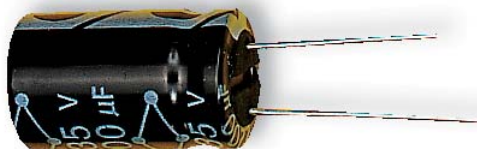


MCRH Series

High Temp. Electrolytic Capacitors



Features:

- General purpose.
- Wide CV value range.
- Safety vent construction products, ECRH series are guaranteed for 2000 hours at 105°C.
- High temperature radial leaded electrolytic.
- Supplied loose with straight leads.

Electrical Specifications

Item	Performance																																											
Operating Temperature Range	-40 to +105°C																																											
Rated Working Voltage Range	10 - 100V dc																																											
Nominal Capacitance Range	0.47 - 4700μF																																											
Capacitance Tolerance	±20% (at +20°C, 120Hz)																																											
Leakage Current	I ≤0.01CV or 3(μA) maximum																																											
	Whichever is greater after 3 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)																																											
Dissipation Factor (tanδ) (120Hz\+20°C)	<table><tr><td>Working Voltage (V)</td><td>10</td><td>16</td><td>25</td><td>35</td><td>63</td><td>100</td></tr><tr><td>tanδ maximum</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td><td>0.07</td></tr></table>							Working Voltage (V)	10	16	25	35	63	100	tanδ maximum	0.19	0.16	0.14	0.12	0.10	0.07																							
	Working Voltage (V)	10	16	25	35	63	100																																					
	tanδ maximum	0.19	0.16	0.14	0.12	0.10	0.07																																					
Add 0.02 per 1000μF for more than 1000μF.																																												
Maximum Permissible Ripple Current	<table><tr><td colspan="2" rowspan="2">Frequency (Hz) WV (V dc)</td><td rowspan="2">60</td><td rowspan="2">120</td><td rowspan="2">1K</td><td rowspan="2">10K</td><td rowspan="2">100K</td></tr><tr></tr><tr><td rowspan="3">10 - 35</td><td>0.47 - 330</td><td>0.85</td><td rowspan="6">1</td><td>1.30</td><td>1.40</td><td>1.55</td></tr><tr><td>470 - 3300</td><td rowspan="2">0.95</td><td>1.15</td><td rowspan="2">1.20</td><td>1.25</td></tr><tr><td>C ≥ 4700</td><td>1.10</td><td>1.20</td></tr><tr><td rowspan="3">63 - 100</td><td>0.47 - 33</td><td rowspan="2">0.75</td><td>1.55</td><td>1.65</td><td>1.80</td></tr><tr><td>47 - 220</td><td>1.40</td><td>1.60</td><td>1.65</td></tr><tr><td>C ≥ 330</td><td>0.80</td><td>1.30</td><td>1.35</td><td>1.40</td></tr></table>							Frequency (Hz) WV (V dc)		60	120	1K	10K	100K	10 - 35	0.47 - 330	0.85	1	1.30	1.40	1.55	470 - 3300	0.95	1.15	1.20	1.25	C ≥ 4700	1.10	1.20	63 - 100	0.47 - 33	0.75	1.55	1.65	1.80	47 - 220	1.40	1.60	1.65	C ≥ 330	0.80	1.30	1.35	1.40
	Frequency (Hz) WV (V dc)		60	120	1K	10K	100K																																					
	10 - 35	0.47 - 330	0.85	1	1.30	1.40	1.55																																					
		470 - 3300	0.95		1.15	1.20	1.25																																					
		C ≥ 4700			1.10		1.20																																					
	63 - 100	0.47 - 33	0.75		1.55	1.65	1.80																																					
		47 - 220			1.40	1.60	1.65																																					
		C ≥ 330	0.80		1.30	1.35	1.40																																					

