

Type TYRV 85°C Series

Key Features

- General purpose polarized aluminum foil electrolytic capacitors
- Radial leads
- Aluminum case with insulating sleeve
- 85°C temperature rating
- 2000 to 3000 hours load life assured
- RoHS Compliant



TE Connectivity's radial lead aluminum electrolytic capacitors are designed for through-hole PCB population where board space is restricted.

The TYRV series offers a wide capacitance range at voltages from 6.3 to 450Vd.c.

Suitable for a broad range of general purpose filtering, bypassing, power supply coupling/decoupling, telecommunications and audio-video applications.

Characteristics - Electrical

| | | | | | | | | | | | | | | | | Test Cond. JIS C5101-4, Characteristic W | | |
|--|-----------------------|---|------|------|------|------|----------------------------------|------|------|----------------------------------|------|------|------|------|------|---|----|---|
| Operating Temp. Range | -40°C ~ +85°C | | | | | | | | | | | | | | | — | | |
| Rated Voltage | DC 6.3 ~ 450V | | | | | | | | | | | | | | | 85°C | | |
| Capacitance | 0.1 ~ 22000µF | | | | | | | | | | | | | | | 85°C | | |
| Capacitance Tolerance | ±20% | | | | | | | | | | | | | | | 120Hz, 20°C | | |
| Leakage Current | Rated Voltage | ≤100V | | | | | >100V | | | | | | | | | C = rated capacitance (µF) V = rated DC working voltage (V) Temperature = 20°C | | |
| | Time | after 2 minutes | | | | | after 5 minutes | | | | | | | | | | | |
| | Leakage Current | I = 0.02CV or 3 (µA) whichever is greater | | | | | CV ≤1000 I = 0.03CV + 15 (µA) | | | CV >1000 I = 0.02CV + 25 (µA) | | | | | | | | |
| Dissipation Factor (Tanδ) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 120Hz, 20°C | | |
| | Tanδ max | 0.23 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.12 | 0.14 | 0.17 | 0.20 | 0.25 | 0.25 | | | |
| Low Temperature Characteristics | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 120Hz | | |
| | Impedance Ratio | | | | | | | | | | | | | | | | | |
| | Z(-25°C)/ Z(+20°C) | ∅D<16 | 6 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 6 | 8 | 12 | 14 | | 16 | |
| | Z(+20°C) | ∅D≥16 | 8 | 6 | 4 | 4 | 3 | 3 | 3 | 3 | | | | | | | | |
| | Z(-40°C)/ Z(+20°C) | ∅D<16 | 10 | 8 | 6 | 6 | 4 | 3 | 3 | 3 | 4 | 8 | 10 | 16 | 18 | | 20 | |
| Load Life Test | Test Time | 2000 Hrs (3000 Hrs for dia ≥10mm) | | | | | | | | | | | | | | Specification satisfied when the capacitors are restored to 20°C after the rated voltage applied with rated ripple current for 2000 / 3000 hrs at 85°C | | |
| | Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | | |
| Shelf Life Test | Test Time | 1000 hrs | | | | | | | | | | | | | | Specifications satisfied when the capacitors are restored to 20°C after exposing them for 1000 hrs at 85°C without voltage applied. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5102) | | |
| | Capacitance Change | Within ±20% of initial value | | | | | | | | | | | | | | | | |
| | Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | | | | | | |
| Ripple Current & Multipliers Frequency | Frequency (Hz) | 60(50) | | | | 120 | | | | 500 | | | | 1k | | 10k and above | | — |
| | C (µF) < 100 | 0.70 | | | | 1.00 | | | | 1.30 | | | | 1.40 | | 1.50 | | |
| | C (µF) 100~1000 | 0.75 | | | | 1.00 | | | | 1.20 | | | | 1.30 | | 1.35 | | |
| | C (µF) > 1000 | 0.80 | | | | 1.00 | | | | 1.10 | | | | 1.12 | | 1.15 | | |

