



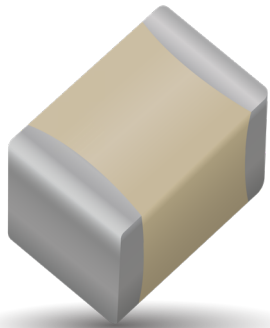
**THE DATASHEET OF**  
**09-50-1041**



# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100B Series Porcelain Superchip® Multilayer Capacitors



#### FEATURES

- Case B Size (.110" x .110")
- Capacitance Range 0.1pF to 1000pF
- Extended WVDC up to 1500 VDC
- Low ESR/ESL
- High Q
- Low Noise
- Ultra-Stable Performance
- High Self-Resonance
- Established Reliability (QPL)

#### GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 100 B Series RF/Microwave Capacitors. This Series is now available with extended operating temperatures up to 175°C. High Density porcelain construction provides a rugged, hermetic package.

#### FUNCTIONAL APPLICATIONS

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

#### CIRCUIT APPLICATIONS

- UHF/Microwave RF Power Amplifiers
- Oscillators
- Low Noise Amplifiers
- Filter Networks
- Timing Circuits

#### 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. 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
<b>Termination Styles</b>	Available in various surface mount and leaded styles. See Mechanical Configurations
<b>Terminal Strength</b>	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.

#### PACKAGING OPTIONS



Tape & Reel



Vertical Orientation Tape & Reel



Cap Pac® (100 pcs)



#### ELECTRICAL SPECIFICATIONS

<b>Temperature Coefficient (TCC)</b>	+90 ±20 PPM/°C (-55°C to +125°C) +90 ±30 PPM/°C (+125°C to +175°C)
<b>Capacitance Range</b>	0.1pF to 1000pF
<b>Operating Temperature</b>	Standard WVDC: 0.1 to 330pF: from -55°C to +175°C 360 to 1000pF: from -55°C to +125°C Extended WVDC: 0.1 to 1000pF: from -55°C to +125°C (No derating of working voltage)
<b>Quality Factor</b>	greater than 10,000 at 1 MHz
<b>Insulation Resistance (IR)</b>	0.1 pF to 470 pF: 10 <sup>5</sup> Megohms min. @ +25°C at rated WVDC. 10 <sup>5</sup> Megohms min. @ +125°C at rated WVDC. 510 pF to 1000 pF: 10 <sup>5</sup> Megohms min. @ +25°C at rated WVDC. 10 <sup>4</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 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
<b>Aging Effects</b>	None
<b>Piezoelectric Effects</b>	None
<b>Capacitance Drift</b>	± (0.02% or 0.02 pF), whichever is greater
<b>Retrace</b>	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.											
OR1	0.1	B	500	1500	2R4	2.4	B, C, D	500	1500	200	20	F, G, J, K, M	500	1500	151	150	F, G, J, K, M	300	EXT.											
OR2	0.2				2R7	2.7				220	22				161	160			1000											
OR3	0.3	B, C			500	1500				3R0	3.0				B, C, D	500			1500	240	24	F, G, J, K, M	500	1500	181	180	F, G, J, K, M	300	1000	
OR4	0.4									3R3	3.3									270	27				201	200			VOLT.	
OR5	0.5	B, C, D			500	1500				3R6	3.6				B, C, D	500			1500	300	30	F, G, J, K, M	500	1500	221	220	F, G, J, K, M	200	EXT.	
OR6	0.6									3R9	3.9									330	33				241	240			600	
OR7	0.7									4R3	4.3									360	36				271	270			EXT.	
OR8	0.8									4R7	4.7									390	39				301	300			600	
OR9	0.9									5R1	5.1									430	43				331	330			EXT.	
1R0	1.0									5R6	5.6									470	47				361	360			600	
1R1	1.1		6R2	6.2			510	51	391	390	VOLT.																			
1R2	1.2		B, C, D	500			1500	6R8	6.8	B, C, J, K, M	500	1500	560	56			F, G, J, K, M	500		1500	431				430	F, G, J, K, M			200	EXT.
1R3	1.3							7R5	7.5				620	62							471				470					EXT.
1R4	1.4							8R2	8.2				680	68							511				510					100
1R5	1.5	9R1			9.1	750		75	561				560	300																
1R6	1.6	100			10	820		82	621				620	EXT.																
1R7	1.7	110			11	910		91	681				680	300																
1R8	1.8	120			12	101		100	751				750	EXT.																
1R9	1.9	130			13	111		110	821				820	300																
2R0	2.0	150			15	121		120	911				910	50																
2R1	2.1	160			16	131		130	102				1000	50																
2R2	2.2	180	18					VOLT																						

