

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

HQCC
AVX Style
HQCC
HQCE
HQLC**
HQLE**

A
Voltage
300V = 9
500V = 7
800V = U
1000V = A
1500V = S
2500V = W
3000V = H
3600V = J
5000V = K
7200V = M

A
Temperature Coefficient
C0G = A
P90 = M

271
Capacitance Code
(2 significant digits + no. of zeros)
Examples:
4.7 pF = 4R7
10 pF = 100
100 pF = 101
1,000 pF = 102

J
Capacitance Tolerance
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%

A
Test Level
A = Standard

T
Termination
SMD Termination (HQCC/HQCE)
T = Plated Ni and Sn (RoHS Compliant)
J = 5% Min Pb
7 = Plated Ni and Au
H = Cu/Sn (Non-Magnetic)

Leaded Termination (HQLE/HQLC)
A = Axial Ribbon
M = Microstrip
4 = Axial Ribbon (Non-Magnetic)
5 = Microstrip (Non-Magnetic)

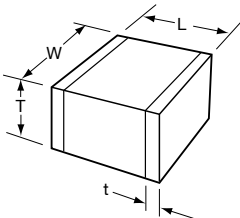
1A
Packaging
1A = 7" Reel*
6A = Waffle Pack

*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	4.32 (0.170) max.
	4.19 (0.165) max. for capacitance values > 680pF	
(t) Overlap	1.02 (0.040) max.	1.02 (0.040) max.

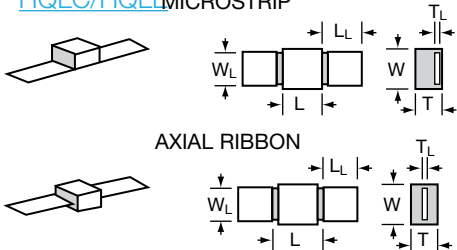
mm (inches)

Not RoHS Compliant



For RoHS compliant products,
please select correct termination style.

HQLC/HQLE MICROSTRIP



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	4.32 (0.170) max.
	4.19 (0.165) max. for capacitance values ≤ 680pF	
(L _L) Lead Length	12.7 min. (0.500)	19.05 (0.750)
(W _L) Lead Width	6.10 ± 0.127 (0.240 ± 0.005)	8.89 ± 0.25 (0.350 ± 0.010)
(T _L) 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)

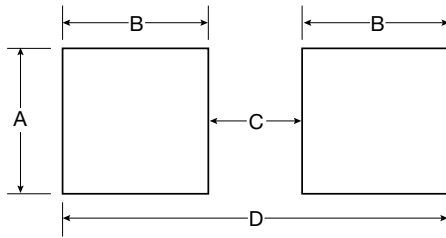


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MOUNTING DIMENSIONS



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

Capacitance Range	1.0pF to 2,700pF (25°C, 1.0 ±0.2 Vrms at 1kHz, for ≤ 1000 pF use 1MHz)
Capacitance Tolerances	±0.10pF, ±0.25pF, ±0.50pF, ±1%, ±2%, ±5%, ±10%, ±20%
Dissipation Factor 25°C	0.1% Max (+25°C, 1.0 ±0.2 Vrms at 1kHz, for ≤ 1000 pF use 1MHz)
Operating Temperature Range	-55°C to +125°C
Temperature Characteristic	C0G: 0 ± 30 ppm/°C (-55°C to +125°C), P90: 90 ± 30 ppm/°C (-55°C to +125°C)
Insulation Resistance	100K MΩ min. @ +25°C and 500VDC 10K MΩ min. @ +125°C and 500VDC
Dielectric Strength	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.

