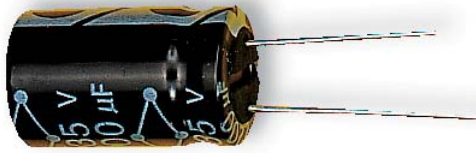


MCRH Series

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	$I \leq 0.01CV$ or $3(\mu A)$ 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 border="1"> <thead> <tr> <th>Working Voltage (V)</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>63</th> <th>100</th> </tr> </thead> <tbody> <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> </tbody> </table> Add 0.02 per 1000μF for more than 1000μF.	Working Voltage (V)	10	16	25	35	63	100	tanδ maximum	0.19	0.16	0.14	0.12	0.10	0.07																																						
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Maximum Permissible Ripple Current	<table border="1"> <thead> <tr> <th rowspan="2">WV (V dc)</th> <th colspan="2">Frequency (Hz)</th> <th rowspan="2">60</th> <th rowspan="2">120</th> <th rowspan="2">1K</th> <th rowspan="2">10K</th> <th rowspan="2">100K</th> </tr> <tr> <th>0.47 - 330</th> <th>470 - 3300</th> </tr> </thead> <tbody> <tr> <td rowspan="2">10 - 35</td> <td>0.47 - 330</td> <td>470 - 3300</td> <td rowspan="2">0.85</td> <td rowspan="2">1</td> <td>1.30</td> <td>1.40</td> <td>1.55</td> </tr> <tr> <td colspan="2">C ≥ 4700</td> <td>0.95</td> <td>1.15</td> <td>1.20</td> <td>1.25</td> </tr> <tr> <td rowspan="3">63 - 100</td> <td>0.47 - 33</td> <td>47 - 220</td> <td rowspan="2">0.75</td> <td rowspan="3">1</td> <td>1.10</td> <td rowspan="2">1.65</td> <td>1.20</td> </tr> <tr> <td>47 - 220</td> <td>C ≥ 330</td> <td>0.80</td> <td>1.55</td> <td>1.60</td> <td>1.80</td> </tr> <tr> <td colspan="2">C ≥ 330</td> <td>0.80</td> <td>1.40</td> <td>1.60</td> <td>1.65</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td></td> <td>1.30</td> <td>1.35</td> <td>1.40</td> </tr> </tbody> </table>	WV (V dc)	Frequency (Hz)		60	120	1K	10K	100K	0.47 - 330	470 - 3300	10 - 35	0.47 - 330	470 - 3300	0.85	1	1.30	1.40	1.55	C ≥ 4700		0.95	1.15	1.20	1.25	63 - 100	0.47 - 33	47 - 220	0.75	1	1.10	1.65	1.20	47 - 220	C ≥ 330	0.80	1.55	1.60	1.80	C ≥ 330		0.80	1.40	1.60	1.65						1.30	1.35	1.40
WV (V dc)	Frequency (Hz)		60	120						1K	10K		100K																																								
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MCRH Series

High Temp. Electrolytic Capacitors



Electrical Specifications

Item	Performance							
Characteristics at Low Temperature (stability at 120Hz)	<table border="1"><thead><tr><th data-bbox="454 448 861 504">Working Voltage (V)</th><th data-bbox="861 448 965 504">10</th><th data-bbox="965 448 1069 504">16</th><th data-bbox="1069 448 1173 504">25</th><th data-bbox="1173 448 1276 504">35</th><th data-bbox="1276 448 1380 504">63</th><th data-bbox="1380 448 1484 504">100</th></tr></thead></table>	Working Voltage (V)	10	16	25	35	63	100
	Working Voltage (V)	10	16	25	35	63	100	
	<table border="1"><tbody><tr><td data-bbox="454 504 861 537">-25°C/ +20°C</td><td data-bbox="861 504 965 537">3</td><td colspan="5" data-bbox="965 504 1484 537">2</td></tr></tbody></table>	-25°C/ +20°C	3	2				
-25°C/ +20°C	3	2						
<table border="1"><tbody><tr><td data-bbox="454 537 861 582">-40°C/+20°C</td><td data-bbox="861 537 965 582">6</td><td data-bbox="965 537 1069 582">4</td><td colspan="4" data-bbox="1069 537 1484 582">3</td></tr></tbody></table>	-40°C/+20°C	6	4	3				
-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.

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	—	—

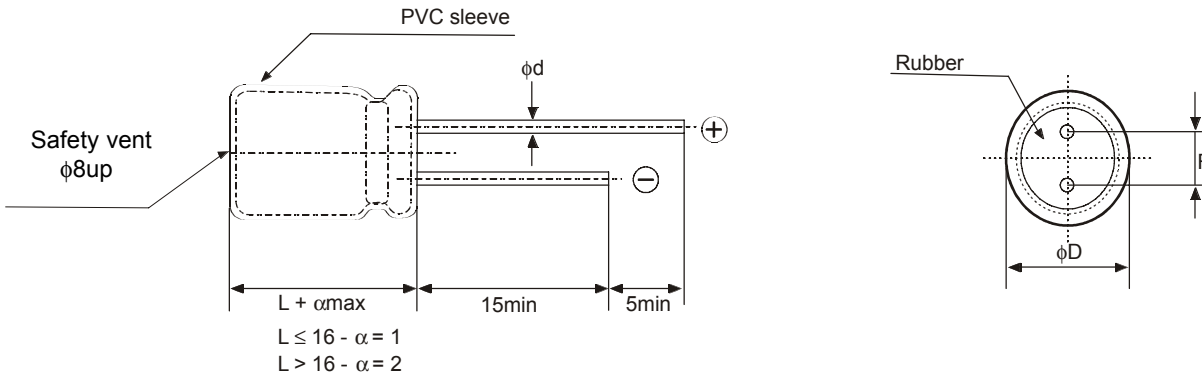


MCRH Series

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	φDiameter x Length					
	10 (13)	16 (20)	25 (32)	35 (44)	63 (79)	100 (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			8 x 11	10 x 13
47	5 x 11	6.3 x 11	6.3 x 11	8 x 11	10 x 13	10 x 16
100						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	
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 (μ F)	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
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	10	0.6	5	945-1749
470	370		13				945-1765
1000	577		21	13	5	945-1773	
2200	1053					945-1781	
3300	1586		26	16	0.8	7.5	945-1790
4700	1889		32				945-1803
33	25	88	11	5	0.5	2	945-1811
47		81					945-1820
100		137		6.3			2.5
220		200	8	3.5	945-1846		
330		347			13	10	0.6
470		458	16	5	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					2.5	945-1935		
100		172					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
2.2	20		945-2010							
3.3	27		921-439							
4.7	30		945-2028							
10	50		945-2036							
22	85		2.5	945-2044						
33	105		3.5	945-2052						
47	146		12	8	0.6	5	945-2060			
100	285		13	10			945-2079			
220	460		21	13			945-2087			
330	551		26	13			945-2095			
470	768		32	16			0.8	7.5	945-2109	
1000	1435		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	2.5					921-592		
22		106	3.5	945-2125						
33		142	13	10	0.6	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



Notes:

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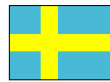
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