



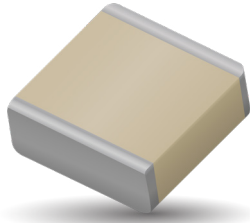
# THE DATASHEET OF HQCEMA220JAT6A



# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### HQ Series, High RF Power Capacitors



#### PRODUCT OFFERING

Hi-Q, high RF power, surface mount MLC capacitors from AVX Corporation are characterized with ultra-low ESR and dissipation factor at high frequencies. They are designed to handle high power and high voltage levels for applications in RF power amplifiers, inductive heating, high magnetic field environments (MRI coils), medical and industrial electronics.

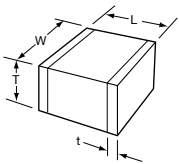
#### HOW TO ORDER

<b>HQCC</b>	<b>A</b>	<b>A</b>	<b>271</b>	<b>J</b>	<b>A</b>	<b>T</b>	<b>1A</b>
<b>AVX Style</b> HQCC HQCE HQLC** HQLE**	<b>Voltage</b> 300V = 9 500V = 7 800V = U 1000V = A 1500V = S 2500V = W 3000V = H 3600V = J 5000V = K 7200V = M	<b>Temperature Coefficient</b> COG = A P90 = M	<b>Capacitance Code</b> (2 significant digits + no. of zeros) Examples: 4.7 pF = 4R7 10 pF = 100 100 pF = 101 1,000 pF = 102	<b>Capacitance Tolerance</b> B = 0.1pf (<8.2pF) C = ±0.25pF (<8.2pF) D = ±0.50pF (<8.2pF) F = ±1% (10pF) G = ±2% J = ±5% K = ±10% M = ±20%	<b>Test Level</b> A = Standard	<b>Termination SMD Termination (HQCC/HQCE)</b> T = Plated Ni and Sn (RoHS Compliant) J = 5% Min Pb 7 = Plated Ni and Au H = Cu/Sn (Non-Magnetic) <b>Leaded Termination (HQLC/HQLE)</b> A = Axial Ribbon M = Microstrip 4 = Axial Ribbon (Non-Magnetic) 5 = Microstrip (Non-Magnetic)	<b>Packaging</b> 1A = 7" Reel* 6A = Waffle Pack *HQCC & HQCE only

\*\*Note: HQLC/HQLE are only available with leaded termination styles. All capacitance values by size/dielectric still apply.

#### DIMENSIONS

##### HQCC/HQCE



STYLE	HQCC	HQCE
(L) Length	5.84 +0.51 -0.25 (0.230 +0.020 -0.010)	9.65 +0.38 -0.25 (0.380 +0.015 -0.010)
(W) Width	6.35 ± 0.38 (0.250 ± 0.015)	9.65 ± 0.25 (0.380 ± 0.010)
(T) Thickness Max.	3.68 (0.145) max. for capacitance values ≤ 680pF 4.19 (0.165) max. for capacitance values > 680pF	4.32 (0.170) max.
(t) Overlap	1.02 (0.040) max.	1.02 (0.040) max.

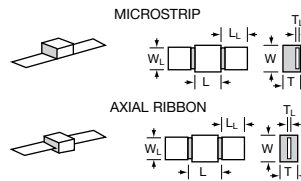
mm (inches)

**Not RoHS Compliant**



For RoHS compliant products,  
please select correct termination style.

##### HQLC/HQLE



STYLE	HQCC	HQCE
(L) Length	6.22 ± 0.64 (0.245 ± 0.025)	9.65 +0.89 -0.25 (0.380 +0.035 -0.010)
(W) Width	6.35 ± 0.38 (0.250 ± 0.015)	9.65 ± 0.25 (0.380 ± 0.010)
(T) Thickness Max.	3.68 (0.145) max. for capacitance values ≤ 680pF 4.19 (0.165) max. for capacitance values > 680pF	4.32 (0.170) max.
(L <sub>L</sub> ) Lead Length	12.7 min. (0.500)	19.05 (0.750)
(W <sub>L</sub> ) Lead Width	6.10 ± 0.127 (0.240 ± 0.005)	8.89 ± 0.25 (0.350 ± 0.010)
(T <sub>L</sub> ) Lead Thickness	0.102 ± 0.025 (0.004 ± 0.001)	0.25 ± 0.13 (0.010 ± 0.005)
Lead Material	High Purity Silver Leads Leads are attached with High Temperature Solder	High Purity Silver Leads Leads are attached with High Temperature Solder

