

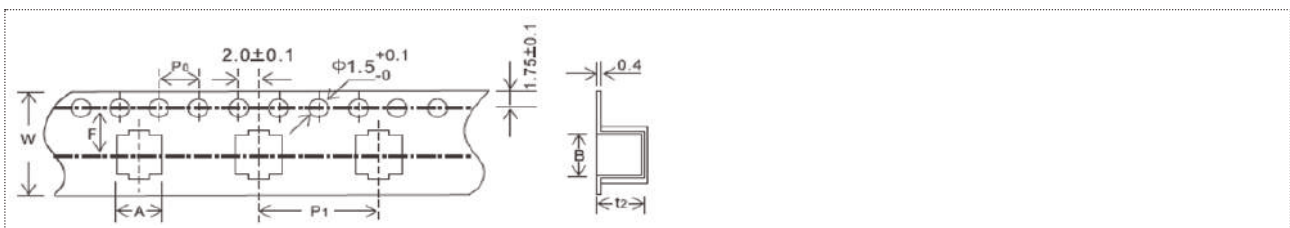


PACKAGING SPECIFICATIONS

| Specifications | Quantity |
|---------------------|-----------|
| Φ4× 5.4 | 2,000 pcs |
| Φ5 ~ 6.3× 5.4 ~ 7.7 | 1,000 pcs |
| Φ8× 6.2 | 1,000 pcs |
| Φ8 ~ 10× 10.2 | 500 pcs |
| Φ12.5× 13.5 | 200 pcs |
| Φ12.5× 16 | 150 pcs |
| Φ16× 16.5 | 125 pcs |
| Φ16× 21.5 | 75 pcs |

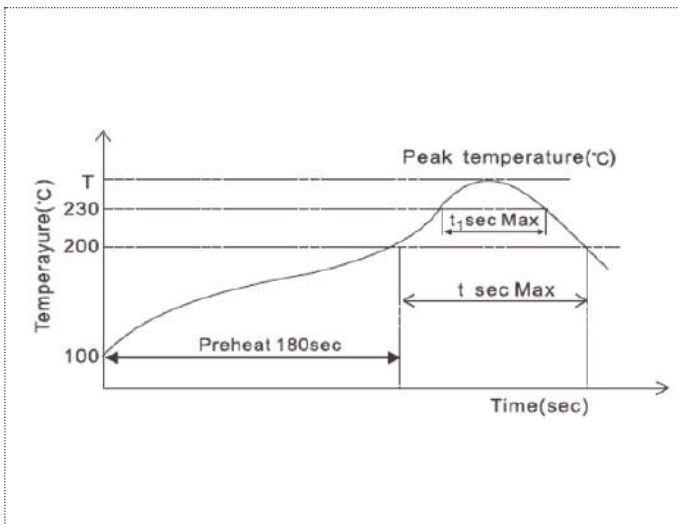
| Φ D | 4 | 5 | 6.3 | 8 | 10 | 12 | 16 |
|-----|----|----|-----|----|----|----|----|
| A | 14 | 14 | 18 | 26 | 26 | 34 | 46 |

TAPING DIMENSIONS



| Specifications | W ±0.30 | A | B | P ₁ ±0.10 | F ±0.10 | t ₂ |
|----------------|------------|------|------|-------------------------|------------|----------------|
| Φ4× 5.4 | 12.0 | 4.7 | 4.7 | 8.0 | 5.5 | 5.8 |
| Φ5× 5.4 | 12.0 | 6.0 | 6.0 | 12.0 | 5.5 | 5.8 |
| Φ6.3× 5.4 | 16.0 | 7.0 | 7.0 | 12.0 | 7.5 | 5.8 |
| Φ6.3× 7.7 | 16.0 | 7.0 | 7.0 | 12.0 | 7.5 | 8.3 |
| Φ8× 6.2 | 16.0 | 8.7 | 8.7 | 12.0 | 7.5 | 6.8 |
| Φ8× 10.2 | 24.0 | 8.7 | 8.7 | 16.0 | 11.5 | 11.0 |
| Φ10× 10.2 | 24.0 | 10.7 | 10.7 | 16.0 | 11.5 | 11.0 |
| Φ12.5× 13.5 | 32.0 | 13.4 | 13.4 | 24 | 14.2 | 14.4 |
| Φ12.5× 16 | 32.0 | 13.4 | 13.4 | 24 | 14.2 | 16.3 |
| Φ16× 16.5 | 44.0 | 17.5 | 17.5 | 28 | 20.2 | 17.4 |
| Φ16× 21.2 | 44.0 | 17.5 | 17.5 | 28 | 20.2 | 22.4 |

REFLOW SOLDERING FOR CHIP CAPACITORS



ALLOWABLE RANGE OF PEAK TEMPERATURE

| Size | T (°C) | t (second) | t ₁ (second) |
|---------|--------|------------|-------------------------|
| Φ4 Φ6.3 | 255 | 100 | 50 |
| Φ8 | 245 | 100 | 40 |
| Φ10 Φ16 | 245 | 100 | 40 |

RECOMMENDED LAND SIZE

| Size | X | Y | a |
|-------|-----|-----|-----|
| Φ4 | 1.6 | 2.6 | 1.0 |
| Φ5 | 1.6 | 3.0 | 1.4 |
| Φ6.3 | 1.6 | 3.5 | 2.1 |
| Φ8 | 2.5 | 3.5 | 3.0 |
| Φ10 | 2.5 | 4.0 | 4.5 |
| Φ12.5 | 2.5 | 6.0 | 5.0 |
| Φ16 | 3.0 | 6.5 | 8.0 |

- Preheat shall be done 100°C-200°C and for maximum 180 seconds.
- The temperature at capacitor top shall not exceed +255°C.
- The duration for over +200°C temperature at capacitor top shall not exceed 110 seconds.
- If capacitors are subject to the conditions other than the allowable range of reflow. Please contact us.

