

SNAP MOUNT TYPE ALUMINUM ELECTROLYTIC CAPACITORS

HP3 Series

Useful of 4,000 hours at 85°C (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 with specified ripple current application 16 ~ 350V.DC / Capacitance variation : Initial value ±15% Dissipation factor : 175% of less specified initial value Leakage current : Not greater than the specified initial value 400 ~ 450V.DC / Capacitance variation : Initial value ±20% Dissipation factor : 200% of less specified initial value Leakage current : Not greater than the specified initial value
Others	JIS C 5101-4.

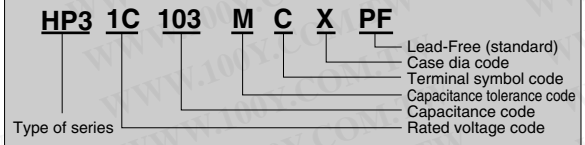
Ripple current correction coefficient

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	16~100V	0.7	1.0	1.1	1.2	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.

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



Case dia code	Code
22	X
25	Y
30	Z
35	A
40	B

Refer to page (67) for other terminal shape available on request

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	HP31C682MCXPF
		22·30	0.50	1.94	HP31C103MCXPF
	10000	25·25	0.50	1.92	HP31C103MCYPF
		22·40	0.50	2.65	HP31C153MCXPF
	15000	25·30	0.50	2.52	HP31C153MCYPF
		30·25	0.50	2.52	HP31C153MCZPF
	22000	25·45	0.50	3.52	HP31C223MCYPF
		30·30	0.50	3.23	HP31C223MCZPF
	33000	35·25	0.50	3.23	HP31C223MCAPF
		30·45	0.50	4.28	HP31C333MCZPF
		35·35	0.50	4.12	HP31C333MCAPF

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	HP31E472MCXPF
		22·30	0.40	1.89	HP31E682MCXPF
	6800	25·25	0.40	1.87	HP31E682MCYPF
		22·35	0.40	2.06	HP31E103MCXPF
	10000	25·30	0.40	2.06	HP31E103MCYPF
		30·25	0.40	2.06	HP31E103MCZPF
	15000	22·45	0.40	2.78	HP31E153MCXPF
		25·35	0.40	2.67	HP31E153MCYPF
	22000	30·30	0.40	2.67	HP31E153MCZPF
		35·25	0.40	2.67	HP31E153MCAPF
	33000	25·45	0.40	3.52	HP31E223MCYPF
		30·35	0.40	3.41	HP31E223MCZPF
		35·30	0.40	3.41	HP31E223MCAPF
		30·50	0.40	4.45	HP31E333MCZPF
		35·40	0.40	4.31	HP31E333MCAPF

