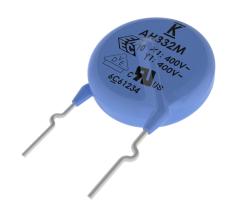


# Safety Standard Recognized, C900, Encapsulated, AH Type, X1 400 VAC/Y1 400 VAC (Industrial Grade)

#### **Overview**

KEMET's 900 series 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 400 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 Y1 requirements, these devices are certified to withstand impulses up to 4 KV (X1) and 8 KV (Y1) respectively. These encapsulated devices also meet the flame test requirements outlined in UL Standard 94V-0.



# **Ordering Information**

C9	3	1	U	101	J	V	S	D	Α	A	7317
Ceramic Series	Body Diameter	Lead Spacing <sup>1</sup>	Spec.	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage	Dielectric/ Temp. Char.	Design	Lead Config. <sup>2</sup>	Failure Rate	Packaging (C-Spec)
C9 = Ceramic 900 Series	0 = 7.0 mm 1 = 8.0 mm 2 = 9.0 mm 3 = 10.0 mm 4 = 11.0 mm 5 = 12.0 mm 6 = 13.0 mm 7 = 14.0 mm	1 = 10.0 mm	U = Safety	Two significant digits and number of zeroes	J = ±5% K = ±10% M = ±20%	V = X1 400 VAC /Y1 400 VAC	S = SL Y = Y5P W = Y5U V = Y5V	D = Disc	A = Straight B = Vertical Kink C = Outside Kink	A = N/A	See "Packaging C-Spec Ordering Options Table" below

<sup>&</sup>lt;sup>1</sup> "Vertical Kink" and "Outside Kink" lead configurations cannot be combined with the bulk/20 mm lead length option (WL20). 20 mm lead length is only available on capacitors ordered with straight leads (lead configuration ordering code "A"). For nonstandard lead length inquiries, please contact KEMET.

<sup>&</sup>lt;sup>2</sup> Bulk packaging lead length availability is dependent upon "Lead Configuration." See "Dimensions" section of this document to verify availability of a specific lead length option. For nonstandard lead length inquiries, please contact KEMET.



# **Packaging C-Spec Ordering Options Table**

Packaging Type	Lead Length (mm) <sup>2,3</sup>	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
Pulk Pog	4.0±1.0	WL40
Bulk Bag	4.5±1.0	WL45
	5.0±1.0	WL50
	20.0 minimum⁴	WL20

<sup>&</sup>lt;sup>1</sup> 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.

#### **Benefits**

- Safety Standard Recognized (IEC 60384-14)
- Reliable operation up to 125°C
- · Class X1/Y1
- · 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
- 100% pure matte tin-plated lead finish allowing for excellent solderability
- 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)

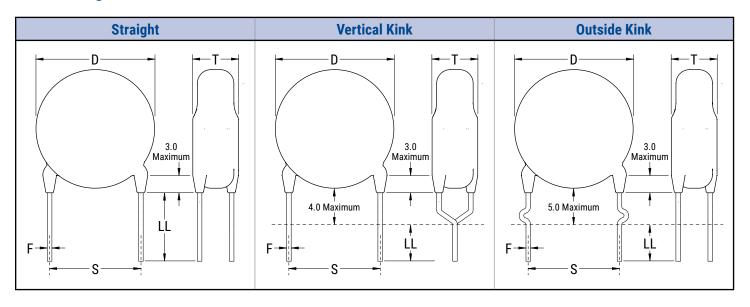
<sup>&</sup>lt;sup>2</sup> "Vertical Kink", "Outside Kink" and "Inside Kink" lead configurations cannot be combined with the bulk/20 mm lead length option (WL20). 20 mm lead length is only available on capacitors with straight leads (lead configuration ordering code "A"). For nonstandard lead length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

<sup>&</sup>lt;sup>3</sup> For nonstandard lead length inquiries, please contact KEMET.

<sup>&</sup>lt;sup>4</sup> Lead length of 20.0 mm minimum only available for straight leads.



