Radial Leaded Ceramic Disc Capacitors Safety Standard Recognized, C900, Encapsulated, AC Type, X1 400 VAC/Y2 250 VAC (Industrial Grade)



Overview

KEMET's 900 encapsulated radial leaded ceramic disc capacitors are specifically designed for interference-suppression AC line filtering applications. Having internationally recognized safety certifications, these capacitors are well-suited for applications that require keeping potentially disruptive or damaging line transients and EMI out of susceptible equipment. They are also an ideal solution when needing to suppress line disturbances at the source.

Safety Certified Capacitors are classified as either X and/ or Y capacitors. Class X capacitors are primarily used in line-to-line (across-the-line) applications. In this application, there is no danger of electric shock to humans should the capacitor fail, but could result in a risk of fire. The class Y capacitor is primarily used in line-to-ground (line by-pass) applications. In this application, failure of the capacitor could lead to danger of electric shock. With a working voltage of 400 VAC in line-to-line (Class X) and 250 VAC in line-to-ground (Class Y) applications, these safety capacitors meet the impulse test criteria outlined in IEC Standard 60384. Meeting subclass X1 and Y2 requirements, these devices are certified to withstand impulses up to 4 KV (X1) and 5 KV (Y2) respectively. These encapsulated devices also meet the flame test requirements outlined in UL Standard 94V-0.



Ordering Information

C 9	8	1	U	103	Μ	Y	V	D	Α	A	7317
Ceramic Series	Body Diameter	Lead Spacing ^{1,2,4}	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/ Temp. Char.	Design	Lead Config. ^{1,3,4}	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 6 = 13.0 mm 8 = 15.0 mm	5 = 5.0 mm 7 = 7.5 mm 1 = 10.0 mm	U = Safety	Two significant digits and number of zeroes	J = ±5% K = ±10% M = ±20%	Y = X1 400 VAC/ Y2 250 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside Kink D = Inside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

¹ Due to a high risk of arcing, "Inside Kink" lead configuration cannot be combined with the 5 mm lead spacing option. The "Inside Kink" option is only available on capacitors with lead spacing of 7.5 mm or greater. A potential for arcing may exist when combining the "Inside Kink" lead configuration with a 7.5 mm lead spacing option, especially in high humidity environments and/or when exposure to voltages and transients may impact creepage and clearance requirements.

² Capacitor body diameter will limit available lead spacing and packaging options. See "Dimensions" and "Product Ordering Codes and Ratings" sections of this document to determine availability.

- ³ "Vertical Kink", "Outside Kink" and "Inside Kink" lead configurations cannot be combined with the bulk/20 mm lead length option (WL20). 20 mm lead length is only available on capacitors with straight leads (lead configuration ordering code "A"). For nonstandard lead length inquiries, please contact KEMET.
- ⁴ Bulk packaging lead length availability is dependent upon "Lead Configuration" and "Lead Spacing." See "Dimensions" section of this document to verify availability of a specific lead length option. For nonstandard lead length inquiries, please contact KEMET.

One world. One KEMET

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Packaging C-Spec Ordering Options Table

Packaging Type	Lead Length (mm) ^{2,3}	Packaging Ordering Code (C-Spec)		
Ammo Pack	20.0 +1.5/-1.0 (straight leads) 18.0 +2.0/-0 (preformed leads¹)	7317		
	3.0 ±1.0	WL30		
	3.5 ±1.0	WL35		
Bulk Bag	4.0 ±1.0	WL40		
Bulk bay	4.5 ±1.0	WL45		
	5.0 ±1.0	WL50		
	20.0 minimum ⁴	WL20		

¹ Preformed (crimped) lead configurations include "Vertical Kink", "Outside Kink" and "Inside Kink". See "Lead Configurations" and "Ordering Information" sections of this document for further details.

² "Vertical Kink", "Outside Kink" and "Inside Kink" lead configurations cannot be combined with the bulk/20 mm lead length option (WL20). 20 mm lead length is only available on capacitors with straight leads (lead configuration ordering code "A"). For nonstandard lead length inquiries, please contact KEMET.

³ For nonstandard lead length inquiries, please contact KEMET.

⁴Lead length of 20.0 mm minimum only available for straight leads.

Benefits

- Safety standard recognized (IEC 60384–14)
- Reliable operation up to 125°C
- Class X1/Y2
- 5.0 mm, 7.5 mm, and 10 mm lead spacing
- Lead (Pb)-free and RoHS Compliant
- · Halogen-free
- Capacitance offerings ranging from 10 pF up to 10 nF
- Available capacitance tolerances of ±5%, ±10%, and ±20%
- · High reliability
- Preformed (crimped) or straight lead configurations
- Non-polar device, minimizing installation concerns
- Encapsulation meets flammability standard UL 94V-0

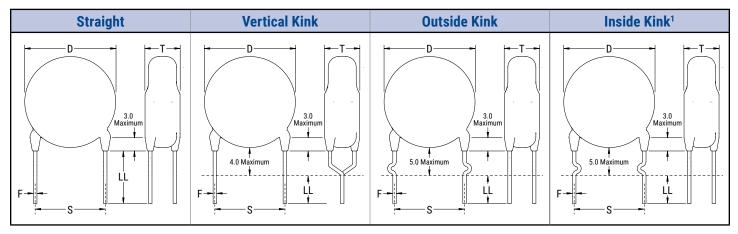
Applications

Typical applications include:

- Line-to-line (Class X) filtering
- · Line-to-ground (Class Y) filtering
- · Antenna coupling
- Primary and secondary coupling (switching power supplies)
- · Line disturbances suppression (motors and motor controls, relays, switching power supplies, and inverters)



Lead Configurations



¹ Due to a high risk of arcing, the "Inside Kink" lead configuration option cannot me combined with 5 mm lead spacing ("S" dimension above). The "Inside Kink" option is only available on devices with lead spacing of 7.5 mm or 10 mm.

