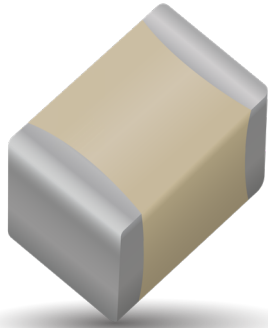


RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors



GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, is announcing new improved ESR/ESL performance for the 700B Series RF/Microwave Capacitors. The superior high self-resonance and zero TCC characteristic of this Series provide excellent performance over a broad range of RF and microwave applications requiring minimum drift, including RF power. Porcelain and ceramic construction provide a rugged, hermetic package.

FUNCTIONAL APPLICATIONS

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

CIRCUIT APPLICATIONS

- Timing Power Amplifiers
- Filters
- Oscillators
- RF Power Amplifiers

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 5 lbs. min., 15 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor.

KYOCERA AVX 700B Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

FEATURES

- Case B Size (.110" x .110")
- Capacitance Range 0.1 pF to 5100 pF
- Extended WVDC up to 1500 VDC
- Low ESR/ESL
- High Q
- Low Noise
- Ultra-Stable Performance
- High Self-Resonance
- Established Reliability (QPL)

PACKAGING OPTIONS



Tape & Reel



Vertical
Orientation
Tape & Reel



Cap Pac®
(100 pcs)



ELECTRICAL SPECIFICATIONS

Temperature Coefficient (TCC)	0 ±30 PPM/°C (-55°C to +125°C)
Capacitance Range	0.1 pF to 5100 pF
Operating Temperature	0.1 to 200 pF: from -55°C to +175°C 220 to 5100 pF: from -55°C to +125°C
Quality Factor	Greater than 10,000 (1 pF to 200 pF) @ 1 MHz. Greater than 2000 (220 pF to 1000 pF) @ 1 MHz. Greater than 2000 (1100 pF to 5100 pF) @ 1 KHz.
Insulation Resistance (IR)	0.1 pF to 470 pF: 10 ⁶ Megohms min. @ +25°C at rated WVDC. 10 ⁵ Megohms min. @ +125°C at rated WVDC. 510 pF to 5100 pF: 10 ⁵ Megohms min. @ +25°C at rated WVDC. 10 ⁴ Megohms min. @ +125°C at rated WVDC.
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.

RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors



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.
0R1	0.1	B	500	EXTENDED VOLTAGE	3R3	3.3	B, C, D	500	1500	330	33	F, G, J, K, M	500	1500	331	330	F, G, J, K, M	200	N/A
0R2	0.2				3R6	3.6				360	36				361	360			
0R3	0.3	3R9			3.9	390				39	391				390				
0R4	0.4	B, C			4R3	4.3				430	43				431	430			
					4R7	4.7				470	47				471	470			
0R5	0.5	B, C, D			5R1	5.1				510	51			1000	511	510			
0R6	0.6				5R6	5.6				560	56				561	560			
0R7	0.7				6R2	6.2				620	62				621	620			
0R8	0.8				B, C, J, K, M	6R8	6.8			680	68				681	680			
0R9	0.9					7R5	7.5			750	75				751	750			
1R0	1.0					8R2	8.2			820	82		821		820				
1R1	1.1					9R1	9.1			910	91		911		910				
1R2	1.2				100	10	101			100	102		1000						
1R3	1.3				110	11	111			110	112		1100						
1R4	1.4				120	12	121			120	122		1200						
1R5	1.5				130	13	131			130	152		1500						
1R6	1.6				150	15	151			150	182		1800						
1R7	1.7				160	16	161			160	222		2200						
1R8	1.8				180	18	181			180	272		2700						
1R9	1.9				200	20	201			200	302		3000						
2R0	2.0				220	22	221			220	332		3300						
2R1	2.1				240	24	241			240	200		N/A	392	3900				
2R2	2.2				270	27	271			270				472	4700				
2R4	2.4				300	30	301			300				512	5100				
2R7	2.7																		
3R0	3.0																		

SPECIAL VALUES, TOLERANCES, DIFFERENT WVDC AND MATCHING AVAILABLE. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.
Capacitance values in **bold** type indicate porcelain dielectric. All other capacitance values indicate ceramic dielectric.

