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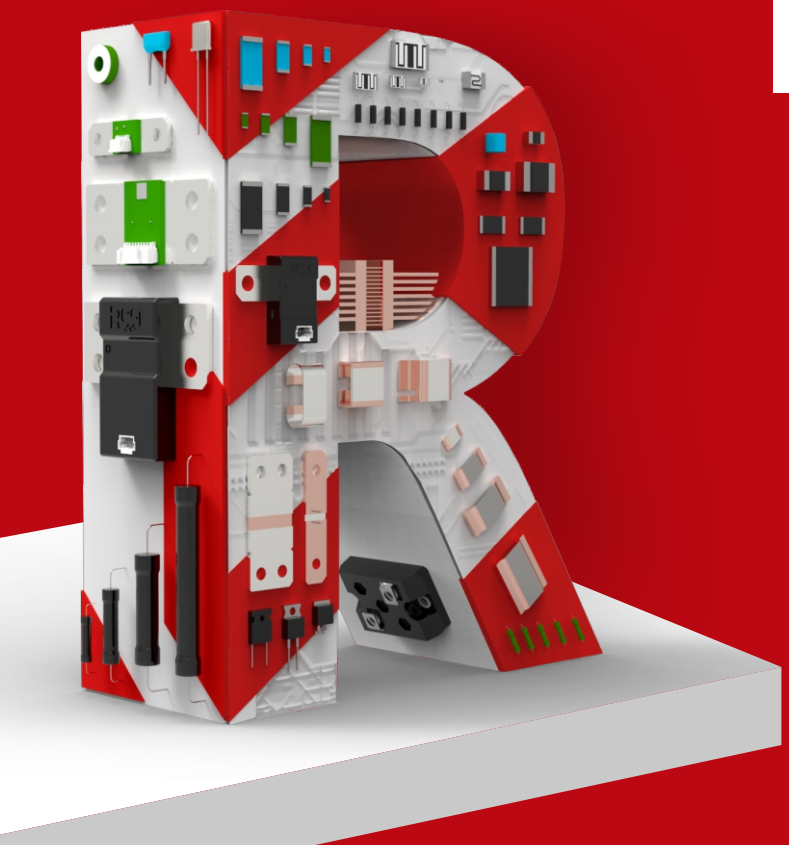
APLC

Aluminum Polymer Capacitors

Capacitance	Up to 560uF
Rated Voltage	2-16V
ESR	Down to 3m Ohm
Package	Low profile SMT



Applications

Server

Graphics card

IT and computers

Industrial equipment

Switching mode power supply

Better Solution for Sustainable High End Manufacturing

APLC Multi-layer Aluminum Polymer capacitors

Introduction

APLC represents an advanced capacitor technology. This rectangular multi-layer aluminum solid capacitor utilizes a high conductive polymer as its electrolyte. This enables it to achieve extremely low equivalent series resistance (ESR). As a result, it can effectively reduce temperature rise and smooth out fluctuations, ensuring a more stable power supply.

APLC demonstrates excellence in product operational life, reliability, and heat resistance. It boasts features like ultra-low ESR, large capacitance, low profile, zero buzzing noise, and high characteristic stability. Thanks to the company's proprietary technologies in conductive polymer formation and manufacturing processes, its endurance is more than triple that of traditional products, even in high-temperature conditions. It's an ideal component used in noise suppression, decoupling and filter applications.

Electrical Parameters

Operating Temperature	-55°C~+105°C
Rated Capacitance Range	47uF~560uF
Capacitance Tolerance	±20% typical
Rated Voltage Range	2~16 V
Dissipation Factor(tanō)	0.06

Standard capacitor offerings table

Capacitance(μF) \ Voltage (V)	2	2.5	6.3	10	16
47			APLC0J470M030S9 APLC0J470M018S9		
68				APLC1A680M045S9 APLC1A680M030S9	APLC1C680M030S9
100			APLC0J101M030S9 APLC0J101M015S9	APLC1A101M045S9 APLC1A101M030S9	APLC1C101M030S9 APLC1C101M018S9
150			APLC0J151M018S9 APLC0J151M015S9 APLC0J151M012S9		
220	APLC0D221M009S9		APLC0J221M015S9 APLC0J221M012S9 APLC0J221M009S9		
330	APLC0D331M009S9 APLC0D331M006S9	APLC0E331M009S9 APLC0E331M006S9	APLC0J331Y018S9 APLC0J331Y015S9 APLC0J331Y012S9		
470	APLC0D471M009S9 APLC0D471M006S9 APLC0D471M4R5S9	APLC0E471M009S9 APLC0E471M006S9 APLC0E471M4R5S9 APLC0E471M003S9			
560	APLC0D561M006S9 APLC0D561M4R5S9 APLC0D561M003S9				

Note: Contact us for other rated voltage and rated capacitance requirement.