Dimensions – Millimeters

	Lead	S	Lead	D	т	е	ØF
Lead Configuration	Lead Onfiguration Lead		Spacing Tolerance	Body Diameter ²	Body Thickness	Lead Meniscus	Lead Diameter
		5.0	±0.8				
Straight	А	7.5	±1.0				
		10.0	±1.0	- See Table 1 –			
	В	5.0	±0.8				
Vertical Kink (Preformed)		7.5	±1.0				
(10.0	±1.0	"Product Or	dering Codes	3.0 maximum	0.55 ±0.1
		5.0	±0.8	and R	atings"		
Outside Kink (Preformed)	С	7.5	±1.0				
		10.0	±1.0				
Inside Kink	D	7.5	±1.0				
(Preformed)	D	10.0	±1.0	-			

¹ Lead Configuration is identified in the 13th character of the ordering code. See "Lead Configuration" and "Ordering Information" sections of this document for further details.

² Body diameter of capacitor will limit available lead spacing and packaging options. See "Product Ordering Codes and Ratings" sections of this document for further details.



Approval Standard and Certification No.

Safety Standard	Standard No.	Subclass	Working Voltage	Certificate No.
VDE		X1	400 VAC	40026415
(ENEC)	IEC 60384-14	Y2	250 VAC	40036415
UL	UL 60384-14 and	X1	400VAC	F256200
CAN/CSA	E60384-14	Y2	250VAC	E356389

These devices are VDE/ENEC and UL recognized for antenna coupling and AC line-to-line (class X) and line-to-ground (class Y) applications per IEC60384–14 and UL 60384–14.

Environmental Compliance

These devices are Halogen free and RoHS Compliant. They meet all requirements set forth by both EU and China RoHS directives.



General Specifications/Performance Characteristics

Dielectric/Temperature Characteristic	SL	Y5P	Y5U	Y5V	
Operating Temperature Range:		-40°C to +125	5°C		
Capacitance Change with Reference to +25°C and 0 VDC Applied (TCC):	-1,000 ~ +350 ppm/°C	±10%	+20%/-55%	~ +30%/-80%	
Dielectric Withstanding Voltage (7.5 mm and 10 mm Lead Spacing) ¹		2,600 VAC (60±5 seconds at 25°C)			
Dielectric Withstanding Voltage (5 mm Lead Spacing) ¹	2,000 VAC (60±5 seconds at 25°C)				
Quality Factor (Q)	30 pF and above: ≥ 1,000 Below 30 pF: ≥ 400 +(20xC)*	Se	ee "Dissipation Facto	or"	
Dissipation Factor (tanδ) at +25°C²	See "Quality Factor"	2.50%	2.50%	5.0%	
Insulation Resistance (IR) Limit at +25°C	(500 V	10,000 MΩ Minimum DC applied for 60±5 seconds at 25°C)			

*C = Nominal capacitance

¹ The distance between the adjacent leads of the component (also referred to as "lead spacing") governs Dielectric Withstanding Voltage (DWV) limit. ² Capacitance and Dissipation Factor (DF) measured under the following conditions:

SL: 1 MHz ± 100 kHz and 1.0 ±0.2 Vrms

X5P, Y5U and Y5V: 1 kHz ± 50 Hz and 1.0 ±0.2 Vrms

Note: When measuring capacitance, it is important to ensure the set voltage level is held constant. The HP4284 and Agilent E4980 have a feature known as Automatic Level Control (ALC). The ALC feature should be switched to "ON."



