CL Series

High Power

FEATURES

- Low ESR/ESL, RF power capacitors
- NP0 capacitors, ultra stability
- RoHS compliant
- Excellent characteristics in current, voltage and power with high Q factor
- Working voltage: 200V - 7,000V
- Sizes: 2225, 4040 and 7065
- Capacitance range: 1pF - 10,000pF
- Laser Marked (optional)

APPLICATIONS

- RF Power Amplifiers
- Industrial (Plasma Chamber)
- Medical (MRI Coils)

CIRCUIT APPLICATIONS

- DC Blocking
- Matching Networks
- Tuning and Coupling

PHYSICAL CHARACTERISTICS

- Chip capacitors for surface mounting with Nickel barrier and tinning or Copper barrier and tinning (non magnetic)
- Ribbon leads for surface mounting, axial or radial leads for through-hole circuits

ELECTRICAL AND ENVIRONMENTAL SPECIFICATIONS

Electrical specifications

Parameter	Value
Capacitance	1pF - 10,000pF
Tolerances	B, C, D below 10pF F, G, J, K, M above 10pF
Working voltage (WVDC)	See capacitance range chart
Temperature coefficient	NP0: (0 ± 30) ppm/°C, −55°C to +125°C
Insulation Resistance	10^5 MΩ min @ 25°C @ rated WVDC 10^4 MΩ min @ 125°C @ rated WVDC
Dielectric Withstanding (test voltage applied for 5 seconds)	2 x WVDC for WVDC ≤ 500V 1.5 x WVDC for 500V < WVDC ≤ 2,500V 1.3 x WVDC for WVDC > 2,500V
Aging	none
Piezo Effect	none

Environmental specifications

Parameter	Value
Life Test	2,000 hours, +125°C @ 1.5 x WVDC (WVDC ≤ 500V) @ 1.3 x WVDC (500V < WVDC < 1,250V) @ 1 x WVDC (1,250V ≤ WVDC)
Moisture Resistance Test 1	240 hours, 85% relative humidity @ 85°C (ESA/SCC n°3009)
Moisture Resistance Test 2	56 days, 93% relative humidity @ 40°C 0V, 5V, WVDC or 500V whichever is less

