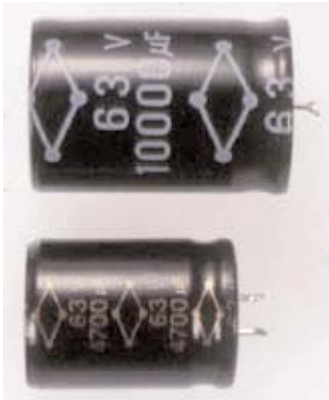


# Electrolytic Capacitors



## HPR Series



### Features:

- Material : Aluminium.
- High temperature snap-In.
- Highly reliable capacitors that has characteristics of high temperature 105°C, and withstand under high ripple current.
- Suitable for filter of industrial equipment, such as automatic machines, computers and switching power supplies.

### Specification Table

No.	Item	Performance																																																			
1	Operating Temperature Range	-40 to +105°C	-25 to +105°C																																																		
2	Rated Working Voltage Range	16 - 100 V dc	250 - 400 V dc																																																		
3	Nominal Capacitance Range	330 - 68,000 µF	33 - 2,200 µF																																																		
4	Capacitance Tolerance	±20% (at +20°C, 120 Hz)																																																			
5	Leakage Current	I = 0.02 CV or 3,000 (µA) Max. Whichever is greater after 3 mins. I : Leakage Current (µA) C : Rated Capacitance (µF) V : Working Voltage (v)																																																			
6	Dissipation Factor (tan δ) (120 Hz / +20°C)	<table border="1"> <thead> <tr> <th>W V µF</th> <th>16</th> <th>25 - 35</th> <th>50 - 63</th> <th>100</th> <th>250</th> <th>400</th> </tr> </thead> <tbody> <tr> <td>33 - 470</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td rowspan="2">0.15</td> <td rowspan="2">0.2</td> </tr> <tr> <td>560 - 3,300</td> <td>0.25</td> <td>0.2</td> <td>0.2</td> <td>0.2</td> </tr> <tr> <td>4,700 - 6,800</td> <td>0.35</td> <td>0.3</td> <td rowspan="2">0.3</td> <td>0.25</td> <td>-</td> <td>-</td> </tr> <tr> <td>10,000 - 22,000</td> <td>0.4</td> <td>0.35</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>27,000 - 47,000</td> <td>0.45</td> <td>0.4</td> <td>0.35</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>56,000 - 68,000</td> <td>0.5</td> <td>0.45</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table> <p>Less than the value under table</p>						W V µF	16	25 - 35	50 - 63	100	250	400	33 - 470	-	-	-	-	0.15	0.2	560 - 3,300	0.25	0.2	0.2	0.2	4,700 - 6,800	0.35	0.3	0.3	0.25	-	-	10,000 - 22,000	0.4	0.35	-	-	-	27,000 - 47,000	0.45	0.4	0.35	-	-	-	56,000 - 68,000	0.5	0.45	-	-	-	-
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7	Characteristics at Low Temperature (Stability at 120 Hz)	<table border="1"> <thead> <tr> <th>Working Voltage (V)</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>250</th> <th>400</th> </tr> </thead> <tbody> <tr> <td>-25°C / +25°C</td> <td>6</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>4</td> <td>4</td> <td>4</td> </tr> <tr> <td>-40°C / +25°C</td> <td>15</td> <td>10</td> <td>8</td> <td>6</td> <td>6</td> <td>6</td> <td>-</td> <td>-</td> </tr> </tbody> </table>								Working Voltage (V)	16	25	35	50	63	100	250	400	-25°C / +25°C	6	6	4	3	3	4	4	4	-40°C / +25°C	15	10	8	6	6	6	-	-																	
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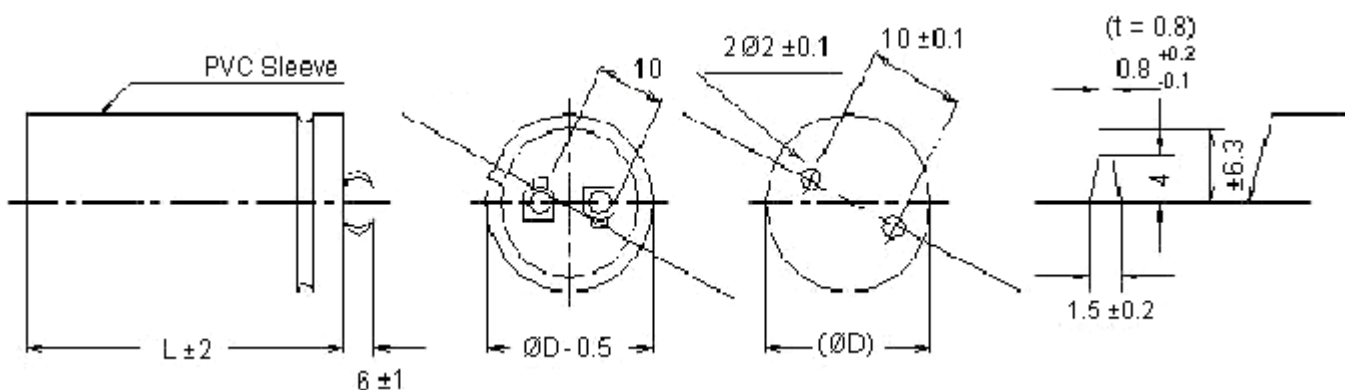
# Electrolytic Capacitors

