

# SNAP-IN TYPE ALUMINUM ELECTROLYTIC CAPACITORS

## HP3 Series (Warranty of 2,000 hours at 85°C)

### Features

- Rendered about 20% to 30% smaller than the preceding HPR and HFR type predecessor thanks to etching foil magnification increase.



### Product Specifications

Items	Specifications
Temperature range	-40°C ~ +85°C
Capacitance tolerance	±20% (20°C, 120Hz)
Rated voltage	16 ~ 450V.DC
Leakage current	0.02CV (µA) or 3mA, whichever is smaller or less [C = nominal capacitance (µF), V = rated voltage (V)]
Dissipation factor	Less than the value specified in the standard products table. (20°C, 120Hz)
Permissible ripple current	As specified in the standard products table. (85°C, 120Hz)
High temp. Load life test	After 85°C, 2000h, rated voltage (specified ripple current superposition) application Capacitance variation : Initial value ±15% Dissipation factor : 175% of less of specified initial value Leakage current : Not greater than the specified initial value
Others	JIS C 5101-4.

### Ripple current correction coefficient

Temperature (°C)	40	60	70	85	
Correction coefficient	1.8	1.4	1.2	1.0	
Frequency (Hz)	50/60	120	300	1K	≥10K
Correction coefficient	0.7	1.0	1.1	1.2	1.2
	16-100V	0.7	1.0	1.1	1.2
	160-450V	0.7	1.0	1.1	1.3
					1.4

A continuous load should be avoided over 10 A at the terminal in accordance with the permissible current.

Product symbol : (Example) HP3 Series 16V 10,000µF ±20%

**HP3 1C 103 M R X**

HP3 1C 103 M R X  
 HP3: Type of series  
 1C: Rated voltage code  
 103: Capacitance code  
 M: Terminal symbol code  
 R: Case dia code  
 X: Type of series

Case dia code

øD	Code
22	X
25	Y
30	Z
35	A
40	B

Refer to page (54) for other terminal shape available on request (ex. short terminals 4mm ± 1mm length)

### Standard value and case size

Rated Voltage V. DC	Capacitance (µF)	Case size øDXL(mm)	tanδ 20°C, 120Hz	Ripple current (Arms) 85°C, 120Hz	Product name
16V(1C)	6800	22×25	0.50	1.78	HP31C682MRX
		22×30	0.50	1.94	HP31C103MRX
	10000	25×25	0.50	1.92	HP31C103MRY
		22×40	0.50	2.65	HP31C153MRX
		25×30	0.50	2.52	HP31C153MRY
	15000	30×25	0.50	2.52	HP31C153MRZ
		25×45	0.50	3.52	HP31C223MRY
		30×30	0.50	3.23	HP31C223MRZ
	22000	35×25	0.50	3.23	HP31C223MRA
		30×45	0.50	4.28	HP31C333MRZ
	33000	35×35	0.50	4.12	HP31C333MRA

Rated Voltage V. DC	Capacitance (µF)	Case size øDXL(mm)	tanδ 20°C, 120Hz	Ripple current (Arms) 85°C, 120Hz	Product name
25V(1E)	4700	22×25	0.40	1.48	HP31E472MRX
		22×30	0.40	1.89	HP31E682MRX
	6800	25×25	0.40	1.87	HP31E682MRY
		22×35	0.40	2.06	HP31E103MRX
		25×30	0.40	2.06	HP31E103MRY
	10000	30×25	0.40	2.06	HP31E103MRZ
		22×45	0.40	2.78	HP31E153MRX
		25×35	0.40	2.67	HP31E153MRY
	15000	30×30	0.40	2.67	HP31E153MRZ
		35×25	0.40	2.67	HP31E153MRA
		25×45	0.40	3.52	HP31E223MRY
	22000	30×35	0.40	3.41	HP31E223MRZ
		35×30	0.40	3.41	HP31E223MRA
	33000	30×50	0.40	4.45	HP31E333MRZ
		35×40	0.40	4.31	HP31E333MRA