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Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
35V(1V)	3300	22·25	0.35	1.38	HP31V332MCXPF
		22·30	0.35	1.57	HP31V472MCXPF
		25·25	0.35	1.56	HP31V472MCYPF
	6800	22·35	0.35	2.01	HP31V682MCXPF
		25·30	0.35	2.01	HP31V682MCYPF
		30·25	0.35	2.01	HP31V682MCZPF
	10000	22·45	0.35	2.27	HP31V103MCXPF
		25·35	0.35	2.18	HP31V103MCYPF
		30·30	0.35	2.18	HP31V103MCZPF
		35·25	0.35	2.18	HP31V103MCAPF
	15000	25·50	0.35	3.03	HP31V153MCYPF
		30·35	0.35	2.82	HP31V153MCZPF
		35·30	0.35	2.82	HP31V153MCAPF
	22000	30·45	0.35	3.73	HP31V223MCZPF
		35·40	0.35	3.76	HP31V223MCAPF
	33000	35·50	0.40	4.67	HP31V333MCAPF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
50V(1H)	2200	22·25	0.30	1.13	HP31H222MCXPF
		22·30	0.30	1.47	HP31H332MCXPF
		25·25	0.30	1.46	HP31H332MCYPF
	4700	22·35	0.30	1.67	HP31H472MCXPF
		25·30	0.30	1.67	HP31H472MCYPF
		30·25	0.30	1.67	HP31H472MCZPF
	6800	22·50	0.30	2.31	HP31H682MCXPF
		25·40	0.30	2.21	HP31H682MCYPF
		30·30	0.30	2.13	HP31H682MCZPF
		35·25	0.30	2.13	HP31H682MCAPF
	10000	25·50	0.35	2.48	HP31H103MCYPF
		30·35	0.35	2.30	HP31H103MCZPF
		35·30	0.35	2.30	HP31H103MCAPF
	15000	30·50	0.35	3.21	HP31H153MCZPF
		35·40	0.35	3.10	HP31H153MCAPF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
63V(1J)	1500	22·25	0.25	1.08	HP31J152MCXPF
		22·30	0.25	1.20	HP31J222MCXPF
		25·25	0.25	1.19	HP31J222MCYPF
	3300	22·35	0.25	1.56	HP31J332MCXPF
		25·30	0.25	1.56	HP31J332MCYPF
		30·25	0.25	1.56	HP31J332MCZPF
	4700	22·45	0.25	1.84	HP31J472MCXPF
		25·35	0.25	1.77	HP31J472MCYPF
		30·30	0.25	1.77	HP31J472MCZPF
		35·25	0.25	1.77	HP31J472MCAPF
	6800	25·50	0.25	2.42	HP31J682MCYPF
		30·35	0.25	2.25	HP31J682MCZPF
		35·30	0.25	2.25	HP31J682MCAPF
	10000	30·45	0.35	2.52	HP31J103MCZPF
		35·40	0.35	2.53	HP31J103MCAPF
	15000	35·50	0.35	3.36	HP31J153MCAPF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
80V(1K)	1000	22·25	0.20	0.88	HP31K102MCXPF
		22·30	0.20	1.15	HP31K152MCXPF
		25·25	0.20	1.13	HP31K152MCYPF
	2200	22·40	0.20	1.34	HP31K222MCXPF
		25·30	0.20	1.28	HP31K222MCYPF
		30·25	0.20	1.28	HP31K222MCZPF
	3300	22·50	0.25	1.80	HP31K332MCXPF
		25·40	0.25	1.72	HP31K332MCYPF
		30·30	0.25	1.65	HP31K332MCZPF
		35·25	0.25	1.65	HP31K332MCAPF
	4700	25·50	0.25	2.01	HP31K472MCYPF
		30·40	0.25	1.96	HP31K472MCZPF
		35·30	0.25	1.87	HP31K472MCAPF
	6800	30·50	0.25	2.56	HP31K682MCZPF
		35·40	0.25	2.47	HP31K682MCAPF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
100V(2A)	1000	22·30	0.20	0.94	HP32A102MCXPF
		25·25	0.20	0.93	HP32A102MCYPF
	1500	22·35	0.20	1.22	HP32A152MCXPF
		25·30	0.20	1.22	HP32A152MCYPF
		30·25	0.20	1.22	HP32A152MCZPF
	2200	22·50	0.20	1.47	HP32A222MCXPF
		25·40	0.20	1.41	HP32A222MCYPF
		30·30	0.20	1.35	HP32A222MCZPF
		35·25	0.20	1.35	HP32A222MCAPF
	3300	25·50	0.20	1.88	HP32A332MCYPF
		30·40	0.20	1.83	HP32A332MCZPF
		35·30	0.20	1.75	HP32A332MCAPF
	4700	30·50	0.25	2.12	HP32A472MCZPF
		35·40	0.25	2.05	HP32A472MCAPF
	6800	35·50	0.25	2.68	HP32A682MCAPF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
160V(2C)	390	22·25	0.15	1.50	HP32C391MCXPF
		22·30	0.15	1.76	HP32C471MCXPF
	470	25·25	0.15	1.74	HP32C471MCYPF
		22·35	0.15	2.03	HP32C561MCXPF
	560	25·30	0.15	2.02	HP32C561MCYPF
		22·40	0.15	2.36	HP32C681MCXPF
	680	25·30	0.15	2.24	HP32C681MCYPF
		30·25	0.15	2.24	HP32C681MCZPF
		22·45	0.15	2.72	HP32C821MCXPF
	820	25·35	0.15	2.61	HP32C821MCYPF
		30·30	0.15	2.61	HP32C821MCZPF
	1000	22·50	0.15	3.13	HP32C102MCXPF
		25·40	0.15	3.00	HP32C102MCYPF
		30·30	0.15	2.88	HP32C102MCZPF
		35·25	0.15	2.88	HP32C102MCAPF
	1200	25·45	0.15	3.44	HP32C122MCYPF
		30·35	0.15	3.34	HP32C122MCZPF
		35·30	0.15	3.34	HP32C122MCAPF
	1500	30·40	0.15	3.91	HP32C152MCZPF
		35·35	0.15	3.96	HP32C152MCAPF
	1800	30·45	0.15	4.47	HP32C182MCZPF
		35·35	0.15	4.34	HP32C182MCAPF

