Radial Leaded Aluminum Conductive Polymer Electrolytic Capacitors

RPA Series

FEATURES

- Super Low ESR, High ripple current capability
- Endurance: 105°C, 5000 hours
- RoHS Compliance and Halogen-free

LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

APPLICATIONS

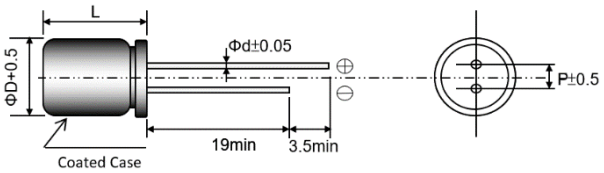
- Servers, APC/UPS power supply, power inverter, etc.

HOW TO ORDER

R	PA	0812	471	M	016	K	-
Product Type	**Series Type**	**Case Size**	**Capacitance Code**	**Tolerance**	**Rated DC Voltage**	**Packaging**	**Lead Type**
Aluminum		See table below	µF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	M = ±20%	002 = 2.5Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	K = Ammo Pack B = Bulk Pack	" " empty = Standard long lead "C"= Lead cut only "D"= Lead cut and crimp "F"= Lead cut and form "H"= Lead cut, crimp and form "B"= Forming only "L"= Lead cut and bend (Left) "Z"= Lead cut and bend (Right)

CASE DIMENSIONS millimeters (inches)

Code	D±0.50 (0.020)	L±1.50 (0.060)	d±0.05 (0.002)	P±0.50 (0.020)	Typical Weight (g)
0606	6.30 (0.248)	6.00 (0.236)	0.45 (0.018)	2.50 (0.098)	0.25
0608	6.30 (0.248)	8.00 (0.315)	0.50 (0.020)	2.50 (0.098)	0.43
0609	6.30 (0.248)	9.00 (0.354)	0.50 (0.020)	2.50 (0.098)	0.45
0808	8.00 (0.315)	8.00 (0.315)	0.60 (0.024)	3.50 (0.138)	0.66
0812	8.00 (0.315)	12.00 (0.472)	0.60 (0.024)	3.50 (0.138)	0.85
1010	10.00 (0.394)	10.00 (0.394)	0.60 (0.024)	5.00 (0.197)	1.10
1012	10.00 (0.394)	12.00 (0.472)	0.60 (0.024)	5.00 (0.197)	1.25



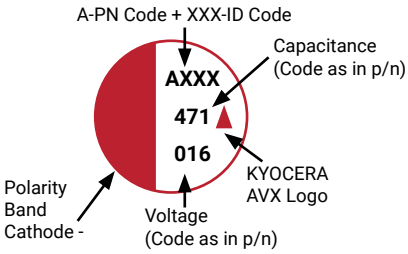
*If different rubber seal is needed, please contact your sales representative.

TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55°C to +105°C	
Capacitance Range	At 25°C,120Hz	10µF to 2200µF
Capacitance Tolerance:	At 25°C,120Hz	±20%
Dissipation Factor (%)	Measurement Frequency: 120Hz at 25°C	Please see the ratings and part number reference table below
Leakage Current:	After 2 minutes at rated working voltage at 25°C*	I ≦ 0.2CV or 300µA, whichever is greater

* Note: In the case of an anomalous reading, re-measure the leakage current after following voltage treatment:
Voltage treatment: DC rated voltage to be applied to the capacitors for 120 minutes at 105°C.