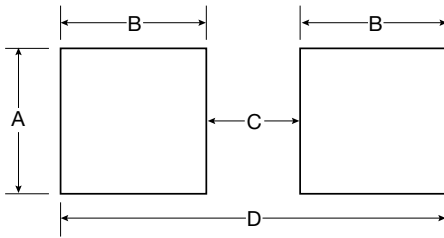
mm (inches)

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### HQ Series, High RF Power Capacitors

#### MOUNTING DIMENSIONS



#### HQCC mm (inches)

Mounting Orientation	Layout Type	A min.	B min.	C min.	D min.
Horizontal	Normal	7.112 (0.280)	1.270 (0.050)	5.080 (0.200)	7.620 (0.300)
	High Density	6.604 (0.260)	0.762 (0.030)	5.080 (0.200)	6.604 (0.260)
Vertical (<680pF)	Normal	3.810 (0.150)	1.270 (0.050)	5.080 (0.200)	7.620 (0.300)
	High Density	3.302 (0.130)	0.762 (0.030)	5.080 (0.200)	6.604 (0.260)
Vertical (>680pF)	Normal	4.699 (0.185)	1.270 (0.050)	5.080 (0.200)	7.620 (0.300)
	High Density	4.191 (0.165)	0.762 (0.030)	5.080 (0.200)	6.604 (0.260)

#### HQCE mm (inches)

Mounting Orientation	Layout Type	A min.	B min.	C min.	D min.
Horizontal	Normal	10.287 (0.405)	1.270 (0.050)	8.255 (0.325)	10.795 (0.425)
	High Density	9.779 (0.385)	0.762 (0.030)	8.255 (0.325)	9.779 (0.385)
Vertical	Normal	4.699 (0.185)	1.270 (0.050)	8.255 (0.325)	10.795 (0.425)
	High Density	4.191 (0.165)	0.762 (0.030)	8.255 (0.325)	9.779 (0.385)

#### DIELECTRIC PERFORMANCE CHARACTERISTICS

<b>Capacitance Range</b>	1.0pF to 2,700pF (25°C, 1.0 ±0.2 Vrms at 1kHz, for ≤ 1000 pF use 1MHz)
<b>Capacitance Tolerances</b>	±0.10pF, ±0.25pF, ±0.50pF, ±1%, ±2%, ±5%, ±10%, ±20%
<b>Dissipation Factor 25°C</b>	0.1% Max (+25°C, 1.0 ±0.2 Vrms at 1kHz, for ≤ 1000 pF use 1MHz)
<b>Operating Temperature Range</b>	-55°C to +125°C
<b>Temperature Characteristic</b>	COG: 0 ± 30 ppm/°C (-55°C to +125°C), P90: 90 ± 30 ppm/°C (-55°C to +125°C)
<b>Insulation Resistance</b>	100K MΩ min. @ +25°C and 500VDC 10K MΩ min. @ +125°C and 500VDC
<b>Dielectric Strength</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 or less for 5 seconds.

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### HQ Series, High RF Power Capacitors



#### HQCC/HQLC CAPACITANCE VALUES (A DIELECTRIC)

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
1R0	1.0	B, C, D	2500	8R2	8.2	B, C, D	2500	680	68	F, G, J, K, M	2500	471	470	F, G, J, K, M	1500
1R2	1.2			100	10	820		82	561			560	1000		
1R5	1.5			120	12	101		100	681			680			
1R8	1.8			150	15	121		120	821			820			
2R2	2.2			180	18	151		150	102			1000			
2R7	2.7			220	22	181		180	122			1200	500		
3R3	3.3			270	27	221		220	152			1500			
3R9	3.9			330	33	271		270	182			1800	300		
4R7	4.7			390	39	331		330	222			2200			
5R6	5.6			470	47	391		390	272			2700			
6R8	6.8			560	56										