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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			
3R3	3.3			270	27	221		220	152			1500	500		
3R9	3.9			330	33	271		270	182			1800			
4R7	4.7			390	39	331		330	1500			222	2200		300
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		1500	2000
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		1000	1500
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		500	800
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		300	500
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		2500	
2R7	2.7				390	39				561	560			
3R3	3.3				470	47				681	680			
3R9	3.9				560	56				821	820		1000	
4R7	4.7				680	68				102	1000			
5R6	5.6				820	82				122	1200			
6R8	6.8	101	100	182	1800									
8R2	8.2	121	120	222	2200									
100	10	G, J, K, M	3600	7200	151	150	5000	7200	222	2200				
120	12				181	180								

HQCE/HQLE CAPACITANCE VALUES (M DIELECTRIC)

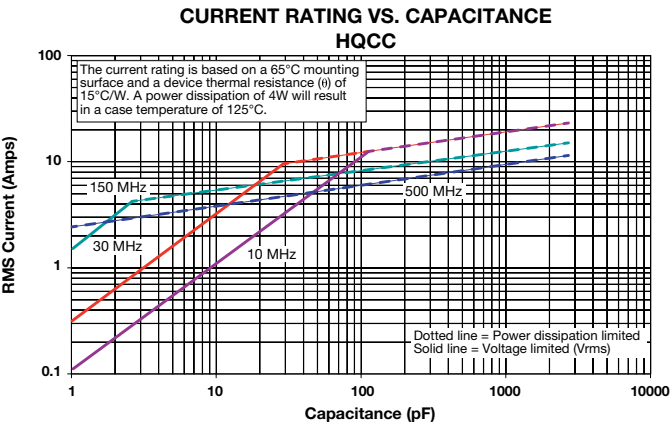
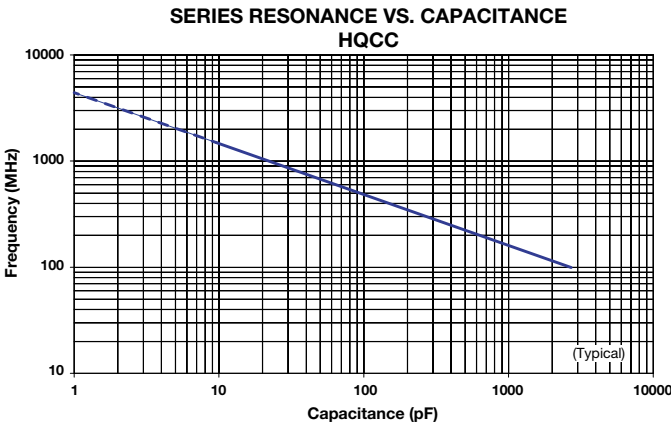
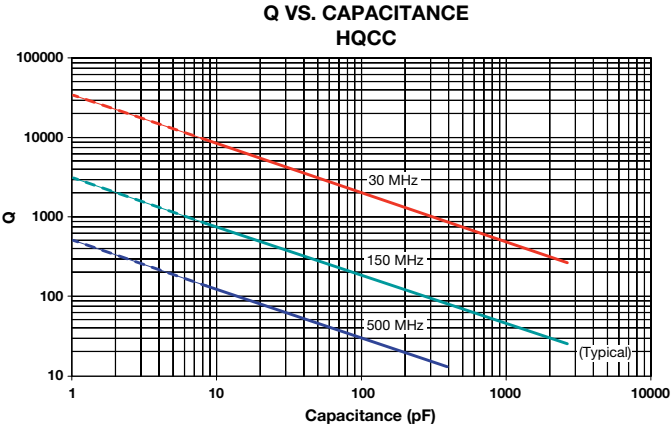
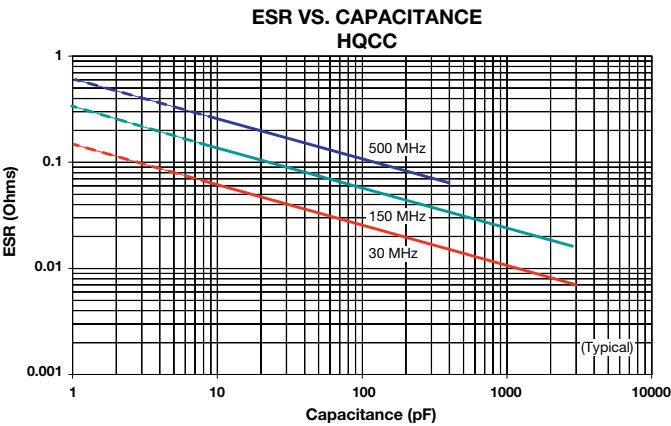
Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC	
			Standard	Extended				Standard	Extended				Standard	Extended
1R0	1.0	B, C, D	3600	7200	180	18	F, G, J, K, M	3600	7200	331	330	F, G, J, K, M	3600	NA
1R2	1.2				220	22				391	390			
1R5	1.5				270	27				471	470			
1R8	1.8				330	33				561	560		2500	
2R2	2.2				390	39				681	680			
2R7	2.7				470	47				821	820			
3R3	3.3				560	56				102	1000		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	F, G, J, K, M	3600	7200	121	120	5000							
8R2	8.2				151	150								
100	10				181	180								
120	12				221	220		3600						
150	15	271	270											