V-Chip Aluminum Electrolytic Capacitors

FEATURES

- Reflow soldering is available
- Available for high density surface mounting
- High stability and reliability
- Life time: 85°C, 2,000Hrs



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | |
|---------------------------------|---|---|------|---|------|------|------|
| Operating Temperature Range | -40 to +85°C | | | | | | |
| Rated Working Voltage Range | 6.3 to 50V | | | | | | |
| Nominal Capacitance Range | 0.1 to 1500μF | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3(μA) whichever is greater measure after 2 minutes application of rated working voltage at +20°C | | | | | | |
| tanδ (120Hz, +20°C) | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | tanδ (max.) Φ4~6.3 | 0.26 | 0.22 | 0.18 | 0.16 | 0.13 | 0.12 |
| | Φ8~10 | 0.35 | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | | | | | | |
| | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Z-40°C / Z+20°C | 8 | 8 | 4 | 4 | 3 | 3 |
| High Temperature Loading | Test time | : 2,000 hours | | Post test requirements at +20°C | | | |
| | Test temperature | : +85°C | | Leakage current : ≤ Initial specified value | | | |
| | Test conditions | : Rated DC working voltage | | Cap. change : within ±20% of the initial measured value | | | |
| | | | | tanδ : ≤ 200% of the initial specified value | | | |
| Shelf Life | At +85°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits | | | | | | |
| | Leakage current | : ≤ 200% of initial specified value | | | | | |
| | Cap. change | : within ±20% of the initial measured value | | | | | |
| | tanδ | : ≤ 200% of the initial specified value | | | | | |
| Industrial Standard | JISC-5101-4 (IEC 60384-4) | | | | | | |

DIMENSIONS & MARKING

| Size | Φ4x5.4 | Φ5x5.4 | Φ6.3x5.4 | Φ6.3x7.7 | Φ8x10.2 | Φ10x10.2 |
|------|-----------|--------|----------|----------|-----------|----------|
| A | 1.8 | 2.1 | 2.4 | 2.5 | 2.9 | 3.2 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| E | 1.0 | 1.3 | 2.2 | 2.2 | 3.1 | 4.5 |
| L | 5.4 | 5.4 | 5.4 | 7.7 | 10.2 | 10.2 |
| H | 0.5 ~ 0.9 | | | | 0.9 ~ 1.1 | |

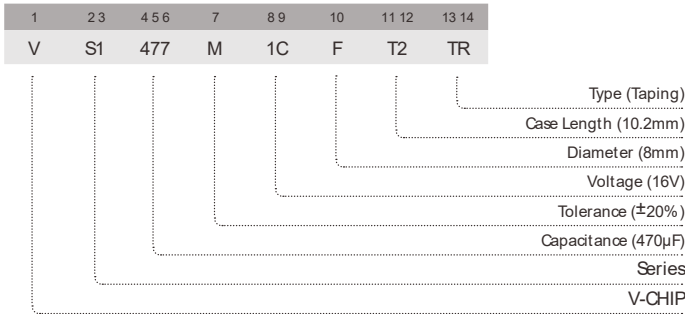
(Φ4~Φ6.3)

(Φ6.3x7.7)

(Φ8~Φ10x10.2)



PART NUMBER SYSTEM (EXAMPLE: 16V 470μF)



STANDARD RATINGS

| Voltage (Code) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | |
|----------------|------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current |
| 4.7 | 475 | | | | | | | 4 x 5.4 | 16 |
| 10 | 106 | | | | | 4 x 5.4 | 23 | 4 x 5.4 | 24 |
| 22 | 226 | 4 x 5.4 | 28 | 4 x 5.4 | 30 | 5 x 5.4 | 37 | 5 x 5.4 | 38 |
| 33 | 336 | 5 x 5.4 | 37 | 5 x 5.4 | 41 | 5 x 5.4 | 44 | 6.3 x 5.4 | 52 |
| 47 | 476 | 5 x 5.4 | 45 | 6.3 x 5.4 | 52 | 5 x 5.4 | 48 | 6.3 x 5.4 | 60 |
| | | | | | | 6.3 x 5.4 | 58 | | |
| 100 | 107 | 5 x 5.4 | 50 | 6.3 x 5.4 | 76 | 6.3 x 5.4 | 86 | 6.3 x 7.7 | 130 |
| | | 6.3 x 5.4 | 70 | | | | | | |
| 220 | 227 | 6.3 x 5.4 | 95 | 6.3 x 7.7 | 150 | 6.3 x 7.7 | 150 | 8 x 10.2 | 232 |
| 330 | 337 | 6.3 x 7.7 | 150 | 8 x 10.2 | 240 | 8 x 10.2 | 270 | 10 x 10.2 | 305 |
| 470 | 477 | 8 x 10.2 | 265 | 8 x 10.2 | 290 | 8 x 10.2 | 280 | 10 x 10.2 | 393 |
| | | | | | | 10 x 10.2 | 330 | | |
| 1000 | 108 | 10 x 10.2 | 400 | 10 x 10.2 | 454 | | | | |
| 1500 | 158 | 10 x 10.2 | 489 | | | | | | |

