

Radial Leaded Aluminum Electrolytic Capacitors

REG Series



FEATURES

- Anhydrous product
- High ripple current
- Low impedance
- Endurance: 5000 hours at 105°C
- RoHS Compliance and Halogen-free

APPLICATIONS

- Communications equipment
- Power supplies
- General purpose



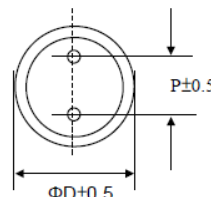
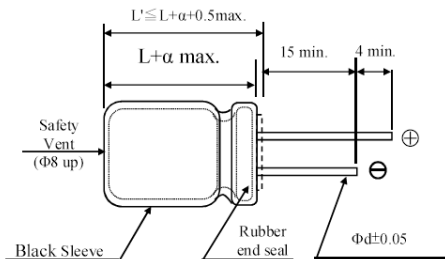
HOW TO ORDER

R	EG	1631	592	M	035	K	-
Product Type Radial Aluminum	Series Type	Case Size See table below	Capacitance Code μF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	Tolerance M = ±20%	Rated DC Voltage 016 = 16Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc 100 = 100Vdc	Packaging K = Ammo Pack B = Bulk Pack	Lead Type " " 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)

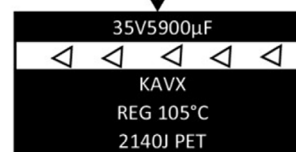
CASE DIMENSIONS AND MARKING millimeters (inches)

Code	D±0.50(0.020)	L	d±0.05(0.002)	P±0.50(0.020)	α	Typical Weight (g)
0511	5.00 (0.020)	11.00 (0.433)	0.50 (0.020)	2.00 (0.079)	1.00 (0.039)	0.43
0611	6.30 (0.248)	11.00 (0.433)	0.50 (0.020)	2.50 (0.098)	1.00 (0.039)	0.60
0812	8.00 (0.315)	12.00 (0.472)	0.50 (0.020)	3.50 (0.138)	1.00 (0.039)	0.98
0816	8.00 (0.315)	16.00 (0.630)	0.50 (0.020)	3.50 (0.138)	2.00 (0.079)	1.33
1013	10.00 (0.394)	13.00 (0.512)	0.60 (0.024)	5.00 (0.020)	1.00 (0.039)	1.52
1016	10.00 (0.394)	16.00 (0.630)	0.60 (0.024)	5.00 (0.020)	2.00 (0.079)	1.80
1025	10.00 (0.394)	25.00 (0.984)	0.60 (0.024)	5.00 (0.020)	2.00 (0.079)	3.37
1316	13.00 (0.512)	16.00 (0.630)	0.60 (0.024)	5.00 (0.020)	2.00 (0.079)	4.08
1325	13.00 (0.512)	25.00 (0.984)	0.60 (0.024)	5.00 (0.020)	2.00 (0.079)	5.00
1616	16.00 (0.630)	16.00 (0.630)	0.80 (0.315)	7.50 (0.295)	2.00 (0.079)	4.90
1631	16.00 (0.630)	31.50 (1.240)	0.80 (0.315)	7.50 (0.295)	2.00 (0.079)	8.75
1632	16.00 (0.630)	32.00 (1.260)	0.80 (0.315)	7.50 (0.295)	2.00 (0.079)	9.60

MARKING



VOLTAGE/CAPACITANCE



- KAVX LOGO
- POLARITY BAND (CATHODE)
- COMPANY NAME
- SERIES/TEMP.
- ID/SLEEVE MATERIAL

*If different rubber seal is needed, please contact your sales representative.
 *For ammo packing lead shape please refer to "Lead forming taping specification for ammo pack".
 *If different lead shape is needed, please refer to "Termination type".

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TECHNICAL SPECIFICATIONS

Category Temperature Range:	-55°C to +105°C	
Capacitance Range:	at 25°C, 120Hz	0.47μF – 5900μF
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*	≤0.01CV or 3μA, whichever is greater

*Leakage current of aluminum electrolytic capacitors may be increased during long storage time. In this case, the capacitors should be subjected to voltage treatment a 1KΩ resistor before using.

CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R)				
μF	Code	16V	25V	35V	50V	100V
0.47	R47				0511	
2.2	2R2				0511	
4.7	4R7				0511	
10	100				0511	
12	120					0611
15	150				0511	
22	220				0511	
33	330			0511	0511, 0611	
47	470		0511	0511	0611	
82	820		0611			
100	101		0611		1013	
120	121	0611				
220	221			0816		
330	331	0812	0812			
680	681	1016				
1000	102				1325	
1500	152	1025				
2200	222	1316	1616			
4700	472		1632			
5900	592			1631		

Released ratings

RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	100kHz RMS Current (mA) / 105°C	MSL
16 Volt							
REG0611121M016*	0611	120	16	19.2	16	520	1
REG0812331M016*	0812	330	16	52.8	16	700	1
REG1016681M016*	1016	680	16	108.8	16	1430	1
REG1025152M016*	1025	1500	16	240	16	2180	1
REG1316222M016*	1316	2200	16	352	16	2150	1
25 Volt							
REG0511470M025*	0511	47	25	11.75	15	250	1
REG0611820M025*	0611	82	25	20.5	15	405	1
REG0611101M025*	0611	100	25	25	15	405	1
REG0812331M025*	0812	330	25	82.5	15	870	1
REG1616222M025B	1616	2200	25	550	15	2770	1
REG1632472M025B	1632	4700	25	1175	15	3750	1
35 Volt							
REG0511330M035*	0511	33	35	11.55	12	250	1
REG0511470M035*	0511	47	35	16.45	12	250	1
REG0816221M035*	0816	220	35	77	12	995	1
REG1631592M035B	1631	5900	35	2065	12	2550	1
50 Volt							
REG0511R47M050*	0511	0.47	50	0.24	10	100	1
REG0511R2M050*	0511	2.2	50	1.1	10	135	1
REG0511R7M050*	0511	4.7	50	2.35	10	100	1
REG0511100M050*	0511	10	50	5	10	130	1
REG0511150M050*	0511	15	50	7.5	10	200	1
REG0511220M050*	0511	22	50	11	10	238	1
REG0511330M050*	0511	33	50	16.5	10	240	1

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RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	100kHz RMS Current (mA) / 105°C	MSL
REG0611330M050*	0611	33	50	16.5	10	330	1
REG0611470M050*	0611	47	50	23.5	10	385	1
REG1013101M050*	1013	100	50	50	10	950	1
REG1325102M050*	1325	1000	50	500	10	2680	1
100 Volt							
REG0611120M100*	0611	12	100	12	9	150	1

* Used to denote packing type: "K" for Ammo Pack or "B" for Bulk Pack.

DF = When nominal capacitance exceeds 1000μF, add 0.02 to the value above for each 1000μF increase.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 3 minutes.

FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

Capacitance (μF)	Frequency (Hz)				
	50	120	1K	10K	100K
≤33	0.45	0.55	0.75	0.90	1.00
47-330	0.60	0.70	0.85	0.95	1.00
470-1000	0.65	0.75	0.90	0.98	1.00
1200-5900	0.75	0.80	0.95	1.00	1.00

QUALIFICATION TABLE

Test	REG series (Temperature range -55°C to +105°C)						
	Conditions	Characteristics					
Temperature Stability (Max. Impedance Ratio)	120Hz	Rated Voltage (V)	16	25	35	50	100
		Z(-25°C) / Z(20°C)	2	2	2	2	2
		Z(-55°C) / Z(20°C)	3	3	3	3	3
Load Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied for 5000 hours (D ≤ 6.3: 2000 hours; D=8: 3000 hours, D=10: 4000 hours, D ≥13: 5000 hours) at 105°C.	ΔC/C	within ±25% of initial limit				
		DF	200% or less of initial specified limit				
		DCL	Initial specified limit or less				
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1000 hours 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4.	ΔC/C	within ±20% of initial limit				
		DF	200% or less of initial specified limit				
		DCL	Initial specified limit or less				
Standard	JIS C-5101-4 (IEC 60384)						

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use the rms ripple current has to be reduced.

