

# Hi-Q® High RF Power MLC Surface Mount Capacitors

For 600V to 7200V Applications



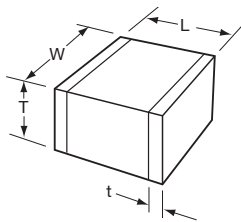
## PRODUCT OFFERING

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

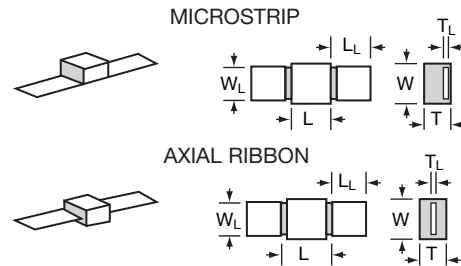
AVX Style	Voltage	Temperature Coefficient	Capacitance Code	Capacitance Tolerance	Test Level	Termination*	Packaging
HQCC	300V = 9	C0G = A	(2 significant digits + no. of zeros)	B = 0.1pF (<8.2pF)	A = Standard	T = Plated Ni and Sn (RoHS Compliant)	1A = 7" Reel*
HQCE	500V = 7	P90 = M	Examples:	C = ±0.25pF (<8.2pF)		J = 5% Min Pb	6A = Waffle Pack
HQLC	800V = U		4.7 pF = 4R7	D = ±0.50pF (<8.2pF)		7 = Plated Ni and Au	*HQCC & HQCE only
HQLE	1000V = A		10 pF = 100	F = ±1% (≥10pF)		A = Axial Ribbon	
	1500V = S		100 pF = 101	G = ±2%		M = Microstrip	
	2500V = W		1,000 pF = 102	J = ±5%		H = Cu/Sn (Non-Magnetic)	
	3000V = H			K = ±10%		4 = Axial Ribbon (Non-Magnetic)	
	3600V = J			M = ±20%		5 = Microstrip (Non-Magnetic)	
	5000V = K						
	7200V = M						

## DIMENSIONS



mm (inches)

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)

STYLE	HQLC	HQLE
(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

**Not RoHS Compliant**



For RoHS compliant products,  
please select correct termination style.

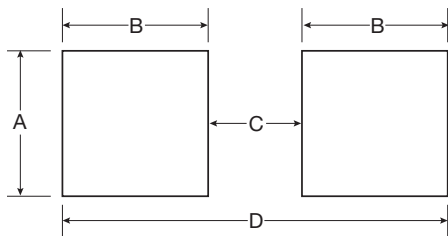


# Hi-Q<sup>®</sup> High RF Power MLC Surface Mount Capacitors

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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

<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>	C0G: 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.

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## HQCC 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	271			2700			
6R8	6.8	560	56												

## HQCC 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		1500	2000
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		1000	1500
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	500	800							
2R4	2.4	360	36	511	510									
2R5	2.5	390	39	561	560	300	500							
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 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	NA
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		1000	NA
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	3600	7200	151	150	G, J, K, M	3600	7200	222	2200			
120	12				181	180								