#### HQCC/HQLC CAPACITANCE VALUES (M DIELECTRIC)

Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC	
			Standard	Extended				Standard	Extended				Standard	Extended
1R0	1.0	B, C, D	2500	3600	100	10	F, G, J, K, M	2500	3600	161	160	F, G, J, K, M	2500	3000
1R1	1.1				110	11				181	180			
1R2	1.2				120	12				201	200			
1R3	1.3				130	13				221	220			
1R4	1.4				150	15				241	240			
1R5	1.5				160	16				271	270			
1R6	1.6				180	18				301	300			
1R7	1.7				200	20				331	330			
1R8	1.8				220	22				331	330			
1R9	1.9				240	24				361	360			
2R0	2.0				270	27				391	390			
2R1	2.1				300	30				431	430			
2R2	2.2				330	33				471	470			
2R4	2.4				360	36				511	510			
2R5	2.5				390	39				561	560			
3R0	3.0				430	43				621	620			
3R3	3.3				470	47				681	680			
3R6	3.6				510	51				751	750			
3R9	3.9				560	56				821	820			
4R3	4.3				620	62				911	910			
4R7	4.7	680	68	102	1000									
5R1	5.1	750	75	112	1100									
5R6	5.6	820	82	122	1200									
6R2	6.2	910	91	152	1500									
6R8	6.8	101	100	182	1800									
7R5	7.5	111	110	222	2200									
8R2	8.2	121	120	242	2400									
9R1	9.1	131	130	272	2700									
		151	150											

#### HQCE/HQLE CAPACITANCE VALUES (A DIELECTRIC)

Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC	
			Standard	Extended				Standard	Extended				Standard	Extended
1R0	1.0	C, D	3600	7200	150	15	G, J, K, M	3600	7200	221	220	G, J, K, M	3600	NA
1R2	1.2				180	18				271	270			
1R5	1.5				220	22				331	330			
1R8	1.8				270	27				391	390			
2R2	2.2				330	33				471	470			
2R7	2.7				390	39				561	560			
3R3	3.3				470	47				681	680			
3R9	3.9				560	56				821	820			
4R7	4.7				680	68				102	1000			
5R6	5.6				820	82				122	1200			
6R8	6.8	101	100	152	1500									
8R2	8.2	121	120	182	1800									
100	10	G, J, K, M			151	150		5000	222	2200				
120	12				181	180								

#### HQCE/HQLE CAPACITANCE VALUES (M DIELECTRIC)

Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC	
			Standard	Extended				Standard	Extended				Standard	Extended
1R0	1.0	B, C, D	3600	7200	180	18	F, G, J, K, M	3600	7200	331	330	F, G, J, K, M	3600	NA
1R2	1.2				220	22				391	390			
1R5	1.5				270	27				471	470			
1R8	1.8				330	33				561	560			
2R2	2.2				390	39				681	680			
2R7	2.7				470	47				821	820			
3R3	3.3				560	56				102	1000			
3R9	3.9				680	68				122	1200			
4R7	4.7				820	82				152	1500			
5R6	5.6				101	100				182	1800			
6R8	6.8	121	120	222	2200									
8R2	8.2	151	150	272	2700									
100	10	F, G, J, K, M			181	180		5000	332	3300	G, J, K, M	500		
120	12				221	220			472	4700				
150	15				271	270			512	5100				