HOW TO ORDER

700

B

331

J

W

500

X

T

Packaging
T = Tape and Reel, 500 pc qty
TV = Vertical Tape and Reel, 500 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

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%

The above part number refers to a 700B Series (case size B) 330 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

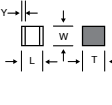
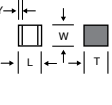
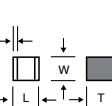
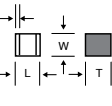
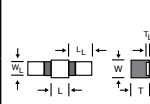
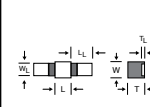
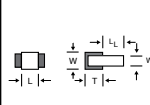
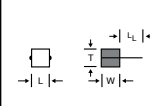
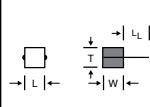
RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors



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	Pkg Code	
					Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials				
700B	W	CDR14BP	 Solder Plate		110+.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59) max.	.015 (0.38) ±.010 (0.25)	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
700B	P	CDR14BP	 Pellet		110+.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59)		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
700B	T	N/A	 Solderable Nickel Barrier		110+.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59)		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
700B	CA	CDR13BP	 Gold Chip		110+.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59)		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
700B	MS	CDR21BP	 Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	Length (L _L)	Width (W _L)	Thickness (T _L)	Cap Pac, 20 pcs	C20
700B	AR	CDR22BP	 Axial Ribbon				.250 (6.35) min.		.093 ± .005 (2.36 ± 0.13)	.004 ± .001 (.102 ± .025)	Box, 20 or 100 pcs	B20 or B100	
700B	RR	CDR24BP	 Radial Ribbon								Box, 20 or 100 pcs	B20 or B100	
700B	RW	CDR23BP	 Radial Wire		.145 ±.020 (3.68 ±0.51)				#26 AWG., .016 (.406) dia.nominal		.500 (12.7)	Box, 20 or 100 pcs	B20 or B100
700B	AW	CDR25BP	 Axial Wire				.950 min.				Box, 20 or 100 pcs	B20 or B100	

Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

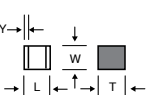
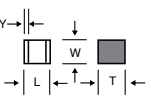
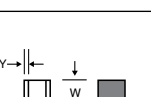
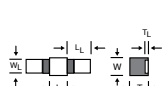
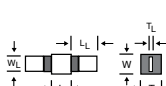
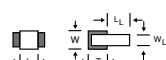
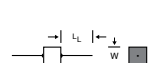
RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors



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	Pkg Code	
					Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials				
700B	WN	Meets Requirements	B  Non-Mag Solder Plate		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.59) max.	.015 (0.38) ±.010 (0.25)	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
700B	PN	Meets Requirements	B  Non-Mag Pellet		.110 +.035 -.010 (2.79 +0.89 -0.25)	.110 ±.015 (2.79 ±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
700B	TN	Meets Requirements	B  Non-Mag Solderable Barrier		.110 +.020 -.010 (2.79 +0.51 -0.25)	.110 ±.015 (2.79 ±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
700B	MN	Meets Requirements	B  Non-Mag Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	Length (L)	Width (W)	Thickness (T.)	Cap Pac, 20 pcs	C20
700B	AN	Meets Requirements	B  Non-Mag Axial Ribbon				.250 (6.35) (6.35) min.		.093 ± .005 (2.36 ± 0.13)	.004 ± . .001 (.102 ± .025)	Box, 20 or 100 pcs	B20 or B100	
700B	FN	Meets Requirements	B  Non-Mag Radial Ribbon				.102 (2.59) max.			.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal	Box, 20 or 100 pcs	B20 or B100
700B	RN	Meets Requirements	B  Non-Mag Axial Wire		Box, 20 or 100 pcs							B20 or B100	
700B	BN	Meets Requirements	B  Non-Mag Radial Wire		Box, 20 or 100 pcs							B20 or B100	

*Capacitors with values greater than 200 pF contain a trace magnetic element that may exhibit weak magnetic properties.

