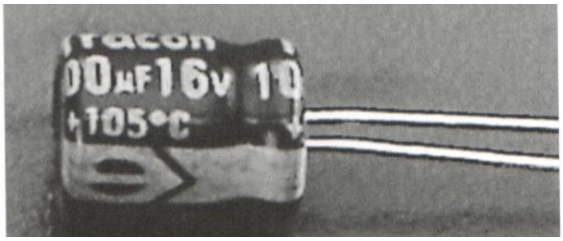
LHR series

Aluminum Electrolytic Capacitors
105℃ / 2000hrs Radial type



◆ Features

» Standard series for general purposes.
» Used in communication equipments, switching power supply
» Safety vent construction design

◆ Part Number

LHR	475	M	500	R	B	-	0611
Series	Capacitance	Tolerance	Voltage	Lead form	package		Size
LHR	0.1uF=104	20%=M	10V=100	Radial=R	Bulk=B		5x11=0511
	4.7uF=475		50V=500	Axial=A	Taping=T		6x11=0611
	47uF=476		100V=101				8X11=0811
							10x12=1012

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◆ Specification

<table>
<tr><th>Test Item</th><th colspan="2">Performance Characteristics</th></tr>
<tr><td>Operating Temperature Range</td><td>-40 to +105℃</td><td>-25 to +105℃</td></tr>
<tr><td>Rated voltage Range</td><td>6.3 to 100 VDC</td><td>160 to 450 VDC</td></tr>
<tr><td>Capacitance Range</td><td>0.1 to 15000uF</td><td>0.47 to 470uF</td></tr>
<tr><td>Capacitance Tolerance</td><td colspan="2">±20%(120Hz, +20℃)</td></tr>
<tr><td>Leakage Current (+20℃, max.)</td><td>I≦0.01 CV or 3(uA) After 1minute whichever is greater measured with rated working voltage applied.</td><td>I≦0.03 CV or 3(uA) After 1minute with rated working voltage applied..</td></tr>
<tr><td>Dissipation Factor (tanδ)</td><td colspan="2">
<table>
<tr><td>Working Voltage (VDC)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr>
<tr><td>D.F.(%)max</td><td>23</td><td>20</td><td>16</td><td>14</td><td>12</td><td>10</td><td>10</td><td>10</td></tr>
</table>
<table>
<tr><td>Working Voltage (VDC)</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr>
<tr><td>D.F.(%)max</td><td>15</td><td>15</td><td>16</td><td>20</td><td>20</td><td>20</td></tr>
</table>
For Capacitance > 1000uF , add 2% per another 1000uF
(+20℃, at 120Hz)
</td></tr>
<tr><td>Low Temperature Characteristics (120Hz)</td><td colspan="2">
<table>
<tr><td>Working Voltage (VDC)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr>
<tr><td>Z-25℃/Z+20℃</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>Z-40℃/Z+20℃</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td></tr>
</table>
<table>
<tr><td>Working Voltage (VDC)</td><td>160</td><td>200</td><td>250</td><td>350</td><td>400</td><td>450</td></tr>
<tr><td>Z-25℃/Z+20℃</td><td>3</td><td>3</td><td>3</td><td>5</td><td>6</td><td>15</td></tr>
</table>
For Capacitance Value 1000uF , add 0.5 per another 1000uF for -25℃/+20℃
add 1 per another 1000uF for -40℃/+20℃
</td></tr>
<tr><td>Load Life</td><td colspan="2">Test conditions
Duration time : 2000Hrs
Ambient temperature:+105℃
Applied voltage: Rated DC working voltage
After test requirements:at+20℃
After test requirements:≦ ±20% of the initial measured value
Dissipation Factor: ≦200% of the initial specified value
Leakage current: ≦The initial specified value</td></tr>
<tr><td>Shelf Life</td><td colspan="2">Test conditions
Duration time :500Hrs
Ambient temperature:+105℃
Applied voltage: None
After test requirements at +20℃: Some limits as Load life.
Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.</td></tr>
</table>

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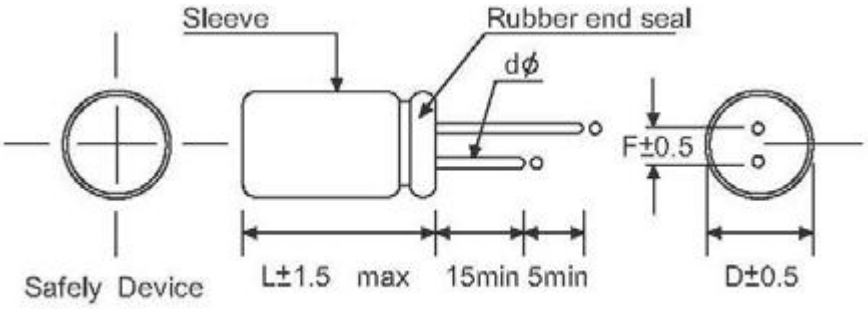
Multiplier for Ripple Current VS, Frequency

