

# Aluminum Capacitors

## +105 °C, Miniature, Axial Lead, General Purpose


**FEATURES**

- Long life
- High performance
- High CV per case size
- Case sizes to 0.709" [18.0 mm] diameters
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

| QUICK REFERENCE DATA                    |  |
|---|--|
| DESCRIPTION                             | VALUE  |
| Nominal case size<br>Ø D x L in mm      | 0.248" x 0.512" [6.3 x 13.0]<br>to 0.709" x 1.574" [18.0 x 40.0]   |
| Operating temperature                   | -40 °C to +105 °C  |
| Rated capacitance range, C <sub>R</sub> | 1 µF to 4700 µF  |
| Tolerance on C <sub>R</sub>             | ± 20 %   |
| Rated voltage range, U <sub>R</sub>     | 3 WV <sub>DC</sub> to 250 WV <sub>DC</sub>   |
| Termination                             | Axial leads  |
| Life validation test at 105 °C          | 2000 h:<br>ΔCAP ≤ 20 % from initial measurement.<br>ΔESR ≤ 1.5 x initial specified limit.<br>ΔDCL ≤ initial specified limit.                                       |
| Shelf life at 85 °C                     | 500 h:<br>ΔCAP ≤ 20 % from initial measurement.<br>ΔESR ≤ 1.5 x initial specified limit.<br>ΔDCL ≤ 2.0 x initial specified limit.                                  |
| DC leakage current                      | 3 WV <sub>DC</sub> to 16 WV <sub>DC</sub> :<br>I = 0.1·√CV + 2<br>25 WV <sub>DC</sub> to 250 WV <sub>DC</sub> :<br>I = 0.2·√CV + 2<br>I in µA, C in µF, V in Volts |

| RIPPLE CURRENT MULTIPLIERS |          |             |            |            |
|----------------------------|----------|-------------|------------|------------|
| TEMPERATURE                |          |             |            |            |
| AMBIENT TEMPERATURE        |          | MULTIPLIERS |            |            |
| +105 °C                    |          | 0.5         |            |            |
| +85 °C                     |          | 1.0         |            |            |
| ≤ 65 °C                    |          | 2.0         |            |            |
| FREQUENCY (Hz)             |          |             |            |            |
| WV <sub>DC</sub>           | 50 TO 60 | 100 TO 120  | 300 TO 400 | 1K TO 100K |
| 3 to 50                    | 0.9      | 1.0         | 1.1        | 1.4        |
| 51 to 250                  | 0.8      | 1.0         | 1.3        | 1.6        |

