

SMD POLYMER ALUMINUM SOLID ELECTROLYTIC CAPACITOR

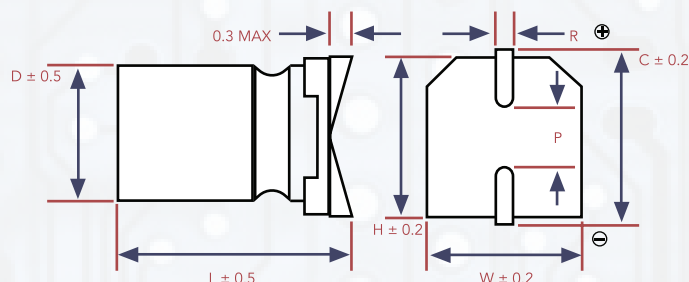
- CCQ SERIES -

FEATURES

- Low ESR, High ripple current, long life, miniaturized
- SMD type: lead free reflow soldering condition at 260°C peak correspondence
- 5000 hours at 105°C.

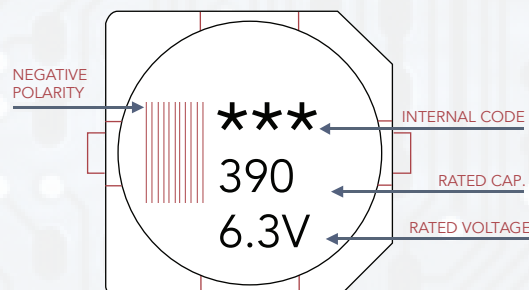


CONSTRUCTION AND DIMENSIONS



øD	W	H	C	R	P
5	5.3	5.3	5.9	0.5~0.8	1.4
6.3	6.5	6.5	7.2	0.5~0.8	2.2
8	8.3	8.3	9.0	0.7~1.1	3.1
10	10.3	10.3	11.0	0.7~1.1	4.5

MARKING



PART NUMBERING

CCQ	1C	470	M	6.3 x 7	R	T
SERIES NAME	RATED VOLTAGE	CAPACITANCE	TOLERANCE	CASE SIZE	PACKAGE TYPE	LONGER TIME
Series is represented by a three/four digit code	OE - 2.5V 1E - 25V OG - 4V 1V - 35V OJ - 6.3V 1H - 50V 1A - 10V 1J - 63V 1C - 16V 1K - 80V 1D - 20V 2A - 100V	470 - 47µF 101 - 100µF 471 - 470µF 102 - 1000µF		3x5.3 8x7.0 4x5.3 8x10.0 4x5.7 8x12.0 5x5.3 10x7.7 5x6.1 10x8.0 5x5.7 10x9.9 6.3x5.3 10x10.0 6.3x5.7 10x10.5 6.3x5.9 10x12.7 6.3x6.0 10x13.0 6.3x7.0 12.5x13.5 6.3x7.7 12.5x16.0 8x6.5 16x16.5 8x6.7	R - Tape and reel	Optional 15000 Hrs @ 105°C

SPECIFICATIONS

ITEM	SPECIFICATION		
Category Temperature Range (°C)	-55°C ~ +105°C		
Rated Voltage Range (V)	2.5V ~ 100V.DC		
Capacitance Tolerance (+20°C, 120Hz)	±20% Less than or equal to the specified value. After 2 minutes application of rated Voltage at 20°C		
Leakage Current	2.5V ~ 25V	35V ~ 100V	
	1≤0.2CV or 500 µA whichever is greater	1≤0.1CV or 299 µA whichever is greater	
Dissipation Factor	Rated Voltage	2.5V ~ 6.3V	10V ~ 100V
	Tan δ (MAX)	0.08	0.12
Low Temperature Characteristics (Max. Impedance Ration)	Z(-25°C) / Z(+20°C)	≤1.25	(100KHz)
	Z(-55°C) / Z(+20°C)	≤1.25	



