

AVX MD series is a Molded 2 Pin DIP capacitor. We offer NP0, X7R, and Z5U dielectrics. Voltages available are 50 and 100Vdc.

Check for up-to-date CV Tables at  
<http://www.avx.com/docs/catalogs/dipguard.pdf>

**HOW TO ORDER**

<b>MD01</b>	<b>5</b>	<b>E</b>	<b>104</b>	<b>M</b>	<b>A</b>	<b>B</b>
<b>AVX Style</b> MD01 CKR22* CKS22** MD02 CKR23* CKS23* MD03 CKR24* CKS24**	<b>Voltage</b> Y = 16V 5 = 50V 1 = 100V	<b>Temperature Coefficient</b> A = C0G (NP0) C = X7R E = Z5U	<b>Capacitance</b> First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros. For example, order 100,000 pF as 104.	<b>Capacitance Tolerance</b> COG (NP0): F = ±1% J = ±5% K = ±10% X7R: J = ±5% K = ±10% M = ±20%	<b>Failure Rate</b> A = Not Applicable	<b>Assembly Method</b> A = Hand Assembled B = Automated Assembly

**C0G (NP0)**

EIA Characteristic		C0G (NP0)	
AVX Style		MD01	
Cap. in pF*		WVDC	
		100	50
10	MD015A100KAB		
15	MD015A150KAB		
22	MD015A220KAB		
33	MD015A330KAB		
47	MD015A470KAB		
68	MD015A680KAB		
100	MD015A101KAB		
150	MD015A151KAB		
220	MD015A221KAB		
330	MD015A331KAB		
470	MD015A471KAB		
680	MD015A681KAB		
1000	MD015A102KAB		
1500	MD015A152KAB		
2200	MD015A222KAB		
3300	MD015A332KAB		
AVX Style		MD02	
Cap. in pF*		WVDC	
		100	50
4700	MD025A472KAB		
6800	MD025A682KAB		
10000	MD025A103KAB		

For other voltages and tolerances see Part No. Codes.

**X7R**

EIA Characteristic		X7R	
AVX Style		MD01	
Cap. in pF*		WVDC	
		100	50
220	MD015C221KAB		
330	MD015C331KAB		
470	MD015C471KAB		
680	MD015C681KAB		
1000	MD015C102KAB		
1500	MD015C152KAB		
2200	MD015C222KAB		
3300	MD015C332KAB		
4700	MD015C472KAB		
6800	MD015C682KAB		
10,000	MD011C103KAB		
15,000	MD015C153KAB		
22,000	MD015C223KAB		
33,000	MD015C333KAB		
47,000	MD015C473KAB		
68,000	MD015C683KAB		
100,000	MD015C104KAB		
AVX Style		MD02	
Cap. in pF*		WVDC	
		100	50
150,000	MD025C154KAB		
220,000	MD025C224KAB		
AVX Style		MD03	
Cap. in pF*		WVDC	
		100	50
330,000	MD035C334KAA		
470,000	MD035C474KAA		
680,000	MD035C684KAA		
1,000,000	MD035C105KAA		

For other voltages and tolerances see Part No. Codes.

**Z5U**

EIA Characteristic		Z5U	
AVX Style		MD01	
Cap. in pF*		WVDC	
		100	50
10,000	MD015E103ZAB		
15,000	MD015E153ZAB		
22,000	MD015E223ZAB		
33,000	MD015E333ZAB		
47,000	MD015E473ZAB		
68,000	MD015E683ZAB		
100,000	MD015E104ZAB		
150,000	MD015E154ZAB		
220,000	MD015E224ZAB		
330,000	MD015E334ZAB		
AVX Style		MD02	
Cap. in pF*		WVDC	
		100	50
470,000	MD025E474ZAB		
AVX Style		MD03	
Cap. in pF*		WVDC	
		100	50
680,000	MD035E684ZAA		
1,000,000	MD035E105ZAA		

For other voltages and tolerances see Part No. Codes.

\*Other capacitance values available upon special request.