Maximum Allowable Ripple Current (mA rms) at 85°C 120Hz

Case Size Φ D x L (mm)

| Voltage (Code) | | 35V (1V) | | 50V (1H) | |
|----------------|------|-----------|----------------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Ripple Current | Case Size | Ripple Current |
| 0.1 | 104 | | | 4 x 5.4 | 1.0 |
| 0.22 | 224 | | | 4 x 5.4 | 2.0 |
| 0.33 | 334 | | | 4 x 5.4 | 2.8 |
| 0.47 | 474 | | | 4 x 5.4 | 4.0 |
| 1 | 105 | | | 4 x 5.4 | 8.4 |
| 2.2 | 225 | | | 4 x 5.4 | 13 |
| 3.3 | 335 | 4 x 5.4 | 18 | 4 x 5.4 | 17 |
| 4.7 | 475 | 4 x 5.4 | 20 | 5 x 5.4 | 20 |
| 10 | 106 | 5 x 5.4 | 29 | 6.3 x 5.4 | 33 |
| 22 | 226 | 6.3 x 5.4 | 46 | 6.3 x 5.4 | 43 |
| 33 | 336 | 6.3 x 5.4 | 53 | 6.3 x 7.7 | 85 |
| 47 | 476 | 6.3 x 5.4 | 55 | 6.3 x 7.7 | 90 |
| | | 6.3 x 7.7 | 70 | 8 x 10.2 | 140 |
| | | 6.3 x 7.7 | 80 | 8 x 10.2 | 145 |
| 100 | 107 | 8 x 10.2 | 175 | 10 x 10.2 | 195 |
| | | 8 x 10.2 | 185 | | |
| 220 | 227 | 10 x 10.2 | 265 | 10 x 10.2 | 415 |
| 330 | 337 | 10 x 10.2 | 324 | | |
| 470 | 477 | 10 x 10.2 | 395 | | |

Maximum Allowable Ripple Current (mA rms) at 85°C 120Hz

Case Size Φ D x L (mm)

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

FEATURES

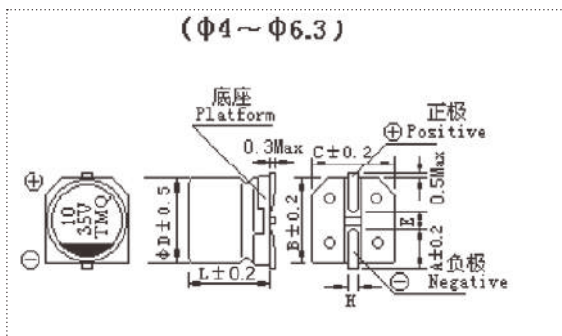
- Operating over wide temperature range
- Reflow soldering is available
- Available for high density surface mounting
- High stability and reliability



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | |
|---------------------------------|---|---|------|------|------|------|------|
| Operating Temperature Range | -55 to +105°C | | | | | | |
| Rated Working Voltage Range | 6.3 to 50V | | | | | | |
| Nominal Capacitance Range | 0.1 to 220μF | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | | | | | | |
| Leakage Current | $I \leq 0.01CV$ or $3(\mu A)$ whichever is greater measure after 2 minutes application of rated working voltage at +20°C | | | | | | |
| tan δ (120Hz, +20°C) | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | tan δ | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | | | | | | |
| | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 |
| High Temperature Loading | Test time : 1,000 hours | Post test requirements at +20°C | | | | | |
| | Test temperature : +105°C | Leakage current : ≤ initial specified value | | | | | |
| Shelf Life | Test conditions : Rated DC working voltage | Cap. change : within ±20% of the initial measured value | | | | | |
| | | tan δ : ≤200% of the initial specified value | | | | | |
| Industrial Standard | JISC-5101-4 (IEC 60384-4) | | | | | | |

DIMENSIONS & MARKING



| Size | Φ4 x 5.4 | Φ5 x 5.4 | Φ6.3 x 5.4 |
|------|-----------|----------|------------|
| A | 1.8 | 2.1 | 2.4 |
| B | 4.3 | 5.3 | 6.6 |
| C | 4.3 | 5.3 | 6.6 |
| E | 1.0 | 1.3 | 2.2 |
| L | 5.4 | 5.4 | 5.4 |
| H | 0.5 ~ 0.9 | | |

PART NUMBER SYSTEM (EXAMPLE: 16V 100μF)

| 1 | 23 | 456 | 7 | 89 | 10 | 11 12 | 13 14 |
|---|----|-----|---|----|----|-------|-------|
| V | T1 | 107 | M | 1C | E | 54 | TR |

Type (Taping)
 Case Length (5.4mm)
 Diameter (6.3mm)
 Voltage (16V)
 Tolerance (±20%)
 Capacitance (100μF)
 Series
 V-CHIP



STANDARD RATINGS

| Voltage (Code) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | |
|----------------|------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current |
| 4.7 | 475 | | | | | 4 x 5.4 | 12 | 4 x 5.4 | 13 |
| 10 | 106 | | | | | 4 x 5.4 | 20 | 4 x 5.4 | 14 |
| | | | | | | | | 5 x 5.4 | 20 |
| 22 | 226 | 4 x 5.4 | 20 | 4 x 5.4 | 21 | 4 x 5.4 | 22 | 5 x 5.4 | 25 |
| | | | | 5 x 5.4 | 27 | 5 x 5.4 | 31 | 6.3 x 5.4 | 36 |
| 33 | 336 | 4 x 5.4 | 22 | 4 x 5.4 | 23 | 5 x 5.4 | 28 | 5 x 5.4 | 29 |
| | | 5 x 5.4 | 27 | 5 x 5.4 | 34 | 6.3 x 5.4 | 40 | 6.3 x 5.4 | 44 |
| 47 | 476 | 4 x 5.4 | 25 | 5 x 5.4 | 30 | 5 x 5.4 | 31 | 6.3 x 5.4 | 48 |
| | | 5 x 5.4 | 37 | 6.3 x 5.4 | 41 | 6.3 x 5.4 | 56 | | |
| 100 | 107 | 5 x 5.4 | 39 | 6.3 x 5.4 | 53 | 6.3 x 5.4 | 75 | | |
| | | 6.3 x 5.4 | 57 | | | | | | |
| 220 | 227 | 6.3 x 5.4 | 67 | | | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size Φ D x L (mm)

