

RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

100E Series Porcelain High RF Power Multilayer Capacitors



GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 100 E Series RF Capacitors. This high Q multilayer capacitor is ultra-stable under high RF current and voltage applications. High density porcelain construction provides a rugged, hermetic package. KYOCERA AVX offers an encapsulation option for applications requiring extended protection against arc-over and corona.

FUNCTIONAL APPLICATIONS

- Bypass
- Impedance Matching
- Coupling
- DC Blocking
- Tuning

CIRCUIT APPLICATIONS

- HF/RF Power Amplifiers
- Plasma Chambers
- Transmitters
- Medical (MRI coils)
- Antenna Tuning

ENVIRONMENTAL CHARACTERISTICS

Thermal Shock	Mil-STD-202, Method 107, Condition A
Moisture Resistance	Mil-STD-202, Method 106
Low Voltage Humidity	Mil-STD-202, Method 103, condition A, with 1.5 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours
Life Test	MIL-STD-202, Method 108, for 2000 hours, at 125°C. Voltage applied. 200% of WVDC for capacitors rated at 500 volts DC or less. 120% of WVDC for capacitors rated at 1250 volts DC or less. 100% of WVDC for capacitors rated above 1250 volts DC
Termination Styles	Available in various surface mount and leaded styles. See Mechanical Configurations
Terminal Strength	Terminations for chips and pellets withstand a pull of 10 lbs. min., 25 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor.

FEATURES

- Case E Size (.380" x .380")
- Capacitance Range 1pF to 5100pF
- Extended WVDC up to 7200 VDC
- Low ESR/ESL
- High Q
- High RF Power
- Ultra-Stable Performance
- High RF Current/Voltage
- Available with Encapsulation Option*

* For leaded styles only

PACKAGING OPTIONS



Tape & Reel



Tray
(96 pcs)



ELECTRICAL SPECIFICATIONS

Temperature Coefficient (TCC)	90 ± 30 PPM/°C
Capacitance Range	1 pF to 5100 pF
Operating Temperature	-55°C to +125°C*
Quality Factor	Greater than 10,000 (1 pF to 1000 pF) @ 1 MHz. Greater than 10,000 (1100 pF to 5100 pF) @ 1 KHz.
Insulation Resistance (IR)	1 pF to 5100 pF 10 ⁵ Megohms min. @ 25°C at 500 VDC 10 ⁴ Megohms min. @ 125°C at 500 VDC
Working Voltage (WVDC)	See Capacitance Values table
Dielectric Withstanding Voltage (DWV)	250% of WVDC for capacitors rated at 500 volts DC or less for 5 seconds. 150% of WVDC for capacitors rated at 1250 volts DC or less for 5 seconds. 120% of WVDC for capacitors rated above 1250 Volts DC for 5 seconds
Aging Effects	None
Piezoelectric Effects	None
Capacitance Drift	± (0.02% or 0.02 pF), whichever is greater
Retrace	Less than ±(0.02% or 0.02 pF), whichever is greater.

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CAPACITANCE VALUES

Cap. Code	Cap. (pF)	Tol.	Rated WVDC		Cap. Code	Cap. (pF)	Tol.	Rated WVDC		Cap. Code	Cap. (pF)	Tol.	Rated WVDC		CAP. CODE	CAP. (pF)	TOL.	RATED WVDC			
			STD.	EXT.				STD.	EXT.				STD.	EXT.				STD.	EXT.	STD.	EXT.
1R0	1.0	B, C, D	3600	7200	5R6	5.6	B, C, D	3600	7200	470	47	F, G, J, K, M	3600	TAGE	391	390	F, G, J, K, M	3600	N/A		
1R1	1.1				6R2	6.2				510	51				431	430					
1R2	1.2				6R8	6.8				560	56				471	470					
1R3	1.3				7R5	7.5				620	62				511	510					
1R4	1.4				8R2	8.2				680	68				561	560					
1R5	1.5				9R1	9.1				750	75				621	620					
1R6	1.6				EXTENDED VOLTAGE	7200				EXTENDED VOLTAGE	7200				820	82				681	680
1R7	1.7														910	91				751	750
1R8	1.8														100	10				821	820
1R8	1.9														110	11				911	910
2R0	2.0	120	12	EXT.			102	1000													
2R1	2.1	130	13	5000			112	1100													
2R2	2.2	150	15	VOLT.			122	1200													
2R3	2.3	160	16				152	1500													
2R4	2.4	180	18				182	1800													
3R0	3.0	200	20				222	2200													
3R3	3.3	220	22		272	2700															
3R6	3.6	240	24		302	3000															
3R9	3.9	270	27		332	3300															
4R3	4.3	300	30		392	3900															
4R7	4.7	330	33		472	4700															
5R1	5.1	360	36		512	5100															
		390	39																		
		430	43																		

