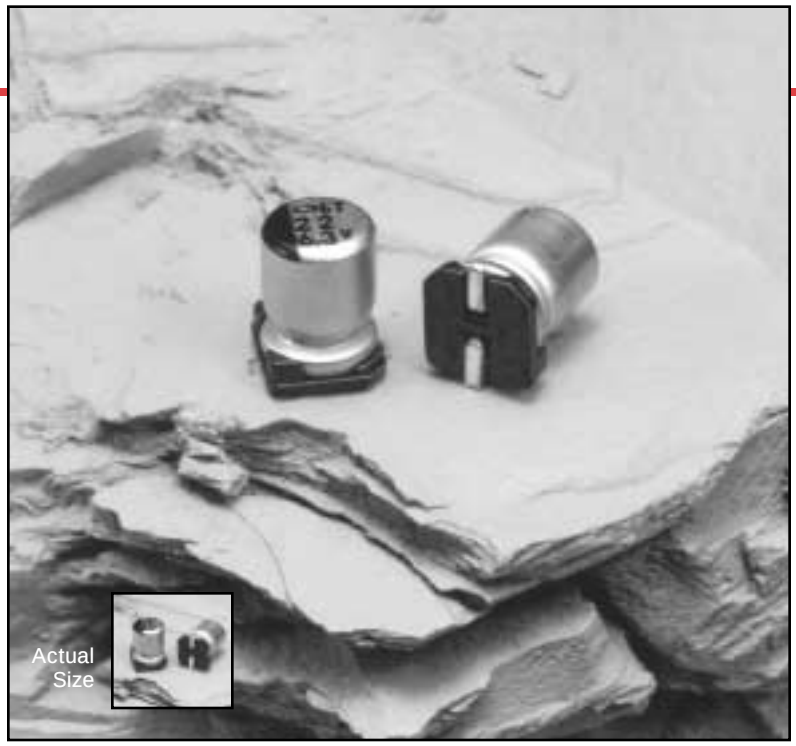
MVJ Series

UNITED CHEMI-CON

- Surface Mount
- Low Profile Vertical Chip
- Solvent Proof
- Long Life
- +105°C Maximum Temperature



The MVJ series capacitors are new long life vertical chip capacitors designed for reflow soldering. The maximum height for these capacitors is 6.0mm, making them ideal for use in low profile situations.

The MVJ series capacitors were developed to withstand HCFC cleaning agents for five minutes by ultrasonic, vapor or immersion. This solvent proof design allows all circuit board components to be cleaned together, at the same time, without resorting to more expensive epoxy end-sealed capacitors. Refer to the Mini-Glossary for recommended cleaning conditions.

Summary of Specifications

- **Surface mount lead terminals.**
- **Capacitance range: 0.1 to 100µF.**
- **Voltage range: 6.3 to 50VDC.**
- **Operating temperature range: −40°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 6.3×5.7mm.**
- **Rated lifetime: 2,000 hours at +105°C.**

MVJ Series

MVJ Specifications

<table>
<tr><th>Item</th><th>Characteristics</th></tr>
<tr><td>Operating Temperature Range</td><td>−40 to +105°C</td></tr>
<tr><td>Rated Voltage Range</td><td>6.3 to 50VDC</td></tr>
<tr><td>Capacitance Range</td><td>0.1 to 100μF</td></tr>
<tr><td>Capacitance Tolerance</td><td>±20% (M) at +20°C, 120Hz</td></tr>
<tr><td>Leakage Current</td><td>I = 0.01CV or 3μA, whichever is greater, after 2 minutes at +20°C.
Where I = Leakage current (μA), C = Nominal capacitance (μF) and V = Rated voltage (V)</td></tr>
<tr><td>Dissipation Factor (Tan δ)</td><td>At +20°C, 120Hz
<table>
<tr><td>Rated Voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr>
<tr><td>Tan δ (DF)</td><td>0.30</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td></tr>
</table></td></tr>
<tr><td>Low Temperature Characteristics</td><td>At 120Hz, impedance (Z) ratio between the −25°C or −40°C value and +20°C value shall not exceed the values given below.
<table>
<tr><td>Rated Voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr>
<tr><td>Z(−25°C)/Z(+20°C)</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>Z(−40°C)/Z(+20°C)</td><td>12</td><td>8</td><td>6</td><td>4</td><td>3</td><td>3</td></tr>
</table></td></tr>
<tr><td>Load Life</td><td>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. The sum of DC voltage and peak AC voltage must not exceed the full rated voltage of the capacitors.
Capacitance change: ≤ ±30% of initial measured value for 6.3V
: ≤ ±25% of initial measured value for 10 & 16V
: ≤ ±20% of initial measured value for ≥ 25V
Tan δ (DF) : ≤ 300% of initial specified value for ≤ 16V
: ≤ 200% of initial specified value for ≥ 25V
Leakage current : ≤ initial specified value</td></tr>
<tr><td>Shelf Life</td><td>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 & 16V
: ≤ ±20% of initial measured value for ≥ 25V
Tan δ (DF) : ≤ 300% of initial specified value for ≤ 16V
: ≤ 200% of initial specified value for ≥ 25V
Leakage current : ≤ initial specified value</td></tr>
<tr><td>Others</td><td>Satisfies characteristic W of JIS C5141</td></tr>
</table>

