Capacitors - AEC-Q200 Approved

Multilayer Ceramic Dipped Axial and Radial Capacitors for Automotive Applications

TABLE OF CONTENTS

Applications 2
General Information 3
Ordering Information 4
Electrical Data and Dielectric Characteristics 5
Dimensions Data 6
Marking 7
- Mono-Axial Marking Code Description 7
- Mono-Kap 8

Packaging 9
- Mono-Axial 9
- Mono-Kap 11

Product Range 13
- Mono-Axial C0G Dielectric 13
- Mono-Axial X7R Dielectric 14
- Mono-Axial X8R Dielectric 16
- Mono-Kap C0G Dielectric 17
- Mono-Kap X7R Dielectric 18
- Mono-Axial X8R Dielectric 20

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MULTILAYER CERAMIC DIPPED AXIAL AND RADIAL CAPACITORS

for Automotive Applications

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Applications

Powertrain

- Engine Control Unit
- Common Rail Diesel Electrical Control
- Turbo Charger Control Unit
- Piezoelectric-Injection Driver
- Engine Sensors
- Electrical Fan Control
- Electrical Water Pump
- Ignition Electrical Drive
- Board Load-Control Unit
- Integrated Starter Generator
- Boardnet Management

Lighting Systems

- Headlight Leveling Control and Advanced Front Lighting Cleaning System
- Sensors for Night Vision Systems and Fog Detection
- LED Lighting
- Ambient Lighting
- HID Electrical

Chassis

- Active Safety
- Sensors
- EAGA, Electrical Catalytic Converter, Diesel Particle Filter
- Electrical Transmission
- Electric Park Brake
- Active Suspension
- Electrical Power Steering
- Electrical Hydraulic Power Steering
- Tire Pressure Monitoring

Body and Comfort

- Sensors
- Climate Control
- Seat Adjust and Memory
- Immobilizer and Security Systems
- Dashboard and Interior Illumination
- HVAC—Heating, Ventilating, Air Conditioning
- Multimedia Systems
- Passive Safety
- Reversible Wiper Drives
- Keyless or Passive Entry
- Door / Window / Sunroof Control

Driver Information

- Driver Information System
- GPS Car Navigation and Audio System
- SDARS / Antenna / Amplifier System
- Bluetooth Communication
- Lidar Sensor

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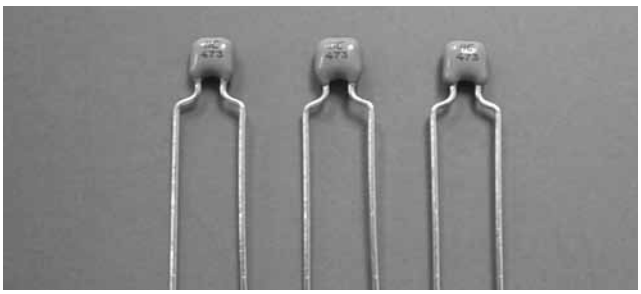
General Information

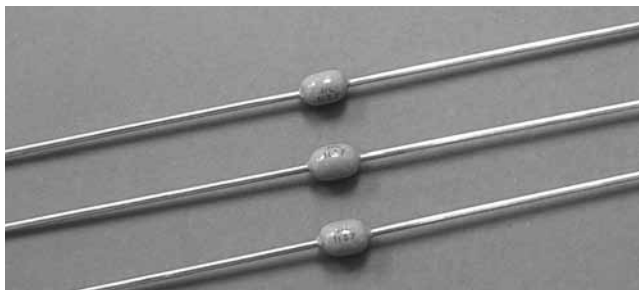
For more than 20 years, Vishay Vitramon has supported the automotive industry with robust, highly reliable MLCCs that have made it a leader in this segment. All Vishay Vitramon MLCCs are manufactured in precious metal technology (PMT/NME) with a wet build process. They are qualified according to AEC-Q200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