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Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
180V(2P)	330	22·25	0.15	1.38	HP32P331MCXPF
		22·30	0.15	1.60	HP32P391MCXPF
	390	25·25	0.15	1.58	HP32P391MCYPF
		22·30	0.15	1.76	HP32P471MCXPF
	470	25·25	0.15	1.74	HP32P471MCYPF
		22·35	0.15	2.03	HP32P561MCXPF
	560	25·30	0.15	2.03	HP32P561MCYPF
		30·25	0.15	2.03	HP32P561MCZPF
	680	22·40	0.15	2.36	HP32P681MCXPF
		25·35	0.15	2.35	HP32P681MCYPF
	820	30·25	0.15	2.24	HP32P681MCZPF
		22·45	0.15	2.72	HP32P821MCXPF
	1000	25·40	0.15	2.72	HP32P821MCYPF
		30·30	0.15	2.61	HP32P821MCZPF
	1200	35·25	0.15	2.61	HP32P821MCAPF
		25·45	0.15	3.14	HP32P102MCYPF
	1500	30·35	0.15	3.04	HP32P102MCZPF
		35·25	0.15	2.88	HP32P102MCAPF
	1800	25·50	0.15	3.59	HP32P122MCYPF
		30·40	0.15	3.49	HP32P122MCZPF
1800	35·30	0.15	3.34	HP32P122MCAPF	
	30·45	0.15	4.08	HP32P152MCZPF	
1800	35·35	0.15	3.96	HP32P152MCAPF	
	35·40	0.15	4.50	HP32P182MCAPF	
1800	40·36	0.15	4.56	HP32P182MSBPF	

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
200V(2D)	220	22·25	0.15	1.36	HP32D221MCXPF
		22·30	0.15	1.60	HP32D271MCXPF
	270	25·25	0.15	1.58	HP32D271MCYPF
		22·30	0.15	1.76	HP32D331MCXPF
	330	25·25	0.15	1.75	HP32D331MCYPF
		22·30	0.15	1.92	HP32D391MCXPF
	390	25·25	0.15	1.90	HP32D391MCYPF
		22·35	0.15	2.23	HP32D471MCXPF
	470	25·30	0.15	2.23	HP32D471MCYPF
		30·25	0.15	2.23	HP32D471MCZPF
	560	22·40	0.15	2.57	HP32D561MCXPF
		25·35	0.15	2.57	HP32D561MCYPF
	680	30·25	0.15	2.44	HP32D561MCZPF
		22·45	0.15	2.98	HP32D681MCXPF
	820	25·35	0.15	2.86	HP32D681MCYPF
		30·30	0.15	2.86	HP32D681MCZPF
	1000	35·25	0.15	2.86	HP32D681MCAPF
		25·40	0.15	3.26	HP32D821MCYPF
	1200	30·30	0.15	3.13	HP32D821MCZPF
		35·25	0.15	3.13	HP32D821MCAPF
1500	25·50	0.15	3.92	HP32D102MCYPF	
	30·35	0.15	3.64	HP32D102MCZPF	
1800	35·30	0.15	3.66	HP32D102MCAPF	
	30·40	0.15	4.19	HP32D122MCZPF	
1800	35·35	0.15	4.25	HP32D122MCAPF	
	35·40	0.15	4.93	HP32D152MCAPF	
1800	40·36	0.15	4.99	HP32D152MSBPF	
	35·50	0.15	5.84	HP32D182MCAPF	
1800	40·41	0.15	5.66	HP32D182MSBPF	

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
250V(2E)	220	22·25	0.15	1.36	HP32E221MCXPF
		22·30	0.15	1.60	HP32E271MCXPF
	270	25·25	0.15	1.58	HP32E271MCYPF
		22·35	0.15	1.87	HP32E331MCXPF
	330	25·30	0.15	1.86	HP32E331MCYPF
		22·35	0.15	2.04	HP32E391MCXPF
	390	25·30	0.15	2.04	HP32E391MCYPF
		30·25	0.15	2.04	HP32E391MCZPF
	470	22·40	0.15	2.35	HP32E471MCXPF
		25·35	0.15	2.35	HP32E471MCYPF
	560	30·25	0.15	2.24	HP32E471MCZPF
		35·25	0.15	2.38	HP32E471MCAPF
	680	22·50	0.15	2.81	HP32E561MCXPF
		25·40	0.15	2.69	HP32E561MCYPF
	820	30·30	0.15	2.59	HP32E561MCZPF
		35·25	0.15	2.59	HP32E561MCAPF
	1000	25·45	0.15	3.11	HP32E681MCYPF
		30·35	0.15	3.01	HP32E681MCZPF
	1200	35·30	0.15	3.01	HP32E681MCAPF
		25·50	0.15	3.55	HP32E821MCYPF
1500	30·40	0.15	3.47	HP32E821MCZPF	
	35·30	0.15	3.31	HP32E821MCAPF	
1800	30·45	0.15	4.00	HP32E102MCZPF	
	35·35	0.15	3.88	HP32E102MCAPF	
1800	30·50	0.15	4.55	HP32E122MCZPF	
	35·40	0.15	4.40	HP32E122MCAPF	
1800	40·36	0.15	4.46	HP32E122MSBPF	
	35·50	0.15	5.34	HP32E152MCAPF	
1800	40·41	0.15	5.29	HP32E152MSBPF	
	40·51	0.15	6.11	HP32E182MSBPF	