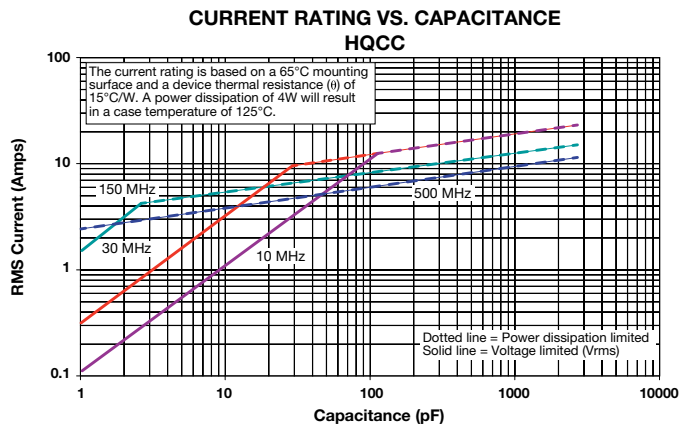
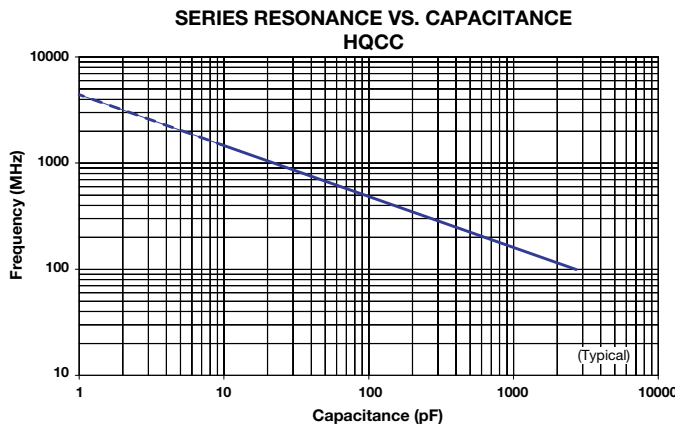
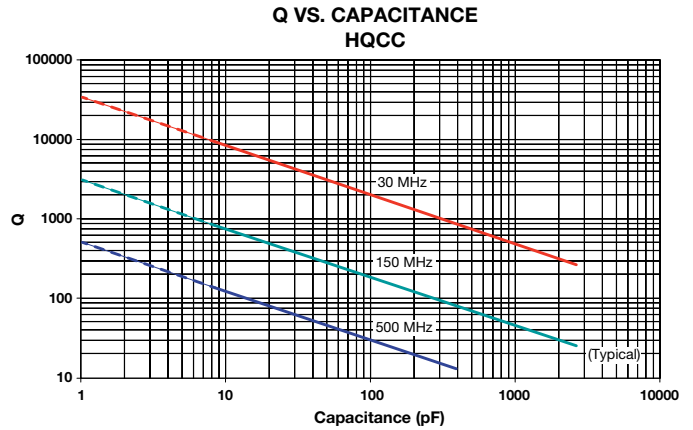
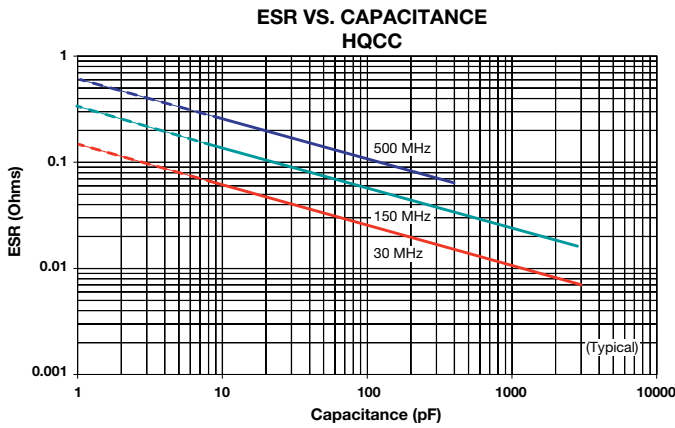
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## RF/Microwave Multilayer Capacitors (MLC)

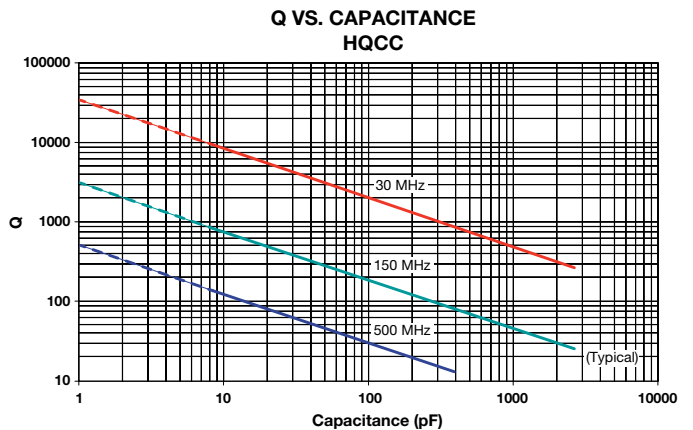
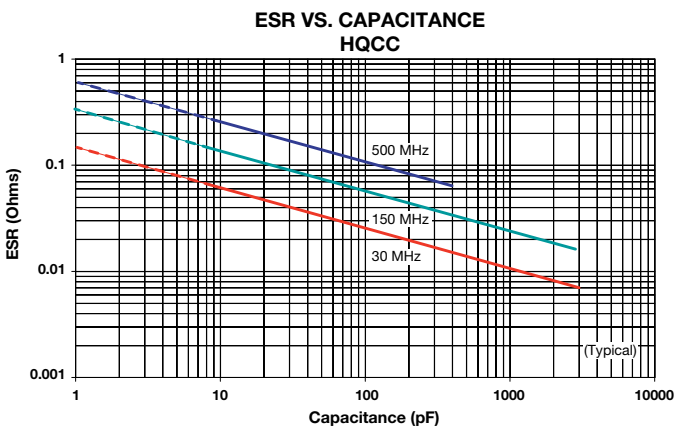
### HQ Series, High RF Power Capacitors