## HPR Series

### Specification Table

No.	Item	Performance																																												
8	Ripple Current	<p>Refer to standard products table (120 Hz, +105°C). Correction factor for frequency.</p> <table border="1"> <thead> <tr> <th>Ambient Temperature</th> <th>Multiplying Factor</th> </tr> </thead> <tbody> <tr> <td>45°C and under</td> <td>2.55</td> </tr> <tr> <td>60°C</td> <td>2.25</td> </tr> <tr> <td>70°C</td> <td>1.8</td> </tr> <tr> <td>105°C</td> <td>1</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Frequency</th> <th colspan="4">Multiplying Factor</th> </tr> <tr> <th>16 - 50 V</th> <th>63 - 100 V</th> <th>250 V</th> <th>400 V</th> </tr> </thead> <tbody> <tr> <td>60 Hz</td> <td>0.9</td> <td>0.85</td> <td>0.8</td> <td>0.9</td> </tr> <tr> <td>120 Hz</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>300 Hz</td> <td>1.03</td> <td>1.07</td> <td>1.15</td> <td>1.1</td> </tr> <tr> <td>1 kHz</td> <td>1.05</td> <td>1.13</td> <td>1.25</td> <td>1.2</td> </tr> <tr> <td>10 kHz</td> <td>1.1</td> <td>1.19</td> <td>1.35</td> <td>1.3</td> </tr> </tbody> </table>	Ambient Temperature	Multiplying Factor	45°C and under	2.55	60°C	2.25	70°C	1.8	105°C	1	Frequency	Multiplying Factor				16 - 50 V	63 - 100 V	250 V	400 V	60 Hz	0.9	0.85	0.8	0.9	120 Hz	1	1	1	1	300 Hz	1.03	1.07	1.15	1.1	1 kHz	1.05	1.13	1.25	1.2	10 kHz	1.1	1.19	1.35	1.3
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9	High Temperature Loading	<p>After 2,000 hours application of DC rated working voltage at +105°C, The capacitor shall meet the following limits: Post test requirements at +20°C.</p> <table border="1"> <tbody> <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 (tan δ)</td> <td>≤ 200% of initial specified value</td> </tr> </tbody> </table>	Leakage current	≤ the initial specified value	Capacitance change	≤ ±20% of initial measured value	Dissipation factor (tan δ)	≤ 200% of initial specified value																																						
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10	Shelf Life	<p>After storage for 500 hours at +105°C with no voltage applied. Post test requirements at +20°C. same limits as high temperature loading.</p>																																												