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

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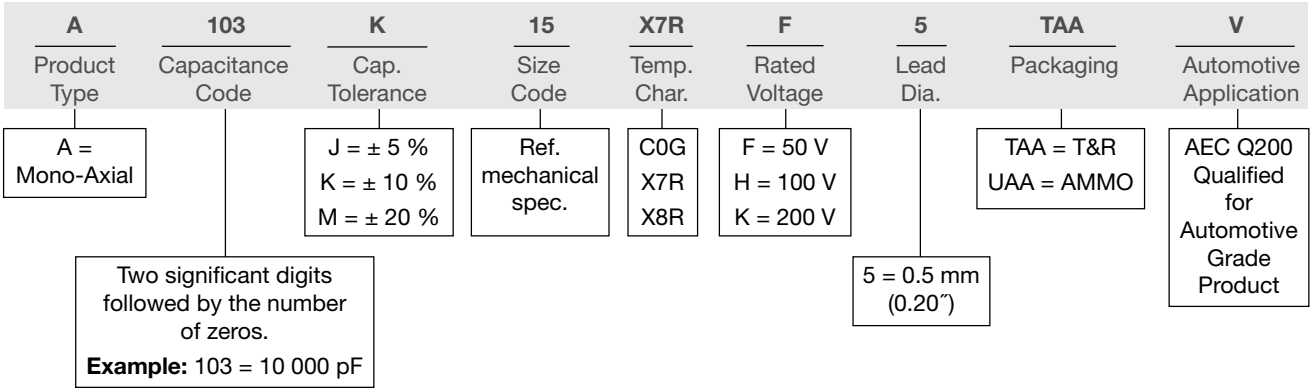
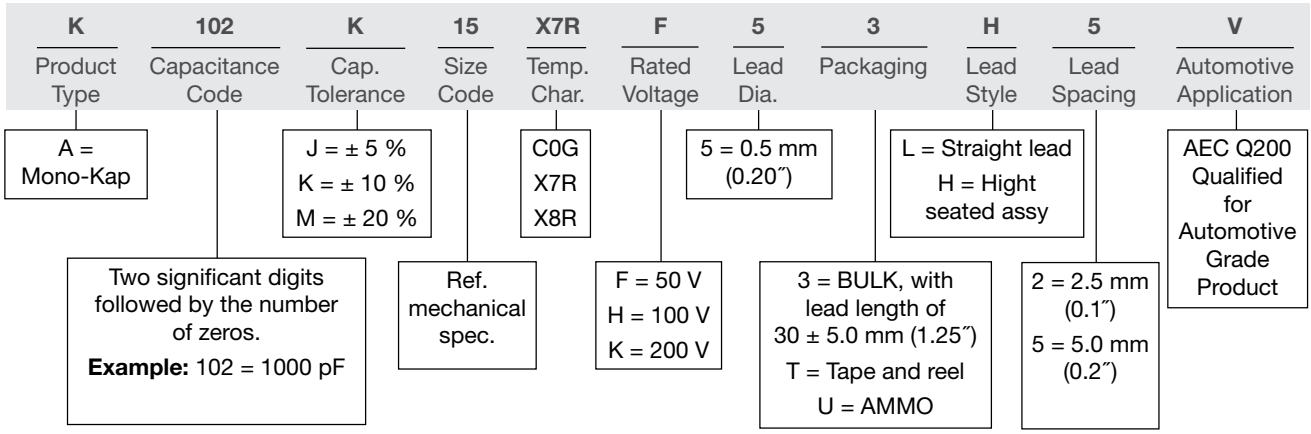
Ordering Information

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

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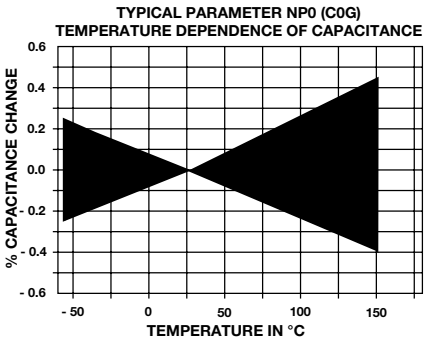
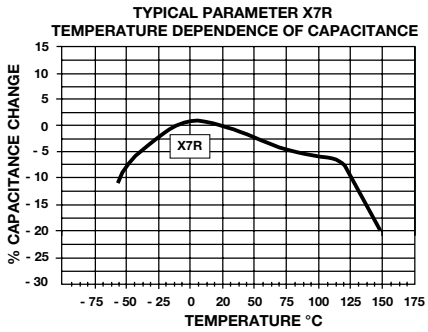
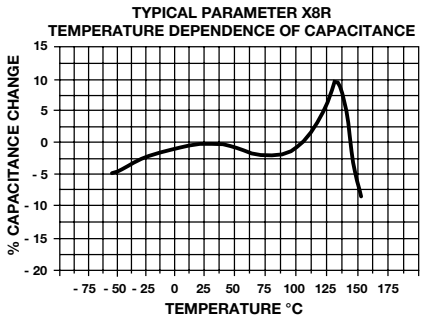
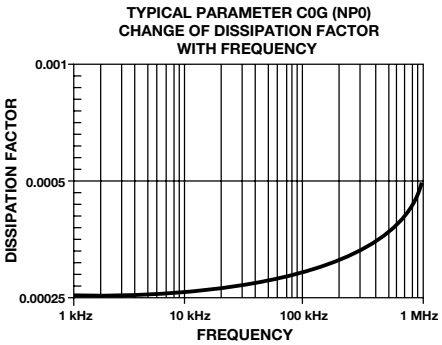
Electrical Data and Dielectric Characteristics