# **Lead Configurations**



# **Dimensions - Millimeters**

	Lead	S	Lead	D	Т	е	ØF
Lead Configuration	d Configuration Lead Spacing Body		Body Diameter <sup>2</sup>	Body Thickness	Lead Meniscus	Lead Diameter	
Straight	Α	10.0	±1.0	See Table 1 - "Product Ordering Codes and Ratings"			
Vertical Kink (Preformed)	В	10.0	±1.0			3.0 maximum	0.55±0.1
Outside Kink (Preformed)	С	10.0	±1.0				

<sup>&</sup>lt;sup>1</sup> 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.

<sup>&</sup>lt;sup>2</sup> 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	IEC 60384-14	X1	400 VAC	40036417	
(ENEC)	150 00304-14	Y1	400 VAC	40030417	
UL	UL 60384-14 and	X1	400 VAC	F256200	
CAN/CSA	E60384-14	Y1	400 VAC	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°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		4,000 VAC (60±5 seconds at 25°C)				
Quality Factor (Q)	30 pF and above: ≥ 1,000 Below 30 pF: ≥ 400 +(20xC)*	:	See "Dissipation Factor	n		
Dissipation Factor (tanδ) at +25°C1	See "Quality Factor"	2.50%	2.50%	5.0%		
Insulation Resistance (IR) Limit at +25°C			) Minimum 50±5 seconds at 25°C)			

<sup>\*</sup> C = Nominal capacitance

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."

<sup>&</sup>lt;sup>1</sup> 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



# **Table 1 - Product Ordering Codes and Ratings**

B: 1 /				Dii	mensions (mm)		Lead S	pacing
Dielectric/ Temp. Char.	KEMET Part Number	Capacitance	Capacitance Tolerance	Body Diameter (Maximum)	Body Thickness (Maximum)	Lead Diameter	Bulk Packaging	Ammo Packaging
	C901U150JVSD(1)A(2)	15 pF						
	C901U180JVSD(1)A(2)	18 pF						
	C901U200JVSD(1)A(2)	20 pF						
	C901U220JVSD(1)A(2)	22 pF						
	C901U240JVSD(1)A(2)	24 pF		7.0				
	C901U270JVSD(1)A(2)	27 pF						
	C901U300JVSD(1)A(2)	30 pF						
	C901U330JVSD(1)A(2)	33 pF						
SL	C901U360JVSD(1)A(2)	36 pF	±5%		5.0	0.55 ±0.1	10	
SL.	C901U390JVSD(1)A(2) C911U470JVSD(1)A(2)	39 pF 47 pF	13%		5.0	0.55 ±0.1	101	nin
	C911U500JVSD(1)A(2)	50 pF		8.0				
	C911U510JVSD(1)A(2)	50 pF						
	C911U560JVSD(1)A(2)	56 pF		0.0				
	C911U620JVSD(1)A(2)	62 pF						
	C921U680JVSD(1)A(2)	68 pF						
	C921U750JVSD(1)A(2)	75 pF		9.0				
	C921U820JVSD(1)A(2)	82 pF		9.0				
	C931U101JVSD(1)A(2)	100 pF		10.0				
	030101010105(1)11(2)	.σσρ.		10.0				
	C901U101KVYD(1)A(2)	100 pF						
	C901U151KVYD(1)A(2)	150 pF		7.	5.0	0.55 ±0.1	10 mm	
	C901U221KVYD(1)A(2)	220 pF		7.0				
VED	C901U331KVYD(1)A(2)	330 pF	1100					
Y5P	C911U471KVYD(1)A(2)	470 pF	±10%	8.0	5.0			
	C921U561KVYD(1)A(2)	560 pF		9.0				
	C921U681KVYD(1)A(2)	680 pF		9.0				
	C941U102KVYD(1)A(2)	1,000 pF		11.0				
	C911U102MVWD(1)A(2)	1,000 pF		8.0				
	C921U152MVWD(1)A(2)	1,500 pF		9.0				
Y5U	C931U222MVWD(1)A(2)	2,200 pF	±20%	10.0	5.0	0.55 ±0.1	10	mm
''"	C951U332MVWD(1)A(2)	3,300 pF		12.0	0.0	0.00 20.7		
	C961U392MVWD(1)A(2)	3,900 pF		13.0				
	C971U472MVWD(1)A(2)	4,700 pF		14.0	L	L		
	C901U102MVVD(1)A(2)	1,000 pF		7.0	T T			
	C911U152MVVD(1)A(2)	1,500 pF		8.0				
Y5V	C921U222MVVD(1)A(2)	2,200 pF	±20%	9.0	5.5	0.55 ±0.1	10	mm
151	C941U332MVVD(1)A(2)	3,300 pF	±20 <i>7</i> 0	11.0	0.0	0.00 ±0.1	101	
	C951U472MVVD(1)A(2)	4,700 pF		12.0				
		.,						
	KEMET Part Number	Capacitance	Capacitance Tolerance	Body Diameter (Maximum)	Body Thickness (Maximum)	Lead Diameter	Lead S	pacing