| DIMENSIONS in inches [millimeters] |                |                |                |                |                                   |                |
|------------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|----------------|
| CASE CODE                          | NOMINAL        |                | STYLE 2        |                | STYLE 5<br>RESIN END SEAL APPLIED |                |
|                                    | D              | L              | D (max.)       | L (max.)       | D (max.)                          | L (max.)       |
| BA                                 | 0.248 [6.300]  | 0.512 [13.000] | 0.276 [7.000]  | 0.567 [14.400] | 0.276 [7.000]                     | 0.626 [15.900] |
| BB                                 | 0.248 [6.300]  | 0.689 [17.500] | 0.276 [7.000]  | 0.756 [19.200] | 0.276 [7.000]                     | 0.815 [20.700] |
| CB                                 | 0.315 [8.000]  | 0.689 [17.500] | 0.339 [8.600]  | 0.756 [19.200] | 0.339 [8.600]                     | 0.815 [20.700] |
| CC                                 | 0.315 [8.000]  | 0.807 [20.500] | 0.339 [8.600]  | 0.878 [22.300] | 0.339 [8.600]                     | 0.937 [23.800] |
| DC                                 | 0.374 [9.500]  | 0.807 [20.500] | 0.402 [10.200] | 0.878 [22.300] | 0.402 [10.200]                    | 0.937 [23.800] |
| DD                                 | 0.374 [9.500]  | 0.945 [24.000] | 0.402 [10.200] | 1.01 [25.500]  | 0.402 [10.200]                    | 1.063 [27.000] |
| DF                                 | 0.374 [9.500]  | 1.260 [32.000] | 0.402 [10.200] | 1.319 [33.500] | 0.402 [10.200]                    | 1.378 [35.000] |
| DH                                 | 0.374 [9.500]  | 1.496 [38.000] | 0.402 [10.200] | 1.567 [39.800] | 0.402 [10.200]                    | 1.626 [41.300] |
| EF                                 | 0.433 [11.000] | 1.260 [32.000] | 0.465 [11.800] | 1.319 [33.500] | 0.465 [11.800]                    | 1.378 [35.000] |
| EH                                 | 0.433 [11.000] | 1.496 [38.000] | 0.465 [11.800] | 1.567 [39.800] | 0.465 [11.800]                    | 1.626 [41.300] |
| FH                                 | 0.492 [12.500] | 1.496 [38.000] | 0.516 [13.100] | 1.567 [39.800] | 0.516 [13.100]                    | 1.626 [41.300] |
| FK                                 | 0.492 [12.500] | 1.752 [44.500] | 0.516 [13.100] | 1.831 [46.500] | 0.516 [13.100]                    | 1.890 [48.000] |
| GH                                 | 0.630 [16.000] | 1.496 [38.000] | 0.654 [16.600] | 1.567 [39.800] | 0.654 [16.600]                    | 1.626 [41.300] |
| GK                                 | 0.630 [16.000] | 1.752 [44.500] | 0.654 [16.600] | 1.831 [46.500] | 0.654 [16.600]                    | 1.890 [48.000] |
| LS                                 | 0.709 [18.000] | 1.575 [40.000] | 0.736 [18.700] | 1.673 [42.500] | 0.736 [18.700]                    | 1.693 [43.000] |

**Note**

- Lead diameter AWG 20 (0.032" [0.81 mm])

**ORDERING EXAMPLE**

Electrolytic capacitor 30D series: 30D 128 M 025 EH 2 A

| DESCRIPTION |                                       |
|-------------|---------------------------------------|
| CODE        | EXPLANATION                           |
| 30D         | Product type                          |
| 128         | Capacitance value (1200 $\mu$ F)      |
| M           | Tolerance (M = $\pm$ 20 %)            |
| 025         | Voltage rating at 105 °C (024 = 25 V) |
| EH          | Can size (see Dimensions table)       |
| 2           | Sleeve and sealing (2 = mylar sleeve) |
| A           | Packaging (A = bulk)                  |

**Note**

- For lead (Pb)-free / RoHS-compliant products add suffix "E3" to part number.  
Example: 30D128M025EH2AE3

