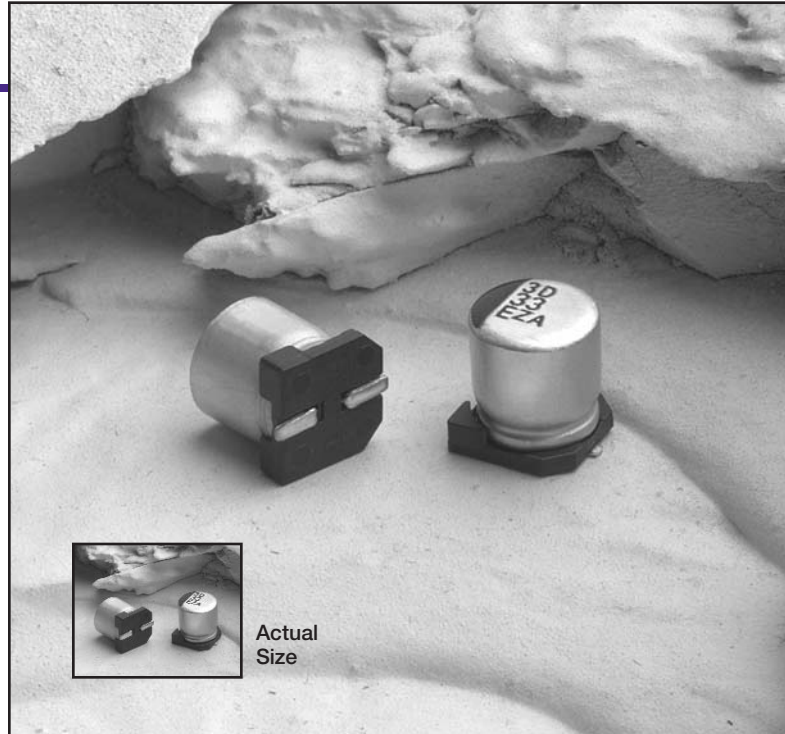


- **Surface Mount**
- **Lowest Impedance**
- **Lead-Free Construction**
- **Solvent Proof**
- **+105°C Maximum Temperature**



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°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 μF .**
- **Voltage range: 6.3 to 50VDC.**
- **Category temperature range: -55°C to $+105^{\circ}\text{C}$.**
- **Leakage current: 0.01CV or 3 μA , 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 μ F																												
Capacitance Tolerance	\pm 20% (M) at +20°C, 120Hz																												
Leakage Current	$I = 0.01CV$ or 3μ A, whichever is greater, after 2 minutes at +20°C. Where I = Max. leakage current (μ A), C = Nominal capacitance (μ F) and V = Rated voltage (V)																												
Dissipation Factor (Tan δ)	At +20°C, 120Hz <table border="1" style="margin-left: 20px;"> <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 δ (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 δ (DF)	0.26	0.19	0.16	0.14	0.12	0.10														
Rated Voltage (V)	6.3	10	16	25	35	50																							
Tan δ (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" style="margin-left: 20px;"> <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 δ (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 δ (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.

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

Diagram of Dimensions

Vertical Chip SMD Lead Terminals

VC Type

MARKING
Example: 25V 33 μ 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	$\varnothing D$ ± 0.5	L	A ± 0.2	B ± 0.2	C ± 0.2	W	P	a	b	c
D61	$\varnothing 4$	5.8 ± 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 ± 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 ± 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 ± 0.3	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
H10	$\varnothing 8$	10 ± 0.5	8.3	8.3	9.0	0.7-1.1	3.1	3.1	4.2	2.2
J10	$\varnothing 10$	10 ± 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
6.3 Volts 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	
10 Volts 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	
16 Volts 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	
25 Volts 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	
35 Volts 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	
50 Volts 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.