| Voltage (Code) | | 35V (1V) | | 50V (1H) | |
|----------------|------|-----------|----------------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Ripple Current | Case Size | Ripple Current |
| 0.1 | 104 | | | 4 x 5.4 | 1.0 |
| 0.22 | 224 | | | 4 x 5.4 | 2.0 |
| 0.33 | 334 | | | 4 x 5.4 | 3.0 |
| 0.47 | 474 | | | 4 x 5.4 | 4.0 |
| 1 | 105 | | | 4 x 5.4 | 8.0 |
| 2.2 | 225 | | | 4 x 5.4 | 11 |
| 3.3 | 335 | | | 4 x 5.4 | 13 |
| 4.7 | 475 | 4 x 5.4 | 14 | 5 x 5.4 | 18 |
| 10 | 106 | 5 x 5.4 | 24 | 6.3 x 5.4 | 28 |
| | | 5 x 5.4 | 27 | | |
| 22 | 226 | 6.3 x 5.4 | 40 | 6.3 x 5.4 | 42 |
| | | 6.3 x 5.4 | 50 | | |

Maximum Allowable Ripple Current (mArms) at 105°C 120Hz

Case Size Φ D x L (mm)

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

FEATURES

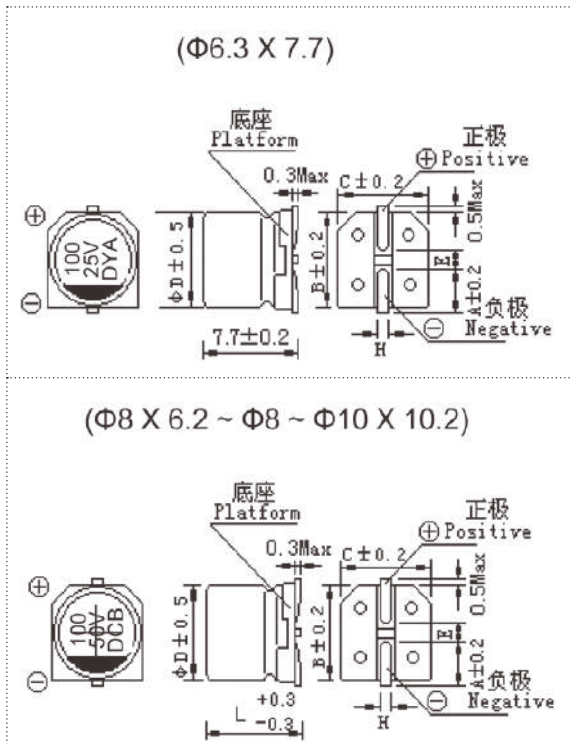
- Life time: 105°C, 2,000Hrs
- Reflow soldering is available
- Available for high density surface mounting
- High stability and reliability



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | |
|---------------------------------|--|----------------------------|------|------|------|---|------|------|------|------|
| Operating Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Working Voltage Range | 6.3 to 100V | | | | | | | | | |
| Nominal Capacitance Range | 4.7 to 1500μF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3(μA) whichever is greater measure after 2 minutes application of rated working voltage at +20°C | | | | | | | | | |
| tanδ (120Hz, +20°C) | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | tanδ (max.) | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | | | | | | | | | |
| | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| | Z-40°C / Z+20°C | 8 | 6 | 4 | 4 | 3 | 3 | 4 | 4 | 4 |
| High Temperature Loading | Test time | : 2,000 hours | | | | Post test requirements at +20°C | | | | |
| | Test temperature | : +105°C | | | | Leakage current : ≤ Initial specified value | | | | |
| Shelf Life | Test conditions | : Rated DC working voltage | | | | Cap. change : within ±20% of the initial measured value (≤16V: within ±25%) | | | | |
| | | | | | | tanδ : ≤200% of the initial specified value | | | | |
| Industrial Standard | At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits Leakage current : ≤ Initial specified value Cap. change : within ±20% of the initial measured value tanδ : ≤200% of the initial specified value JISC-5101-4 (IEC 60384-4) | | | | | | | | | |

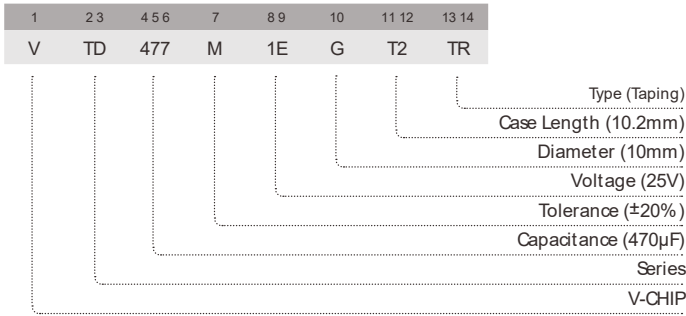
DIMENSIONS & MARKING



| Size | Φ6.3 x 7.7 | Φ8 x 6.2 | Φ8 x 10.2 | Φ10 x 10.2 |
|------|------------|----------|-----------|------------|
| A | 2.5 | 2.9 | 2.9 | 3.2 |
| B | 6.6 | 8.3 | 8.3 | 10.3 |
| C | 6.6 | 8.3 | 8.3 | 10.3 |
| E | 2.2 | 3.1 | 3.1 | 4.5 |
| L | 7.7 | 6.2 | 10.2 | 10.2 |
| H | 0.5 ~ 0.9 | | 0.8 ~ 1.1 | |



PART NUMBER SYSTEM (EXAMPLE: 25V 470µF)



