

**RoHS
Compliant**



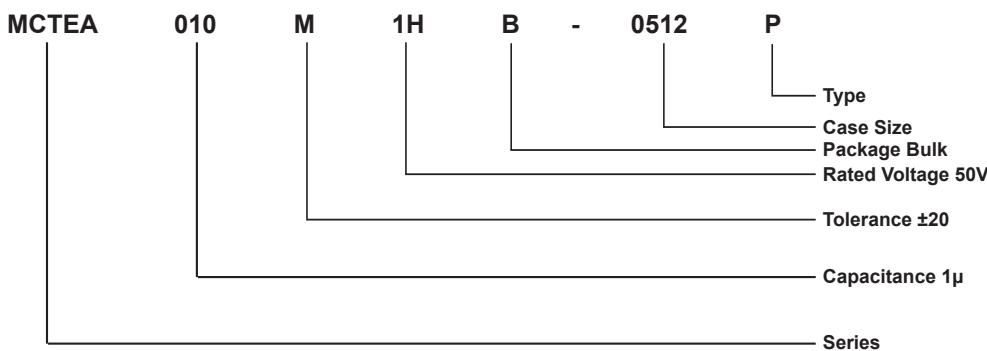
Features:

- 85°C, 2,000 hours assured
- For general purpose application

How To Order:

Series	Capacitance		Tolerance		Rated Voltage		Package	-	Case Size (mm)	Type
	(μ F)	Code	%	Code	Voltage (V)	Code				
MCTEA	0.1	0R1			10	1A	B = Bulk	-	The first two digits indicate diameter in mm. The last two digits indicate case length in mm.	P = Lead free wire +PET sleeve.
	1	010	± 5	J	16	1C				
	2.2	2R2	± 10	K	25	1E				
	22	220	± 20	M	35	1V				
	220	221	+20 to -10	V	50	1H				
	2,200	222	+50 to -10	T	63	1J				
	22,000	223			100	2A				
					250	2E				
				450	2W					

Example:

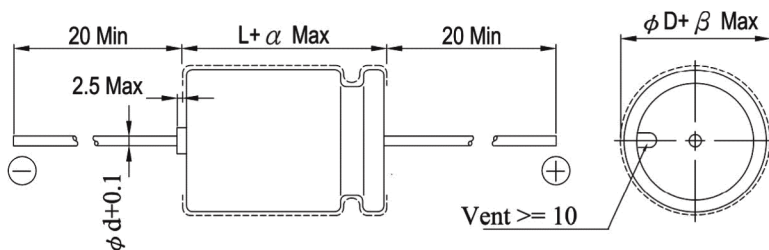


Specifications:

Items	Performance																	
Operating Temperature Range	-40°C to +85°C																	
Capacitance Tolerance	$\pm 20\%$ (at 120Hz, 20°C)																	
Leakage Current (at 20°C)	<table border="1"> <thead> <tr> <th>Rated voltage</th> <th>$\leq 100V$</th> <th colspan="2">$> 100V$</th> </tr> <tr> <th>Time</th> <th>after 2 minutes</th> <th colspan="2">after 5 minutes</th> </tr> </thead> <tbody> <tr> <td>Leakage Current</td> <td>$I = 0.02CV$ or 3 (μA) whichever is greater</td> <td>$CV \leq 1,000$ $I = 0.03CV + I_5(\mu A)$</td> <td colspan="2">$CV > 1,000$ $I = 0.02CV + 25(\mu A)$</td> </tr> <tr> <td colspan="4">Where, C = rated capacitance in μ F. V = rated DC working voltage in V</td> </tr> </tbody> </table>	Rated voltage	$\leq 100V$	$> 100V$		Time	after 2 minutes	after 5 minutes		Leakage Current	$I = 0.02CV$ or 3 (μ A) whichever is greater	$CV \leq 1,000$ $I = 0.03CV + I_5(\mu A)$	$CV > 1,000$ $I = 0.02CV + 25(\mu A)$		Where, C = rated capacitance in μ F. V = rated DC working voltage in V			
	Rated voltage	$\leq 100V$	$> 100V$															
	Time	after 2 minutes	after 5 minutes															
	Leakage Current	$I = 0.02CV$ or 3 (μ A) whichever is greater	$CV \leq 1,000$ $I = 0.03CV + I_5(\mu A)$	$CV > 1,000$ $I = 0.02CV + 25(\mu A)$														
Where, C = rated capacitance in μ F. V = rated DC working voltage in V																		