Part Numbering System for MVJ Series

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

MVJ 6.3 VC 22R M D60 TP

- TP — Lead Length: TP is for Standard Taping.
- D60 — Case Code: See Case Sizes in Tables.
- M — Capacitance Tolerance: M = ±20%
- 22R — 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. R22 = .22μF; 2R2 = 2.2μF; 22R = 22μF; 221 = 220μF; 222 = 2,200μF; 223 = 22,000μF).
- VC — Lead Configuration: VC = Vertical Chip Lead Terminals.
- 6.3 — DC Rated Voltage: Expressed in Volts (e.g. 6.3 = 6.3WVDC).
- MVJ — Series Name: Indicates Basic Capacitor Design.

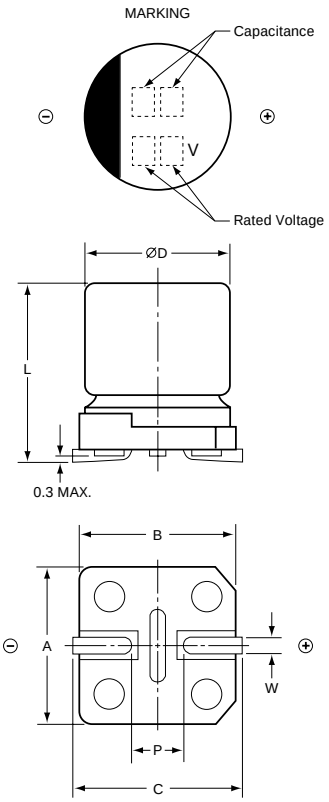
MVJ Series

Diagram of Dimensions

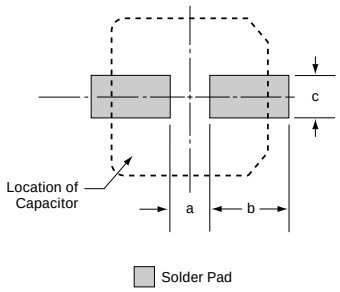
Vertical Chip Lead Terminals

Unit: mm

VC Type



Recommended Solder Pad on PC Board



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

Case and Solder Pad Dimensions

Case Code	ØD ±0.5	L ±0.3	A ±0.2	B ±0.2	C ±0.2	W	P	a	b	c
D60	ø4	5.7	4.3	4.3	5.1	0.5-0.8	1.0	1.0	2.6	1.6
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

Standard Voltage Ratings - Surface Mount

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Case Code	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +105°C, 120Hz
6.3 Volts 8 Volts Surge	22	MVJ6.3VC22RMD60TP	4 × 5.7	D60	22.602	21
	47	MVJ6.3VC47RME60TP	5 × 5.7	E60	10.58	36
	100	MVJ6.3VC101MF60TP	6.3 × 5.7	F60	4.973	56
10 Volts 13 Volts Surge	33	MVJ10VC33RME60TP	5 × 5.7	E60	12.055	34
16 Volts 20 Volts Surge	10	MVJ16VC10RMD60TP	4 × 5.7	D60	33.15	16
	22	MVJ16VC22RME60TP	5 × 5.7	E60	15.068	30
	47	MVJ16VC47RMF60TP	6.3 × 5.7	F60	7.053	48
25 Volts 32 Volts Surge	33	MVJ25VC33RMF60TP	6.3 × 5.7	F60	8.036	45
35 Volts 44 Volts Surge	4.7	MVJ35VC4R7MD60TP	4 × 5.7	D60	49.372	15
	10	MVJ35VC10RME60TP	5 × 5.7	E60	23.205	25
	22	MVJ35VC22RMF60TP	6.3 × 5.7	F60	10.548	40

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

MVJ Series

Standard Voltage Ratings - Surface Mount

Rated Voltage (WVDC)	Capacitance (µF)	Catalog Part Number	Nominal Case Size* D×L (mm)	Case Code	Maximum ESR (Ω) at +20°C, 120Hz	Maximum Ripple Current (mA rms) at +105°C, 120Hz
50 Volts **63 Volts Surge**	0.1	MVJ50VCR10MD60TP	4 × 5.7	D60	1,989.0	1.3
	0.22	MVJ50VCR22MD60TP	4 × 5.7	D60	904.091	2.6
	0.33	MVJ50VCR33MD60TP	4 × 5.7	D60	602.727	3.2
	0.47	MVJ50VCR47MD60TP	4 × 5.7	D60	423.191	3.8
	1.0	MVJ50VC1R0MD60TP	4 × 5.7	D60	198.9	5.6
	2.2	MVJ50VC2R2MD60TP	4 × 5.7	D60	90.409	10
	3.3	MVJ50VC3R3MD60TP	4 × 5.7	D60	60.273	14
	4.7	MVJ50VC4R7ME60TP	5 × 5.7	E60	42.319	19
	10	MVJ50VC10RMF60TP	6.3 × 5.7	F60	19.89	29

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

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Chemi-Con:
MVJ35VC22RMF60TP MVJ16VC22RME60TP MVJ16VC47RMF60TP MVJ50VC10RMF60TP MVJ6.3VC22RMD60TP