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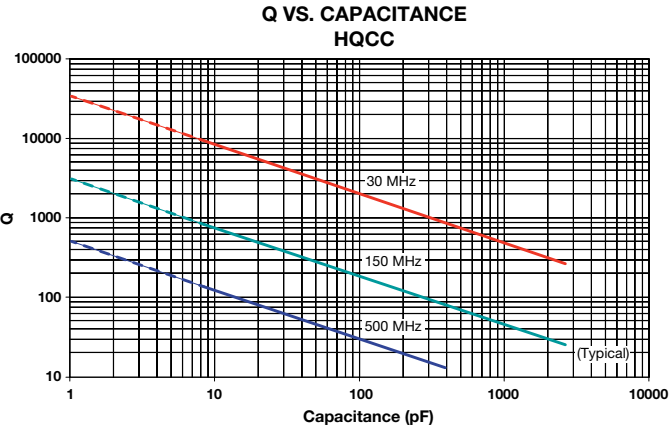
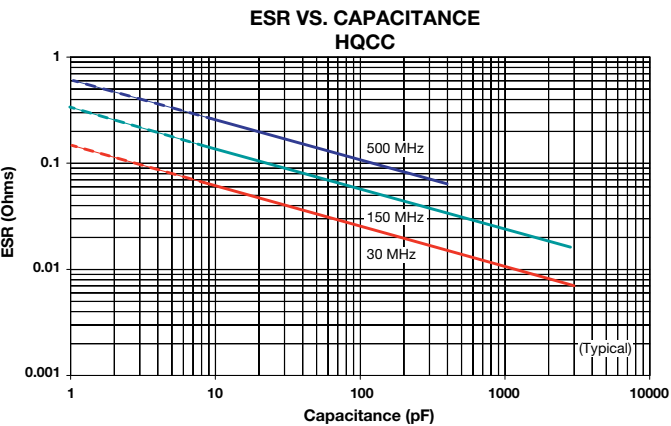


HQ[®] Series, High RF Power Capacitors

HQCC PERFORMANCE CHARACTERISTICS (A DIELECTRIC)



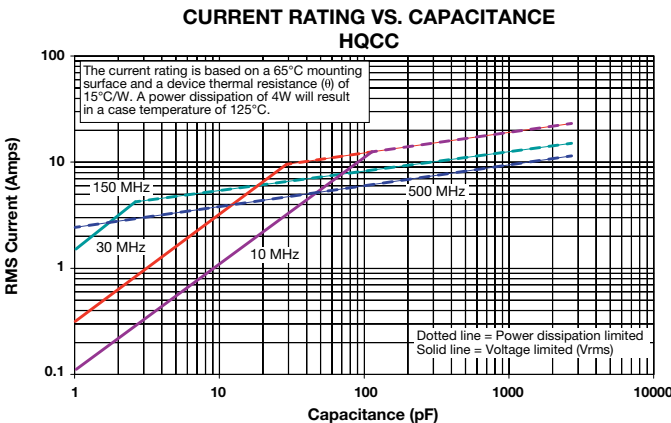
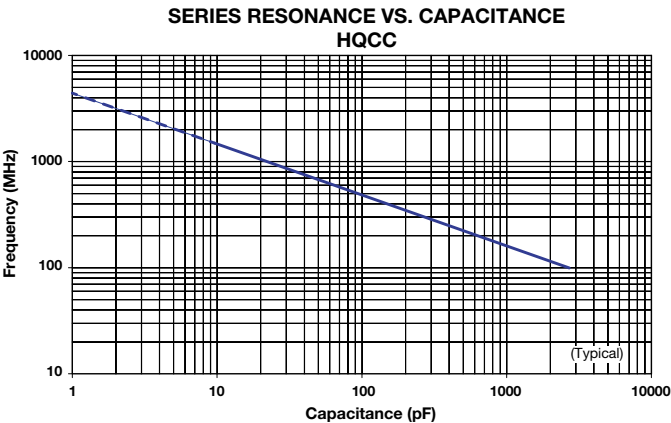
HQCC PERFORMANCE CHARACTERISTICS (M DIELECTRIC)



