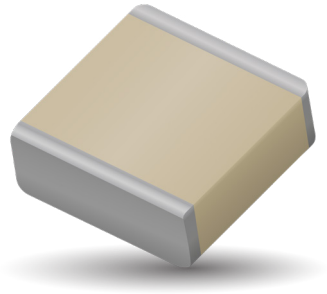
RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

100E Series Porcelain High RF Power Multilayer Capacitors



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

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 agains arc-over and corona.

PACKAGING OPTIONS

Tape & Reel

Tray (96 pcs)

RoHS COMPLIANT

FUNCTIONAL APPLICATIONS

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

CIRCUIT APPLICATIONS

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

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.

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.

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.
1R0	1.0	B, C, D	3600	7200 EXTENDED VOLTAGE	5R6	5.6	B, C, D	3600	7200 EXTENDED VOLTAGE	470	47	F, G, J, K, M	3600	7200 EXTENDED VOLTAGE	391	390	F, G, J, K, M	3600	N/A
1R1	1.1				6R2	6.2				510	51				431	430		2500	
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				100	10	F, G, J, K, M			820	82				681	680			
1R7	1.7				110	11				910	91				751	750			
1R8	1.8				120	12				101	100				821	820		1000	
1R8	1.9				130	13				111	110				911	910			
2R0	2.0				150	15				121	120				102	1000			
2R1	2.1				160	16				131	130				112	1100			
2R2	2.2				180	18				151	150				122	1200			
2R3	2.4				200	20				161	160				152	1500			
2R4	2.7				220	22				181	180				182	1800			
3R0	3.0				240	24				201	200				222	2200			
3R0	3.3				270	27				221	220				272	2700		500	
3R0	3.6				300	30				241	240				302	3000			
3R0	3.9				330	33				271	270				332	3300			
4R3	4.3				360	36				301	300				392	3900			
4R7	4.7				390	39				331	330				472	4700			
5R1	5.1				430	43				361	360				512	5100			

EXTENDED VOLTAGE TAGE 7200 EXTENDED EXT. 5000 VOLT. N/A

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

100 E 391 K W 3600 X T

Series

Case Size
See mechanical dimensions below

Capacitance
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

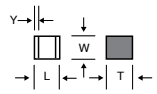
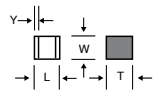
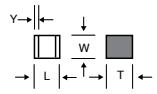
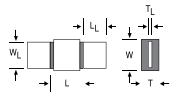
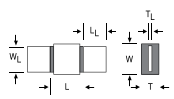
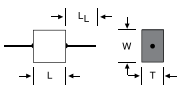
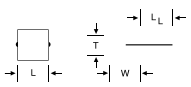
Laser Marking (Optional)

Voltage Rating

Termination Style Code
Please see 2nd Column Mechanical Configuration Table

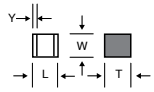
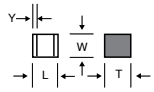
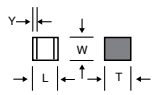
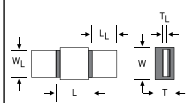
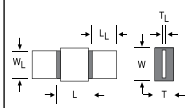
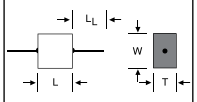
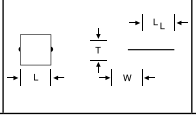
The above part number refers to a 100 E Series (case size E) 390 pF capacitor, K tolerance (±10%), 3600 WVDC, with W termination (Tin / Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

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	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						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 2.25 (57.2) min.	Box, 20 pcs	B20
100E	RW	E Non-Mag Radial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 1.0 (25.4) min.	Tray, 16 or 64 pcs	J16 J64

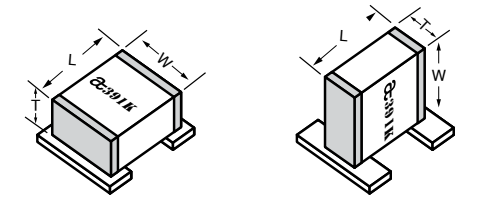
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

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	WN	E 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	E 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	E 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	E Non-Mag Microstrip		.380+.035 -.010 (9.65+0.89-0.25)			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	AN	E Non-Mag Axial Ribbon							Tray, 16 or 32 pcs	J16 J32
100E	BN	E Non-Mag Axial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 2.25 (57.2) min.	Box, 20 pcs	B20
100E	RN	E Non-Mag Radial Wire						Silver-plated Copper Leads Dia. = .032 ±.002 (.813 ±.051) L_L = 1.0 (25.4) min.	Tray, 16 or 64 pcs	J16 J64

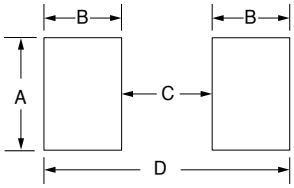
Custom lead styles and lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are **RoHS** compliant.

