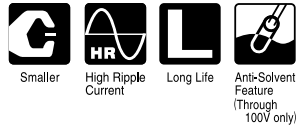


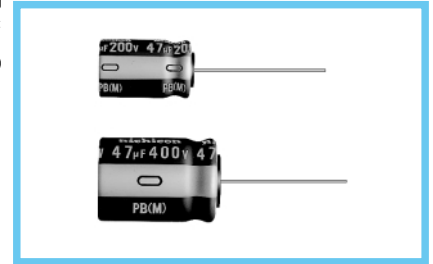
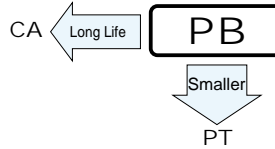
# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

**PB series** Miniature Sized, High Ripple Current High Reliability



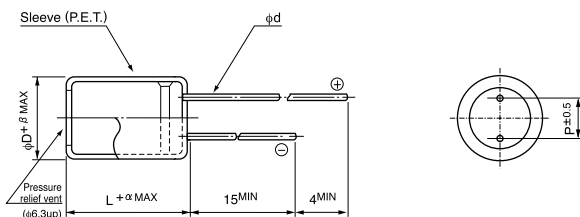
- High ripple current load life of 5000 / 7000 hours at +105°C.
- Suited for ballast application.
- Adapted to the RoHS directive (2002/95/EC).



## Specifications

Item	Performance Characteristics														
Category Temperature Range	-40 ~ +105°C (10 ~ 50V), -25 ~ +105°C (160 ~ 450V)														
Rated Voltage Range	10 ~ 450V														
Rated Capacitance Range	0.47 ~ 3300µF														
Capacitance Tolerance	±20% at 120Hz, 20°C														
Leakage Current	Rated Voltage (V)			10 ~ 50V						160 ~ 450V					
	—			After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (µA), whichever is greater.						After 2 minutes' application of rated voltage, leakage current is not more than 0.06CV+10 (µA).					
tan δ	Measurement frequency : 120Hz, Temperature : 20°C														
	Rated voltage (V)	10	16	25	35	50	160	200	250	350	400	450			
tan δ (MAX.)		0.30	0.25	0.22	0.18	0.15	0.15	0.15	0.15	0.20	0.24	0.24			
Stability at Low Temperature	Measurement frequency : 120Hz														
	Rated voltage (V)	10	16	25	35	50	160	200	250	350	400	450			
Impedance ratio ZT / Z20 (MAX.) Z-25°C / Z+20°C		3	2	2	2	2	3	3	3	4	6	6			
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 5000 hours (φ10 · φ12.5 (10 ~ 50V) : 7000 hours) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristic requirements listed at right.														
	Capacitance change	Within ±30% of initial value (10 ~ 50V) Within ±20% of initial value (160 ~ 450V)													
	tan δ	300% or less of initial specified value (10 ~ 50V) 200% or less of initial specified value (160 ~ 450V)													
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above.														
	Leakage current														
Marking	Printed with white color letter on dark brown sleeve.														

## Radial Lead Type

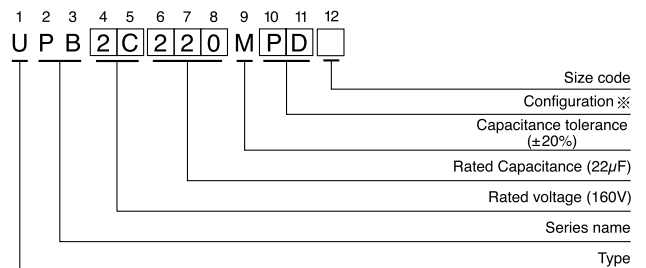


	(mm)										
φD	5	6.3	8	10	12.5	16	18	22	25		
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	12.5		
φd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0		
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0		

α	(φD ≤ 18) 1.5
	(φD ≥ 22) 2.0

- Please refer to page 21 about the end seal configuration.

## Type numbering system (Example : 160V 22µF)



※ Configuration	
φ D	Pb-free leadwire Pb-free PET sleeve
5	DD
6.3	ED
8 · 10	PD
12.5 ~ 18	HD
22 · 25	RD

Please refer to page 21, 22, 23 about the formed or taped product spec.  
Please refer to page 3 for the minimum order quantity.