** Additional lead styles available: Narrow Microstrip (DN), Narrow Axial Ribbon (GN) and Vertical Narrow Microstrip (HN). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and RoHS compliant.

RF/Microwave Capacitors

RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors

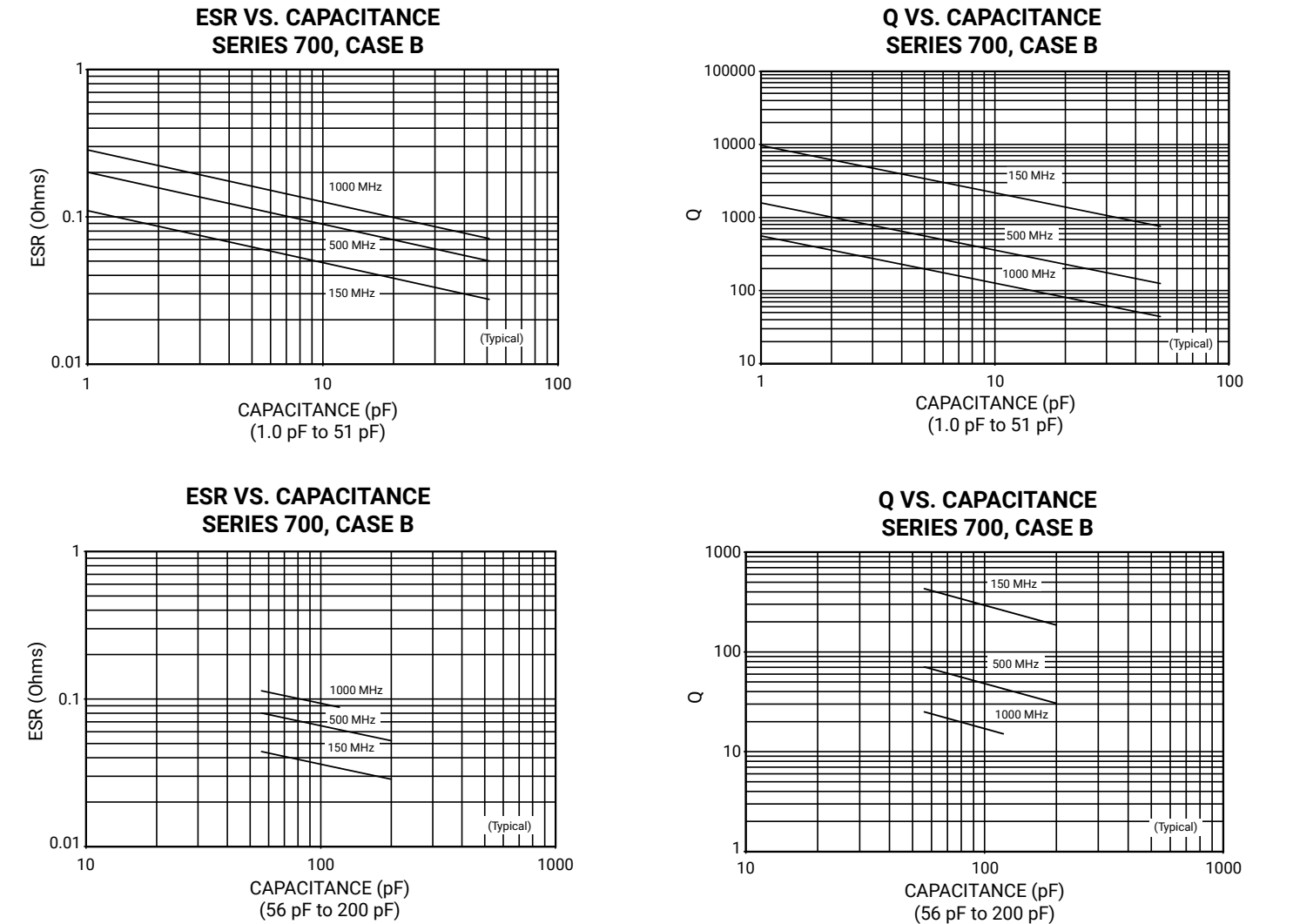


SUGGESTED MOUNTING PAD DIMENSIONS

Case B Vertical Mount					
Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
0.1 pF	Normal	.065	.050	.075	.175
	High Density	.045	.030	.075	.135
0.2 pF	Normal	.090	.050	.075	.175
	High Density	.070	.030	.075	.135
0.3 to 510 pF	Normal	.110	.050	.075	.175