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Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
35V(1V)	3300	22×25	0.35	1.38	HP31V332MRX
		22×30	0.35	1.57	HP31V472MRX
		25×25	0.35	1.56	HP31V472MRY
	4700	22×35	0.35	2.01	HP31V682MRX
		25×30	0.35	2.01	HP31V682MRY
		30×25	0.35	2.01	HP31V682MRZ
	6800	22×45	0.35	2.27	HP31V103MRX
		25×35	0.35	2.18	HP31V103MRY
		30×30	0.35	2.18	HP31V103MRZ
		35×25	0.35	2.18	HP31V103MRA
	10000	25×50	0.35	3.03	HP31V153MRY
		30×35	0.35	2.82	HP31V153MRZ
		35×30	0.35	2.82	HP31V153MRA
	22000	30×45	0.35	3.73	HP31V223MRZ
35×40		0.35	3.76	HP31V223MRA	
33000	35×50	0.40	4.67	HP31V333MRA	

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
50V(1H)	2200	22×25	0.30	1.13	HP31H222MRX
		22×30	0.30	1.47	HP31H332MRX
		25×25	0.30	1.46	HP31H332MRY
	3300	22×35	0.30	1.67	HP31H472MRX
		25×30	0.30	1.67	HP31H472MRY
		30×25	0.30	1.67	HP31H472MRZ
	4700	22×50	0.30	2.31	HP31H682MRX
		25×40	0.30	2.21	HP31H682MRY
		30×30	0.30	2.13	HP31H682MRZ
		35×25	0.30	2.13	HP31H682MRA
	6800	25×50	0.35	2.48	HP31H103MRY
		30×35	0.35	2.30	HP31H103MRZ
		35×30	0.35	2.30	HP31H103MRA
	10000	30×50	0.35	3.21	HP31H153MRZ
		35×40	0.35	3.10	HP31H153MRA

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
63V(1J)	1500	22×25	0.25	1.08	HP31J152MRX
		22×30	0.25	1.20	HP31J222MRX
		25×25	0.25	1.19	HP31J222MRY
	2200	22×35	0.25	1.56	HP31J332MRX
		25×30	0.25	1.56	HP31J332MRY
		30×25	0.25	1.56	HP31J332MRZ
	3300	22×45	0.25	1.84	HP31J472MRX
		25×35	0.25	1.77	HP31J472MRY
		30×30	0.25	1.77	HP31J472MRZ
		35×25	0.25	1.77	HP31J472MRA
	4700	25×50	0.25	2.42	HP31J682MRY
		30×35	0.25	2.25	HP31J682MRZ
		35×30	0.25	2.25	HP31J682MRA
	6800	30×45	0.35	2.52	HP31J103MRZ
		35×40	0.35	2.53	HP31J103MRA
	10000	35×50	0.35	3.36	HP31J153MRA

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
80V(1K)	1000	22×25	0.20	0.88	HP31K102MRX
		22×30	0.20	1.15	HP31K152MRX
		25×25	0.20	1.13	HP31K152MRY
	1500	22×40	0.20	1.34	HP31K222MRX
		25×30	0.20	1.28	HP31K222MRY
		30×25	0.20	1.28	HP31K222MRZ
	2200	22×50	0.25	1.80	HP31K332MRX
		25×40	0.25	1.72	HP31K332MRY
		30×30	0.25	1.65	HP31K332MRZ
		35×25	0.25	1.65	HP31K332MRA
	3300	25×50	0.25	2.01	HP31K472MRY
		30×40	0.25	1.96	HP31K472MRZ
		35×30	0.25	1.87	HP31K472MRA
	4700	30×50	0.25	2.56	HP31K682MRZ
		35×40	0.25	2.47	HP31K682MRA

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
100V(2A)	1000	22×30	0.20	0.94	HP32A102MRX
		25×25	0.20	0.93	HP32A102MRY
	1500	22×35	0.20	1.22	HP32A152MRX
		25×30	0.20	1.22	HP32A152MRY
		30×25	0.20	1.22	HP32A152MRZ
	2200	22×50	0.20	1.47	HP32A222MRX
		25×40	0.20	1.41	HP32A222MRY
		30×30	0.20	1.35	HP32A222MRZ
		35×25	0.20	1.35	HP32A222MRA
	3300	25×50	0.20	1.88	HP32A332MRY
		30×40	0.20	1.83	HP32A332MRZ
		35×30	0.20	1.75	HP32A332MRA
	4700	30×50	0.25	2.12	HP32A472MRZ
		35×40	0.25	2.05	HP32A472MRA
	6800	35×50	0.25	2.68	HP32A682MRA

