



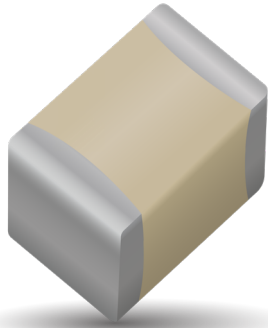
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RF/Microwave Capacitors

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.



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

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RF/Microwave Multilayer Capacitors (MLC)

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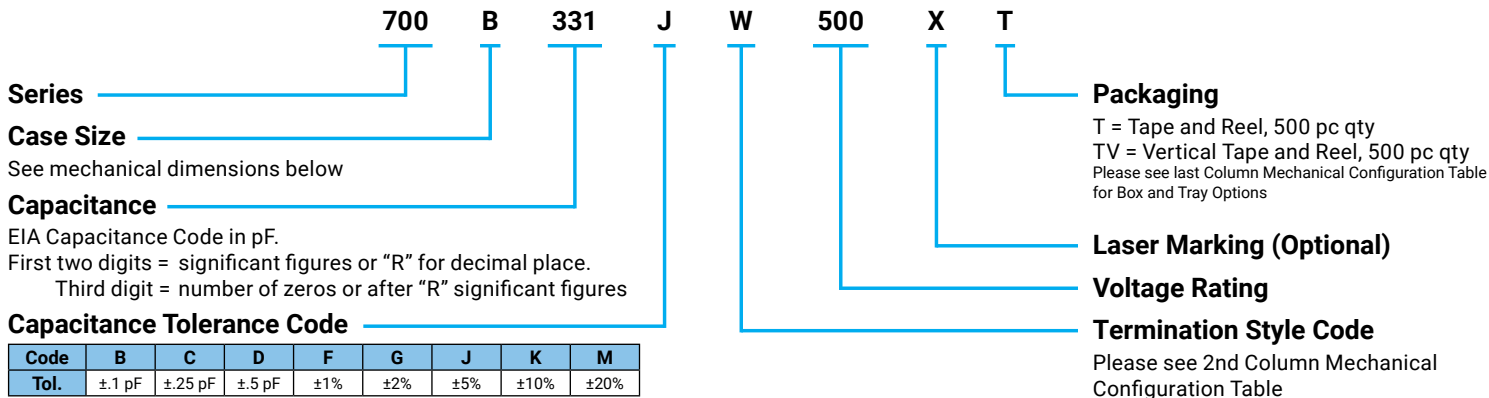


CAPACITANCE VALUES

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.																						
0R1	0.1	B	500	1500	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																									
0R2	0.2				3R6	3.6				360	36					361				360																							
0R3	0.3	B, C			EXTENDED VOLTAGE	3R9				3.9	EXTENDED VOLTAGE					500				1500	390	39	EXTENDED VOLTAGE	1000	1500	391	390	EXTENDED VOLTAGE	150														
0R4	0.4					4R3				4.3											430	43					431				430												
0R5	0.5	B, C, D				EXTENDED VOLTAGE				4R7											4.7	EXTENDED VOLTAGE					500				1500	470	47	EXTENDED VOLTAGE	300	1500	471	470	EXTENDED VOLTAGE	50	N/A		
0R6	0.6									5R1											5.1											510	51					511				510	
0R7	0.7									5R6											5.6											560	56					561				560	
0R8	0.8									6R2											6.2											620	62					621				620	
0R9	0.9									B, C, J, K, M											6R8											6.8	680					68				681	680
1R0	1.0																				7R5											7.5	750					75				751	750
1R1	1.1		B, C, D	EXTENDED VOLTAGE			8R2	8.2	EXTENDED VOLTAGE	500		1500	820	82	EXTENDED VOLTAGE		200	1500	821		820											EXTENDED VOLTAGE	50					N/A					
1R2	1.2						9R1	9.1					910	91							911																					910	
1R3	1.3				100		10	101			100		102	1000																													
1R4	1.4				110		11	111			110		112	1100																													
1R5	1.5	120			12	121	120	122			1200																																
1R6	1.6	F, G, J, K, M			130	13	131	130			152		1500																														
1R7	1.7				150	15	151	150			182		1800																														
1R8	1.8				160	16	161	160			222		2200																														
1R9	1.9				180	18	181	180			272		2700																														
2R0	2.0				200	20	201	200			302		3000																														
2R1	2.1		220	22	221	220	332	3300																																			
2R2	2.2		240	24	241	240	392	3900																																			
2R4	2.4		270	27	271	270	472	4700																																			
2R7	2.7		300	30	301	300	512	5100																																			
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



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	B 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	B 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	B 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	B 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	B 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	B 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	B Radial Ribbon		.145 ±.020 (3.68 ±0.51)	.110 ±.015 (2.79 ±0.38)	.102 (2.59) max.	N/A	.500 (12.7)	#26 AWG., .016 (.406) dia.nominal		Box, 20 or 100 pcs	B20 or B100			
700B	RW	CDR23BP	B Radial Wire									.950 min.			Box, 20 or 100 pcs	B20 or B100
700B	AW	CDR25BP	B Axial Wire													

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.