CAP (uF) \ HZ		50(60)	120	400	1K	10K	50-100K
Multiplier	CAP≦10	0.8	1.0	1.30	1.45	1.65	1.70
	10<CAP≦100	0.8	1.0	1.23	1.36	1.48	1.53
	100<CAP≦1000	0.8	1.0	1.16	1.25	1.35	1.38
	1000<CAP	0.8	1.0	1.11	1.18	1.25	1.28

Multiplier for Ripple Current VS, Temperature

Temperature (℃)	45	60	70	85	105
Multiplier	2.10	1.90	1.65	1.40	1.00

Diagram of Dimensions: (Unit: mm)



D Ø	5	6.3	8	10	13	16	18	22	25
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10	12
d Ø	0.5			0.6		0.8			1.0
L	L < 20 : ±1.5 mm, L ≥ 20 : +2.0 mm								

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◆ Standard Products Table

Ø D x L (mm)

WV / uF	6.3		10		16		25		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1	-	-	-	-	5x11	9	5x11	9	5x11	11
4.7	-	-	-	-	-	-	5x11	27	5x11	29
6.8	-	-	-	-	-	-	5x11	35	5x11	38
10	-	-	-	-	5x11	38	5x11	40	5x11	42
22	-	-	5x11	50	5x11	56	5x11	60	5x11	62
33	5x11	56	5x11	60	5x11	65	5x11	70	5x11	78
47	5x11	68	5x11	72	5x11	100	5x11	105	5x11 6.3x11	110 115
68	5x11	77	5x11	82	5x11	105	6.3x11	120	6.3x11	140
100	5x11	98	5x11	110	5x11 6.3x11 8x11	115 135 165	5x11 6.3x11 8x11	135 150 175	6.3x11 8x11 8x14	165 180 190
220	5x11 6.3x11	160 180	5x11 6.3x11	170 180	6.3x11 8x11	220 230	6x11 8x11 10x12	230 240 285	8x11 8x14 8x16 8x20 10x12	300 325 330 350 330
330	6.3x11	200	6.3x11 8x11	260 280	8x11	300	8x11 8x14 10x12	350 352 355	10x12 10x15	410 420
470	6.3x11 8x11	280 310	6.3x11 8x11	300 315	8x11 8x14 10x12	380 390 400	8x14 10x12 10x15 10x20	415 445 450 465	8x20 10x12 10x15 10x16 10x17 10x20	500 460 470 460 480 520
560	8x11	320	8x11	330	10x12	410	10x15	460	10x17 13x14	540 500
680	8x11	360	8x11 8x14 10x12	400 410 420	8x14 10x12	470 480	10x12 10x15 10x17	450 520 600	10x20 13x21	550 750
820	8x11	390	10x12	480	10x15	550	10x15	640	10x20	760
1000	8x11 10x12	420 460	8x11 8x14 8x16 10x12 10x15	490 500 530 530 580	8x16 8x20 10x12 10x13 10x15 10x16 10x17 10x20	570 595 580 590 600 560 630 640	10x15 10x17 10x20 13x16 13x21	740 800 680 850 900	10x20 10x25 13x14 13x16 13x20 13x26 16x16	810 870 850 860 810 910 910
1500	10x15	620	10x17	770	10x20	640	13x20	810	13x26	970
2200	10x17 10x20	780 800	10x17 10x20	870 900	10x20 13x16 13x20 13x26	980 980 920 1060	10x25 13x21 13x25 16x16 16x26	1180 1210 1090 1270 1290	13x26 16x21 16x26 16x31 18x16	1260 1290 1300 1400 1280
2700	10x20	850	13x21	920	13x21	1100	16x26	1330	16x31	1500
3300	10x20 13x21	970 1010	10x25 13x21	1110 1160	13x21 13x26 16x16	1220 1240 1220	16x26 16x31 18x17	1480 1540 1450	16x31 16x36 18x36	1620 1680 1720
4700	10x25 13x21	1160 1200	13x21 13x26	1360 1380	13x26 16x26 18x17	1450 1620 1560	16x31	1800	18x36	1900
5600	13x26	1320	16x26	1510	16x31 18x19	1720 1660	16x36	1890	18x36	2000
6800	16x26	1470	16x26 16x31	1680 1800	16x31	1880	18x36	2040	18x41	2090
8200	16x26	1520	16x31	1840	16x36	1950	18x36	2090	22x42	2180
10000	16x26 16x31	1690 1740	16x36 18x36	1900 1980	18x36 18x41	2060 2080	18x41 22x42	2160 2200	18x40 25x44	2200 2300
15000	16x36 18x36	2080 2190	18x36	2230	22x40	2300	22x42	2500	-	-