| ELECTRICAL DATA AND ORDERING INFORMATION           |                |                                    |   |   |
|--|----------------|------------------------------------|---|---|
| CAPACITANCE<br>( $\mu$ F)                          | PART NUMBER    | NOMINAL CASE SIZE<br>D x L<br>[mm] | MAX. ESR<br>AT +25 °C<br>120 Hz<br>( $\Omega$ ) | MAX. RIPPLE<br>AT +85 °C<br>120 Hz<br>(A) |
| <b>6.3 WV<sub>DC</sub> AT +105 °C, SURGE = 8 V</b> |                |                                    |   |   |
| 150.0  | 30D157M6R3BB2A | 0.248 x 0.689 [6.3 x 17.5]         | 2.875   | 0.163                                     |
| 330.0  | 30D337M6R3CC2A | 0.315 x 0.807 [8.0 x 20.5]         | 1.277   | 0.299                                     |
| 1200.0   | 30D128M6R3DF2A | 0.374 x 1.260 [9.5 x 32.0]         | 0.345   | 0.767                                     |
| 2200.0   | 30D228M6R3EF2A | 0.433 x 1.260 [11.0 x 32.0]        | 0.206   | 1.080                                     |
| 4700.0   | 30D478M6R3GH2A | 0.630 x 1.496 [16.0 x 38.0]        | 0.118   | 1.910                                     |
| <b>10 WV<sub>DC</sub> AT +105 °C, SURGE = 12 V</b> |                |                                    |   |   |
| 47.0   | 30D476M010BA2A | 0.248 x 0.512 [6.3 x 13.0]         | 7.487   | 0.089                                     |
| 100.0  | 30D107M010BB2A | 0.248 x 0.689 [6.3 x 17.5]         | 3.561   | 0.147                                     |
| 330.0  | 30D337M010CC2A | 0.315 x 0.807 [8.0 x 20.5]         | 1.081   | 0.325                                     |
| 470.0  | 30D477M010DC2A | 0.374 x 0.807 [9.5 x 20.5]         | 0.748   | 0.434                                     |
| 1000.0   | 30D108M010DF2A | 0.374 x 1.260 [9.5 x 32.0]         | 0.356   | 0.755                                     |
| 2200.0   | 30D228M010EH2A | 0.433 x 1.496 [11.0 x 38.0]        | 0.184   | 1.240                                     |
| <b>16 WV<sub>DC</sub> AT +105 °C, SURGE = 20 V</b> |                |                                    |   |   |
| 33.0   | 30D336M016BA2A | 0.248 x 0.512 [6.3 x 13.0]         | 9.814   | 0.078                                     |
| 150.0  | 30D157M016CB2A | 0.315 x 0.689 [8.0 x 17.5]         | 2.208   | 0.212                                     |
| 330.0  | 30D337M016DC2A | 0.374 x 0.807 [9.5 x 20.5]         | 1.981   | 0.379                                     |
| 470.0  | 30D477M016DD2A | 0.374 x 0.945 [9.5 x 24.0]         | 0.679   | 0.483                                     |
| 1200.0   | 30D128M016DH2A | 0.374 x 1.496 [9.5 x 38.0]         | 0.265   | 0.947                                     |
| 4700.0   | 30D478M016GK2A | 0.630 x 1.752 [16.0 x 44.5]        | 0.093   | 2.290                                     |
| <b>20 WV<sub>DC</sub> AT +105 °C, SURGE = 25 V</b> |                |                                    |   |   |
| 150.0  | 30D157M020CC2A | 0.315 x 0.807 [8.0 x 20.5]         | 2.110   | 0.233                                     |
| 220.0  | 30D227M020DC2A | 0.374 x 0.807 [9.5 x 20.5]         | 1.410   | 0.318                                     |
| 1000.0   | 30D108M020EF2A | 0.433 x 1.260 [11.0 x 32.0]        | 0.323   | 0.863                                     |
| 1500.0   | 30D158M020EH2A | 0.433 x 1.496 [11.0 x 38.0]        | 0.221   | 1.140                                     |
| 3300.0   | 30D338M020GK2A | 0.630 x 1.752 [16.0 x 44.5]        | 0.118   | 2.040                                     |



