

PH series

- Super low ESR, Long Life capability
- Rated voltage :4.0~50V.
- Endurance:20,000hours at 105°C
- Applications:DC/DC Converter, Voltage Regulators, Decoupling Applications for Computer Motherboards, etc.
- ROHS compliant
- Halogen Free compliant



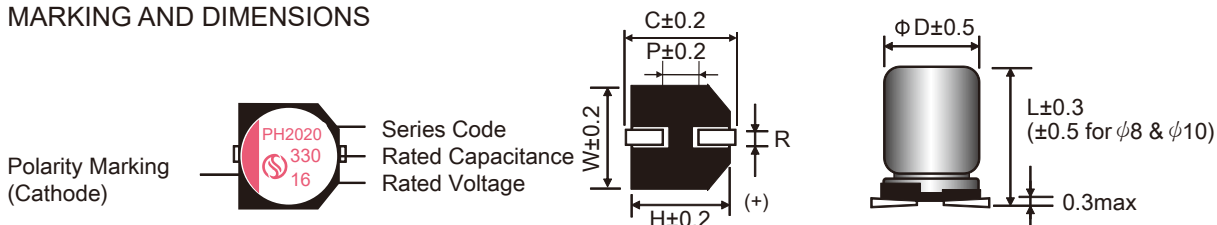
PH

SPECIFICATIONS

Items	Conditions	Characteristics
Category Temperature Range	—	-55 to +105°C
Rated Voltage Range	—	4.0~50V
Capacitance Tolerance	at 20°C, 120HZ	±20%(M)
Surge Voltage	at 105°C	Rated voltage ×1.15V
Leakage Current	at 20°C after 2 minutes	I ≤ 0.2CV or 300(μA) Whichever is greater measured, after 2 minutes application of rated working voltage at +20°C.
Dissipation Factor (tan δ)	at 20°C, 120Hz	Please see the attached characteristics list
Characteristics of Impedance at low, high temperature	at -55°C, 100kHz	Z(-55°C)/Z(+20°C) ≤ 1.25
	at -25°C, 100kHz	Z(-25°C)/Z(+20°C) ≤ 1.15
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 20,000 hours at 105°C.	Appearance NO significant damage.
		Capacitance change ≤ ±20% of the initial value.
		DF(tanδ) ≤ 150% of the initial specified value.
		ESR ≤ 150% of the initial specified value.
		Leakage current ≤ The initial specified value.
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjecting them to store at 60°C, 90 to 95% RH for 1,000 hours, without DC applied.	Appearance NO significant damage.
		Capacitance change ≤ ±20% of the initial value.
		DF(tanδ) ≤ 150% of the initial specified value.
		ESR ≤ 150% of the initial specified value.
		Leakage current ≤ The initial specified value.
Surge Voltage	The capacitors shall be subjected to 1,000 cycles each consisting of charge with the surge voltages specified at 105°C for 30 seconds through a protective resistor (R=1kΩ) and discharge for 5 minutes 30seconds	Appearance NO significant damage.
		Capacitance change ≤ ±20% of the initial value.
		DF(tanδ) ≤ 150% of the initial specified value.
		ESR ≤ 150% of the initial specified value.
		Leakage current ≤ The initial specified value.

※ Note: If any doubt arises, measure the leakage current after following voltage treatment.
Voltage treatment :DC rated voltage are applied to the capacitors for 120 minutes at 105°C.

MARKING AND DIMENSIONS



(Unit:mm)

Size Code	φ D	L	W	H	C	R	P
6.3×6	6.3	6.0	6.6	6.6	7.3	0.5~0.8	2.1
6.3×7	6.3	7.0	6.6	6.6	7.3	0.5~0.8	2.1
6.3×9.5	6.3	9.5	6.6	6.6	7.3	0.5~0.8	2.1
8×7	8.0	7.0	8.3	8.3	9.3	0.5~0.8	3.2
8×9.5	8.0	9.5	8.3	8.3	9.3	0.8~1.1	3.2
8×12	8.0	12.0	8.3	8.3	9.0	0.8~1.1	3.2
10×10.5	10.0	10.5	10.3	10.3	11.0	0.8~1.1	4.6
10×12.5	10.0	12.5	10.3	10.3	11.0	0.8~1.1	4.6

