

Radial Leaded Aluminum Electrolytic Capacitors
REA Series



FEATURES

- Long Life
- Endurance: 3000 - 5000 hours at 105°C
- RoHS Compliance

APPLICATIONS

- Communications Equipment
- Industrial Equipment

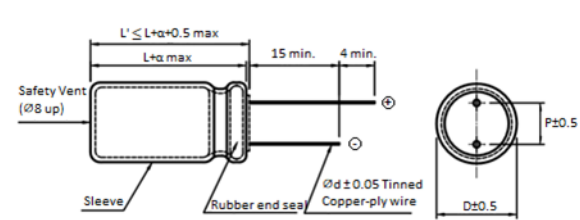


HOW TO ORDER

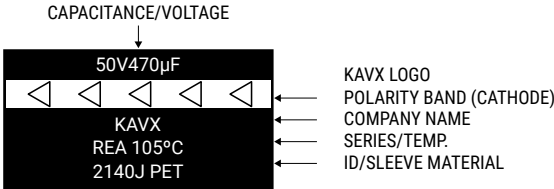
Product Type: Radial Aluminum
Series Type: EA
Case Size: 1013
Capacitance Code: 471
Tolerance: M
Special: No Code = std
Packaging: K
Rated DC Voltage: 016 = 6.3Vdc, 050 = 50Vdc, 250 = 250Vdc, 010 = 10Vdc, 063 = 63Vdc, 350 = 350Vdc, 016 = 16Vdc, 100 = 100Vdc, 400 = 400Vdc, 025 = 25Vdc, 160 = 160Vdc, 450 = 450Vdc, 035 = 35Vdc, 200 = 200Vdc

CASE DIMENSIONS millimeters (inches)

Table with 14 columns: Code, D+0.50 (0.020), L'±0.50 (0.020), d±0.05 (0.002), P±0.50 (0.020), α, Typical Weight (g). It lists dimensions and weights for various capacitor codes from 0511 to 2550.



MARKING



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TECHNICAL SPECIFICATIONS

Category Temperature Range:	-40°C to +105°C (6.3-250V), -25°C to +105°C (350-450V)		
Capacitance Range	At 25°C, 120Hz	0.47μF – 22,000μF	
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 (6.3-100V), 3 minutes (160-250V) at rated working voltage at 25°C*	6.3-100V	160-450V
		≤0.01CV or 3μA, whichever is greater	≤0.03CV + 20μA, 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.

CAPACITANCE AND RATED VOLTAGE RANGE (FIGURES DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R)													
μF	Code	6.3V	10V	16V	25V	35V	50V	63V	100V	160V	200V	250V	350V	400V	450V
0.47	R47						0511								
1.0	1R0						0511								
2.2	2R2						0511		0511	0611	0611	0812	0812	0812	1013
3.3	3R3						0511		0511	0812	0812	0812	0812	0812	1013
4.7	4R7						0511		0511	0812	1013	0812	1013	1013	1016
10	100				0511	0511	0511	0511	0611	1013	1016	1016	1020	1020	1321
22	220				0511	0611	0611	0611	0812	1016	1020	1321	1321	0850 1325	1040 1622
33	330				0611	0611	0812	0812	1013	1020	1321	1321	1040 1325	0861 1040 1622	1050 1335 1626
39	390								1013	1020	1321	1325	1040 1330 1622	0861 1045 1335 1626	0861 1050 1340 1632
47	470			0511	0611	0812	0812	1013	1016	1321	1321	1325	1040 1335 1430 1626	1050 1340 1440 1632	1060 1350 1440 1825
53	530												1335	1350	1060
68	680								1020	1325	1325	1622	1060 1340 1626 1635	1350 1445 1635 1825	1360 1450 1640 1832
82	820								1321	1622	1626	1632	1350 1635 1825	1445 1640 1832	1450 1645 1835
100	101	0511	0511	0611	0812	0812	1013	1016	1321	1626	1632	1636	1640 1832	1450 1645 1835	1650 1840
120	121												1835	1840	
220	221	0611	0611	0812	1013	1013	1016	1020	1626	1835	1840				
330	331	0812	0812	0812	1013	1016	1020	1321	1626						
470	471	0812	0812	1013	1020	1321	1321	1626	1632						
560	561									2240	2250				
680	681									2250	2550				
820	821										2550				
1000	102	1013	1016	1020	1321	1325	1626	1632							
2200	222	1020	1321	1325	1626	1632	1835								
3300	332	1321	1325	1626	1632	1835	1840								
4700	472	1325	1626	1632	1835	1840									
6800	682	1626	1632	1835	1840										
10,000	103	1632	1835	1840											
15,000	153	1835	1840												
22,000	223	1840													

