

Features

- SMD TYPE. Conductive Polymer Aluminum Solid Capacitors
- This type has lowest ESR level and excellent performance at high frequency through low profile.
- Ideal capacitor for digital and high frequency devices.
- High heat resistance and high reliability.

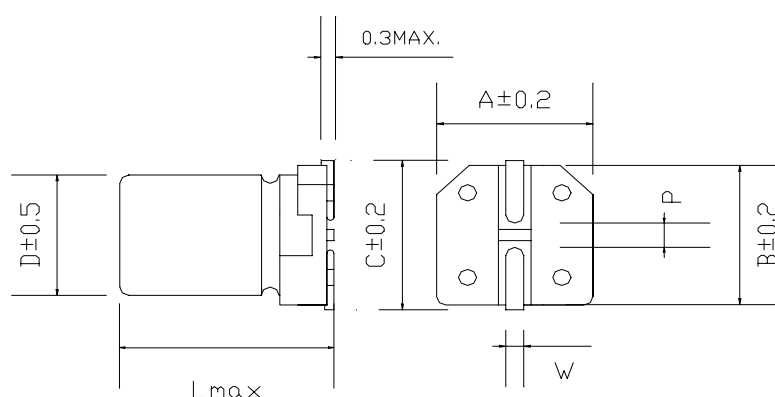
Application :

- Circuit = Noise-limiter, smoothing circuit of power supply
- Equipment = PC, Digital Still Camera, Hard Disk Drive, PDA, M.D. Graphic card etc

Characteristics

Voltage Range	2.5 ~20VDC	
Capacitance Range	22uF ~ 1500uF	
Temperature Range	-55 ~ +105°C	
Capacitance Tolerance	M=+20%/-20% , K=+10%/-10% (at 20°C , 120Hz)	
Leakage Current	0.2 x Capacitance(μF) x Rated Voltage(Vdc) After 2minutes	
Endurance (Rated Voltage at 105°C 2000 h)	Appearance	≦ No significant damage
	Capacitance Change (μF)	≦ 20% of an initial measured value
	Dissipation Factor (tan δ)	≦ 150% of an initial specified value
	ESR (mΩ)	≦ 150% of an initial specified value
	Leakage Current (μA)	≦ An initial specified value
Low Temperature Characteristics	Impedance Ratio (at 100kHz): Z ₋₂₅ /Z ₊₂₀ : 1.15 , Z ₋₅₅ /Z ₊₂₀ : 1.25	
Surge Voltage (V)	Rated Voltage x 1.15 (at 105°C)	

Diagram of dimensions



Lead Spacing And Diameter

SIZE CODE	φD	L	A	B	C	W	P±0.2
C6	6.3	6.0±0.2	6.6	6.6	2.7	0.5 to 0.8	2.0
C7	6.3	7.0±0.2	6.6	6.6	2.7	0.5 to 0.8	2.0
D7	8	7.0±0.2	8.4	8.4	3.0	0.7 to 1.1	3.1
E12	8	12.0±0.5	8.4	8.4	3.0	0.7 to 1.1	3.1
F8	10	8.0±0.2	10.4	10.4	3.3	0.7 to 1.1	4.7
F10	10	10.0±0.5	10.4	10.4	3.3	0.7 to 1.1	4.7
F13	10	13±0.5	10.4	10.4	3.3	0.7 to 1.1	4.7

Frequency coefficient for ripple current

Frequency	120Hz ≤ f < 1KHz	1KHz ≤ f < 10KHz	10KHz ≤ f < 100KHz	100KHz ≤ f < 500KHz
Coefficient	0.05	0.3	0.7	1

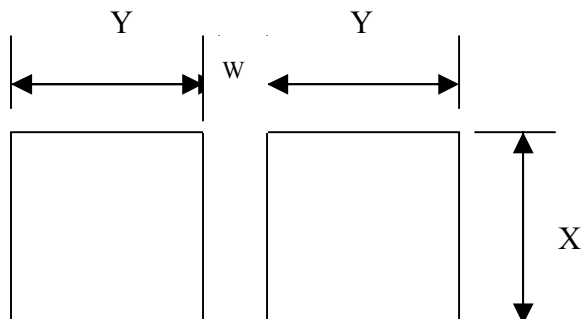
Dimension: ϕ Dx L(mm)
DIMENSIONS & CHARACTERISTICS
Ripple Current: mA/rms at 100kHz, 105°C

