

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100A Series Porcelain Superchip® Multilayer Capacitors



#### FEATURES

- Case A Size (.055" x .055")
- Lowest ESR/ESL
- High Q
- Low Noise
- Capacitance Range 0.1 pF to 100 pF
- Extended WVDC up to 250 VDC
- Ultra-Stable Performance
- High Self-Resonance
- Established Reliability (QPL)

#### GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 100A Series RF/Microwave Capacitors. This is KYOCERA AVX most versatile high Q, high self resonant multilayer capacitor. High density porcelain construction provides a rugged, hermetic package.

Typical functional applications: Bypass, Coupling, Tuning, Feedback, Impedance Matching and DC Blocking.

Typical circuit applications: Microwave/RF/IF Amplifiers, Mixers, Oscillators, Low Noise Amplifiers, Filter Networks, Timing Circuits and Delay Lines.

#### PACKAGING OPTIONS



#### ELECTRICAL SPECIFICATIONS

<b>Temperature Coefficient (TCC)</b>	90 ± 20 PPM/°C
<b>Capacitance Range</b>	0.1 pF to 100 pF
<b>Operating Temperature</b>	-55°C to +125°C*
<b>Quality Factor</b>	Greater than 10,000 @ 1 MHz.
<b>Insulation Resistance (IR)</b>	0.1 pF to 100 pF 10 <sup>6</sup> Megohms min. @ 25°C at rated WVDC 10 <sup>5</sup> Megohms min. @ 125°C at rated WVDC
<b>Working Voltage (WVDC)</b>	See Capacitance Values table
<b>Dielectric Withstanding Voltage (DWV)</b>	250% of rated WVDC for 5 seconds
<b>Aging Effects</b>	None
<b>Piezoelectric Effects</b>	None
<b>Capacitance Drift</b>	± (0.02% or 0.02 pF), whichever is greater

#### ENVIRONMENTAL CHARACTERISTICS

<b>Thermal Shock</b>	Mil-STD-202, Method 107, Condition A
<b>Moisture Resistance</b>	Mil-STD-202, Method 106
<b>Low Voltage Humidity</b>	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
<b>Life Test</b>	MIL-STD-202, Method 108, for 2000 hours, at 125°C. 200% WVDC applied.
<b>Termination Styles</b>	Available in various surface mount styles. See Mechanical Configurations, page 3
<b>Terminal Strength</b>	Terminations for chips and pellets withstand a pull of 5 lbs. min., 10 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor.

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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		
			STD.	EXT.				STD.	EXT.				STD.	EXT.	
0R1	0.1	A, B	150	EXTENDED VOLTAGE	2R2	2.2	B, C, D	150	EXTENDED VOLTAGE	160	16	F, G, J K, M	150	VOLTAGE	
0R2	0.2				2R4	2.4				180	18				
0R3	0.3	B, C			2R7	2.7				200	20				
0R4	0.4				3R0	3.0				220	22				
0R5	0.5	B, C, D	150	EXTENDED VOLTAGE	3R3	3.3	B, C, J K, M	150	EXTENDED VOLTAGE	240	24	F, G, J K, M	150	250	
0R6	0.6					3R6				3.6	270				27
0R7	0.7					3R9				3.9	300				30
0R8	0.8					4R3				4.3	330				33
0R9	0.9	B, C, D	150	EXTENDED VOLTAGE	4R7	4.7	B, C, J K, M	150	EXTENDED VOLTAGE	360	36	F, G, J K, M	150	EXTENDED	
1R0	1.0					5R1				5.1	390				39
1R1	1.1					5R6				5.6	430				43
1R2	1.2					6R2				6.2	470				47
1R3	1.3	B, C, D	150	EXTENDED VOLTAGE	6R8	6.8	B, C, J K, M	150	EXTENDED VOLTAGE	510	51	F, G, J K, M	150	EXTENDED	
1R4	1.4					7R5				7.5	560				56
1R5	1.5					8R2				8.2	620				62
1R6	1.6					9R1				9.1	680				68
1R7	1.7	B, C, D	150	EXTENDED VOLTAGE	100	10	F, G, J K, M	150	EXTENDED VOLTAGE	750	75	F, G, J K, M	150	VOLT.	
1R8	1.8					110				11	820				82
1R9	1.9					120				12	910				91
2R0	2.0					130				13	101				100
2R1	2.1				150	15								EXT	

$v_{rms} = 0.707 \times WVDC$

Special values, tolerances, different WVDC and matching available. Please consult factory.