Table 1 – Product Ordering Codes and Ratings

Contract Park National Park National Distribution (Maximum) Diameter Packaging Packaging C30(1)0100.ytS0(2)A(3) 10 pF (Maximum) (Maximum) Diameter Packaging Packaging C30(1)0100.ytS0(2)A(3) 10 pF (Maximum) (Maximum) Diameter Packaging Packaging C30(1)0102.ytS0(2)A(3) 10 pF (Second State Stat					Di	mensions (mm)		Lead S	pacing
Contruit20.vrs0(2)(3) 12 pF Contrust Specific Contrust		Part Number	Capacitance					-	Ammo Packaging
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SL Cond(1)/US0/VSD(2)A(3) 36 pF ±5% 5.0 0.55 ±0.1 0.55 ±0.1 0.51 mm, or 10 mm C30(1)/US0/VSD(2)A(3) 50 pF 8.0									•
Cond () U390, USD (2)A(2) 39 pF 00 C00 () U370, USD (2)A(3) 50 pF 70 10 mm C00 () U300, USD (2)A(3) 50 pF 8.0 10 mm C01 () U300, USD (2)A(3) 56 pF 8.0 10 mm C01 () U300, USD (2)A(3) 56 pF 8.0 10 mm C01 () U300, USD (2)A(3) 56 pF 8.0 10 mm C01 () U300, USD (2)A(3) 56 pF 9.0 10.0 C01 () U300, USD (2)A(3) 75 pF 9.0 10.0 C020 () U315 (VYD (2)A(3) 100 pF 10.0 10.0 C00 () U10 (VYD (2)A(3) 100 pF 7.0 5.0 0.55 ±0.1 C00 () U10 (VYD (2)A(3) 220 pF 9.0 5.0 0.55 ±0.1 5.0 mm, 7.5 mm, or 10 mm C00 () U31 (VYD (2)A(3) 500 pF 210% 9.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm C021 (U102 (VYD (2)A(3) 1.500 pF 9.0 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm V5U C021 (U10 (VYD (2)A(3) 3.300 pF 120% 1.30	SL			±5%		5.0	0.55 ±0.1		
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C91(1)0800/US2/A(3) 68 pF C92(1)0820/YS0(2)A(3) 75 pF C92(1)0820/YS0(2)A(3) 82 pF B 9.0 C93(1)0101/YS0(2)A(3) 100 pF 10.0 C93(1)0101/YS0(2)A(3) 100 pF 10.0 C93(1)0101/YS0(2)A(3) 100 pF 10.0 C90(1)015/KYV0(2)A(3) 150 pF 5.0 0.55 ±0.1 C90(1)015/KYV0(2)A(3) 560 pF 8.0 5.0 0.55 ±0.1 C91(1)056/KYV0(2)A(3) 680 pF 8.0 5.0 0.55 ±0.1 0.55 ±0.1 C92(1)0102/KYV0(2)A(3) 680 pF 9.0 5.0 0.55 ±0.1 10 mm V5U C92(1)012/KYV0(2)A(3) 1.000 pF 9.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5U C94(1)012/KYV0(2)A(3) 3.300 pF ±20% 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5V C94(1)012/KYV0(2)A(3) 3.300 pF ±20% 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5V C94(1)012/KYV0(2)A(3) 1.000 pF 13.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5V <td></td> <td></td> <td></td> <td>-</td> <td>8.0</td> <td></td> <td></td> <td></td> <td></td>				-	8.0				
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V5P C90(1)U231KYY0(2)A(3) 220 pF C90(1)U331KYY0(2)A(3) 330 pF Storm V5P C90(1)U471KYV0(2)A(3) 560 pF C91(1)U651KYY0(2)A(3) 560 pF C92(1)U621KYY0(2)A(3) 560 pF C92(1)U621KYY0(2)A(3) 680 pF C92(1)U621KYY0(2)A(3) 680 pF C92(1)U621KYY0(2)A(3) 600 pF C92(1)U621KYY0(2)A(3) 7.0 0.55 ±0.1 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm V5U C90(1)U102MYW0(2)A(3) 1.000 pF C92(1)U22MYW0(2)A(3) 7.0 9.0 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm V5U C90(1)U102MYW0(2)A(3) 1.000 pF C92(1)U222MYW0(2)A(3) 2.200 pF 9.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm V5U C90(1)U102MYW0(2)A(3) 3.900 pF ±20% 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm V5V C90(1)U122MYW0(2)A(3) 1.000 pF 7.0 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm V5V C90(1)U122MYW0(2)A(3) 1.000 pF 9.0 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm V5V C90(1)U122MYW0(2)A(3) 1.000 pF 11.0 5.0 0.55 ±0.1 7.5 mm V5V C90(1)U		C90(1)U101KYYD(2)A(3)	100 pF						
Y5P C90(1)U331KYYD(2)A(3) 330 pF ±10% 5.0 0.55 ±0.1 5 mm, or 0 r C91(1)U551KYYD(2)A(3) 660 pF 8.0 0.55 ±0.1 0.55 ±0.		C90(1)U151KYYD(2)A(3)	150 pF						