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RF/Microwave Multilayer Capacitors (MLC)

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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	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) 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						.145 ±.020 (3.68 ±0.51)	.102 (2.59) max.	N/A	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal		Box, 20 or 100 pcs
700B	RN	Meets Requirements	B Non-Mag Axial Wire		.950 min.	N/A	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal					Box, 20 or 100 pcs	B20 or B100	
700B	BN	Meets Requirements	B Non-Mag Radial Wire					.950 min.					N/A	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal

*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.

SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal
Electrode Orientation

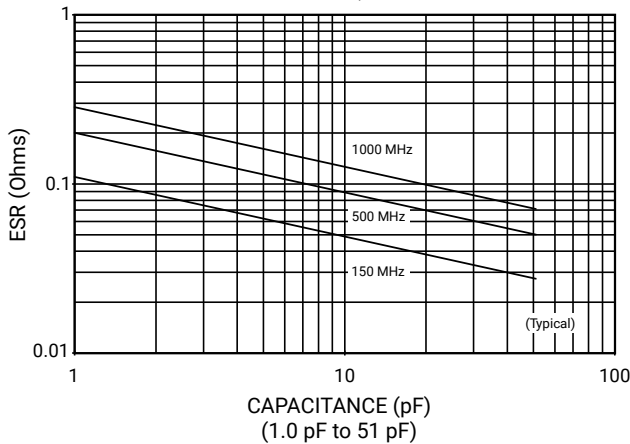
Vertical
Electrode Orientation

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

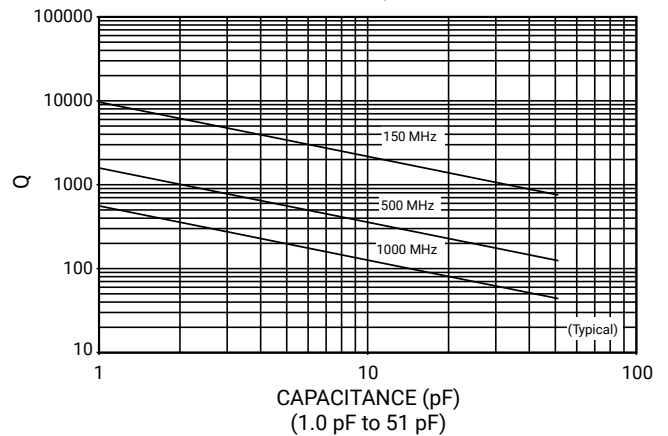
Horizontal Mount					
All Values	Pad Size	A Min.	B Min.	C Min.	D Min.
All Values	Normal	.130	.050	.075	.175
	High Density	.110	.030	.075	.135

PERFORMANCE DATA

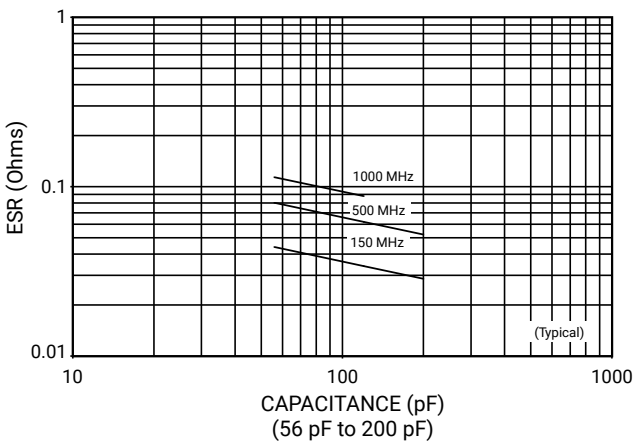
**ESR VS. CAPACITANCE
SERIES 700, CASE B**



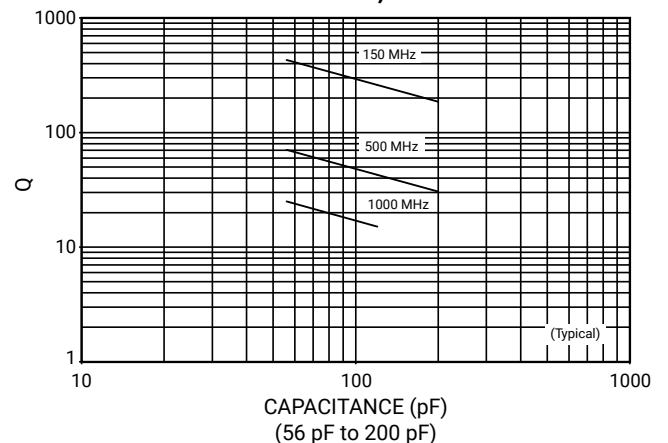
**Q VS. CAPACITANCE
SERIES 700, CASE B**