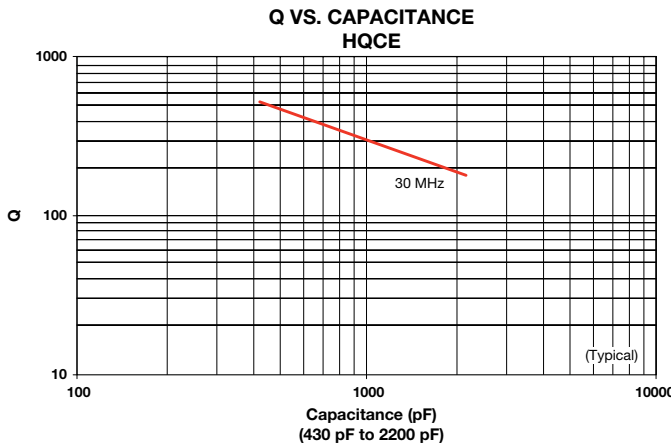
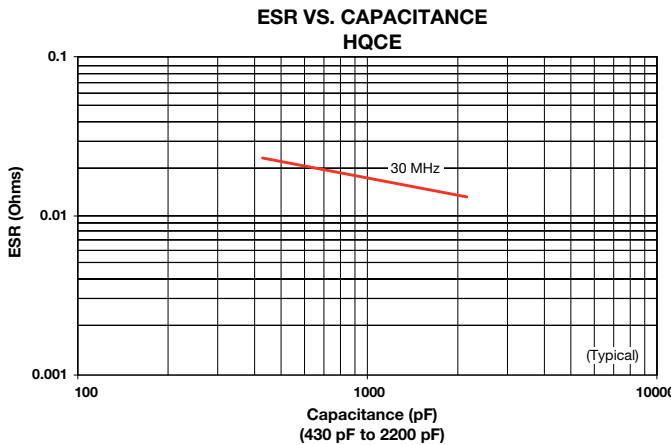
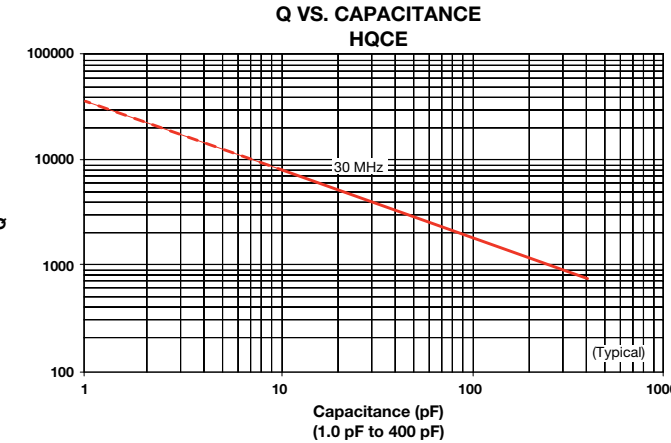
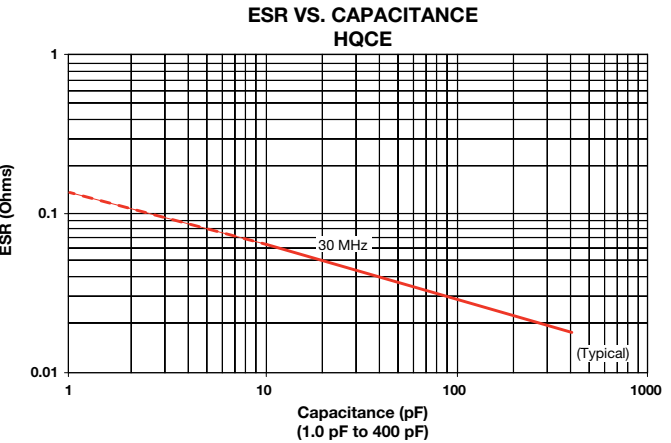