STORAGE

- It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C (if between 35°C to 85°C, it should be less than three months) and the relative humidity of 75% or below.
- Confirm that the environment does not have any of the following conditions:
 - Damp conditions such as water, saltwater spray, 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.
- Shelf life

Years		
0-1	1-2	>2
Ok	Ok	Performance check

- Years from manufacturing date code.
- KYOCERA AVX does not guarantee or assume responsibility for product behavior after 3 years of storage.
- Ageing procedure should be performed as follows:
 - Connect the capacitor in series to a 1kΩ resistor, and apply half rated voltage for 2 hours.
 - After half rated voltage for 2 hours applied, increase and apply rated voltage for another 2 hours.

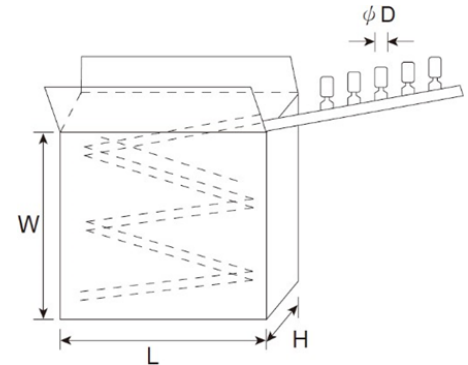
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PACKAGE TAPE DIMENSIONS

AMMO PACKING

Ammo Pack						
Size Code	W±5 (mm)	L±5 (mm)	H±5 (mm)	Qty. (pcs)	G.W. kg/box	Box/ Carton
0511	235	327	54	2000	0.99	10
0611	235	327	54	1500	1.12	10
0812	265	327	51	1000	1.48	10
0816	265	327	51	1000	1.48	10
1013/1016	235	330	57	600	1.29	5
1025	235	330	57	600	1.29	5
1316	280	315	65	400	1.95	6
1325	280	315	65	400	2.35	6



LEAD FORMING TAPING SPECIFICATIONS FOR AMMO PACK

Case Diameter	5mm	6.3mm	8mm	10mm	13mm
Figure #	Fig. 1	Fig. 1	Fig. 1	Fig. 2	Fig. 3

(Unit:mm)

Fig. 1 (ϕ5-ϕ8)

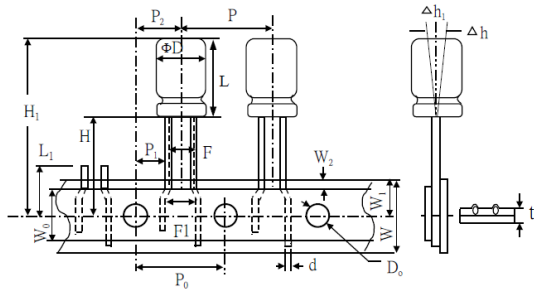
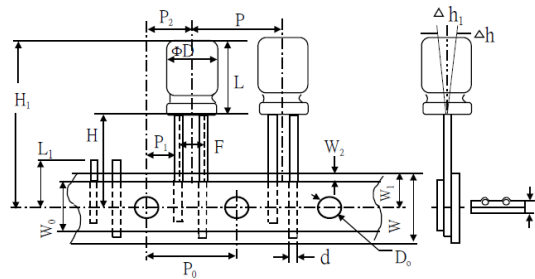


Fig. 2 (ϕ10)

