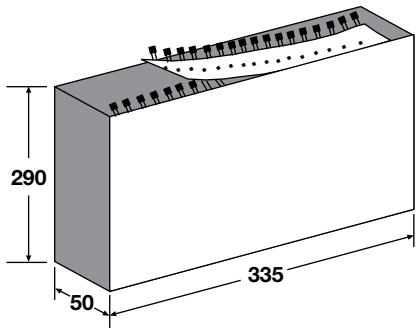
- Each reel is provided with a label showing the following details:
- Manufacturer, K style, capacitance, tolerance, batch number, quantity of components, rated voltage, dielectric.
- On special request other designations can be shown.
- See example.

Reel and Reel Dimensions

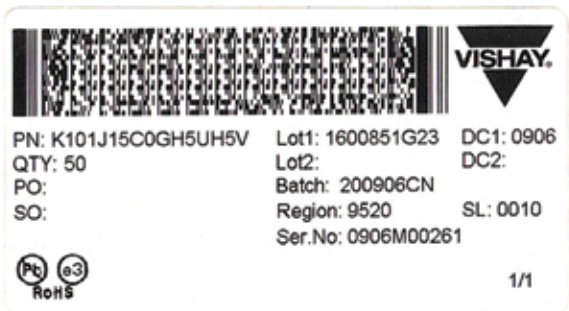


REEL SIZE		(mm)
A	Outer Dia.	355.6 Max
L	Hole Dia.	28 ± 1.5
K	Core Dia.	90
H_1	Internal Width	48 + 0/- 2
H_2	External Width	55 Max

Ammopack



Labelling Example



Packaging Quantities and Box Dimensions

Packaging	Size Code	Smallest Packaging Quantity (SPQ)	Box Dimensions L x W x H (mm)
Tape on reel	15	4000	370 x 370 x 60
	20	3000	
Ammopack	15; 20	2500	335 x 290 x 50
Bulk (Note 1)	15; 20	5000	245 x 120 x 65

Note:
1. SPQ contains one or a multiple of poly-bags, 1000 units per bag.

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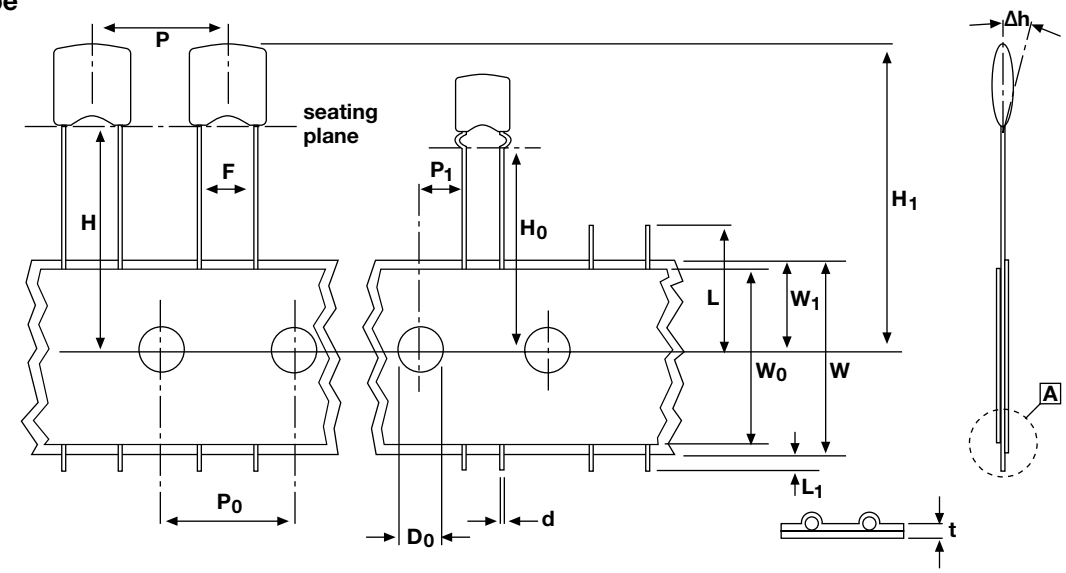
Packaging