W.V.(V)	Capacitance (μ F)	Size ϕ DxL(mm)	SIZE Code	Tan δ (120Hz,200C)	L.C. (μ A)	E.S.R. (100k-300kHz,m Ω , 20°C MAX)	Rated R.C (mArms at 100kHz, 105°C)
2.5(0E)	220	6.3x6	C6	0.12	110	28	2390
	560	8x7	D7	0.12	280	25	2700
	680	8x12	E12	0.18	340	13	4520
	1000	10x10	F10	0.18	500	13	5200
	1200	10x13	F13	0.18	750	12	5440
	1500	10x8	F8	0.12	500	20	3800
4(0G)	150	6.3x6	C6	0.12	120	35	1810
	220	8x7	D7	0.12	176	29	2700
	330	8x7	D7	0.12	264	29	2700
	470	10x8	F8	0.12	376	22	3800
	560	8x12	E12	0.18	448	13	4520
	680	10x8	F8	0.12	544	22	3800
	820	10x10	F10	0.18	656	13	5200
	1200	10x13	F13	0.18	960	12	5440
6.3(0J)	82	6.3x6	C6	0.12	103	40	1700
	100	6.3x6	C6	0.12	126	40	1810
	150	6.3x7	C7	0.12	151	30	2010
		8x7	D7	0.12	189	30	2250
	220	8x7	D7	0.12	189	29	2600
		6.3x7	C7	0.12	277	45	2320
	330	8x7	D7	0.12	277	29	2600
		10x8	F8	0.12	416	22	3500
	470	8x12	E12	0.15	592	15	4210
		10x8	F8	0.12	592	22	3500
	560	10x10	F10	0.15	706	16	4700
	820	10x13	F13	0.15	1033	12	5440
10	56	6.3x6	C6	0.10	112	45	1700
	150	8x7	D7	0.10	300	32	2200
	330	10x8	F8	0.10	660	25	3200
	330	8x12	E12	0.15	660	17	3950
	470	10x10	F10	0.15	940	18	4400
	560	10x13	F13	0.15	1360	13	5230
16	47	6.3x6	C6	0.10	150	50	1650
	82	8x7	D7	0.10	262	43	2100
	180	8x12	E12	0.15	576	20	3640
		10x8	F8	0.10	576	33	3000
	220	10x10	F10	0.15	704	20	4200
	330	10x13	F13	0.15	1056	16	4270
20	22	6.3x6	C6	0.10	88	60	1450
	47	8x7	D7	0.10	188	45	2000
	82	10x8	F8	0.10	328	40	2500
	100	8x12	E12	0.15	400	24	3320
		10x10	F10	0.15	400	25	3700
	150	10x13	F13	0.15	608	20	4320

Soldering Profile

Recommended pad pattern and size

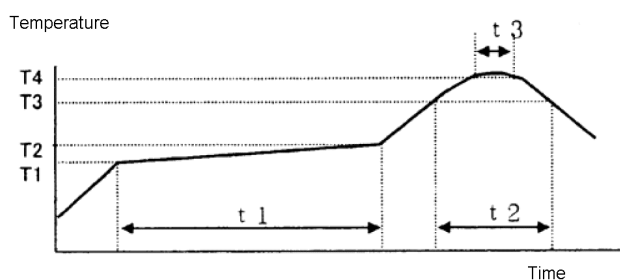
Unit:mm



Size (DxL)	Case code	Land size		
		X	Y	W
6.3 x 6	C6	1.6	3.5	2.1
6.3 x 7	C7	1.6	3.5	2.1
8 x 7	D7	2.5	3.5	3.0
8 x 12	E12	2.5	3.5	3.0
10 x 8	F8	2.5	4.4	4.3
10 x 10	F10	2.5	4.0	4.0
10 x 13	F13	2.5	4.4	4.3

Recommended soldering methods

Method	Reflow soldering	Soldering iron	Flow soldering
Advisability	○	○	X
	Recommended	Recommended	Not Recommended



Preheat	Temp(T1~T2)	150~180°C	
	Time(t1)	90sec	
Duration	Temp(T3)	200°C	230°C
	Time(t2)(Max.)	60sec	40sec
Peak	Temp(T4)(Max.)	250°C	
	Time(t3)	5sec	
Reflow Cycle	Twice or less		

*If 260°C Reflow peak temperature is necessary, please consult with us.

(1) Method is as follows.

Reflow soldering condition.

The following temperature profile condition should be observed for soldering. (For higher temperature, please contact us after measuring the capacitor product temperature profile at your side)

Product temperature will rise slower as the product size gets bigger. It is not necessary to the reflow furnace temperature setting according to the product size, for example, $\phi 4$ and $\phi 10$ products can be mixed on one PCB for reflowing.

(2) Soldering precaution

- Elements related to the reflow soldering temperature
 - *Product size: The temperature rises slower as the size gets bigger.
 - *Product location: The center part of the PCB tends to have a lower temperature than the PCB edges.
 - *PCB size: The PCB temperature rises slower as the area and / or thickness of the PCB gets greater.
- Repeated reflowing
 - *Avoid reflowing twice if possible.
 - *If repeated reflowing is unavoidable, contact us after measuring the first and the second reflow profiles and reflow interval at your side.
 - *Do not attempt to reflow three times.
- Soldering with soldering iron
 - Observe the following conditions.
 - *The iron tip temperature: 350+/-5°C.
 - *Soldering time: 3_0^{+1} seconds.

Attention: Reflow soldering may reduce the capacitance of products before or after soldering even if soldering conditions stipulated in Recommendable Reflow Condition are met. Though the actual reflow conditions are subject to change depending on the kind of reflow soldering method, please be aware that the peak temperature at the top of Al-case and electrode terminals should not exceed peak temperature. Particular notice should be given to the time EVS is heated at 200°C or higher during reflow. If your reflow condition (temperature and/or duration) exceed the above, EVS may be damaged exhibiting; 50% decrease in capacitance, an increase of leakage current, (up to several mA) as well as damage to the exterior of the capacitor.