# Electronic Equipment Use

<table>
<thead>
<tr>
<th>Dielectric</th>
<th>Series</th>
<th>Appearance</th>
<th>Operating Temp</th>
<th>Rating</th>
<th>Structure-Feature</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallized Type</td>
<td>ECU(A)</td>
<td>–40 ℃ to +85 ℃</td>
<td>0.10 μF to 1.0 μF</td>
<td>16 V.DC</td>
<td>Non-inductive, Reflow soldering</td>
<td>Noise suppressor, Audio circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQE(F)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.010 μF to 10 μF</td>
<td>100 V.DC to 1250 V.DC, 125 V.A.C, 250 V.A.C</td>
<td>Epoxy resin coating, Wide capacitance range</td>
<td>General purpose, Noise suppressor</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQE(B)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.010 μF to 4.7 μF</td>
<td>250 V.DC</td>
<td>Epoxy resin coating, Miniaturation of ECQE(F) type</td>
<td>General purpose, Noise suppressor</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQE(T)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.010 μF to 10 μF</td>
<td>250 V.DC to 630 V.DC, 125 V.A.C, 250 V.A.C</td>
<td>Epoxy resin coating, Excellent moisture resistance</td>
<td>Electric circuit of high humidity equipment</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(L)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.010 μF to 2.4 μF</td>
<td>400 V.DC, 630 V.DC</td>
<td>Epoxy resin coating, Low D.F, Excellent moisture resistance</td>
<td>High frequency high current circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(A)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.10 μF to 6.8 μF</td>
<td>250 V.DC to 630 V.DC</td>
<td>Miniaturization of ECWF(L) type, Low D.F</td>
<td>Active filtering circuit, High frequency high current circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(L)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.01 μF to 4.7 μF</td>
<td>630 V.DC</td>
<td>Epoxy resin coating, Miniaturization of ECWF(A) type</td>
<td>Active filtering circuit, High frequency high current circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(E)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.10 μF to 4.7 μF</td>
<td>450 V.DC</td>
<td>Box type, Low D.F</td>
<td>Active filtering circuit, High frequency high current circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(V)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.0010 μF to 0.10 μF</td>
<td>1000 V.DC to 2000 V.DC</td>
<td>Epoxy resin coating, Low D.F, Small in size</td>
<td>High frequency high current circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(H)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.0010 μF to 0.047 μF</td>
<td>800 V.DC, 1600 V.DC</td>
<td>Epoxy resin coating, Low D.F, Miniaturization of ECWF(V) type</td>
<td>General resonance circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECWF(C)</td>
<td>–40 ℃ to +105 ℃</td>
<td>0.0024 μF to 0.33 μF</td>
<td>630 V.DC to 3000 V.DC</td>
<td>Epoxy resin coating, Low D.F</td>
<td>General resonance circuit, Microwave oven, IH resonance circuit</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>TMF</td>
<td>–25 ℃ to +85 ℃</td>
<td>1 μF to 10 μF</td>
<td>150 V.A.C to 220 V.A.C, 350 V.DC to 630 V.DC (Resonance circuit)</td>
<td>Wide voltage range up to 2300 V.A.C, High frequency and high current capability, Long life time / High reliability, Flame retardant</td>
<td>General resonance and smoothing circuits for IH and Industry</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQUA</td>
<td>–40 ℃ to +110 ℃</td>
<td>0.0082 μF to 10.0 μF</td>
<td>275 V.A.C</td>
<td>Box type, UL, CSA, ENEC Approved (Class X2)</td>
<td>Worldwide, Noise suppressor for AC line</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQLB</td>
<td>–40 ℃ to +110 ℃</td>
<td>0.001 μF to 1.0 μF</td>
<td>300 V.A.C</td>
<td>Box type, UL, CSA, ENEC Approved (Class Y2/X1)</td>
<td>Worldwide, Noise suppressor for AC line</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQL(A)</td>
<td>–40 ℃ to +100 ℃</td>
<td>0.0010 μF to 2.2 μF</td>
<td>275 V.A.C (250 V.A.C)</td>
<td>Box type, UL, CSA, VDE Approved (Class X2/X3)</td>
<td>Worldwide, Noise suppressor for AC line</td>
</tr>
<tr>
<td>Metallized Type</td>
<td>ECQLG</td>
<td>–40 ℃ to +100 ℃</td>
<td>0.0010 μF to 1.0 μF</td>
<td>300 V.A.C (250 V.A.C)</td>
<td>Equipped with a safety mechanism, UL, CSA, VDE, ENEC Approved (Class X1)</td>
<td>Worldwide, Noise suppressor for AC line</td>
</tr>
</tbody>
</table>

* Operating temp. : Including temperature-rise on unit surface.
* Refer to each product page for details.

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Should a safety concern arise regarding this product, please be sure to contact us immediately.