<sup>(1)</sup> 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

<sup>(2)</sup> 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**

It	em	Speci	fication			Test Met	hod	
Operating Tem	perature Range			-40°C to +125°C				
	Between lead wires	No failures		The capacitor shall not be damaged when 4,000 VAC(rms) is applied between the lead wires for 60 seconds.				
Dielectric Strength	Body Insulation	No failures		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. 4,000 VAC(rms) is applied for 60 seconds between the capacitor lead wires and metal balls.			I foil f the 4 mm then netal er. 4,000 between	
Insulation Ro	esistance (IR)	10,000 M	Ω minimum			istance shall be mose seconds of charg	easured with 500±50 VDC ing.	
Capac	citance	Within speci	fied tolerance		<u> </u>	<u> </u>	3	
		Temperature Characteristics	Specification					
		Y5P, Y5U	DF ≤ 2.5%	Y5P, Y5U and Y5V: Capacitance is measured at 1 kHz ±20% and 5				
Dissipation F	Dissipation Factor (DF) or Q		DF ≤ 5.0%	Vrms or less. (20±2°C) SL: Capacitance is measured at 1 MHz ±20% and 1.0±0.2 Vrms				
Dissipation F			≥ 30 pF: Q ≥ 1,000 < 30 pF: Q ≥ 400 +(20 x C) C = Nominal capacitance	(25°C) <sup>r</sup>				
					A capacitance measurement is made at each step specified:			
		Temperature	Capacitance Change		Step	Temperature		
		Characteristics		ľ	1	+20±2°C		
		Y5P	Within ±10%		2	-25±2°C		
Temperature (	Characteristics	Y5U	Within +22%/-56%		3	+20±2°C		
		Y5V	Within		4	+85±2°C		
			~+30%/-80%		5	+20±2°C		
		SL	-1,000 ~+350 ppm°C (+20°C ~+85°C)	(	Pre-treatment: Capacitor is store condition <sup>1</sup> for 24±	d at 85±2°C for 1 h 2 hours before me	our and then placed at room asurement.	
Tensile		•	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 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.				

 $<sup>^1</sup>$  "Room Condition" is defined as follows: Temperature: 15 ~ 35°C/Humidity: 45 ~ 75%/Atmospheric Pressure: 86 ~ 106 kPa.



