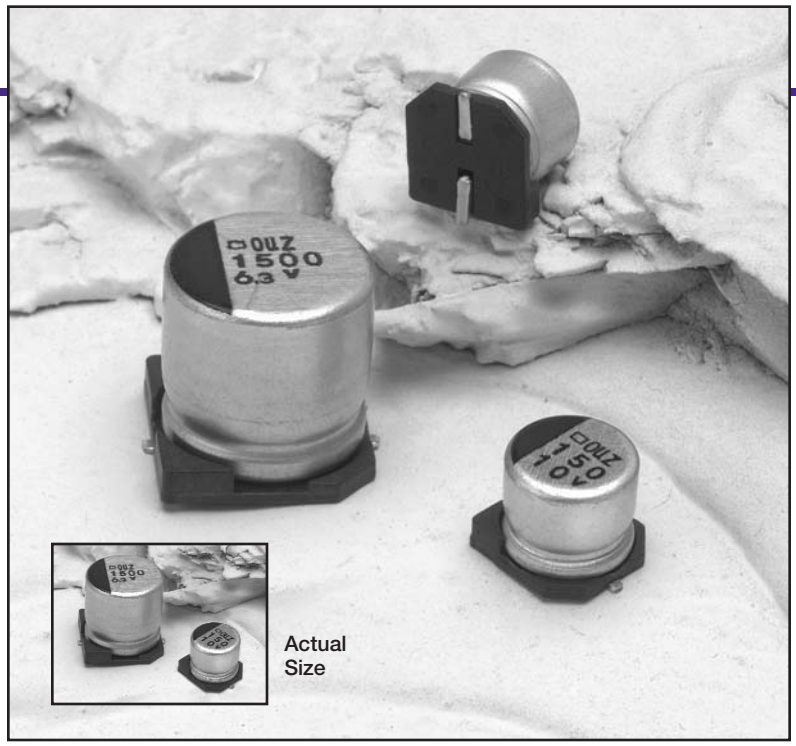
UPGRADE
Engineering Bulletin Jul 03

MVZ Series

UNITED CHEMI-CON

- Surface Mount
- Low Impedance
- Vertical Chip
- Solvent Proof
- +105°C Maximum Temperature



The MVZ series capacitors are low impedance vertical chip capacitors designed for reflow soldering. The specified impedance values at 100kHz for this surface mount series are even lower than the MVY series. The miniaturized case sizes ranging from Ø4×5.7mm to Ø10×10mm make these capacitors ideal for use in low profile situations and are also recommended as suitable tantalum replacement where a low impedance device is required.

The MVZ 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: 10 to 1,500µF.**
- **Voltage range: 6.3 to 25VDC.**
- **Category temperature range: −55°C to +105°C.**
- **Leakage current: 0.01CV or 3µA, whichever is greater, after 2 minutes at +20°C.**
- **Standard capacitance tolerance: ±20%**
- **Nominal case size (D×L): 4×5.7mm to 10×10mm.**
- **Rated lifetime: 1,000 to 2,000 hours at +105°C depending on case size.**

MVZ Series

MVZ Specifications

Item	Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 25VDC
Capacitance Range	10 to 1,500μF
Capacitance Tolerance	±20% (M) at +20°C, 120Hz
Leakage Current	I = 0.01CV or 3μA, whichever is greater, 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)	At +20°C, 120Hz

Rated Voltage (V)	6.3	10	16	25
Case D60-F80	0.24	0.20	0.16	0.14
Case H10 & J10	0.28	0.24	0.20	0.16

Impedance at 100kHz	At +20°C, 100kHz, impedance (Z) shall not exceed the values given in the Ratings Tables.
Low Temperature Characteristics	At 120Hz, 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)	6.3	10	16	25
Z(−25°C)/Z(+20°C)	3	2	2	2
Z(−55°C)/Z(+20°C)	5	4	4	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 the specified test time at +105°C.

Case Code	D60-F80	H10 & J10
Test Time	1,000 Hours	2,000 Hours

Capacitance change: ≤ ±30% of initial measured value for 6.3V
: ≤ ±25% of initial measured value for 10-25V
Tan δ (DF) : ≤ 200% of initial specified value
Leakage current : ≤ 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: ≤ ±30% of initial measured value for 6.3V
: ≤ ±25% of initial measured value for 10-25V
Tan δ (DF) : ≤ 200% of initial specified value
Leakage current : ≤ initial specified value

Part Numbering System for MVZ Series

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

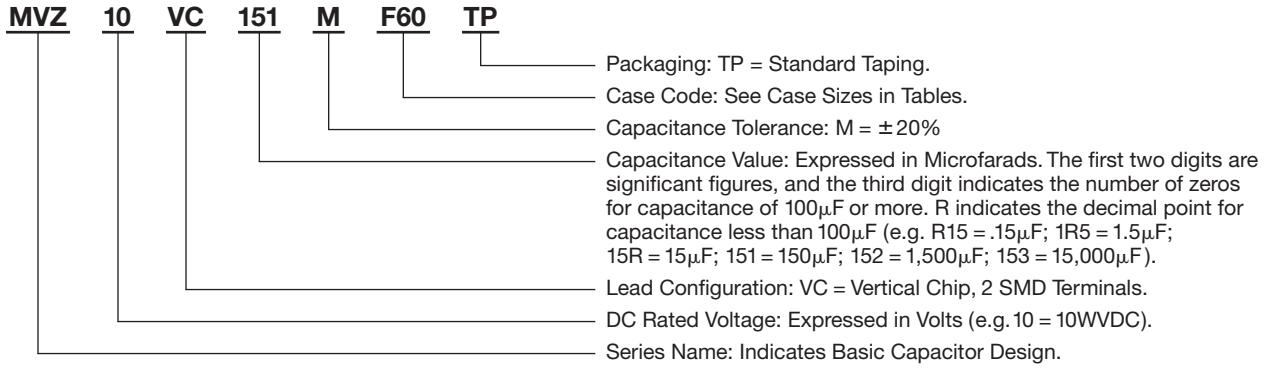
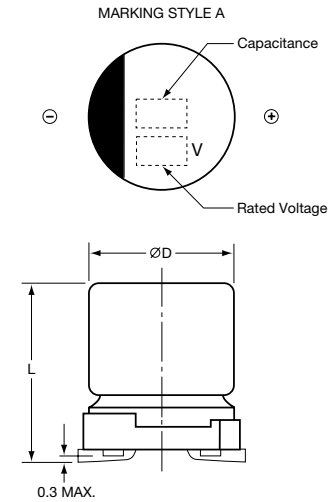


