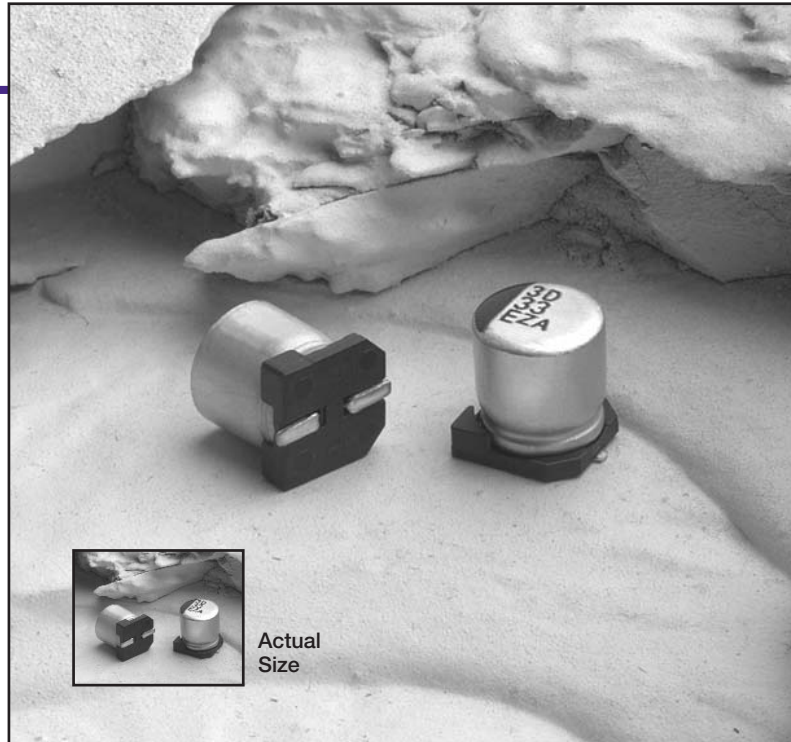


- **Surface Mount**
- **Lowest Impedance**
- **Lead-Free Construction**
- **Solvent Proof**
- **+105°C Maximum Temperature**



The MZA series is United Chemi-Con's lowest impedance vertical surface mount capacitor series. These low impedance capacitors are also constructed of lead-free materials and can withstand high temperature, lead-free alloy reflow soldering. The MZA series has a wide temperature range of  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  with a rated lifetime of 2,000 hours at  $+105^{\circ}\text{C}$ . Available in low profile case sizes ranging from  $\text{Ø}4 \times 5.8\text{mm}$  to  $\text{Ø}10 \times 10\text{mm}$ , the MZA series is suitable for general purpose applications where miniaturization and Pb-free requirements exist.

The MZA 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 terminals.**
- **Capacitance range: 4.7 to 1,500 $\mu\text{F}$ .**
- **Voltage range: 6.3 to 50VDC.**
- **Category temperature range:  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$ .**
- **Leakage current: 0.01CV or 3 $\mu\text{A}$ , whichever is greater, after 2 minutes at  $+20^{\circ}\text{C}$ .**
- **Standard capacitance tolerance:  $\pm 20\%$**
- **Nominal case size (D  $\times$  L): 4  $\times$  5.8mm to 10  $\times$  10mm.**
- **Rated lifetime: 2,000 hours at  $+105^{\circ}\text{C}$ .**

## MZA Specifications

Item	Characteristics																												
Category Temperature Range	- 55 to +105°C																												
Rated Voltage Range	6.3 to 50VDC																												
Capacitance Range	4.7 to 1,500 $\mu$ F																												
Capacitance Tolerance	$\pm$ 20% (M) at +20°C, 120Hz																												
Leakage Current	I = 0.01CV or 3 $\mu$ A, whichever is greater, after 2 minutes at +20°C. Where I = Max. leakage current ( $\mu$ A), C = Nominal capacitance ( $\mu$ F) and V = Rated voltage (V)																												
Dissipation Factor (Tan $\delta$ )	At +20°C, 120Hz <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Tan <math>\delta</math> (DF)</td> <td>0.26</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> </tr> </tbody> </table>	Rated Voltage (V)	6.3	10	16	25	35	50	Tan $\delta$ (DF)	0.26	0.19	0.16	0.14	0.12	0.10														
Rated Voltage (V)	6.3	10	16	25	35	50																							
Tan $\delta$ (DF)	0.26	0.19	0.16	0.14	0.12	0.10																							
Low Temperature Characteristics	At 120Hz, impedance (Z) ratio between the - 25°C, - 40°C or - 55°C value and +20°C value shall not exceed the values given below. <table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td>Z (-25°C) / Z (+20°C)</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z (-40°C) / Z (+20°C)</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> <tr> <td>Z (-55°C) / Z (+20°C)</td> <td>4</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </tbody> </table>	Rated Voltage (V)	6.3	10	16	25	35	50	Z (-25°C) / Z (+20°C)	2	2	2	2	2	2	Z (-40°C) / Z (+20°C)	3	3	3	3	3	3	Z (-55°C) / Z (+20°C)	4	4	4	3	3	3
Rated Voltage (V)	6.3	10	16	25	35	50																							
Z (-25°C) / Z (+20°C)	2	2	2	2	2	2																							
Z (-40°C) / Z (+20°C)	3	3	3	3	3	3																							
Z (-55°C) / Z (+20°C)	4	4	4	3	3	3																							
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 2,000 hours at +105°C. Capacitance change: $\leq \pm$ 30% of initial measured value Tan $\delta$ (DF) : $\leq$ 200% of initial specified value Leakage current : $\leq$ initial specified value																												
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to +20°C after exposing them for 1,000 hours at +105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change: $\leq \pm$ 30% of initial measured value Tan $\delta$ (DF) : $\leq$ 300% of initial specified value Leakage current : $\leq$ initial specified value																												