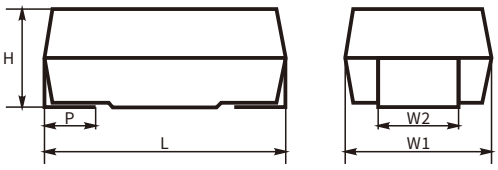
Electrical Parameters

Model	Rated Voltage (V.DC)	Capacitance 120 Hz/20℃ (μF)	tan δ 120 Hz/20℃ max	Leak Current (μA)	ESR 100 kHz/20℃ max(mΩ)	Rated Ripple Current 100 kHz/45℃ max(A)
APLC0D561M006S9	2	560	0.06	112	6	8.6
APLC0D561M4R5S9	2	560	0.06	112	4.5	8.6
APLC0D561M003S9	2	560	0.06	112	3	10.2
APLC0D471M009S9	2	470	0.06	94	9	7.7
APLC0D471M006S9	2	470	0.06	94	6	8.6
APLC0D471M4R5S9	2	470	0.06	94	4.5	8.6
APLC0D331M009S9	2	330	0.06	66	9	7.7
APLC0D331M006S9	2	330	0.06	66	6	8.6
APLC0D221M009S9	2	220	0.06	44	9	7.7
APLC0E471M009S9	2.5	470	0.06	117.5	9	7.7
APLC0E471M006S9	2.5	470	0.06	117.5	6	8.6
APLC0E471M4R5S9	2.5	470	0.06	117.5	4.5	8.6
APLC0E471M003S9	2.5	470	0.06	117.5	3	10.2
APLC0E331M009S9	2.5	330	0.06	82.5	9	7.7
APLC0E331M006S9	2.5	330	0.06	82.5	6	8.6
APLC0J331Y018S9	6.3	330	0.06	207.9	18	4.7
APLC0J331Y015S9	6.3	330	0.06	207.9	15	5.6
APLC0J331Y012S9	6.3	330	0.06	207.9	12	6.1
APLC0J221M015S9	6.3	220	0.06	138.6	15	5.6
APLC0J221M012S9	6.3	220	0.06	138.6	12	6.1
APLC0J221M009S9	6.3	220	0.06	138.6	9	7.7
APLC0J151M018S9	6.3	150	0.06	94.5	18	4.7
APLC0J151M015S9	6.3	150	0.06	94.5	15	5.6
APLC0J151M012S9	6.3	150	0.06	94.5	12	6.1
APLC0J101M030S9	6.3	100	0.06	63	30	4.7
APLC0J101M015S9	6.3	100	0.06	63	15	5.6
APLC0J470M030S9	6.3	47	0.06	29.6	30	2.9
APLC0J470M018S9	6.3	47	0.06	29.6	18	4.7
APLC1A101M045S9	10	100	0.06	100	45	2.7
APLC1A101M030S9	10	100	0.06	100	30	3.3
APLC1A680M045S9	10	68	0.06	68	45	2.7
APLC1A680M030S9	10	68	0.06	68	30	3.3
APLC1C101M030S9	16	100	0.06	160	30	3.3
APLC1C101M018S9	16	100	0.06	160	18	6.2
APLC1C680M030S9	16	68	0.06	108	30	3.3

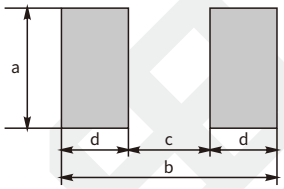
Dimensions

Unit: mm

Capacitor



Land Pattern



L	W1	W2	H	P	a	b	c	d
7.3±0.3	4.3±0.3	2.4±0.1	1.9±0.2	1.3±0.3	2.8	8.8	4.0	2.4

Part Number Information

Example: APLC0E471M009S9 (APLC 2.5V 470μF ±20% 9mΩ Standard)

