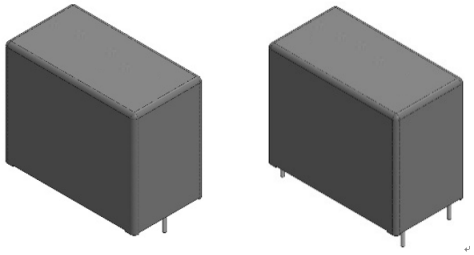
Snubber Capacitors (Metallized Polypropylene Film Capacitors

PCPW238 MMKP

CONSTRUCTION

· Dielectric	:	Double side metallized PET film & Metallized polypropylene film
· Case	:	PBT (UL94 V-0)
· Filling	:	Epoxy resin (UL94 V-0)
· Terminals	:	Tinned copper wire (2-pin / 4-pin)



FEATURE

- Self-Healing
- Low contact resistance
- Low loss dielectric
- High ripple current
- High contact reliability

APPLICATION

. Snubber Capacitor for IGBT

. Protection circuits in SMPS

. Energy conversion and control in power electronics

QUICK REFERENCE DATA

Capacitance range	0.10 to 3.3μF
Capacitance tolerance	±5%, ±10%,
Rated voltage (DC)	850V, 1000V, 1250V, 1600V, 2000V
Dissipation factor (DF)	0.0005 at 1KHz(0.1uF < C ≤ 3.3uF)
Insulation resistance (IR)	10,000s after 1minute of electrification at 500Vdc(C > 0.33uF)
Climatic category	40 / 85 / 56
Temperature range	-40°C ~+105 °C
Max permissible ambient temperature	85°C (operation at rated power, rated current and natural cooling)
Reference	IEC 60384-16 / IEC61071
Potting & Encapsulation material	Qualified in accordance with UL94V-0

• Design and specifications are subjected to change without notice. Please refer to caution and warning at http://www.pilkor.co.kr/sub/download/Introductions.pdf before using these products.

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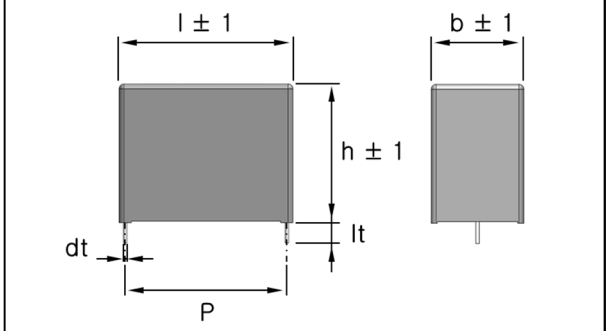
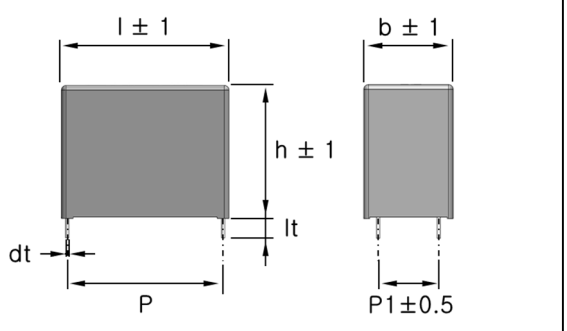
ORDERING INFORMATION

2-PINS



P(mm)	dt (mm)
32.5 (±0.7)	Ø1.0 (±0.10)
37.5 (±0.7)	Ø1.0 (±0.10)

4-PINS



P(mm)	dt (mm)
37.5 (±0.7)	Ø1.0 (±0.10)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
P	**2**	**3**	**8**	**Q**	**8**	**5**	**1**	**0**	**5**	**K**	**A**	**S**	**2**

Digits 1~4	
Code	Series name
P238	PCPW238

Digits 5	
Code	Pitch
N	32.5 mm
Q	37.5 mm
T	52.5 mm

Digits 6~7	
Code	Voltage
85	850Vdc
10	1000Vdc
12	1250Vdc
16	1600Vdc
20	2000Vdc

Digits 8~10	
Code	Capacitance
334	0.33uF
335	3.3uF
336	33uF

Digits 11	
Code	Cap. tolerance
J	5%
K	10%

Digits 12	
Code	Revision
A	Standard
M	Automotive
L	Low profile

Digits 13	
Code	Lead length
L	25.0± 1.0
S	5.0± 1.0
F	4.0± 0.5
8	3.8±0.5(0.3)*
7	3.7±0.5(0.3)*
5	3.5±0.5(0.3)*
4	3.4±0.5(0.3)*
2	3.2±0.5(0.3)*
T	3.0±0.5(0.3)*

* dt(mm) = Ø0.8, ±0.3

Digits 14		
Code	Lead type	Packing
2	2-PIN	Arrange
4	4-PIN	Arrange

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ELETRICAL DATA AND ORDERING CODE