SPECIFICATIONS

ITEM	SPECIFICATION	
Endurance	The specifications listed below shall be satisfied when the capacitors are restored to 20°C after application of rated voltage for 5000 hours at 105°C.	
	Appearance	No Significant Damage
	Capacitance Change	$\leq \pm 20\%$ of the initial value
	D.F. (Tan δ)	$\leq 150\%$ of the specified value
	ESR	$\leq 150\%$ of the specified value
	Leakage Current	$\leq$ The Specified Value
Damp Heat (Steady State)	The specifications listed below shall be satisfied when the capacitors are restored to 20°C after application of rated voltage for 1000 hours at 60°C, 90%~95% RH	
	Appearance	No Significant Damage
	Capacitance Change	$\leq \pm 20\%$ of the initial value
	D.F. (Tan δ)	$\leq 150\%$ of the specified value
	ESR	$\leq 150\%$ of the specified value
	Leakage Current	$\leq$ The Specified Value
Surge Voltage	Surge Voltage = Rated Voltage $\times$ 1.15 (V) The capacitors shall be subjected to 1000 cycles each consisting of charge with surge voltages specified at 105°C for 30 seconds through a protective resistor ($R_c = 1k\Omega$) and discharge for 5 minutes 30 seconds.	
	Appearance	No Significant Damage
	Capacitance Change	$\leq \pm 20\%$ of the initial value
	D.F. (Tan δ)	$\leq 150\%$ of the specified value
	ESR	$\leq 150\%$ of the specified value
	Leakage Current	$\leq$ The Specified Value
Resistance to Soldering Heat	Measurement for solder temperature profile shall be made at the capacitor top and the terminal.	
	Capacitance Change	$\leq \pm 10\%$ of the initial value
	D.F. (Tan δ)	$\leq 130\%$ of the specified value
	ESR	$\leq 130\%$ of the specified value
	Leakage Current	$\leq$ The Specified Value



RATED RIPPLE CURRENT COEFFICIENT

FREQUENCY	120Hz $\leq f < 1$ KHz	1KHz $\leq f < 10$ KHz	10KHz $\leq f < 100$ KHz	100KHz $\leq f < 500$ KHz
COEFFICIENT	0.05	0.30	0.70	1.00



STANDARD RATINGS

RATED VOLTAGE	RATED CAPACITANCE (μ F)	CASE SIZE $\varnothing D \times L$ (mm)	ESR (m Ω) AT 20°C, 100KHz	LEAKAGE CURRENT (μ A)	RATED RIPPLE CURRENT (mA rms / 105°C/100kHz)
2.5	470	6.3 x 9	18	500	4100
	560	6.3 x 9	18	500	4100
	680	6.3 x 9	18	500	4100
	820	6.3 x 9	18	500	4100
4	560	6.3 x 9	18	500	4100
	680	6.3 x 9	18	544	4100
	820	6.3 x 9	18	656	4100
	1000	6.3 x 9	18	800	4100
	1200	6.3 x 9	18	960	4100
6.3	220	5 x 6.1	35	500	3500
	220	6.3 x 7	30	500	3500
	330	6.3 x 7	25	500	3500
	470	6.3 x 7	25	592	3500
	560	6.3 x 7	25	706	3500
	680	6.3 x 9	18	857	3800
	820	6.3 x 9	18	1033	3800
	1000	8 x 9.8	15	1260	4100
	1500	10 x 13.6	15	1890	4800