- Dimension table in next page.

# ALUMINUM ELECTROLYTIC CAPACITORS

PB series

## ■ Dimensions

V		10		16		25		35		50	
Cap.(μF)	Code	1A		1C		1E		1V		1H	
0.47	R47									5×11	5
1	010									5×11	10
2.2	2R2									5×11	15
3.3	3R3									5×11	20
4.7	4R7									5×11	25
10	100									5×11	30
22	220									5×11	40
33	330							5×11	50	6.3×11	55
47	470					5×11	55	6.3×11	60	6.3×11	65
100	101	5×11	70	6.3×11	85	6.3×11	95	8×11.5	100	8×11.5	100
220	221	6.3×11	100	8×11.5	130	8×11.5	195	10×12.5	200	10×16	235
330	331	8×11.5	150	8×11.5	195	10×12.5	255	10×16	280	10×20	295
470	471	8×11.5	180	10×12.5	270	10×16	325	10×20	350	12.5×20	370
1000	102	10×16	350	10×20	430	12.5×20	500	12.5×25	570		
2200	222	12.5×20	550	12.5×25	710						
3300	332	12.5×25	810							Case size φD×L(mm)	Rated ripple

Rated Ripple (mArms) at 105°C 120Hz

V		160		200		250		350		400		450	
Cap.(μF)	Code	2C		2D		2E		2V		2G		2W	
10	100							10×20	125 250	10×20	125 250	12.5×20	150 300
22	220	10×20	250 500	10×20	250 500	12.5×20	300 600	12.5×20	175 350	12.5×25	200 400	16×25	275 550
33	330	10×20	250 500	12.5×20	300 600	12.5×20	300 600	16×20	250 500	16×25	300 600	18×25	350 700
47	470	12.5×20	300 600	12.5×20	300 600	12.5×25	350 700	16×25	325 650	18×25	375 750	18×31.5	425 850
56	560											18×35.5	475 950
68	680	12.5×25	375 750	12.5×25	375 750	16×25	500 1000	18×25	400 800	18×31.5	450 900	18×40	500 1000
82	820									18×35.5	500 1000	22×40	550 1100
100	101	16×25	550 1100	16×25	550 1100	18×25	600 1200	18×31.5	500 1000	18×40	550 1100		
120	121							18×35.5	575 1150	22×40	600 1200	22×50	700
150	151	18×25	650 1300	18×25	650 1300	18×31.5	750 1500	18×40	650 1300			▲25×40	1400
180	181					18×35.5	850 1700	22×40	750 1500	22×50	800	▲25×40	1600
220	221			18×31.5	850 1700	18×40	950 1900			25×50	900 1800		
270	271			18×31.5	950 1900	22×40	1050 2100	22×50	950	▲25×40	1900		
330	331	18×31.5	850 1700	18×40	1050 2100			25×50	1050 2100				
390	391	18×35.5	950 1900	22×40	1150 2300	22×50	1150	▲25×40	2300				
470	471	18×40	1050 2100			25×50	1400 2800						
560	561	22×40	1150 2300	22×50	1350	▲25×40	2700						
680	681	22×50	1350	25×50	1500	▲25×40	3000						
820	821	25×50	1500 3000									Case Size φD×L(mm)	Rated ripple

●: Rated ripple (mArms) at 105°C 120Hz

△: Rated ripple (mArms) at 105°C 100kHz

▲: In this case, [6] will be put at 12th digit of type numbering system.

## ● Frequency coefficient of rated ripple current

V	Cap.(μF)	Frequency						
		50Hz	120Hz	300Hz	1kHz	10k ~ 50kHz	100kHz	
10 ~ 50	0.47 ~ 10	0.75	1.00	1.20	1.40	1.55	1.65	
	22 ~ 470	0.85	1.00	1.10	1.20	1.25	1.30	
	1000 ~ 3300	0.95	1.00	1.03	1.05	1.10	1.15	
160 ~ 450	10 ~ 820	0.60	1.00	1.20	1.60	1.80	2.00	