| <b>ELECTRICAL DATA AND ORDERING INFORMATION</b>    |                    |   |  |   |
|--|--------------------|---|--|---|
| <b>CAPACITANCE<br/>(<math>\mu</math>F)</b>         | <b>PART NUMBER</b> | <b>NOMINAL CASE SIZE<br/>D x L<br/>[mm]</b> | <b>MAX. ESR<br/>AT +25 °C<br/>120 Hz<br/>(<math>\Omega</math>)</b> | <b>MAX. RIPPLE<br/>AT +85 °C<br/>120 Hz<br/>(A)</b> |
| <b>25 WV<sub>DC</sub> AT +105 °C, SURGE = 35 V</b> |                    |   |  |   |
| 22.0   | 30D226M025BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 13.270   | 0.067   |
| 47.0   | 30D476M025BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 6.128  | 0.112   |
| 100.0  | 30D107M025CC2A     | 0.315 x 0.807 [8.0 x 20.5]                  | 2.914  | 0.197   |
| 220.0  | 30D227M025DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 1.327  | 0.326   |
| 330.0  | 30D337M025DD2A     | 0.374 x 0.945 [9.5 x 24.0]                  | 0.885  | 0.423   |
| 470.0  | 30D477M025DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 0.612  | 0.575   |
| 1200.0   | 30D128M025EH2A     | 0.433 x 1.496 [11.0 x 38.0]                 | 0.239  | 1.090   |
| 3300.0   | 30D338M025LS2A     | 0.709 x 1.575 [18.0 x 40.0]                 | 0.108  | 2.190   |
| <b>35 WV<sub>DC</sub> AT +105 °C, SURGE = 45 V</b> |                    |   |  |   |
| 33.0   | 30D336M035BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 8.330  | 0.096   |
| 100.0  | 30D107M035DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 2.740  | 0.212   |
| 220.0  | 30D227M035DD2A     | 0.374 x 0.945 [9.5 x 24.0]                  | 1.250  | 0.356   |
| 330.0  | 30D337M035DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 0.830  | 0.495   |
| 1000.0   | 30D108M035EH2A     | 0.433 x 1.496 [11.0 x 38.0]                 | 0.274  | 1.020   |
| 2200.0   | 30D228M035GK2A     | 0.630 x 1.752 [16.0 x 44.5]                 | 0.125  | 1.980   |
| <b>40 WV<sub>DC</sub> AT +105 °C, SURGE = 50 V</b> |                    |   |  |   |
| 15.0   | 30D156M040BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 17.600   | 0.058   |
| 22.0   | 30D226M040BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 11.700   | 0.081   |
| 47.0   | 30D476M040CB2A     | 0.315 x 0.689 [8.0 x 17.5]                  | 5.435  | 0.134   |
| 100.0  | 30D107M040DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 2.585  | 0.234   |
| 470.0  | 30D477M040DH2A     | 0.374 x 1.496 [9.5 x 38.0]                  | 0.543  | 0.663   |
| 1000.0   | 30D108M040FK2A     | 0.492 x 1.752 [12.5 x 44.5]                 | 0.258  | 1.210   |
| 2200.0   | 30D228M040LS2A     | 0.709 x 1.575 [18.0 x 40.0]                 | 0.125  | 2.040   |
| <b>50 WV<sub>DC</sub> AT +105 °C, SURGE = 65 V</b> |                    |   |  |   |
| 10.0   | 30D106M050BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 25.85  | 0.048   |
| 22.0   | 30D226M050BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 11.700   | 0.081   |
| 33.0   | 30D336M050CB2A     | 0.315 x 0.689 [8.0 x 17.5]                  | 7.850  | 0.112   |
| 100.0  | 30D107M050DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 2.585  | 0.233   |
| 220.0  | 30D227M050DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 1.177  | 0.417   |
| 330.0  | 30D337M050DH2A     | 0.374 x 1.496 [9.5 x 38.0]                  | 0.785  | 0.551   |
| 1500.0   | 30D158M050GK2A     | 0.630 x 1.752 [16.0 x 44.5]                 | 0.176  | 1.670   |
| <b>63 WV<sub>DC</sub> AT +105 °C, SURGE = 75 V</b> |                    |   |  |   |
| 15.0   | 30D156M063BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 16.580   | 0.068   |
| 33.0   | 30D336M063CB2A     | 0.315 x 0.689 [8.0 x 17.5]                  | 7.370  | 0.116   |
| 47.0   | 30D476M063CC2A     | 0.315 x 0.807 [8.0 x 20.5]                  | 5.100  | 0.149   |
| 100.0  | 30D107M063DD2A     | 0.374 x 0.945 [9.5 x 24.0]                  | 2.426  | 0.256   |
| 220.0  | 30D227M063EF2A     | 0.433 x 1.260 [11.0 x 32.0]                 | 1.105  | 0.467   |
| 470.0  | 30D477M063EH2A     | 0.433 x 1.496 [11.0 x 38.0]                 | 0.510  | 0.745   |
| 1000.0   | 30D108M063GK2A     | 0.630 x 1.752 [16.0 x 44.5]                 | 0.242  | 1.420   |



