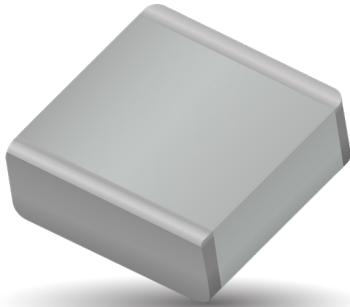


# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 800R Series NPO Ceramic Ultra-Low ESR Multilayer Capacitors



#### GENERAL DESCRIPTION

KYOCERA AVX's 800 R Series offers superb performance in demanding high RF power applications requiring consistent and reliable operation. The combination of optimized case geometry, highly conductive electrode formulations and proprietary dielectrics, yields the lowest ESR and superior heat transfer. KYOCERA AVX's new NPO low loss rugged dielectrics are designed to provide superior heat transfer in high RF power applications. Ultra-low ESR and superior thermal performance ensure that the 800 R Series products are your best choice for high RF power applications from UHF through microwave frequencies.

#### TYPICAL APPLICATIONS

- Homeland Security/Public Safety Radio (APCO-25)
- WiMAX/LTE\*
- Satellite Systems
- Microwave Communications
- Digital HD FM Transmitters
- Avionics
- Digital HDTV Transmitters
- Medical Electronics

#### TYPICAL CIRCUIT APPLICATIONS

- High RF Power Filter Networks
- Matching Networks
- Output Coupling
- DC Blocking
- Combiners
- Couplers
- Antenna Coupling
- Bypassing

#### ENVIRONMENTAL TEST

<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 Volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.
<b>Life Test</b>	MIL-STD-202, Method 108, for 2000 hours, at 125°C 200% WVDC applied

#### FEATURES

- Case R Size (.070" x .090")
- Rugged, reliable NPO dielectric
- Optimized for highest self resonant frequency
- Capacitance Range 1 pF to 100 pF
- Capable of highest RF Power
- RoHS Compliant / Lead-Free
- Optimized for lowest ESR and superior heat transfer

#### PACKAGING OPTIONS



Tape & Reel



#### ENVIRONMENTAL CHARACTERISTICS

<b>Quality Factor</b>	Greater than 2,000 at 1 MHz (Cap Values $\leq 10\text{pF}$ .0010 Max. @ 1MHz Cap Values $> 10\text{pF}$ .0005 Max. @ 1MHz)
<b>Temperature Coefficient of Capacitance (TCC)</b>	0 $\pm 30$ PPM/ $^{\circ}\text{C}$ (-55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$ )
<b>Insulation Resistance (IR)</b>	1 pF to 100 pF: 10 <sup>5</sup> Megohms min. @ +25 $^{\circ}\text{C}$ at rated WVDC 10 <sup>4</sup> Megohms min. @ +125 $^{\circ}\text{C}$ at rated WVDC
<b>Working Voltage (WVDC)</b>	500 WVDC
<b>Dielectric Withstanding Voltage (DWV)</b>	Case R: 250% of rated WVDC for 5 secs
<b>Aging Effects</b>	None
<b>Piezoelectric Effects</b>	None
<b>Capacitance Drift</b>	$\pm(0.02\%$ or 0.02 pF), whichever is greater
<b>Operating Temperature Range</b>	From -55 $^{\circ}\text{C}$ to +125 $^{\circ}\text{C}$
<b>Termination Styles</b>	RoHS Compliant and Solder Plate See Mechanical Configurations
<b>Terminal Strength</b>	Terminations for chips withstand a pull of 5 lbs. min., 15 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, Method 211.