Released ratings

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RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	120Hz RMS Current (mA) / 105°C
6.3 Volt						
REA0511101M006*	0511	100	6.3	6.3	24	120
REA0611221M006*	0611	220	6.3	13.86	24	170
REA0812331M006*	0812	330	6.3	20.79	24	250
REA0812471M006*	0812	470	6.3	29.61	24	290
REA1013102M006*	1013	1000	6.3	63	24	490
REA1020222M006*	1020	2200	6.3	138.6	24	830
REA1321332M006*	1321	3300	6.3	207.9	24	1060
REA1325472M006*	1325	4700	6.3	296.1	24	1310
REA1626682M006B	1626	6800	6.3	428.4	24	1430
REA1632103M006B	1632	10000	6.3	630	24	1790
REA1835153M006B	1835	15000	6.3	945	24	1980
REA1840223M006B	1840	22000	6.3	1386	24	2290
10 Volt						
REA0511101M010*	0511	100	10	10	20	130
REA0611221M010*	0611	220	10	22	20	190
REA0812331M010*	0812	330	10	33	20	280
REA0812471M010*	0812	470	10	47	20	330
REA1016102M010*	1016	1000	10	100	20	580
REA1321222M010*	1321	2200	10	220	20	970
REA1325332M010*	1325	3300	10	330	20	1250
REA1626472M010B	1626	4700	10	470	20	1400
REA1632682M010B	1632	6800	10	680	20	1690
REA1835103M010B	1835	10000	10	1000	20	2010
REA1840153M010B	1840	15000	10	1500	20	2260
16 Volt						
REA0511470M016*	0511	47	16	7.52	17	85
REA0611101M016*	0611	100	16	16	17	140
REA0812221M016*	0812	220	16	35.2	17	240
REA0812331M016*	0812	330	16	52.8	17	310
REA1013471M016*	1013	470	16	75.2	17	380
REA1020102M016*	1020	1000	16	160	17	670
REA1325222M016*	1325	2200	16	352	17	1130
REA1626332M016B	1626	3300	16	528	17	1350
REA1632472M016B	1632	4700	16	752	17	1570
REA1835682M016B	1835	6800	16	1088	17	1930
REA1840103M016B	1840	10000	16	1600	17	2190
25 Volt						
REA0511100M025*	0511	10	25	2.5	15	45
REA0511220M025*	0511	22	25	5.5	15	60
REA0611330M025*	0611	33	25	8.25	15	90
REA0611470M025*	0611	47	25	11.75	15	105
REA0812101M025*	0812	100	25	25	15	185
REA1013221M025*	1013	220	25	55	15	290
REA1013331M025*	1013	330	25	82.5	15	350
REA1020471M025*	1020	470	25	117.5	15	465
REA1321102M025*	1321	1000	25	250	15	830
REA1626222M025B	1626	2200	25	550	15	1210
REA1632332M025B	1632	3300	25	825	15	1540
REA1835472M025B	1835	4700	25	1175	15	1870
REA1840682M025B	1840	6800	25	1700	15	2120
35 Volt						
REA0511100M035*	0511	10	35	3.5	12	48
REA0611220M035*	0611	22	35	7.7	12	78
REA0611330M035*	0611	33	35	11.55	12	100
REA0812470M035*	0812	47	35	16.45	12	130
REA0812101M035*	0812	100	35	35	12	190
REA1013221M035*	1013	220	35	77	12	320
REA1016331M035*	1016	330	35	115.5	12	420
REA1321471M035*	1321	470	35	164.5	12	580
REA1325102M035*	1325	1000	35	350	12	1000
REA1632222M035B	1632	2200	35	770	12	1450