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
160V(2C)	390	22×25	0.15	1.86	HP32C391MRX
		22×30	0.15	1.76	HP32C471MRX
	470	25×25	0.15	1.74	HP32C471MRY
		22×35	0.15	2.03	HP32C561MRX
	560	25×30	0.15	2.02	HP32C561MRY
		22×40	0.15	2.36	HP32C681MRX
	680	25×30	0.15	2.24	HP32C681MRY
		30×25	0.15	2.24	HP32C681MRZ
		22×45	0.15	2.72	HP32C821MRX
	820	25×35	0.15	2.61	HP32C821MRY
		30×30	0.15	2.61	HP32C821MRZ
	1000	22×50	0.15	3.13	HP32C102MRX
		25×40	0.15	3.00	HP32C102MRY
		30×30	0.15	2.88	HP32C102MRZ
		35×25	0.15	2.88	HP32C102MRA
	1200	25×45	0.15	3.44	HP32C122MRY
		30×35	0.15	3.34	HP32C122MRZ
		35×30	0.15	3.34	HP32C122MRA
	1500	30×40	0.15	3.91	HP32C152MRZ
		35×35	0.15	3.96	HP32C152MRA
	1800	30×45	0.15	4.47	HP32C182MRZ
		35×35	0.15	4.34	HP32C182MRA

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Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
180V(2P)	330	22×25	0.15	1.38	HP32P331MRX
		22×30	0.15	1.60	HP32P391MRX
	390	25×25	0.15	1.58	HP32P391MRY
		22×30	0.15	1.76	HP32P471MRX
	470	25×25	0.15	1.74	HP32P471MRY
		22×35	0.15	2.03	HP32P561MRX
	560	25×30	0.15	2.03	HP32P561MRY
			30×25	0.15	2.03
		22×40	0.15	2.36	HP32P681MRX
	680	25×35	0.15	2.35	HP32P681MRY
			30×25	0.15	2.24
		22×45	0.15	2.72	HP32P821MRX
	820	25×40	0.15	2.72	HP32P821MRY
			30×30	0.15	2.61
		35×25	0.15	2.61	HP32P821MRA
			25×45	0.15	3.14
	1000	30×35	0.15	3.04	HP32P102MRZ
			35×25	0.15	2.88
		25×50	0.15	3.59	HP32P122MRY
	1200	30×40	0.15	3.49	HP32P122MRZ
35×30			0.15	3.34	HP32P122MRA
30×45		0.15	4.08	HP32P152MRZ	
1500	35×35	0.15	3.96	HP32P152MRA	
		35×40	0.15	4.50	HP32P182MRA
1800	40×36	0.15	4.56	HP32P182MSB	

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
200V(2D)	220	22×25	0.15	1.36	HP32D221MRX
		22×30	0.15	1.50	HP32D271MRX
	270	22×25	0.15	1.58	HP32D271MRY
		22×30	0.15	1.76	HP32D331MRX
	330	25×25	0.15	1.89	HP32D331MRY
			22×30	0.15	1.92
	390	25×25	0.15	1.90	HP32D391MRY
			22×35	0.15	2.23
	470	25×30	0.15	2.23	HP32D471MRY
			30×25	0.15	2.23
		22×40	0.15	2.57	HP32D561MRX
	560	25×35	0.15	2.57	HP32D561MRY
			30×25	0.15	2.44
		22×45	0.15	2.98	HP32D681MRX
	680	25×35	0.15	2.86	HP32D681MRY
			30×30	0.15	2.86
		35×25	0.15	2.86	HP32D681MRA
			25×40	0.15	3.26
	820	30×30	0.15	3.13	HP32D821MRZ
			35×25	0.15	3.13
		25×50	0.15	3.92	HP32D102MRY
	1000	30×35	0.15	3.64	HP32D102MRZ
			35×30	0.15	3.66
		30×40	0.15	4.19	HP32D122MRZ
	1200	35×35	0.15	4.25	HP32D122MRA
			35×40	0.15	4.93
	1500	40×36	0.15	4.99	HP32D152MSB
			35×40	0.15	5.84
	1800	40×41	0.15	5.66	HP32D182MSB