Type TYRV 85°C Series

Product Availability Chart

| Capacitance | | Rated Voltage (V.DC) | | | | | | | | | | | | | |
|-------------|------|----------------------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|------|
| | | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | | 63 | |
| µF | Code | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P |
| 0.1 | 104 | | | | | | | | | | | 5x11 | 2.0 | | |
| 0.22 | 224 | | | | | | | | | | | 5x11 | 2.0 | | |
| 0.33 | 334 | | | | | | | | | | | 5x11 | 2.0 | | |
| 0.47 | 474 | | | | | | | | | | | 5x11 | 2.0 | | |
| 1.0 | 105 | | | | | | | | | | | 5x11 | 2.0 | | |
| 2.2 | 225 | | | | | | | | | | | 5x11 | 2.0 | | |
| 3.3 | 335 | | | | | | | | | | | 5x11 | 2.0 | | |
| 4.7 | 475 | | | | | | | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | | |
| 10 | 106 | | | | | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 |
| 22 | 226 | | | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 6.3x11 | 2.5 |
| 33 | 336 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 6.3x11 | 2.5 |
| 47 | 476 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 |
| 100 | 107 | 5x11 | 2.0 | 5x11 | 2.0 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 |
| 220 | 227 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x16 | 5.0 |
| 330 | 337 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x16 | 5.0 | 10x20 | 5.0 |
| 470 | 477 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x16 | 5.0 | 10x20 | 5.0 | 12.5x20 | 5.0 |
| 1000 | 108 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x16 | 5.0 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 |
| 2200 | 228 | 10x20 | 5.0 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x35.5 | 7.5 | 18x40 | 7.5 |
| 3300 | 338 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x35.5 | 7.5 | 18x35.5 | 7.5 | 22x40 | 10 |
| 4700 | 478 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x31.5 | 7.5 | 18x35.5 | 7.5 | 22x40 | 10 | 25x40 | 12.5 |
| 6800 | 688 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x31.5 | 7.5 | 18x35.5 | 7.5 | | | | | | |
| 10000 | 109 | 16x25 | 7.5 | 16x35.5 | 7.5 | 18x35.5 | 7.5 | 22x40 | 10 | | | | | | |
| 22000 | 229 | 18x40 | 7.5 | 22x40 | 10 | 22x40 | 10 | | | | | | | | |
| | | 22x40 | 10 | | | | | | | | | | | | |

| Capacitance | | Rated Voltage (V.DC) | | | | | | | | | | | | | |
|-------------|------|----------------------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|
| | | 100 | | 160 | | 200 | | 250 | | 350 | | 400 | | 450 | |
| µF | Code | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P | Dia x L | P |
| 0.1 | 104 | 5x11 | 2.0 | | | | | | | | | | | | |
| 0.22 | 224 | 5x11 | 2.0 | | | | | | | | | | | | |
| 0.33 | 334 | 5x11 | 2.0 | | | | | | | | | | | | |
| 0.47 | 474 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | | | | | | | | |
| 1.0 | 105 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | | | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 8x11.5 | 3.5 |
| 2.2 | 225 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x12.5 | 5.0 |
| 3.3 | 335 | 5x11 | 2.0 | 6.3x11 | 2.5 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 10x12.5 | 5.0 | 10x16 | 5.0 | 10x16 | 5.0 |
| 4.7 | 475 | 5x11 | 2.0 | 6.3x11 | 2.5 | 8x11.5 | 3.5 | 8x11.5 | 3.5 | 10x16 | 5.0 | 10x20 | 5.0 | 10x20 | 5.0 |
| 10 | 106 | 6.3x11 | 2.5 | 10x12.5 | 5.0 | 10x12.5 | 5.0 | 10x16 | 5.0 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x20 | 5.0 |
| 22 | 226 | 6.3x11 | 2.5 | 10x20 | 5.0 | 10x20 | 5.0 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 |
| 33 | 336 | 8x11.5 | 3.5 | 10x20 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x25 | 7.5 | 16x31.5 | 7.5 |
| 47 | 476 | 10x12.5 | 5.0 | 12.5x20 | 5.0 | 12.5x25 | 5.0 | 12.5x25 | 5.0 | 16x31.5 | 7.5 | 16x31.5 | 7.5 | 18x40 | 7.5 |
| 100 | 107 | 10x20 | 5.0 | 12.5x25 | 5.0 | 16x25 | 7.5 | 16x35.5 | 7.5 | 18x40 | 7.5 | 22x40 | 10 | 22x45 | 10 |
| 220 | 227 | 12.5x20 | 5.0 | 16x31.5 | 7.5 | 18x35.5 | 7.5 | 22x40 | 10 | | | | | | |
| 330 | 337 | 16x25 | 7.5 | 18x35.5 | 7.5 | | | | | | | | | | |
| 470 | 477 | 16x31.5 | 7.5 | | | | | | | | | | | | |
| 1000 | 108 | 18x40 | 7.5 | | | | | | | | | | | | |
| 2200 | 228 | | | | | | | | | | | | | | |
| 3300 | 338 | | | | | | | | | | | | | | |
| 4700 | 478 | | | | | | | | | | | | | | |
| 6800 | 688 | | | | | | | | | | | | | | |
| 10000 | 109 | | | | | | | | | | | | | | |
| 22000 | 229 | | | | | | | | | | | | | | |