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

lte	m	Specif	ication	Test M	Nethod			
Solder	ability	of solder in the axia	ve a uniform coating al direction and over cumference.	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				
	IR	1,00	0 ΜΩ	epoxy meniscus (root of lead wire). Duration/Solder Temperature: 3.5±0.5 seconds/350°C ±10°C or				
	Dielectric Strength	Per it	tem 1	10±1 seconds/260°C ±5°C  Thermal Capacitor				
Soldering Effect (Non-Preheat)	Capacitance	SL: Within ±2.5% or	5V: Within ±10% ±0.25 pF, whichever rger.	Pre-treatment: Capacitor is stored at 85°C ±2°C for 1 hour and then placed at room condition¹ for 24±2 hours before initial measurements.  Post-treatment: Capacitor is stored for 1 to 2 hours at room condition¹.				
	Appearance	No visua	al defect	Capacitor is stored at 120°C +0/	-5°C for 60 +0/-5 seconds.			
	IR	1,00	0 ΜΩ	Then, as shown in the figure below, the lead wires are immersed in molten solder up to 1.5 mm (+5/-0mm) from the end of the epoxy meniscus (root of lead wire).				
	Dielectric Strength	Per item 1		Duration/Solder Temperature: 7.5+0/-1 seconds/260°C ±5°C  Thermal Capacitor Screen 1.5 to 2.0 mm				
Soldering Effect (Preheat)	Capacitance	Y5P, Y5U and Y5V: Within ±10% SL: Within ±2.5% or ±0.25 pF, whichever is larger.						
	Appearance	No visua	al defect	Steady State Humidity:	Load Humidity:			
		Temperature Characteristics	Capacitance Change					
		Y5P	Within ±10%					
	Capacitance	Y5U	Within ±20%					
	•	Y5V	Within ±30%		00 1 050 1 111 14000			
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. Post Treatment:	90 to 95% humidity at 40°C ±2°C for 500±12 hours with full rated voltage applied.			
	DF		5.0% maximum maximum	Capacitor is stored for 1 to 2 hours at room condition <sup>1</sup> .	Post Treatment: Capacitor is stored for 1 to 2 hours at room condition <sup>1</sup> .			
	Q	SL: Less than 30 p More than 30 C = Nominal	oF: Q ≥ 100+10×C/3 0 pF: Q ≥ 200 capacitance	nours at room condition.				
	IR		3,000 MΩ minimum IΩ minimum					
	Dielectric Strength		ilures					

 $<sup>^1</sup>$  "Room Condition" is defined as follows: Temperature: 15 ~ 35°C/Humidity: 45 ~ 75%/Atmospheric Pressure: 86 ~ 106 kPa.



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

Ite	em	Specification	Test Method			
Appearance Capacitance Change IR High		No visual defect Y5P, Y5V and Y5U: Within ±20% SL: Within ±3 or ±0.3 pF, whichever is larger. 3,000 MΩ minimum SL: 1,000 MΩ minimum	Impulse Voltage: Each individual capacitor is subjected to three 8 kv impulses prior to life testing.  Output  Description  Output  Des			
Temperature Life	Dielectric Strength	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°C throughout the test. The capacitors are subjected to AC 680 Vrms. Each hour the voltage is increased to AC 1,000 Vrms for 0.1 seconds.			
		The capacitor flame extinguishes as follows:	The capacitor is exposed to a flame for 15 seconds and then removed for 15 seconds. This test is repeated for 5 cycles.			
Flame Test		CycleTime1 ~ 430 seconds maximum560 seconds maximum	Flame 76  Gas Burner (Unit:mm)			
			The capacitors are individually wrapped in at least one, but not 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.			
Active Flammability		The cheesecloth should not ignite.	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			

 $<sup>^1</sup>$  "Room Condition" is defined as follows: Temperature: 15  $\sim$  35°C/Humidity: 45  $\sim$  75%/Atmospheric Pressure: 86  $\sim$  106 kPa.