### Diagram of Dimensions



Dimensions : Millimetres

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size : ØD × L (mm))  
**Maximum Ripple Current : A (rms)**

W V	Capacitors (µF)	Case Size	R C
16 (20)	3,300	22 × 25	0.98
	4,700	22 × 30	1.3
		25 × 25	1.1
	6,800	22 × 40	1.7
		25 × 25	1.5
	8,200	22 × 30	2
		22 × 45	2.7
	10,000	22 × 31	2.33
		25 × 26	2.1
	12,000	22 × 40	2.9
		25 × 31	2.7
	15,000	22 × 45	3.2
		25 × 41	3.1
	18,000	22 × 51	2.93
		25 × 46	2.8
	22,000	25 × 46	3.4
		30 × 36	3.2
	27,000	25 × 51	3.59
		30 × 41	3.4
	33,000	30 × 45	4.1
35 × 40		4	
39,000	22 × 51	4.8	
	35 × 42	4.6	
47,000	35 × 47	5.3	
56,000	35 × 52	5.9	
25 (32)	2,200	22 × 26	0.86
	3,300	22 × 31	1.25
		25 × 26	1.1
	4,700	22 × 40	1.6
		25 × 31	1.45
	5,600	22 × 31	1.9
	6,800	22 × 31	2.2
		25 × 26	2

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size :  $\varnothing D \times L$  (mm))  
Maximum Ripple Current : A (rms)

W V	Capacitors ( $\mu$ F)	Case Size	R C
25 (32)	8,200	22 $\times$ 40	2.7
		25 $\times$ 31	2.5
	10,000	22 $\times$ 41	2.9
		25 $\times$ 36	2.7
	12,000	22 $\times$ 45	3.4
		25 $\times$ 41	3.2
	15,000	25 $\times$ 45	3.8
		30 $\times$ 36	3.7
	18,000	25 $\times$ 51	4.2
		30 $\times$ 41	4
	22,000	30 $\times$ 50	4.3
		35 $\times$ 37	4
	27,000	35 $\times$ 45	4.6
		40 $\times$ 40	4.3
33,000	35 $\times$ 50	5.1	
35 (44)	1,500	22 $\times$ 26	1.1
	2,200	22 $\times$ 25	1.2
		25 $\times$ 25	1.1
	3,300	22 $\times$ 25	1.6
		25 $\times$ 25	1.8
	3,900	22 $\times$ 31	1.86
	4,700	22 $\times$ 36	2.1
		25 $\times$ 26	2
	5,600	22 $\times$ 36	2.5
		25 $\times$ 31	2.3
	6,800	22 $\times$ 40	2.7
		25 $\times$ 36	2.5
	8,200	22 $\times$ 51	3
		25 $\times$ 41	2.9
	10,000	25 $\times$ 41	3.4
		30 $\times$ 36	3.2
	12,000	25 $\times$ 50	3.7
		30 $\times$ 41	3.5

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size : ØD × L (mm))  
**Maximum Ripple Current : A (rms)**

W V	Capacitors (µF)	Case Size	R C	
35 (44)	15,000	30 × 45	4.1	
		35 × 40	3.9	
	18,000	35 × 42	4.3	
		40 × 40	3.8	
	22,000	35 × 52	4.6	
		40 × 40	4.3	
50 (63)	1,000	22 × 26	0.7	
	1,500	22 × 25	0.9	
		22 × 31	1.1	
	1,800	22 × 26	1.3	
	2,200	22 × 31	1.4	
		25 × 25	1.3	
	2,700	22 × 36	1.7	
		25 × 25	1.6	
	3,300	22 × 35	1.9	
		25 × 31	1.75	
	3,900	22 × 41	2.2	
		30 × 26	1.95	
	4,700	22 × 46	2.5	
		25 × 40	2.3	
	5,600	22 × 51	2.6	
		25 × 41	2.48	
	6,800	25 × 51	2.72	
		30 × 41	2.6	
	8,200	30 × 41	3	
		35 × 35	2.9	
	10,000	30 × 51	3.5	
		35 × 42	3.4	
	63 (79)	1,000	22 × 31	0.7
			25 × 25	0.65
1,200		20 × 30	0.95	
		22 × 26	0.82	
1,500		22 × 31	0.92	