A	P	L	C	0	E	4	7	1	M	0	0	9	S	9

Series	Rated Voltage	Capacitance	Tolerance	ESR(mΩ)	Case Size	Code
APLC	0D=2V 0E=2.5V 0G=4V 0J=6.3V 1A=10V 1C=16V	680=68μF 101=100μF 121=120μF 391=390μF	M=±20% Y=-35%~+10%	003=3 4R5=4.5 006=6 009=9 012=12 015=15 030=30	S=Standard	9=7'' 1200pc R=14'' 4200pc X=Custom

Performance

No.	Item	Outline of Test Method	Characteristics	
1	Capacitance Range	Measuring frequency: 120Hz ±12Hz Measuring temperature: 20℃	refer to parameter table.	
2	Leakage Current (I_L)	Protective resistor: 1000Ω Applied voltage: Rated voltage Measuring: after 2 minutes Measuring temperature: 20℃	refer to parameter table.	
3	Dissipation Factor (tanδ)	Measuring frequency: 120Hz ±12Hz Measuring temperature: 20℃	0.06 (max.)	
4	Equivalent Series Resistance (R_{ESR})	Measuring frequency: 100Hz ±10Hz Measuring temperature: 20℃	refer to parameter table.	
5	Resistance to Soldering Heat	Test method: the reflow method Reflow temperature profile: See Chapter 8.7 Recovery period: 24h±2h	Visual examination Capacitance change（ΔC/C） tanδ R_{ESR} I L	No visible damage Legible marking ≤±10% of initial measured value ≤initial limit ≤initial limit ≤initial limit
6	Solderability	Test method: the reflow method	Visual examination	Areas to be soldered shall be covered with a new solder coating with no more than a small amount of scattered imperfections such as pinholes or un-wetted or de-wetted areas. These imperfections shall not be concentrated in one area.
7	Solvent Resistance of the Marking	Solvent to be used: IPA Solvent temperature: 23℃±5℃ Method 1（with rubbing） Rubbing material: cotton wool Recovery time: not applicable	Visual examination	No visible damage Legible marking
8	Component Solvent Resistance	Solvent to be used: IPA Solvent temperature: 23℃±5℃ Duration of immersion: 5min±0.5min Method 2（without rubbing） Recovery time: 48h	Visual examination	No visible damage Legible marking
9	Substrate Bending Test	Deflection D: 1mm The number of bends: one The substrate shall be maintained for 20 s±1 s. Capacitance shall be measured with printed board in bent position.	Visual examination Capacitance change（ΔC/C） tanδ	No visible damage ≤±5% of initial measured value ≤initial limit
10	Shear Test	Push direction: side Force: 5N Holding time: 10s±1s	Visual examination	No visible damage
11	Rapid Change of Temperature	T_A=-55℃±3℃ T_B=+105℃±3℃ Five cycles Duration: t_1= 30min Recovery time: 1h～2h	Visual examination Capacitance change（ΔC/C） tanδ I L	No visible damage Legible marking ≤±10% of initial measured value ≤initial limit ≤initial limit

Performance

No.	Item	Outline of Test Method	Characteristics	
12	Capacitance Range	Dry heat: Temperature: +105℃±3℃ Duration: 16h Recovery time: ≥4h Damp heat, cyclic, test Db, first cycle: Duration: 24h Temperature: 55℃ Cold: Temperature: -55℃±3℃ Duration: 2h Recovery time: ≥4h Damp heat, cyclic, test Db, remaining cycles: Number of cycles: 1 Duration: 24h Temperature: 55℃ Recovery time: 1h～2h	Visual examination Capacitance change (ΔC/C) tanδ I L	No visible damage Legible marking ≤±10% of initial measured value ≤initial limit ≤initial limit
13	Damp Heat, Steady State	Temperature: 60℃±2℃ Humidity: (93±3)%RH No voltage shall be applied Duration: 21d Recovery time: 1h～2h	Visual examination Capacitance change (ΔC/C) tanδ I L	No visible damage Legible marking -20%~+70% of initial value ≤2 times initial limit ≤2 times initial limit
14	Characteristics at High and Low Temperature	The capacitors shall be measured at each temperature step: Step 1: 20℃±2℃ (Initial value measuring)		
		Step 2: -55℃±3℃	Capacitance change (ΔC/C) tanδ	≤±20% of value measured in Step 1 ≤2 times initial limit
		Step 3: +105℃±3℃	Capacitance change (ΔC/C) tanδ I L	≤±20% of value measured in Step 1 ≤2 times initial limit ≤5 times initial limit
15	Charge and Discharge	Temperature: 15℃～35℃ Number of cycles: 10^6 Duration of charge: 0.5s Duration of discharge: 0.5s	Visual examination Capacitance change (ΔC/C) tanδ R_{ESR} I L	No visible damage Legible marking ≤±20%of initial measured value ≤1.5 times initial limit ≤2 times initial limit ≤initial limit
16	Endurance	Test temperature: +105℃±3℃ Voltage: U_R Duration: 2000h Recovery: 1h～2h	Visual examination Capacitance change (ΔC/C) tanδ I L	No visible damage Legible marking ≤±20%of initial measured value ≤1.5 times initial limit ≤initial limit
17	Storage at High Temperature	Test temperature: +105℃±3℃ Duration: 500^{+24}_{0}h Recovery: 16h	Visual examination Capacitance change (ΔC/C) tanδ I L	No visible damage Legible marking ≤±20%of initial measured value ≤initial limit ≤2 times initial limit
18	Storage at High Temperature	Test temperature: 15℃～35℃ Voltage: $1.25U_R$ Duration of charge: 30s Duration of no load: 5min 30s Number of cycles: 1000 Protective resistor: 1000Ω	Visual examination Capacitance change (ΔC/C) tanδ I L	No visible damage Legible marking ≤±10%of initial measured value ≤initial limit ≤initial limit