STANDARD RATINGS

RATED VOLTAGE	RATED CAPACITANCE (μ F)	CASE SIZE $\varnothing$ DxL (mm)	ESR (m Ω) AT 20°C, 100KHz	LEAKAGE CURRENT (μ A)	RATED RIPPLE CURRENT (mA rms / 105°C/100kHz)
10	220	6.3 x 7	30	500	2650
	330	6.3 x 7	30	660	2650
	470	6.3 x 7	30	940	2700
	560	6.3 x 9	20	1120	2900
	680	8 x 9.8	18	1360	3500
	820	8 x 12.6	18	1640	4100
		10 x 10.5	15	1640	4100
	1000	8 x 12.6	18	2000	4100
16	1500	10 x 13.6	15	2000	4500
	47	6.3 x 7	50	500	2100
	68	6.3 x 7	40	500	2100
	100	6.3 x 7	40	500	2100
	220	6.3 x 7	30	704	2100
		8 x 9.8	25	704	2690
		6.3 x 7	30	1056	2260
	330	8 x 9.8	25	1056	2900
		8 x 12.6	20	1056	3500
		8 x 9.8	25	1504	2900
	470	8 x 12.6	20	1504	3500
		8 x 12.6	20	2176	3500
		8 x 12.6	20	2624	3500
	1000	8 x 12.6	20	3200	3500
	1500	10 x 13.6	15	4800	4100
20	390	10 x 10.5	22	1560	3650*
25	47	6.3 x 7	50	500	1950
	100	6.3 x 7	45	500	1950
		6.3 x 9	40	500	2100
	220	6.3 x 9	40	1100	2100
		8 x 9.8	30	1100	2690
	270	6.3 x 10	35	1350	2400
	330	8 x 9.8	30	1650	2690
		8 x 12.6	25	2350	3100
	470	10 x 10.5	30	2350	3100
		8 x 12.6	25	3400	3100
	680	10 x 13.6	20	3400	3800
35	820	10 x 13.6	20	4100	3800
	1000	10 x 13.6	20	5000	3800
	47	6.3 x 7	80	299	1410
		6.3 x 7	80	350	1516
	100	6.3 x 9	80	350	1950
		8 x 9.8	50	350	2450
	150	6.3 x 10	70	525	2100
		8 x 9.8	50	770	2450
	220	8 x 12.6	50	770	2910
		8 x 12.6	50	1155	2910
50	330	10 x 13.6	40	1155	3640
		10 x 13.6	40	1155	3640
	47	6.3 x 9	100	299	850
		6.3 x 9	100	299	850
		8 x 9.8	60	299	1200
		8 x 12.6	60	299	1500
	100	8 x 9.8	60	500	1320
		8 x 12.6	60	500	1550
		10 x 13.6	55	500	2100
		8 x 12.6	60	750	1550
	220	10 x 13.6	55	1100	2100

* - Endurance: 15,000 Hrs @ 105°C



STANDARD RATINGS

RATED VOLTAGE	RATED CAPACITANCE (μF)	CASE SIZE ØDxL (mm)	ESR (mΩ) AT 20°C, 100KHz	LEAKAGE CURRENT (μA)	RATED RIPPLE CURRENT (mA _{rms} /105°C/100kHz)
63	10	6.3 x 9	110	299	750
	22	6.3 x 9	110	299	750
	33	6.3 x 9	100	299	820
		8 x 9.8	60	299	1100
	47	8 x 9.8	60	299	1100
		8 x 12.6	60	299	1300
	82	8 x 12.6	60	517	1550
	100	8 x 12.6	60	630	1550
10 x 13.6		55	630	1800	
80	150	10 x 13.6	55	945	1800
	10	6.3 x 9	120	299	550
	22	6.3 x 9	120	299	600
		8 x 9.8	70	299	950
	33	8 x 9.8	70	299	950
		8 x 12.6	70	299	1300
	47	8 x 12.6	70	376	1300
	56	8 x 12.6	70	448	1400
100	68	10 x 13.6	50	544	1750
	100	10 x 13.6	50	800	1750
	10	6.3 x 9	120	299	550
	22	8 x 9.8	80	299	950
		8 x 12.6	70	299	1300
	33	8 x 12.6	70	330	1300
	47	10 x 13.6	50	470	1700
	68	10 x 13.6	50	680	1750