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size : ØD × L (mm))  
**Maximum Ripple Current : A (rms)**

W V	Capacitors (µF)	Case Size	R C
63 (79)	1,500	25 × 31	0.8
	2,200	22 × 36	1.4
		25 × 31	1.3
	2,700	22 × 41	1.8
		25 × 36	1.6
	3,300	22 × 51	2.1
		25 × 41	2
	3,900	25 × 46	2.6
		30 × 36	2.5
	4,700	25 × 41	2.8
		30 × 41	2.8
	5,600	25 × 46	3.3
		30 × 41	3.1
	6,800	30 × 51	4
35 × 42		3.8	
8,200	35 × 47	4.2	
	40 × 40	3.99	
10,000	35 × 50	4.8	
100 (125)	330	22 × 26	0.45
	470	22 × 26	0.66
		22 × 31	0.85
	560	22 × 26	0.8
	680	22 × 41	0.9
		25 × 31	0.8
	820	22 × 41	1.1
		25 × 31	1
	1,000	22 × 36	1.2
		25 × 31	1.1
	1,200	22 × 41	1.4
		25 × 36	1.2
	1,500	22 × 46	1.6
		25 × 41	1.4
1,800	22 × 46	2.2	

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size : ØD × L (mm))  
**Maximum Ripple Current : A (rms)**

W V	Capacitors (µF)	Case Size	R C
100 (125)	1,800	25 × 41	2
	2,200	25 × 41	2.77
		35 × 30	2.5
	2,700	30 × 46	3.5
		35 × 37	3.4
	3,300	30 × 51	3.9
		35 × 42	3.75
3,900	35 × 46	4.2	
4,700	35 × 52	4.53	
250 (300)	100	22 X 31	0.37
		25 X 26	0.35
	120	22 X 25	0.37
	150	22 X 41	0.5
		25 X 31	0.45
	180	22 X 31	0.58
		25 X 26	0.55
	220	22 X 31	0.67
		25 X 26	0.65
	270	22 X 36	0.85
		25 X 31	0.75
	330	22 X 40	0.95
		25 X 36	0.9
	390	22 X 46	1.1
		25 X 36	1
	470	22 X 50	1.2
		25 X 41	1.1
	560	25 X 51	1.4
		30 X 36	1.3
	680	30 X 46	1.6
35 X 37		1.5	
820	30 X 51	1.7	
	35 X 42	1.6	
1,000	35 X 47	1.78	

# Electrolytic Capacitors



## HPR Series

**Case Size Table and Permissible Ripple Current** (Case Size : ØD × L (mm))  
Maximum Ripple Current : A (rms)

W V	Capacitors (µF)	Case Size	R C
400 (450)	47	22 × 25	0.47
		25 × 25	0.42
	56	22 × 26	0.57
	68	22 × 25	0.6
	82	22 × 25	0.69
	100	22 × 30	0.68
		25 × 25	0.65
	120	22 × 30	0.75
	150	22 × 50	0.82
		25 × 41	0.8
	180	25 × 50	0.95
		30 × 36	0.88
	220	25 × 50	1.1
		30 × 41	1
	270	30 × 46	1.1
		35 × 37	1.08
	330	30 × 50	1.2
		35 × 30	1.1
390	35 × 47	1.28	
470	35 × 52	1.34	