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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
1R0	1.0	B, C, D	500	3R9	3.9	B, C, D	500	220	22	G, J K, M	500
1R1	1.1			4R3	4.3			240	24		
1R2	1.2			4R7	4.7			270	27		
1R3	1.3			5R1	5.1			300	30		
1R4	1.4			5R6	5.6			330	33		
1R5	1.5			6R2	6.2			360	36		
1R6	1.6			6R8	6.8	B, C, J, K, M		390	39		
1R7	1.7			7R5	7.5			430	43		
1R8	1.8			8R2	8.2			470	47		
1R9	1.9			9R1	9.1	G, J K, M		510	51		
2R0	2.0			100	10			560	56		
2R1	2.1			110	11			620	62		
2R2	2.2			120	12			680	68		
2R4	2.4			130	13			750	75		
2R7	2.7			150	15			820	82		
3R0	3.0			160	16			910	91		
3R3	3.3			180	18			101	100		
3R6	3.6			200	20						

VRMS = 0.707 X WVDC  
SPECIAL VALUES, TOLERANCES AND MATCHING AVAILABLE. PLEASE CONSULT FACTORY.

HOW TO ORDER

800

R

100

J

T

500

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	G	J	K	M
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±2%	±5%	±10%	±20%

**Packaging**  
T = Tape and Reel, 500 pc.  
T1K = Tape and Reel, 1000 pc.  
Please see last Column Mechanical Configuration Table for other options

**Laser Marking (Optional)**

**WVDC**

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

The above part number refers to a 800 R Series (case size R) 10 pF capacitor, J tolerance (±5%), 500 WVDC, with T termination (Tin Plated over Nickel Barrier, RoHS Compliant), laser marked, and tape and reel packaging.  
\*Consult ATC for other quantities.


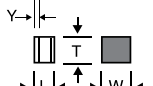

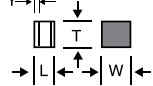
# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)


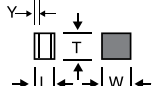
### 800R Series NPO Ceramic Ultra-Low ESR Multilayer Capacitors



#### MECHANICAL CONFIGURATION

Series & Case Size	Term. Code	Case Size & Type	Outline ES 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		
800R	T	 Solderable Nickel Barrier		.070 ±.015 (1.78±0.38)	.090 ±.010 (2.29±0.25)	.115 (2.92) max.	.010+.010 - .005 (0.25+0.25 - 0.13)	<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination	T&R, 1000 or 500 pcs	T1K or T
800R	W	 Solder Plate		.070 ±.015 (1.78±0.38)	.090 ±.010 (2.29±0.25)	.115 (2.92) max.	.010+.010 - .005 (0.25+0.25 - 0.13)	Tin/ Lead, Solder Plated over Nickel Barrier Termination	T&R, 1000 or 500 pcs	T1K or T

#### NON-MAGNETIC CONFIGURATION

Series & Case Size	Term. Code	Case Size & Type	Non-Magnetic Configuration	Body Dimensions inches (mm)			Lead and Termination Dimensions and Material		Pkg Type & Qty	Pkg Code
				Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials		
800R	TN	 Non-Mag Solderable Barrier		.070 ±.015 (1.78±0.38)	.090 ±.010 (2.29±0.25)	.115 (2.92) max.	.010+.010 - .005 (0.25+0.25 - 0.13)	<b>RoHS Compliant</b> Tin Plated over Non-Magnetic Barrier Termination	T&R, 1000 or 500 pcs	T1K or T

#### SUGGESTED MOUNTING PAD DIMENSIONS

A 3D isometric drawing of a rectangular capacitor. The top horizontal edge is labeled 'L', the front horizontal edge is labeled 'W', and the vertical edge on the left is labeled 'T'. The side of the capacitor is labeled '±100'.

Horizontal  
Electrode Orientation

A top-down view diagram of the capacitor showing two rectangular pads. The left pad has a width labeled 'B' and a height labeled 'A'. The right pad also has a width labeled 'B'. The distance between the inner edges of the two pads is labeled 'C'. The total distance between the outer edges of the two pads is labeled 'D'.