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
350V(2V)	100	22·25	0.15	0.76	HP32V101MCXPF
		22·30	0.15	0.89	HP32V121MCXPF
	120	25·25	0.15	0.88	HP32V121MCYPF
		22·30	0.15	0.99	HP32V151MCXPF
	150	25·25	0.15	0.98	HP32V151MCYPF
		22·35	0.15	1.15	HP32V181MCXPF
	180	25·30	0.15	1.15	HP32V181MCYPF
		30·25	0.15	1.15	HP32V181MCZPF
	220	22·40	0.15	1.34	HP32V221MCXPF
		25·35	0.15	1.34	HP32V221MCYPF
	270	30·25	0.15	1.28	HP32V221MCZPF
		22·50	0.15	1.63	HP32V271MCXPF
	330	25·40	0.15	1.56	HP32V271MCYPF
		30·30	0.15	1.50	HP32V271MCZPF
	390	35·25	0.15	1.50	HP32V271MCAPF
		25·45	0.15	1.80	HP32V331MCYPF
	470	30·35	0.15	1.75	HP32V331MCZPF
		35·30	0.15	1.75	HP32V331MCAPF
	560	25·50	0.15	2.04	HP32V391MCYPF
		30·40	0.15	1.99	HP32V391MCZPF
680	35·30	0.15	1.90	HP32V391MCAPF	
	30·40	0.15	2.19	HP32V471MCZPF	
1800	35·35	0.15	2.22	HP32V471MCAPF	
	30·50	0.15	2.59	HP32V561MCZPF	
1800	35·40	0.15	2.54	HP32V561MCAPF	
	40·36	0.15	2.54	HP32V561MSBPF	
1800	35·45	0.15	2.88	HP32V681MCAPF	
	40·41	0.15	2.90	HP32V681MSBPF	

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Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
400V(2G)	100	20·25	0.20	0.89	HP32G101MCWS2PF
		20·30	0.20	1.04	HP32G121MCWS3PF
	120	22·25	0.20	1.00	HP32G121MCXS2PF
		25·25	0.20	1.06	HP32G121MCY2PF
		20·35	0.20	1.24	HP32G151MCWS4PF
	150	22·30	0.20	1.20	HP32G151MCXS3PF
		25·25	0.20	1.18	HP32G151MCYS2PF
		22·35	0.20	1.38	HP32G181MCXS4PF
	180	25·30	0.20	1.38	HP32G181MCYS3PF
		30·25	0.20	1.38	HP32G181MCZPF
		22·40	0.20	1.62	HP32G221MCXS5PF
	220	25·30	0.20	1.52	HP32G221MCYS3PF
		30·25	0.20	1.52	HP32G221MCZS2PF
		22·45	0.20	1.88	HP32G271MCXS6PF
	270	25·35	0.20	1.78	HP32G271MCYS4PF
		30·30	0.20	1.79	HP32G271MCZS3PF
		35·25	0.20	1.79	HP32G271MCAS2PF
		22·50	0.20	2.17	HP32G331MCXS7PF
	330	25·40	0.20	2.07	HP32G331MCYS5PF
		30·30	0.20	1.98	HP32G331MCZS3PF
		35·25	0.20	1.98	HP32G331MCAS2PF
	390	25·45	0.20	2.36	HP32G391MCYS6PF
		30·35	0.20	2.27	HP32G391MCZS4PF
		35·30	0.20	2.28	HP32G391MCAS3PF
	470	30·40	0.20	2.61	HP32G471MCZS5PF
		35·35	0.20	2.63	HP32G471MCAS4PF
		30·45	0.20	2.98	HP32G561MCZS6PF
	560	35·35	0.20	2.87	HP32G561MCAS4PF
		680	35·40	0.20	3.31
	820	35·50	0.20	3.94	HP32G821MCAS7PF