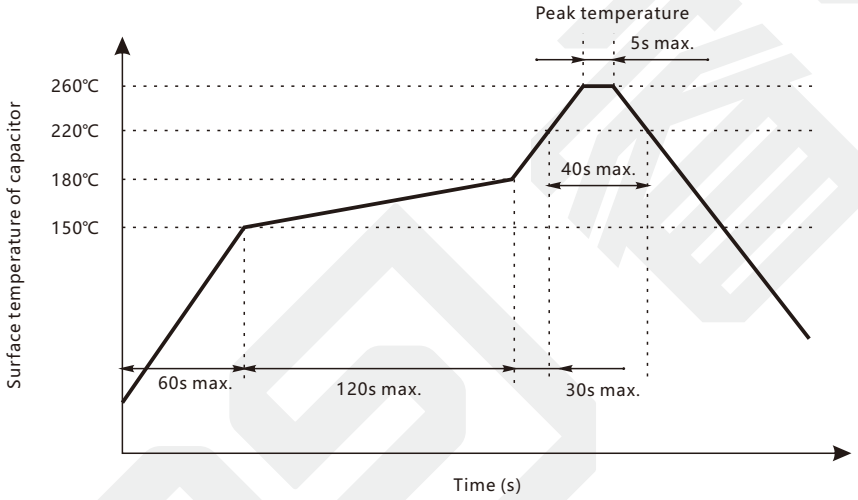
Derating Guidelines

Multipliers for Ripple Current

Temperature	T≤45℃	45℃<T≤85℃	85℃<T≤105℃
2V to 6.3V	100%	75%	27%
10V to 35V	100%	83%	60%

Reflow Soldering Profile

APLC is suit to reflow soldering, recommended lead free soldering curve is as following.



When using the electric iron, the electric soldering bit should not touch the case. Make sure that the soldering temperature is no more than 350 ℃ and the time is shorter than 3 seconds.

Before mounting, please confirm whether the lead size is suit to the designed dimensions of the circuit board. Do not distort and apply strong force to the capacitor during mounting, otherwise the electrical performance of the capacitor will be affected greatly, even damaged. After it is soldered on PCB board, do not remove it with strong force.

In addition, re-flow soldering should be no more than two times.

Special handing instructions:

The capacitor must stored in a moisture-proof and non-direct sunlight environment, storing at ambient temperatures of 5°C to 30° C, relative humidity below 60% RH. The temperature should not change too quickly.Moisture Sensitivity Level: Level 3.To maintain good welding performance, please keep the capacitor in original packing condition and try to use up all at once after opening, if there's someRemaining, please repackage in the packing bag and seal it.The shelf life of the product is: 24 months from the manufacturing batch number before opening the packaging, less than 7 days after opening packages; after the expiry of storage period, must carry out baking process. baking conditions: 50°C±2° C, 100h~200h.

Revision

Version	Revised Content	Date	Approver
V0	Initial Issue	2024.12.27	CFD
V1	New model added	2025.6.30	CFD

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