MCRH Series

High Temp. Electrolytic Capacitors



Electrical Specifications

Item	Performance						
Characteristics at Low Temperature (stability at 120Hz)	Working Voltage (V)	10	16	25	35	63	100
	-25°C/ +20°C	3	2				
	-40°C/+20°C	6	4	3			
	For capacitance value >1000μF, Add 0.5 per another 1000μF for -25°C/ +25°C, Add 1.0 per another 1000μF for -40°C/+20°C.						
High Temperature Loading	After 2000 hours application of DC rated working voltage at +105°C, The capacitor shall meet the following limits: Post test requirements at +20°C.						
	Leakage Current	≤ the initial specified value					
	Capacitance Change	≤ ±20% of initial measured value					
	Dissipation Factor (tanδ)	≤ 200% of initial specified value					
Shelf Life	After storage for 500 hours at +105°C with no voltage applied. Post test requirements at +20°C. Same limits for high temperature loading.						

MCRH Series

High Temp. Electrolytic Capacitors



Permissible Ripple Current

Maximum Ripple Current: mA (rms) (at 105°C, 120Hz)

WV (SV) μF	10 (13)	16 (20)	25 (32)	35 (44)	63 (79)	100 (125)
0.47	—	—	—	—	—	10
1.0	—	—	—	—	—	15
2.2	—	—	—	—	—	23
3.3	—	—	—	—	—	29
4.7	—	—	26	28	32	34
10	—	35	38	41	50	56
22	49	54	57	61	82	96
33	60	64	69	75	100	140
47	70	99	82	100	135	180
100	105	125	135	170	223	320
220	175	215	230	300	400	570
330	245	260	335	400	540	700
470	290	370	440	520	700	880
1000	550	640	770	920	1210	—
2200	860	1000	1170	1340	—	—
3300	1100	1300	1460	1650	—	—
4700	1400	1600	1780	1900	—	—

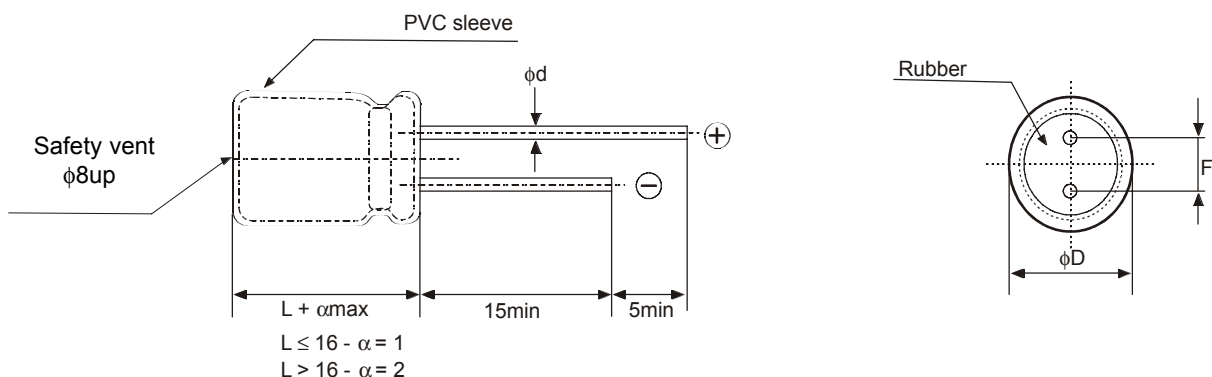


MCRH Series

High Temp. Electrolytic Capacitors



Diagram of Dimensions



Dϕ (+ 0.5 Maximum)	5	6.3	8	10	13	16	18
F (± 0.5)	2	2.5	3.5	5		7.5	
dϕ (±0.02)	0.5		0.6			0.8	