YSP CS0(1)US3 (YTD(2)A(3) S30 pr (291(1)US61KYYD(2)A(3) S60 pF (291(1)US61KYYD(2)A(3) S60 pF (292(1)US61KYYD(2)A(3) 10% 8.0 0.55 ±0.1 7.5 mm, or 10 mm (S90(1)U102KYYD(2)A(3) S60 pF (292(1)U102KYYD(2)A(3) 1,000 pF 9.0 0.55 ±0.1 7.5 mm, or 10 mm Y5U C99(1)U102KYYD(2)A(3) 1,000 pF 9.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5U C99(1)U102XYWD(2)A(3) 1,000 pF 9.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5U C99(1)U102XYWD(2)A(3) 3,300 pF ±20% 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5U C99(1)U102XWVD(2)A(3) 3,300 pF ±20% 11.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5V C99(1)U102XWVD(2)A(3) 1,000 pF 7.0 5.0 0.55 ±0.1 7.5 mm, or 10 mm Y5V C99(1)U152WVD(2)A(3) 1,000 pF 7.0 7.5 mm, or 10 mm 7.5 mm, or 10 mm 7.5 mm, or 10 mm Y5V C99(1)U152WVD(2)A(3) 3,300 pF ±20% 9.0 5.0 0.55 ±0					7.0			5 mm	
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C94(1)0332MYW0(2)A(3) 3,300 pF 11.0 7.5 mm or 10 mm or 10 mm C96(1)U392MYW0(2)A(3) 3,900 pF 13.0 10 mm o 10 mm o C96(1)U472MYW0(2)A(3) 1,000 pF 7.0 5 mm, 7.5 mm, or 10 mm 10 mm o Y5V C90(1)U102MYV0(2)A(3) 1,500 pF 9.0 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm Y5V C92(1)U322MYV0(2)A(3) 3,300 pF ±20% 9.0 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm Y5V C92(1)U322MYV0(2)A(3) 3,300 pF 11.0 7.5 mm or 10 7.5 mm 10 mm Y5V C92(1)U322MYV0(2)A(3) 3,300 pF ±20% 5.0 0.55 ±0.1 5 mm, 7.5 mm, or 10 mm 10 mm C94(1)U472MYV0(2)A(3) 6,800 pF 13.0 10.000 pF 10 mm <	24511	C92(1)U222MYWD(2)A(3)	2,200 pF	1000	5.0	F	0.55.004		75
C96(1)U392MYWD(2)A(3) 3,900 pF 13.0 mm 10 mm o C96(1)U472MYWD(2)A(3) 4,700 pF 13.0 mm 10 mm o V5V C90(1)U102MYVD(2)A(3) 1,000 pF 7.0 5 mm, 7.5 mm, or 10 mr Y5V C90(1)U222MYVD(2)A(3) 2,200 pF 9.0 5.0 0.55 ± 0.1 Y5V C92(1)U322MYVD(2)A(3) 3,300 pF ±20% 9.0 5.0 0.55 ± 0.1 Y5V C92(1)U322MYVD(2)A(3) 3,300 pF ±20% 9.0 5.0 0.55 ± 0.1 7.5 mm, or 10 mr C94(1)U472MYVD(2)A(3) 4,700 pF 11.0 7.5 mm or 10 7.5 mm or 10 m C94(1)U472MYVD(2)A(3) 6,800 pF 13.0 10.000 pF 10 mm o 10 mm o C96(1)U682MYVD(2)A(3) 6,800 pF 15.0 10 mm o 10 mm o 10 mm o	Y5U	C94(1)U332MYWD(2)A(3)	3,300 pF	±20%	11.0	5.0	0.55 ±0.1	7 5 mm or 10	
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Y5V C90(1)U152MYVD(2)A(3) 1,500 pF C90(1)U222MYVD(2)A(3) 2,200 pF C92(1)U332MYVD(2)A(3) 3,300 pF C92(1)U322MYVD(2)A(3) 3,300 pF C94(1)U472MYVD(2)A(3) 3,900 pF C96(1)U682MYVD(2)A(3) 4,700 pF C96(1)U682MYVD(2)A(3) 6,800 pF C96(1)U682MYVD(2)A(3) 10,000 pF To mm 13.0 C98(1)U103MYVD(2)A(3) 10,000 pF KEMET Part Number Capacitance Tolerance Body Diameter Body Thickness Lead Diameter Lead Diameter		C96(1)U472MYWD(2)A(3)	4,700 pF		13.0				TO MM ONLY
Y5V C90(1)U152MYVD(2)A(3) 1,500 pF Y5V C90(1)U222MYVD(2)A(3) 2,200 pF C92(1)U332MYVD(2)A(3) 3,300 pF C92(1)U322MYVD(2)A(3) 3,900 pF C94(1)U472MYVD(2)A(3) 3,900 pF C96(1)U682MYVD(2)A(3) 4,700 pF C96(1)U682MYVD(2)A(3) 6,800 pF C96(1)U103MYVD(2)A(3) 10,000 pF To mm 15.0			1.002						
Y5V C90(1)U222MYVD(2)A(3) 2,200 pF C92(1)U332MYVD(2)A(3) 3,300 pF C94(1)U392MYVD(2)A(3) 3,900 pF C94(1)U472MYVD(2)A(3) 3,900 pF C94(1)U472MYVD(2)A(3) 4,700 pF C96(1)U682MYVD(2)A(3) 6,800 pF C98(1)U103MYVD(2)A(3) 10,000 pF To mm 15.0					7.0				
Y5V C92(1)U332MYVD(2)A(3) 3,300 pF C94(1)U392MYVD(2)A(3) 3,900 pF 11.0 5.0 0.55 ± 0.1 C94(1)U472MYVD(2)A(3) 4,700 pF 11.0 7.5 mm or 10 mm C96(1)U682MYVD(2)A(3) 6,800 pF 13.0 10 mm or 10 mm C98(1)U103MYVD(2)A(3) 10,000 pF 15.0 0.55 ± 0.1					7.0			5 mm, 7.5 m	m, or 10 mm
Y5V C94(1)U392MYVD(2)A(3) 3,900 pF ±20% 11.0 5.0 0.35 ±0.1 7.5 mm or 10 or 10 m C94(1)U472MYVD(2)A(3) 4,700 pF 11.0 13.0 13.0 10 mm or 10 m 10 mm or 10 m C98(1)U103MYVD(2)A(3) 10,000 pF 15.0 15.0 15.0 10 mm or 10 m				-	0.0				
C94(1)U472MYVD(2)A(3) 4,700 pF C96(1)U682MYVD(2)A(3) 6,800 pF C98(1)U103MYVD(2)A(3) 10,000 pF	Y5V			±20%		5.0	0.55 ±0.1		7.5 mm
C96(1)U682MYVD(2)A(3) 6,800 pF 13.0 mm 10 mm o C98(1)U103MYVD(2)A(3) 10,000 pF 15.0 10 mm o 10 mm o					11.0			7.5 mm or 10	or 10 mm
C98(1)U103MYVD(2)A(3) 10,000 pF 15.0 10 mm o				1	13.0				
KEMET Part Number Canacitance Conscitance Tolerance Body Diameter Body Thickness Lead Diameter Lead Spacing									10 mm only
		· · · · · · · · · · · · · · · · · · ·	· · ·	^		•	-		
		KEMET Part Number	Capacitance	Capacitance Tolerance			Lead Diameter	Lead S	pacing