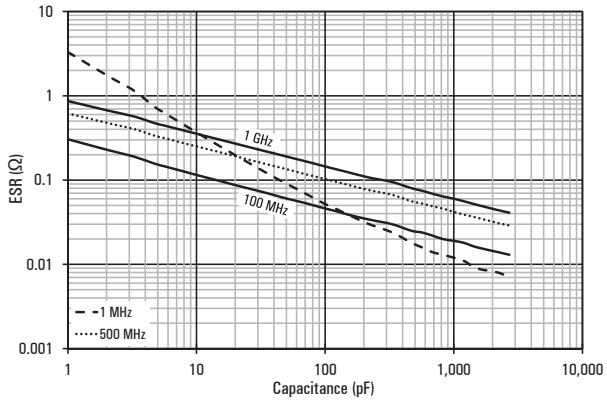
HOW TO ORDER

362	CL	X	100	G	C	1	-	L	-	-RoHS
Voltage code	Dielectric	Case size	Capacitance code	Tolerance code	Termination code	Lead / Ribbon code	Coating code	Marking code	Tape and reel	
201 = 200V **301** = 300V **501** = 500V **102** = 1,000V **122** = 1,200V **152** = 1,500V **162** = 1,600V **252** = 2,500V **362** = 3,600V **502** = 5,000V **702** = 7,000V Please refer to voltage given in capacitance range chart	**CL** = NP0: (0±30) ppm/°C	**X** = 2225 **E** = 4040 **F** = 7065	Please refer to capacitance code given in capacitance range chart	**B** = ±0.1pF **C** = ±0.25pF **D** = ±0.5pF **F** = ±1% **G** = ±2% **J** = ±5% **K** = ±10% See note 1	**S** = Standard: tin-plated nickel Available on sizes 2225 and 4040: **C** = Non-magnetic: tin-plated copper Available on size 7065: **A** = Non-magnetic: silver-palladium See note 2	**-**: no lead or ribbon **1** = Micro-strip ribbons, RoHS **6** = Radial leads, non RoHS Available on size 4040: **1S** = Short micro-strip ribbons, RoHS. **2** = Axial ribbons, RoHS. **3** = Radial ribbons, RoHS. Available on sizes 2225 and 4040: **7** = Axial leads, non RoHS. See note 3	**-**: no coating **H** = coating requested	**-**: no marking **L** = laser marking	**-**: no tape and reel Available on sizes 2225 and 4040: **E** = horizontal orientation CPX: 500 components per reel CPE: 500 or 700 components per reel Available on size 4040: **X** = verticale orientation, only available on CPE, 350 components per reel	The RoHS tag is not part of the reference Tag added at the end of P/N for information