Type TYRV 85°C Series

Standard Product Table

| Rated Voltage V.DC | Capacitance | | Case Size Dia x L | Lead Pitch | Case Code | Dissipation Factor (%)* | Ripple Current (mA)* | Part Number |
|-----------------------|-------------|------|----------------------|------------|-----------|-------------------------|----------------------|----------------|
| | µF | Code | | | | | | |
| 6.3 | 33 | 336 | 5x11 | 2.0 | A11 | 23 | 72 | TYRV0J336A11ML |
| 6.3 | 47 | 476 | 5x11 | 2.0 | A11 | 23 | 90 | TYRV0J476A11ML |
| 6.3 | 100 | 107 | 5x11 | 2.0 | A11 | 23 | 130 | TYRV0J107A11ML |
| 6.3 | 220 | 227 | 5x11 | 2.0 | A11 | 23 | 200 | TYRV0J227A11ML |
| 6.3 | 330 | 337 | 6.3x11 | 2.5 | B11 | 23 | 270 | TYRV0J337B11ML |
| 6.3 | 470 | 477 | 6.3x11 | 2.5 | B11 | 23 | 320 | TYRV0J477B11ML |
| 6.3 | 1000 | 108 | 8x11.5 | 3.5 | C11 | 23 | 540 | TYRV0J108C11ML |
| 6.3 | 2200 | 228 | 10x20 | 5.0 | D20 | 23 | 1000 | TYRV0J228D20ML |
| 6.3 | 3300 | 338 | 10x20 | 5.0 | D20 | 23 | 1185 | TYRV0J338D20ML |
| 6.3 | 4700 | 478 | 12.5x20 | 5.0 | E20 | 23 | 1545 | TYRV0J478E20ML |
| 6.3 | 6800 | 688 | 12.5x25 | 5.0 | E25 | 23 | 1880 | TYRV0J688E25ML |
| 6.3 | 10000 | 109 | 16x25 | 7.5 | F25 | 23 | 2330 | TYRV0J109F25ML |
| 6.3 | 22000 | 229 | 18x40 | 7.5 | G40 | 23 | 3320 | TYRV0J229G40ML |
| 6.3 | 22000 | 229 | 22x40 | 10 | H40 | 23 | 3700 | TYRV0J229H40ML |
| 10 | 22 | 226 | 5x11 | 2.0 | A11 | 20 | 70 | TYRV1A226A11ML |
| 10 | 33 | 336 | 5x11 | 2.0 | A11 | 20 | 84 | TYRV1A336A11ML |
| 10 | 47 | 476 | 5x11 | 2.0 | A11 | 20 | 100 | TYRV1A476A11ML |
| 10 | 100 | 107 | 5x11 | 2.0 | A11 | 20 | 145 | TYRV1A107A11ML |
| 10 | 220 | 227 | 6.3x11 | 2.5 | B11 | 20 | 250 | TYRV1A227B11ML |
| 10 | 330 | 337 | 6.3x11 | 2.5 | B11 | 20 | 290 | TYRV1A337B11ML |
| 10 | 470 | 477 | 6.3x11 | 2.5 | B11 | 20 | 350 | TYRV1A477B11ML |
| 10 | 1000 | 108 | 10x12.5 | 5.0 | D12 | 20 | 650 | TYRV1A108D12ML |
| 10 | 2200 | 228 | 10x20 | 5.0 | D20 | 20 | 1070 | TYRV1A228D20ML |