(1) To properly complete ordering code, insert the one-digit numeric code to reflect required lead spacing: (Note that select capacitance values and packaging options may limit lead spacing availability. See table above to verify availability.) 5 = 5.0 mm 7 = 7.5 mm

1 = 10.0 mm

(2) To properly complete ordering code, insert the one-digit character code to reflect the required lead configuration: (See "Lead Configuration" section of this document, page 2, for further details.)

A = Straight

B = Vertical Kink

C = Outside Kink

D = Inside Kink (not available with 5 mm lead spacing option)

(3) To properly complete ordering code, enter the four-digit numeric or alphanumeric "Packaging C-Spec Ordering Code." See "Dimensions" section of this document, page 2, for available options.



Table 2 – Performance & Reliability: Test Methods and Conditions

lt	em	Speci	fication		Test Method			
Operating Ter	nperature Range			-40°C to +125°C				
	Between lead wires	No fa	ailures	The capacitor shall not be damaged when voltage is applied between the lead wires for 60 seconds. 2,000 VAC(rms) – 5.0 mm lead spacing 2,600 VAC(rms) – 7.5 mm and 10 mm lead spacing				
Dielectric Strength	Body Insulation	No fa	ailures	The terminals (leads) of the capacitor shall be connected together. A metal foil is tightly wrapped around the body of the capacitor at a distance of about 3 to 4 mm from each terminal. The capacitor is then inserted into a container filled with metal balls approximately 1 mm in diameter. 2,600 VAC(rms) is applied for 60 seconds between the capacitor lead wires and metal balls.				
Insulation R	esistance (IR)	10,000 M	Ω minimum		istance shall be m 5 seconds of charc	easured with 500 ±50 VDC		
Сара	citance	Within speci	fied tolerance			·····3·		
		Temperature Characteristics	Specification					
		Y5P, Y5U	DF ≤ 2.5%	Y5P, Y5U and Y5V: Capacitance is measured at 1 kHz ±20% and 5 Vrms or less. (20 ±2°C)				
Dissipation F	actor (DF) or Q	Y5V	DF ≤ 5.0%	SL: Capacitance is measured at 1 MHz ±20% and 1.0 ±0.2 Vrms (25°C)				
		SL	≥ 30 pF: Q ≥ 1000 < 30 pF: Q ≥ 400 +(20 x C) C = Nominal capacitance					
				A capacitance me	asurement is made	e at each step specified:		
				Step	Temperature			
		Temperature Characteristics	Capacitance Change	1	+20 ±2°C			
		Characteristics	Change	2	-25 ±2°C			
Temperature	Characteristics	Y5P	Within ±10%	3	+20 ±2°C			
		Y5U	Within +20%/-55%	4	+85 ±2°C			
		Y5V	Within ~+30%/-80%	5	+20 ±2°C			
		SL	-1,000 ~+350 ppm°C (+20°C ~+85°C)	Pretreatment: Capacitor is store	d at 85 ±2°C for 1 l	hour and then placed at room		
	Tensile		citor body shall not eak.	condition ¹ for 24 ±2 hours before measurement. With the termination in its normal position, the specimen is held by its body in such a manner that the axis of the termination is vertical; a tensile force of 10 N is applied to the termination in the direction of its axis and acting in a direction away from the body of the specimen.				
Terminal Strength	Bending		citor body shall not eak.	With the termination in its normal position, the specimen is held by its body in such a manner that the axis of the termination is vertical; a mass force of 5 N is then suspended from the end of the termination. The body of the specimen is then inclined within a period of 2 to 3 seconds, through an angle of approximately 90° in the vertical plane and then resumed to its initial position over the same period of time; this operation constitutes one bend. One bend immediately followed by a second bend in the opposite direction.				



