



REA Series

Features

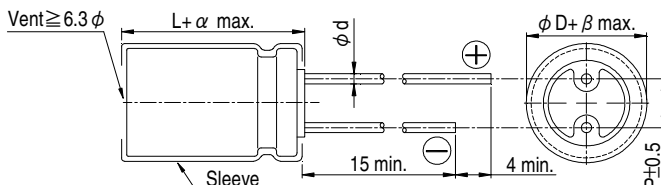
- 85°C, 2,000 ~ 3,000 hours assured
- Standard series for general purposes
- RoHS compliance



Specifications

Items	Performance																
Category Temperature Range	-40°C ~ +85°C																
Capacitance Tolerance	±20% (at 120 Hz, 20°C)																
Leakage Current (at 20°C)	Rated voltage		≤100V					> 100V									
	Time		after 2 minutes					after 5 minutes									
	Leakage Current		I = 0.01CV or 3 (μA) whichever is greater					CV ≤ 1,000		CV > 1,000							
								I = 0.03CV + 15(μA)		I = 0.02CV + 25(μA)							
Where, C = rated capacitance in μF, V = rated DC working voltage in V																	
Tanδ (at 120 Hz, 20°C)	Rated Voltage	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450		
	Tanδ (max)	0.23	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.12	0.14	0.17	0.20	0.25	0.25		
When the capacitance exceeds 1,000μF, 0.02 shall be added every 1,000μF increase.																	
Low Temperature Characteristics (at 120 Hz)	Impedance ratio shall not exceed the values given in the table below.																
	Rated Voltage		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	
	Impedance Ratio	Z (-25°C)	φ D < 16	6	4	3	3	2	2	2	2	3	6	8	12	14	16
		/Z (+20°C)	φ D ≥ 16	8	6	4	4	3	3	3	3						
		Z (-40°C)	φ D < 16	10	8	6	6	4	3	3	3	4	8	10	16	18	20
/Z (+20°C)		φ D ≥ 16	18	16	12	10	8	8	6	6							
Endurance	Test Time		2,000 Hrs for φ D ≤ 8mm 3,000 Hrs for φ D ≥ 10mm														
	Capacitance Change		Within ±20% of initial value														
	Tanδ		Less than 200% of specified value														
	Leakage Current		Within specified value														
* The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2,000 / 3,000 hours at 85°C.																	
Shelf Life Test	Test Time		1,000 Hrs														
	Capacitance Change		Within ±20% of initial value														
	Tanδ		Less than 200% of specified value														
	Leakage Current		Within specified value														
* The above specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85 °C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1).																	
Ripple Current and Frequency Multipliers	Cap. (μF) \ Freq. (Hz)		60 (50)		120		500		1k		10k up						
			≤ 100		0.70		1.00		1.30		1.40		1.50				
	100 < C ≤ 1,000		0.75		1.00		1.20		1.30		1.35						
	1,000 <		0.80		1.00		1.10		1.12		1.15						

Diagram of Dimensions

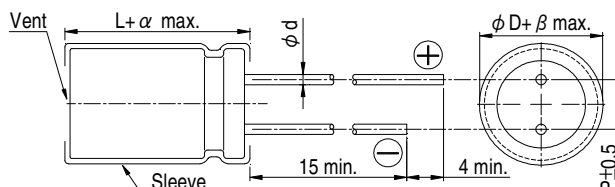


Lead Spacing and Diameter

Unit: mm

ϕD	5	6.3	8	10	12.5	16	18	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	12.5
ϕd	0.5		0.6			0.8		1.0	
α	L<20: 1.5, L $\geq$ 20: 2.0							2.0	
β	0.5								

The case size of 12.5×16, 16×16, 16×20, 18×16, 18×20 and 18×25 are suitable for below diagram:



Dimension: $\phi D \times L$ (mm)