Mono-Kap (continued)

Capacitors on Tape



Symbol	Parameter	Dimensions	
		mm	inch
L	Cut of length	≤ 11	≤ 0.443
L_1	Lead end protrusion	≤ 1	≤ 0.039
H	Height to seating plane (straight leads)	≥ 18	≥ 0.709
H_0	Height to seating plane (crimp leads)	16.0 ± 0.5	0.630 ± 0.020
H_1	Top of Component height	≤ 32	≤ 1.26
Δh	Body inclination	0.0 ± 1.0	0 ± 0.039
W	Carrier tape width	18.0 + 1.0/– 0.5	0.709 + 0.039/– 0.02
W_0	Hold down tape width	15.0 ref. (Note 2)	0.591 ref. (Note 2)
W_1	Sprocket hole position	9 + 0.075/– 0.5	0.354 + 0.03/– 0.02
F	1e lead space (Note 3)	2.5 + 0.60/– 0.40	0.10 + 0.024/– 0.016
	2e lead space (Note 3)	5.0 + 0.60/– 0.40	0.20 + 0.024/– 0.016
P_0	Sprocket hole pitch	12.7 ± 0.3	0.50 ± 0.012
P_1	1e sprocket hole centre to lead centre	5.08 ± 0.7	0.20 ± 0.028
	2e sprocket hole centre to lead centre	3.85 ± 0.7	0.015 ± 0.028
D_0	Sprocket hole diameter	4.0 ± 0.30	0.157 ± 0.012
t	Overall tape thickness	≤ 0.9	≤ 0.035
d	Wire lead diameter	0.50 ± 0.05	0.02 ± 0.002
P	Taping pitch	12.7 ref.	0.50 ref.

Note:
2. Tape width of 6 mm (0.236 inch) permissible.
3. e = 2.54 mm.

Product Range

Mono-Axial C0G Dielectric

C	Tol. (%)	Lb Max (mm)	ØD Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc				
100 pF	5	3.81	2.54	A101J15C0GF□□□□V
150 pF				A151J15C0GF□□□□V
220 pF				A221J15C0GF□□□□V
330 pF				A331J15C0GF□□□□V
470 pF				A471J15C0GF□□□□V
680 pF				A681J15C0GF□□□□V
1000 pF				A102J15C0GF□□□□V
1500 pF				A152J15C0GF□□□□V
2200 pF				A222J15C0GF□□□□V
3300 pF				A332J15C0GF□□□□V
3900 pF				A392J15C0GF□□□□V
4700 pF	5	5.08	3.05	A472J20C0GF□□□□V
6800 pF				A682J20C0GF□□□□V
0.01 µF				A103J20C0GF□□□□V
100 Vdc				
100 pF	5	3.81	3.81	A101J15C0GH□□□□V
150 pF				A151J15C0GH□□□□V
220 pF				A221J15C0GH□□□□V
330 pF				A331J15C0GH□□□□V
470 pF				A471J15C0GH□□□□V
680 pF				A681J15C0GH□□□□V
1000 pF				A102J15C0GH□□□□V
1500 pF				A152J15C0GH□□□□V
1800 pF				A182J15C0GH□□□□V
2200 pF		5.08	3.05	A222J20C0GH□□□□V
3300 pF				A332J20C0GH□□□□V
4700 pF				A472J20C0GH□□□□V
6800 pF				A682J20C0GH□□□□V
0.01 µF				A103J20C0GH□□□□V
200 Vdc				
100 pF	5	3.81	2.54	A101J15C0GK□□□□V
150 pF				A151J15C0GK□□□□V
220 pF				A221J15C0GK□□□□V
330 pF				A331J15C0GK□□□□V
470 pF				A471J15C0GK□□□□V
680 pF				A681J15C0GK□□□□V
1000 pF				A102J15C0GK□□□□V

Note:
1.The four blank digits are filled with lead configuration and packaging, and please refer to ordering information

