



2 Axial Capacitors Type A



Features

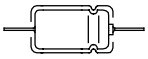
- polarized
- switch proofed
- welded axial leads
- high reliability
- high ripple current
- all contacts welded

Applications

- standard- and switch mode power supplies
- computer
- telecommunications
- general industrial
- consumer - electronic

Quick reference

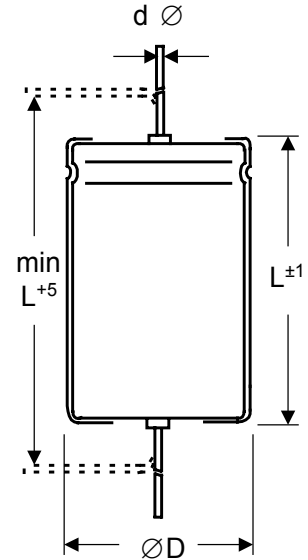
| | $U_R \leq 100 \text{ V}$ | $U_R > 100 \text{ V}$ |
|-------------------------------|--|-----------------------|
| Temperature range | - 40°C ... + 105°C | - 40°C ... + 85°C |
| Tolerance | ± 20 % | |
| Max. reverse voltage | 2V | |
| Useful life | see diagram useful life S. 13 | |
| Leakage current 5 min @ U_R | 0,008 * C [µF] * U [V] + 4µA [µA] | |
| Leakage current 1 h @ U_R | 0,15 * leakage current 5 min @ U_R | |
| Specs | DIN 41332 IEC 384 - 4 | |
| Insulation Ø up to 25 mm | polyesterfilm : voltage proof ≥ 1000 V AC | |
| Insulation Ø more than 25 mm | shrink - on sleeve : voltage proof ≥ 2500 V AC | |
| Ø leads | up to 25 mm Ø : 0.8mm ; more than 25 mm Ø : 1.0 mm | |



Aluminium Electrolytic Capacitors

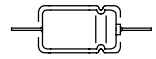
2.1 Mechanical Data

| D | d |
|-----------------|--------|
| up to 25 mm | 0,8 mm |
| more than 25 mm | 1,0 mm |



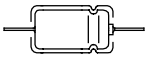
D x L

| Capacitance [μ F] | Rated voltage [V] | | | | | | | | | |
|---------------------------|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | 16 | 25 | 40 | 63 | 100 | 160 | 250 | 350 | 450 | 500 |
| 4,7 | | | | | | | | | 10 x 30 | |
| 10 | | | | | | | | 10 x 30 | 12 x 30 | 14 x 30 |
| 15 | | | | | | | 10 x 30 | 10 x 30 | 14 x 30 | 16 x 39 |
| 22 | | | | | | | 10 x 30 | 12 x 30 | 16 x 30 | 18 x 39 |
| 33 | | | | | | 10 x 30 | 12 x 30 | 14 x 37 | 18 x 39 | 21 x 36 |
| 47 | | | | | | 10 x 30 | 14 x 30 | 16 x 39 | 21 x 36 | 25 x 38 |
| 100 | | | | | 10 x 30 | 16 x 30 | 18 x 39 | 25 x 38 | 25 x 49 | 30 x 49 |
| 220 | | | | 10 x 30 | 14 x 30 | 18 x 39 | 25 x 38 | 25 x 49 | 30 x 49 | |
| 470 | | | 10 x 30 | 14 x 30 | 16 x 39 | 25 x 49 | 30 x 49 | 35 x 49 | | |
| 1000 | 10 x 30 | 10 x 30 | 14 x 30 | 16 x 39 | 25 x 38 | 35 x 49 | | | | |
| 2200 | 14 x 30 | 14 x 37 | 16 x 39 | 25 x 38 | 30 x 49 | | | | | |
| 3300 | 16 x 39 | 16 x 39 | 21 x 36 | 25 x 49 | 35 x 49 | | | | | |
| 4700 | 16 x 39 | 18 x 39 | 25 x 38 | 25 x 49 | 35 x 66 | | | | | |
| 6800 | 21 x 36 | 25 x 38 | 25 x 49 | 35 x 49 | | | | | | |
| 10000 | 25 x 38 | 25 x 49 | 30 x 49 | 35 x 66 | | | | | | |