PH SERIES STANDARD CHARACTERISTICS LIST

Rated Voltage (S.V.)	Cap (μF)	Size DxL	Leakage current (μA) max. ※2	ESR (mΩ) max. 100k to 300kHz / 20°C	Rated Ripple Current (mA rms) 100kHz / 105°C	D.F. (tanδ) max. 120Hz / 20°C
4 (4.6)	220	6.3X6	300	20	2,800	0.12
	560	6.3X9.5	448	20	3,500	0.12
	560	8X7	448	18	3,700	0.12
	820	8X9.5	656	15	3,500	0.12
	1200	8X12	960	15	4,450	0.12
	1500	10×10.5	1,200	13	4,200	0.12
	2200	10X12.5	1,760	13	5,400	0.12
6.3 (7.2)	100	6.3X6	300	35	2,400	0.12
	220	6.3X6	300	22	2,600	0.12
	470	6.3X9.5	592	22	3,200	0.12
	560	6.3X9.5	705	22	3,200	0.12
	820	8X9.5	1,033	20	3,850	0.12
	1000	8X12	1,260	20	4,250	0.12
	1200	10×10.5	1,512	18	4,350	0.12
	1800	10X12.5	2,268	18	5,200	0.12
10 (11.5)	68	6.3X6	300	30	2,400	0.12
	100	6.3X6	300	30	2,400	0.12
	220	6.3X7	440	30	2,500	0.12
	330	6.3X9.5	660	30	3,150	0.12
	560	8X9.5	1,120	25	3,850	0.12
	680	8x12	1,360	25	4,150	0.12
	820	10×10.5	1,640	20	4,250	0.12
	1000	10×10.5	2,000	20	4,250	0.12
	1200	10x12.5	2,400	20	5,100	0.12
16 (18.4)	100	6.3X6	320	30	2,200	0.12
	220	6.3X9.5	704	30	3,050	0.12
	330	8X9.5	1,056	20	3,450	0.12
	470	8x12	1,504	22	4,050	0.12
	680	10×10.5	2,176	20	4,150	0.12
	820	10x12.5	2,624	20	5,100	0.12
25 (28.8)	47	6.3×6	300	40	1,500	0.12
	100	6.3×9.5	500	40	2,800	0.12
	180	8×9.5	900	30	3,250	0.12
	220	8×12	1100	30	3,900	0.12
	330	10×10.5	1650	20	4,100	0.12
	470	10×12.5	2350	25	4,500	0.12
35 (40.3)	22	6.3×6	300	70	1,450	0.12
	68	6.3×9.5	476	60	1,500	0.12
	120	8×9.5	840	50	1,800	0.12
	150	8×12	1050	50	2,850	0.12
	220	10×10.5	1540	40	2,950	0.12
	270	10×12.5	1890	40	3,200	0.12
50 (57.5)	10	6.3×6	300	60	1,400	0.12
	33	6.3×9.5	330	30	1,700	0.12
	47	8×9.5	470	30	2,000	0.12
	68	8×12	680	28	2,200	0.12
	100	10×10.5	1000	30	2,300	0.12
	100	10×12.5	1000	28	2,650	0.12

※ 1. Capacitance tolerance : ±20%(M)
 ※ 2. After 2 minutes

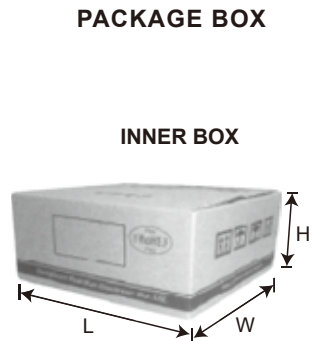
FREQUENCY COEFFICIENT FOR RIPPLE CURRENT

Frequency	120Hz ≤ f < 1kHz	1kHz ≤ f < 10kHz	10kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz
Coefficient	0.05	0.3	0.7	1

PH

Packing specifications(Lead type)

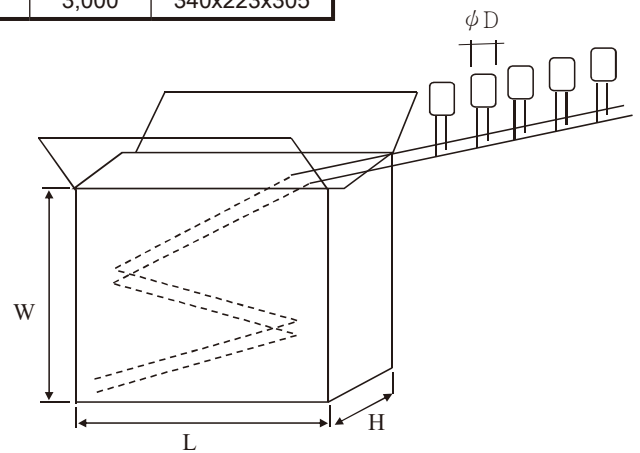
ϕ DxL	Bags / Inner Box	Layer Quantity	Quantity (pcs/bag)	Total Quantity (pcs/carton)	Size of Inner Box	Size of Out Box (L)x(W)x(H)
5x6	15	2	1000	30,000	267 X 260 X 135	546 X 279 X 160
6.3x6	10	2	1000	20,000		
6.3x (7 ~ 12)	9	2	1000	18,000		
8x (7 ~ 12)	10	2	500	10,000		
10x (8 ~ 12)	11	2	200	4,400		
10x (16 ~ 20)	9	2	200	3,600		