Product Range

Mono-Axial X7R Dielectric

C	Tol. (%)	Lb Max (mm)	ØD Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc				
470 pF	10	3.81	2.54	A471K15X7RF□□□□V
680 pF				A681K15X7RF□□□□V
1000 pF				A102K15X7RF□□□□V
1500 pF				A152K15X7RF□□□□V
2200 pF				A222K15X7RF□□□□V
3300 pF				A332K15X7RF□□□□V
4700 pF				A472K15X7RF□□□□V
6800 pF				A682K15X7RF□□□□V
0.010 µF				A103K15X7RF□□□□V
0.015 µF				A153K15X7RF□□□□V
0.022 µF				A223K15X7RF□□□□V
0.033 µF				A333K15X7RF□□□□V
0.047 µF				A473K15X7RF□□□□V
0.068 µF				A683K15X7RF□□□□V
0.10 µF				A104K15X7RF□□□□V
0.15 µF				A154K15X7RF□□□□V
0.22 µF	10	5.08	3.05	A224K20X7RF□□□□V
0.33 µF				A334K20X7RF□□□□V
0.47 µF				A474K20X7RF□□□□V
0.68 µF		5.08	4.5[2]	A684K20X7RF□□□□V
1.0 µF				A105K20X7RF□□□□V
100 Vdc				
470 pF	10	3.81	3.81	A471K15X7RH□□□□V
680 pF				A681K15X7RH□□□□V
1000 pF				A102K15X7RH□□□□V
1500 pF				A152K15X7RH□□□□V
2200 pF				A222K15X7RH□□□□V
3300 pF				A332K15X7RH□□□□V
4700 pF				A472K15X7RH□□□□V
6800 pF				A682K15X7RH□□□□V
0.010 µF				A103K15X7RH□□□□V
0.015 µF				A153K15X7RH□□□□V
0.022 µF				A223K15X7RH□□□□V
0.033 µF				A333K15X7RH□□□□V
0.047 µF				A473K15X7RH□□□□V
0.068 µF				A683K15X7RH□□□□V
0.10 µF				A104K15X7RH□□□□V

Note:
1.The four blank digits are filled with lead configuration and packaging, and please refer to ordering information
2. Inserted with 1210 chip

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Product Range

Mono-Axial X7R Dielectric (continued)

C	Tol. (%)	Lb Max (mm)	ØD Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
100 Vdc (continued)				
0.15 µF	10	5.08	3.05	A154K20X7RH□□□□V
0.22 µF				A224K20X7RH□□□□V
0.33 µF		5.08	4.5[2]	A334K20X7RH□□□□V
0.47 µF				A474K20X7RH□□□□V
200 Vdc				
330 pF	10	3.81	3.81	A331K15X7RK□□□□V
470 pF				A471K15X7RK□□□□V
680 pF				A681K15X7RK□□□□V
1000 pF				A102K15X7RK□□□□V
1500 pF				A152K15X7RK□□□□V
2200 pF				A222K15X7RK□□□□V
3300 pF				A332K15X7RK□□□□V
4700 pF				A472K15X7RK□□□□V
6800 pF				A682K15X7RK□□□□V
0.010 µF				A103K15X7RK□□□□V
0.015 µF				A153K15X7RK□□□□V
0.022 µF				A223K15X7RK□□□□V
0.033 µF		5.08	3.05	A333K20X7RK□□□□V
0.047 µF				A473K20X7RK□□□□V
0.068 µF				A683K20X7RK□□□□V
0.10 µF				A683K20X7RK□□□□V

Note:
1.The four blank digits are filled with lead configuration and packaging, and please refer to ordering information
2. Inserted with 1210 chip