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Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	120Hz RMS Current (mA) / 105°C
REA1835332M035B	1835	3300	35	1155	12	1830
REA1840472M035B	1840	4700	35	1645	12	2150
50 Volt						
REA0511R47M050*	0511	0.47	50	0.235	10	8
REA05111R0M050*	0511	1	50	0.5	10	17
REA05112R2M050*	0511	2.2	50	1.1	10	23
REA05113R3M050*	0511	3.3	50	1.65	10	31
REA05114R7M050*	0511	4.7	50	2.35	10	35
REA0511100M050*	0511	10	50	5	10	51
REA0611220M050*	0611	22	50	11	10	85
REA0812330M050*	0812	33	50	16.5	10	102
REA0812470M050*	0812	47	50	23.5	10	141
REA1013101M050*	1013	100	50	50	10	231
REA1016221M050*	1016	220	50	110	10	368
REA1020331M050*	1020	330	50	165	10	490
REA1321471M050*	1321	470	50	235	10	665
REA1626102M050B	1626	1000	50	500	10	1080
REA1835222M050B	1835	2200	50	1100	10	1695
REA1840332M050B	1840	3300	50	1650	10	2070
63 Volt						
REA0511100M063*	0511	10	63	6.3	9	56
REA0611220M063*	0611	22	63	13.86	9	95
REA0812330M063*	0812	33	63	20.79	9	122
REA1013470M063*	1013	47	63	29.61	9	152
REA1016101M063*	1016	100	63	63	9	250
REA1020221M063*	1020	220	63	138.6	9	415
REA1321331M063*	1321	330	63	207.9	9	550
REA1626471M063B	1626	470	63	296.1	9	725
REA1632102M063B	1632	1000	63	630	9	1135
100 Volt						
REA05112R2M100*	0511	2.2	100	2.2	8	28
REA05113R3M100*	0511	3.3	100	3.3	8	34
REA05114R7M100*	0511	4.7	100	4.7	8	40
REA0611100M100*	0611	10	100	10	8	66
REA0812220M100*	0812	22	100	22	8	112
REA1013330M100*	1013	33	100	33	8	155
REA1013390M100*	1013	39	100	39	8	160
REA1016470M100*	1016	47	100	47	8	190
REA1020680M100*	1020	68	100	68	8	210
REA1321820M100*	1321	82	100	82	8	240
REA1321101M100*	1321	100	100	100	8	310
REA1626221M100B	1626	220	100	220	8	540
REA1626331M100B	1626	330	100	330	8	660
REA1632471M100B	1632	470	100	470	8	880
160 Volt						
REA06112R2M160*	0611	2.2	160	10.56	15	28
REA08123R3M160*	0812	3.3	160	15.84	15	34
REA08124R7M160*	0812	4.7	160	22.56	15	43
REA1013100M160*	1013	10	160	48	15	75
REA1016220M160*	1016	22	160	105.6	15	130
REA1020330M160*	1020	33	160	158.4	15	170
REA1020390M160*	1020	39	160	187.2	15	190
REA1321470M160*	1321	47	160	225.6	15	230
REA1325680M160*	1325	68	160	326.4	15	260
REA1622820M160B	1622	82	160	393.6	15	320
REA1626101M160B	1626	100	160	480	15	350
REA1835221M160B	1835	220	160	1056	15	640
REA2240561M160B	2240	560	160	2688	15	1300
REA2250681M160B	2250	680	160	3264	15	1420
200 Volt						
REA06112R2M200*	0611	2.2	200	13.2	15	28
REA08123R3M200*	0812	3.3	200	19.8	15	35
REA10134R7M200*	1013	4.7	200	28.2	15	50
REA1016100M200*	1016	10	200	60	15	80
REA1020220M200*	1020	22	200	132	15	140