STANDARD RATINGS

| Voltage (Code) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | |
|----------------|------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| Cap. (µF) | Code | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current |
| 100 | 107 | | | | | | | 6.3 x 7.7 | 91 |
| | | | | | | | | 8 x 6.2 | 105 |
| 220 | 227 | 6.3 x 7.7 | 105 | 6.3 x 7.7 | 110 | 6.3 x 7.7 | 105 | 8 x 10.2 | 175 |
| | | 8 x 6.2 | 115 | 8 x 6.2 | 120 | 8 x 6.2 | 125 | | |
| 330 | 337 | 6.3 x 7.7 | 110 | 8 x 10.2 | 196 | 8 x 10.2 | 195 | 10 x 10.2 | 240 |
| | | 8 x 6.2 | 120 | | | | | 8 x 10.2 | 220 |
| 470 | 477 | 8 x 10.2 | 210 | 8 x 10.2 | 210 | 8 x 10.2 | 230 | 10 x 10.2 | 280 |
| | | | | | | | | | |
| 1000 | 108 | 10 x 10.2 | 300 | 10 x 10.2 | 315 | 10 x 10.2 | 340 | | |
| | | 8 x 10.2 | 230 | | | | | | |
| 1500 | 158 | 10 x 10.2 | 315 | 10 x 12 | 350 | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size Φ D x L (mm)

| Voltage (Code) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | |
|----------------|------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| Cap. (µF) | Code | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current |
| 4.7 | 475 | | | | | | | 6.3 x 7.7 | 35 |
| | | | | | | | | 8 x 6.2 | 40 |
| 10 | 106 | | | | | 6.3 x 7.7 | 39 | 8 x 10.2 | 77 |
| | | | | | | 8 x 6.2 | 45 | 6.3 x 7.7 | 35 |
| 22 | 226 | | | 6.3 x 7.7 | 51 | 6.3 x 7.7 | 48 | 10 x 10.2 | 126 |
| | | | | 8 x 6.2 | 54 | | | 8 x 10.2 | 84 |
| 33 | 336 | 8 x 6.2 | 50 | 6.3 x 7.7 | 60 | 8 x 10.2 | 98 | 10 x 10.2 | 133 |
| | | | | | | | | | |
| 47 | 476 | 6.3 x 7.7 | 70 | 8 x 10.2 | 120 | 10 x 10.2 | 160 | 10 x 10.2 | 140 |
| | | 8 x 6.2 | 78 | 6.3 x 7.7 | 75 | 8 x 10.2 | 119 | | |
| 100 | 107 | 8 x 10.2 | 120 | 10 x 10.2 | 170 | 10 x 10.2 | 196 | | |
| | | 6.3 x 7.7 | 84 | 8 x 10.2 | 140 | | | | |
| 220 | 227 | 10 x 10.2 | 220 | 10 x 10.2 | 220 | | | | |
| | | 8 x 10.2 | 190 | | | | | | |
| 330 | 337 | 10 x 10.2 | 245 | | | | | | |
| 470 | 477 | 10 x 12 | 280 | | | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size Φ D x L (mm)

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

FEATURES

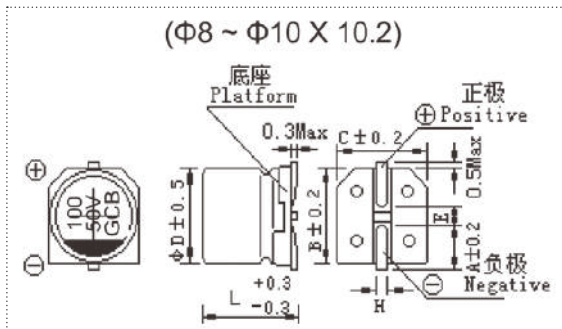
- Life time: 105°C, 3,000Hrs
- Small size, large capacity
- High stability and reliability with high ripple current



SPECIFICATIONS

| Item | Performance Characteristics | |
|---------------------------------|--|---|
| Operating Temperature Range | -25 to +105°C | |
| Rated Working Voltage Range | 400V.DC | |
| Nominal Capacitance Range | 2.2 ~ 4.7μF | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | |
| Leakage Current | I ≤ 0.04CV + 100(μA) after 1 minute application of rated working voltage at +20°C | |
| tanδ (120Hz, +20°C) | Working Voltage (V) | 400 |
| | tanδ | 0.22 |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | |
| | Working Voltage (V) | 400 |
| High Temperature Loading | Z-25°C / Z+20°C | |
| | Test time | 3,000 hours |
| | Test temperature | +105°C |
| | Test conditions | Rated DC working voltage |
| Shelf Life | At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits | |
| | Leakage current | ≤ 200% of initial specified value |
| | Cap. change | within ±20% of the initial measured value |
| | tanδ | ≤ 200% of the initial specified value |
| Industrial Standard | JISC-5101-4 (IEC 60384-4) | |

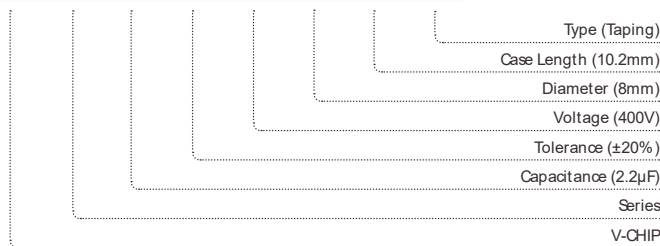
DIMENSIONS & MARKING



| Size | Φ 8 x 10.2 | Φ 10 x 10.2 |
|------|------------|-------------|
| A | 2.9 | 3.2 |
| B | 8.3 | 10.3 |
| C | 8.3 | 10.3 |
| E | 3.1 | 4.5 |
| L | 10.2 | 10.2 |
| H | 0.8 ~ 1.1 | |

PART NUMBER SYSTEM (EXAMPLE: 400V 2.2μF)

| | | | | | | | |
|---|----|-----|---|----|----|-------|-------|
| 1 | 23 | 456 | 7 | 89 | 10 | 11 12 | 13 14 |
| V | TG | 225 | M | 2G | F | T2 | TR |



+105°C, Surface Mount Type, High Voltage, 3,000 Hours (高壓貼片品)

VTG
Series

STANDARD RATINGS

| Voltage (Code) | | 400V (2G) | |
|----------------|------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Ripple Current |
| 2.2 | 225 | 8 x 10.2 | 26 |
| 3.3 | 335 | 10 x 10.2 | 37 |
| 4.7 | 475 | 10 x 10.2 | 39 |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size ΦD x L (mm)

VTG

Miniature Aluminum Electrolytic Capacitors

Specifications are subject to change without notice. Should a safety or technical concern arise regarding the product, please be sure to contact our sales offices or agents immediately.