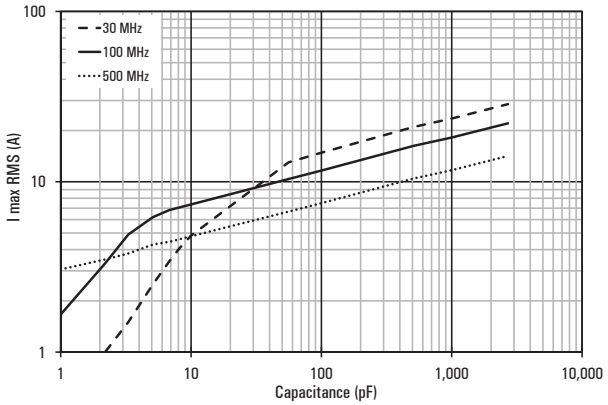
High Power

CL Series

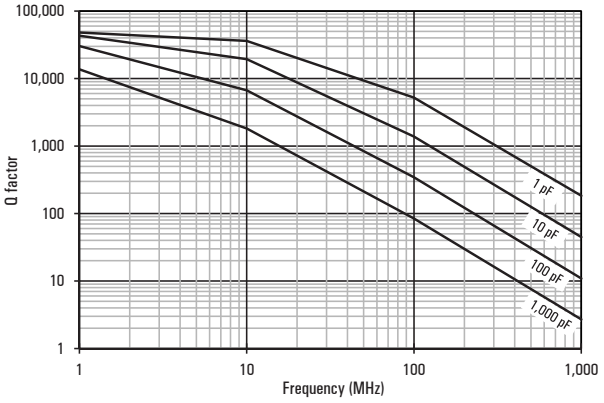
2225: TYPICAL ESR VERSUS CAPACITANCE



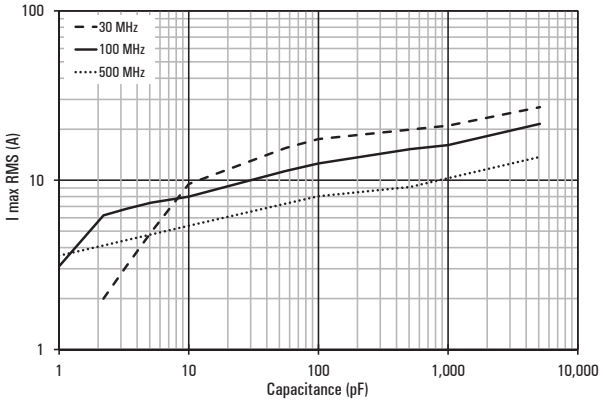
2225: TYPICAL CURRENT RATING VERSUS CAPACITANCE



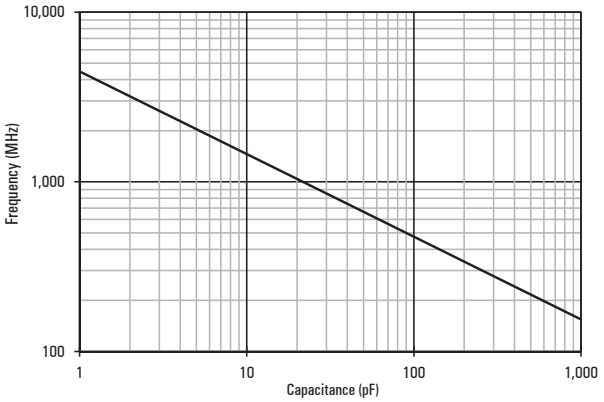
2225: TYPICAL Q FACTOR VERSUS FREQUENCY



4040: TYPICAL CURRENT RATING VERSUS CAPACITANCE



2225: TYPICAL SERIES RESONANCE FREQUENCY VERSUS CAPACITANCE



Note 1:
- For capacitance values less than 10pF, tolerances B, C and D available.
- For capacitance values equal to or higher than 10pF, tolerances F, G, J and K available.

Note 2:
- All terminations are backward compatible and lead-free
- The non-magnetic terminations are all Magnetism-free Rated

Note 3: when coding ribbons or leads for the description of the part, the termination has to be mentioned for MR certified types to ensure that only non-magnetic materials are used.

Examples: 362 CLE 470 J1L any termination material could be used
362 CLE 470 JC1L only non-magnetic termination materials could be used

Please consult us for specific requirements.

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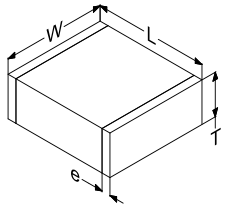
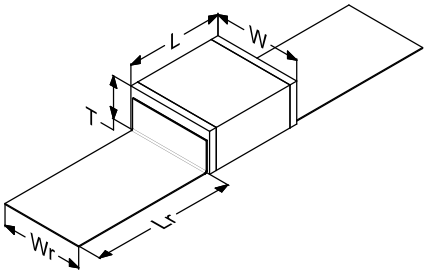
DIMENSIONS in inches (mm)

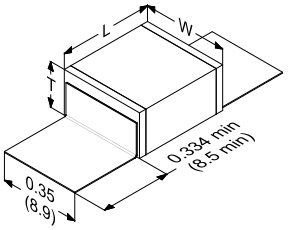
Chips



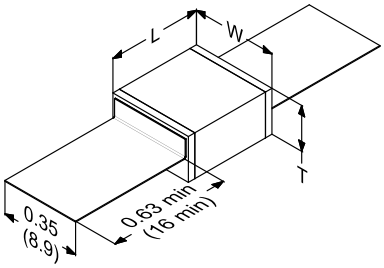
Micro-strip ribbons: available on all sizes (Type 1)



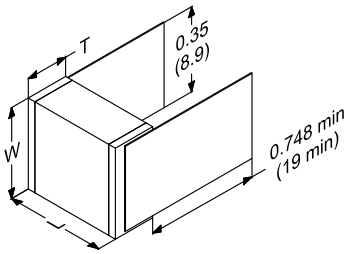
Short Micro-strip ribbons: available on size E (4040) (Type 1S)



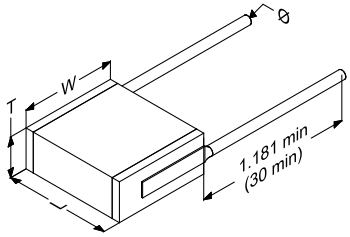
Axial ribbons: available on size E (4040) (Type 2)



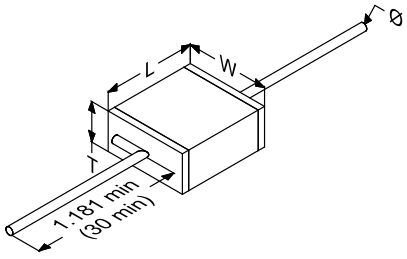
Radial ribbons: available on size E (4040) (Type 3)



Radial leads: available on all sizes (Type 6)