Table 2 – Performance & Reliability: Test Methods and Conditions cont'd

Ite	m	Specif	ication	Test M	lethod		
Soldera	ability	Lead wire should ha of solder in the axia 3/4 of its cir	I direction and over	The lead wire of the capacitor is dipped into molten solder for 5 ±0.5 seconds. The depth of immersion is up to 1.5 mm (+5/-0 mm) from the root of lead wires. Solder Temperature: lead-free solder (Sn-3Ag – 0.5Cu) 245°C ±5°C.			
	Appearance	No visua	al defect	As shown in the figure below, the lead wires are immersed in molten solder up to 1.5 mm(+5/-0 mm) from the end of the epoxy meniscus (root of lead wire). Duration/Solder Temp: 3.5 ±0.5 seconds/350°C ±10°C or 10 ±1			
-	IR	1,00	0 ΜΩ				
	Dielectric Strength	Per it	iem 1	seconds/260°C ±5°C			
Soldering Effect (Non-Preheat)	Capacitance		5V: within ±10% 0.25 pF, whichever is ger.	Screen 1.5 to 1.5 to 2.0 mm Molten Solder Pretreatment: Capacitor is stored at 85°C ±2°C for 1 hour and then placed at room condition ¹ for 24 ±2 hours before initial measurements. Post-treatment: Capacitor is stored for 1 to 2 hours at room condition ¹ .			
	Appearance	No visua	al defect	Capacitor is stored at 120°C +0/-5°C for 60 +0/-5 seconds. Then, as shown in the figure below , the lead wires are immersed			
	IR	1,00	0 ΜΩ	in molten solder up to 1.5 mm (+5/-0mm) from the end of the epoxy meniscus (root of lead wire).			
-	Dielectric Strength	Per it	tem 1	Duration/Solder Temperature 7.5	+0/-1 second/260°C ±5°C.		
Soldering Effect (Preheat)	Capacitance		5V: within ±10% 0.25 pF, whichever is ger.	Screen 1.5 to 2.0 mm Molten Solder Pretreatment: Capacitor is stored at 85°C ±2°C for 1 hour and then placed at room condition ¹ for 24 ±2 hours before initial measurements. Post-treatment: Capacitor is stored for 1 to 2 hours at room condition ¹ .			
	Appearance	No visua	al defect	Steady State Humidity:	Load Humidity:		
-		Temperature Characteristics	Capacitance Change				
		Y5P	Within ±10%				
	Capacitance	Y5U	Within ±20%				
		Y5V	Within ±30%				
Biased Humidity		SL	Within ±2.5% or ±0.25 pF, whichever is larger.	90 to 95% humidity at 40°C ±2°C for 500 ±12 hours.	90 to 95% humidity at 40°C ±2°C for 500 ±12 hours with full rated voltage applied.		
-	DF	Y5V: 7.5%	5.0% maximum maximum	Post-treatment: Capacitor is stored for 1 to 2 hours at room condition ¹ .	Post-treatment: Capacitor is stored for 1 to 2 hours at room condition ¹ .		
	Q	SL: Less than 30 pF: $Q \ge 100 + 10 \times C/3$ More than 30 pF: $Q \ge 200$ C = Nominal capacitance					
	IR		3,000 MΩ minimum				
-	Dielectric Strength		ilures				



Table 2 – Performance & Reliability: Test Methods and Conditions cont'd

lte	m	Specification	Test Method				
	Appearance Capacitance Change IR	No visual defect Y5P, Y5V and Y5U: within ±20% SL: within ±3 or ±0.3 pF, whichever is larger. 3,000 MΩ minimum	Impulse Voltage: Each individual capacitor is subjected to three 5 kv impulses prior to life testing. v_p v_p u_{PP} u_{P				
High Temperature Life	Dielectric Strength	SL: 1,000 MΩ minimum No failures	Capacitors are placed in a circulating air oven for a period of 1,000 hours. The air in the oven is maintained at a temperature of 125°C ±2 throughout the test. The capacitors are subjected to AC 425 Vrms. Each hour the voltage is increased to AC 1,000 Vrms for 0.1 seconds.				
Flame	9 Test	The capacitor flame extinguishes as follows:CycleTime1 ~ 430 seconds maximum560 seconds maximum	te. $\frac{C_{x} \text{ tr} \text{ td}}{U_{pp}} \frac{C_{x} \text{ tr} \text{ td}}{(uF) (uS) (uS)}}{\frac{0.01 \text{ 12. 46}}{0.1 \text{ 1.5 47}}}$ $\frac{C_{x} \text{ point}}{U_{pp}} \frac{U_{pp}}{U_{pp}} \frac{U_{pp}}{U_{$				
Active Fla	mmability	The cheesecloth should not ignite.	more than two, complete layers of cheesecloth. They are then subjected to 20 discharges. The interval between successive discharges is 5 seconds. The VAC is maintained for 2 minutes after the last discharge. $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				



Table 2 – Performance & Reliability: Test Methods and Conditions cont'd

lte	m	Specifi	cation		Test Me	thod			
Passive Flammability Appearance		The burning time should not exceed 30 seconds. The tissue paper should not ignite.		The capacitor under test is held into a flame and in a position which best promotes burning. Each specimen is exposed to the flame once.					
	Appearance	No visua	l defect	_					
		Temperature Characteristics			The capacitor is subjected to 5 temperature cycles. Temperature Cycle				
	Capacitance	SL	Within ±5%	Tempera					
		Y5P	Within ±10%	Step	Temperature (°C)	Dwell Time	Transition Time		
		Y5U, Y5V	Within ±20%	Step	Temperature (C)	(minutes)	(minutes)		
_		SL	≥ 30 pF: Q ≥ 350	1	-40 +0/-3	30			
Temperature Cycle			< 30 pF: Q ≥ 275	2	Room temperature	3	3		
0,0.0			+5/2C C = Nominal	3	125 +3/-0	30	3		
	DF/Q		capacitance	4	Room temperature	3			
		Y5P	DF ≤ 5%						
		Y5U, Y5V	DF ≤ 7.5%	Pretreatme placed at r	ent: Capacitor shall be st oom condition ¹ for 24 ±2	tored at 85 ±2 f hours.	or 1 hour then		
	IR	3,000 MΩ SL: 1,000 M		Post-treatment: Capacitor is stored for 1 to 2 hours at room condition ¹ .					
	Dielectric Strength	No failures							



Soldering and Mounting Information

Soldering:

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could reflow the solder joint between the lead and ceramic element and/or may result in thermal shocks that can crack the ceramic element.