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES, DIFFERENT WVDC AND MATCHING AVAILABLE. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY. NOTE: EXTENDED WVDC DOES NOT APPLY TO CDR PRODUCTS.

#### HOW TO ORDER

**Series** 100    **Case Size** B    **Capacitance** 910    **Capacitance Tolerance Code** J    **Termination Style Code** W    **Voltage Rating** 500    **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, 500 pc qty  
 TV = Vertical Tape and Reel, 500 pc qty  
 Please see last column of mechanical configuration table for other options.

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

The above part number refers to a 100 B Series (case size B) 91 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)

### 100B Series Porcelain Superchip® 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				
100B	W	CDR14BG	Solder Plate		.110+ .020 - .01 (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 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	
100B	P	CDR14BG	Pellet		.110+ .035 - .01 (2.79 + 0.89-0.25)	.110 ±.015 (2.79 ±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	
100B	T	N/A	Solderable Nickel		.110+ .020 - .01 (2.79 + 0.51-0.25)	.110 ±.015 (2.79 ±0.38)			<b>RoHS Compliant</b> 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	
100B	CA	CDR13BG	Gold Chip		.110+.020 - .010 (2.79 + 0.51-0.25)	.110 ±.015 (2.79 ±0.38)			<b>RoHS Compliant</b> 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	
100B	MS	CDR21BG	Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	Length (L <sub>L</sub> )	Width (W <sub>L</sub> )	Thickness (T <sub>L</sub> )	Cap Pac, 20 pcs	C20
100B	AR	CDR22BG	Axial Ribbon						.250 (6.35) min.	.093±.005 (2.36 ±0.13)	.004 ± .001 (.102±.025)	Box, 20 or 100 pcs	B20 or B100
100B	RR	CDR24BG	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
100B	RW	CDR23BG	Radial Wire									Box, 20 or 100 pcs	B20 or B100
100B	AW	CDR25BG	Axial Wire									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)

### 100B Series Porcelain Superchip® Multilayer Capacitors



#### NON-MAGNETIC 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						
100B	WN	Meets Requirements	Non-Mag		.110+ .020 - .01 (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 Copper 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		
100B	PN	Meets Requirements	Solderable Nickel		.110+ .035 - .01 (2.79 + 0.51-0.25)	.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		
100B	TN	Meets Requirements	Non-Mag Solderable Barrier		.110+.020 - .010 (2.79 + 0.51-0.25)	.110 ±.015 (2.79 ±0.38)			<b>RoHS Compliant</b> 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		
100B	MN	Meets Requirements	Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	Length (L <sub>L</sub> )	Width (W <sub>L</sub> )	Thickness (T <sub>L</sub> )	Cap Pac, 20 pcs	C20		
100B	AN	Meets Requirements	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
100B	FN	Meets Requirements	Radial Ribbon									#26 AWG., .016 (.406) dia. nominal			Box, 20 or 100 pcs
100B	RN	Meets Requirements	Radial Wire		.145 ±.020 (3.68 ±0.51)	.102 (2.59) max.	N/A	.500 (12.7)	Box, 20 or 100 pcs			B20 or B100			
100B	BN	Meets Requirements	Axial Wire						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)

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#### SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal  
Electrode Orientation