FEATURES

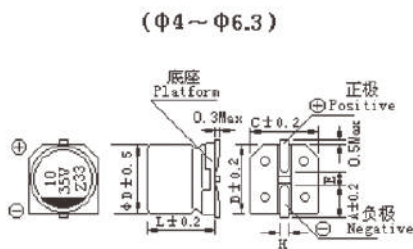
- Life time: 105°C, 2,000Hrs
- Reflow soldering is available
- Available for high density surface mounting
- High stability and reliability
- Low impedance



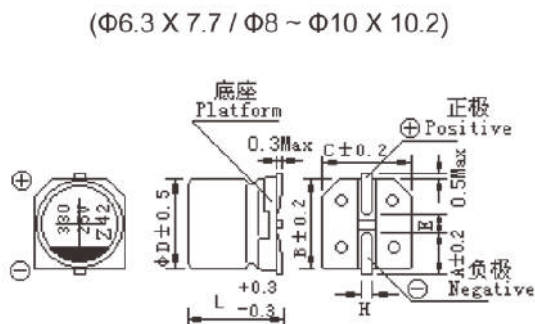
SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | | | |
|---------------------------------|--|----------------------------|------|------|------|---|------|------|------|------|
| Operating Temperature Range | -55 to +105°C | | | | | | | | | |
| Rated Working Voltage Range | 6.3 to 100V | | | | | | | | | |
| Nominal Capacitance Range | 1 to 1500μF | | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3(μA) whichever is greater measure after 2 minutes application of rated working voltage at +20°C | | | | | | | | | |
| tanδ (120Hz, +20°C) | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| | tanδ (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 | 0.08 |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | | | | | | | | | |
| | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
| | Z-25°C / Z+20°C | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | Z-40°C / Z+20°C | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| High Temperature Loading | Test time | : 2,000 hours | | | | Post test requirements at +20°C | | | | |
| | Test temperature | : +105°C | | | | Leakage current : ≤ Initial specified value | | | | |
| | Test conditions | : Rated DC working voltage | | | | Cap. change : within ±20% of the initial measured value (≤16V: within ±25%) | | | | |
| | | | | | | tanδ : ≤200% of the initial specified value | | | | |
| Shelf Life | At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits | | | | | | | | | |
| | Leakage current : ≤200% of initial specified value | | | | | | | | | |
| | Cap. change : within ±20% of the initial measured value | | | | | | | | | |
| | tanδ : ≤120% of the initial specified value | | | | | | | | | |
| Industrial Standard | JISC-5101-4 (IEC 60384-4) | | | | | | | | | |

DIMENSIONS & MARKING

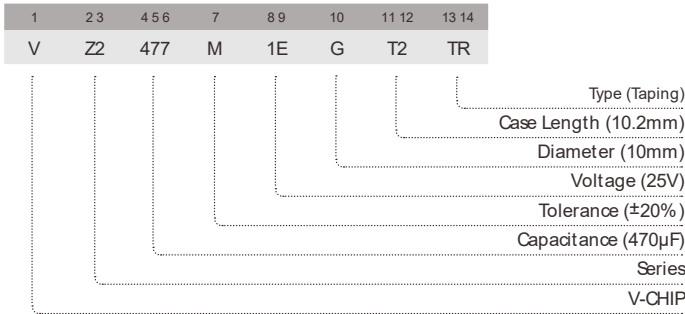


| Size | Φ4x5.4 | Φ5x5.4 | Φ6.3x5.4 | Φ6.3x7.7 | Φ8x6.2 | Φ8x10.2 | Φ10x10.2 |
|------|---------|--------|----------|----------|---------|---------|----------|
| A | 1.8 | 2.2 | 2.6 | 2.6 | 2.9 | 2.9 | 3.3 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 8.3 | 10.3 |
| L | 5.4 | 5.4 | 5.4 | 7.7 | 6.2 | 10.2 | 10.2 |
| H | 0.5-0.9 | | | | 0.9-1.1 | | |





PART NUMBER SYSTEM (EXAMPLE: 25V 470μF)



