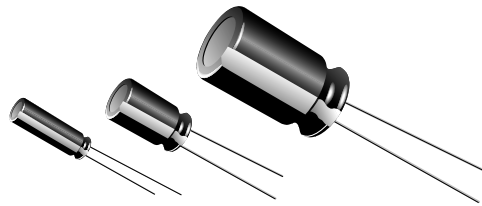


### Aluminum Electrolytic Capacitors (Radial Lead Type)

Series: M  
Type: A (Radial Leads)  
Style: 04/JIS C 5141



STANDARD

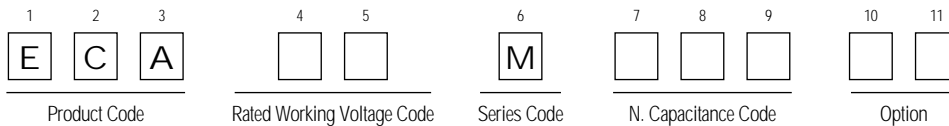
#### ■ Features

- Lifetime: 85°C 2000 h
- Smaller than series SU
- IEC pub. 384-4 approved

#### ■ Recommended Applications

- Audio visual (television, video, audio), office, home appliances

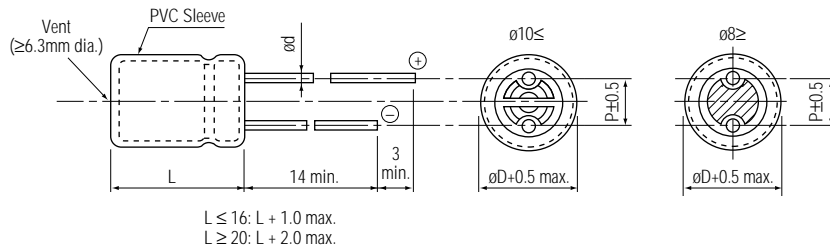
#### ■ Explanation of Part Numbers



#### ■ Specifications

Operating temperature range	-40 to +85°C	-25 to +85°C
Rated working voltage	6.3 to 100 V DC	160 to 450 V DC
Nominal capacitance range	0.1 to 22000 $\mu$ F	1.0 to 470 $\mu$ F
Capacitance tolerance	$\pm$ 20% (120 Hz/+20°C)	
DC leakage current	$I \leq 0.03 CV$ or 4 ( $\mu$ A) after 1 minute $I \leq 0.01 CV$ or 3 ( $\mu$ A) after 2 minutes	(Whichever is greater) $I \leq 0.06 CV + 10 (\mu$ A) after 2 minutes
tan $\delta$	(120 Hz/+20°C)	
	<b>W.V. (V)</b>	<b>6.3</b> <b>10</b> <b>16</b> <b>25</b> <b>35</b> <b>50</b> <b>63</b> <b>100</b> <b>160</b> <b>200</b> <b>250</b> <b>350</b> <b>400</b> <b>450</b>
	tan $\delta$	0.28   0.24   0.20   0.16   0.14   0.12   0.11   0.10   0.16   0.18   0.18   0.20   0.20   0.20
Add 0.02 per 1,000 $\mu$ F for products of 1,000 $\mu$ F or more.		
Characteristics at low temperature	Impedance ratio at 120 Hz	
	<b>W.V. (V)</b>	<b>6.3</b> <b>10</b> <b>16</b> <b>25</b> <b>35</b> <b>50</b> <b>63</b> <b>100</b> <b>160</b> <b>200</b> <b>250</b> <b>350</b> <b>400</b> <b>450</b>
	$Z (-25^\circ\text{C}) / Z (+20^\circ\text{C})$	5   4   3   2   2   2   2   2   2   2   3   5   6   6
	$Z (-40^\circ\text{C}) / Z (+20^\circ\text{C})$	12   10   8   5   4   3   3   3   —   —   —   —   —
(1) Add 0.5 per 1,000 $\mu$ F for products of 1,000 $\mu$ F or more at -25°C (2) Add 1.0 per 1,000 $\mu$ F for products of 1,000 $\mu$ F or more at -40°C		
Endurance	After applying working voltage for 2,000 hours at +85°C and then being stabilized at +20°C, capacitor shall meet the following limits.	
	Capacitance change	$\pm$ 20% of initial measured value ( $\phi$ 3.5 $\pm$ 25%)
	tan $\delta$	$\leq$ 150% of initial specified value
	DC leakage current	$\leq$ initial specified value
Shelf life	After storage for 1,000 hours at +85°C with no voltage applied then being stabilized at +20°C, capacitor shall meet the limits specified in "Endurance."	