## Part Numbering System for MZA Series

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

MZA	25	VC	33R	M	E61	TP	
							Packaging: TP = Standard Taping. Refer to our web site for taping and reel specifications.
							Case Code: See Case Sizes in Tables.
							Capacitance Tolerance: M = $\pm$ 20%
							Capacitance Value: Expressed in Microfarads. The first two digits are significant figures, and the third digit indicates the number of zeros for capacitance of 100 $\mu$ F or more. R indicates the decimal point for capacitance less than 100 $\mu$ F (e.g. R33 = .33 $\mu$ F; 3R3 = 3.3 $\mu$ F; 33R = 33 $\mu$ F; 331 = 330 $\mu$ F; 332 = 3,300 $\mu$ F; 333 = 33,000 $\mu$ F).
							Lead Configuration: VC = Vertical Chip, 2 SMD Terminals.
							DC Rated Voltage: Expressed in Volts (e.g. 25 = 25WVDC).
							Series Name: Indicates Basic Capacitor Design.

## Diagram of Dimensions

### Vertical Chip SMD Lead Terminals

VC Type

MARKING  
Example: 25V 33 $\mu$ F

Rated Voltage Marking

j = 6.3V	E = 25V
A = 10V	V = 35V
C = 16V	H = 50V

### Recommended PCB Land Pattern

Unit: mm

### Case and Solder Land Dimensions

Case Code	$\varnothing D \pm 0.5$	L	A $\pm 0.2$	B $\pm 0.2$	C $\pm 0.2$	W	P	a	b	c
D61	$\varnothing 4$	$5.8 \pm 0.3$	4.3	4.3	5.1	0.5-0.8	1.0	1.0	2.6	1.6
E61	$\varnothing 5$	$5.8 \pm 0.3$	5.3	5.3	5.9	0.5-0.8	1.4	1.4	3.0	1.6
F61	$\varnothing 6.3$	$5.8 \pm 0.3$	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
F80	$\varnothing 6.3$	$7.7 \pm 0.3$	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
H10	$\varnothing 8$	$10 \pm 0.5$	8.3	8.3	9.0	0.7-1.1	3.1	3.1	4.2	2.2
J10	$\varnothing 10$	$10 \pm 0.5$	10.3	10.3	11.0	0.7-1.1	4.5	4.5	4.4	2.2

## Recommended Reflow Soldering Conditions

### Temperature Profile for Air or Infrared Reflow Soldering Methods

Refer to our web site for additional reflow soldering guidelines and precautions for surface mount capacitors.

### Time and Temperature Ranges

Reflow Conditions		Case Code D61~F80	Case Code H10~J10
Preheat	Max. Time	120 seconds	120 seconds
	Temperature Range	150~180°C	150~180°C
Reflow	Max. Time Over 200°C	60 seconds	50 seconds
	Max. Time Over 230°C	30 seconds	20 seconds
	Max. Peak Temperature	250°C	240°C