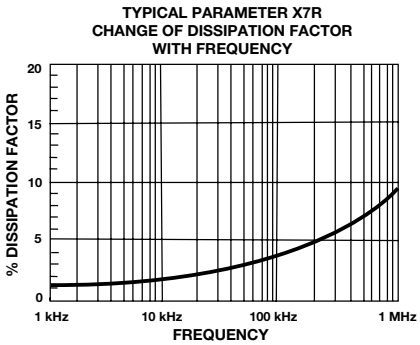


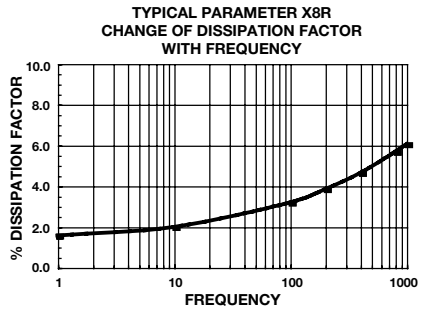


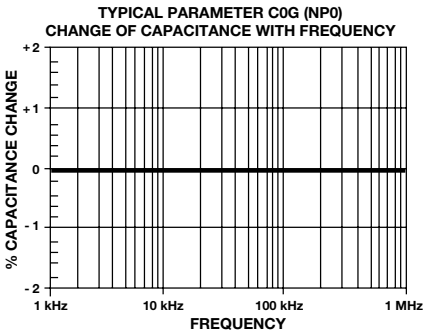


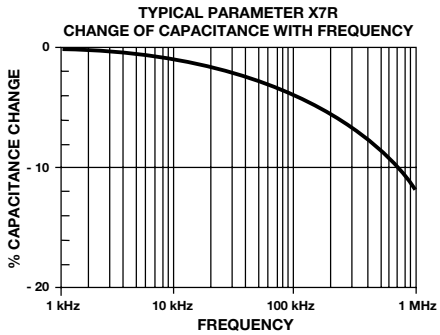
Remark: NP0 and X7R are defined temperature up to + 125 °C

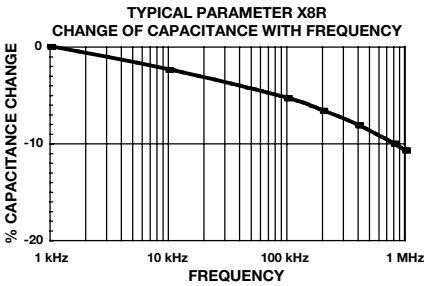












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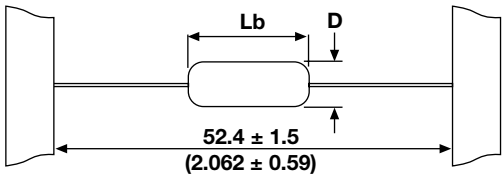
Dimensions Data

Mono-Axial

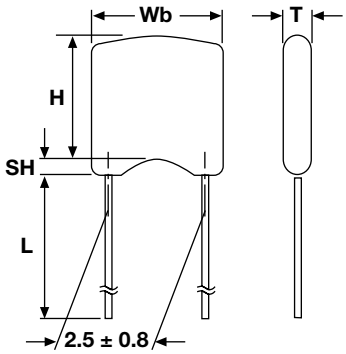


Capacitor Dimensions and Weight				
Size Code	**Lb_{max} (1)**	**$ØD_{max}$ (1)**	**Lead diameter (mm)**	**Weight (g)**
15	0.15 (3.8)	0.10 (2.5)	0.5 ± 0.05	≈ 0.14
20	0.20 (5.0)	0.12 (3.0)	0.5 ± 0.05	≈ 0.15