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

Ite	em	Specif	cation	Test Method				
Passive Flammability		The burning time sh seco The tissue paper	nds.	d not exceed 30  s. uld not ignite.  Time of exposure to fla  Length of fla  Gas burner len  Inside diame  Outside diame  Gas butane gas pu		g. Each specimen is exposed to the Specimen  t 10mm t Board ne: 30 seconds ne: 12±1 mm th: 35 mm minimum er: 0.5±0.1 mm er: 0.9 mm maximum		
	Appearance	No visua	I defect					
	Capacitance	Temperature Characteristics	Capacitance Change Within ±5%	The capacitor is subjected to 5 temperature cycles.  Temperature Cycle				
		SL Y5P Y5U, Y5V	Within ±10% Within ±20%	Step	Temperature (°C)	Dwell Time (minutes)	Transition Time (minutes)	
Temperature		SL	≥30 pF: Q ≥ 350	1	-40 +0/-3	30		
Cycle			<30 pF: Q ≥ 275	2	Room temperature	3		
			+5/2C C = Nominal	3	125 +3/-0	30	3	
	DF/Q		capacitance	4	Room temperature	3		
		Y5P Y5U, Y5V	DF ≤ 5% DF ≤ 7.5%	Pre-treatment: Capacitor shall be stored at 85±2 for 1 hour then placed at room condition for 24±2 hours.		for 1 hour then		
	IR	3,000 MΩ SL: 1,000 M			ment: Capacitor is stored		rs at room	
	Dielectric Strength		No failures					

 $<sup>^1</sup>$  "Room Condition" is defined as follows: Temperature: 15 ~ 35°C/Humidity: 45 ~ 75%/Atmospheric Pressure: 86 ~ 106 kPa.



# **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:

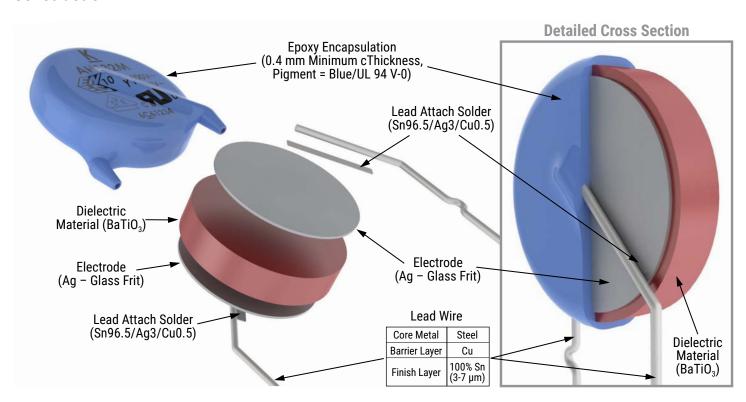
- Temperature of iron-tip: 400°C maximum
- · Soldering iron wattage: 50 W maximum
- · Soldering time: 3.5 seconds maximum

#### 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

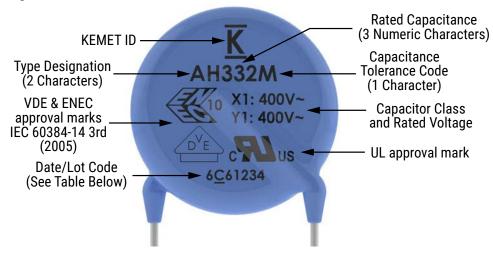




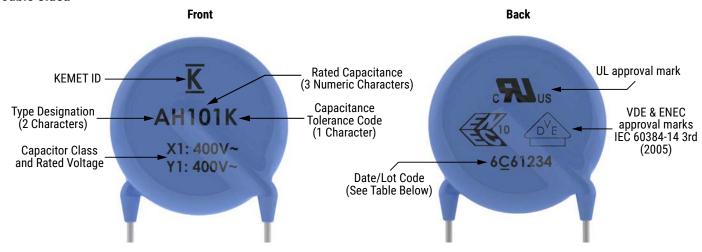
## **Marking**

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.)

#### **Single Sided**



#### **Double Sided**



Date/Lot Code Explanation

6	<u>C</u>	6	1234
Last digit of year, e.g., 6 = 2016	Manufacturing Location Code	Manufacturing Month: 1-9 = Jan - Sept A = October N = November D = December	Last 4 digits of lot no.