| 10 | 3300 | 338 | 12.5x20 | 5.0 | E20 | 20 | 1420 | TYRV1A338E20ML |
| 10 | 4700 | 478 | 12.5x25 | 5.0 | E25 | 20 | 1780 | TYRV1A478E25ML |
| 10 | 6800 | 688 | 16x25 | 7.5 | F25 | 20 | 2220 | TYRV1A688F25ML |
| 10 | 10000 | 109 | 16x35.5 | 7.5 | F35 | 20 | 2670 | TYRV1A109F35ML |
| 10 | 22000 | 229 | 22x40 | 10 | H40 | 20 | 3790 | TYRV1A229H40ML |
| 16 | 10 | 106 | 5x11 | 2.0 | A11 | 16 | 49 | TYRV1C106A11ML |
| 16 | 22 | 226 | 5x11 | 2.0 | A11 | 16 | 75 | TYRV1C226A11ML |
| 16 | 33 | 336 | 5x11 | 2.0 | A11 | 16 | 90 | TYRV1C336A11ML |
| 16 | 47 | 476 | 5x11 | 2.0 | A11 | 16 | 110 | TYRV1C476A11ML |
| 16 | 100 | 107 | 5x11 | 2.0 | A11 | 16 | 160 | TYRV1C107A11ML |
| 16 | 220 | 227 | 6.3x11 | 2.5 | B11 | 16 | 260 | TYRV1C227B11ML |
| 16 | 330 | 337 | 8x11.5 | 3.5 | C11 | 16 | 370 | TYRV1C337C11ML |
| 16 | 470 | 477 | 8x11.5 | 3.5 | C11 | 16 | 440 | TYRV1C477C11ML |
| 16 | 1000 | 108 | 10x16 | 5.0 | D16 | 16 | 785 | TYRV1C108D16ML |
| 16 | 2200 | 228 | 12.5x20 | 5.0 | E20 | 16 | 1295 | TYRV1C228E20ML |
| 16 | 3300 | 338 | 12.5x25 | 5.0 | E25 | 16 | 1655 | TYRV1C338E25ML |
| 16 | 4700 | 478 | 16x25 | 7.5 | F25 | 16 | 2090 | TYRV1C478F25ML |
| 16 | 6800 | 688 | 16x31.5 | 7.5 | F31 | 16 | 2520 | TYRV1C688F31ML |
| 16 | 10000 | 109 | 18x35.5 | 7.5 | G35 | 16 | 2920 | TYRV1C109G35ML |
| 16 | 22000 | 229 | 22x40 | 10 | H40 | 16 | 3900 | TYRV1C229H40ML |
| 25 | 4.7 | 475 | 5x11 | 2.0 | A11 | 14 | 31 | TYRV1E475A11ML |
| 25 | 10 | 106 | 5x11 | 2.0 | A11 | 14 | 54 | TYRV1E106A11ML |
| 25 | 22 | 226 | 5x11 | 2.0 | A11 | 14 | 80 | TYRV1E226A11ML |
| 25 | 33 | 336 | 5x11 | 2.0 | A11 | 14 | 97 | TYRV1E336A11ML |
| 25 | 47 | 476 | 5x11 | 2.0 | A11 | 14 | 115 | TYRV1E476A11ML |
| 25 | 100 | 107 | 6.3x11 | 2.5 | B11 | 14 | 190 | TYRV1E107B11ML |
| 25 | 220 | 227 | 8x11.5 | 3.5 | C11 | 14 | 320 | TYRV1E227C11ML |
| 25 | 330 | 337 | 8x11.5 | 3.5 | C11 | 14 | 440 | TYRV1E337C11ML |