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES, MATCHING, AND CAPACITOR ASSEMBLIES ARE AVAILABLE. • KYOCERA AVX CUSTOM POWER CAPACITOR ASSEMBLY CATALOG, LISTS ASSEMBLY OPTIONS. • DIFFERENT WORKING VOLTAGES ARE AVAILABLE • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

HOW TO ORDER

Series **100** Case Size **E** Capacitance **391** Tolerance **K** Voltage Rating **W** Termination Style Code **3600** Laser Marking (Optional) **X** Packaging **T**

See mechanical dimensions below

EIA Capacitance Code in pF.
First two digits = significant figures or "R" for decimal place.
Third digit = number of zeros or after "R" significant figures

Capacitance Tolerance Code

Code	B	C	D	F	G	J	K	M
Tol.	±1 pF	±25 pF	±5 pF	±1%	±2%	±5%	±10%	±20%

Packaging
T = Tape and Reel, 250 pc qty. Please see last Column Mechanical Configuration Table for Box and Tray Options

Voltage Rating
Please see 2nd Column Mechanical Configuration Table

The above part number refers to a 100 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 WVDC, with W termination (Tin / Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

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MECHANICAL CONFIGURATION

Series & Case Size	Term. Code	Case Size & Type	Outline W/T is a Termination Surface	Body Dimensions inches (mm)			Lead and Termination Dimensions and Material		Pkg Type & Qty	Pkg Code	
				Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials			
100E	W	E Solder Plate		.380+.015-.010 (9.65+0.38-0.25)	.380 ±.010 (9.65 ±0.25)	.170 (4.32) max.	.040 (1.02) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	P	E Pellet		.380+.040-.010 (9.65+1.02-0.25)				Heavy Tin/Lead Coated, over Nickel Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	T	E Solderable Nickel		.380+.015-.010 (9.65+0.38-0.25)				RoHS Compliant Tin Plated over Nickel Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	MS	E Microstrip		.380+.035-.010 (9.65+0.89-0.25)			N/A	N/A	High Purity Silver Leads L _L = .750 (19.05) min W _L = .350 ±.010 (8.89 ±0.25) T _L = .010 ±.005 (0.25 ±0.13) Leads are Attached with High Temperature Solder.	Tray, 16 or 32 pcs	J16 J32
100E	AR	E Axial Ribbon							Tray, 16 or 32 pcs	J16 J32	
100E	AW	E Non-Mag Axial Wire							Box, 20 pcs	B20	
100E	RW	E Non-Mag Radial Wire							Tray, 16 or 64 pcs	J16 J64	

Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

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				Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials			
100E	WN	Non-Mag Solder Plate		.380+.015 -.010 (9.65+0.38-0.25)	.380 ±.010 (9.65 ±0.25)	.170 (4.32) max.	.040 (1.02) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	PN	Non-Mag Pellet		.380+.040 -.010 (9.65+1.02-0.25)				Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	TN	Non-Mag Solderable Barrier		.380+.015 -.010 (9.65+0.38-0.25)				RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination	T&R, 250 pcs Tray, 24 or 96 pcs	T J24 J96	
100E	MN	Non-Mag Microstrip		.380+.035 -.010 (9.65+0.89-0.25)			N/A	N/A	High Purity Silver Leads $L_L = .750$ (19.05) min $W_L = .350 \pm .010$ (8.89 ±0.25) $T_L = .010 \pm .005$ (0.25 ±0.13) Leads are Attached with High Temperature Solder.	Tray, 16 or 32 pcs	J16 J32
100E	AN	Non-Mag Axial Ribbon							Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) $L_L = 2.25$ (57.2) min.	Tray, 16 or 32 pcs	J16 J32
100E	BN	Non-Mag Axial Wire							Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) $L_L = 1.0$ (25.4) min.	Box, 20 pcs	B20
100E	RN	Non-Mag Radial Wire									

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SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal
Electrode Orientation

Mount Type	Case E				
	Pad Size	A Min.	B Min.	C Min.	D Min.
Horizontal Mount	Normal	.405	.050	.325	.425
	High Density	.385	.030	.325	.385

Dimensions are in inches.

PERFORMANCE DATA

