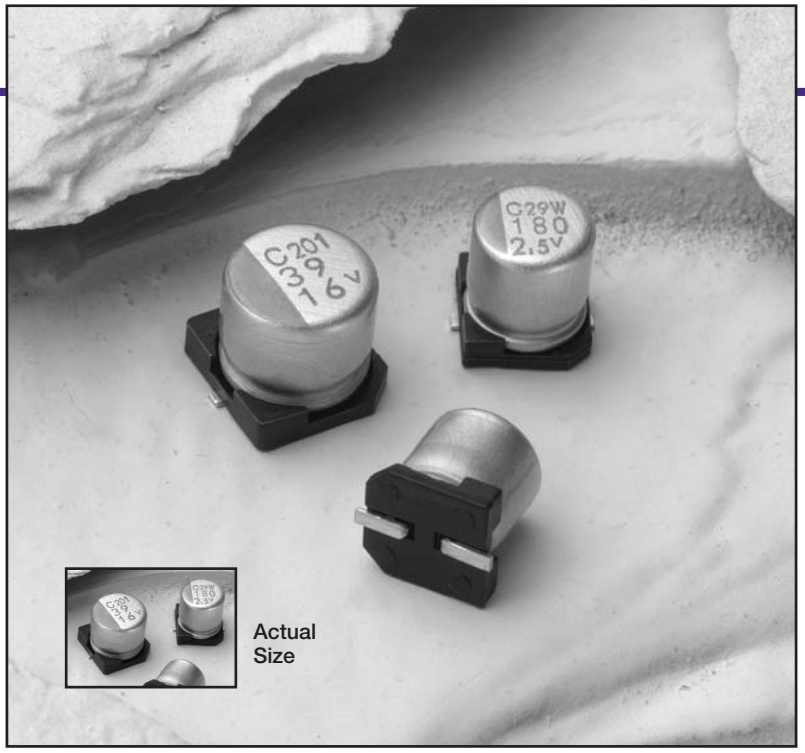
UPGRADE
Engineering Bulletin Jul 03

PXC Series

UNITED CHEMI-CON



Actual Size

- **Solid Functional Polymer Aluminum**
- **Lead-Free Construction**
- **20-30% Lower ESR than PXA**
- **Vertical Chip**
- **+105°C Max. Temperature**

The PXC series is a surface mount aluminum vertical chip series that uses a solid functional polymer as the electrolyte. The PXC capacitors, which are enhanced, downsized versions of the PXA series, offer 20% to 30% lower ESR and higher ripple current capability than the PXA series. Constructed of durable lead-free materials, the PXC capacitors are high heat resistant and can withstand two reflow soldering cycles when exposed to lead-free alloy melting points up to 230°C. The PXC series has been upgraded and offers a higher capacitance case size in five voltage ratings. The PXC capacitors are ideal for use in DC-DC converters, voltage regulators and decoupling applications for computer motherboards. The PXC capacitors are also cost-effective polymer tantalum replacements.

The PXC 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: 27 to 470µF.**
- **Voltage range: 2.5 to 16VDC.**
- **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 (D×L): 5×5.7mm, 6.3×5.7mm and 8×6.7mm.**
- **Rated lifetime: 1,000 hours at +105°C.**

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PXC Series

PXC Specifications

Item	Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	2.5 to 16VDC
Capacitance Range	27 to 470μF
Capacitance Tolerance	±20% (M) at +20°C, 120Hz
Leakage Current	I = 0.2CV maximum after 2 minutes at +20°C. Note: If you need to measure the leakage current, apply a voltage treatment by subjecting the capacitors to the DC rated voltage for 120 minutes at +105°C before the measurement. 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) | 2.5-16 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 is applied at +105°C through a protective resistor of 1,000 ohms at a cycling of 30 seconds on, 5.5 minutes off for 1,000 cycles. 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%)