#### HQCC PERFORMANCE CHARACTERISTICS (A DIELECTRIC)



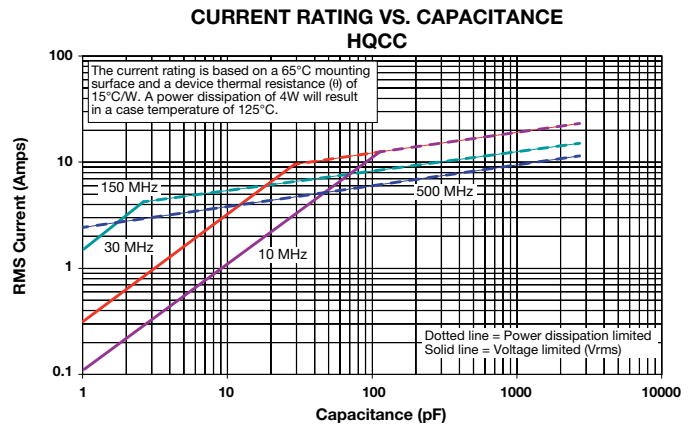
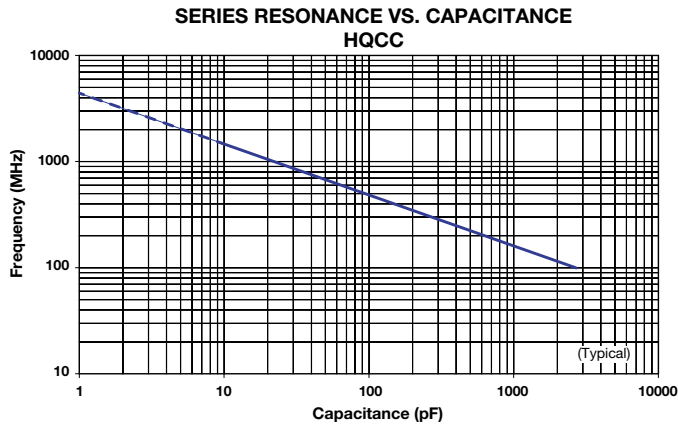
#### HQCC PERFORMANCE CHARACTERISTICS (M DIELECTRIC)