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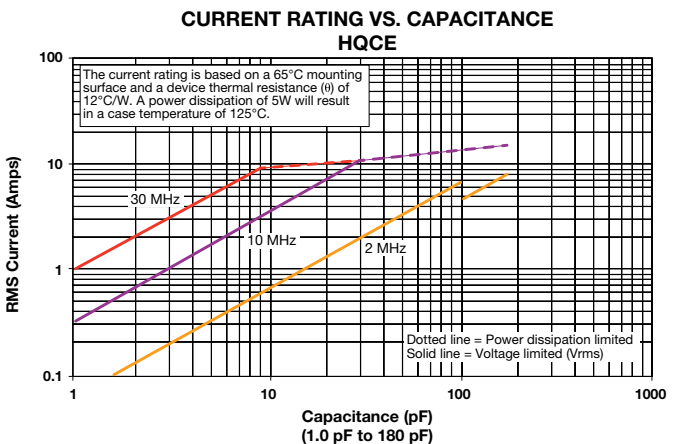
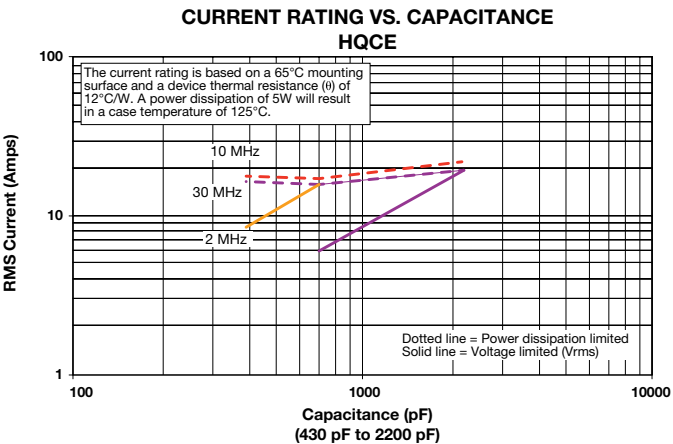
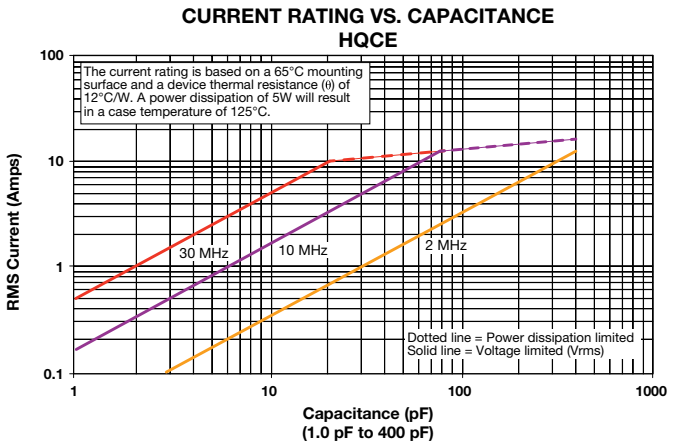
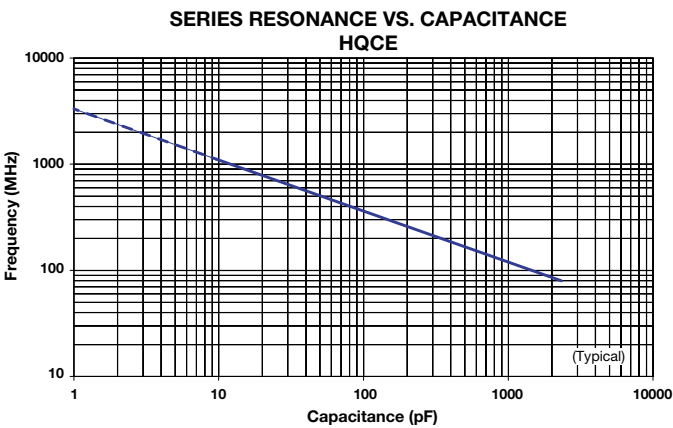