V_{Rdc} = 850V

Cap (μF)	B x H x L (mm)	d_t (mm)	P (mm)	dv/dt (V/us)	I_{peak} (A)	I_{rms} (A) *	Ordering Code
Pitch = 32.5 ± 0.7 mm							
0.68	16.0 x 26.0 x 37.0	1.0	32.5	450	306	6.0	P238N85684KA**
0.82	18.0 x 30.0 x 37.0	1.0	32.5	450	369	7.0	P238N85824KA**
1.0	20.0 x 34.0 x 37.0	1.0	32.5	450	450	8.0	P238N85105KA**
Pitch = 37.5 ± 0.7 mm							
0.82	24.0 x 17.0 x 42.0	1.0	37.5	450	369	8.0	P238Q85824KL**
1.0	18.0 x 33.0 x 42.0	1.0	37.5	450	450	10.0	P238Q85105KA**
1.5	20.0 x 35.0 x 42.0	1.0	37.5	450	675	12.0	P238Q85155KA**
2.2	24.0 x 39.0 x 42.0	1.0	37.5	450	990	14.0	P238Q85225KA**
3.3	30.0 x 45.0 x 42.0	1.0	37.5	450	1485	17.0	P238Q85335KA**

V_{Rdc} = 1000V

Cap (μF)	B x H x L (mm)	d_t (mm)	P (mm)	dv/dt (V/us)	I_{peak} (A)	I_{rms} (A) *	Ordering Code
Pitch = 32.5 ± 0.7 mm							
0.47	16.0 x 26.0 x 37.0	1.0	32.5	450	148	6.0	P238N10474KA**
0.68	18.0 x 30.0 x 37.0	1.0	32.5	450	306	7.0	P238N10684KA**
0.82	20.0 x 34.0 x 37.0	1.0	32.5	450	369	8.0	P238N10824KA**
Pitch = 37.5 ± 0.7 mm							
0.56	24.0 x 17.0 x 42.0	1.0	37.5	450	252	8.0	P238Q10564KL**
1.0	20.0 x 35.0 x 42.0	1.0	37.5	450	450	11.0	P238Q10105KA**
1.5	24.0 x 39.0 x 42.0	1.0	37.5	450	675	13.0	P238Q10155KA**
2.2	30.0 x 45.0 x 42.0	1.0	37.5	450	990	15.0	P238Q10155KA**

(*)Maximum RMS current at +70℃, 100KHz, ΔT=+15℃ (Hot spot temp. = T_{amb} + ΔT = 70℃ + 15℃ = 85℃)

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V_{Rdc} = 1250 V

Cap (μF)	B x H x L (mm)	d_t (mm) or Terminal	P (mm)	dv/dt (V/us)	I_{peak} (A)	I_{rms} (A) *	Ordering Code
Pitch = 32.5 ± 0.7 mm							
0.22	16.0 x 26.0 x 37.0	1.0	32.5	700	154	6.0	P238N12224KA**
0.33	18.0 x 30.0 x 37.0	1.0	32.5	700	231	7.0	P238N12334KA**
0.47	20.0 x 34.0 x 37.0	1.0	32.5	700	329	8.0	P238N12474KA**
Pitch = 37.5 ± 0.7 mm							
0.47	18.0 x 33.0 x 42.0	1.0	37.5	700	329	10.0	P238Q12474KA**
0.68	20.0 x 35.0 x 42.0	1.0	37.5	700	476	11.0	P238Q12684KA**
1.0	24.0 x 39.0 x 42.0	1.0	37.5	700	700	12.0	P238Q12105KA**
1.5	30.0 x 45.0 x 42.0	1.0	37.5	700	1050	14.0	P238Q12155KA**

V_{Rdc} = 1600 V

Cap (μF)	B x H x L (mm)	d_t (mm) or Terminal	P (mm)	dv/dt (V/us)	I_{peak} (A)	I_{rms} (A) *	Ordering Code
Pitch = 32.5 ± 0.7 mm							
0.18	16.0 x 26.0 x 37.0	1.0	32.5	1000	220	6.0	P238N16154KA**
0.22	18.0 x 30.0 x 37.0	1.0	32.5	1000	300	7.0	P238N16224KA**
0.30	20.0 x 34.0 x 37.0	1.0	32.5	1000	330	8.0	P238N16304KA**
Pitch = 37.5 ± 0.7 mm							
0.22	24.0 x 17.0 x 42.0	1.0	37.5	1000	220	7.0	P238Q16224KL**
0.33	18.0 x 33.0 x 42.0	1.0	37.5	1000	330	8.0	P238Q16334KA**
0.47	20.0 x 35.0 x 42.0	1.0	37.5	1000	470	9.0	P238Q16474KA**
0.68	24.0 x 39.0 x 42.0	1.0	37.5	1000	680	11.0	P238Q16684KA**
1.0	30.0 x 45.0 x 42.0	1.0	37.5	1000	1000	13.0	P238Q16105KA**