## HQCE CAPACITANCE VALUES (M DIELECTRIC)

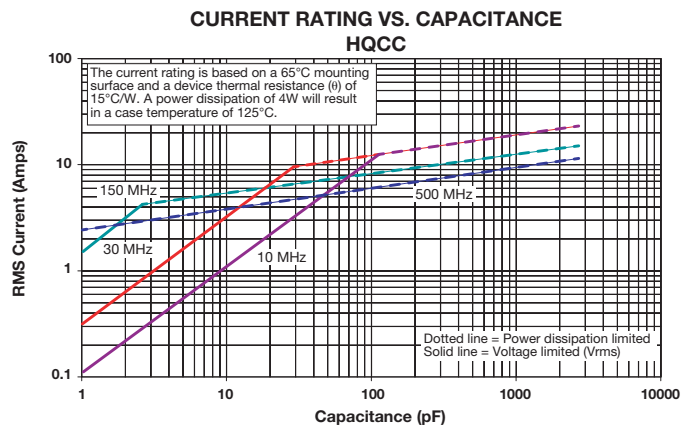
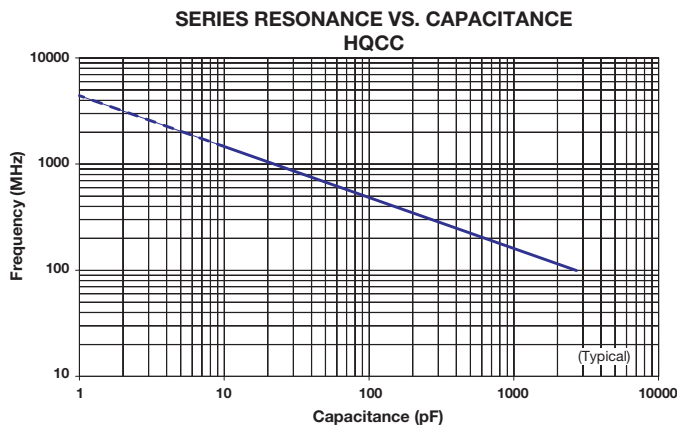
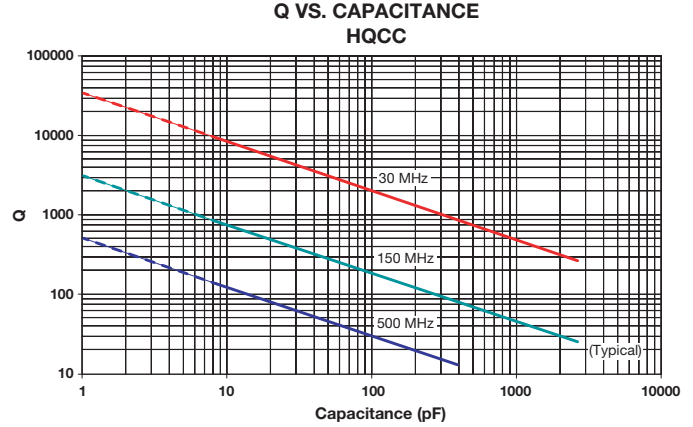
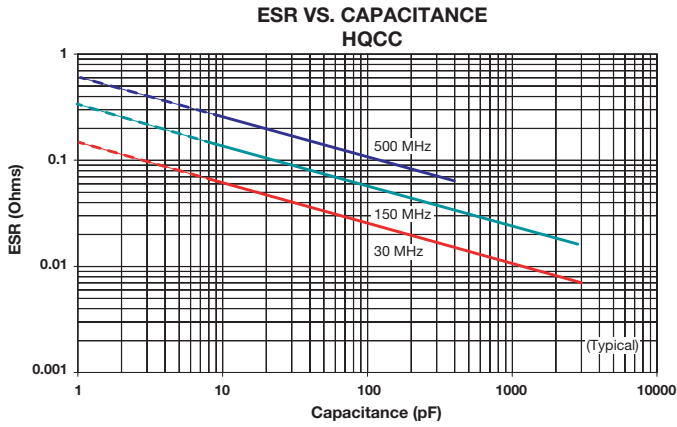
Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC		Cap Code	Cap (pF)	Tol.	Rated WVDC	
			Standard	Extended				Standard	Extended				Standard	Extended
1R0	1.0	B, C, D	3600	7200	180	18	F, G, J, K, M	3600	7200	331	330	F, G, J, K, M	3600	NA
1R2	1.2				220	22				391	390			
1R5	1.5				270	27				471	470			
1R8	1.8				330	33				561	560			
2R2	2.2				390	39				681	680		2500	NA
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		1000	NA
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	3600	7200	181	180	F, G, J, K, M	3600	7200	332	3300	G, J, K, M	500	NA
120	12				221	220				472	4700			
150	15				271	270				512	5100			