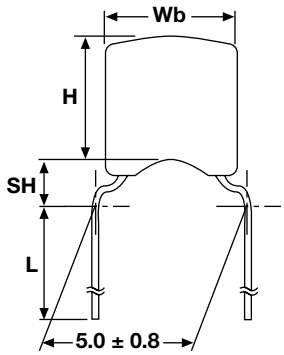
Note: 1. Dimensions between parentheses are in millimeters.
2. If inserted with 1210 chip, then $Ød_{max}$ is 4.5 mm (0.18").

Mono-Kap

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

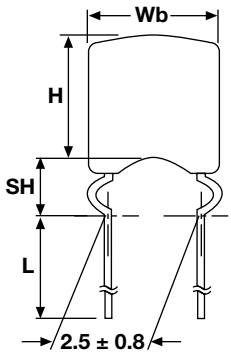


H5
Component outline for
Lead spacing 5.0 ± 0.8 mm
(flat bent leads)

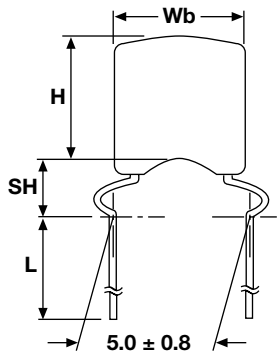


L2 and H5 are preferred styles

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

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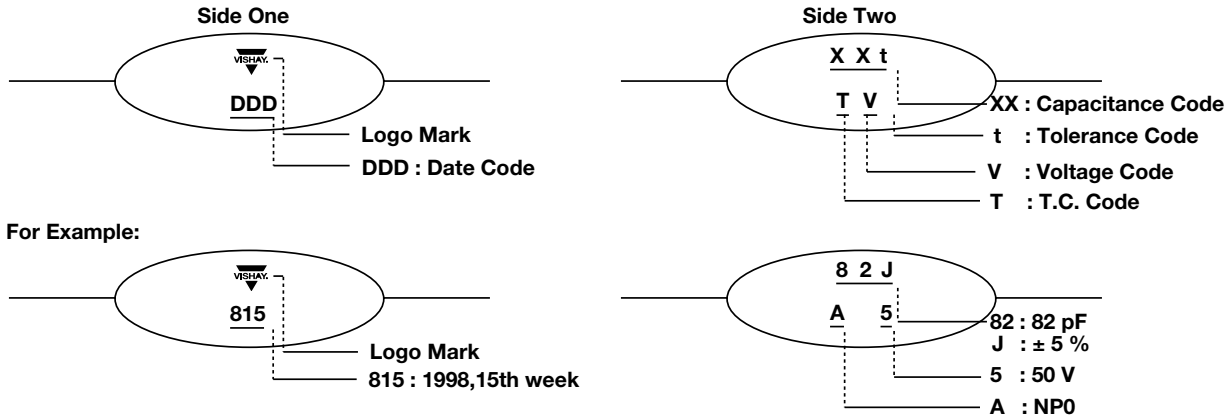
Marking