SUGGESTED MOUNTING PAD DIMENSIONS



Horizontal Electrode Orientation

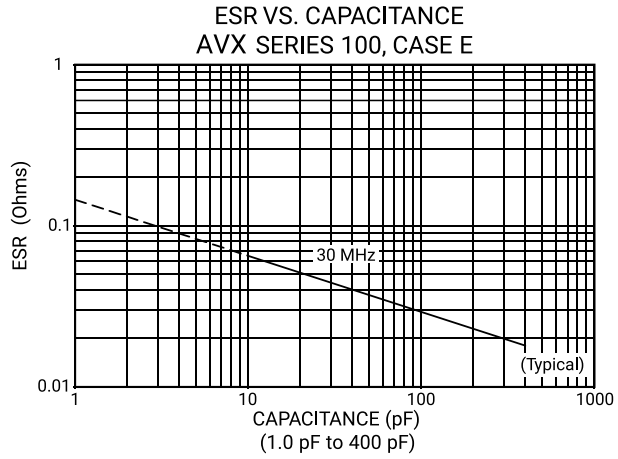
Vertical Electrode Orientation

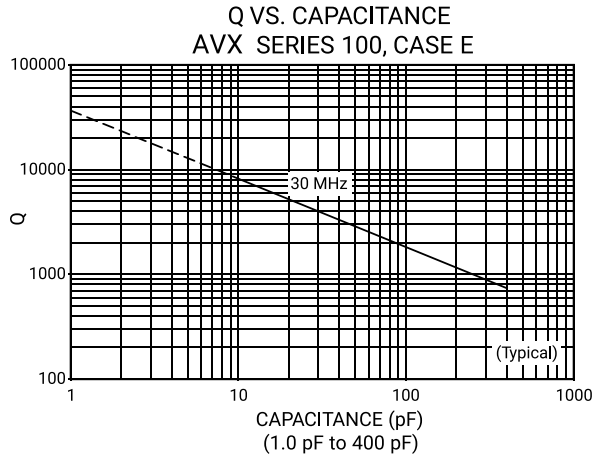


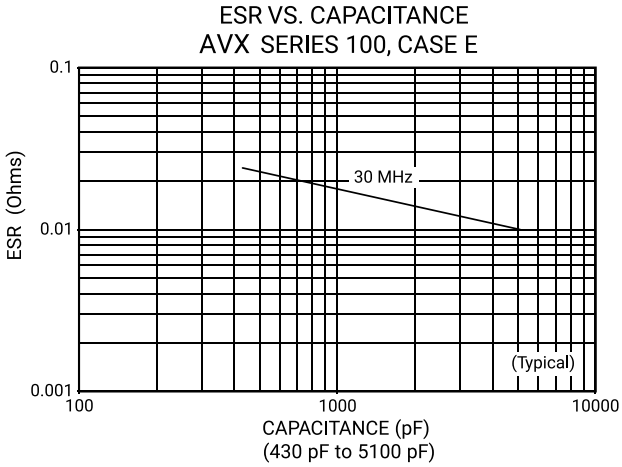
Mount Type	Case E				
	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.185	.050	.325	.425
	High Density	.165	.030	.325	.385
Horizontal Mount	Normal	.405	.050	.325	.425
	High Density	.385	.030	.325	.385

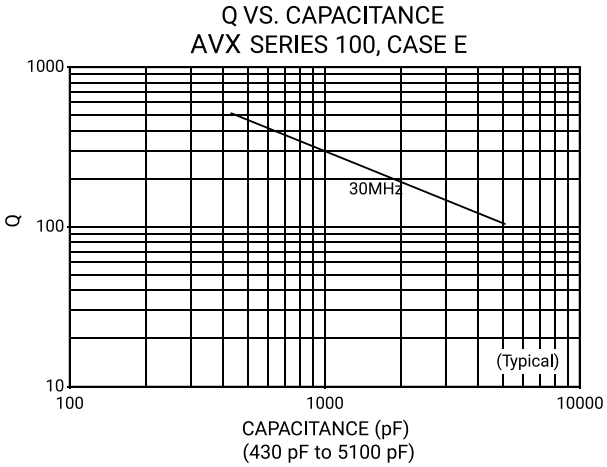
Dimensions are in inches.