# Hi-Q<sup>®</sup> High RF Power MLC Surface Mount Capacitors

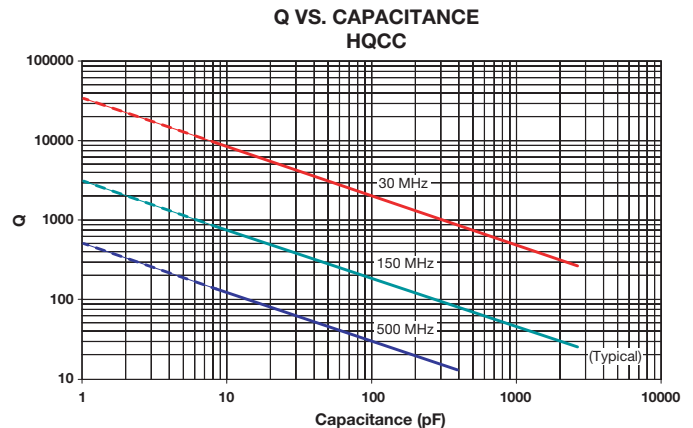
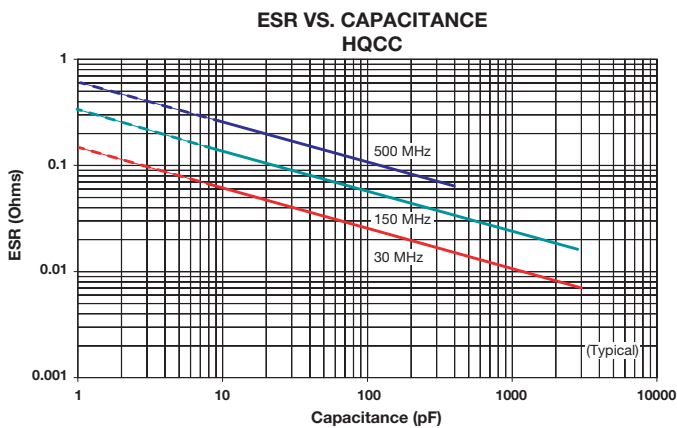
For 600V to 7200V Applications



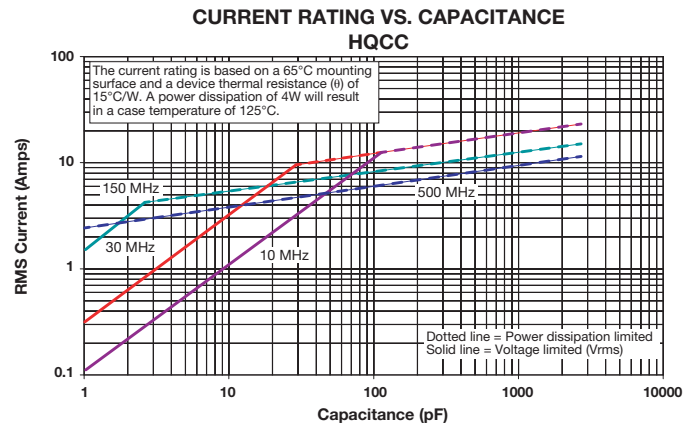
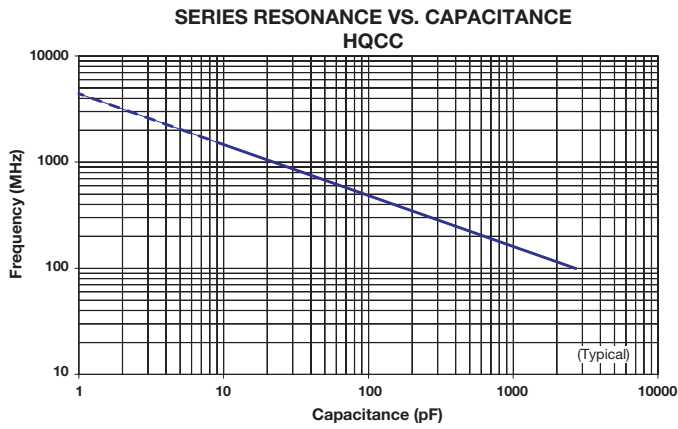
## HQCC PERFORMANCE CHARACTERISTICS (A DIELECTRIC)