# **Packaging Quantities**

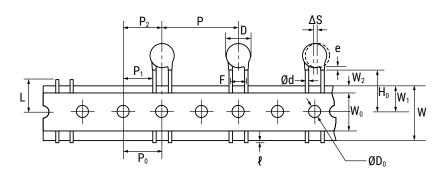
		- " -	Ammo Pack (Carrier Tape)		
Capacitor Body Diameter (mm)	Body Diameter Code <sup>1</sup>	Bulk Bag (Loose)	Component pitch on carrier tape <sup>2</sup>		
body blameter (mm)		(EUUSE)	25.4 mm		
7.0	0				
8.0	1				
9.0	2		1,000 pieces/box		
10.0	3	EOO niceas/bag			
11.0	4	500 pieces/bag			
13.0	6				
14.0	7		500 pieces/box		
15.0	8				

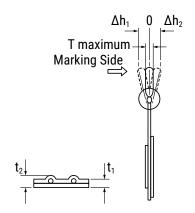
<sup>&</sup>lt;sup>1</sup> The "Body Diameter Code" is located in the third character position of the ordering code. This code identifies the maximum diameter of the capacitor body in millimeters. For more information regarding the ordering code, see "Ordering Information" section of this document.

<sup>&</sup>lt;sup>2</sup> 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 (10 mm Lead Spacing)





**Table 3 – Ammo Pack Taping Specifications** 

Lead Spacing		10 mm	
Lead Style		Straight	Preformed <sup>1</sup>
Item	Symbol	Dimensions (mm)	
Lead Spacing	F	10.0±1.0	
Component Pitch	Р	25.4±2	
Sprocket Hole Pitch	P <sub>0</sub>	12.7±0.3	
Sprocket Hole Center to Component Center	P <sub>2</sub>	12.7±1.5	
Sprocket Hole Center to Lead Center	P <sub>1</sub>	7.7±1.5	
Body Diameter	D	See "Product Ordering Codes and Ratings" section of this document.	
Component Alignment (side/side)	ΔS	0±2.0	
Carrier Tape Width	W	18.0+1.0/-0.5	
Sprocket Hole Position	W <sub>1</sub>	9.0 ±0.5	
Height to Seating Plane <sup>2</sup> (preformed leads <sup>1</sup> )	H <sub>o</sub>	N/A	18.0 +2.0/-0
Height to Seating Plane <sup>2</sup> (straight leads)	Н	20.0+1.5/-1.0	N/A
Lead Protrusion	ę	2.0 maximum	
Diameter of Sprocket Hole	D <sub>o</sub>	4.0±0.2	
Lead Diameter	φd	0.55±0.1	
Carrier Tape Thickness	t <sub>1</sub>	0.6±0.3	
Total Thickness (Carrier Tape, Hold-Down Tape and Lead)	t <sub>2</sub>	1.5 maximum	
Component Alignment (front/back )	Δh <sub>1</sub>	2.0 maximum	
	Δh <sub>2</sub>	-	
Cut Out Length	L	11.0 maximum	
Hold-Down Tape Width	W <sub>0</sub>	11.0 minimum	
Hold-Down Tape Position	W <sub>2</sub>	1.5±1.5	
Coating Extension on Leads (meniscus)	е	3.0 maximum for straight lead; not to exceed the bend for preformed lead configurations.	
Body Thickness	T	See "Product Ordering Codes and Ratings" section of this document.	

<sup>&</sup>lt;sup>1</sup> Preformed (crimped) lead configurations include vertical kink and outside kink. See "Lead Configurations" and "Ordering Information" sections of this document for further details.

<sup>&</sup>lt;sup>2</sup> Also referred to as "lead length" in this document.



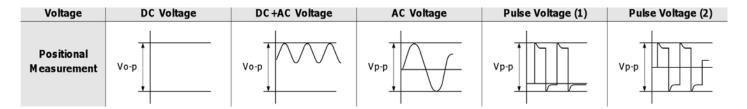
## **Application Notes:**

#### **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.



#### **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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#### **Disclaimer**

All product specifications, statements, information and data (collectively, the "Information") in this datasheet are subject to change. The customer is responsible for checking and verifying the extent to which the Information contained in this publication is applicable to an order at the time the order is placed.

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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.

# **Mouser Electronics**

**Authorized Distributor** 

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