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Type TYRV 85°C Series

Standard Product Table (cont.)

| Rated Voltage V.DC | Capacitance | | Case Size Dia x L | Lead Pitch | Case Code | Dissipation Factor (%)* | Ripple Current (mA)* | Part Number |
|--------------------|-------------|------|-------------------|------------|-----------|-------------------------|----------------------|----------------|
| | µF | Code | | | | | | |
| 25 | 330 | 337 | 10x12.5 | 5.0 | D12 | 14 | 470 | TYRV1E337D12ML |
| 25 | 470 | 477 | 10x12.5 | 5.0 | D12 | 14 | 545 | TYRV1E477D12ML |
| 25 | 1000 | 108 | 10x20 | 5.0 | D20 | 14 | 955 | TYRV1E108D20ML |
| 25 | 2200 | 228 | 12.5x25 | 5.0 | E25 | 14 | 1540 | TYRV1E228E25ML |
| 25 | 3300 | 338 | 16x25 | 7.5 | F25 | 14 | 1975 | TYRV1E338F25ML |
| 25 | 4700 | 478 | 16x31.5 | 7.5 | F31 | 14 | 2420 | TYRV1E478F31ML |
| 25 | 6800 | 688 | 18x35.5 | 7.5 | G35 | 14 | 2880 | TYRV1E688G35ML |
| 25 | 10000 | 109 | 22x40 | 10 | H40 | 14 | 3440 | TYRV1E109H40ML |
| 35 | 4.7 | 475 | 5x11 | 2.0 | A11 | 12 | 40 | TYRV1V475A11ML |
| 35 | 10 | 106 | 5x11 | 2.0 | A11 | 12 | 58 | TYRV1V106A11ML |
| 35 | 22 | 226 | 5x11 | 2.0 | A11 | 12 | 87 | TYRV1V226A11ML |
| 35 | 33 | 336 | 5x11 | 2.0 | A11 | 12 | 108 | TYRV1V336A11ML |
| 35 | 47 | 476 | 5x11 | 2.0 | A11 | 12 | 130 | TYRV1V476A11ML |
| 35 | 100 | 107 | 6.3x11 | 2.5 | B11 | 12 | 210 | TYRV1V107B11ML |
| 35 | 220 | 227 | 8x11.5 | 3.5 | C11 | 12 | 385 | TYRV1V227C11ML |
| 35 | 220 | 227 | 10x12.5 | 5.0 | D12 | 12 | 420 | TYRV1V227D12ML |
| 35 | 330 | 337 | 10x12.5 | 5.0 | D12 | 12 | 490 | TYRV1V337D12ML |
| 35 | 470 | 477 | 10x16 | 5.0 | D16 | 12 | 740 | TYRV1V477D16ML |
| 35 | 1000 | 108 | 12.5x20 | 5.0 | E20 | 12 | 1145 | TYRV1V108E20ML |
| 35 | 2200 | 228 | 16x25 | 7.5 | F25 | 12 | 1785 | TYRV1V228F25ML |
| 35 | 3300 | 338 | 16x35.5 | 7.5 | F35 | 12 | 2275 | TYRV1V338F35ML |
| 35 | 4700 | 478 | 18x35.5 | 7.5 | G35 | 12 | 2700 | TYRV1V478G35ML |
| 50 | 0.1 | 104 | 5x11 | 2.0 | A11 | 10 | 1.5 | TYRV1H104A11ML |
| 50 | 0.22 | 224 | 5x11 | 2.0 | A11 | 10 | 3.5 | TYRV1H224A11ML |
| 50 | 0.33 | 334 | 5x11 | 2.0 | A11 | 10 | 5.0 | TYRV1H334A11ML |
| 50 | 0.47 | 474 | 5x11 | 2.0 | A11 | 10 | 7.0 | TYRV1H474A11ML |
| 50 | 1.0 | 105 | 5x11 | 2.0 | A11 | 10 | 15 | TYRV1H105A11ML |
| 50 | 2.2 | 225 | 5x11 | 2.0 | A11 | 10 | 29 | TYRV1H225A11ML |
| 50 | 3.3 | 335 | 5x11 | 2.0 | A11 | 10 | 35 | TYRV1H335A11ML |
| 50 | 4.7 | 475 | 5x11 | 2.0 | A11 | 10 | 42 | TYRV1H475A11ML |
| 50 | 10 | 106 | 5x11 | 2.0 | A11 | 10 | 65 | TYRV1H106A11ML |
| 50 | 22 | 226 | 5x11 | 2.0 | A11 | 10 | 95 | TYRV1H226A11ML |
| 50 | 33 | 336 | 5x11 | 2.0 | A11 | 10 | 125 | TYRV1H336A11ML |
| 50 | 47 | 476 | 6.3x11 | 2.5 | B11 | 10 | 165 | TYRV1H476B11ML |
| 50 | 100 | 107 | 8x11.5 | 3.5 | C11 | 10 | 260 | TYRV1H107C11ML |
| 50 | 220 | 227 | 10x12.5 | 5.0 | D12 | 10 | 455 | TYRV1H227D12ML |
| 50 | 330 | 337 | 10x16 | 5.0 | D16 | 10 | 585 | TYRV1H337D16ML |
| 50 | 470 | 477 | 10x20 | 5.0 | D20 | 10 | 755 | TYRV1H477D20ML |
| 50 | 1000 | 108 | 12.5x25 | 5.0 | E25 | 10 | 1340 | TYRV1H108E25ML |
| 50 | 2200 | 228 | 16x35.5 | 7.5 | F35 | 10 | 2075 | TYRV1H228F35ML |
| 50 | 3300 | 338 | 18x35.5 | 7.5 | G35 | 10 | 2500 | TYRV1H338G35ML |
| 50 | 3300 | 338 | 22x40 | 10 | H40 | 10 | 2785 | TYRV1H338H40ML |
| 50 | 4700 | 478 | 22x40 | 10 | H40 | 10 | 3155 | TYRV1H478H40ML |
| 50 | 4700 | 478 | 25x40 | 12.5 | J40 | 10 | 3300 | TYRV1H478J40ML |
| 63 | 10 | 106 | 5x11 | 2.0 | A11 | 9 | 70 | TYRV1J106A11ML |
| 63 | 22 | 226 | 6.3x11 | 2.5 | B11 | 9 | 115 | TYRV1J226B11ML |
| 63 | 33 | 336 | 6.3x11 | 2.5 | B11 | 9 | 140 | TYRV1J336B11ML |
| 63 | 47 | 476 | 6.3x11 | 2.5 | B11 | 9 | 170 | TYRV1J476B11ML |
| 63 | 100 | 107 | 10x12.5 | 5.0 | D12 | 9 | 320 | TYRV1J107D12ML |
| 63 | 220 | 227 | 10x16 | 5.0 | D16 | 9 | 490 | TYRV1J227D16ML |

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Type TYRV 85°C Series

Standard Product Table (cont.)