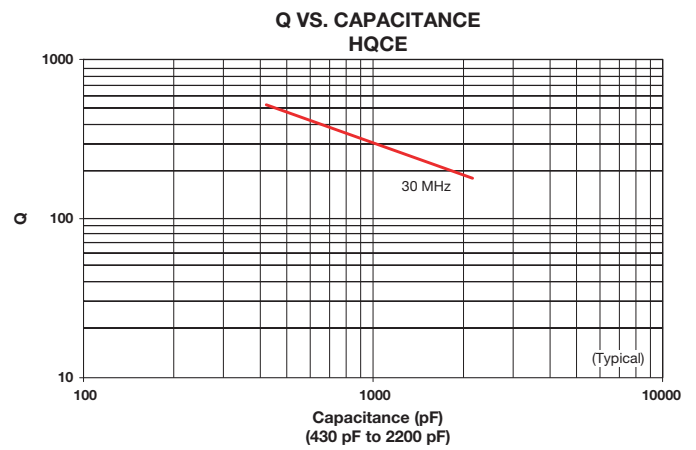
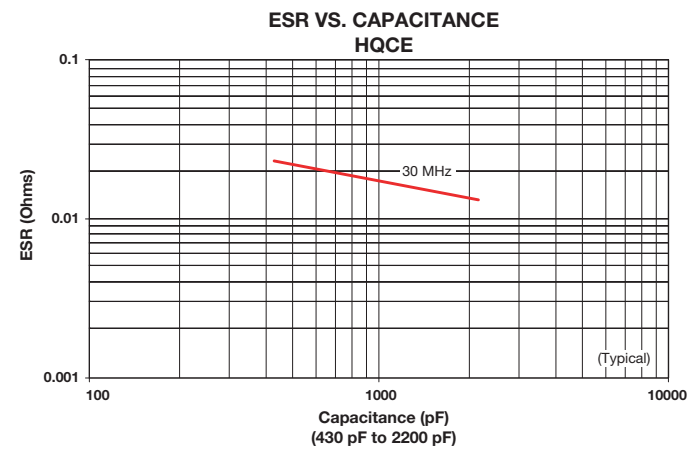
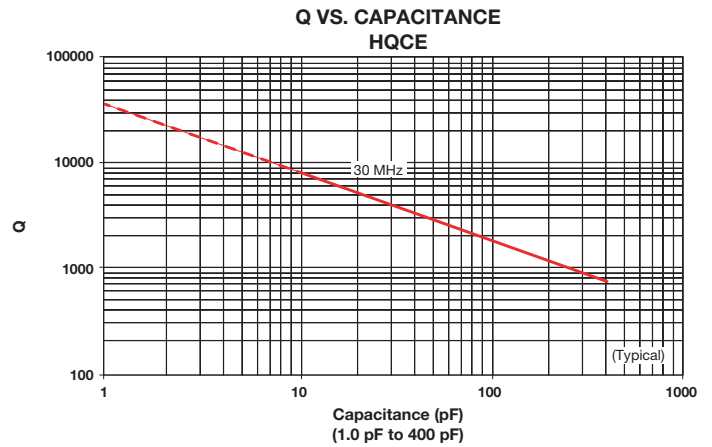
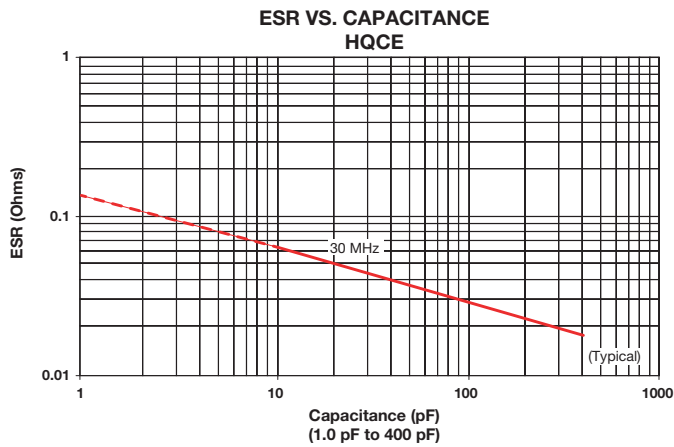
## HQCC PERFORMANCE CHARACTERISTICS (M DIELECTRIC)