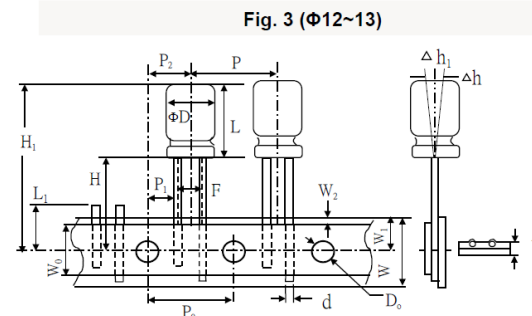


Items	Symbol	Case Size							Tolerance	Remark	
		0511	0611	0812	0816	1013	1016	1025			
Lead Wire Diameter	d	0.50/0.60				0.60			±0.05		
Body Height	L	13.00		13.00	18.00	14.00	18.00	27.00	max		
Intervals of Bodies	P	12.70							±1.00		
Intervals of Punched Holes	P ₀	12.70							±0.20		
Distance between Holes and Lead Wire	P ₁	3.85								Fig.1	
		5.10	5.10						±0.70	Fig.2	
		5.35									
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	5.00	Fig.2					
		2.00									
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	Fig.1, Fig.2	
Deviation between Body Bottom and Tape Center	H	18.50							±0.75		
Lead Wire Clinched Height	H ₀	16.00							±0.50		
Distance between Body Top and Tape Center	H ₁	32.00		33.00	38.00	34.00	38.00	47.00	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

Items	Symbol	Case Size		Tolerance
		1316	1325	
Lead Wire Diameter	d	0.60		±0.05
Body Height	L	18.00	27.00	max
Intervals of Bodies	P	15.00		±1.00
Intervals of Punched Holes	P ₀	15.00		±0.20
Distance between Holes and Lead Wire	P ₁	5.00		±0.70
Distance between Holes and Bodies	P ₂	7.50		±1.00
Distance between Lead and Lead	F	5.00		+0.80 -0.20
Base Tape Width	W	18.00		±0.50
Adhesive Tape Width	W ₀	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	H	18.50		±0.75
Distance between Body Top and Tape Center	H ₁	38.00	47.00	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

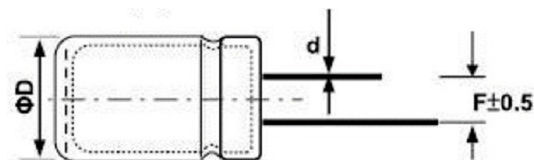
Size Code	Bulk			Ammo Taping	
	Bag / Box		Carton	Box	Carton
0511	Bag	1000	20,000	2000	20,000
0611	Bag	1000	16,000	1500	15,000
0812	Bag	500	9000	1000	10,000
0816	Bag	500	8000	1000	10,000
1013	Bag	200	4400	600	3000
1016	Bag	200	3600	600	3000
1025	Bag	200	3200	600	3000
1316	Bag	150	2100	400	2400
1325	Bag	150	1800	400	2400
1616	Box	390	1560	-	-
1631	Box	390	1560	-	-
1632	Box	390	1560	-	-

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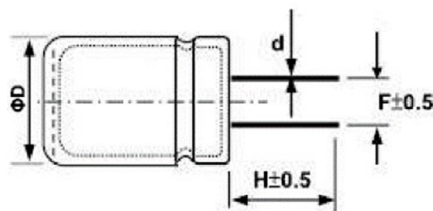
REG Series

TERMINATION TYPE

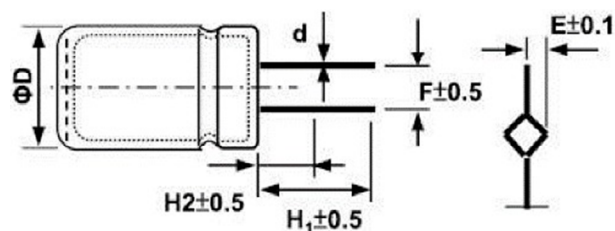
Letter " ": Empty = Standard Long lead.



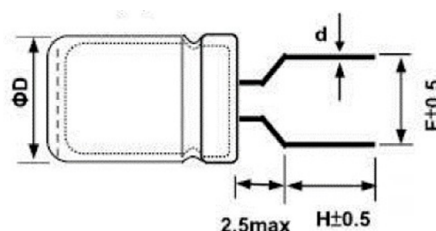
Letter "C": Lead cut only.