Mount Type	Case R				
	Pad Size	A Min.	B Min.	C Min.	D Min.
Horizontal Mount	Normal	.110	.050	.030	.130
	High Density	.090	.030	.030	.090

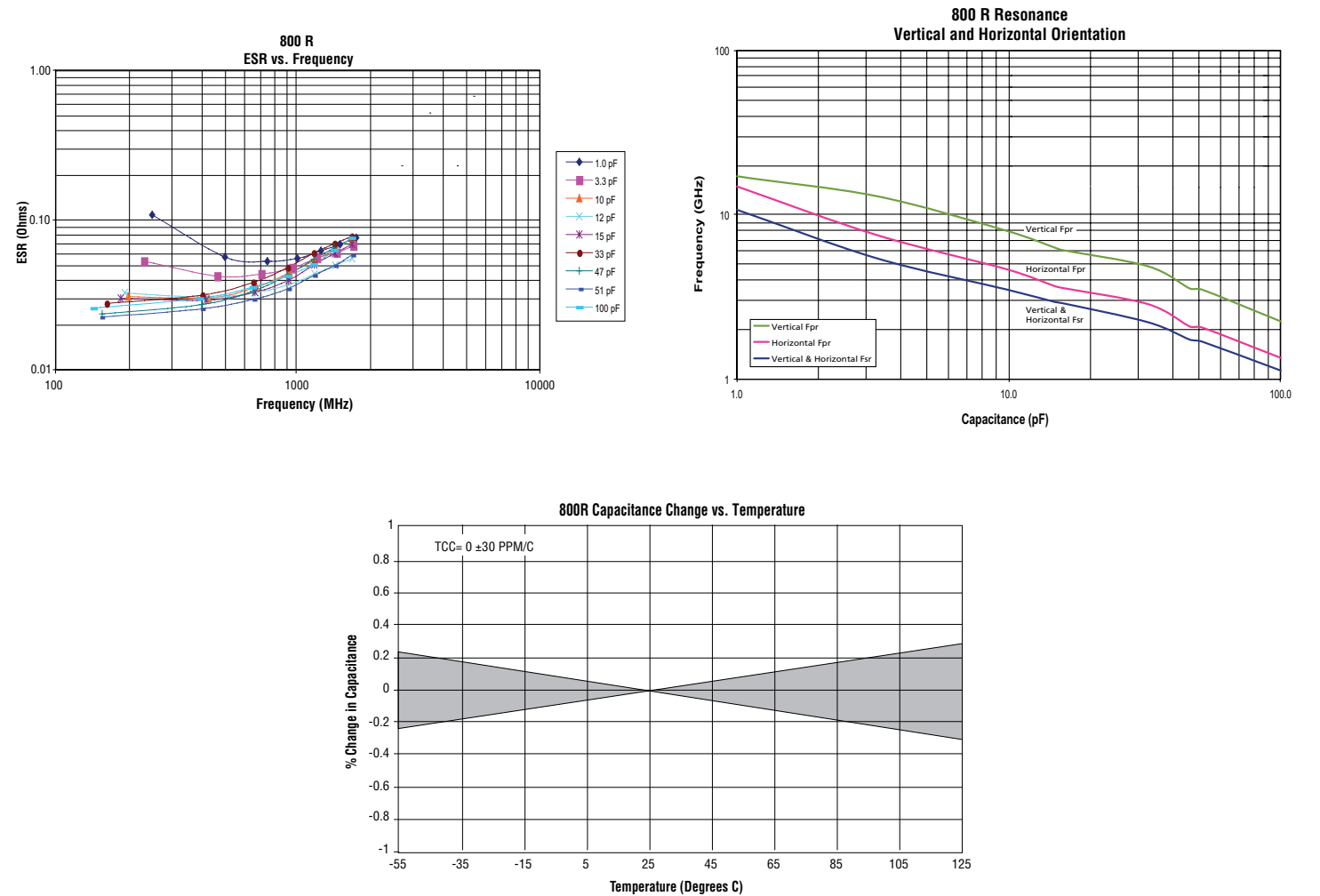
Dimensions are in inches.

# RF/Microwave Capacitors



## RF/Microwave Multilayer Capacitors (MLC)

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SAMPLE KITS

Kit #	RoHS Compliant	Item Number	Description	Cap. Value Range (pF)	Cap Value (pF)	Tol.	Price
Kit 86T		DK0086T	800R NPO Ceramic Ultra-Low ESR MLCs 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..... 3.9, 4.7, 5.6, 6.8, 8.2..... 10.....	±0.1 ±0.25 ±5%	\$250
Kit 87T		DK0087T	800R NPO Ceramic Ultra-Low ESR MLCs 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%	\$250