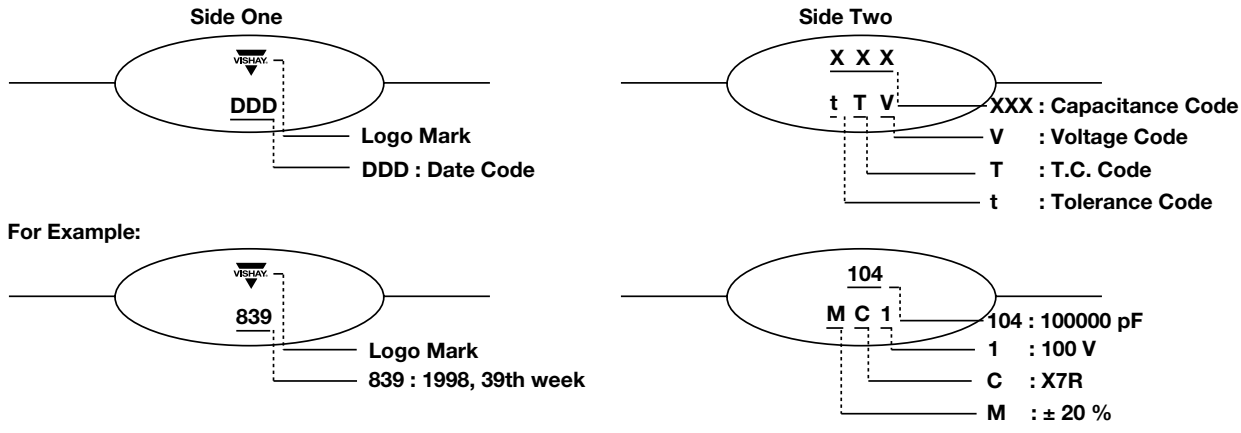
Mono-Axial Marking Code Description

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.

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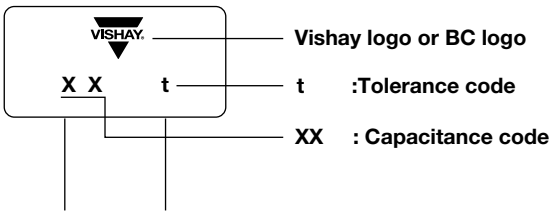
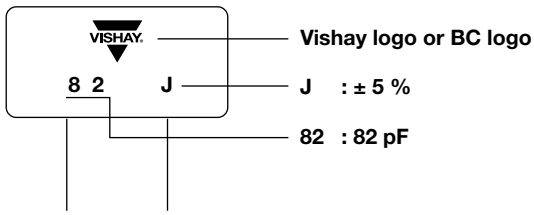
Marking

Mono-Kap

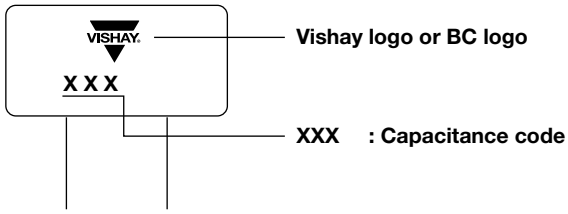
Size 15 Capacitance Value < 100 pF



For example



Size 15 Capacitance Value ≥ 100 pF



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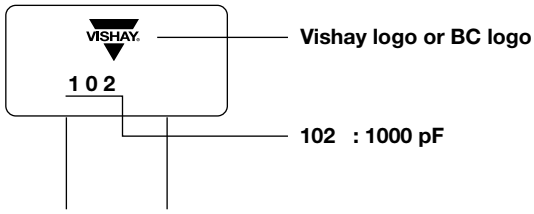
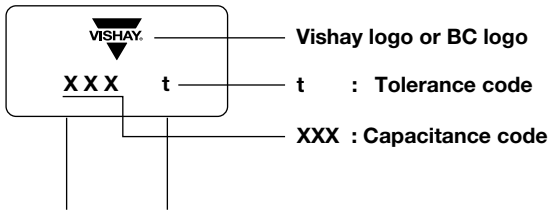


Size 20 Capacitance Value ≥ 100 pF



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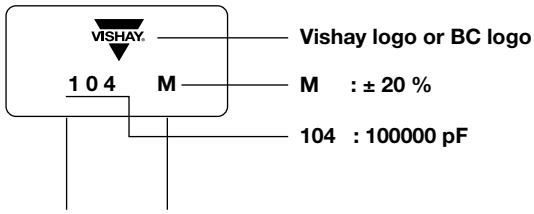

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Packaging

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.