### Part Number Table

Description	Part Number
Capacitor, 3300uF, 16V	MCHPR16V338M22X25
Capacitor, 4700uF, 16V	MCHPR16V478M22X25
Capacitor, 6800uF, 16V	MCHPR16V688M22X25
Capacitor, 8200uF, 16V	MCHPR16V828M22X30
Capacitor, 10000uF, 16V	MCHPR16V109M22X32
Capacitor, 12000uF, 16V	MCHPR16V129M22X35
Capacitor, 15000uF, 16V	MCHPR16V159M22X36
Capacitor, 18000uF, 16V	MCHPR16V189M25X35
Capacitor, 22000uF, 16V	MCHPR16V229M22X41
Capacitor, 27000uF, 16V	MCHPR16V279M30X31

Description	Part Number
Capacitor, 33000uF, 16V	MCHPR16V339M30X45
Capacitor, 39000uF, 16V	MCHPR16V399M30X50
Capacitor, 47000uF, 16V	MCHPR16V479M35X50
Capacitor, 56000uF, 16V	MCHPR16V569M35X55
Capacitor, 2200uF, 25V	MCHPR25V228M22X26
Capacitor, 3300uF, 25V	MCHPR25V338M22X26
Capacitor, 4700uF, 25V	MCHPR25V478M22X26
Capacitor, 5600uF, 25V	MCHPR25V568M22X31
Capacitor, 6800uF, 25V	MCHPR25V688M22X31
Capacitor, 8200uF, 25V	MCHPR25V828M22X35



# Electrolytic Capacitors



## HPR Series

### Part Number Table

Description	Part Number
Capacitor, 10000uF, 25V	MCHPR25V109M25X31
Capacitor, 12000uF, 25V	MCHPR25V129M25X31
Capacitor, 15000uF, 25V	MCHPR25V159M30X36
Capacitor, 18000uF, 25V	MCHPR25V189M25X41
Capacitor, 22000uF, 25V	MCHPR25V229M30X45
Capacitor, 27000uF, 25V	MCHPR25V279M30X45
Capacitor, 33000uF, 25V	MCHPR25V339M30X51
Capacitor, 1500uF, 35V	MCHPR35V158M22X26
Capacitor, 2200uF, 35V	MCHPR35V228M22X26
Capacitor, 3300uF, 35V	MCHPR35V338M22X26
Capacitor, 3900uF, 35V	MCHPR35V398M22X31
Capacitor, 4700uF, 35V	MCHPR35V478M22X32
Capacitor, 5600uF, 35V	MCHPR35V568M22X36
Capacitor, 6800uF, 35V	MCHPR35V688M25X31
Capacitor, 8200uF, 35V	MCHPR35V828M22X41
Capacitor, 10000uF, 35V	MCHPR35V109M25X32
Capacitor, 12000uF, 35V	MCHPR35V129M25X51
Capacitor, 15000uF, 35V	MCHPR35V159M30X45
Capacitor, 18000uF, 35V	MCHPR35V189M30X50
Capacitor, 22000uF, 35V	MCHPR35V229M35X46
Capacitor, 1000uF, 50V	MCHPR50V108M22X26
Capacitor, 1500uF, 50V	MCHPR50V158M22X26
Capacitor, 1800uF, 50V	MCHPR50V188M22X26
Capacitor, 2200uF, 50V	MCHPR50V228M22X26
Capacitor, 2700uF, 50V	MCHPR50V278M22X31
Capacitor, 3300uF, 50V	MCHPR50V338M25X30
Capacitor, 3900uF, 50V	MCHPR50V398M25X32
Capacitor, 4700uF, 50V	MCHPR50V478M25X32
Capacitor, 5600uF, 50V	MCHPR50V568M25X35
Capacitor, 6800uF, 50V	MCHPR50V688M25X41
Capacitor, 8200uF, 50V	MCHPR50V828M25X50
Capacitor, 10000uF, 50V	MCHPR50V109M35X42
Capacitor, 1000uF, 63V	MCHPR63V108M22X25
Capacitor, 1200uF, 63V	MCHPR63V128M22X25