## Standard Voltage Ratings - Surface Mount

Rated Voltage (VWDC)	Capacitance (μF)	Catalog Part Number	Nominal Case Size* D × L (mm)	Case Code	Maximum Impedance (Ω) at +20°C, 100kHz	Rated Ripple Current (mA rms) at +105°C, 100kHz
<b>6.3 Volts</b> 8 Volts Surge	22	MZA6.3VC22RMD61TP	4 × 5.8	D61	1.35	90
	47	MZA6.3VC47RMD61TP	4 × 5.8	D61	1.35	90
	47	MZA6.3VC47RME61TP	5 × 5.8	E61	0.70	160
	100	MZA6.3VC101ME61TP	5 × 5.8	E61	0.70	160
	100	MZA6.3VC101MF61TP	6.3 × 5.8	F61	0.36	240
	220	MZA6.3VC221MF61TP	6.3 × 5.8	F61	0.36	240
	330	MZA6.3VC331MF80TP	6.3 × 7.7	F80	0.34	280
	470	MZA6.3VC471MH10TP	8 × 10	H10	0.16	600
	1,000	MZA6.3VC102MH10TP	8 × 10	H10	0.16	600
1,500	MZA6.3VC152MJ10TP	10 × 10	J10	0.08	850	
<b>10 Volts</b> 13 Volts Surge	22	MZA10VC22RMD61TP	4 × 5.8	D61	1.35	90
	33	MZA10VC33RMD61TP	4 × 5.8	D61	1.35	90
	33	MZA10VC33RME61TP	5 × 5.8	E61	0.70	160
	220	MZA10VC221MF80TP	6.3 × 7.7	F80	0.34	280
	330	MZA10VC331MH10TP	8 × 10	H10	0.16	600
	470	MZA10VC471MH10TP	8 × 10	H10	0.16	600
	680	MZA10VC681MH10TP	8 × 10	H10	0.16	600
	1,000	MZA10VC102MJ10TP	10 × 10	J10	0.08	850
<b>16 Volts</b> 20 Volts Surge	10	MZA16VC10RMD61TP	4 × 5.8	D61	1.35	90
	22	MZA16VC22RMD61TP	4 × 5.8	D61	1.35	90
	22	MZA16VC22RME61TP	5 × 5.8	E61	0.70	160
	47	MZA16VC47RME61TP	5 × 5.8	E61	0.70	160
	47	MZA16VC47RMF61TP	6.3 × 5.8	F61	0.36	240
	100	MZA16VC101MF61TP	6.3 × 5.8	F61	0.36	240
	220	MZA16VC221MF80TP	6.3 × 7.7	F80	0.34	280
	330	MZA16VC331MH10TP	8 × 10	H10	0.16	600
	470	MZA16VC471MH10TP	8 × 10	H10	0.16	600
	680	MZA16VC681MJ10TP	10 × 10	J10	0.08	850
<b>25 Volts</b> 32 Volts Surge	10	MZA25VC10RMD61TP	4 × 5.8	D61	1.35	90
	22	MZA25VC22RME61TP	5 × 5.8	E61	0.70	160
	33	MZA25VC33RME61TP	5 × 5.8	E61	0.70	160
	33	MZA25VC33RMF61TP	6.3 × 5.8	F61	0.36	240
	47	MZA25VC47RMF61TP	6.3 × 5.8	F61	0.36	240
	100	MZA25VC101MF80TP	6.3 × 7.7	F80	0.34	280
	220	MZA25VC221MH10TP	8 × 10	H10	0.16	600
	330	MZA25VC331MH10TP	8 × 10	H10	0.16	600
	470	MZA25VC471MJ10TP	10 × 10	J10	0.08	850
<b>35 Volts</b> 44 Volts Surge	4.7	MZA35VC4R7MD61TP	4 × 5.8	D61	1.35	90
	10	MZA35VC10RMD61TP	4 × 5.8	D61	1.35	90
	10	MZA35VC10RME61TP	5 × 5.8	E61	0.70	160
	22	MZA35VC22RME61TP	5 × 5.8	E61	0.70	160
	33	MZA35VC33RMF61TP	6.3 × 5.8	F61	0.36	240
	47	MZA35VC47RMF61TP	6.3 × 5.8	F61	0.36	240
	100	MZA35VC101MF80TP	6.3 × 7.7	F80	0.34	280
	100	MZA35VC101MH10TP	8 × 10	H10	0.16	600
	220	MZA35VC221MH10TP	8 × 10	H10	0.16	600
	330	MZA35VC331MJ10TP	10 × 10	J10	0.08	850
<b>50 Volts</b> 63 Volts Surge	4.7	MZA50VC4R7MD61TP	4 × 5.8	D61	2.90	60
	10	MZA50VC10RME61TP	5 × 5.8	E61	1.52	85
	10	MZA50VC10RMF61TP	6.3 × 5.8	F61	0.88	165
	22	MZA50VC22RMF61TP	6.3 × 5.8	F61	0.88	165
	33	MZA50VC33RMF80TP	6.3 × 7.7	F80	0.68	195
	47	MZA50VC47RMF80TP	6.3 × 7.7	F80	0.68	195
	100	MZA50VC101MH10TP	8 × 10	H10	0.34	350
	220	MZA50VC221MJ10TP	10 × 10	J10	0.18	670

\* Refer to diagrams for detailed case size dimensions.