PERFORMANCE DATA



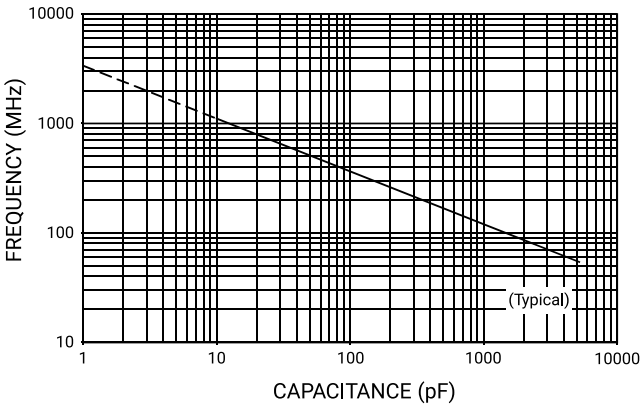




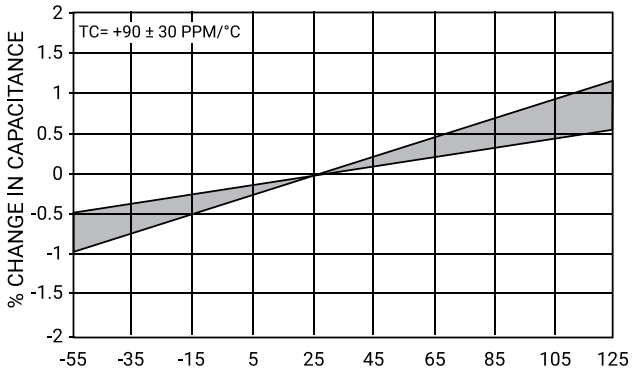


PERFORMANCE DATA

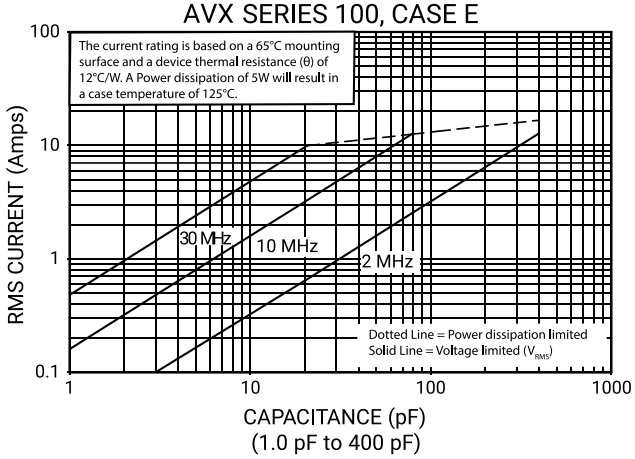
SERIES RESONANCE VS. CAPACITANCE
AVX SERIES 100, CASE E



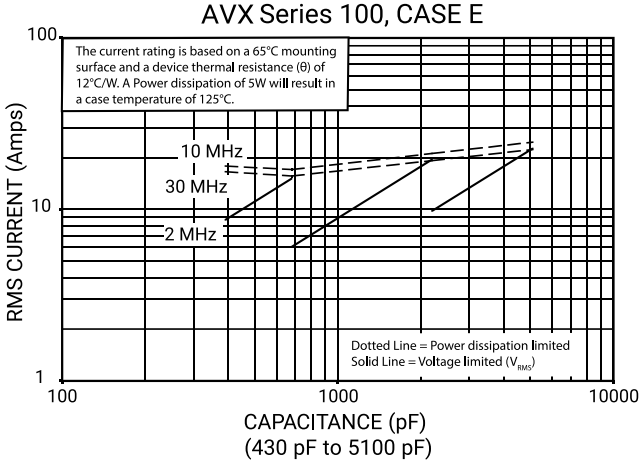
CAPACITANCE CHANGE VS. TEMPERATURE
AVX SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE
AVX SERIES 100, CASE E



CURRENT RATING VS. CAPACITANCE
AVX Series 100, CASE E



CURRENT RATING VS. CAPACITANCE
AVX SERIES 100, CASE E, EXTENDED VOLTAGE