Industry preferred values

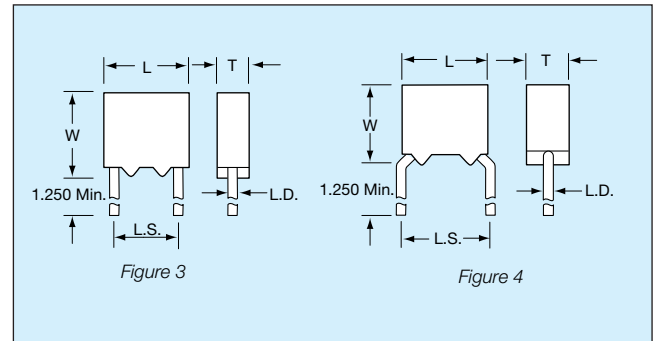
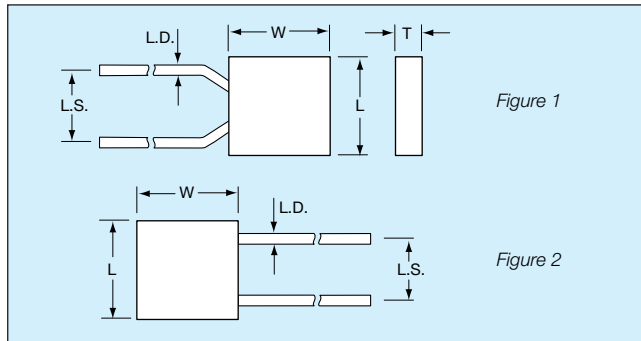
# CKR Series

## Molded Ceramic Capacitors



The CKR series of multilayer ceramic capacitors are molded radial and molded axial leaded devices. They provide a rugged construction and are designed specifically for military

applications. Terminations are Tin/Lead for improved solderability. Available to military specifications MIL-PRF-39014, MIL-PRF-20 and MIL-C-11014.



## HOW TO ORDER

**Military Type Designation: Styles CKR04, CKR05, CKR06, CKR08, CKR11, CKR12, CKR14, CKR15, CKR16**

**Dash Number Option: MIL-PRF-39014/01 (Appropriate Dash Number)**

**CKR05**

### Style

CK = General purpose, ceramic dielectric, fixed capacitors  
 R = Established Reliability Parts  
 05 = Remaining two numbers identify shape and dimension  
 11 = Remaining two numbers identify shape and dimension

**BX**

### Voltage-Temperature Limits

First letter identifies temperature range.  
 B = -55°C to +125°C  
 Second letter identifies voltage-temperature coefficient.

Capacitance Change with Reference to 25°C		
Second Letter	No Voltage	Rated Voltage
X	+15, -15%	+15, -25%
R Axial Only	+15, -15%	+15, -40%

**104**

### Capacitance

First two digits are the significant figures of capacitance. Third digit indicates the additional number of zeros. For example, order 100,000 pF as 104. (For values below 10pF use "R" in place of decimal point, e.g., 1R4 = 1.4pF)

**K**

### Capacitance Tolerance

K = ±10%  
 M = ±20%

**S**

### Military Failure Rate

M = 1% per 1000 hours  
 P = 0.1% per 1000 hours  
 R = 0.01% per 1000 hours  
 S = 0.001% per 1000 hours

Note:

AVX reserves the right to substitute a lower failure rate part per MIL-PRF-39014. Substitutability for failure rate levels shall be as follows:

Failure Rate Level	Will Replace Failure Rate Level
S (STD) (X-ray)	R, P, M, L
R (STD) (No X-ray)	P, M, L
P	M, L
M	L

**(M)**

### Standoff Option

To order standoff option, place "V" at the end of the part number.  
 Example: CKR05BX104KSV