Items	Performance															
Dissipation Factor (Tan δ at 120Hz, 20°C)	Rated Voltage	10	16	25	35	50	63	100	160	200	250	350	400	450		
	Tan δ (max)	0.2	0.17	0.15	0.12	0.1	0.09	0.08	0.12	0.14	0.17	0.2	0.24	0.24		
	When the capacitance exceeds 1,000 μ F, 0.02 shall be added every 1,000 μ F increase.															
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below															
	Rated Voltage		10	16	25	35	50	63	100	160	200	250	350	400	450	
	Impedance Ratio	Z(-25°C) /Z(+20°C)	$\varnothing D < 16$	4	3	3	2	2	2	2	3	6	8	12	14	16
			$\varnothing D \geq 16$	6	4	4	3	3	3	3						
Z(-40°C) /Z(+20°C)	$\varnothing D < 16$	8	6	6	4	3	3	3	4	8	10	-	-	-		
	$\varnothing D \geq 16$	16	12	10	8	8	6	6								
Load Life Test	Test Time	2,000 Hrs														
	Capacitance Change	Within $\pm 20\%$ of initial value														
	Dissipation Factor	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 for 2,000 hours at 85°C																
Shelf Life Test	Test Time	2,000 Hrs														
	Capacitance Change	Within $\pm 20\%$ of initial value														
	Dissipation Factor	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 5101-44.1).																
Ripple Current & Frequency Multipliers	Freq. (Hz)															
	Cap. (μ F)	60 (50)	120	500	1K	10K up										
	Under 100	0.7	1	1.3	1.4	1.5										
	100 < C \leq 1,000	0.75	1	1.2	1.3	1.35										
1,000 up above	0.8	1	1.1	1.12	1.15											

Diagram of Dimensions:



$\varnothing D$	5	6.3	8	10	12.5	16	18	22	25
$\varnothing d$	0.6					0.8			
α	1.5			2					
β	0.5								

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

Ripple Current: mA/rms at 120Hz, 85°C

Aluminum Electrolytic Capacitors



μF	V DC Contents	10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1J)		100V (2A)	
		øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA
0.1	0R1									5×12	1.5	5×12	3	5×12	3
0.22	R22									5×12	3.5	5×12	4.5	5×12	5
0.33	R33									5×12	5	5×12	7.5	5×12	8
0.47	R47									5×12	6	5×12	9	5×12	9
1	010									5×12	10	5×12	15	5×12	15
2.2	2R2									5×12	20	5×12	30	5×12	30
3.3	3R3									5×12	30	5×12	36	5×12	40
4.7	4R7									5×12	42	5×12	44	6.3×13	41
10	100					5×12	40	5×12	55	5×12	50	6.3×13	55	6.3×13	72
22	220			5×12	71	5×12	76	6.3×13	70	6.3×13	85	6.3×13	109	8×16	133
33	330			5×12	85	5×12	80	6.3×13	115	6.3×13	126	8×13	154	10×17	190
47	470	5×12	94	6.3×13	88	6.3×13	100	6.3×13	138	8×13	174	8×16	214	10×21	237
100	101	6.3×13	145	6.3×13	160	8×13	215	8×16	232	10×17	296	10×17	326	13×22	377
220	221	8×13	231	8×13	298	8×16	319	10×17	401	10×21	459	13×22	527	16×28	625
330	331	8×16	327	8×16	365	10×17	454	10×21	514	13×22	613	13×22	675	16×33	793
470	471	8×16	390	8×16	460	10×21	524	13×22	613	13×22	731	13×27	780	16×36	942
1,000	102	10×17	671	10×21	775	13×22	873	13×27	955	16×33	1,111	16×36	1,249	18×42	1,359
2,200	222	13×22	1,051	13×24	1,125	16×28	1,344	16×33	1,421	18×36	1,699	22×43	1,744	25×52	2,430
3,300	332	13×27	1,288	16×28	1,454	16×33	1,611	18×36	1,640	22×43	2,027	25×52	2,309		
4,700	472	16×28	1,552	16×33	1,650	18×36	1,881	22×43	2,280	25×43	2,347	25×52	2,710		
6,800	682	16×33	1,930	18×36	2,040	18×42	2,170	22×43	2,470	25×52	2,650				
10,000	103	18×36	2,122	18×42	2,503	22×43	2,893	25×52	3,180						

μF	V DC Contents	160V (2C)		200V (2D)		250V (2E)		350V (2V)		400V (2G)		450V (2W)	
		øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA	øD×L	mA
1	010	6.3×13	7	6.3×13	9	6.3×13	12	8×16	13	8×16	14	8×16	15
2.2	2R2	6.3×13	15	8×13	16	8×16	17	8×20	19	10×17	21	10×21	23
3.3	3R3	8×13	21	8×16	26	8×21	31	8×21	33	10×17	34	10×21	36
4.7	4R7	8×16	31	10×17	33	10×17	38	10×21	44	10×26	45	10×26	46
10	100	10×17	60	10×21	66	10×21	72	13×22	72	13×22	80	13×27	82
22	220	10×21	121	13×22	121	13×27	126	13×27	132	16×33	137	16×36	143
33	330	13×22	154	13×27	167	16×28	178	16×33	186	16×36	192	16×42	201
47	470	13×27	198	16×33	214	16×33	241	16×42	253	18×42	339	18×42	339
100	101	16×33	345	16×36	368	16×42	391	22×43	402	25×43	424	25×52	448
220	221	18×42	586	22×43	609	22×43	632						
330	331	22×43	632										

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