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
250V(2E)	220	22×25	0.15	1.36	HP32E221MRX
		22×30	0.15	1.60	HP32E271MRX
	270	25×25	0.15	1.58	HP32E271MRY
		22×35	0.15	1.87	HP32E331MRX
	330	25×30	0.15	1.86	HP32E331MRY
			22×35	0.15	2.04
	390	25×30	0.15	2.04	HP32E391MRY
			30×25	0.15	2.04
		22×40	0.15	2.35	HP32E471MRX
	470	25×35	0.15	2.35	HP32E471MRY
			30×25	0.15	2.24
		35×25	0.15	2.38	HP32E471MRA
	560	22×50	0.15	2.81	HP32E561MRX
			25×40	0.15	2.69
		30×30	0.15	2.59	HP32E561MRZ
			35×25	0.15	2.59
	680	25×45	0.15	3.11	HP32E681MRY
			30×35	0.15	3.01
		35×30	0.15	3.01	HP32E681MRA
	820	25×50	0.15	3.55	HP32E821MRY
			30×40	0.15	3.47
		35×30	0.15	3.31	HP32E821MRA
	1000	30×45	0.15	4.00	HP32E102MRZ
			35×35	0.15	3.88
	1200	30×50	0.15	4.55	HP32E122MRZ
			35×40	0.15	4.40
		40×36	0.15	4.46	HP32E122MSB
	1500	35×50	0.15	5.34	HP32E152MRA
			40×41	0.15	5.29
	1800	40×51	0.15	6.11	HP32E182MSB

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
350V(2V)	100	22×25	0.15	0.76	HP32V101MRX
		22×30	0.15	0.89	HP32V121MRX
	120	25×25	0.15	0.88	HP32V121MRY
		22×30	0.15	0.99	HP32V151MRX
	150	25×25	0.15	0.98	HP32V151MRY
			22×35	0.15	1.15
	180	25×30	0.15	1.15	HP32V181MRY
			30×25	0.15	1.15
		22×40	0.15	1.34	HP32V221MRX
	220	25×35	0.15	1.34	HP32V221MRY
			30×25	0.15	1.28
		22×50	0.15	1.63	HP32V271MRX
	270	25×40	0.15	1.56	HP32V271MRY
			30×30	0.15	1.50
		35×25	0.15	1.50	HP32V271MRA
			25×45	0.15	1.80
	330	30×35	0.15	1.75	HP32V331MRZ
			35×30	0.15	1.75
		25×50	0.15	2.04	HP32V391MRY
	390	30×40	0.15	1.99	HP32V391MRZ
			35×30	0.15	1.90
		30×40	0.15	2.19	HP32V471MRZ
	470	35×35	0.15	2.22	HP32V471MRA
			30×50	0.15	2.59
	560	35×40	0.15	2.54	HP32V561MRA
			40×36	0.15	2.54
		35×45	0.15	2.88	HP32V681MRA
	680	40×41	0.15	2.90	HP32V681MSB

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Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
400V(2G)	82	20×25	0.15	0.81	HP32G820MRWS2
		20×30	0.15	0.95	HP32G101MRWS3
	100	22×25	0.15	0.92	HP32G101MRXS2
		20×30	0.15	1.04	HP32G121MRWS3
	120	22×25	0.15	1.00	HP32G121MRX
		25×25	0.15	1.06	HP32G121MRY
	150	20×35	0.15	1.24	HP32G151MRWS4
		22×30	0.15	1.20	HP32G151MRXS3
		25×25	0.15	1.18	HP32G151MRY2
	180	22×35	0.15	1.38	HP32G181MRXS4
		25×30	0.15	1.38	HP32G181MRY3
		30×25	0.15	1.38	HP32G181MRZ
	220	22×40	0.15	1.62	HP32G221MRXS5
		25×35	0.15	1.62	HP32G221MRY4
		30×25	0.15	1.52	HP32G221MRZS2
	270	22×45	0.15	1.88	HP32G271MRXS6
		25×40	0.15	1.88	HP32G271MRY5
		30×30	0.15	1.79	HP32G271MRZS3
	330	35×25	0.15	1.79	HP32G271MRAS2
		25×45	0.15	2.17	HP32G331MRY6
		30×35	0.15	2.08	HP32G331MRZS4
	390	35×30	0.15	2.10	HP32G331MRA
		25×50	0.15	2.46	HP32G391MRY7
		30×40	0.15	2.38	HP32G391MRZS5
	470	35×35	0.15	2.42	HP32G391MRA
		30×45	0.15	2.73	HP32G471MRZS6
		35×35	0.15	2.63	HP32G471MRAS4
	560	30×50	0.15	3.10	HP32G561MRZS7
		35×40	0.15	3.01	HP32G561MRAS5
	680	35×50	0.15	3.45	HP32G681MRA