Product Range

Mono-Axial X8R Dielectric

C	Tol. (%)	Lb Max (mm)	ØD Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc				
470 pF	10	3.81	2.54	A471K15X8RF□□□□V
680 pF				A681K15X8RF□□□□V
1000 pF				A102K15X8RF□□□□V
1500 pF				A152K15X8RF□□□□V
2200 pF				A152K15X8RF□□□□V
3300 pF				A332K15X8RF□□□□V
4700 pF				A472K15X8RF□□□□V
6800 pF				A682K15X8RF□□□□V
0.010 µF				A103K15X8RF□□□□V
0.015 µF				A153K15X8RF□□□□V
0.022 µF				A223K15X8RF□□□□V
0.033 µF				A333K15X8RF□□□□V
0.047 µF				A473K15X8RF□□□□V
0.056 µF				A563K15X8RF□□□□V
0.068 µF		5.08	3.05	A683K20X8RF□□□□V
0.10 µF				A104K20X8RF□□□□V
0.15 µF		5.08	4.5[2]	A154K20X8RF□□□□V
0.22 µF				A224K20X8RF□□□□V
0.33 µF				A334K20X8RF□□□□V

Note:
1. The four blank digits are filled with lead configuration and packaging, and please refer to ordering information
2. Inserted with 1210 chip

Product Range

Mono-Kap C0G Dielectric

C	Tol. (%)	W_b Max (mm)	H Max (mm)	T Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc					
100 pF	5	3.81	3.81	2.54	K101J15C0GF□□□□V
150 pF					K151J15C0GF□□□□V
220 pF					K221J15C0GF□□□□V
330 pF					K331J15C0GF□□□□V
470 pF					K471J15C0GF□□□□V
680 pF					K681J15C0GF□□□□V
1000 pF					K102J15C0GF□□□□V
1500 pF					K152J15C0GF□□□□V
2200 pF					K222J15C0GF□□□□V
3300 pF					K332J15C0GF□□□□V
3900 pF					K392J15C0GF□□□□V
4700 pF	5	5.08	5.08	3.18	K472J20C0GF□□□□V
6800 pF					K682J20C0GF□□□□V
0.01 µF					K103J20C0GF□□□□V
100 Vdc					
100 pF	5	3.81	3.81	2.54	K101J15C0GH□□□□V
150 pF					K151J15C0GH□□□□V
220 pF					K221J15C0GH□□□□V
330 pF					K331J15C0GH□□□□V
470 pF					K471J15C0GH□□□□V
680 pF					K681J15C0GH□□□□V
1000 pF					K102J15C0GH□□□□V
1500 pF					K152J15C0GH□□□□V
1800 pF					K182J15C0GH□□□□V
2200 pF		5.08	5.08	3.18	K222J20C0GH□□□□V
3300 pF					K332J20C0GH□□□□V
4700 pF					K472J20C0GH□□□□V
6800 pF					K682J20C0GH□□□□V
0.01 µF					K103J20C0GH□□□□V
200 Vdc					
100 pF	5	3.81	3.81	2.54	K101J15C0GK□□□□V
150 pF					K151J15C0GK□□□□V
220 pF					K221J15C0GK□□□□V
330 pF					K331J15C0GK□□□□V
470 pF					K471J15C0GK□□□□V
680 pF					K681J15C0GK□□□□V
1000 pF					K102J15C0GK□□□□V

Note: 1. The four blank digits are filled with lead configuration and packaging, and please refer to ordering information