## PACKAGING REQUIREMENTS

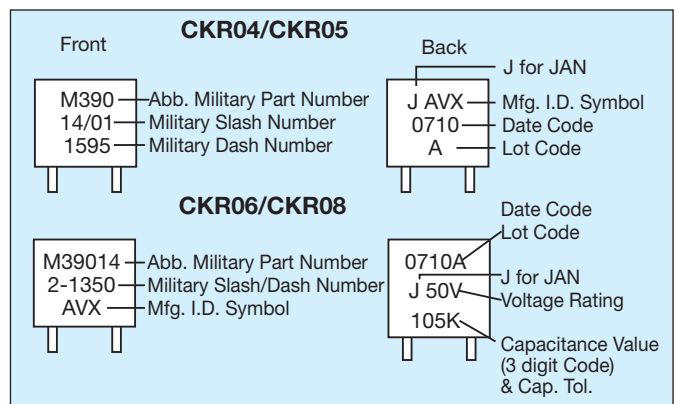
Packaging: 100 Pcs/bag; Radial Tape and Reel Packaging available upon request (2500 pcs./reel).

## SIZE SPECIFICATIONS

Dimensions: Millimeters (Inches)

Per Mil Spec	Case Size				
	Length (L)	Width (W)	Thickness (T)	Lead Spacing (L.S.)	Lead Diameter (L.D.)
MIL-PRF-39014					
CKR04 (Fig. 2)	4.83±.25 (.190±.010)	4.83±.25 (.190±.010)	2.29±.25 (.090±.010)	2.54±.38 (.100±.015)	.64±.05 (.025±.002)
CKR05 (Fig. 1, 4)	4.83±.25 (.190±.010)	4.83±.25 (.190±.010)	2.29±.25 (.090±.010)	5.08±.38 (.200±.015)	.64±.05 (.025±.002)
CKR06 (Fig. 2, 3)	7.37±.25 (.290±.010)	7.37±.25 (.290±.010)	2.29±.25 (.090±.010)	5.08±.38 (.200±.015)	.64±.05 (.025±.002)
CKR08 (Fig. 2)	7.37±.25 (.290±.010)	7.37±.25 (.290±.010)	3.68±.38 (.145±.015)	5.08±.38 (.200±.015)	.64±.05 (.025±.002)

## MARKING RADIAL LEAD



## HOW TO ORDER

**Military Type Designation: Capacitors, Fixed, Ceramic Dielectric, (Temperature Stable and General Purpose), High Reliability**

**M123**

**Mil-Spec Number**

**A**

**Modification Spec.**

**01**

**Slash Sheet Number**

**BX**

**Temperature Characteristic**

**B**

**Voltage**  
B = 50  
C = 100

**103**

**Capacitance Code**

**K**

**Capacitance Tolerance**  
C =  $\pm 0.25\text{pF}$   
D =  $\pm 0.5\text{pF}$   
F =  $\pm 1\%$   
J =  $\pm 5\%$   
K =  $\pm 10\%$

**C**

**Termination**  
C = Copper, solder coated (type C-4 or C-5 of MIL-STD-1276)  
W = Copper clad steel, solder coated, 60 micro inches minimum.

Capacitance change with reference to 25°C over temperature range -55°C to +125°C		
Symbol	Without Voltage	With Rated DC Voltage
BP	0 $\pm$ 30 ppm/°C	0 $\pm$ 30 ppm/°C
BX	$\pm 15, -15\%$	$\pm 15, -25\%$

## CROSS REFERENCE MIL-SPEC TEST REQUIREMENTS

TEST DESCRIPTION	MIL-PRF-123	MIL-PRF-39014	MIL-PRF-20	MIL-PRF-55681
NDT (Non-Destructive Test)	100% Ultrasonic Scan or Neutron-Radiography	No	No	No
Pre-Cap Visual (Pre-Encapsulation Visual Examination)	100%	No	No	No
D.P.A. (Destructive Physical Analysis)	Lot by Lot—Pre-Termination Lot by Lot—Finished Product	No	No	No
Pre-Cap Terminal Strength (Pre-Encapsulation Pull Test)	Lot by Lot	No	No	No
Life Test (Lot by Lot)	Lot by Lot—1000 Hours	No	No	No
Low Voltage Humidity	Lot by Lot	No	No	No
Thermal Shock 100 Cycles	Lot by Lot	No	No	No