	High Density	.090	.030	.075	.135
> 510 pF	Normal	.120	.050	.075	.175
	High Density	.100	.030	.075	.135

Horizontal Mount					
All Values	Pad Size	A Min.	B Min.	C Min.	D Min.
All Values	Normal	.130	.050	.075	.175
	High Density	.110	.030	.075	.135

PERFORMANCE DATA



RF/Microwave Capacitors

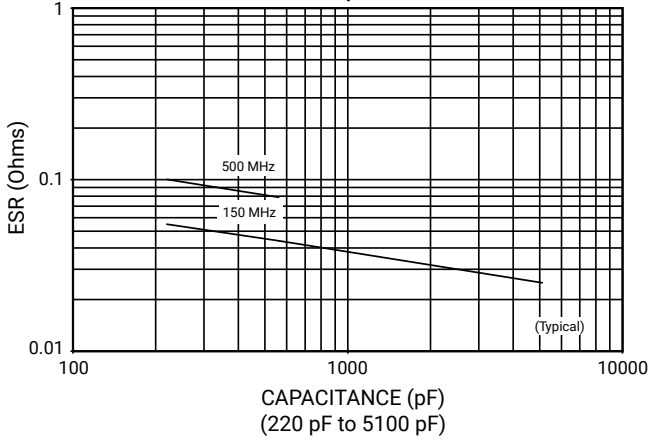
RF/Microwave Multilayer Capacitors (MLC)

700B Series NPO Porcelain and Ceramic Multilayer Capacitors

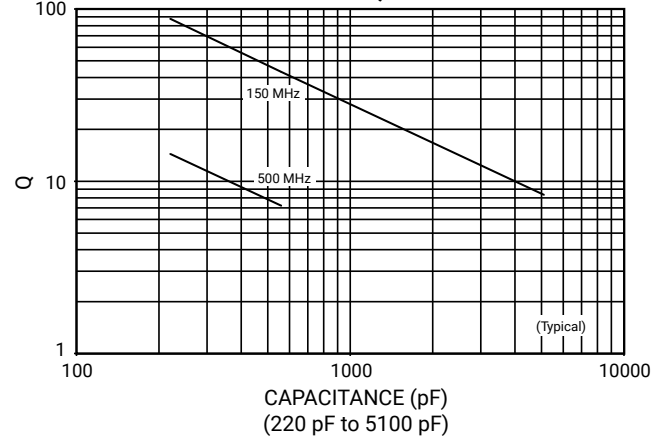


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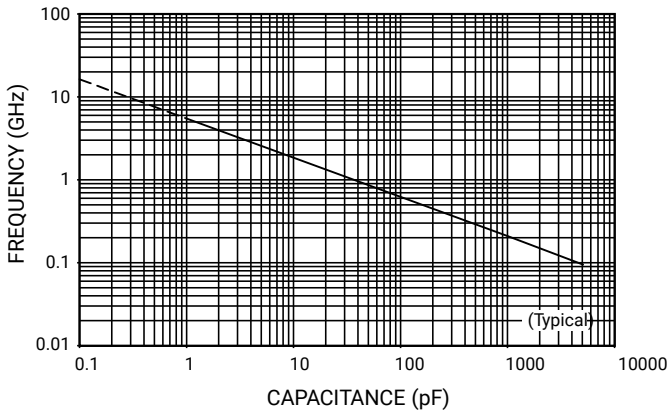
**ESR VS. CAPACITANCE
SERIES 700, CASE B**