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

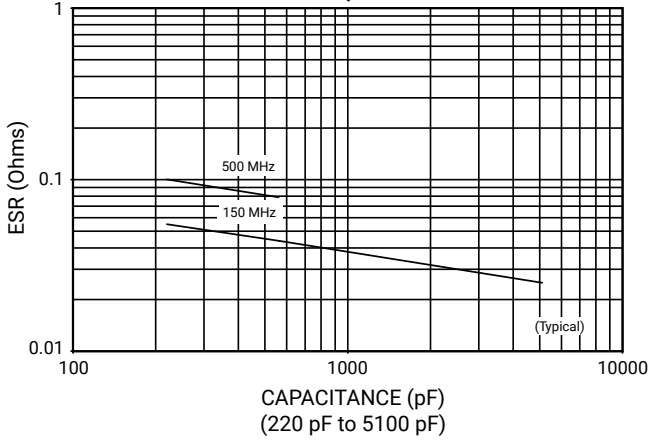


**Q VS. CAPACITANCE
SERIES 700, CASE B**

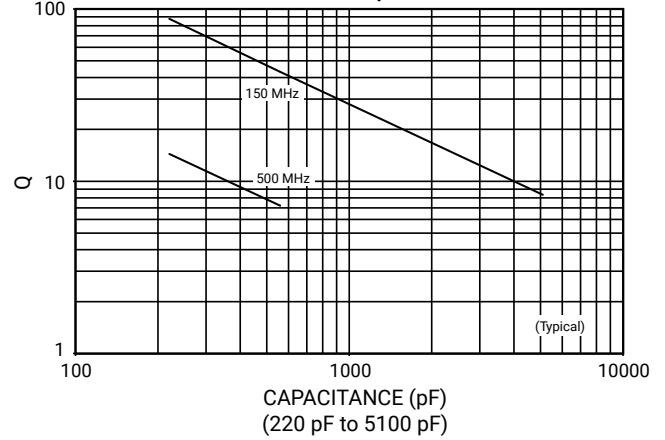


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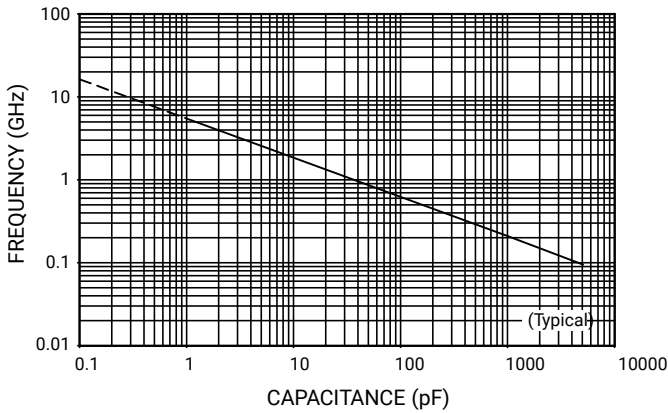
ESR VS. CAPACITANCE
SERIES 700, CASE B



