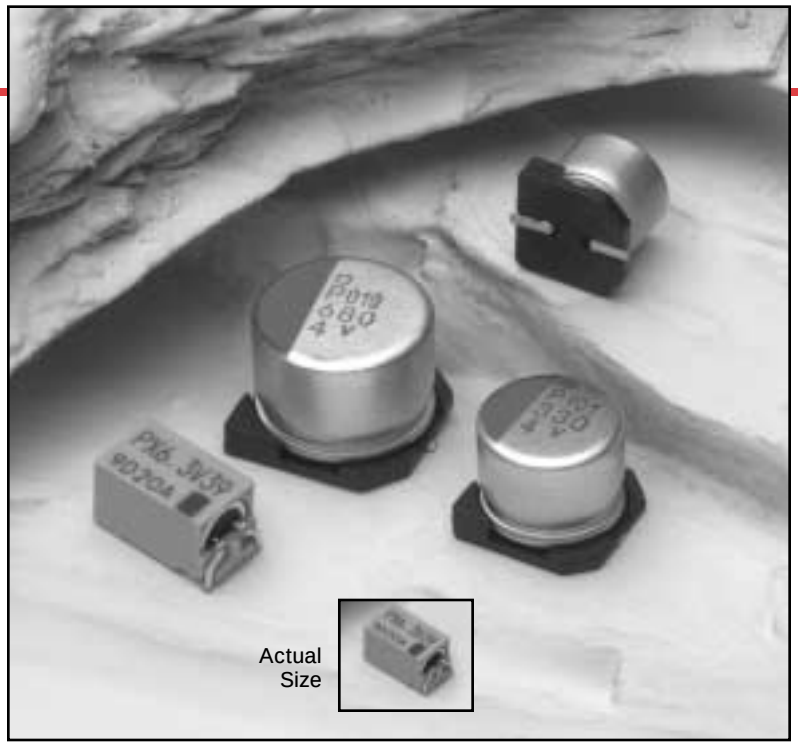
PX Series

UNITED CHEMI-CON

- **Solid Functional Polymer Aluminum**
- **Surface Mount**
- **Super Low Impedance**
- **Solvent Proof**
- **+105°C Max. Temperature**



The PX series is a new surface mount capacitor series that uses a polymer as the electrolyte. This allows for very low impedance and for extended useful lifetimes. Available in vertical and horizontal case styles, the PX series is designed for use in DC-DC converters and voltage regulators or any other application where a low impedance cap is required. The PX series capacitors can also be used as a surface mount option for an OS-CON™ capacitor.

The PX series capacitors are solvent proof. Refer to the Mini-Glossary for cleaning guidelines and recommended cleaning agents that are compatible with United Chemi-Con products.

Summary of Specifications

- **Surface mount lead terminals.**
- **Capacitance range: 15 to 680µF.**
- **Voltage range: 4 to 20VDC.**
- **Category temperature range: −55°C to +105°C.**
- **Leakage current: 0.2CV maximum after 2 minutes at +20°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size: vertical style (D×L) 6.3×5.7mm to 10×7.7mm; horizontal style (L×W×H) 8.3×4.6×4.5mm.**
- **Rated lifetime: 1,000 hours at +105°C.**

PX Series

PX Specifications

Item	Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	4 to 20VDC
Capacitance Range	15 to 680μF
Capacitance Tolerance	±20% (M) at +20°C, 120Hz
Leakage Current	I = 0.2CV maximum after 2 minutes at +20°C. Where I = Max. leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)
Dissipation Factor (Tan δ)	0.12 maximum at +20°C, 120Hz
Low Temperature Characteristics	At 100kHz, impedance (Z) ratio between the −25°C or −55°C value and +20°C value shall not exceed the values given below. Rated Voltage (V) | 4-20 Z(−25°C)/Z(+20°C) | ≤ 1.15 Z(−55°C)/Z(+20°C) | ≤ 1.25
Endurance (Load Life)	The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to the DC rated voltage for 1,000 hours at +105°C. Appearance : no significant damage Capacitance change: ≤ ±20% of the initial measured value Tan δ (DF) : ≤ 150% of the initial specified value ESR : ≤ 150% of the initial specified value Leakage current : ≤ initial specified value
Bias Humidity Test	The following specifications shall be satisfied when the capacitors are restored to +20°C after subjecting them to the DC rated voltage for 500 hours at +60°C, 90-95%RH. Appearance : no significant damage Capacitance change: ≤ ±20% of the initial measured value Tan δ (DF) : ≤ 150% of the initial specified value ESR : ≤ 150% of the initial specified value Leakage current : ≤ initial specified value
Surge Voltage Test	The following specifications shall be satisfied when the capacitors are restored to +20°C after the surge voltage at +105°C is applied at a cycling of 30 seconds on, 5.5 minutes off for 1,000 cycles through a protective resistor of 1,000 ohms. The surge voltage shall not exceed 115% of the rated voltage. Appearance : no significant damage Capacitance change: ≤ ±20% of the initial measured value Tan δ (DF) : ≤ 150% of the initial specified value ESR : ≤ 150% of the initial specified value Leakage current : ≤ initial specified value
Failure Rate	1% maximum per 1,000 hours at +105°C with rated voltage applied. (Confidence level 60%)
Others	IEC 384-18-1 (Fixed Aluminum Electrolytic Chip Capacitors With Solid Electrolyte)

