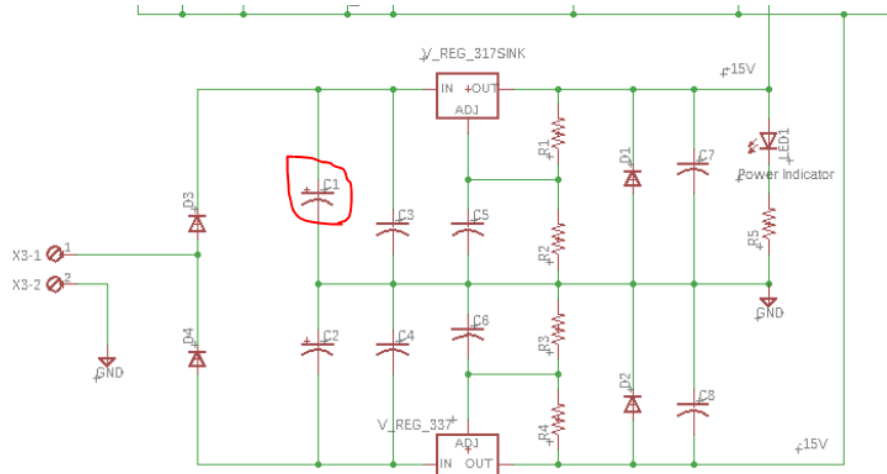


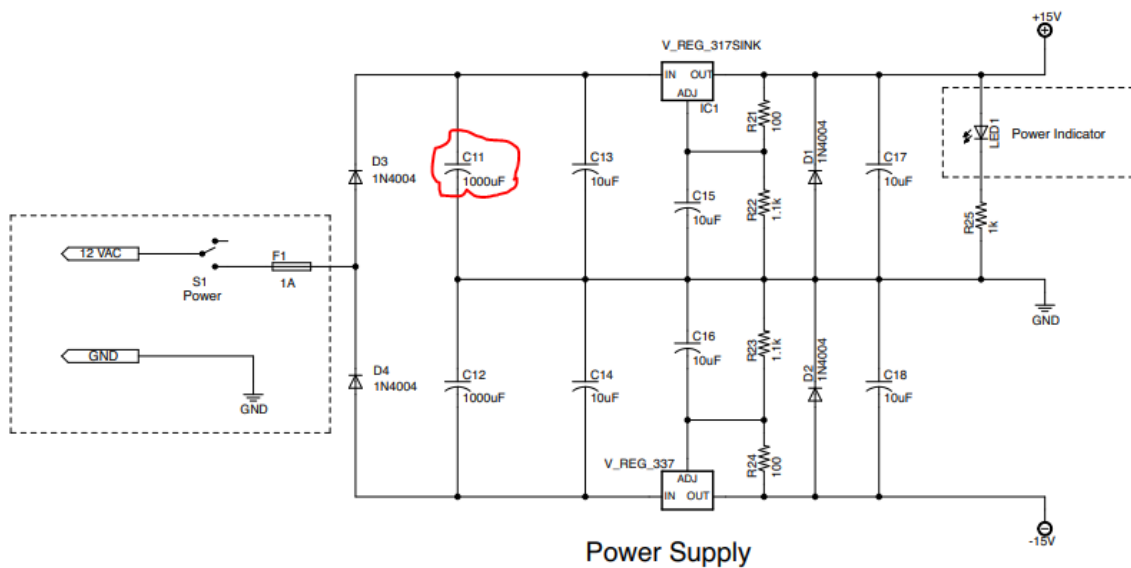
## Example: How to pick a right capacitor from EAGLE parts:

1. Let's say you are looking for this capacitor on EAGLE:



2. Go to Schematic file to see what is the value of this Cap → it is 1000uf:

[https://faculty.sfsu.edu/sites/default/files/faculty\\_files/7396/ENGR301/Final%20Project/03\\_projSchematic.pdf](https://faculty.sfsu.edu/sites/default/files/faculty_files/7396/ENGR301/Final%20Project/03_projSchematic.pdf)