When soldering these capacitors with a soldering iron, it should be performed under the following conditions:

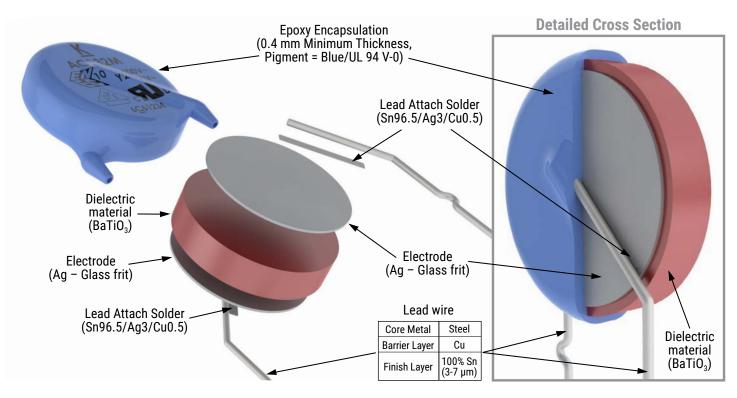
- Temperature of iron-tip: 400°C maximum
- Soldering iron wattage: 50 W maximum
- · Soldering time: 3.5 seconds maximum

Cleaning (ultrasonic cleaning):

To perform ultrasonic cleaning, observe the following conditions:

- · Rinse bath capacity: output of 20 watts per liter or less
- · Rinsing time: 5 minute maximum
- Do not vibrate the PCB/PWB directly
- · Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires

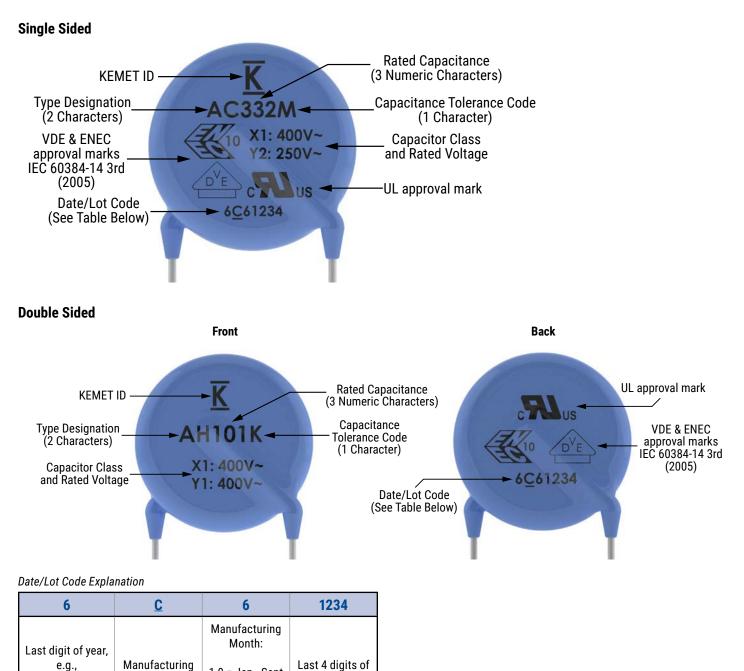
Construction





Marking

These capacitors shall be stamped or laser marked with KEMET's trademark, type designation, capacitor class, rated voltage, rated capacitance and capacitance tolerance codes. In addition, all devices are marked with the recognized approval mark and a date/lot code for traceability. Marking will be supplied either on one side or both sides of the encapsulated capacitor body. All marking shall be legible to allow for clear identification of the component. Marking appears in legible contrast. Illustrated below is an example of the marking format and content. (Two sided marking is limited to capacitors with body diameters ≤ 8.0 mm.)



lot no.

1-9 = Jan - Sept

A = October

N = November D = December

Location Code

6 = 2016



Packaging Quantities

Capacitor			Ar	oe)			
Body Diameter	Body Diameter Code ¹	Bulk Bag (Loose)	Comp	onent pitch on carrie	er tape ²		
(mm)	oouc	(10000)	12.7 mm 15 mm		25.4 mm		
7.0	0						
8.0	1						
9.0	2						
10.0	3				1,000 pieces/box		
11.0	4	500 pieces/bag	1,000 pie	eces/box			
12.0	5						
13.0	6						
14.0	7				500 pieces/box		
15.0	8						

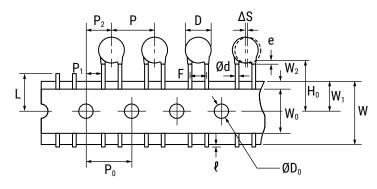
¹ The "Body Diameter Code" is located in the third character position of the ordering code. This code identifies the maximum diameter of the capacitor body in millimeters. For more information regarding the ordering code, see "Ordering Information" section of this document.