2.2 Standard Values Type A

| U _R [V] | C _R [μF] | Case size Ø x L [mm] | ESR _{100 Hz} 20°C typ. [mΩ] | ESR _{100Hz} 20°C max. [mΩ] | tan δ _{100Hz} 20°C max. [%] | Z _{10KHz} 20°C max. [mΩ] | Rated ripple current 100Hz | | Order code A... |
|-----------------------|------------------------|----------------------------|--|---|--|---|-------------------------------|--------------|--------------------|
| | | | | | | | 85°C [A] | 105°C [A] | |
| 16 | 1000 | 10 x 30 | 220 | 330 | 21 | 220 | | 0,6 | ...10201610030 |
| 16 | 2200 | 14 x 30 | 130 | 195 | 27 | 130 | | 1,0 | ...22201614030 |
| 16 | 3300 | 16 x 39 | 90 | 135 | 28 | 90 | | 1,4 | ...33201616039 |
| 16 | 4700 | 16 x 39 | 60 | 90 | 29 | 60 | | 1,7 | ...47201616039 |
| 16 | 6800 | 21 x 36 | 50 | 75 | 32 | 50 | | 2,2 | ...68201621036 |
| 16 | 10000 | 25 x 38 | 40 | 60 | 38 | 40 | | 2,6 | ...10301625038 |
| 25 | 1000 | 10 x 30 | 180 | 270 | 17 | 180 | | 0,7 | ...10202510030 |
| 25 | 2200 | 14 x 37 | 120 | 180 | 25 | 120 | | 1,1 | ...22202514037 |
| 25 | 3300 | 16 x 39 | 85 | 127 | 26 | 85 | | 1,5 | ...33202516039 |
| 25 | 4700 | 18 x 39 | 60 | 90 | 27 | 60 | | 1,9 | ...47202518039 |
| 25 | 6800 | 25 x 38 | 50 | 75 | 32 | 50 | | 2,4 | ...68202525038 |
| 25 | 10000 | 25 x 49 | 35 | 52 | 33 | 35 | | 3,2 | ...10302525049 |
| 40 | 470 | 10 x 30 | 220 | 330 | 10 | 220 | | 0,6 | ...47104010030 |
| 40 | 1000 | 14 x 30 | 150 | 225 | 14 | 150 | | 0,9 | ...10204014030 |
| 40 | 2200 | 16 x 39 | 100 | 150 | 21 | 100 | | 1,3 | ...22204016039 |
| 40 | 3300 | 21 x 36 | 85 | 127 | 26 | 85 | | 1,7 | ...33204021036 |
| 40 | 4700 | 25 x 38 | 60 | 90 | 27 | 60 | | 2,2 | ...47204025038 |
| 40 | 6800 | 25 x 49 | 50 | 75 | 28 | 50 | | 2,7 | ...68204025049 |
| 40 | 10000 | 30 x 49 | 30 | 45 | 28 | 30 | | 3,7 | ...10304030049 |
| 63 | 220 | 10 x 30 | 400 | 600 | 8 | 400 | | 0,5 | ...22106310030 |
| 63 | 470 | 14 x 30 | 200 | 300 | 9 | 200 | | 0,8 | ...47106314030 |
| 63 | 1000 | 16 x 39 | 120 | 180 | 11 | 120 | | 1,2 | ...10206316039 |
| 63 | 2200 | 25 x 38 | 95 | 142 | 22 | 95 | | 1,7 | ...22206325038 |
| 63 | 3300 | 25 x 49 | 50 | 75 | 16 | 50 | | 2,7 | ...33206325049 |
| 63 | 4700 | 25 x 49 | 40 | 60 | 18 | 40 | | 3,0 | ...47206325049 |
| 63 | 6800 | 35 x 49 | 35 | 52 | 29 | 35 | | 3,8 | ...68206335049 |
| 63 | 10000 | 35 x 66 | 30 | 45 | 20 | 30 | | 4,6 | ...10306335066 |
| 100 | 100 | 10 x 30 | 750 | 1125 | 7 | 750 | | 0,3 | ...10110010030 |
| 100 | 220 | 14 x 30 | 350 | 525 | 7 | 350 | | 0,6 | ...22110014030 |
| 100 | 470 | 16 x 39 | 150 | 225 | 7 | 150 | | 1,1 | ...47110016039 |
| 100 | 1000 | 25 x 38 | 110 | 165 | 8 | 110 | | 1,6 | ...10210025038 |
| 100 | 2200 | 30 x 49 | 60 | 90 | 10 | 60 | | 2,6 | ...22210030049 |
| 100 | 3300 | 35 x 49 | 50 | 75 | 12 | 50 | | 3,2 | ...33210035049 |
| 100 | 4700 | 35 x 66 | 30 | 45 | 13 | 30 | | 4,6 | ...47210035066 |
| 160 | 33 | 10 x 30 | 3100 | 4650 | 6 | 3100 | 0,2 | | ...33016010030 |
| 160 | 47 | 10 x 30 | 1950 | 2925 | 6 | 1950 | 0,2 | | ...47016010030 |
| 160 | 100 | 16 x 30 | 980 | 1470 | 6 | 980 | 0,4 | | ...10116016030 |
| 160 | 220 | 18 x 39 | 470 | 705 | 6 | 470 | 0,7 | | ...22116018039 |
| 160 | 470 | 25 x 49 | 150 | 225 | 6 | 150 | 1,5 | | ...47116025049 |
| 160 | 1000 | 35 x 49 | 100 | 150 | 6 | 100 | 2,2 | | ...10216035049 |
| 250 | 22 | 10 x 30 | 4300 | 6450 | 6 | 4300 | 0,1 | | ...22025010030 |
| 250 | 33 | 12 x 30 | 2400 | 3600 | 7 | 2400 | 0,2 | | ...33025012030 |
| 250 | 47 | 14 x 30 | 1600 | 2400 | 7 | 1600 | 0,3 | | ...47025014030 |
| 250 | 100 | 18 x 39 | 750 | 1125 | 7 | 750 | 0,5 | | ...10125018039 |
| 250 | 220 | 25 x 38 | 180 | 270 | 7 | 180 | 1,2 | | ...22125025038 |
| 250 | 470 | 30 x 49 | 130 | 195 | 7 | 130 | 1,8 | | ...47125030049 |