STANDARD RATINGS

| Voltage (Code) | | 6.3V (0J) | | | 10V (1A) | | | 16V (1C) | | | 25V (1E) | | | 35V (1V) | | |
|----------------|------|-----------|-----------|----------------|-----------|-----------|----------------|-----------|-----------|----------------|-----------|-----------|----------------|-----------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current |
| 4.7 | 475 | | | | | | | | | | 4 x 5.4 | 2.2 | 80 | 4 x 5.4 | 2.2 | 80 |
| 10 | 106 | | | | | | | 4 x 5.4 | 2.2 | 80 | 4 x 5.4 | 2.2 | 80 | 5 x 5.4 | 1.2 | 150 |
| 22 | 226 | 4 x 5.4 | 2.2 | 80 | 4 x 5.4 | 2.2 | 80 | 5 x 5.4 | 1.2 | 150 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 5.4 | 0.58 | 230 |
| 33 | 336 | 5 x 5.4 | 1.2 | 150 | 5 x 5.4 | 1.2 | 150 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 5.4 | 0.58 | 230 |
| 47 | 476 | 5 x 5.4 | 1.2 | 150 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 7.7 | 0.34 | 280 | 6.3 x 7.7 | 0.34 | 280 |
| 100 | 107 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 7.7 | 0.34 | 280 | 6.3 x 5.4 | 0.52 | 230 | 6.3 x 7.7 | 0.34 | 280 | 8 x 10.2 | 0.17 | 450 |
| | | | | | | | | 6.3 x 7.7 | 0.34 | 280 | 8 x 6.2 | 0.26 | 300 | | | |
| 150 | 157 | 6.3 x 5.4 | 0.58 | 230 | 6.3 x 7.7 | 0.34 | 280 | 6.3 x 7.7 | 0.34 | 280 | 8 x 10.2 | 0.17 | 450 | 10 x 10.2 | 0.1 | 670 |
| | | 6.3 x 5.4 | 0.58 | 243 | 6.3 x 7.7 | 0.34 | 280 | 6.3 x 7.7 | 0.34 | 384 | 8 x 10.2 | 0.17 | 450 | 8 x 10.2 | 0.17 | 587 |
| 220 | 227 | 6.3 x 7.7 | 0.34 | 280 | 6.3 x 7.7 | 0.34 | 280 | 8 x 10.2 | 0.17 | 450 | 8 x 10.2 | 0.17 | 450 | 10 x 10.2 | 0.1 | 670 |
| | | | | | | | | | | | | | | | | |
| 330 | 337 | 6.3 x 7.7 | 0.34 | 280 | 8 x 10.2 | 0.17 | 450 | 8 x 10.2 | 0.17 | 450 | 10 x 10.2 | 0.1 | 670 | 10 x 10.2 | 0.1 | 670 |
| 470 | 477 | 8 x 10.2 | 0.17 | 450 | 8 x 10.2 | 0.17 | 450 | 8 x 10.2 | 0.17 | 450 | 10 x 10.2 | 0.1 | 670 | 10 x 10.2 | 0.1 | 670 |
| | | | | | | | | | | | | | | | | |
| 1000 | 108 | 8 x 10.2 | 0.17 | 450 | 10 x 10.2 | 0.1 | 670 | 10 x 10.2 | 0.1 | 670 | | | | | | |
| | | 10 x 10.2 | 0.1 | 670 | | | | | | | | | | | | |
| 1500 | 158 | 10 x 10.2 | 0.1 | 670 | | | | | | | | | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 100kHz Case Size Φ D x L (mm)
 Maximum ESR (Ω) at 20°C 100kHz

| Voltage (Code) | | 50V (1H) | | | 63V (1J) | | | 80V(1K) | | | 100V (2A) | | |
|----------------|------|-----------|-----------|----------------|-----------|-----------|----------------|-----------|-----------|----------------|-----------|-----------|----------------|
| Cap. (μF) | Code | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current | Case Size | Impedance | Ripple Current |
| 1 | 105 | 4 x 5.4 | 4.5 | 60 | | | | | | | | | |
| 2.2 | 225 | 4 x 5.4 | 4.5 | 60 | | | | | | | | | |
| 3.3 | 335 | 4 x 5.4 | 4.5 | 60 | | | | 5 x 5.4 | 5 | 25 | | | |
| 4.7 | 475 | 5 x 5.4 | 3.5 | 85 | 5 x 5.4 | 3 | 50 | 6.3 x 5.4 | 3 | 40 | | | |
| 10 | 106 | 6.3 x 5.4 | 1.8 | 165 | 6.3 x 5.4 | 1.5 | 80 | 6.3 x 7.7 | 2.4 | 60 | | | |
| | | | | | 6.3 x 7.7 | 1.2 | 120 | | | | | | |
| 22 | 226 | 6.3 x 7.7 | 1.6 | 185 | 6.3 x 7.7 | 1.2 | 120 | 8 x 10.2 | 1.3 | 130 | 8 x 10.2 | 1.3 | 130 |
| 33 | 336 | 6.3 x 7.7 | 1.6 | 185 | 8 x 10.2 | 0.65 | 250 | 8 x 10.2 | 1.3 | 130 | 10 x 10.2 | 0.7 | 200 |
| | | 8 x 10.2 | 0.4 | 300 | | | | | | | | | |
| 47 | 476 | 10 x 10.2 | 0.3 | 342 | 8 x 10.2 | 0.65 | 250 | 10 x 10.2 | 0.7 | 200 | | | |
| 68 | 686 | 10 x 10.2 | 0.3 | 342 | 8 x 10.2 | 0.65 | 250 | | | | | | |
| 100 | 107 | 10 x 10.2 | 0.22 | 670 | 10 x 10.2 | 0.35 | 400 | | | | | | |
| 150 | 157 | 10 x 10.2 | 0.2 | 670 | | | | | | | | | |
| 220 | 227 | 10 x 10.2 | 0.18 | 670 | | | | | | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 100kHz Case Size Φ D x L (mm)
 Maximum ESR (Ω) at 20°C 100kHz

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FEATURES

- Load life of 3,000/5,000 hours at 105°C
- Reflow soldering is available
- Available for high density surface mounting



SPECIFICATIONS

| Item | Performance Characteristics | | | | | | | |
|---------------------------------|--|---|------|------|------|------|---|--|
| Operating Temperature Range | -40 to +105°C | | | | | | | |
| Rated Working Voltage Range | 6.3 to 50V | | | | | | | |
| Nominal Capacitance Range | 0.1 to 1000μF | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, +20°C | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3(μA) whichever is greater measure after 2 minutes application of rated working voltage at +20°C | | | | | | | |
| tanδ (120Hz, +20°C) | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | |
| | tanδ | 0.30 | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | |
| Low Temperature Characteristics | Impedance ratio max. at 120Hz | | | | | | | |
| | Working Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | |
| | Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 | |
| High Temperature Loading | Test time | 3,000 hours (Φ4~6.3); 5,000 hours (Φ8~10) | | | | | Post test requirements at +20°C | |
| | Test temperature | +105°C | | | | | Leakage current : ≤ Initial specified value | |
| | Test conditions | Rated DC working voltage | | | | | Cap. change : within ±30% of the initial measured value | |
| | | | | | | | tanδ : ≤ 300% of the initial specified value | |
| Shelf Life | At +105°C no voltage applied after 1,000 hours and then being stabilized at +20°C the capacitors shall meet the following limits | | | | | | | |
| | Leakage current | : ≤ Initial specified value | | | | | | |
| | Cap. change | : within ±30% of the initial measured value | | | | | | |
| | tanδ | : ≤ 300% of the initial specified value | | | | | | |
| Industrial Standard | JISC-5101-4 (IEC60384-4) | | | | | | | |