Vertical  
Electrode Orientation

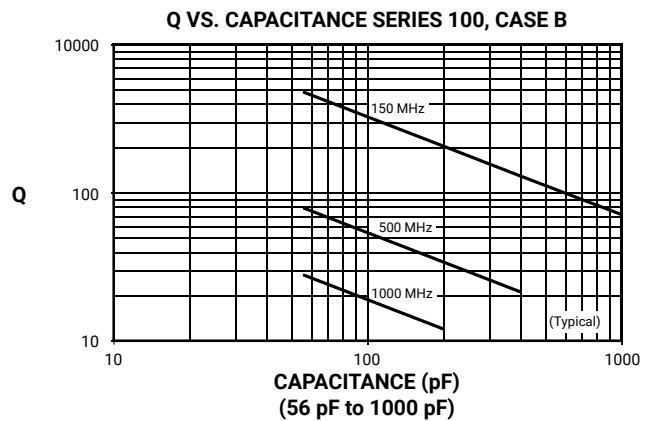
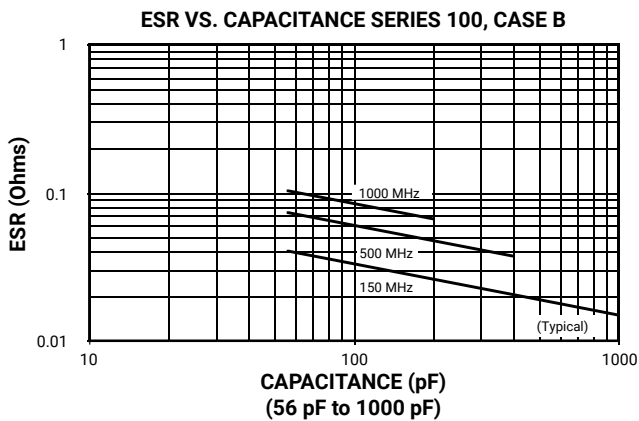
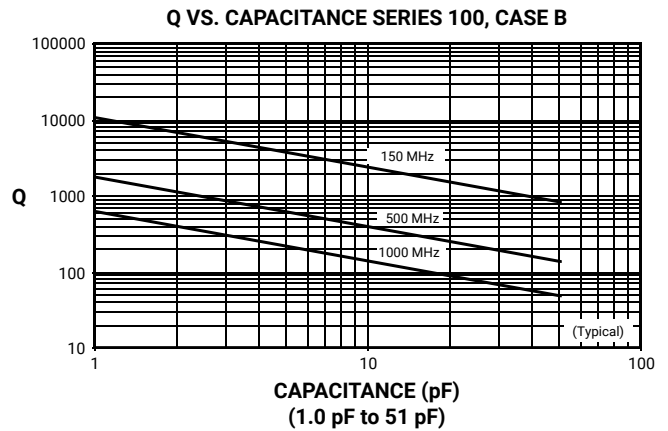
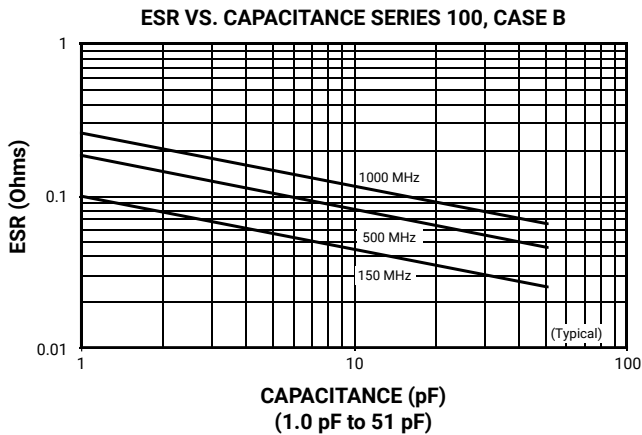
#### Case B Vertical Mount