Diagram of Dimensions

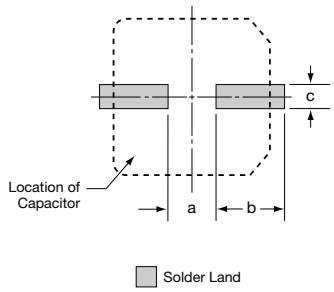
Vertical Chip SMD Lead Terminals

Unit: mm

VC Type



Recommended PCB Land Pattern



Refer to Packaging section for Surface Mount taping and reel specifications and Surface Mount Soldering section for reflow soldering conditions.

Case and Solder Land Dimensions

Case Code	ØD ±0.5	L	A ±0.2	B ±0.2	C ±0.2	W	P	a	b	c
D60	ø4	5.7±0.3	4.3	4.3	5.1	0.5-0.8	1.0	1.0	2.6	1.6
E60	ø5	5.7±0.3	5.3	5.3	5.9	0.5-0.8	1.4	1.4	3.0	1.6
F60	ø6.3	5.7±0.3	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
F80	ø6.3	7.7±0.3	6.6	6.6	7.2	0.5-0.8	1.9	1.9	3.5	1.6
H10	ø8	10±0.5	8.3	8.3	9.0	0.7-1.1	3.1	3.1	4.2	2.2
J10	ø10	10±0.5	10.3	10.3	11.0	0.7-1.1	4.5	4.5	4.4	2.2

Standard Voltage Ratings - Surface Mount

Rated Voltage (WVDC)	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**	27	MVZ6.3VC27RMD60TP	4 × 5.7	D60	1.80	80
	47	MVZ6.3VC47RME60TP	5 × 5.7	E60	0.76	150
	56	MVZ6.3VC56RME60TP	5 × 5.7	E60	0.76	150
	220	MVZ6.3VC221MF60TP	6.3 × 5.7	F60	0.44	230
	330	MVZ6.3VC331MF80TP	6.3 × 7.7	F80	0.34	280
	680	MVZ6.3VC681MH10TP	8 × 10	H10	0.17	450
	1,000	MVZ6.3VC102MH10TP	8 × 10	H10	0.17	450
	1,500	MVZ6.3VC152MJ10TP	10 × 10	J10	0.09	670
10 Volts **13 Volts Surge**	22	MVZ10VC22RMD60TP	4 × 5.7	D60	1.80	80
	33	MVZ10VC33RME60TP	5 × 5.7	E60	0.76	150
	150	MVZ10VC151MF60TP	6.3 × 5.7	F60	0.44	230
	1,000	MVZ10VC102MJ10TP	10 × 10	J10	0.09	670
16 Volts **20 Volts Surge**	15	MVZ16VC15RMD60TP	4 × 5.7	D60	1.80	80
	27	MVZ16VC27RME60TP	5 × 5.7	E60	0.76	150
	100	MVZ16VC101MF60TP	6.3 × 5.7	F60	0.44	230
	150	MVZ16VC151MF80TP	6.3 × 7.7	F80	0.34	280
	220	MVZ16VC221MF80TP	6.3 × 7.7	F80	0.34	280
	470	MVZ16VC471MH10TP	8 × 10	H10	0.17	450
	680	MVZ16VC681MJ10TP	10 × 10	J10	0.09	670

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

MVZ Series

Standard Voltage Ratings - Surface Mount

Rated Voltage (WVDC)	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
25 Volts **32 Volts Surge**	10	MVZ25VC10RMD60TP	4 × 5.7	D60	1.80	80
	15	MVZ25VC15RME60TP	5 × 5.7	E60	0.76	150
	22	MVZ25VC22RME60TP	5 × 5.7	E60	0.76	150
	27	MVZ25VC27RMF60TP	6.3 × 5.7	F60	0.44	230
	33	MVZ25VC33RMF60TP	6.3 × 5.7	F60	0.44	230
	47	MVZ25VC47RMF60TP	6.3 × 5.7	F60	0.44	230
	56	MVZ25VC56RMF60TP	6.3 × 5.7	F60	0.44	230
	68	MVZ25VC68RMF60TP	6.3 × 5.7	F60	0.44	230
	100	MVZ25VC101MF80TP	6.3 × 7.7	F80	0.34	280
	150	MVZ25VC151MH10TP	8 × 10	H10	0.17	450
	220	MVZ25VC221MH10TP	8 × 10	H10	0.17	450
	330	MVZ25VC331MH10TP	8 × 10	H10	0.17	450
	470	MVZ25VC471MJ10TP	10 × 10	J10	0.09	670

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