■ Dimensions in mm (not to scale)



Body Dia. øD	5	6.3	8	10	12.5	16	18	
Lead Dia. ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8	
Lead Space P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	

■ Case Size/Ripple Current

øDxL (mm)/mA rms (120 Hz/+85°C)

Cap. (μF)	Working Voltage															
	6.3 (0J)		10 (1A)		16 (1C)		25 (1E)		35 (1V)		50 (1H)		63 (1J)		100 (2A)	
0.1(OR1)											5 x11	1.3				
0.22(R22)											5 x11	2.9				
0.33(R33)											5 x11	4.4				
0.47(R47)											5 x11	5			5 x11	10
1.0 (010)											5 x11	10			5 x11	20
2.2 (2R2)											5 x11	20			5 x11	30
3.3 (3R3)											5 x11	35			5 x11	40
4.7 (4R7)											5 x11	45			5 x11	50
10 (100)					5 x11	30					5 x11	65	5 x11	70	*5 x11	70
22 (220)					5 x11	75					5 x11	100	*5 x11	105	*6.3x11.2	115
33 (330)					5 x11	110					*5 x11	110	6.3x11.2	130	*8 x11.5	145
47 (470)					5 x11	130			*5 x11	130	6.3x11.2	130	*6.3x11.2	160	*8 x11.5	180
100 (101)					*5 x11	180	6.3x11.2	180	*6.3x11.2	210	8 x11.5	250	*8 x11.5	270	10 x16	350
220 (221)	*5 x11	24			*6.3x11.2	280			*8 x11.5	350	10 x12.5	400	10x16	450	*12.5x20	550
330 (331)			*6.3x11.2	330			8 x11.5	390	10 x12.5	440	10 x16	500	10 x20	550	*12.5x25	700
470 (471)	*6.3x11.2	380			*8 x11.5	440	10 x12.5	480	10 x16	550	10 x20	650	12.5x20	750	16 x25	900
1000 (102)	*8 x11.5	580	10 x12.5	630	10 x16	680	10 x20	850	1.5x20	900	*12.5x25	1050	16 x25	1100	18 x35.5	1300
2200 (222)	10 x16	890	10 x20	920	12.5x20	1000	*12.5x25	1200	16 x25	1250	16 x31.5	1300	18 x35.5	1400		
3300 (332)	10 x20	1020	12.5x20	1090	*12.5x25	1200	16 x25	1300	16 x31.5	1400	18 x35.5	1500				
4700 (472)	*12.5x20	1170	*12.5x25	1200	16 x25	1360	16 x31.5	1500	18 x35.5	1600						
6800 (682)	*12.5x25	1270	16 x25	1400	16 x31.5	1600	18 x35.5	1750								
10000 (103)	16 x25	1450	16 x31.5	1600	18 x35.5	1800										
15000 (153)	16 x31.5	1700	18 x35.5	1850												
22000 (223)	18 x35.5	1900														Case size Ripple current

Cap. (μF)	Working Voltage													
	160 (2C)		200 (2D)		250 (2E)		350 (2V)		400 (2G)		450 (2W)		Case size	Ripple current
1.0	6.3 x11.2	36	6.3 x11.2	34	6.3 x11.2	34	6.3 x11.2	32	*6.3 x11.2	32	*8 x11.5	37		
2.2	6.3 x11.2	53	6.3 x11.2	50	*6.3 x11.2	50	*8 x11.5	55	*8 x11.5	50	10 x12.5	44		
3.3	6.3 x11.2	66	*6.3 x11.2	62	*8 x11.5	72	*8 x11.5	60	10 x12.5	54	10 x16	60		
4.7	*6.3 x11.2	78	*8 x11.5	86	*8 x11.5	86	10 x12.5	65	10 x16	72	10 x20	79		
10	10 x12.5	105	10 x12.5	100	10 x16	110	10 x20	115	10 x20	115	12.5 x20	130		
22	10 x16	175	10 x20	180	10 x20	180	12.5 x20	195	*12.5 x25	215	16 x25	210		
33	10 x20	235	10 x20	220	12.5 x20	250	16 x25	300	16 x25	275	16 x31.5	285		
47	12.5 x20	320	12.5 x20	300	*12.5 x25	330	16 x25	325	16 x31.5	350				
100	*12.5 x25	515	16 x25	475	16 x31.5	530	18 x31.5	535	18 x40	600				
220	16 x35.1	830	18 x31.5	835	18 x40	930								
330	18 x31.5	1090	18 x40	1140										
470	18 x40	1440												

( ) shows W.V. and capacitance code

\* Lead spacing is narrower than series SU because of miniaturization.