Dimensions : Millimetres

Case Size Table

WV (SV) μF	10	16	25	35	63	100	
	(13)	(20)	(32)	(44)	(79)	(125)	
0.47	—	—	—	—	—	5 x 11	
1.0	—	—	—	—	—		
2.2	—	—	—	—	—		
3.3	—	—	—	—	—		
4.7	—	—	—	—	—		
10	—	—	5 x 11	5 x 11	5 x 11	6.3 x 11	
22	—	—			6.3 x 11	8 x 11	
33	—	5 x 11			6.3 x 11	8 x 11	10 x 13
47	5 x 11						10 x 16
100		6.3 x 11	6.3 x 11	8 x 11	10 x 13	13 x 21	
220	6.3 x 11	8 x 11	8 x 11	10 x 13	10 x 21	16 x 26	
330	8 x 11		10 x 13	10 x 16	13 x 21		
470			10 x 13	10 x 16	10 x 21		13 x 26
1000	10 x 16	10 x 21	13 x 21	13 x 21	16 x 32	—	
2200	13 x 21	13 x 21	13 x 26	16 x 32	—	—	
3300		13 x 26	16 x 32	18 x 36	—	—	
4700	16 x 26	16 x 32	18 x 36	18 x 42	—	—	

Dimensions : Millimetres



MCRH Series

High Temp. Electrolytic Capacitors



Part Numbers

Capacitance (μF)	Voltage (V dc)	Ripple (mA)	Dimensions				Part Number	
			Length	Diameter (D)	Diameter (d)	Pitch		
22	10	49	11	5	0.5	2	920-988	
33		56					920-990	
47		80					921-002	
100		105					945-1625	
220		171		6.3		2.5	945-1633	
330		246	12	8	0.6	3.5	921-038	
470		328					945-1641	
1000		570	16	10		5	945-1650	
2200		960	21	13			945-1668	
3300		1194					945-1676	
4700		1423	26	16	0.8	7.5	945-1684	
10		16	39	11	5	0.5	2	945-1692
22	49		945-1706					
33	56		921-117					
47	76		945-1714					
100	129		12	6.3	2.5		945-1722	
220	225			8	3.5		945-1730	
330	295		11	0.6		5	945-1749	
470	370		13		10		945-1765	
1000	577		21				13	945-1773
2200	1053							945-1781
3300	1586		26		16	0.8	7.5	945-1790
4700	1889		32	16	0.8	7.5	945-1803	
33	25	88	11	5	0.5	2	945-1811	
47		81		6.3			945-1820	
100		137				2.5	945-1838	
220		200		8	0.6	3.5	945-1846	
330		347	13	10		5	945-1854	
470		458	16				945-1862	
1000		505	21				13	945-1870
2200		1234	26					945-1889
3300		1630	32	16	0.8	7.5	945-1897	

Dimensions : Millimetres



MCRH Series

High Temp. Electrolytic Capacitors



Part Numbers

Capacitance (mF)	Voltage (V dc)	Ripple (mA)	Dimensions				Part Number	
			Length	Diameter (D)	Diameter (d)	Pitch		
4.7	35	22	11	5	0.5	2	945-2745	
10		39					945-1900	
22		60					945-1919	
33		72					945-1927	
47		101		6.3		2.5	945-1935	
100		172		8		3.5	945-1943	
220		300	13	10	0.6	5	945-1951	
330		417	14				945-1960	
470		535	21				945-1978	
1000		869					13	945-1986
2200		1362	32	16	0.8	7.5	945-1994	
1		63	12	11	5	0.5	2	945-2001
2.2	20		945-2010					
3.3	27		921-439					
4.7	30		945-2028					
10	50		6.3		2.5		945-2036	
22	85						945-2044	
33	105		12	8	0.6	3.5	945-2052	
47	146					945-2060		
100	285					13	945-2079	
220	460			21		10	5	945-2087
330	551		945-2095					
470	768		26	13		945-2109		
1000	1435		32	16	0.8	7.5	945-2117	
0.47	100		10	11	5	0.5	2	921-543
1			15					921-555
2.2		22	921-567					
3.3		27	921-579					
4.7		36	921-580					
10		61	6.3		2.5		921-592	
22		106	8	0.6	3.5	945-2125		
33		142	13		10	5	921-610	
47		190	16				945-2133	
100		320	21				13	945-2141
220		665	26	16	0.8	7.5	945-2150	
330		702					945-2168	

Dimensions : Millimetres



MCRH Series

High Temp. Electrolytic Capacitors



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