01-Oct-20
## Summary of Products

### AC Motor Use

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<th>Dielectric</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Metallized Polyester Film Capacitor for Noise Suppression of Automobile</td>
<td>AMF</td>
<td></td>
<td>-25 ℃ to +70 ℃</td>
<td>10 μF to 40 μF 180 V.AC to 440 V.AC</td>
<td>High safety (with safety function) High reliability Small size, lightness, and low loss</td>
<td>Motor and compressor (for running)</td>
</tr>
<tr>
<td></td>
<td>▶ DMF</td>
<td></td>
<td>-25 ℃ to +70 ℃</td>
<td>10 μF to 60 μF 180 V.AC to 450 V.AC</td>
<td>High safety (with safety device) High reliability, safety standard approval Small size, lightness, and low loss</td>
<td>Motor and compressor (for running)</td>
</tr>
<tr>
<td></td>
<td>PMF</td>
<td></td>
<td>-25 ℃ to +70 ℃</td>
<td>0.5 μF to 65 μF 150 V.AC to 500 V.AC</td>
<td>High safety (with safety function) High reliability, safety standard approval Small size, lightness, and low loss</td>
<td>Motor and small compressor (for running)</td>
</tr>
<tr>
<td></td>
<td>▶ SMF</td>
<td></td>
<td>-25 ℃ to +70 ℃</td>
<td>1.5 μF to 9 μF 370 V.AC to 450 V.AC</td>
<td>High safety (with safety function) High reliability, safety standard approval Small size, lightness, and low loss</td>
<td>Motor and small compressor (for running)</td>
</tr>
</tbody>
</table>

### Automotive, Industrial and Infrastructure Use

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<thead>
<tr>
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<th>Operating Temp</th>
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<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallized Polyester Film Capacitor</td>
<td>ECQE</td>
<td>Box type</td>
<td>-40 ℃ to +130 ℃</td>
<td>0.47 μF 2.2 μF 4.7 μF 250 V.DC</td>
<td>AEC-Q200 compliant High safety (with safety function) Excellent moisture resistance High thermal shock resistance</td>
<td>xEV-charging circuit DC/DC, AC/DC converter (smoothing, PFC)</td>
</tr>
<tr>
<td>Metallized Polypropylene Film Capacitors</td>
<td>ECWFG</td>
<td></td>
<td>-40 ℃ to +110 ℃</td>
<td>1.0 μF to 8.0 μF 630 V.DC to 1100 V.DC</td>
<td>AEC-Q200 compliant High safety (with safety function) Excellent moisture resistance High thermal shock resistance</td>
<td>xEV-charging circuit DC/DC converter (Noise suppression)</td>
</tr>
<tr>
<td>Metallized Polypropylene Film Capacitors</td>
<td>ECQUA</td>
<td></td>
<td>-40 ℃ to +110 ℃</td>
<td>0.1 μF to 10.0 μF 275 V.AC, 310 V.AC</td>
<td>High safety, Self-healing and Self-protecting function built in. No catastrophic failure upon natural end of life due to inherent fuse function.</td>
<td>Any automotive and/or application requiring DC Linkage</td>
</tr>
<tr>
<td>DC-Link Film Capacitor</td>
<td>Type1</td>
<td></td>
<td>-40 ℃ to +105 ℃</td>
<td>581 μF 450 V.DC</td>
<td>High safety, Self-healing and Self-protecting function built in. No catastrophic failure upon natural end of life due to inherent fuse function.</td>
<td>Noise suppressor for automobile</td>
</tr>
<tr>
<td>Metallized Polypropylene Film Capacitors</td>
<td>EZPE</td>
<td></td>
<td>-40 ℃ to +85 ℃</td>
<td>10 μF to 110 μF 500 V.DC to 1300 V.DC</td>
<td>High safety (with safety function) Long product life, High reliability Low loss, Low ESR Flame retardant</td>
<td>DC filtering DC link circuit Solar, Inverters, Micro inverters Wind power generation Industrial power supplies Inverter circuit in appliances (Air Conditioners etc.)</td>
</tr>
<tr>
<td></td>
<td>EZPE (Low profile type)</td>
<td></td>
<td>-40 ℃ to +85 ℃</td>
<td>29 μF : 450 V.DC 66 μF : 525 V.DC 12 μF : 575 V.DC 10 μF : 630 V.DC</td>
<td>High safety (with safety function) Long product life, High reliability, High moisture resistance Low loss, Low ESR Flame retardant</td>
<td>AC Filter</td>
</tr>
<tr>
<td></td>
<td>EZQ</td>
<td></td>
<td>-40 ℃ to +105 ℃</td>
<td>12 μF to 36 μF 250 V.AC</td>
<td>High safety (with safety function) Long product life, High reliability Low loss, Low ESR Flame retardant High moisture resistance</td>
<td>For DC filtering DC link circuit Solar Inverters Wind power generation Industrial power supplies Inverter circuit in appliances On board charger</td>
</tr>
<tr>
<td></td>
<td>EZPV</td>
<td></td>
<td>-40 ℃ to +105 ℃</td>
<td>3 μF to 110 μF 600 V.DC to 1100 V.DC</td>
<td>High safety (with safety function) Long product life, High reliability Low loss, Low ESR Flame retardant (Case and sealing resin) AEC-Q200 compliant (For automotive Part No.)</td>
<td>For DC filtering DC link circuit Solar Inverters Wind power generation Industrial power supplies Inverter circuit in appliances On board charger</td>
</tr>
</tbody>
</table>