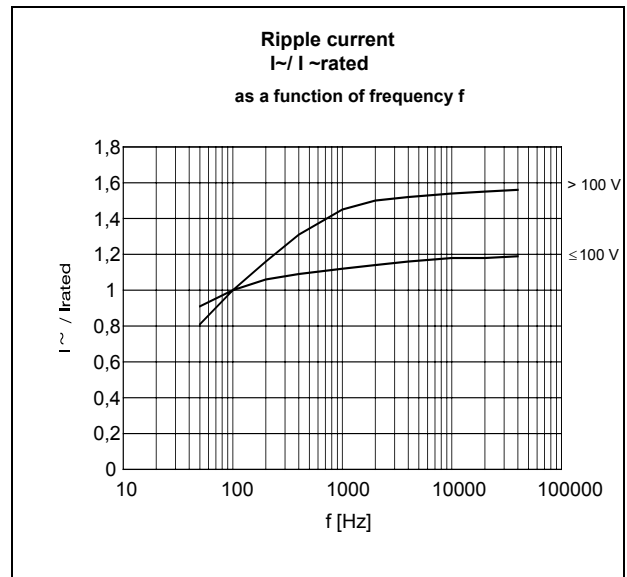
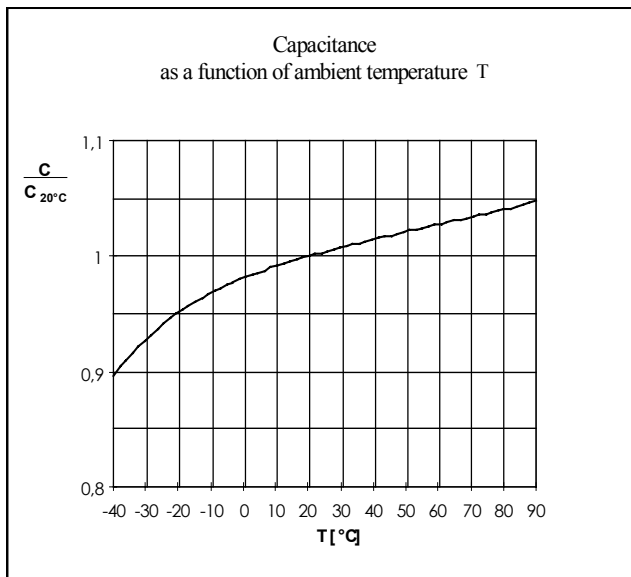
Aluminium Electrolytic Capacitors