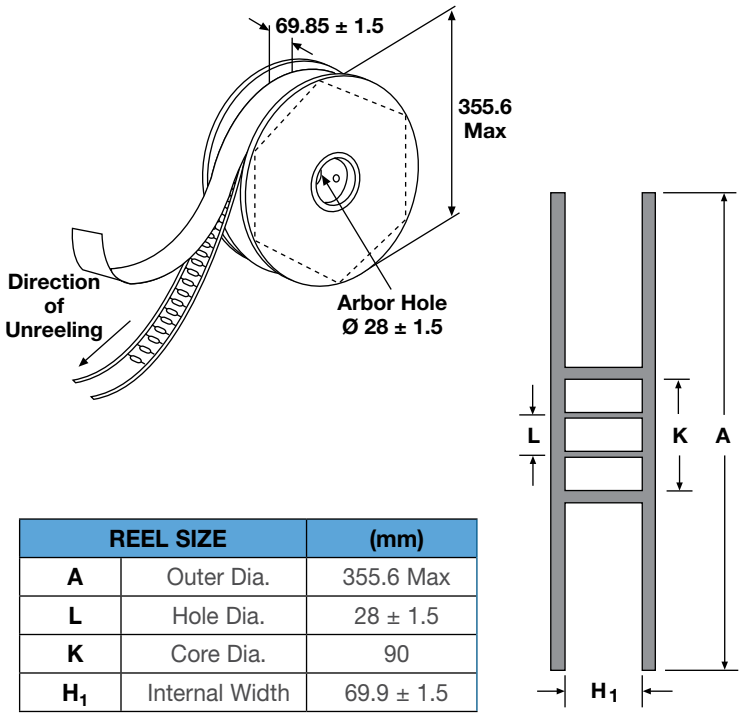
Ammopack Data

- 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

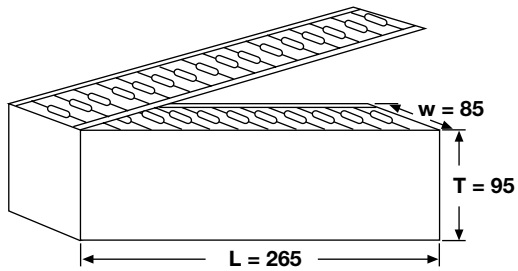
- Each reel is provided with a label showing the following details:
- Manufacturer, A style, capacitance, tolerance, batch number, quantity of components, rated voltage, dielectric.
- On special request other designations can be shown.
- See example.

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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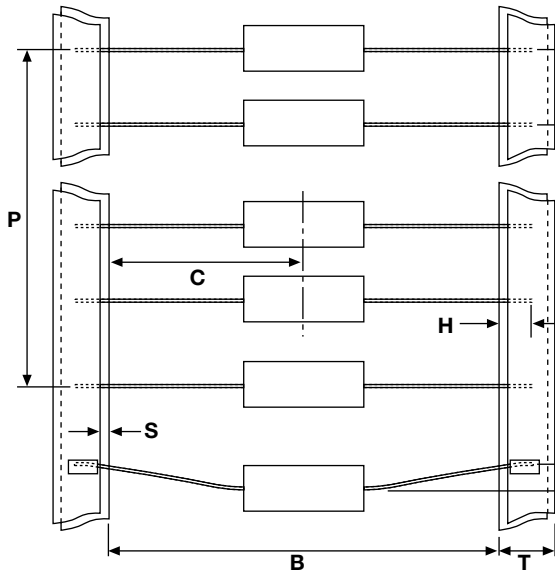
Packaging

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

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Capacitors - AEC-Q200 Approved

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.