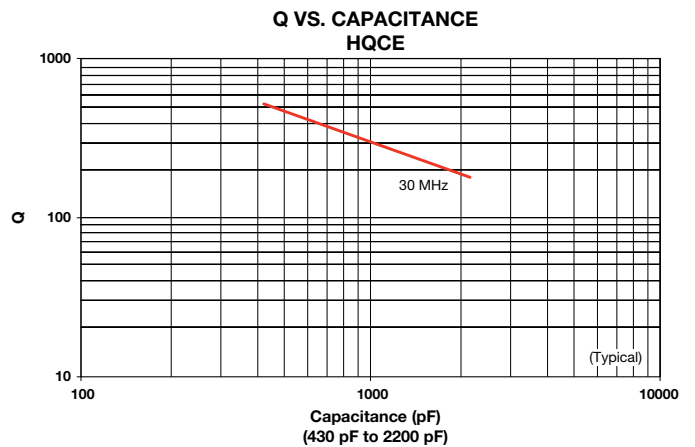
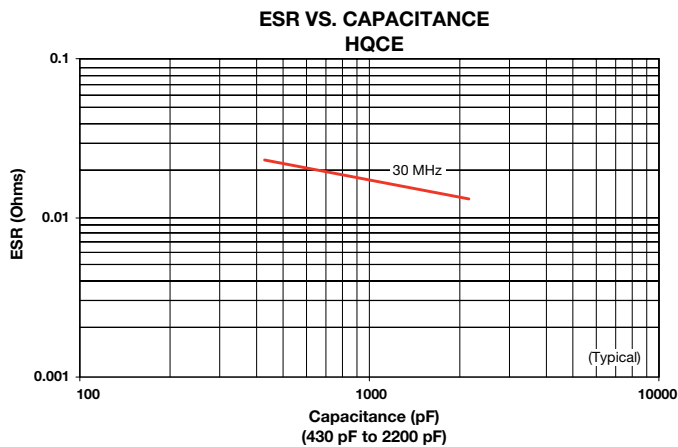
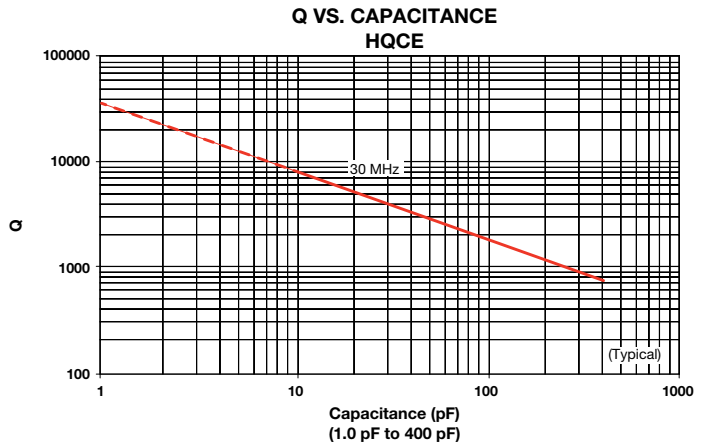
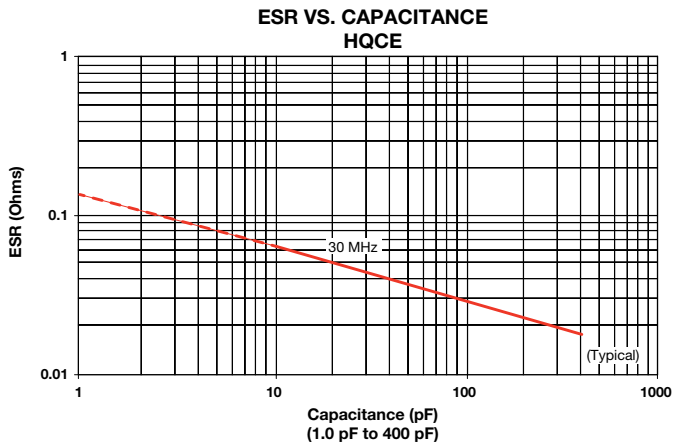
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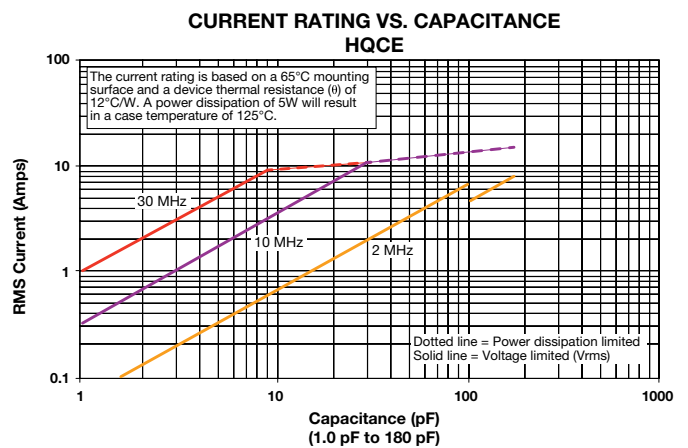
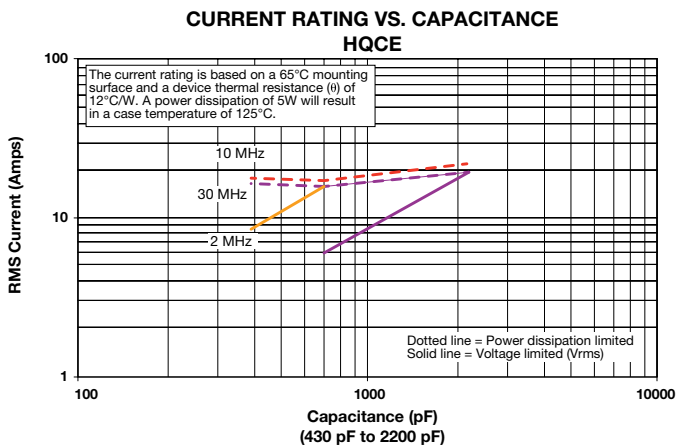
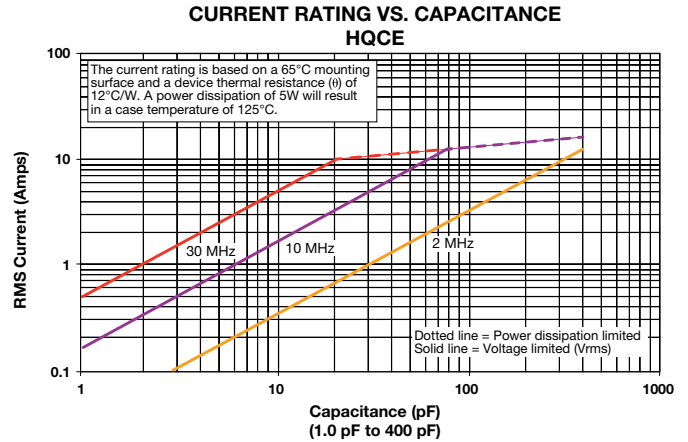
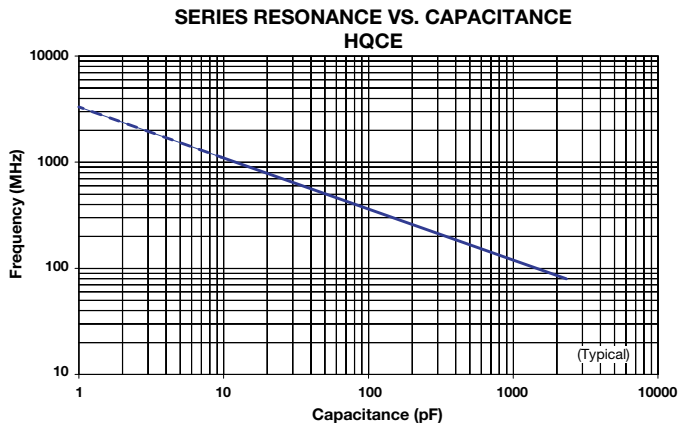
### HQCE PERFORMANCE CHARACTERISTICS (A DIELECTRIC)