(*)Maximum RMS current at +70℃, 100KHz, ΔT=+15℃ (Hot spot temp. = T_{amb} + ΔT = 70℃ + 15℃ = 85℃)

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V_{Rdc} = 2000 V

Cap (μF)	B x H x L (mm)	d_t (mm) or Terminal	P (mm)	dv/dt (V/us)	I_{peak} (A)	I_{rms} (A) *	Ordering Code
Pitch = 32.5 ± 0.7 mm							
0.15	16.0 x 26.0 x 37.0	1.0	32.5	1000	150	6.0	P238N20154KA**
0.18	18.0 x 30.0 x 37.0	1.0	32.5	1000	180	7.0	P238N20184KA**
0.20	20.0 x 34.0 x 37.0	1.0	32.5	1000	200	8.0	P238N20204KA**
Pitch = 37.5 ± 0.7 mm							
0.22	18.0 x 33.0 x 42.0	1.0	37.5	1000	220	9.0	P238Q20224KA**
0.33	20.0 x 35.0 x 42.0	1.0	37.5	1000	330	10.0	P238Q20334KA**
0.47	24.0 x 39.0 x 42.0	1.0	37.5	1000	470	11.0	P238Q20474KA**
0.68	30.0 x 45.0 x 42.0	1.0	37.5	1000	680	12.0	P238Q20684KA**

(*)Maximum RMS current at +70℃, 100KHz, ΔT=+15℃ (Hot spot temp. = T_{amb} + ΔT = 70℃ + 15℃ = 85℃)

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CHARACTERISTICS

● **Test Votage**

. Test Voltage (between terminations) : 1.6 x V_{Rdc}, 10s (1 min for type test)
. Test Voltage (between leads and case) : 3KV- 50Hz(or 60Hz) for 60 seconds

● **Dissipation Factor**

Rated voltage	Capacitance	Tangent of loss angle (x 10^{-4})		
		1 kHz	10 kHz	100 kHz
850~2000V	0.1 ㎌ < C ≤ 3.3 ㎌	≤ 5	≤ 8	-

● **Insulation Resistance**

The insulation resistance is measured for 1min ±5s, at 500V

Rated voltage	Minimum RC	Minimum Insulation
	Capacitance > 0.33uF	Capacitance ≤ 0.33uF
≥ 500V	> 10,000s	> 30GΩ

(R = insulation resistance between the terminations[Ω], C = capacitance[Farad])

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PRODUCT MARKING

Capacitors are marked on the top or on the top and one side with the following information :

. Rated capacitance code in accordance with IEC 60062

. Tolerance on rated capacitance : J : ± 5 % K : ± 10 %

. Rated (DC) Voltage (e.g. 1250 V)

. Code for dielectric material (MMKP)

. Manufacturer's type designation (PCPW 238)

. Manufacturer's name (PILKOR)

Example of marking

1u5	K	1250V	PILKOR
PCPW238		MMKP	WK....

Marking on the top or side

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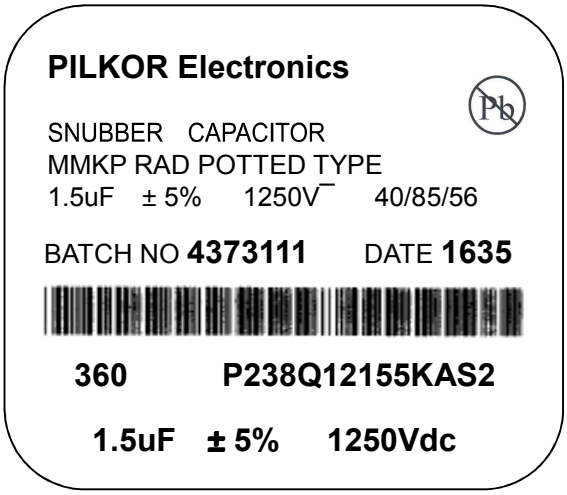
PACKAGE MARKING

The package containing the capacitors is marked as shown.



LINE MARKING EXPLANATION

1 Manufacturer`s name

2 Sub – family

3. Pb free marking(JEDEC-STD-97)

4 Type description

5 Capacitance value, tolerance,
Voltage and climatic category (IEC)

6 Batch no. & production period
year and week code

7 Quantity and Product code

8 Capacitance, tolerance and voltage

PACKING QUANTITY INFORMATION

SMALLEST PACKING QUANTITIES (SPQ)	Arrange Pack.
	lt = 5.0 ± 1.0mm
16.0 x 26.0 x 37.0	88
18.0 x 30.0 x 37.0	80
20.0 x 34.0 x 37.0	72
18.0 x 33.0 x 42.0	100
20.0 x 35.0 x 42.0	90
24.0 x 17.0 x 42.0	65
24.0 x 39.0 x 42.0	75
28.0 x 43.0 x 42.0	65
30.0 x 45.0 x 42.0	60