DIMENSIONS & MARKING

| Size | Φ4x6.0 | Φ5x6.0 | Φ6.3x6.0 | Φ6.3x8.0 | Φ8x10.5 | Φ10x10.5 |
|------|---------|--------|----------|----------|---------|----------|
| A | 1.8 | 2.1 | 2.4 | 2.5 | 2.9 | 3.2 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| D | 4.0 | 5.0 | 6.3 | 6.3 | 8.0 | 10.0 |
| E | 1.0 | 1.3 | 2.2 | 2.2 | 3.1 | 4.5 |
| L | 6.0 | 6.0 | 6.0 | 8.0 | 10.5 | 10.5 |
| H | 0.5~0.9 | | | 0.9~1.1 | | |

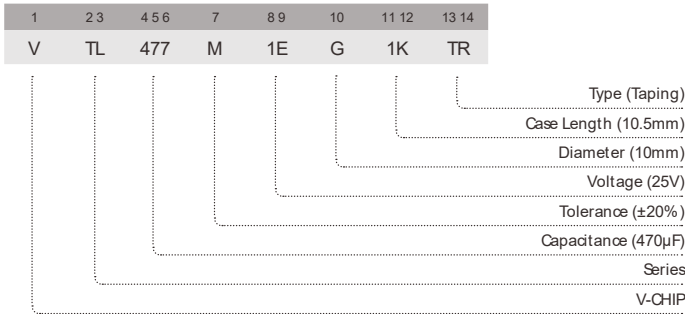
(Φ4~Φ6.3 × 6.0)

(Φ6.3 × 8.0)

(Φ8~Φ10 × 10.5)



PART NUMBER SYSTEM (EXAMPLE: 25V 470µF)



STANDARD RATINGS

| Voltage (Code) | | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | |
|----------------|------|-----------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|
| Cap. (µF) | Code | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current | Case Size | Ripple Current |
| 4.7 | 475 | | | | | | | 4 x 6.0 | 13 |
| 10 | 106 | | | | | 4 x 6.0 | 18 | 4 x 6.0 | 20 |
| 22 | 226 | 4 x 6.0 | 22 | 4 x 6.0 | 27 | 5 x 6.0 | 30 | 6.3 x 6.0 | 34 |
| 33 | 336 | 5 x 6.0 | 30 | 5 x 6.0 | 35 | 6.3 x 6.0 | 40 | 6.3 x 6.0 | 50 |
| 47 | 476 | 5 x 6.0 | 38 | 6.3 x 6.0 | 48 | 6.3 x 6.0 | 50 | 6.3 x 8.0 | 63 |
| 100 | 107 | 6.3 x 6.0 | 69 | 6.3 x 8.0 | 80 | 6.3 x 8.0 | 81 | 6.3 x 8.0 | 90 |
| 220 | 227 | 6.3 x 8.0 | 120 | 6.3 x 8.0 | 130 | 8 x 10.5 | 115 | 8 x 10.5 | 170 |
| 330 | 337 | 6.3 x 8.0 | 130 | 8 x 10.5 | 180 | 8 x 10.5 | 195 | 10 x 10.5 | 230 |
| 470 | 477 | 8 x 10.5 | 210 | 8 x 10.5 | 210 | 10 x 10.5 | 260 | 10 x 10.5 | 280 |
| 1000 | 108 | 10 x 10.5 | 300 | 10 x 10.5 | 300 | | | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size Φ D x L (mm)

| Voltage (Code) | | 35V (1V) | | 50V (1H) | |
|----------------|------|-----------|----------------|-----------|----------------|
| Cap. (µF) | Code | Case Size | Ripple Current | Case Size | Ripple Current |
| 0.1 | 104 | | | 4 x 6.0 | 1.0 |
| 0.22 | 224 | | | 4 x 6.0 | 2.6 |
| 0.33 | 334 | | | 4 x 6.0 | 3.2 |
| 0.47 | 474 | | | 4 x 6.0 | 4.0 |
| 1 | 105 | | | 4 x 6.0 | 8.0 |
| 2.2 | 225 | | | 4 x 6.0 | 11 |
| 3.3 | 335 | | | 4 x 6.0 | 14 |
| 4.7 | 475 | 4 x 6.0 | 16 | 5 x 6.0 | 19 |
| 10 | 106 | 5 x 6.0 | 27 | 6.3 x 6.0 | 32 |
| 22 | 226 | 6.3 x 6.0 | 44 | 6.3 x 8.0 | 58 |
| 33 | 336 | 6.3 x 8.0 | 57 | 6.3 x 8.0 | 70 |
| 47 | 476 | 6.3 x 8.0 | 68 | 8 x 10.5 | 124 |
| 100 | 107 | 8 x 10.5 | 120 | 10 x 10.5 | 200 |
| 220 | 227 | 10 x 10.5 | 220 | 10 x 10.5 | 230 |
| 330 | 337 | 10 x 10.5 | 260 | | |

Maximum Allowable Ripple Current (mA rms) at 105°C 120Hz

Case Size Φ D x L (mm)

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