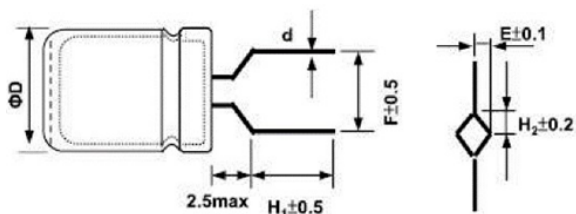
Letter "D": Lead cut and crimp.



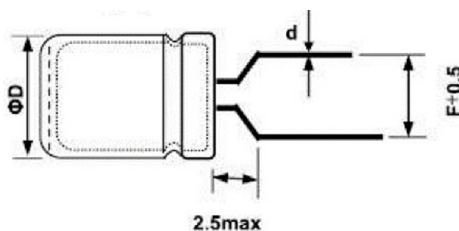
Letter "F": Lead cut and form.



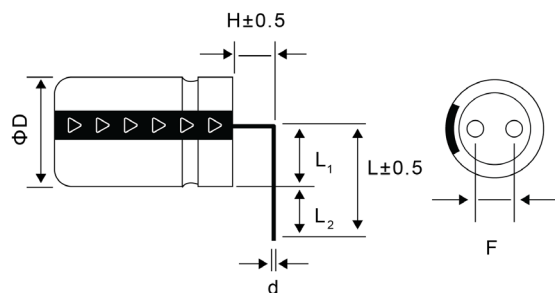
Letter "H": Lead cut, crimp, and form.



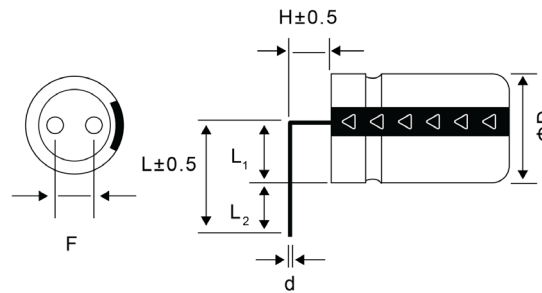
Letter "B": Forming only.



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



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



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TERMINATION TYPE

Letter	Termination Type	Dø	5ø	6.3ø	8ø	10ø	13ø	16ø
	Standard long lead	F	2.00	2.50	3.50	5.00	5.00	7.50
		d	0.50	0.50	0.50	0.60	0.60	0.80
C	Lead cut only	F	2.00	2.50	3.50	5.00	5.00	7.50
		H	5.00	5.00	5.00	5.00	5.00	5.00
		d	0.50	0.50	0.50	0.60	0.60	0.80
D	Lead cut and crimp	E	1.12	1.12	1.32	1.32	1.32	1.32
		F				5.00	5.00	7.70
		H ₁				5.00	5.00	5.00
		H ₂				1.80	1.80	1.80
		d				0.60	0.60	0.80
F	Lead cut and form	F	5.00	5.00	5.00			
		H	5.00	5.00	5.00			
		d	0.50	0.50	0.50			
H	Lead, cut, crimp, and form	E	1.12	1.12	1.32	1.32	1.32	1.32
		F	5.00	5.00	5.00			
		H ₁	5.00	5.00	5.00			
		H ₂	1.80	1.80	1.80			
		d	0.50	0.50	0.50			
B	Forming only	F	5.00	5.00	5.00			
		d	0.50	0.50	0.50			
L / Z	Lead cut and bend	F	2.00	2.50	3.50	5.00	5.00	7.50
		H	2.00	2.00	2.50	2.50	2.50	2.50
		L ₁	2.70	3.40	4.50	5.30	6.80	8.40
		L ₂	3.50	3.50	3.50	3.50	3.50	3.50
		d	0.50	0.50	0.50	0.60	0.60	0.80

*All dimensions in mm.