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

<b>All Values</b>	Normal	.130	.050	.075	.175
	High Density	.110	.030	.075	.135

#### PERFORMANCE DATA



# RF/Microwave Capacitors

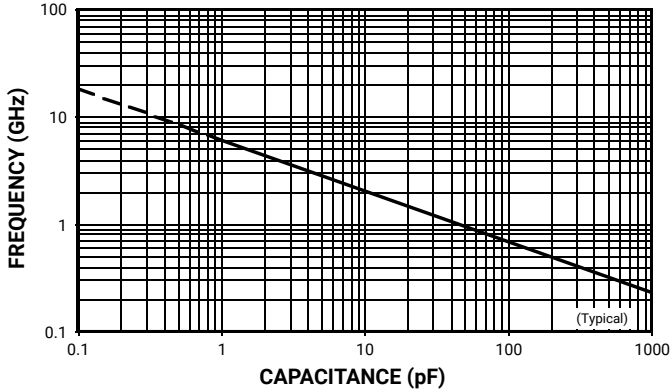
## RF/Microwave Multilayer Capacitors (MLC)

### 100B Series Porcelain Superchip® Multilayer Capacitors

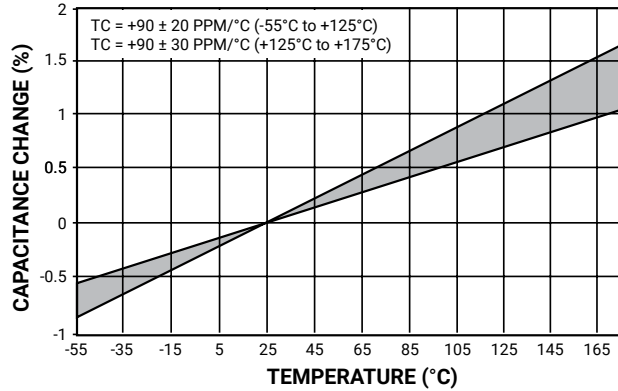


#### PERFORMANCE DATA

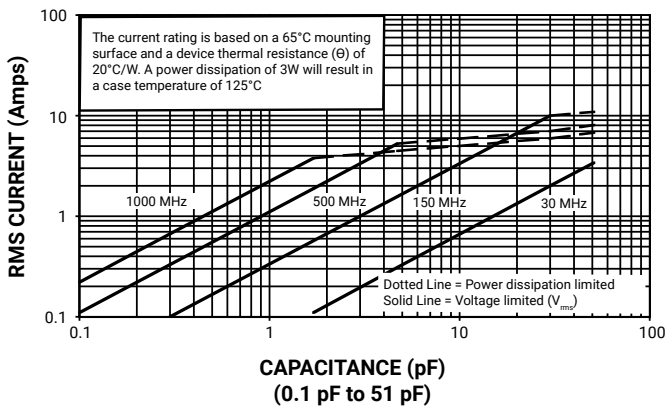
**SERIES RESONANCE VS. CAPACITANCE**  
SERIES 100, CASE B



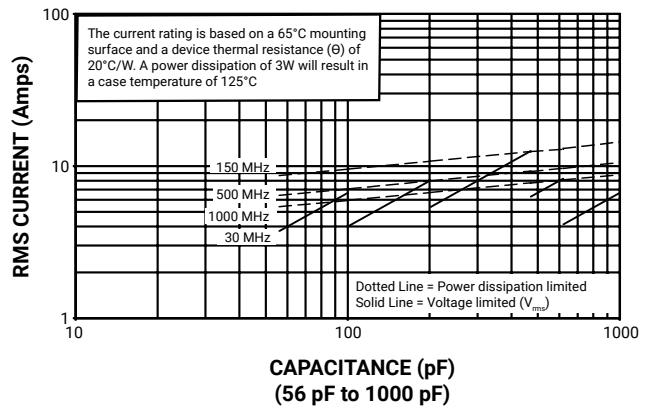
**CAPACITANCE CHANGE VS. TEMPERATURE**  
SERIES 100, CASE B



**CURRENT RATING VS. CAPACITANCE**  
SERIES 100, CASE B



**CURRENT RATING VS. CAPACITANCE**  
SERIES 100, CASE B



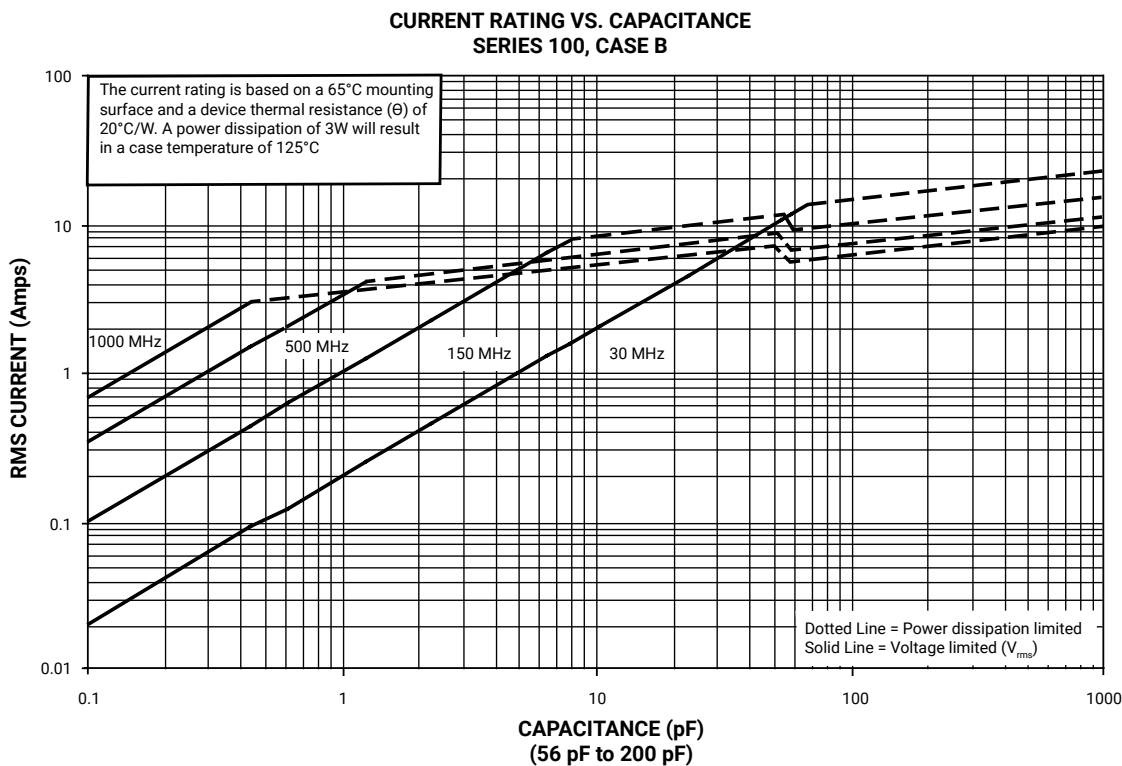
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 100B Series Porcelain Superchip® Multilayer Capacitors



#### PERFORMANCE DATA



#### DESIGN KITS

Kit #	RoHS Compliant	Item #	Description	Cap. Value Range (pF)	Cap. Value (pF)	Tol. (pF)	Price
Kit 9		DK0009	100B Porcelain Superchip®, 16 different values, 15 pcs. min. per value	0.1 to 2.0	10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47, 56, 68, 82, 100 .....	±5%	\$180.00
Kit 9T		DK0009T					
Kit 10		DK0010	100B Porcelain Superchip®, 16 different values, 15 pcs. min. per value	10 to 27	100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 390, 470 .....	±5%	\$180.00
Kit 10T		DK0010T					

For Online Kit Orders, Catalog & Application Notes, Visit: [www.kyocera-avx.com](http://www.kyocera-avx.com)

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 [Molex, LLC Information](#)

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