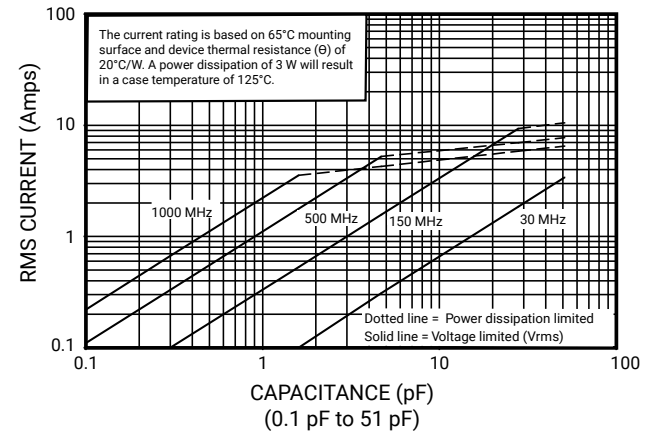
Q VS. CAPACITANCE
SERIES 700, CASE B



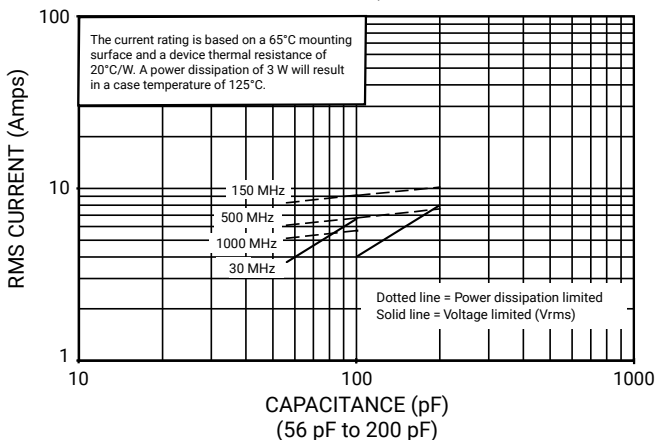
SERIES RESONANCE VS. CAPACITANCE
SERIES 700, CASE B



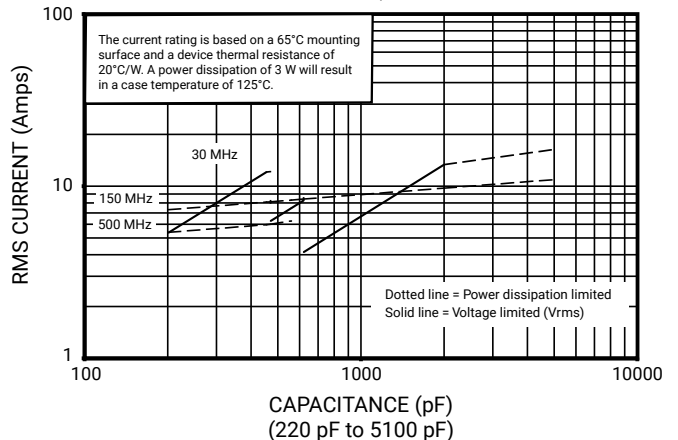
CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B



CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B

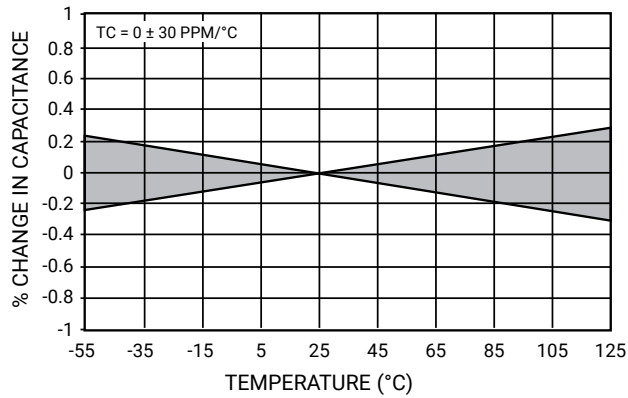


CURRENT RATING VS. CAPACITANCE
SERIES 700, CASE B

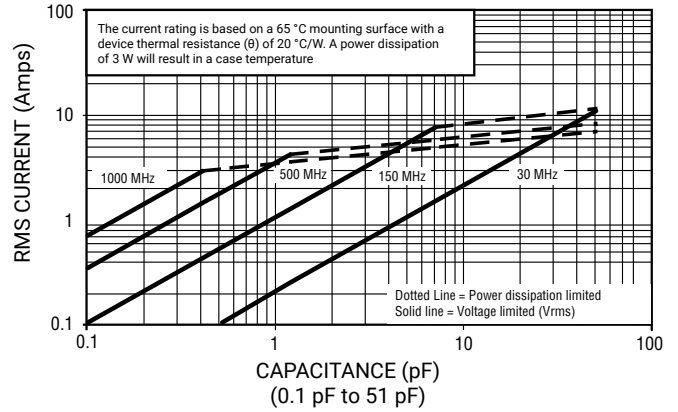


PERFORMANCE DATA

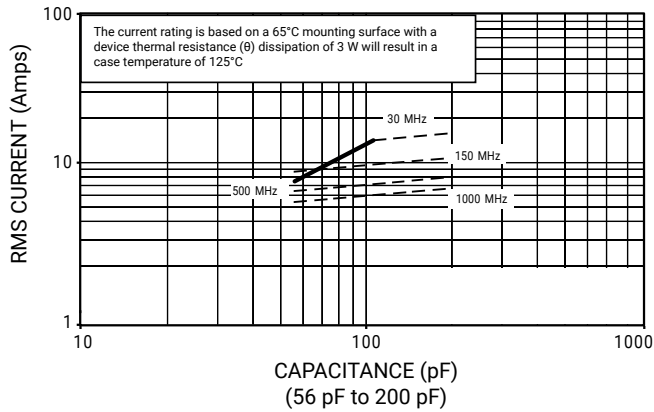
CURRENT CHANGE VS. TEMPERATURE
SERIES 700, CASE B



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



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



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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	
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%	

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-  Obsolete Management
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-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management