HQCE PERFORMANCE CHARACTERISTICS (A DIELECTRIC)

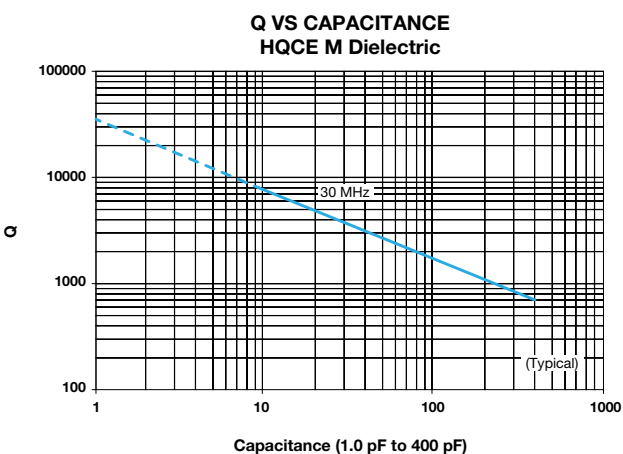
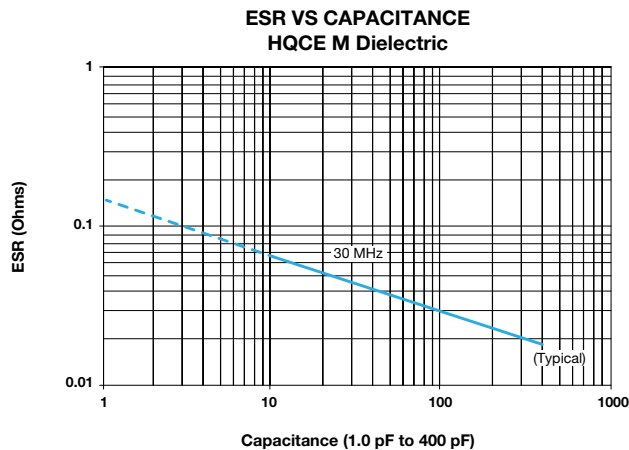