Description	Part Number
Capacitor, 1500uF, 63V	MCHPR63V158M22X31
Capacitor, 2200uF, 63V	MCHPR63V228M25X26
Capacitor, 2700uF, 63V	MCHPR63V278M25X26
Capacitor, 3300uF, 63V	MCHPR63V338M25X26
Capacitor, 3900uF, 63V	MCHPR63V398M25X41
Capacitor, 4700uF, 63V	MCHPR63V478M25X41
Capacitor, 5600uF, 63V	MCHPR63V568M30X41
Capacitor, 6800uF, 63V	MCHPR63V688M30X41
Capacitor, 8200uF, 63V	MCHPR63V828M30X51
Capacitor, 10000uF, 63V	MCHPR63V109M30X51
Capacitor, 330uF, 100V	MCHPR100V337M22X26
Capacitor, 470uF, 100V	MCHPR100V477M22X26
Capacitor, 560uF, 100V	MCHPR100V567M22X26
Capacitor, 680uF, 100V	MCHPR100V687M22X26
Capacitor, 820uF, 100V	MCHPR100V827M25X31
Capacitor, 1000uF, 100V	MCHPR100V108M22X32
Capacitor, 1200uF, 100V	MCHPR100V128M25X36
Capacitor, 1500uF, 100V	MCHPR100V158M25X41
Capacitor, 1800uF, 100V	MCHPR100V188M25X41
Capacitor, 2200uF, 100V	MCHPR100V228M25X46
Capacitor, 2700uF, 100V	MCHPR100V278M35X37
Capacitor, 3300uF, 100V	MCHPR100V338M35X45
Capacitor, 3900uF, 100V	MCHPR100V398M35X46
Capacitor, 4700uF, 100V	MCHPR100V478M35X52
Capacitor, 100uF, 250V	MCHPR250V107M22X25
Capacitor, 120uF, 250V	MCHPR250V127M22X25
Capacitor, 150uF, 250V	MCHPR250V157M22X26
Capacitor, 180uF, 250V	MCHPR250V187M25X26
Capacitor, 220uF, 250V	MCHPR250V227M22X32
Capacitor, 270uF, 250V	MCHPR250V277M22X32
Capacitor, 330uF, 250V	MCHPR250V337M22X41
Capacitor, 390uF, 250V	MCHPR250V397M25X36
Capacitor, 470uF, 250V	MCHPR250V477M25X41
Capacitor, 560uF, 250V	MCHPR250V567M25X51

# Electrolytic Capacitors



## HPR Series

### Part Number Table

Description	Part Number
Capacitor, 680uF, 250V	MCHPR250V687M30X45
Capacitor, 820uF, 250V	MCHPR250V827M35X45
Capacitor, 1000uF, 250V	MCHPR250V108M35X47
Capacitor, 47uF, 400V	MCHPR400V476M22X25
Capacitor, 56uF, 400V	MCHPR400V566M22X25
Capacitor, 68uF, 400V	MCHPR400V686M22X25
Capacitor, 82uF, 400V	MCHPR400V826M25X25
Capacitor, 100uF, 400V	MCHPR400V107M22X32
Capacitor, 120uF, 400V	MCHPR400V127M25X30
Capacitor, 150uF, 400V	MCHPR400V157M25X35
Capacitor, 180uF, 400V	MCHPR400V187M25X35
Capacitor, 220uF, 400V	MCHPR400V227M25X41
Capacitor, 270uF, 400V	MCHPR400V277M25X46
Capacitor, 330uF, 400V	MCHPR400V337M30X41
Capacitor, 390uF, 400V	MCHPR400V397M35X47
Capacitor, 470uF, 400V	MCHPR400V477M35X51

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