MARKING



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CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R)						
µF	Code	2.5V	6.3V	10V	16V	25V	35V	50V
10	100							0606
22	220						0606	
33	330							0608
47	470					0606		0808
68	680						0608	0812
82	820				0606			
100	101		0606		0608	0609		1010, 1012
120	121			0606			0808	
150	151						0812	
180	181		0606			0808		
220	221	0606			0608	0812	1010	
270	271						1012	
330	331			0608	0808	1010		
470	471		0608		0812, 1012	1012		
560	561	0608	0608, 0808	0808				
680	681		0808	0812	1010			
820	821				1012			
1000	102	0808	0812	1010	1012			
1200	122	0812	1010	1012				
1800	182	1012	1012					
2200	222	1012						

Released ratings

RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL Max. (µA)	DF Max. (%)	ESR Max. @100kHz (mΩ)	100kHz RMS Current (mA)	MSL
2.5 V								
RPA0606221M002*	0606	220	2.5	300	12	24	2400	1
RPA0608561M002*	0608	560	2.5	300	12	15	3200	1
RPA0808102M002*	0808	1000	2.5	500	12	15	3640	1
RPA0812122M002*	0812	1200	2.5	600	12	10	5200	1
RPA1012182M002*	1012	1800	2.5	900	12	10	5200	1
RPA1012222M002*	1012	2200	2.5	1100	12	10	5500	1
6.3 Volt								
RPA0606101M006*	0606	100	6.3	300	12	24	2400	1
RPA0606181M006*	0606	180	6.3	300	12	24	2400	1
RPA0608471M006*	0608	470	6.3	592	12	15	3500	1
RPA0608561M006*	0608	560	6.3	706	12	15	3500	1
RPA0808561M006*	0808	560	6.3	706	12	15	4100	1
RPA0808681M006*	0808	680	6.3	856	12	15	4300	1
RPA0812102M006*	0812	1000	6.3	1260	12	12	5000	1
RPA1010122M006*	1010	1200	6.3	1512	12	15	5200	1
RPA1012182M006*	1012	1800	6.3	2268	12	12	5500	1
10 Volt								
RPA0606121M010*	0606	120	10	300	12	24	2400	1
RPA0608331M010*	0608	330	10	660	12	15	3500	1
RPA0808561M010*	0808	560	10	1120	12	15	4000	1
RPA0812681M010*	0812	680	10	1360	12	15	4800	1
RPA1010102M010*	1010	1000	10	2000	12	15	4800	1
RPA1012122M010*	1012	1200	10	2400	12	12	5500	1
16V								
RPA0606820M016*	0606	82	16	300	12	24	2400	1
RPA0608101M016*	0608	100	16	320	12	15	3500	1
RPA0608221M016*	0608	220	16	704	12	15	3500	1
RPA0808331M016*	0808	330	16	1056	12	15	4200	1
RPA0812471M016*	0812	470	16	1504	12	12	4500	1
RPA1012471M016*	1012	470	16	1504	12	10	5100	1

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RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	DCL Max. (µA)	DF Max. (%)	ESR Max. @100kHz (mΩ)	100kHz RMS Current (mA)	MSL
RPA1010681M016*	1010	680	16	2176	12	15	5100	1
RPA1012821M016*	1012	820	16	2624	12	15	5400	1
RPA1012102M016*	1012	1000	16	3200	12	15	5400	1
25 Volt								
RPA0606470M025*	0606	47	25	300	12	40	1500	1
RPA0609101M025*	0609	100	25	500	12	30	2500	1
RPA0808181M025*	0808	180	25	900	12	30	3260	1
RPA0812221M025*	0812	220	25	1100	12	30	3520	1
RPA1010331M025*	1010	330	25	1650	12	20	3850	1
RPA1012471M025*	1012	470	25	2350	12	25	4020	1
35 Volt								
RPA0606220M035*	0606	22	35	300	12	70	1450	1
RPA0608680M035*	0608	68	35	476	12	60	1520	1
RPA0808121M035*	0808	120	35	840	12	30	2100	1
RPA0812151M035*	0812	150	35	1050	12	26	2800	1
RPA1010221M035*	1010	220	35	1540	12	30	3050	1
RPA1012271M035*	1012	270	35	1890	12	26	3650	1
50 Volt								
RPA0606100M050*	0606	10	50	300	12	90	900	1
RPA0608330M050*	0608	33	50	330	12	60	1500	1
RPA0808470M050*	0808	47	50	470	12	32	2000	1
RPA0812680M050*	0812	68	50	680	12	28	2200	1
RPA1010101M050*	1010	100	50	1000	12	32	2350	1
RPA1012101M050*	1012	100	50	1000	12	28	2550	1