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Ripple Current(mA,rms)at105℃120Hz

Ø D x L (mm)

WV / uF	50		63		100		160		200	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1	5x11	1.3	5x11	1.3	5x11	1.3	-	-	-	-
0.22	5x11	2.9	5x11	2.9	5x11	2.9	-	-	-	-
0.33	5x11	4.2	5x11	4.2	5x11	4.2	-	-	-	-
0.47	5x11	8	5x11	8	5x11	8	5x11	12	5x11	12
1	5x11	14	5x11	14	5x11	15	5x11	17	6.3x11	17
2.2	5x11	20	5x11	21	5x11 6x11	22 24	6.3x11	26	6.3x11	33
3.3	5x11	26	5x11	28	5x11	30	6.3x11	32	6.3x11	43
4.7	5x11	32	5x11	34	5x11	36	6.3x11 8x11	36 42	8x11	51
6.8	5x11	40	5x11	42	6.3x11	47	8x11	56	10x12	63
10	5x11 6x11	50 55	5x11	51	6.3x11	60	8x11 10x12	75 78	10x12 10x15	83 90
22	5x11	75	5x11 6.3x11	75 85	6.3x11 8x11	98 105	10x15	105	10x20	135
33	5x11 6.3x11	90 95	6.3x11 8x11	105 115	8x11 10x12	145 155	10x20	170	13x21	180
47	6.3x11	120	6.3x11 8x11	145 155	10x12 10x15	170 180	13x21	210	13x21 13x26	220 230
68	8x11	155	8x11	185	10x15 10x17	240 250	13x26	280	16x26	300
100	8x11	200	8x11 10x12	220 240	10x16 10x20	250 270	13x26 16x26	320 330	16x26	360
220	8x16 10x12 10x15 10x17	355 350 360 365	10x17 10x20	400 430	13x26 16x26	530 560	16x36	580	18x36	590
330	10x15 10x17 10x20	435 450 470	10x20 13x21	500 570	16x26	715	18x31	710	18x31 18x36	590 740
470	10x20 13x21	590 610	13x21 13x26 16x26	640 700 720	16x26 16x31	840 860	18x36 18x41	870 880	22x42	890
560	13x21	660	13x26	770	16x36	880	-	-	-	-
680	13x21 13x26	730 770	16x26	880	16x36	920	-	-	-	-
820	13x26	850	16x26	920	18x31	970	-	-	-	-
1000	13x26 16x21 16x26	900 950 1010	16x26 16x36	1150 1220	18x41	1250	-	-	-	-
1500	16x31	1300	18x31	1350	22x42	1500	-	-	-	-
2200	16x26 16x31 18x36	1400 1450 1550	18x36 22x42	1590 2100	25x44	1880	-	-	-	-
2700	18x36	1610	22x42	1720	-	-	-	-	-	-
3300	18x36	1780	22x42	1900	-	-	-	-	-	-
4700	22x36	1950	25x44	2200	-	-	-	-	-	-
5600	25x42	2160	-	-	-	-	-	-	-	-
6800	25x44	2280	-	-	-	-	-	-	-	-
1000	25x42 25x50	2800 3100	-	-	-	-	-	-	-	-

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Ø D x L (mm)

WV / uF	250		350		400		450	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.47	5x11	12	6.3x11	15	6.3x11	15	6.3x11	15
1	6.3x11	17	6.3x11	20	6x11 8x11	20 22	8x11	22
2.2	6x11 8x11	35 36	10x12	39	8x11 10x12	35 39	10x12 10x17	39 50
3.3	8x11	43	10x12	53	10x12 10x15	53 55	10x15 10x20	53 55
4.7	8x11 10x12	48 51	10x12 10x15	63 66	8x11 8x14 10x12 10x15 10x17 10x20	60 63 63 69 70 72	10x20	64
6.8	10x12	70	10x15	79	10x15	85	10x20	75
10	10x15	90	10x20	110	10x12 10x15 10x17 10x20 13x21	98 100 110 112 115	13x21 13x26 16x16	92 98 98
22	10x12 10x20	115 160	13x26	180	13x21 13x26 16x26	170 190	16x26 16x31	175 180
33	13x21 13x26	175 180	16x26	190	13x26 16x16 16x21 16x26	200 200 210 170	16x36	210
47	13x26 16x26	240 260	16x31	250	16x26 16x31 16x36 18x21	280 300 350 270	16x26 16x36	250 280
68	16x26	320	16x31	330	16x31 16x36 18x26	340 355 350	18x31 18x36	320 330
100	16x31	400	18x36	420	18x31 18x36	435 450	18x36 22x30	430 500

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