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Part No.	Case Size	Capacitance (μF)	Rated Voltage (V)	DCL Max. (μA)	DF Max. (%)	120Hz RMS Current (mA) / 105°C
REA1321330M200*	1321	33	200	198	15	200
REA1321390M200*	1321	39	200	234	15	220
REA1321470M200*	1321	47	200	282	15	250
REA1325680M200*	1325	68	200	408	15	280
REA1626820M200B	1626	82	200	492	15	350
REA1632101M200B	1632	100	200	600	15	480
REA1840221M200B	1840	220	200	1320	15	810
REA2250561M200B	2250	560	200	3360	15	1400
REA2550681M200B	2550	680	200	4080	15	1550
REA2550821M200B	2550	820	200	4920	15	1700
250 Volt						
REA08122R2M250*	0812	2.2	250	16.5	15	35
REA08123R3M250*	0812	3.3	250	24.75	15	50
REA08124R7M250*	0812	4.7	250	35.25	15	55
REA1016100M250*	1016	10	250	75	15	100
REA1321220M250*	1321	22	250	165	15	170
REA1321330M250*	1321	33	250	247.5	15	225
REA1325390M250*	1325	39	250	292.5	15	250
REA1325470M250*	1325	47	250	352.5	15	280
REA1622680M250B	1622	68	250	510	15	310
REA1632820M250B	1632	82	250	615	15	390
REA1636101M250B	1636	100	250	750	15	500
350 Volt						
REA08122R2M350*	0812	2.2	350	23.1	20	35
REA08123R3M350*	0812	3.3	350	34.65	20	44
REA10134R7M350*	1013	4.7	350	49.35	20	55
REA1020100M350*	1020	10	350	105	20	92
REA1321220M350*	1321	22	350	231	20	162
REA1040330M350B	1040	33	350	346.5	20	210
REA1325330M350*	1325	33	350	346.5	20	205
REA1040390M350B	1040	39	350	409.5	20	210
REA1330390M350B	1330	39	350	409.5	20	270
REA1622390M350B	1622	39	350	409.5	20	205
REA1040470M350B	1040	47	350	493.5	20	300
REA1335470M350B	1335	47	350	493.5	20	320
REA1430470M350B	1430	47	350	493.5	20	320
REA1626470M350B	1626	47	350	493.5	20	320
REA1335530M350B	1335	53	350	556.5	20	320
REA1060680M350B	1060	68	350	714	20	400
REA1340680M350B	1340	68	350	714	20	430
REA1626680M350B	1626	68	350	714	20	350
REA1635680M350B	1635	68	350	714	20	420
REA1350820M350B	1350	82	350	861	20	450
REA1635820M350B	1635	82	350	861	20	500
REA1825820M350B	1825	82	350	861	20	420
REA1640101M350B	1640	100	350	1050	20	530
REA1832101M350B	1832	100	350	1050	20	550
REA1835121M350B	1835	120	350	1260	20	650
400 Volt						
REA08122R2M400*	0812	2.2	400	26.4	20	35
REA08123R3M400*	0812	3.3	400	39.6	20	50
REA10134R7M400*	1013	4.7	400	56.4	20	60
REA1020100M400*	1020	10	400	120	20	100
REA0850220M400B	0850	22	400	264	20	135
REA1325220M400*	1325	22	400	264	20	190
REA0861330M400B	0861	33	400	396	20	280
REA1040330M400B	1040	33	400	396	20	260
REA1622330M400B	1622	33	400	396	20	240
REA0861390M400B	0861	39	400	468	20	280
REA1045390M400B	1045	39	400	468	20	300
REA1335390M400B	1335	39	400	468	20	310
REA1626390M400B	1626	39	400	468	20	300
REA1050470M400B	1050	47	400	564	20	330
REA1340470M400B	1340	47	400	564	20	350
REA1440470M400B	1440	47	400	564	20	370

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REA1632470M400B	1632	47	400	564	20	330
REA1350530M400B	1350	53	400	636	20	385
REA1350680M400B	1350	68	400	816	20	385
REA1445680M400B	1445	68	400	816	20	400
REA1635680M400B	1635	68	400	816	20	420
REA1825680M400B	1825	68	400	816	20	350
REA1445820M400B	1445	82	400	984	20	530
REA1640820M400B	1640	82	400	984	20	550
REA1832820M400B	1832	82	400	984	20	580
REA1450101M400B	1450	100	400	1200	20	700
REA1645101M400B	1645	100	400	1200	20	720
REA1835101M400B	1835	100	400	1200	20	660
REA1840121M400B	1840	120	400	1440	20	770
450 Volt						
REA10132R2M450*	1013	2.2	450	29.7	20	36
REA10133R3M450*	1013	3.3	450	44.55	20	48
REA10164R7M450*	1016	4.7	450	63.45	20	60
REA1321100M450*	1321	10	450	135	20	110
REA1040220M450B	1040	22	450	297	20	280
REA1622220M450B	1622	22	450	297	20	210
REA1050330M450B	1050	33	450	445.5	20	350
REA1335330M450B	1335	33	450	445.5	20	300
REA1626330M450B	1626	33	450	445.5	20	280
REA0861390M450B	0861	39	450	526.5	20	350
REA1050390M450B	1050	39	450	526.5	20	350
REA1340390M450B	1340	39	450	526.5	20	360
REA1632390M450B	1632	39	450	526.5	20	330
REA1060470M450B	1060	47	450	634.5	20	410
REA1350470M450B	1350	47	450	634.5	20	370
REA1440470M450B	1440	47	450	634.5	20	390
REA1825470M450B	1825	47	450	634.5	20	360
REA1060530M450B	1060	53	450	715.5	20	440
REA1360680M450B	1360	68	450	918	20	450
REA1450680M450B	1450	68	450	918	20	400
REA1640680M450B	1640	68	450	918	20	440
REA1832680M450B	1832	68	450	918	20	500
REA1450820M450B	1450	82	450	1107	20	600
REA1645820M450B	1645	82	450	1107	20	620
REA1835820M450B	1835	82	450	1107	20	600
REA1650101M450B	1650	100	450	1350	20	760
REA1840101M450B	1840	100	450	1350	20	720