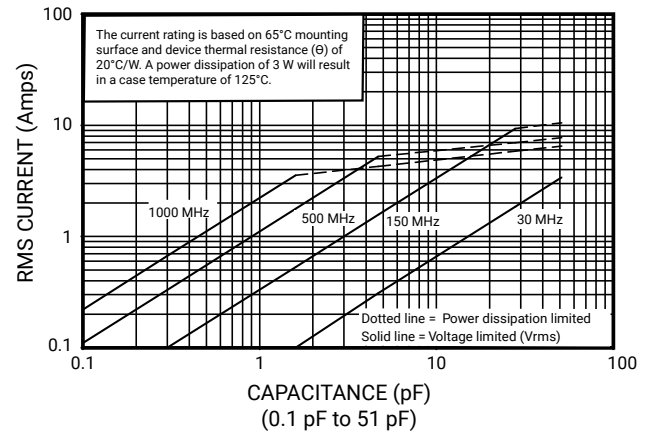
**Q VS. CAPACITANCE
SERIES 700, CASE B**



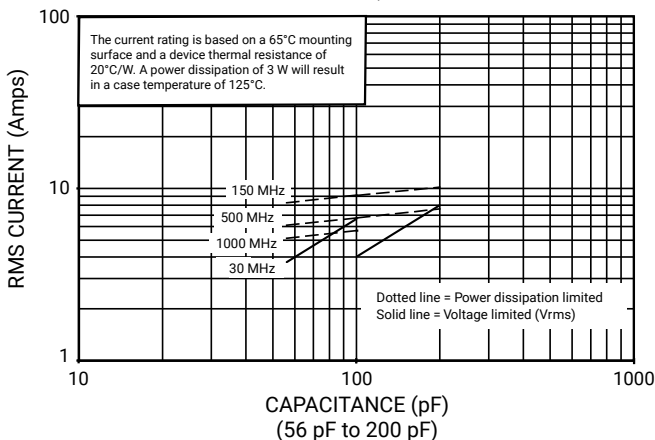
**SERIES RESONANCE VS. CAPACITANCE
SERIES 700, CASE B**



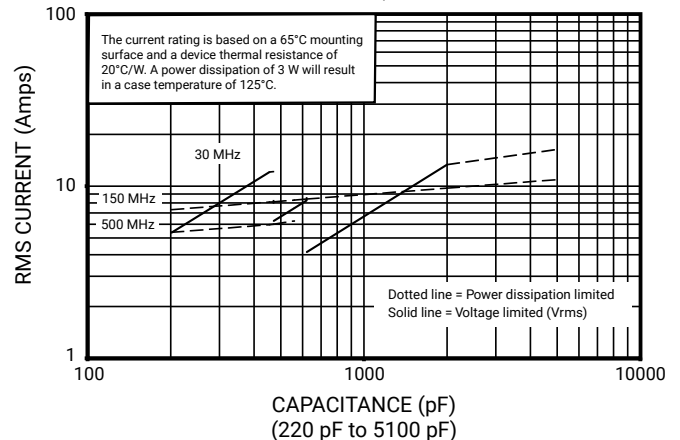
**CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B**



**CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B**

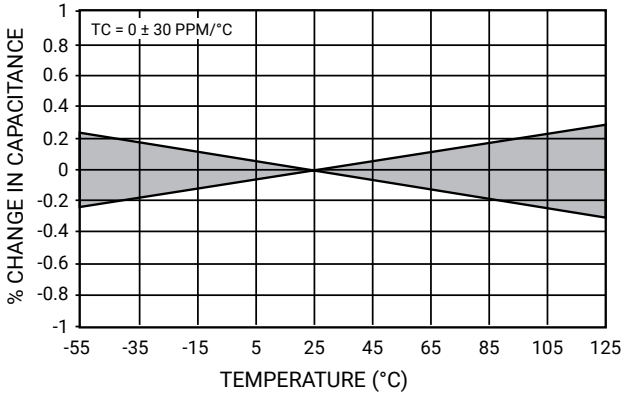


**CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B**

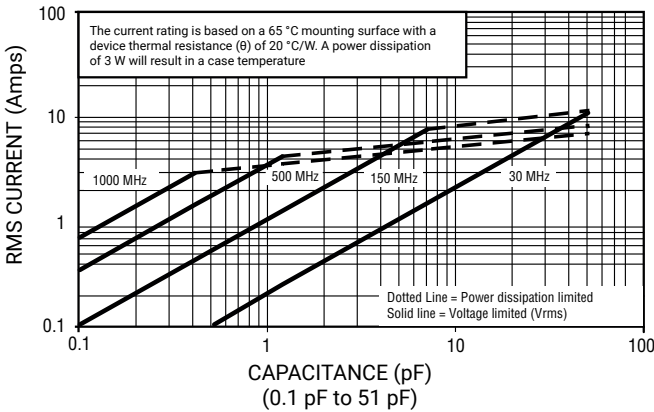


PERFORMANCE DATA

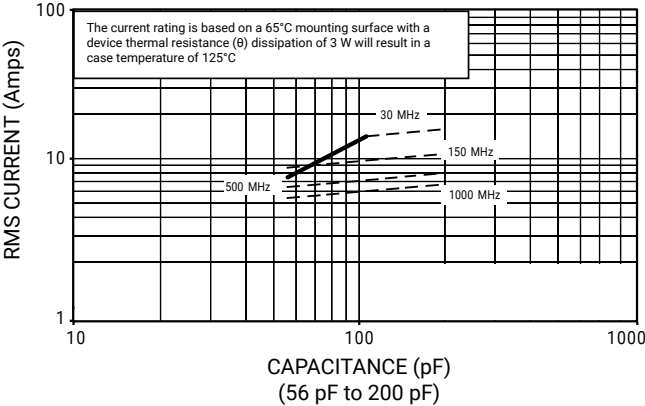
CURRENT CHANGE VS. TEMPERATURE
SERIES 700, CASE B



CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B, EXTENDED VOTAGE



CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B, EXTENDED VOTAGE



RF/Microwave Capacitors
RF/Microwave Multilayer Capacitors (MLC)
700B Series NPO Porcelain and Ceramic Multilayer Capacitors

SAMPLE KITS

Kit #	RoHS Compliant	Item Number	Description	Cap. Value Range (pF)	Cap Value (pF)	Tol.	Price
Kit 11	-	DK0011	700B Porcelain and Ceramic 16 different values, 15 pcs. min. per value	1.0 to 10	1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3.....	±0.1	\$165.00
Kit 11T		DK0011T			3.9, 4.7, 5.6, 6.8, 8.2 3.9, 4.7, 5.6, 6.8, 8.2	±0.25	
					10	±5%	
Kit 12	-	DK0012	700B Porcelain and Ceramic 16 different values, 15 pcs. min. per value	10 to 100	10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47, 56, 68, 82, 100	±5%	\$165.00
Kit 12T		DK0012T					
Kit 13	-	DK0013	700B Porcelain and Ceramic 16 different values, 15 pcs. min. per value	100 to 1000	100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 390, 470	± 5%	\$165.00
Kit 13T		DK0013T					
					560, 680, 820, 1000.....	±10%	