3. Go to your excel sheet part# and search for a cap with 1000uf. Note that this capacitor has a polarity.

| Index | Part Number    | Manufacturer Part Number | Description                           |
|-------|----------------|--------------------------|---------------------------------------|
| 1     | 445-8290-ND    | FK14X5R1C106K            | CAP CER 10UF 16V X5R RADIAL           |
| 2     | BC1023CT-ND    | K681J15C0GF5TL2          | CAP CER 680PF 50V COG/NPO RADIAL      |
| 3     | 493-16123-ND   | <b>UVP1C102MHD</b>       | <b>CAP ALUM 1000UF 20% 16V RADIAL</b> |
| 4     | 2N5551TFRCT-ND | 2N5551TFR                | TRANS NPN 160V 0.6A TO-92             |
| 5     | 2N5401CS-ND    | 2N5401                   | TRANS PNP 150V 0.6A TO-92             |
| 6     | MJE15032GOS-ND | MJE15032G                | TRANS NPN 250V 8A TO220AB             |

4. On Google search for: UVP1C102MHD

a. You will find :

<https://www.digikey.com/en/products/detail/nichicon/UVP1C102MHD/2539555>




Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

**UVP1C102MHD**

---

Digi-Key Part Number: 493-16123-ND

Manufacturer: Nichicon

Manufacturer Product Number: UVP1C102MHD

Description: CAP ALUM 1000UF 20% 16V RADIAL

Detailed Description: 1000 µF 16 V Aluminum Electrolytic Capacitors Radial, Can 2000 Hrs @ 85°C

Customer Reference:

Datasheet: [Datasheet](#)

### Product Attributes

| TYPE                               | DESCRIPTION                                    | SELECT                |
|------------------------------------|--|-----------------------|
| Category                           | Capacitors<br>Aluminum Electrolytic Capacitors | <input type="radio"/> |
| Mfr                                | Nichicon                                       | <input type="radio"/> |
| Series                             | UVP  | <input type="radio"/> |
| Package                            | Bulk   | <input type="radio"/> |
| Product Status                     | Not For New Designs                            | <input type="radio"/> |
| Capacitance                        | 1000 µF  | <input type="radio"/> |
| Tolerance                          | ±20%   | <input type="radio"/> |
| Voltage - Rated                    | 16 V   | <input type="radio"/> |
| ESR (Equivalent Series Resistance) | -  | <input type="radio"/> |
| Lifetime @ Temp.                   | 2000 Hrs @ 85°C                                | <input type="radio"/> |
| Operating Temperature              | -40°C – 85°C                                   | <input type="radio"/> |
| Polarization                       | Bi-Polar                                       | <input type="radio"/> |
| Ratings                            | -  | <input type="radio"/> |
| Applications                       | General Purpose                                | <input type="radio"/> |
| Ripple Current @ Low Frequency     | 855 mA @ 120 Hz                                | <input type="radio"/> |
| Ripple Current @ High Frequency    | 989.25 mA @ 10 kHz                             | <input type="radio"/> |
| Lead Spacing                       | 0.197" (5.00mm)                                | <input type="radio"/> |
| Size / Dimension                   | 0.492" Dia (12.50mm)                           | <input type="radio"/> |

In here you can have a quick look at the capacitor important dimensions: **Lead space = 5mm** and **Diameter = 12.5cm**

b. Or Go to the datasheet for more details if needed:

<https://products.nichicon.co.jp/en/pdf/XJA043/e-uvp.pdf>

**ALUMINUM ELECTROLYTIC CAPACITORS** **nichicon**

**UVP**

■ Dimensions

| Rated Voltage (V) (code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ  | Leakage Current (μA) (at 20°C after 5 minutes) | Rated Ripple (mA rms) (85°C/120Hz) | Part Number  |
|--------------------------|------------------------|---------------------|--------|--|------------------------------------|--------------|
| 6.3 (0J)                 | 33                     | 5×11                | 0.26   | 6.237  | 64                                 | *UVP0J330MDD |
|                          | 47                     | 5×11                | 0.26   | 8.883  | 76                                 | *UVP0J470MDD |
|                          | 100                    | 6.3×11              | 0.26   | 18.9   | 125                                | *UVP0J101MED |
|                          | 220                    | 8×11.5              | 0.26   | 41.58  | 215                                | UVP0J221MPD  |
|                          | 330                    | 8×11.5              | 0.26   | 62.37  | 265                                | UVP0J331MPD  |
|                          | 470                    | 10×12.5             | 0.26   | 88.83  | 370                                | UVP0J471MPD  |
|                          | 1000                   | 10×20               | 0.26   | 189  | 650                                | UVP0J102MPD  |
|                          | 2200                   | 12.5×25             | 0.28   | 415.8  | 1160                               | UVP0J222MHD  |
|                          | 3300                   | 16×25               | 0.30   | 623.7  | 1570                               | UVP0J332MHD  |
|                          | 4700                   | 16×30.5             | 0.32   | 888.3  | 2020                               | UVP0J472MHD  |
| 6800                     | 18×35.5                | 0.36                | 1285.2 | 2600   | UVP0J682MHD                        |              |
| 10 (1A)                  | 22                     | 5×11                | 0.24   | 6.6  | 57                                 | *UVP1A220MDD |
|                          | 33                     | 5×11                | 0.24   | 9.9  | 64                                 | *UVP1A330MDD |
|                          | 47                     | 5×11                | 0.24   | 14.1   | 76                                 | *UVP1A470MDD |
|                          | 100                    | 6.3×11              | 0.24   | 30   | 125                                | *UVP1A101MED |
|                          | 220                    | 8×11.5              | 0.24   | 66   | 215                                | UVP1A221MPD  |
|                          | 330                    | 10×16               | 0.24   | 99   | 345                                | UVP1A331MPD  |
|                          | 470                    | 10×16               | 0.24   | 141  | 410                                | UVP1A471MPD  |
|                          | 1000                   | 12.5×20             | 0.24   | 300  | 720                                | UVP1A102MHD  |
|                          | 2200                   | 16×25               | 0.26   | 660  | 1280                               | UVP1A222MHD  |
|                          | 3300                   | 16×30.5             | 0.28   | 990  | 1690                               | UVP1A332MHD  |
| 4700                     | 18×35.5                | 0.30                | 1410   | 2160   | UVP1A472MHD                        |              |
| 16 (1C)                  | 10                     | 5×11                | 0.22   | 4.8  | 42                                 | *UVP1C100MDD |
|                          | 22                     | 5×11                | 0.22   | 10.56  | 57                                 | *UVP1C220MDD |
|                          | 33                     | 5×11                | 0.22   | 15.84  | 70                                 | *UVP1C330MDD |
|                          | 47                     | 6.3×11              | 0.22   | 22.56  | 95                                 | *UVP1C470MED |
|                          | 100                    | 8×11.5              | 0.22   | 48   | 160                                | UVP1C101MPD  |
|                          | 220                    | 10×12.5             | 0.22   | 105.6  | 275                                | UVP1C221MPD  |
|                          | 330                    | 10×16               | 0.22   | 158.4  | 375                                | UVP1C331MPD  |
|                          | 470                    | 10×20               | 0.22   | 225.6  | 485                                | UVP1C471MPD  |
|                          | 1000                   | 12.5×25             | 0.22   | 480  | 855                                | UVP1C102MHD  |
|                          | 2200                   | 16×30.5             | 0.24   | 1056   | 1510                               | UVP1C222MHD  |

From datasheet you will see the dimension and value of the cap:

From datasheet you can see the capacitor has a diameter of **12.5mm** and value of **1000uf**.