Ripple Current: mA/rms at 120 Hz, 85°C

Dimension and Permissible Ripple Current

Cap.(μ F)	Contents	Rated Volt. (V _{DC})		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
2.2	2R2													5×11	29			5×11	33
3.3	3R3													5×11	35			5×11	40
4.7	4R7													5×11	42			5×11	48
10	100													5×11	65	5×11	70	5×11	59
22	220													5×11	95	6.3×11	115	6.3×11 8×11.5	115 135
33	330											5×11	108	6.3×11 5×11	136 125	6.3×11	140	8×11.5	145
47	470									5×11	115	5×11	130	6.3×11	165	6.3×11	170	10×12.5	235
100	101							5×11	160	6.3×11	190	6.3×11	210	8×11.5	260	8×11.5 10×12.5	245 320	10×16	325
220	221					5×11	220	6.3×11	260	8×11.5	320	8×11.5	385	10×12.5	455	10×16	490	12.5×20 16×16	640 625
330	331					6.3×11	290	6.3×11	290	8×11.5	440	10×12.5	490	10×16	585	10×20 12.5×16	710 675	16×20 18×16	695 685
470	471					6.3×11	350	8×11.5	440	10×12.5	545	10×16	740	10×20 12.5×16	755 610	16×16 12.5×20	910 900	16×25	910
1,000	102			8×11.5	540	10×12.5 8×11.5	650 550	10×12.5	635	10×20 12.5×16	955 830	12.5×20 16×16	1,145 1,010	12.5×25 16×20	1,340 1,160	16×20	1,260	18×40	1,820
2,200	222			10×16	845	10×20 12.5×16	1,070 970	12.5×16 16×16	930 1,160	12.5×25 16×16	1,540 1,150	16×20	1,390	16×35.5	1,960	18×31.5	2,040		
3,300	332			10×20 12.5×16	1,185 960	12.5×20	1,420	12.5×20 16×16	1,450 1,240	16×20	1,490	16×31.5 18×25	2,070 1,970	18×35.5	2,500	18×40	2,575		
4,700	472			12.5×20	1,545	12.5×25 16×16	1,780 1,420	16×20 18×16	1,600 1,820	16×25 18×25	2,100 2,170	18×35.5	2,700	22×40	3,040				
6,800	682			12.5×25	1,880	16×20 18×20	1,700 1,870	16×25 18×20	2,280 1,890	16×35.5 18×31.5	2,475 2,550	22×40	2,900	22×45	3,185				
10,000	103			16×20 18×20	2,000 2,020	16×25 18×25	2,150 2,370	18×31.5 16×35.5	2,590 2,450	18×40	3,080	22×45	3,400						
15,000	153			16×31.5 18×25	2,460 2,375	16×40 18×31.5	2,730 2,620	18×40	3,100	22×45 25×40	3,780 3,850								
22,000	223			18×31.5	2,780	18×40	3,370	22×40	3,900	25×45	4,290								
33,000	333			22×40	3,700														

Cap.(μ F)	Contents	Rated Volt. (V _{DC})		160V (2C)		200V (2D)		250V (2E)		350V (2V)		400V (2G)		450V (2W)	
		$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA	$\phi D \times L$	mA
1	010							5×11	18	5×11	18	5×11	22	6.3×11	25
2.2	2R2					5×11	29	6.3×11	33	6.3×11	33	6.3×11	33	8×11.5	45
3.3	3R3					6.3×11	46	6.3×11	46	8×11.5	50	8×11.5	50	10×12.5	65
4.7	4R7					6.3×11	50	8×11.5	55	8×11.5	60	8×11.5 10×12.5	55 80	8×11.5 10×12.5	55 80
10	100			8×11.5	75	8×11.5	81	10×12.5	100	10×16	110	10×16	110	10×20	140
22	220			10×12.5	130	10×12.5	135	10×16	150	12.5×16	185	12.5×20	200	12.5×20	200
33	330			10×16	175	10×16	180	10×20 12.5×16	215 220	12.5×20 16×16	245 260	16×16	260	16×20	270
47	470			10×20 12.5×16	230 250	10×20 12.5×16	240 250	12.5×20	290	16×20 18×16	340 310	16×20	340	16×31.5	390
68	680			12.5×20	330	12.5×20 16×16	330 370	12.5×25	370	16×25 18×20	420 410	16×31.5	435	16×35.5	460
100	101			12.5×25	440	16×20 18×16	460 450	16×25	510	16×31.5 18×25	540 520	16×40 18×35.5	560 570	18×35.5	570
150	151			16×25	620	16×25 18×20	620 605	16×31.5 18×25	625 630	18×35.5	640	18×40	670	22×45	800
220	221			16×31.5 18×25	790 760	16×35.5	830	16×40 18×35.5	840 890	22×40	920	22×45 25×40	960 980	25×45	1,030
330	331			18×35.5	985	18×40	1,150	22×40	1,200	25×45	1,270				
470	471			18×40	1,150	22×40	1,400	22×45	1,470						

Part Numbering System

REA Series 470 μ F $\pm 20\%$ 16V Bulk Package Gas Type 8 $\phi \times 11.5L$ Pb-free and PET sleeve

REA **471** **M** **1C** **BK** - **0811**

Series Name Capacitance Capacitance Tolerance Rated Voltage Lead Configuration and Package Rubber Type Case Size Lead Wire and Sleeve type

Note: For more details, please refer to "Part Numbering System (Radial Type)" on page 13.