| Rated Voltage V.DC | Capacitance | | Case Size Dia x L | Lead Pitch | Case Code | Dissipation Factor (%)* | Ripple Current (mA)* | Part Number |
|--------------------|-------------|------|-------------------|------------|-----------|-------------------------|----------------------|----------------|
| | µF | Code | | | | | | |
| 63 | 330 | 337 | 10x20 | 5.0 | D20 | 9 | 710 | TYRV1J337D20ML |
| 63 | 470 | 477 | 12.5x20 | 5.0 | E20 | 9 | 900 | TYRV1J477E20ML |
| 63 | 1000 | 108 | 16x25 | 7.5 | F25 | 9 | 1560 | TYRV1J108F25ML |
| 63 | 2200 | 228 | 18x40 | 7.5 | G40 | 9 | 2385 | TYRV1J228G40ML |
| 63 | 3300 | 338 | 22x40 | 10 | H40 | 9 | 3000 | TYRV1J338H40ML |
| 63 | 4700 | 478 | 25x40 | 12.5 | J40 | 9 | 3560 | TYRV1J478J40ML |
| 100 | 0.1 | 104 | 5x11 | 2.0 | A11 | 8 | 3.0 | TYRV2A104A11ML |
| 100 | 0.22 | 224 | 5x11 | 2.0 | A11 | 8 | 5.8 | TYRV2A224A11ML |
| 100 | 0.33 | 334 | 5x11 | 2.0 | A11 | 8 | 8.8 | TYRV2A334A11ML |
| 100 | 0.47 | 474 | 5x11 | 2.0 | A11 | 8 | 12 | TYRV2A474A11ML |
| 100 | 1.0 | 105 | 5x11 | 2.0 | A11 | 8 | 22 | TYRV2A105A11ML |
| 100 | 2.2 | 225 | 5x11 | 2.0 | A11 | 8 | 33 | TYRV2A225A11ML |
| 100 | 3.3 | 335 | 5x11 | 2.0 | A11 | 8 | 40 | TYRV2A335A11ML |
| 100 | 4.7 | 475 | 5x11 | 2.0 | A11 | 8 | 48 | TYRV2A475A11ML |
| 100 | 10 | 106 | 6.3x11 | 2.5 | B11 | 8 | 80 | TYRV2A106B11ML |
| 100 | 22 | 226 | 6.3x11 | 2.5 | B11 | 8 | 115 | TYRV2A226B11ML |
| 100 | 33 | 336 | 8x11.5 | 3.5 | C11 | 8 | 145 | TYRV2A336C11ML |
| 100 | 47 | 476 | 10x12.5 | 5.0 | D12 | 8 | 235 | TYRV2A476D12ML |
| 100 | 100 | 107 | 10x20 | 5.0 | D20 | 8 | 370 | TYRV2A107D20ML |
| 100 | 220 | 227 | 12.5x20 | 5.0 | E20 | 8 | 640 | TYRV2A227E20ML |
| 100 | 330 | 337 | 16x25 | 7.5 | F25 | 8 | 825 | TYRV2A337F25ML |
| 100 | 470 | 477 | 16x31.5 | 7.5 | F31 | 8 | 1070 | TYRV2A477F31ML |
| 100 | 1000 | 108 | 18x40 | 7.5 | G40 | 8 | 2410 | TYRV2A108G40ML |
| 160 | 0.47 | 474 | 6.3x11 | 2.5 | B11 | 12 | 15 | TYRV2C474B11ML |
| 160 | 1.0 | 105 | 6.3x11 | 2.5 | B11 | 12 | 24 | TYRV2C105B11ML |
| 160 | 2.2 | 225 | 6.3x11 | 2.5 | B11 | 12 | 34 | TYRV2C225B11ML |
| 160 | 3.3 | 335 | 6.3x11 | 2.5 | B11 | 12 | 43 | TYRV2C335B11ML |
| 160 | 4.7 | 475 | 6.3x11 | 2.5 | B11 | 12 | 51 | TYRV2C475B11ML |
| 160 | 10 | 106 | 10x12.5 | 5.0 | D12 | 12 | 104 | TYRV2C106D12ML |
| 160 | 22 | 226 | 10x20 | 5.0 | D20 | 12 | 189 | TYRV2C226D20ML |
| 160 | 33 | 336 | 10x20 | 5.0 | D20 | 12 | 228 | TYRV2C336D20ML |
| 160 | 47 | 476 | 12.5x20 | 5.0 | E20 | 12 | 318 | TYRV2C476E20ML |
| 160 | 100 | 107 | 12.5x25 | 5.0 | E25 | 12 | 510 | TYRV2C107E25ML |
| 160 | 220 | 227 | 16x31.5 | 7.5 | F31 | 12 | 792 | TYRV2C227F31ML |
| 160 | 330 | 337 | 18x35.5 | 7.5 | G35 | 12 | 984 | TYRV2C337G35ML |
| 200 | 0.47 | 474 | 6.3x11 | 2.5 | B11 | 14 | 16 | TYRV2D474B11ML |
| 200 | 1.0 | 105 | 6.3x11 | 2.5 | B11 | 14 | 25 | TYRV2D105B11ML |
| 200 | 2.2 | 225 | 6.3x11 | 2.5 | B11 | 14 | 37 | TYRV2D225B11ML |
| 200 | 3.3 | 335 | 6.3x11 | 2.5 | B11 | 14 | 46 | TYRV2D335B11ML |
| 200 | 4.7 | 475 | 8x11.5 | 3.5 | C11 | 14 | 64 | TYRV2D475C11ML |
| 200 | 10 | 106 | 10x12.5 | 5.0 | D12 | 14 | 112 | TYRV2D106D12ML |
| 200 | 22 | 226 | 10x20 | 5.0 | D20 | 14 | 204 | TYRV2D226D20ML |
| 200 | 33 | 336 | 12.5x20 | 5.0 | E20 | 14 | 288 | TYRV2D336E20ML |
| 200 | 47 | 476 | 12.5x25 | 5.0 | E25 | 14 | 378 | TYRV2D476E25ML |
| 200 | 100 | 107 | 16x25 | 7.5 | F25 | 14 | 582 | TYRV2D107F25ML |
| 200 | 220 | 227 | 18x35.5 | 7.5 | G35 | 14 | 1002 | TYRV2D227G35ML |
| 250 | 2.2 | 225 | 6.3x11 | 2.5 | B11 | 17 | 42 | TYRV2E225B11ML |
| 250 | 3.3 | 335 | 8x11.5 | 3.5 | C11 | 17 | 60 | TYRV2E335C11ML |
| 250 | 4.7 | 475 | 8x11.5 | 3.5 | C11 | 17 | 72 | TYRV2E475C11ML |
| 250 | 10 | 106 | 10x16 | 5.0 | D16 | 17 | 138 | TYRV2E106D16ML |