Part Numbering System for PX Series

When ordering, always specify complete catalog number for PX Series.

PX 4 VC 681 M J80 TP

- TP — Packaging: TP = Standard Taping.
- J80 — Case Code: See Case Sizes in Tables.
- M — Capacitance Tolerance: M = ±20%
- 681 — Capacitance Value: Expressed in Microfarads. The first two digits are significant figures, and the third digit indicates the number of zeros for capacitance of 100μF or more. R indicates the decimal point for capacitance less than 100μF (e.g. R68 = .68μF; 6R8 = 6.8μF; 68R = 68μF; 681 = 680μF; 682 = 6,800μF; 683 = 68,000μF).
- VC — Lead Configuration: VC = Vertical Chip, 2 SMD Terminals. FC = Horizontal Chip, 2 SMD Terminals.
- 4 — DC Rated Voltage: Expressed in Volts (e.g. 4 = 4WVDC).
- PX — Series Name: Indicates Basic Capacitor Design.

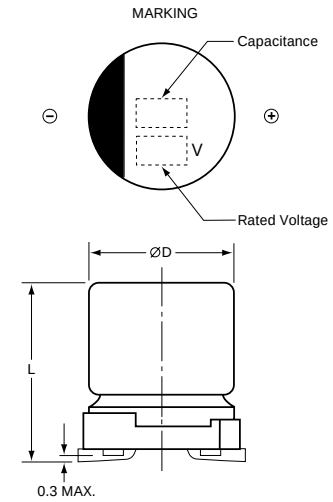
PX Series

Diagram of Dimensions

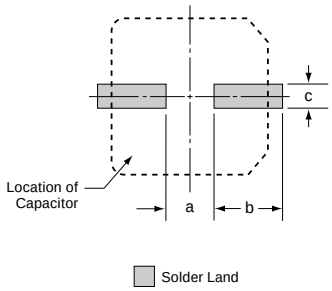
Vertical Chip SMD Lead Terminals

Unit: mm

VC Type



Recommended PCB Land Pattern



For tape and reel packaging and reflow soldering conditions, refer to the beginning of the Surface Mount section.

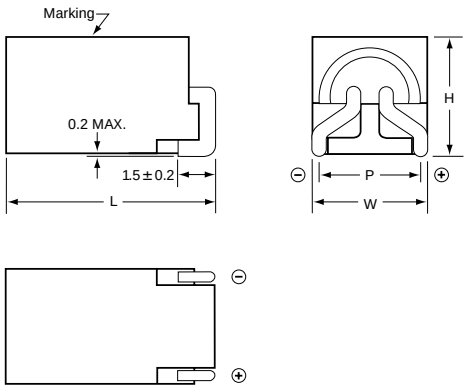
Case and PCB Land Pattern Dimensions

Case Code	øD ±0.5	L ±0.3	A ±0.2	B ±0.2	C ±0.2	W	P	a	b	c
F60	ø6.3	5.7	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
H70	ø8	6.7	8.3	8.3	9.0	0.7-1.1	3.1	3.1	4.2	2.2
J80	ø10	7.7	10.3	10.3	11.0	0.7-1.1	4.5	4.5	4.4	2.2

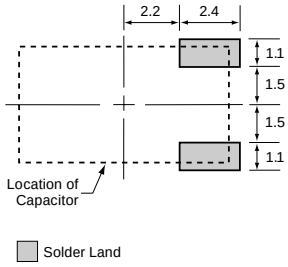
Horizontal Chip SMD Lead Terminals

Unit: mm

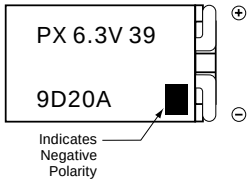
FC Type



Recommended PCB Land Pattern



Marking Example: 6.3V, 39µF



For tape and reel packaging and reflow soldering conditions, refer to the beginning of the Surface Mount section.