Note: Extended WVDC does not apply to CDR products

## HOW TO ORDER



Code	A	B	C	D	F	G	J	K	M
Tol.	±0.05 pF	±1 pF	±.25 pF	±.5 pF	±1%	±2%	±5%	±10%	±20%

**Termination Style Code** W  
Please see 2nd Column Mechanical Configuration Table

The above part number refers to a 100 A Series (case size A) 10 pF capacitor, J tolerance (±5%), 150 WVDC, with W termination (Tin / Lead, Solder Plated over Nickel Barrier), Laser Marking and Tape and Reel 1000 pc qty packaging.

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#### MECHANICAL CONFIGURATION

Series & Case Size	Term. Code	MIL-PRF-55681	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		
100A	W	CDR12BG	A Solder Plate		.055+.015-.010 (1.40+0.38-0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 + .010 - .005 (0.25 + 0.25 - 0.13)	Tin/ Lead, Solder Plated over Nickel Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100
100A	P	CDR12BG	A Pellet		.055+.025-.010 (1.40+0.64-0.25)	.055 ±.015 (1.40 ±0.38)			Heavy Tin/ Lead Coated, over Nickel Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100
100A	T	N/A	A Solderable Nickel Barrier		.055+.015-.010 (1.40+0.38-0.25)	.055 ±.015 (1.40 ±0.38)			RoHS Compliant Tin Plated over Nickel Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100
100A	CA	CDR11BG	A Gold Chip		.055+.015-.010 (1.40+0.38-0.25)	.055 ±.015 (1.40 ±0.38)			RoHS Compliant Gold Plated over Nickel Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100

#### NON-MECHANICAL CONFIGURATION

Series & Case Size	Term. Code	MIL-PRF-55681	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		
100A	WN	Meets Requirements	A Solder Plate		.055+.015-.010 (1.40+0.38-0.25)	.055 ±.015 (1.40 ±0.38)	.057 (1.45) max.	.010 + .010 - .005 (0.25 + 0.25 - 0.13)	Tin/ Lead, Solder Plated over Non-Magnetic Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100
100A	PN	Meets Requirements	A Pellet		.055+.025-.010 (1.40+0.64-0.25)	.055 ±.015 (1.40 ±0.38)			Heavy Tin/ Lead Coated, over Non-Magnetic Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100
100A	TN	Meets Requirements	A Solderable Nickel Barrier		.055+.015-.010 (1.40+0.38-0.25)	.055 ±.015 (1.40 ±0.38)			RoHS Compliant Tin Plated over Non-Magnetic Barrier Termination	T&R, 1000 or 500 pcs Vertical T&R, 1000 or 500 pcs Cap Pac, 100 pcs	T1K or T TV1K or TV C100

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#### SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal Electrode Orientation

Vertical Electrode Orientation

Case A					
Mount Type	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.070	.050	.030	.130
	High Density	.050	.030	.030	.090
Horizontal Mount	Normal	.080	.050	.030	.130
	High Density	.060	.030	.030	.090

Dimensions are in inches.

#### PERFORMANCE DATA

ESR VS. CAPACITANCE  
SERIES 100, CASE A



Q VS. CAPACITANCE  
SERIES 100, CASE A



SERIES RESONANCE VS. CAPACITANCE  
SERIES 100, CASE A



CURRENT RATING VS. CAPACITANCE  
SERIES 100, CASE A



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**PERFORMANCE DATA**