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
420V(420V)	68	20×25	0.15	0.73	HP3420V680MRWS2
	82	20×25	0.15	0.81	HP3420V820MRWS2
		20×30	0.15	0.95	HP3420V101MRWS3
	100	22×25	0.15	0.92	HP3420V101MRXS2
		20×30	0.15	1.11	HP3420V121MRWS4
	120	22×30	0.15	1.07	HP3420V121MRXS3
		25×25	0.15	1.06	HP3420V121MRY2
	150	22×35	0.15	1.26	HP3420V151MRXS4
		25×30	0.15	1.26	HP3420V151MRY3
		22×40	0.15	1.46	HP3420V181MRXS5
	180	25×30	0.15	1.38	HP3420V181MRY3
		30×25	0.15	1.38	HP3420V181MRZS2
		22×45	0.15	1.70	HP3420V221MRXS6
	220	25×35	0.15	1.61	HP3420V221MRY4
		30×30	0.15	1.62	HP3420V221MRZS3
		35×25	0.15	1.62	HP3420V221MRAS2
	270	22×50	0.15	1.96	HP3420V271MRXS7
		25×40	0.15	1.87	HP3420V271MRY5
		30×35	0.15	1.90	HP3420V271MRZ
	330	35×30	0.15	1.90	HP3420V271MRA
		25×45	0.15	2.17	HP3420V331MRY6
		30×35	0.15	2.08	HP3420V331MRZS4
	390	35×30	0.15	2.10	HP3420V331MRAS3
		30×40	0.15	2.38	HP3420V391MRZS5
		35×35	0.15	2.40	HP3420V391MRAS4
	470	30×45	0.15	2.73	HP3420V471MRZS6
		35×40	0.15	2.75	HP3420V471MRAS5
		560	35×45	0.15	3.13
	680	35×50	0.15	3.59	HP3420V681MRAS7

Rated Voltage V. DC	Capacitance ( $\mu$ F)	Case size $\phi$ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
450V(2W)	56	20×25	0.15	0.67	HP32W560MRWS2
	68	20×25	0.15	0.73	HP32W680MRWS2
		20×30	0.15	0.86	HP32W820MRWS3
	82	22×25	0.15	0.83	HP32W820MRXS2
		20×35	0.15	1.01	HP32W101MRWS4
	100	22×30	0.15	0.98	HP32W101MRXS3
		25×25	0.15	0.96	HP32W101MRY2
	120	20×35	0.15	1.11	HP32W121MRWS4
		22×30	0.15	1.07	HP32W121MRXS3
		25×25	0.15	1.06	HP32W121MRY2
	150	22×35	0.15	1.26	HP32W151MRXS4
		25×30	0.15	1.26	HP32W151MRY3
		30×25	0.15	1.26	HP32W151MRZS2
	180	22×40	0.15	1.46	HP32W181MRXS5
		25×35	0.15	1.46	HP32W181MRY4
		30×25	0.15	1.38	HP32W181MRZS2
	220	22×50	0.15	1.77	HP32W221MRXS7
		25×40	0.15	1.70	HP32W221MRY5
		30×30	0.15	1.62	HP32W221MRZS3
	270	35×25	0.15	1.62	HP32W221MRAS2
		25×45	0.15	1.96	HP32W271MRY6
		30×35	0.15	1.90	HP32W271MRZS4
	330	35×30	0.15	1.90	HP32W271MRAS3
		25×50	0.15	2.26	HP32W331MRY7
		30×40	0.15	2.19	HP32W331MRZS5
	390	35×35	0.15	2.23	HP32W331MRA
		30×45	0.15	2.48	HP32W391MRZS6
		35×35	0.15	2.40	HP32W391MRAS4
	470	30×50	0.15	2.84	HP32W471MRZS7
		35×40	0.15	2.75	HP32W471MRAS5
560	35×45	0.15	3.13	HP32W561MRAS6	