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Type TYRV 85°C Series

Standard Product Table (cont.)

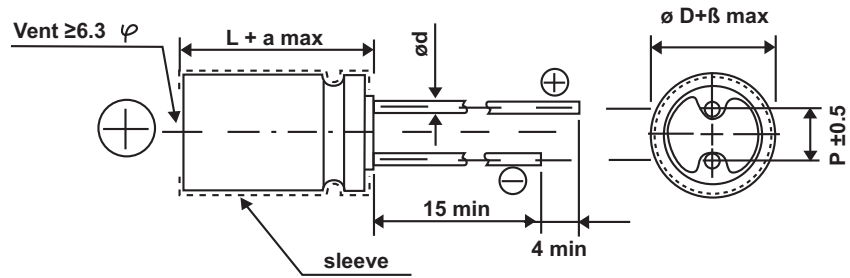
| Rated Voltage V.DC | Capacitance | | Case Size Dia x L | Lead Pitch | Case Code | Dissipation Factor (%) [*] | Ripple Current (mA) [*] | Part Number |
|-----------------------|-------------|------|----------------------|------------|-----------|-------------------------------------|----------------------------------|----------------|
| | μF | Code | | | | | | |
| 250 | 22 | 226 | 10 x 20 | 5.0 | D20 | 17 | 220 | TYRV2E226D20ML |
| 250 | 33 | 336 | 12.5 x 20 | 5.0 | E20 | 17 | 310 | TYRV2E336E20ML |
| 250 | 47 | 476 | 12.5 x 25 | 5.0 | E25 | 17 | 420 | TYRV2E476E25ML |
| 250 | 100 | 107 | 16 x 35.5 | 7.5 | F35 | 17 | 732 | TYRV2E107F35ML |
| 250 | 220 | 227 | 22 x 40 | 10 | H40 | 17 | 1134 | TYRV2E227H40ML |
| 350 | 1.0 | 105 | 6.3 x 11 | 2.5 | B11 | 20 | 27 | TYRV2V105B11ML |
| 350 | 2.2 | 225 | 8 x 11.5 | 3.5 | C11 | 20 | 49 | TYRV2V225C11ML |
| 350 | 3.3 | 335 | 10 x 12.5 | 5.0 | D12 | 20 | 70 | TYRV2V335D12ML |
| 350 | 4.7 | 475 | 10 x 16 | 5.0 | D16 | 20 | 93 | TYRV2V475D16ML |
| 350 | 10 | 106 | 10 x 20 | 5.0 | D20 | 20 | 150 | TYRV2V106D20ML |
| 350 | 22 | 226 | 12.5 x 20 | 5.0 | E20 | 20 | 255 | TYRV2V226E20ML |
| 350 | 33 | 336 | 16 x 25 | 7.5 | F25 | 20 | 390 | TYRV2V336F25ML |
| 350 | 47 | 476 | 16 x 31.5 | 7.5 | F31 | 20 | 474 | TYRV2V476F31ML |
| 350 | 100 | 107 | 18 x 40 | 7.5 | G40 | 20 | 685 | TYRV2V107G40ML |
| 400 | 1.0 | 105 | 8 x 11.5 | 3.5 | C11 | 25 | 32 | TYRV2G105C11ML |
| 400 | 2.2 | 225 | 10 x 12.5 | 5.0 | D12 | 25 | 57 | TYRV2G225D12ML |
| 400 | 3.3 | 335 | 10 x 16 | 5.0 | D16 | 25 | 78 | TYRV2G335D16ML |
| 400 | 4.7 | 475 | 10 x 20 | 5.0 | D20 | 25 | 103 | TYRV2G475D20ML |
| 400 | 10 | 106 | 12.5 x 20 | 5.0 | E20 | 25 | 174 | TYRV2G106E20ML |
| 400 | 22 | 226 | 12.5 x 25 | 5.0 | E25 | 25 | 280 | TYRV2G226E25ML |
| 400 | 22 | 226 | 16 x 25 | 7.5 | F25 | 25 | 318 | TYRV2G226F25ML |
| 400 | 33 | 336 | 16 x 25 | 7.5 | F25 | 25 | 390 | TYRV2G336F25ML |
| 400 | 47 | 476 | 16 x 31.5 | 7.5 | F31 | 25 | 474 | TYRV2G476F31ML |
| 400 | 100 | 107 | 22 x 40 | 10 | H40 | 25 | 710 | TYRV2G107H40ML |
| 450 | 1.0 | 105 | 8 x 11.5 | 3.5 | C11 | 25 | 32 | TYRV2W105C11ML |
| 450 | 2.2 | 225 | 10 x 12.5 | 5.0 | D12 | 25 | 57 | TYRV2W225D12ML |
| 450 | 3.3 | 335 | 10 x 16 | 5.0 | D16 | 25 | 78 | TYRV2W335D16ML |
| 450 | 4.7 | 475 | 10 x 20 | 5.0 | D20 | 25 | 103 | TYRV2W475D20ML |
| 450 | 10 | 106 | 12.5 x 20 | 5.0 | E20 | 25 | 174 | TYRV2W106E20ML |
| 450 | 22 | 226 | 16 x 25 | 7.5 | F25 | 25 | 354 | TYRV2W226F25ML |
| 450 | 33 | 336 | 16 x 31.5 | 7.5 | F31 | 25 | 435 | TYRV2W336F31ML |
| 450 | 47 | 476 | 18 x 40 | 7.5 | G40 | 25 | 600 | TYRV2W476G40ML |
| 450 | 100 | 107 | 22 x 45 | 10 | H45 | 25 | 750 | TYRV2W107H45ML |