* Used to denote packing type: "K" for Ammo Pack or "B" for Bulk.
All technical data relates to an ambient temperature of +25C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 2 minutes

FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

Frequency	120 ≦ F(Hz) <1k	1k ≦ F(Hz) <10k	10k ≦ F(Hz) <100k	100k ≦ F < 500kHz
Coefficient	0.05	0.30	0.70	1.00

QUALIFICATION TABLE

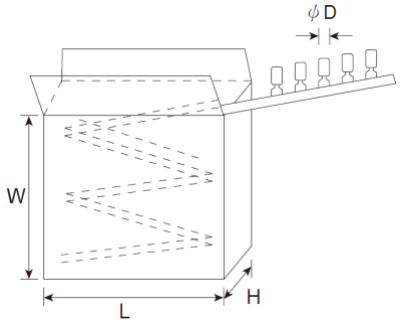
Test	RPA Series (Temperature Range -55°C to +105°C)		
	Condition	Characteristics	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours at 105°C.	**Visual examination**	no visible damage
		ΔC/C	≦ ±20% of the initial limit
		DF:	≦ 150% of the initial specified limit
		ESR:	≦ 150% of the initial specified limit
		DCL:	≦ Initial specified limit
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1000 hours, without DC applied.	**Visual examination**	no visible damage
		ΔC/C	≦ ±20% of the initial limit
		DF:	≦ 150% of the initial specified limit
		ESR:	≦ 150% of the initial specified limit
		DCL:	≦ Initial specified limit
Surge Voltage	The capacitors shall be subjected to 1000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R = 1 kΩ) and discharge for 5 minutes 30 seconds.	**Visual examination**	no visible damage
		ΔC/C	≦ ±20% of the initial limit
		DF:	≦ 150% of the initial specified limit
		ESR:	≦ 150% of the initial specified limit
		DCL:	≦ Initial specified limit

STORAGE

1. It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
2. Confirm that the environment does not have any of the following conditions:
   - Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity condensation situations.
   - In an atmosphere filled with toxic gasses (such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.).
   - Being exposed to direct sunlight, ozone, ultraviolet ray, or radiation.
   - Being exposed to acidic or alkaline solutions.
   - Under severe conditions where vibration and / or mechanical shock exceed the applicable ranges of the specification.
3.

Category	Description	Storage Life
Mid-High Voltage	160V and above	2yrs, after 1yr, needs to check characteristics, if NG, needs to do aging
Low Voltage	120V and below	2yrs

PACKAGE TAPE DIMENSIONS units (mm)



AMMO PACKING

Ammo Pack						
Size Code	W±5	L±5	H±5	Qty. (pcs)	G.W. kg/box	Box /Carton
0606-0609	235	327	54	1500	1.12	10
0808-0812	265	327	51	1000	1.48	10
1010-1012	235	330	57	600	1.29	10

LEAD FORMING TAPING SPECIFICATIONS FOR AMMO PACK

Case Diameter	6.3mm	8mm	10mm
Figure #	Fig. 1	Fig. 1	Fig. 2

(Unit:mm)

Fig. 1 (Φ5-Φ8)