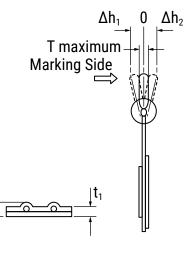
² For details regarding component pitch on carrier tape, see "Ammo Pack Taping Format" and "Ammo Pack Taping Specifications" sections of this document.



Figure 1 - Ammo Pack Taping Format

5 mm and 7.5 mm Lead Spacing:





10 mm Lead Spacing:

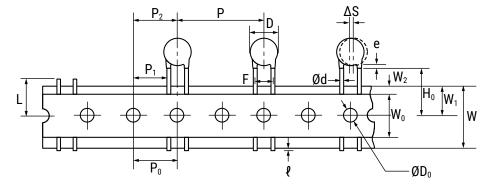


Table 3 – Ammo Pack Taping Specifications

Lead Spacing		5 mm		7.5 mm		10 mm	
Lead Style		Straight	Preformed ¹	Straight	Preformed ¹	Straight	Preformed ¹
Item	Symbol			Dimensi	ons (mm)		
Lead Spacing	F	5.0+0	.8/-0.2	7.5	±1.0	10.0)±1.0
Component Pitch	Р	12	2.7	15	5.0	25.	.4±2
Sprocket Hole Pitch	P ₀	12.7	12.7±0.3		15.0±0.3		7±0.3
Sprocket Hole Center to Component Center	P ₂	6.35	6.35±1.5		7.5±1.5		7±1.5
Sprocket Hole Center to Lead Center	P ₁	3.75	5±1.0	3.75	5±1.0	7.7±1.5	
Body Diameter	D	S	ee "Product Orde	ering Codes and	Ratings" section	of this docume	nt.
Component Alignment (side/side)	ΔS			0±	2.0		
Carrier Tape Width	W	18.0+1.0/-0.5					
Sprocket Hole Position	W ₁			9.0	±0.5		

¹ Prefromed (crimped) lead configurations include vertical kink, outside kink and inside kink. See "Lead Configurations" and "Ordering Information" sections of this document for further details.

² Also referred to as "lead length" in this document.



Table 3 – Ammo Pack Taping Specifications cont'd

Lead Spacing		5 mm		7.5 mm		10 mm	
Lead Style		Straight	Preformed ¹	Straight	Preformed ¹	Straight	Preformed ¹
Item	Symbol	Dimensions (mm)					
Height to Seating Plane ² (preformed leads ¹)	H ₀	N/A	18.0 +2.0/-0	N/A	18.0 +2.0/-0	N/A	18.0 +2.0/-0
Height to Seating Plane ² (straight leads)	Н	20.0 +1.5/-1.0	N/A	20.0 +1.5/-1.0	N/A	20.0 +1.5/-1.0	N/A
Lead Protrusion	ł	2.0 maximum					
Diameter of Sprocket Hole	D ₀	4.0 ±0.2					
Lead Diameter	φd	0.55 ±0.1					
Carrier Tape Thickness	t ₁	0.6 ±0.3					
Total Thickness (Carrier Tape, Hold-Down Tape and Lead)	t ₂	1.5 maximum					
Component Alignment (front/ back)	Δh_1 Δh_2	2.0 maximum					
Cut Out Length	L	11.0 maximum					
Hold-Down Tape Width	W _o	11.0 minimum		11.5 minimum			
Hold-Down Tape Position	W ₂	3.0 maximum		1.5 ±1.5			
Coating Extension on Leads (meniscus)	е	3.0 maximum for straight lead; not to exceed the bend for preformed ¹ lead configurations.					
Body Thickness	Т	See "Product Ordering Codes and Ratings" section of this document.					

¹ Prefromed (crimped) lead configurations include vertical kink, outside kink and inside kink. See "Lead Configurations" and "Ordering Information" sections of this document for further details.

²Also referred to as "lead length" in this document.

Application Notes:

Storage and Operating Conditions:

The insulating coating of these devices does not form an air and moisture-tight seal. Avoid exposure to moisture and do not use or store these devices in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt, or the like are present. Before cleaning, bonding or molding these devices, it is important to verify that your process does not affect product quality and performance. KEMET recommends testing and evaluating the performance of a cleaned, bonded or molded product prior to implementing and/or qualifying any of these processes. Store the capacitors where the temperature and relative humidity do not exceed 40 degrees Centigrade and 70% respectively. For optimum solderability, capacitor stock should be used promptly, preferably within 6 months of receipt.

Working Voltage:

Application voltage (Vp-p or Vo-p) must not exceed the voltage rating of the capacitor. Irregular voltages can be generated for a transient period of time when voltage is initially applied and/or removed from a circuit. It is important to choose a capacitor with a voltage rating greater than or equal to these irregular voltages.



Voltage	DC Voltage DC +AC Voltage		AC Voltage	Pulse Voltage (1)	Pulse Voltage (2)	
Positional Measurement	Vo-p	Vo-p	vp-p	Vp-p	Vp-p	

Operating Temperature and Self-Generating Heat:

The surface temperature of a capacitor should be kept below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high-frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. Temperature rise due to self-generated heating should not exceed 20°C (while operated at an atmosphere temperature of 25°C).

Handling - Vibration and Impact:

Do not expose these devices or their leads to excessive shock or vibration during use.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.



KEMET Electronics Corporation Sales Offices

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Although KEMET designs and manufactures its products to the most stringent quality and safety standards, given the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage.

Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicted or that other measures may not be required.

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