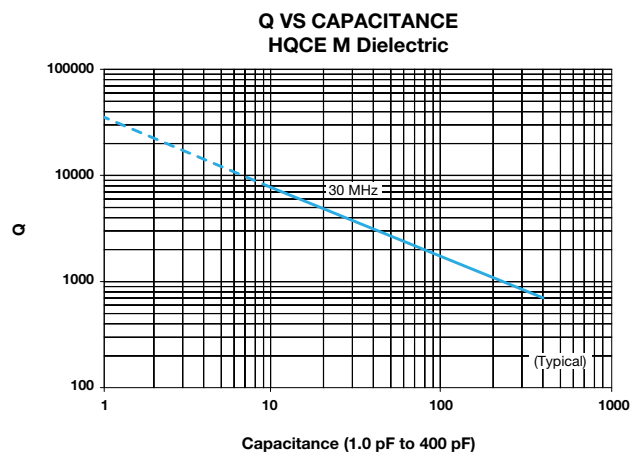
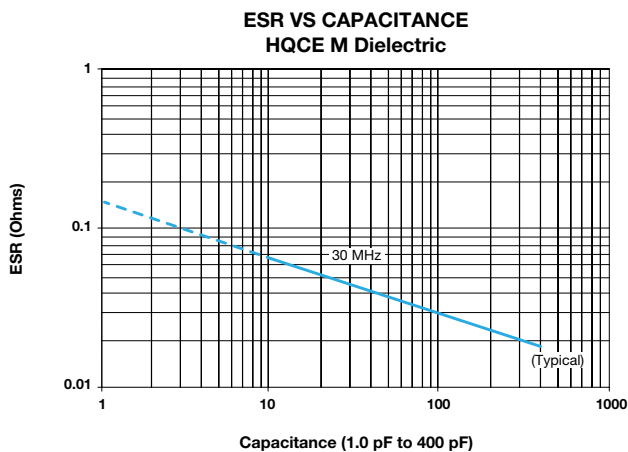
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## HQCE PERFORMANCE CHARACTERISTICS (M DIELECTRIC)