Case Dimensions

Case Code	L+0.2 max.	W+0.2 max.	H+0.2 max.	P±0.3
D8	8.3	4.6	4.5	4.0

PX Series

Standard Voltage Ratings - Surface Mount Type VC

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Case Code	Maximum ESR (mΩ) at +20°C, 100kHz	Rated Ripple Current (mA rms) at 100k-300kHz	
						≤+85°C	>+85°C, ≤+105°C
4 Volts 4.6 Volts Surge	100	PX4VC101MF60TP	6.3 × 5.7	F60	40	1,550	1,550
	150	PX4VC151MF60TP	6.3 × 5.7	F60	40	1,550	1,550
	220	PX4VC221MH70TP	8 × 6.7	H70	35	2,400	2,000
	330	PX4VC331MH70TP	8 × 6.7	H70	35	2,400	2,000
	470	PX4VC471MJ80TP	10 × 7.7	J80	25	3,500	2,500
	680	PX4VC681MJ80TP	10 × 7.7	J80	25	3,500	2,500
6.3 Volts 7.2 Volts Surge	82	PX6.3VC82RMF60TP	6.3 × 5.7	F60	40	1,500	1,500
	100	PX6.3VC101MF60TP	6.3 × 5.7	F60	40	1,550	1,550
	150	PX6.3VC151MH70TP	8 × 6.7	H70	35	2,200	1,900
	220	PX6.3VC221MH70TP	8 × 6.7	H70	35	2,200	1,900
	330	PX6.3VC331MJ80TP	10 × 7.7	J80	25	3,100	2,400
	470	PX6.3VC471MJ80TP	10 × 7.7	J80	25	3,100	2,400
10 Volts 11.5 Volts Surge	56	PX10VC56RMF60TP	6.3 × 5.7	F60	50	1,450	1,450
	120	PX10VC121MH70TP	8 × 6.7	H70	40	2,000	1,800
	150	PX10VC151MH70TP	8 × 6.7	H70	40	2,000	1,800
	270	PX10VC271MJ80TP	10 × 7.7	J80	30	2,800	2,300
	330	PX10VC331MJ80TP	10 × 7.7	J80	30	2,800	2,300
16 Volts 18.4 Volts Surge	39	PX16VC39RMF60TP	6.3 × 5.7	F60	60	1,400	1,400
	82	PX16VC82RMH70TP	8 × 6.7	H70	45	1,800	1,600
	150	PX16VC151MJ80TP	10 × 7.7	J80	35	2,500	2,000
	180	PX16VC181MJ80TP	10 × 7.7	J80	35	2,500	2,000
20 Volts 23 Volts Surge	22	PX20VC22RMF60TP	6.3 × 5.7	F60	65	1,350	1,350
	27	PX20VC27RMF60TP	6.3 × 5.7	F60	65	1,350	1,350

Standard Voltage Ratings - Surface Mount Type FC

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* L×W×H (mm)	Case Code	Maximum ESR (mΩ) at +20°C, 100kHz	Rated Ripple Current (mA rms) at 100k-300kHz	
						≤+85°C	>+85°C, ≤+105°C
4 Volts 4.6 Volts Surge	47	PX4FC47RMD8TP	8.3 × 4.6 × 4.5	D8	80	1,000	1,000
	68	PX4FC68RMD8TP	8.3 × 4.6 × 4.5	D8	80	1,000	1,000
6.3 Volts 7.2 Volts Surge	33	PX6.3FC33RMD8TP	8.3 × 4.6 × 4.5	D8	80	1,000	1,000
	39	PX6.3FC39RMD8TP	8.3 × 4.6 × 4.5	D8	80	1,000	1,000
10 Volts 11.5 Volts Surge	22	PX10FC22RMD8TP	8.3 × 4.6 × 4.5	D8	100	1,000	1,000
	33	PX10FC33RMD8TP	8.3 × 4.6 × 4.5	D8	100	1,000	1,000
16 Volts 18.4 Volts Surge	15	PX16FC15RMD8TP	8.3 × 4.6 × 4.5	D8	120	800	800

***Refer to diagrams for detailed case size dimensions.**