# Hi-Q<sup>®</sup> High RF Power MLC Surface Mount Capacitors For 600V to 7200V Applications



## HQCE PERFORMANCE CHARACTERISTICS (A DIELECTRIC)

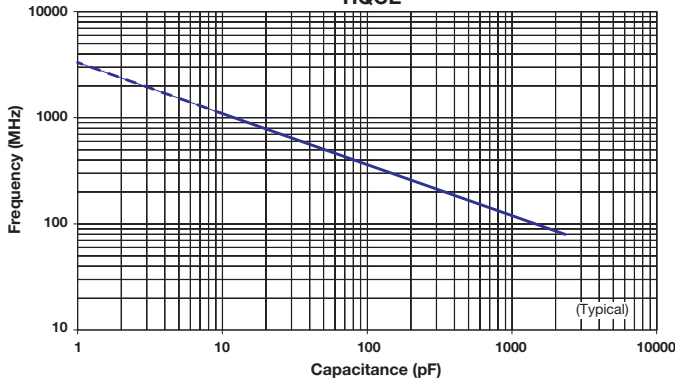


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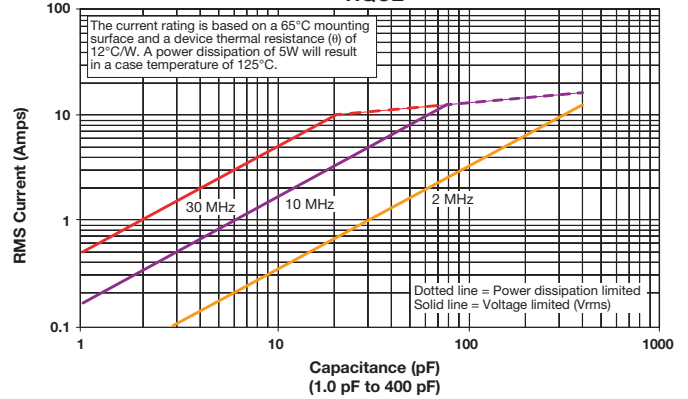
For 600V to 7200V Applications



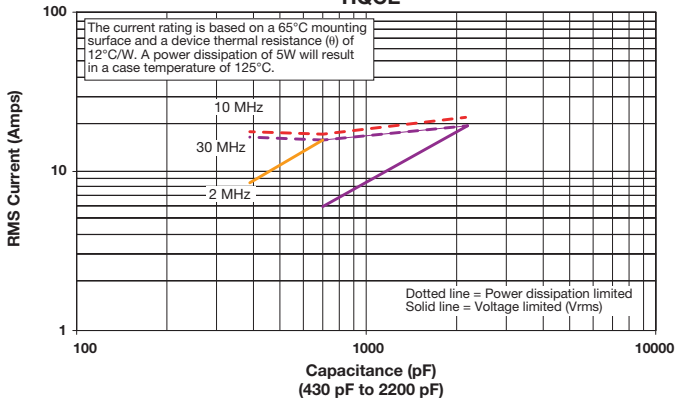
**SERIES RESONANCE VS. CAPACITANCE**  
HQCE



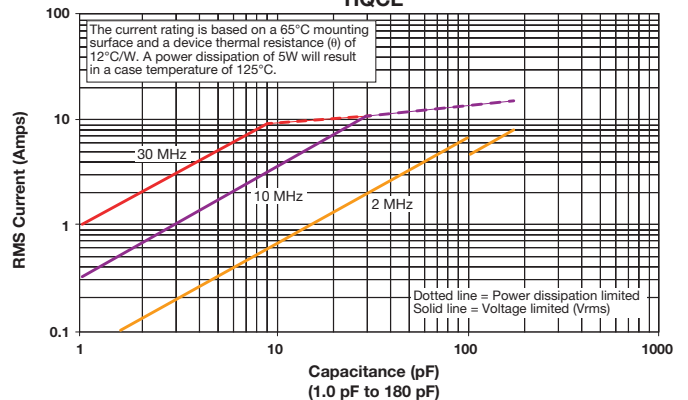
**CURRENT RATING VS. CAPACITANCE**  
HQCE



**CURRENT RATING VS. CAPACITANCE**  
HQCE

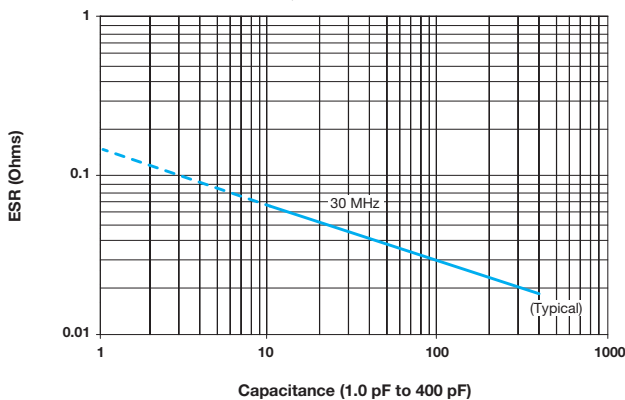


**CURRENT RATING VS. CAPACITANCE**  
HQCE



## HQCE PERFORMANCE CHARACTERISTICS (M DIELECTRIC)

**ESR VS CAPACITANCE**  
HQCE M Dielectric



**Q VS CAPACITANCE**  
HQCE M Dielectric