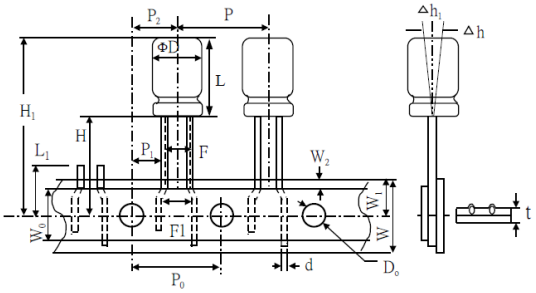
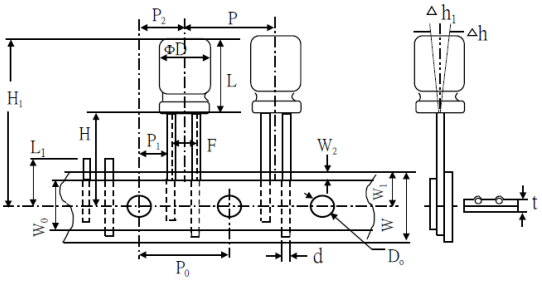


Fig. 2 (Φ10)



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RPA Series

Items	Symbol	Case Size							Tolerance	Remark
		0606	0608	0808	0609	0812	1010	1012		
Lead Wire Diameter	d	0.45	0.50/0.60				0.60		±0.05	
Body Height	L	7.00	9.00	9.50	11.00	13.00	11.00	14.00	max	
Intervals of Bodies	P	12.70							±1.00	
Intervals of Punched Holes	P_0	12.70							±0.20	
Distance between Holes and Lead Wire	P_1	3.85								Fig.1
		5.10							±0.70	Fig.2
Distance between Holes and Body Center	P_2	6.35							±1.00	
Distance between Lead and Lead	F	5.00							+0.80 -0.20	Fig.1
		2.50	2.50	3.50	2.50	3.50	5.00			Fig.2
Distance between Lead and Lead	F_1	5.00								Fig.2
Base Tape Width	W	18.00							±0.50	
Adhesive Tape Width	W_0	10.00				12.00			min	
Deviation between Holes and Base Tape	W_1	9.00							±0.50	
Deviation between Adhesive and Base Tape	W_2	1.50							max	
Deviation between Body Bottom and Tape Center	H	18.50							±0.75	Fig.1, Fig.2
Lead Wire Clinched Height	H_0	16.00							±0.50	
Distance between Body Top and Tape Center	H_1	27.00	29.00	29.50	30.00	33.00	31.00	34.00	max	
Punched Hole Diameter	D_0	4.00							±0.30	
Length of not Good Lead Slit	L_1	11.00							max	
Base and Adhesive Tape Thickness	t	0.70							±0.20	
Deviation of Body Alignment	Δh	0							±2.00	
Deviation of Body Alignment	$Δh_1$	0							±2.00	

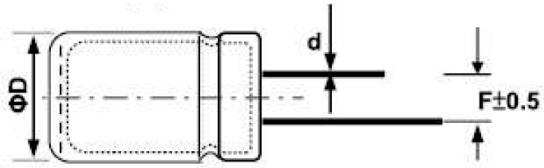
*All dimensions in mm

BULK PACKING

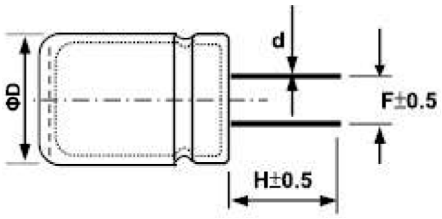
Package Box				
Size Code	Bags Inner box	Layer Quantity	Quantity (pcs/bag)	Total quantity (pcs/carton)
0606	10	2	1000	20,000
0608-0609	9	2	1000	18,000
0808-0812	10	2	500	10,000
1010-1012	11	2	200	4400

TERMINATION TYPE

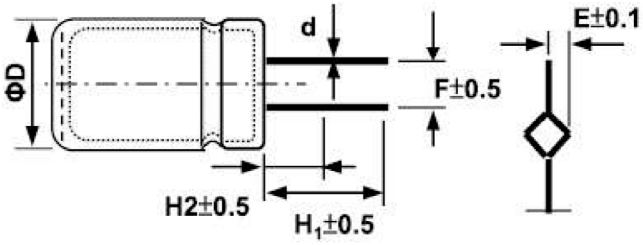
Letter " ": Empty = Standard Long lead.