Product Range

Mono-Kap X7R Dielectric

C	Tol. (%)	W_b Max (mm)	H Max (mm)	T Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc					
470 pF	10	3.81	3.81	2.54	K471K15X7RF□□□□V
680 pF					K681K15X7RF□□□□V
1000 pF					K102K15X7RF□□□□V
1500 pF					K152K15X7RF□□□□V
2200 pF					K222K15X7RF□□□□V
3300 pF					K332K15X7RF□□□□V
4700 pF					K472K15X7RF□□□□V
6800 pF					K682K15X7RF□□□□V
0.010 µF					K103K15X7RF□□□□V
0.015 µF					K153K15X7RF□□□□V
0.022 µF					K223K15X7RF□□□□V
0.033 µF					K333K15X7RF□□□□V
0.047 µF					K473K15X7RF□□□□V
0.068 µF					K683K15X7RF□□□□V
0.10 µF					K104K15X7RF□□□□V
0.15 µF					K154K15X7RF□□□□V
0.22 µF	10	5.08	5.08	3.18	K224K20X7RF□□□□V
0.33 µF					K334K20X7RF□□□□V
0.47 µF					K474K20X7RF□□□□V
0.68 µF					K684K20X7RF□□□□V
1.0 µF					K105K20X7RF□□□□V
100 Vdc					
470 pF	10	3.81	3.81	2.54	K471K15X7RH□□□□V
680 pF					K681K15X7RH□□□□V
1000 pF					K102K15X7RH□□□□V
1500 pF					K152K15X7RH□□□□V
2200 pF					K222K15X7RH□□□□V
3300 pF					K332K15X7RH□□□□V
4700 pF					K472K15X7RH□□□□V
6800 pF					K682K15X7RH□□□□V
0.010 µF					K103K15X7RH□□□□V
0.015 µF					K153K15X7RH□□□□V
0.022 µF					K223K15X7RH□□□□V
0.033 µF					K333K15X7RH□□□□V
0.047 µF					K473K15X7RH□□□□V
0.068 µF					K683K15X7RH□□□□V
0.10 µF					K104K15X7RH□□□□V

Note:
1. The four blank digits are filled with lead configuration and packaging, and please refer to ordering information

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Product Range

Mono-Kap X7R Dielectric (continued)

C	Tol. (%)	W_b Max (mm)	H Max (mm)	T Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
100 Vdc (continued)					
0.15 µF	10	5.08	5.08	3.18	K154K20X7RH□□□□V
0.22 µF					K224K20X7RH□□□□V
0.33 µF					K334K20X7RH□□□□V
0.47 µF					K474K20X7RH□□□□V
200 Vdc					
330 pF	10	3.81	3.81	2.54	K331K15X7RK□□□□V
470 pF					K471K15X7RK□□□□V
680 pF					K681K15X7RK□□□□V
1000 pF					K102K15X7RK□□□□V
1500 pF					K152K15X7RK□□□□V
2200 pF					K222K15X7RK□□□□V
3300 pF					K332K15X7RK□□□□V
4700 pF					K472K15X7RK□□□□V
6800 pF					K682K15X7RK□□□□V
0.010 µF					K103K15X7RK□□□□V
0.015 µF					K153K15X7RK□□□□V
0.022 µF					K223K15X7RK□□□□V
0.033 µF		5.08	5.08	3.18	K333K20X7RK□□□□V
0.047 µF					K473K20X7RK□□□□V
0.068 µF					K683K20X7RK□□□□V
0.10 µF					K104K20X7RK□□□□V

Note:
1. The four blank digits are filled with lead configuration and packaging, and please refer to ordering information

Product Range

Mono-Axial X8R Dielectric

C	Tol. (%)	W_b Max (mm)	H Max (mm)	T Max (mm)	Clear Text Code without Lead configuration and Packaging[1]
50 Vdc					
470 pF	10	3.81	3.81	2.54	K471K15X8RF□□□□V
680 pF					K681K15X8RF□□□□V
1000 pF					K102K15X8RF□□□□V
1500 pF					K152K15X8RF□□□□V
2200 pF					K222K15X8RF□□□□V
3300 pF					K332K15X8RF□□□□V
4700 pF					K472K15X8RF□□□□V
6800 pF					K682K15X8RF□□□□V
0.010 µF					K103K15X8RF□□□□V
0.015 µF					K153K15X8RF□□□□V
0.022 µF					K223K15X8RF□□□□V
0.033 µF					K333K15X8RF□□□□V
0.047 µF					K473K15X8RF□□□□V
0.056 µF					K563K15X8RF□□□□V
0.068 µF	10	5.08	5.08	3.18	K683K20X8RF□□□□V
0.10 µF					K104K20X8RF□□□□V
0.15 µF					K154K20X8RF□□□□V
0.22 µF					K224K20X8RF□□□□V
0.33 µF					K334K20X8RF□□□□V

Note:
1. The four blank digits are filled with lead configuration and packaging, and please refer to ordering information

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