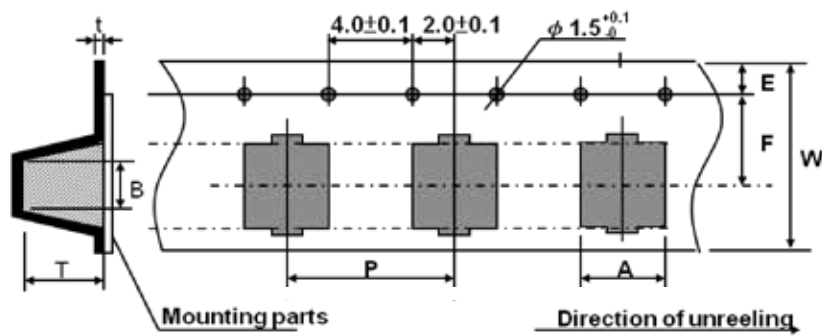
Inner Box Size:
(L) X (W) X (H)

TAPING PACKAGE

Item	Taping packing						Size of Out Box (L)x(W)x(H)
ϕ D (mm)	W \pm 5 (mm)	L \pm 5 (mm)	H \pm 5 (mm)	Qty. (pcs)	Inner Box (pcs)	Total (pcs)	
5x6	235	320	54	2000	10	20,000	490x330x293
6.3x (6 ~ 9.5)	235	320	54	1500		15,000	490x330x293
8x (7 ~ 12)	235	320	51	1000		10,000	490x330x285
8x (16 ~ 20)	255	320	63	1000	8	8,000	490x330x275
10x (8 ~ 20)	218	325	57	600	5	3,000	340x223x305



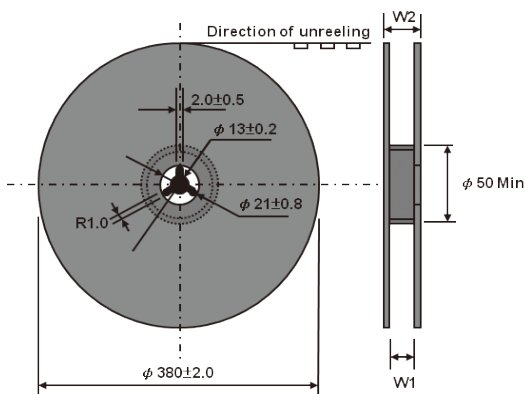
Carrier Tape



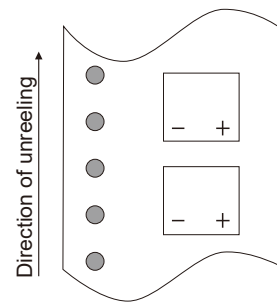
(Unit:mm)

ΦDxL	A	B	W	F	E	P	t	T
5×6	5.7±0.2	5.7±0.2	12.0±0.3	6.5±0.1	1.75±0.1	12.0±0.1	0.4±0.1	7.5±0.2
6.3×6	7.0±0.2	7.0±0.2	16.0±0.3	7.5±0.1	1.75±0.1	12.0±0.1	0.4±0.1	8.0±0.2
6.3x(7~8)	7.0±0.2	7.0±0.2	16.0±0.3	7.5±0.1	1.75±0.1	12.0±0.1	0.4±0.1	8.0±0.2
6.3×9.5	7.0±0.2	7.0±0.2	16.0±0.3	7.5±0.1	1.75±0.1	12.0±0.1	0.4±0.1	10.0±0.2
8×7	8.7±0.2	8.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	8.8±0.2
8x(9.5~10)	8.7±0.2	8.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	11.0±0.2
8x12	8.7±0.2	8.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	13.0±0.2
10X8	10.7±0.2	10.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	8.5±0.2
10x10.5	10.7±0.2	10.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	11.0±0.2
10x(12~12.5)	10.7±0.2	10.7±0.2	24.0±0.3	11.5±0.1	1.75±0.1	16.0±0.1	0.4±0.1	(13~13.5)±0.2

Reel



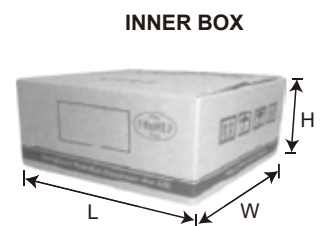
Polarity



PACKAGE BOX

(Unit:mm)

Size Code ΦDxL	W1	W2	Q'ty / Reel	Size of Inner Box (L)x(W)x(H)	Size of Out Box (L)x(W)x(H)
5×6	14.0±1.0	18.0±1.0	1000 pcs.	385x385x106	412x403x255
6.3×(6~8)	18.0±1.0	22.0±1.0	1000 pcs.	385x385x125	412x403x293
6.3×9.5	18.0±1.0	22.0±1.0	800 pcs.	385x385x125	412x403x293
8×(7~10)	26.0±1.0	30.0±1.0	500 pcs.	385x385x106	412x403x255
10×(8~10.5)	26.0±1.0	30.0±1.0	500 pcs.	385x385x106	412x403x255
(8~10)×12.5	26.0±1.0	30.0±1.0	400 pcs.	385x385x106	412x403x255



Inner Box Size:
(L) X (W) X (H)