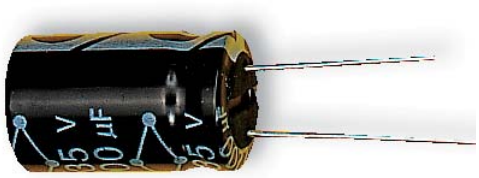
MCRH Series

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\+20ºC)	**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	See table below

WV (V dc) \ Frequency (Hz)		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

Electrical Specifications

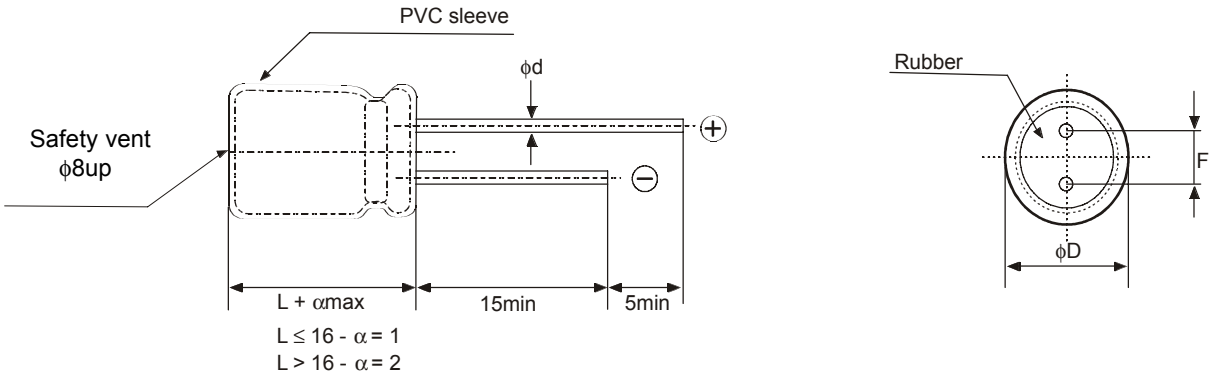
<table>
<tr><th>Item</th><th>Performance</th></tr>
<tr><td>Characteristics at Low Temperature
(stability at 120Hz)</td><td>
<table>
<tr><th>Working Voltage (V)</th><td>10</td><td>16</td><td>25</td><td>35</td><td>63</td><td>100</td></tr>
<tr><th>-25ºC/ +20ºC</th><td>3</td><td colspan="5">2</td></tr>
<tr><th>-40°C/+20°C</th><td>6</td><td>4</td><td colspan="4">3</td></tr>
</table>
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.
</td></tr>
<tr><td>High Temperature Loading</td><td>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.
<table>
<tr><td>Leakage Current</td><td>≤ the initial specified value</td></tr>
<tr><td>Capacitance Change</td><td>≤ ±20% of initial measured value</td></tr>
<tr><td>Dissipation Factor (tanδ)</td><td>≤ 200% of initial specified value</td></tr>
</table>
</td></tr>
<tr><td>Shelf Life</td><td>After storage for 500 hours at +105°C with no voltage applied.
Post test requirements at +20°C.
Same limits for high temperature loading.</td></tr>
</table>

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	—	—

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

ϕDiameter x Length

WV (SV) / μF	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				10 x 13
47	5 x 11			6.3 x 11	8 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	16 x 32
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

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	0.6	3.5	945-1730
330		295	11				945-1749
470		370	13	10		5	945-1765
1000		577	21				945-1773
2200		1053		13			945-1781
3300		1586	26				945-1790
4700		1889	32	16	0.8	7.5	945-1803
33	25	88	11	5	0.5	2	945-1811
47		81					945-1820
100		137		6.3		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

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	0.6	3.5	945-1943
220		300	13	10		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			945-2036
22		85				2.5	945-2044
33		105					945-2052
47		146	12	8	0.6	3.5	945-2060
100		285	13	10		5	945-2079
220		460	21				945-2087
330		551		13			945-2095
470		768	26				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

Notes:

International Sales Offices:

AUSTRALIA – Farnell InOne
Tel No: ++ 61 2 9645 8888
Fax No: ++ 61 2 9644 7898

FINLAND – Farnell InOne
Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411

NETHERLANDS – Farnell InOne
Tel No: ++ 31 30 241 7373
Fax No: ++ 31 30 241 7333

SWITZERLAND – Farnell InOne
Tel No: ++ 41 1 204 64 64
Fax No: ++ 41 1 204 64 54

AUSTRIA – Farnell InOne
Tel No: ++ 43 662 2180 680
Fax No: ++ 43 662 2180 670

FRANCE – Farnell InOne
Tel No: ++ 33 474 68 99 99
Fax No: ++ 33 474 68 99 90

NEW ZEALAND – Farnell InOne
Tel No: ++ 64 9 357 0646
Fax No: ++ 64 9 357 0656

UK – Farnell InOne
Tel No: ++ 44 8701 200 200
Fax No: ++ 44 8701 200 201

BELGIUM – Farnell InOne
Tel No: ++ 32 3 475 2810
Fax No: ++ 32 3 227 3648

GERMANY – Farnell InOne
Tel No: ++ 49 89 61 39 39 39
Fax No: ++ 49 89 613 59 01

NORWAY – Farnell InOne
Tel No: ++ 45 44 53 66 66
Fax No: ++ 45 44 53 66 02

UK – BuckHickman InOne
++ 44 8450 510 150
++ 44 8450 510 130

BRAZIL – Farnell-Newark InOne
Tel No: ++ 55 11 4066 9400
Fax No: ++ 55 11 4066 9410

HONG KONG – Farnell-Newark InOne
Tel No: ++ 852 2268 9888
Fax No: ++ 852 2268 9899

PORTUGAL – Farnell InOne
Tel No: ++ 34 93 475 8804
Fax No: ++ 34 93 474 5288

UK – CPC
++ 44 8701 202 530
++ 44 8701 202 531

CHINA – Farnell-Newark InOne
Tel No: ++86 10 6238 5152
Fax No: ++86 10 6238 5022

IRELAND – Farnell InOne
Tel No: ++ 353 1 830 9277
Fax No: ++ 353 1 830 9016

SINGAPORE – Farnell-Newark InOne
Tel No: ++ 65 6788 0200
Fax No: ++ 65 6788 0300

EXPORT – Farnell InOne
Tel No: ++ 44 8701 200 208
Fax No: ++ 44 8701 200 209
For enquiries from all other markets

DENMARK – Farnell InOne
Tel No: ++ 45 44 53 66 44
Fax No: ++ 45 44 53 66 06

ITALY – Farnell InOne
Tel No: ++ 39 02 93 995 200
Fax No: ++ 39 02 93 995 300

SPAIN – Farnell InOne
Tel No: ++ 34 93 475 8805
Fax No: ++ 34 93 474 5107

http://www.farnellinone.com

http://www.buckhickmaninone.com

http://www.cpc.co.uk

ESTONIA – Farnell InOne
Tel No: ++ 358 9 560 7780
Fax No: ++ 358 9 345 5411

MALAYSIA – Farnell-Newark InOne
Tel No: ++ 60 3 7873 8000
Fax No: ++ 60 3 7873 7000

SWEDEN – Farnell InOne
Tel No: ++ 46 8 730 50 00
Fax No: ++ 46 8 83 52 62