Axial leads: available on sizes X (2225) and E (4040) (Type 7)



High Power

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STANDARD RATINGS

Size		2225		4040	
Size code		X		E	
Dimensions inches (mm)	L	0.244 +0.012 / -0.028 (6.2 +0.3 / -0.7)		0.413 +0.012 / -0.028 (10.5 +0.3 / -0.7)	
	W	0.26 ± 0.02 (6.6 ± 0.5)		0.374 ± 0.02 (9.5 ± 0.5)	
	T	0.15 max (3.8 max)		0.177 max (4.5 max)	
	e	0.032 ± 0.024 (0.8 ± 0.6)		0.032 ± 0.024 (0.8 ± 0.6)	
	Lr	0.472 min (12 min)		0.63 min (16 min)	
	Wr	0.213 (5.4)		0.35 (8.9)	
	Ø	0.024 (0.60)		0.035 (0.90)	
Value (pF)	Cap. Code	Standard	Extended	Standard	Extended
1.0	1R0	2,500V	3,600V	3,600V	7,000V
1.1	1R1				
1.2	1R2				
1.3	1R3				
1.4	1R4				
1.5	1R5				
1.6	1R6				
1.7	1R7				
1.8	1R8				
1.9	1R9				
2.0	2R0				
2.1	2R1				
2.2	2R2				
2.4	2R4				
2.7	2R7				
3.0	3R0				
3.3	3R3				
3.6	3R6				
3.9	3R9				
4.3	4R3				
4.7	4R7				
5.1	5R1				
5.6	5R6				
6.2	6R2				
6.8	6R8				
7.5	7R5				
8.2	8R2				
9.1	9R1				
10	100				
11	110				
12	120				
13	130				
15	150				
16	160				
18	180				
20	200				
22	220				
24	240				
27	270				
30	300				
33	330				
36	360				
39	390				
43	430				
47	470				
51	510				

Special values, tolerances, higher WVDC and matching available, please consult factory.

Size		2225		4040		7065
Size code		X		E		F
Dimensions inches (mm)	L	0.244 +0.012 / -0.028 (6.2 +0.3 / -0.7)		0.413 +0.012 / -0.028 (10.5 +0.3 / -0.7)		0.244 +0.012 / -0.028 0.701 ± 0.02
	W	0.26 ± 0.02 (6.6 ± 0.5)		0.374 ± 0.02 (9.5 ± 0.5)		(17.8 ± 0.5) 0.63 ± 0.02
	T	0.15 max (3.8 max)		0.177 max (4.5 max)		(16 ± 0.5) 0.158 max
	e	0.032 ± 0.024 (0.8 ± 0.6)		0.032 ± 0.024 (0.8 ± 0.6)		(4 max) 0.032 ± 0.024
	Lr	0.472 min (12 min)		0.63 min (16 min)		(0.8 ± 0.6) 0.236 min
	Wr	0.213 (5.4)		0.35 (8.9)		(6 min) 0.591
	Ø	0.024 (0.60)		0.035 (0.90)		(15) 0.035
Value (pF)	Cap. Code	Standard	Extended	Standard	Extended	Standard
56	560	2,500V	3,600V	3,600V	7,000V	1,000V
62	620					
68	680					
75	750					
82	820					
91	910					
100	101					
110	111					
120	121					
130	131					
150	151					
160	161					
180	181					
200	201					
220	221					
240	241					
270	271					
300	301	1,500V				
330	331					
360	361					
390	391					
430	431					
470	471					
510	511	1,200V				
560	561					
620	621					
680	681					
750	751					
820	821					
910	911					
1,000	102					
1,100	112					
1,200	122					
1,500	152	500V				
1,800	182					
2,200	222	300V				
2,700	272					
3,000	302					
3,300	332					
3,900	392					
4,700	472					
5,100	512					
5,600	562					
6,800	682					
8,200	822					
10,000	103					500V

Special values, tolerances, higher WVDC and matching available, please consult factory.

HIGH Q