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name	
420V(420V)	82	20·25	0.20	0.81	HP3420V820MCWS2PF	
		100	20·30	0.20	0.95	HP3420V101MCWS3PF
	100	22·25	0.20	0.92	HP3420V101MCXS2PF	
		25·25	0.20	1.04	HP3420V121MCWS3PF	
		20·30	0.20	1.04	HP3420V121MCWS3PF	
	120	20·35	0.20	1.24	HP3420V151MCWS4PF	
		22·30	0.20	1.20	HP3420V151MCXS3PF	
		25·25	0.20	1.18	HP3420V151MCYS2PF	
	150	22·35	0.20	1.39	HP3420V181MCXS4PF	
		25·30	0.20	1.38	HP3420V181MCYS3PF	
		30·25	0.20	1.38	HP3420V181MCZS2PF	
	180	22·40	0.20	1.62	HP3420V221MCXS5PF	
		25·35	0.20	1.61	HP3420V221MCYS4PF	
		30·25	0.20	1.52	HP3420V221MCZS2PF	
	220	22·50	0.20	1.96	HP3420V271MCXS7PF	
		25·40	0.20	1.87	HP3420V271MCYS5PF	
		30·30	0.20	1.79	HP3420V271MCZS3PF	
	270	35·25	0.20	1.79	HP3420V271MCAS2PF	
		25·45	0.20	2.17	HP3420V331MCYS6PF	
		30·35	0.20	2.08	HP3420V331MCZS4PF	
	330	35·30	0.20	2.10	HP3420V331MCAS3PF	
		25·50	0.20	2.46	HP3420V391MCYS7PF	
		30·40	0.20	2.38	HP3420V391MCZS5PF	
	390	35·30	0.20	2.28	HP3420V391MCAS3PF	
		470	30·45	0.20	2.73	HP3420V471MCZS6PF
		35·35	0.20	2.63	HP3420V471MCAS4PF	
	470	30·50	0.20	3.10	HP3420V561MCZS7PF	
		35·40	0.20	3.01	HP3420V561MCAS5PF	
		680	35·45	0.20	3.45	HP3420V681MCAS6PF
	820	35·50	0.20	3.94	HP3420V821MCAS7PF	

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)

Rated Voltage V. DC	Capacitance (μ F)	Case size ϕ DXL(mm)	$\tan\delta$ 20°C,120Hz	Ripple current (Arms) 85°C,120Hz	Product name
450V(2W)	82	20·25	0.20	0.81	HP32W820MCWS2PF
		100	20·30	0.20	0.95
	100	22·25	0.20	0.92	HP32W101MCXS2PF
		25·25	0.20	0.96	HP32W101MCYS2PF
		20·35	0.20	1.11	HP32W121MCWS4PF
	120	22·30	0.20	1.07	HP32W121MCXS3PF
		25·25	0.20	1.06	HP32W121MCYS2PF
		22·35	0.20	1.26	HP32W151MCXS4PF
	150	25·30	0.20	1.26	HP32W151MCYS3PF
		30·25	0.20	1.26	HP32W151MCZS2PF
		22·40	0.20	1.46	HP32W181MCXS5PF
	180	25·30	0.20	1.38	HP32W181MCYS3PF
		30·25	0.20	1.38	HP32W181MCZS2PF
		22·45	0.20	1.70	HP32W221MCXS6PF
	220	25·35	0.20	1.61	HP32W221MCYS4PF
		30·30	0.20	1.62	HP32W221MCZS3PF
		35·25	0.20	1.62	HP32W221MCAS2PF
	270	22·50	0.20	1.96	HP32W271MCXS7PF
		25·40	0.20	1.87	HP32W271MCYS5PF
		30·30	0.20	1.79	HP32W271MCZS3PF
		35·25	0.20	1.79	HP32W271MCAS2PF
	330	25·50	0.20	2.26	HP32W331MCYS7PF
		30·35	0.20	2.08	HP32W331MCZS4PF
	390	30·40	0.20	2.38	HP32W391MCZS5PF
		35·30	0.20	2.28	HP32W391MCAS3PF
	470	30·45	0.20	2.73	HP32W471MCZS6PF
		35·35	0.20	2.63	HP32W471MCAS4PF
	560	35·40	0.20	3.01	HP32W561MCAS5PF
	680	35·45	0.20	3.45	HP32W681MCAS6PF