* DF measured at 120Hz, 20°C

* RC measured at 120Hz, 85°C

Type TYRV 85°C Series

Dimensions



| Case Code | Dimensions (mm) | | | |
|-----------|-----------------|-----------|-------|----------|
| | Dia + β 0.5 max | L + a max | P±0.5 | Lead dia |
| A11 | 5.0 | 11+1.0 | 2.0 | 0.5 |
| B11 | 6.3 | 11+1.0 | 2.5 | 0.5 |
| C11 | 8.0 | 11.5 +1.0 | 3.5 | 0.6 |
| D12 | 10 | 12.5 +1.5 | 5.0 | 0.6 |
| D16 | 10 | 16 +1.5 | 5.0 | 0.6 |
| D20 | 10 | 20 +1.5 | 5.0 | 0.6 |
| E20 | 12.5 | 20 +1.5 | 5.0 | 0.6 |
| E25 | 12.5 | 25 +1.5 | 5.0 | 0.6 |
| F25 | 16 | 25 +1.5 | 7.5 | 0.8 |
| F31 | 16 | 31.5 +1.5 | 7.5 | 0.8 |
| F35 | 16 | 35.5 +1.5 | 7.5 | 0.8 |
| G35 | 18 | 35.5 +1.5 | 7.5 | 0.8 |
| G40 | 18 | 40 +1.5 | 7.5 | 0.8 |
| H40 | 22 | 40 +2.0 | 10 | 1.0 |
| H45 | 22 | 45 +2.0 | 10 | 1.0 |
| J40 | 25 | 40 +2.0 | 12.5 | 1.0 |

How to Order

| TYRV | OJ | 336 | A11 | M | L |
|-------------|--|-------------|-----------|-----------|------------------|
| Common Part | Voltage Code | Capacitance | Case Code | Tolerance | Packaging |
| TYRV | OJ (6.3V) 1A (10V) 1C (16V) 1E (25V) 1V (35V) 1H (50V) 1J (63V) 2A (100V) 2C (160V) 2D (200V) 2E (250V) 2V (350V) 2G (400V) 2W (450V) | e.g. 336 | e.g. A11 | M (20%) | L = Loose (bulk) |

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