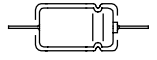
Standard Values Type A

| U _R [V] | C _R [μF] | Case size ∅ x L [mm] | ESR _{100 Hz} | ESR _{100Hz} | tan δ _{100Hz} | Z _{10KHz} | Rated ripple current 100Hz | | Order code A... |
|-----------------------|------------------------|----------------------------|-----------------------|----------------------|------------------------|--------------------|-------------------------------|--------------|--------------------|
| | | | 20°C typ. [mΩ] | 20°C max. [mΩ] | 20°C max. [%] | 20°C max. [mΩ] | 85°C [A] | 105°C [A] | |
| 350 | 10 | 10 x 30 | 8800 | 13200 | 6 | 8800 | 0,1 | | ...10035010030 |
| 350 | 15 | 10 x 30 | 7000 | 10500 | 6 | 7000 | 0,1 | | ...15035010030 |
| 350 | 22 | 12 x 30 | 2600 | 3900 | 6 | 2600 | 0,2 | | ...22035012030 |
| 350 | 33 | 14 x 37 | 1500 | 2250 | 6 | 1500 | 0,3 | | ...33035014037 |
| 350 | 47 | 16 x 39 | 1300 | 1950 | 6 | 1300 | 0,4 | | ...47035016039 |
| 350 | 100 | 25 x 38 | 580 | 870 | 6 | 580 | 0,7 | | ...10135025038 |
| 350 | 220 | 25 x 49 | 400 | 600 | 6 | 400 | 0,9 | | ...22135025049 |
| 350 | 470 | 35 x 49 | 120 | 180 | 6 | 120 | 2,0 | | ...47135035049 |
| 450 | 4,7 | 10 x 30 | 10000 | 15000 | 6 | 10000 | 0,1 | | ...4,745010030 |
| 450 | 10 | 12 x 30 | 7000 | 10500 | 6 | 7000 | 0,1 | | ...10045012030 |
| 450 | 15 | 14 x 30 | 4800 | 7200 | 6 | 4800 | 0,2 | | ...15045014030 |
| 450 | 22 | 16 x 30 | 4500 | 6750 | 6 | 4500 | 0,2 | | ...22045016030 |
| 450 | 33 | 18 x 39 | 3800 | 5700 | 6 | 3800 | 0,2 | | ...33045018039 |
| 450 | 47 | 21 x 36 | 1300 | 1950 | 6 | 1300 | 0,4 | | ...47045021036 |
| 450 | 100 | 25 x 49 | 700 | 1050 | 6 | 700 | 0,7 | | ...10145025049 |
| 450 | 220 | 30 x 49 | 400 | 600 | 6 | 400 | 1,0 | | ...22145030049 |
| 500 | 10 | 14 x 30 | 7000 | 10500 | 6 | 7000 | 0,1 | | ...10050014030 |
| 500 | 15 | 16 x 39 | 4800 | 7200 | 6 | 4800 | 0,2 | | ...15050016039 |
| 500 | 22 | 18 x 39 | 4500 | 6750 | 6 | 4500 | 0,2 | | ...22050018039 |
| 500 | 33 | 21 x 36 | 3800 | 5700 | 6 | 3800 | 0,2 | | ...33050021036 |
| 500 | 47 | 25 x 38 | 1800 | 2700 | 6 | 1800 | 0,4 | | ...47050025038 |
| 500 | 100 | 30 x 49 | 800 | 1200 | 6 | 800 | 0,7 | | ...10150030049 |

We produce also customer specific capacitors (case size / voltage / capacitance) at reasonable prices !
Please contact us for more information.

2.3 Technical Data Type A





2.3.1 Useful Life Type A