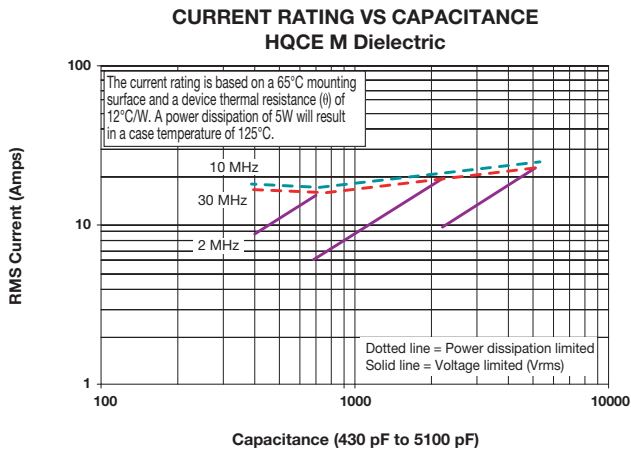
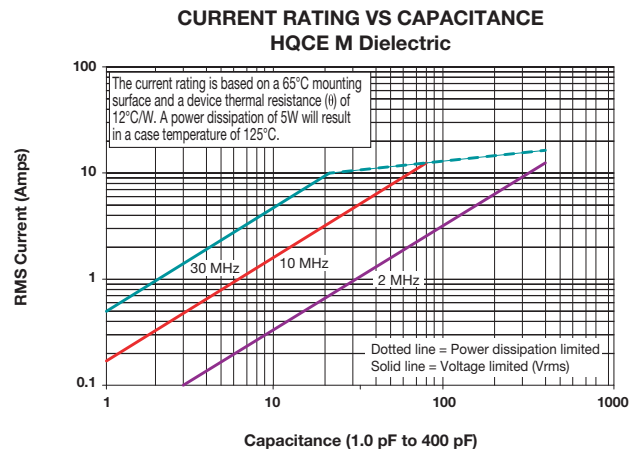
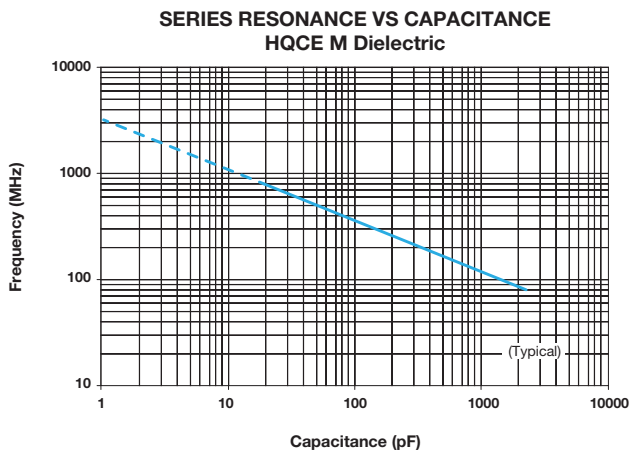
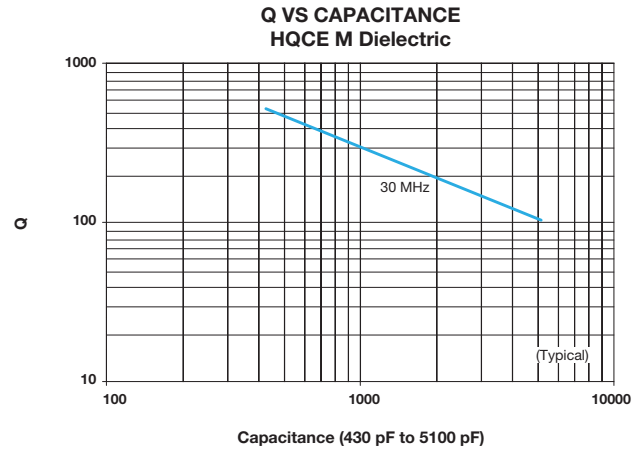
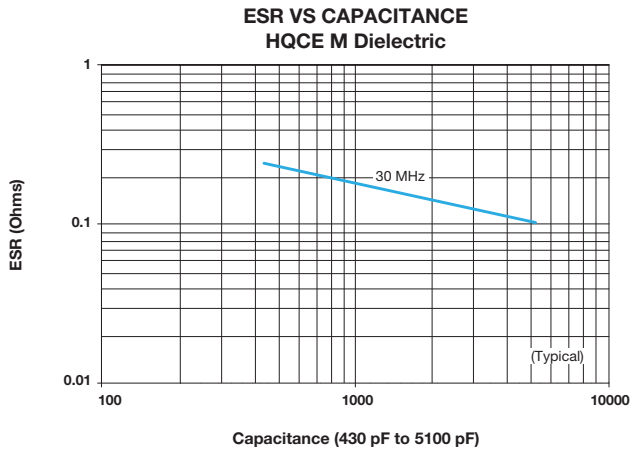


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# RF/Microwave Capacitors

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