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01-Oct-20
Series system diagram

**Surface mounting type**

**Stacked Metallized PPS Film Chip Capacitor**
- High performance
  - High density surface mounting
  - ECHU(X)
    - Volt: 160 V DC to 380 V DC
    - Temp.: –55 ℃ to +125 ℃
    - Cap.: 0.0001 μF to 0.22 μF
- General-purpose
  - ECHU(X)
    - Volt: 100 V DC
    - Temp.: –55 ℃ to +105 ℃
    - Cap.: 0.001 μF to 10.0 μF

**Stacked Metallized PEN Film Chip Capacitor**
- High performance
  - General-purpose
  - ECHU(X)
    - Volt: 160 V DC to 500 V DC
    - Temp.: –55 ℃ to +125 ℃
    - Cap.: 0.0001 μF to 0.22 μF
- Special application
  - DC Blocking for xDSL
  - ECWU(V)
    - Volt: 250 V DC
    - Temp.: –55 ℃ to +85 ℃
    - Cap.: 0.001 μF to 1.0 μF

**Stacked Metallized Plastic Film Chip Capacitor**
- High performance
  - Large capacitor
  - ECPU(A)
    - Volt: 800 V DC to 1600 V DC
    - Temp.: –40 ℃ to +85 ℃
- Special application
  - Noise suppression
  - ECWU(X)
    - Volt: 250 V DC to 630 V DC
    - Temp.: –40 ℃ to +110 ℃ (630 V DC)
    - Cap.: 0.0010 μF to 0.047 μF

**Radial lead type**

**Metallized Polyester Film Capacitor**
- Metallization of ECQE(F) type
  - General-purpose
    - ECQE(B)
      - Volt: 250 V DC to 1250 V DC
      - Temp.: –40 ℃ to +130 ℃
      - Cap.: 0.001 μF to 1.0 μF
  - Standard
    - General-purpose
      - ECQE(F)
        - Volt: 150 V DC to 1250 V DC
        - Temp.: –40 ℃ to +105 ℃
        - Cap.: 0.0003 μF to 10.0 μF
  - Special application
    - Noise suppressor for automobile
      - ECQE
        - Volt: 250 V DC
        - Temp.: –40 ℃ to +130 ℃
        - Cap.: 0.07 μF to 4.7 μF

**Metallized Polypropylene Film Capacitor**
- High voltage
  - High current
    - General-purpose
      - ECWH(V)
        - Volt: 1000 V DC to 2000 V DC
        - Temp.: –40 ℃ to +105 ℃
        - Cap.: 0.0001 μF to 0.1 μF
  - Resonance circuit
    - Microwave oven
      - ECWH(C)
        - Volt: 630 V DC to 3000 V DC
        - Temp.: –40 ℃ to +105 ℃
        - Cap.: 0.0024 μF to 0.33 μF

**Safety Standard Approval Metallized Film Capacitor**

**PP**
- For automotive
  - Noise suppression
    - AEC-Q200 Compliant
    - With safety function
    - ECQUA
      - Volt: 275 V AC, 210 V AC
      - Temp.: –40 ℃ to +110 ℃
      - Cap.: 0.10 μF to 10.0 μF
    - UL, CSA, ENEC approved
- Product for Class X2
  - Case type
    - Noise suppression
      - With safety function
    - ECQUA
      - Volt: 275 V AC
      - Temp.: –40 ℃ to +110 ℃
      - Cap.: 0.0015 μF to 10.0 μF
    - UL, CSA, ENEC approved

**PP**
- For automotive
  - Noise suppression
    - AEC-Q200 Compliant
    - With safety function
    - ECQUB
      - Volt: 300 V AC
      - Temp.: –40 ℃ to +110 ℃
      - Cap.: 0.005 μF to 1.0 μF
- Product for Class Y2/X1
  - Case type
    - Noise suppression
      - With safety function
    - ECQUG
      - Volt: 450 V DC, 630 V DC
      - Temp.: –40 ℃ to +110 ℃ (450 VDC)
      - Cap.: 0.01 μF to 2.4 μF
    - UL, CSA, ENEC approved
    - ★ Not Recommended for New Design

**PET**
- Product for Class X1
  - Case type
    - Noise suppression
      - With safety function
    - ECQUL
      - Volt: 800 V DC to 1600 V DC
      - Temp.: –40 ℃ to +105 ℃
      - Cap.: 0.1 μF to 1.0 μF
    - UL, CSA, ENEC approved

**NEW**
- Active filtering circuit
  - High frequency and high current circuit
  - ECWF(E)
    - Volt: 450 V DC to 630 V DC
    - Temp.: –40 ℃ to +105 ℃ (450 VDC)
    - Cap.: 0.001 μF to 2.4 μF
  - Ultrasonic circuit
    - Microwave oven
      - ECWFG
        - Volt: 630 V DC to 1100 V DC
        - Temp.: –40 ℃ to +105 ℃
        - Cap.: 0.0005 μF to 0.01 μF

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