5. Go to EAGLE parts under RLC → CPOL-US. This means capacitors with polarity and US symbol.

| rcd              | Eagle Pcb | Resistors, Capaci...    |
|------------------|-----------|-------------------------|
| ▶ C-EU           |           | CAPACITOR, Eur...       |
| ▶ C-TRIMM        |           | Trimm capacitor         |
| ▶ C-US           |           | CAPACITOR, Am...        |
| ▶ CPOL-EU        |           | POLARIZED CAP...        |
| ▶ <u>CPOL-US</u> |           | <u>POLARIZED CAP...</u> |
| ▶ CX             |           | X CAPACITOR             |
| ▶ CY             |           | Y CAPACITOR             |
| ▶ EL-            |           | BIPOLAR ELECT...        |
| ▶ L-EU           |           | INDUCTOR, Euro...       |
| ▶ L-US           |           | INDUCTOR. Ame...        |

6. Now look at capacitor which has **12.5mm diameter** ( or very close to 12.5mm), **lead space/grid of 5mm** , polarity and foot print of cylindrical shape:

ADD
×

| Name               | Managed Folder | Description | Popularity |
|--------------------|----------------|-------------|------------|
| CPOL-USE2.5-6      |                | E2,5-6      | ■■■■■■■■■■ |
| CPOL-USE2.5-7      |                | E2,5-7      | ■■■■■■■■■■ |
| CPOL-USE3.5-8      |                | E3,5-8      | ■■■■■■■■■■ |
| CPOL-USE3.5-10     |                | E3,5-10     | ■■■■■■■■■■ |
| CPOL-USE5-4        |                | E5-4        | ■■■■■■■■■■ |
| CPOL-USE5-5        |                | E5-5        | ■■■■■■■■■■ |
| CPOL-USE5-6        |                | E5-6        | ■■■■■■■■■■ |
| CPOL-USE5-8,5      |                | E5-8,5      | ■■■■■■■■■■ |
| CPOL-USE5-9VAXIAL  |                | E5R         | ■■■■■■■■■■ |
| CPOL-USE5-10,5     |                | E5-10,5     | ■■■■■■■■■■ |
| CPOL-USE5-13       |                | E5-13       | ■■■■■■■■■■ |
| CPOL-USE7.5-16     |                | E7,5-16     | ■■■■■■■■■■ |
| CPOL-USE7.5-18     |                | E7,5-18     | ■■■■■■■■■■ |
| CPOL-USE10-20      |                | EB20D       | ■■■■■■■■■■ |
| CPOL-USE10-22.5    |                | EB22,5D     | ■■■■■■■■■■ |
| CPOL-USE10-25      |                | EB25D       | ■■■■■■■■■■ |
| CPOL-USE10-30      |                | EB30D       | ■■■■■■■■■■ |
| CPOL-USE10-35      |                | EB35D       | ■■■■■■■■■■ |
| CPOL-USE15-5AXIAL  |                | E15-5       | ■■■■■■■■■■ |
| CPOL-USE15-6AXIAL  |                | E15-6       | ■■■■■■■■■■ |
| CPOL-USE15-9AXIAL  |                | E15-9       | ■■■■■■■■■■ |
| CPOL-USE22-6AXIAL  |                | E22-6       | ■■■■■■■■■■ |
| CPOL-USE22-9AXIAL  |                | E22-9       | ■■■■■■■■■■ |
| CPOL-USE22-10AXIAL |                | E22-10      | ■■■■■■■■■■ |
| CPOL-USE25-9AXIAL  |                | E25-9       | ■■■■■■■■■■ |

**CPOL-US (Version 29)**

**POLARIZED CAPACITOR**, American symbol

Footprint: E5-13 (Version 1)

**ELECTROLYTIC CAPACITOR**

grid 5.08 mm, diameter 13 mm

**3D Package:** E5-13 (Version 1)

ELECTROLYTIC CAPACITOR grid 5.08 mm, diameter 13 mm

This is the right part for your schematic.