* 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 +25C. 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

Rated Voltage (V)	Capacitance (μF)	Frequency (Hz)			
		50	120	1K	≥ 10K
≤ 100	< 100	0.70	1.00	1.40	1.60
	100 - 4700	0.75	1.00	1.30	1.40
	> 4700	0.80	1.00	1.15	1.20
≥ 160	2.2 - 820	0.80	1.00	1.30	1.40

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QUALIFICATION TABLE

Test	REA Series (Temperature Range -40°C to +105°C (6.3-250V), -25°C to 105°C (350-450V))							
	Condition	Characteristics						
Temperature Stability (Max. Impedance Ratio)	120Hz	Rated Voltage (V)	6.3	10-16	25-100	160-250	350-400	450
		Z(-25°C) / Z(20°C)	4	3	2	4	8	15
		Z(-40°C) / Z(20°C)	8	6	4	6	-	-
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 ≤ 8: 3000 hours; D=10: 4000 hours, D ≥13: 5000 hours) at 105°C.	ΔC/C	within ±20% 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 5101-4-1 (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

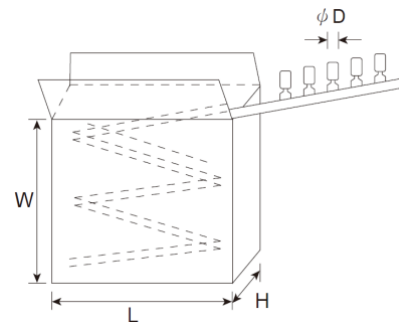
- It is recommended to keep capacitors between the ambient temperatures of 5°C to 35°C and a relative humidity of 75% or below.
- Confirm that the environment does not have any of the following conditions:
 - Damp conditions such as water, saltwater spray, or oil spray or fumes. High humidity or humidity 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.
-

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

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
1013/1016	235	330	57	600	1.29	10
1020	235	330	57	600	1.48	10
1321	280	315	65	400	1.95	6
1325	280	315	65	400	2.35	6



Radial Leaded Aluminum Electrolytic Capacitors

REA Series



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	9000
0850	Box	588	2352	-	-
0861	Box	588	2352	-	-
1013	Bag	200	4400	600	3000
1016	Bag	200	3600	600	3000
1020	Bag	200	3600	600	3000
1040	Box	828	3312	-	-
1045	Box	828	3312	-	-
1050	Box	828	3312	-	-
1060	Box	828	3312	-	-
1321	Bag	150	2100	400	2400
1325	Bag	150	1800	400	2400
1330	Bag	100	1400	-	-
1335	Bag	100	1400	-	-
1340	Box	540	2160	-	-
1350	Box	540	2160	-	-
1360	Box	270	1080	-	-
1430	Box	448	1792	-	-
1440	Box	448	1792	-	-
1445	Box	448	1792	-	-
1450	Box	448	1792	-	-
1622	Box	390	1560	-	-
1626	Box	390	1560	-	-
1632	Box	390	1560	-	-
1635	Box	390	1560	-	-
1636	Box	390	1560	-	-
1640	Box	390	1560	-	-
1645	Box	390	1560	-	-
1650	Box	390	1560	-	-
1825	Box	286	1144	-	-
1832	Box	286	1144	-	-
1835	Box	286	1144	-	-
1840	Box	286	1144	-	-
2240	Box	198	792	-	-
2250	Box	198	792	-	-
2550	Box	144	576	-	-