Part Numbering System for PXC Series

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

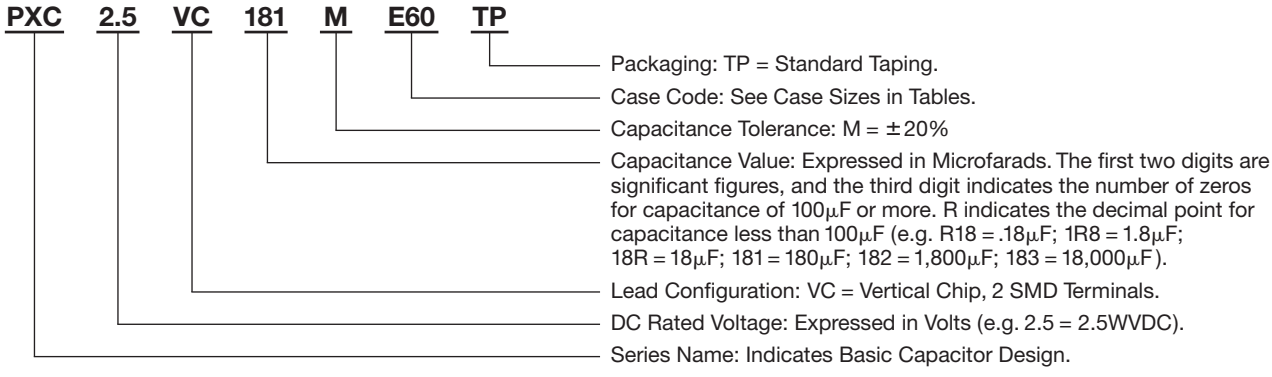

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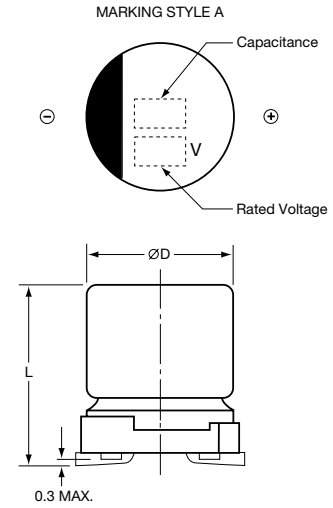
Diagram of Dimensions

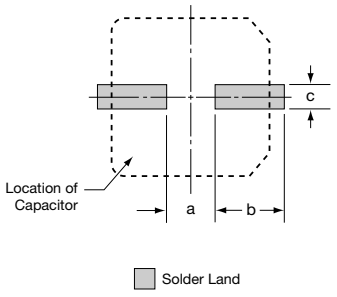
Vertical Chip SMD Lead Terminals

Unit: mm

VC Type



Recommended PCB Land Pattern



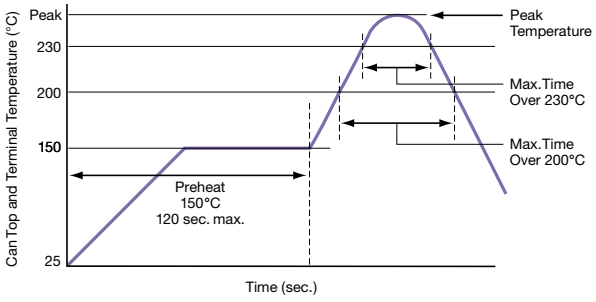
Refer to Packaging section for Surface Mount taping and reel specifications.

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
E60	ø5	5.7	5.3	5.3	5.9	0.5-0.8	1.4	1.4	3.0	1.6
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

Recommended Reflow Soldering Conditions

Temperature Profile for Air or Infrared Reflow Soldering Methods



Refer to Surface Mount Soldering section for additional reflow soldering guidelines and precautions.

Time and Temperature Ranges

Reflow Conditions		For One Reflow Cycle	For Two Reflow Cycles (if necessary)
Preheat	Max. Time	120 seconds	120 seconds
	Temperature	150°C	150°C
Reflow	Max. Time Over 200°C	60 seconds	50 seconds
	Max. Time Over 230°C	40 seconds	30 seconds
	Max. Peak Temperature	250°C	250°C

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PXC Series

Standard Voltage Ratings - Surface Mount

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Case Code	Maximum ESR (mΩ) at +20°C		Rated Ripple Current (mA rms) at −55°C to +105°C 100k-300kHz
					100kHz	300kHz†	
2.5 Volts **2.9 Volts Surge**	180	PXC2.5VC181ME60TP	5 × 5.7	E60	30	22	2,000
	270	PXC2.5VC271MF60TP	6.3 × 5.7	F60	20	18	2,700
	470	PXC2.5VC471MH70TP	8 × 6.7	H70	17	16	3,420
4 Volts **4.6 Volts Surge**	150	PXC4VC151ME60TP	5 × 5.7	E60	30	22	2,000
	220	PXC4VC221MF60TP	6.3 × 5.7	F60	21	19	2,640
	330	PXC4VC331MH70TP	8 × 6.7	H70	18	17	3,300
6.3 Volts **7.2 Volts Surge**	100	PXC6.3VC101ME60TP	5 × 5.7	E60	35	26	1,780
	180	PXC6.3VC181MF60TP	6.3 × 5.7	F60	22	19	2,580
	220	PXC6.3VC221MH70TP	8 × 6.7	H70	18	17	3,300
10 Volts **11.5 Volts Surge**	56	PXC10VC56RME60TP	5 × 5.7	E60	40	31	1,660
	82	PXC10VC82RMF60TP	6.3 × 5.7	F60	23	21	2,400
	150	PXC10VC151MH70TP	8 × 6.7	H70	20	19	3,160
16 Volts **18.4 Volts Surge**	27	PXC16VC27RME60TP	5 × 5.7	E60	45	35	1,570
	39	PXC16VC39RMF60TP	6.3 × 5.7	F60	25	23	2,300
	82	PXC16VC82RMH70TP	8 × 6.7	H70	25	23	2,830

*** Refer to diagrams for detailed case size dimensions.**
† Reference value for ESR at 300kHz.

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