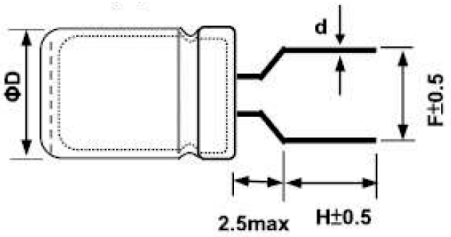
Letter "C": Lead cut only.



Letter "D": Lead cut and crimp.



Letter "F": Lead cut and form.



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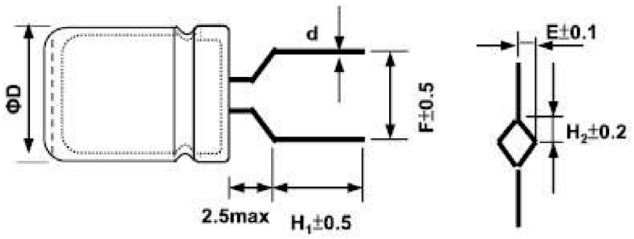
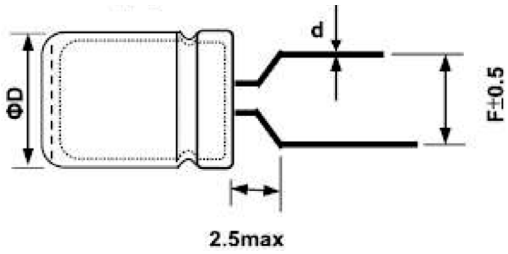
TERMINATION TYPE

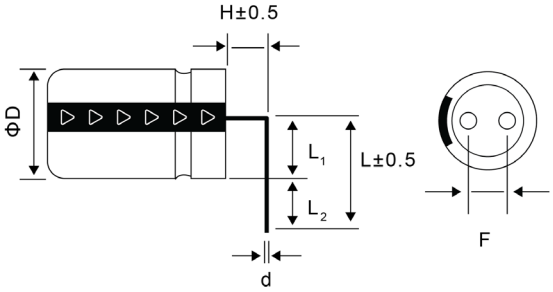
Letter "H": Lead cut, crimp, and form.



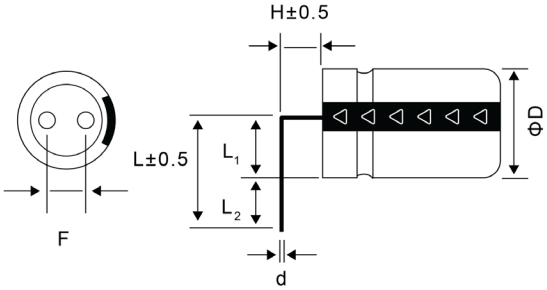
Letter "B": Forming only.



Letter "L": Lead cut and bend (Left).



Letter "Z": Lead cut and bend (Right).



Letter	Termination Type	Dø	6.3ø	8ø	10ø
	Standard long lead	F	2.50	3.50	5.00
		d	0.50	0.50	0.60
C	Lead cut only	F	2.50	3.50	5.00
		H	5.00	5.00	5.00
		d	0.50	0.50	0.60
D	Lead cut and crimp	E	1.12	1.32	1.32
		F			5.00
		H_1			5.00
		H_2			1.80
		d			0.60
F	Lead cut and form	F	5.00	5.00	
		H	5.00	5.00	
		d	0.50	0.50	
H	Lead, cut, crimp, and form	E	1.12	1.32	1.32
		F	5.00	5.00	
		H_1	5.00	5.00	
		H_2	1.80	1.80	
		d	0.50	0.50	
B	Forming only	F	5.00	5.00	
		d	0.50	0.50	
L/Z	Lead cut and bend	F	2.50	3.50	5.00
		H	2.00	2.50	2.50
		L_1	3.40	4.50	5.30
		L_2	3.50	3.50	3.50
		d	0.50	0.50	0.60

*All dimensions in mm.

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