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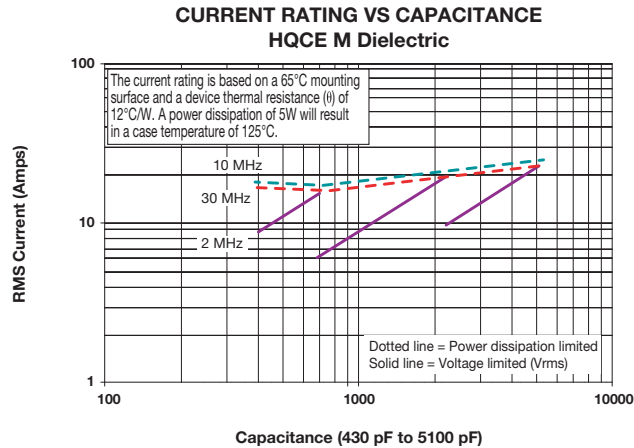
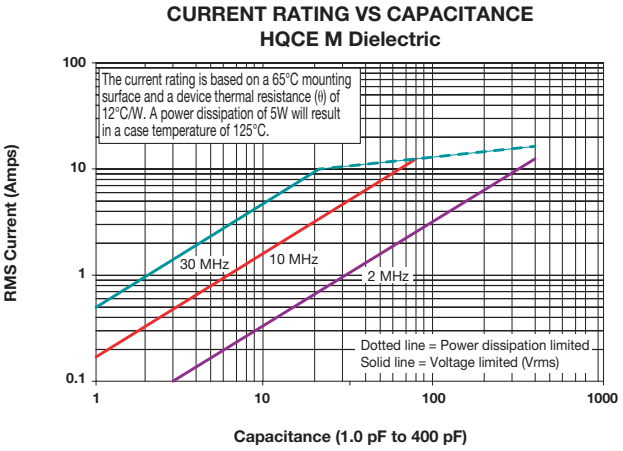
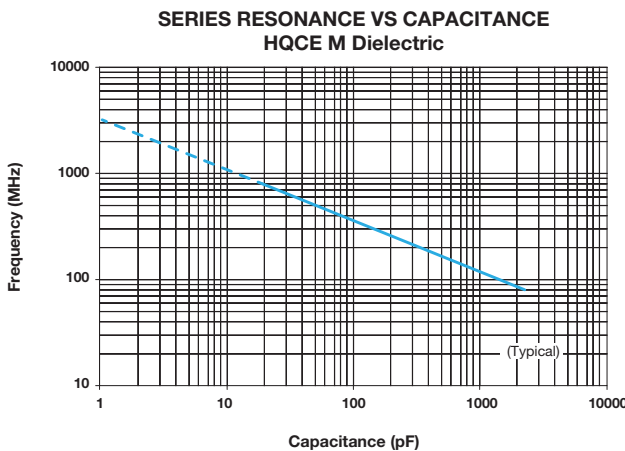
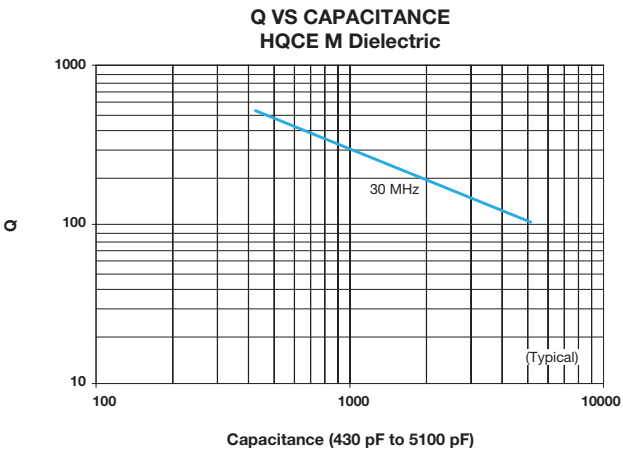
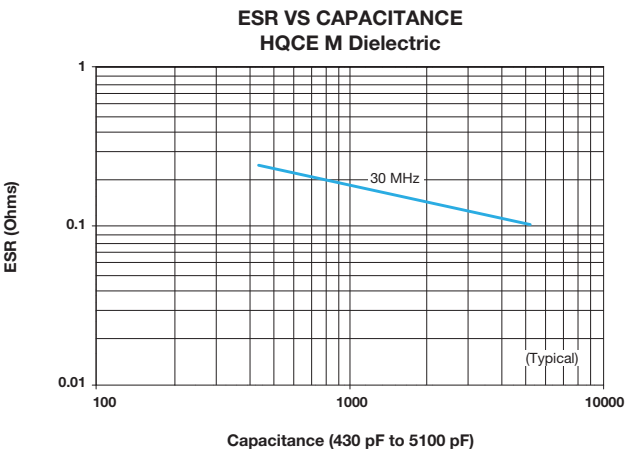


HQCE PERFORMANCE CHARACTERISTICS (M DIELECTRIC)



RF/Microwave Multilayer Capacitors (MLC)

HQ® Series, High RF Power Capacitors



Mouser Electronics

Authorized Distributor

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AVX:

[HQCEMA680FAT9A](#) [HQCEMA680FAT3A](#) [HQCEKA151JAT9A](#) [HQLCHA6R8CAM](#) [HQLCGA471GAM](#)
[HQCCHA3R3DAT9A](#) [HQLCSA102GAM](#) [HQCEMA470JAT9A](#) [HQLEKA111JAM](#) [HQLEAA332GAM](#)
[HQCEMA101JAT3A](#) [HQLEMA270JAM](#) [HQLCHA220DAM](#) [HQCEMA750FAT3A](#) [HQCEMA430FAT3A](#)
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[HQCCWM221GAH6A](#) [HQCCWM240GAH6A](#) [HQCCWM271GAH6A](#) [HQCCWM2R0BAH6A](#) [HQCCWM2R4BAH6A](#)
[HQCCWM300GAH6A](#) [HQCCWM330GAH6A](#) [HQCCWM3R3BAH6A](#) [HQCCWM3R9BAH6A](#) [HQCCWM430GAH6A](#)
[HQCCWM470GAH6A](#) [HQCCWM4R7BAH6A](#) [HQCCWM510GAH6A](#) [HQCCWM560GAH6A](#)