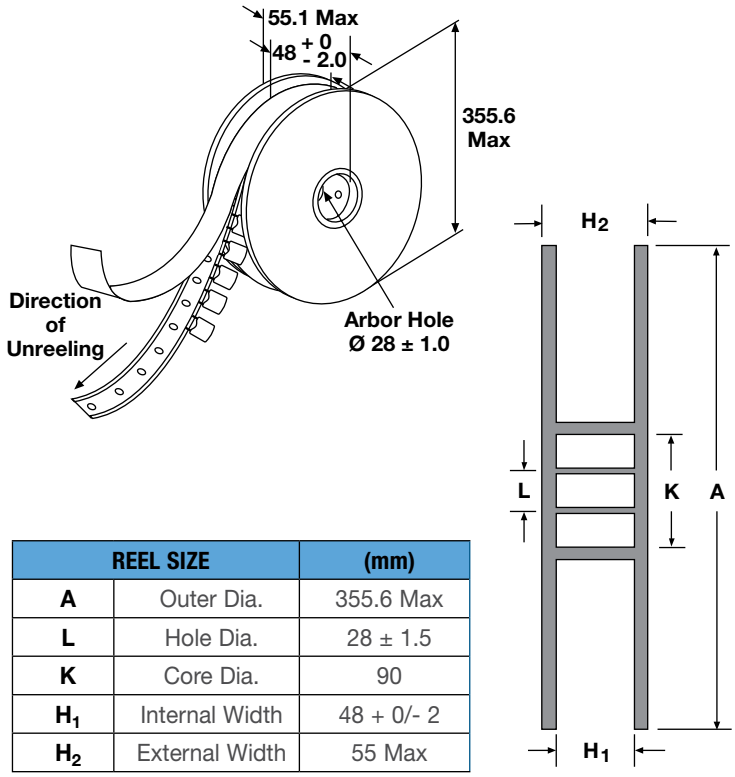
Ammopack Data

- 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

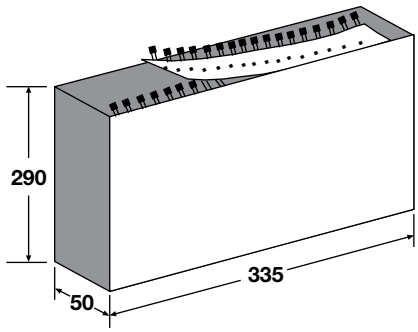
- Each reel is provided with a label showing the following details:
- Manufacturer, K style, capacitance, tolerance, batch number, quantity of components, rated voltage, dielectric.
- On special request other designations can be shown.
- See example.

Reel and Reel Dimensions

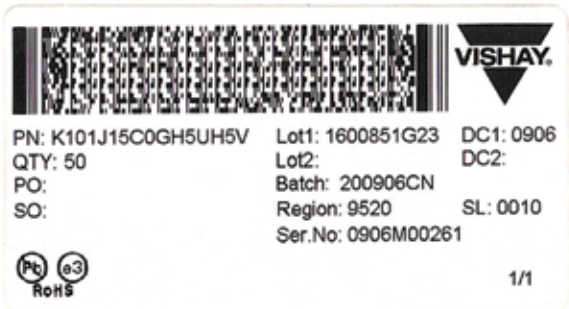


REEL SIZE		(mm)
A	Outer Dia.	355.6 Max
L	Hole Dia.	28 ± 1.5
K	Core Dia.	90
H_1	Internal Width	48 + 0/- 2
H_2	External Width	55 Max

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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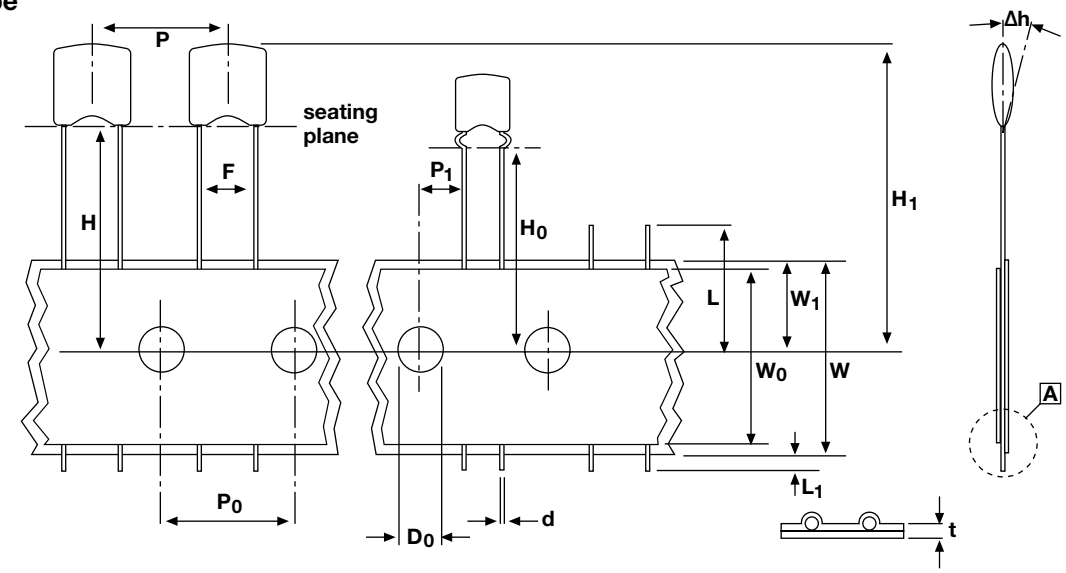
Capacitors - AEC-Q200 Approved

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.

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Capacitors - AEC-Q200 Approved

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:
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Capacitors - AEC-Q200 Approved

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:
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2. Inserted with 1210 chip

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Capacitors - AEC-Q200 Approved

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

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Capacitors - AEC-Q200 Approved

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

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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

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Capacitors - AEC-Q200 Approved

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

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Capacitors - AEC-Q200 Approved

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

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Capacitors - AEC-Q200 Approved

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:
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LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

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