| <b>ELECTRICAL DATA AND ORDERING INFORMATION</b>      |                    |   |  |   |
|--|--------------------|---|--|---|
| <b>CAPACITANCE<br/>(<math>\mu</math>F)</b>           | <b>PART NUMBER</b> | <b>NOMINAL CASE SIZE<br/>D x L<br/>[mm]</b> | <b>MAX. ESR<br/>AT +25 °C<br/>120 Hz<br/>(<math>\Omega</math>)</b> | <b>MAX. RIPPLE<br/>AT +85 °C<br/>120 Hz<br/>(A)</b> |
| <b>75 WV<sub>DC</sub> AT +105 °C, SURGE = 85 V</b>   |                    |   |  |   |
| 12.0   | 30D126M075BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 13.200   | 0.076   |
| 47.0   | 30D476M075DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 3.384  | 0.204   |
| 120.0  | 30D127M075DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 1.320  | 0.392   |
| 1000.0   | 30D108M075LS2A     | 0.709 x 1.575 [18.0 x 40.0]                 | 0.160  | 1.810   |
| <b>100 WV<sub>DC</sub> AT +105 °C, SURGE = 125 V</b> |                    |   |  |   |
| 4.7  | 30D475M100BB2A     | 0.248 x 0.689 [6.3 x 17.5]                  | 33.840   | 0.048   |
| 10.0   | 30D106M100CB2A     | 0.315 x 0.689 [8.0 x 17.5]                  | 16.097   | 0.079   |
| 100.0  | 30D107M100DH2A     | 0.374 x 1.496 [9.5 x 38.0]                  | 1.609  | 0.386   |
| 220.0  | 30D227M100EK2A     | 0.492 x 1.752 [12.5 x 44.5]                 | 0.733  | 0.717   |
| 470.0  | 30D477M100LS2A     | 0.709 x 1.575 [18.0 x 40.0]                 | 0.338  | 1.240   |
| <b>160 WV<sub>DC</sub> AT +105 °C, SURGE = 180 V</b> |                    |   |  |   |
| 1.5  | 30D155M160BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 110.10   | 0.023   |
| 3.3  | 30D335M160CB2A     | 0.315 x 0.689 [8.0 x 17.5]                  | 48.880   | 0.045   |
| 10.0   | 30D106M160DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 16.097   | 0.093   |
| 22.0   | 30D226M160DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 7.333  | 0.166   |
| 33.0   | 30D336M160EF2A     | 0.433 x 1.260 [11.0 x 32.0]                 | 4.888  | 0.222   |
| 47.0   | 30D476M160EH2A     | 0.433 x 1.496 [11.0 x 38.0]                 | 3.384  | 0.289   |
| 100.0  | 30D107M160GK2A     | 0.630 x 1.752 [16.0 x 44.5]                 | 1.609  | 0.552   |
| <b>200 WV<sub>DC</sub> AT +105 °C, SURGE = 250 V</b> |                    |   |  |   |
| 1.2  | 30D125M200BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 132.01   | 0.022   |
| 4.7  | 30D475M200CC2A     | 0.315 x 0.807 [8.0 x 20.5]                  | 33.850   | 0.058   |
| 8.2  | 30D825M200DC2A     | 0.374 x 0.807 [9.5 x 20.5]                  | 19.410   | 0.085   |
| 10.0   | 30D106M200DD2A     | 0.374 x 0.945 [9.5 x 24.0]                  | 16.090   | 0.101   |
| 22.0   | 30D226M200DH2A     | 0.374 x 1.496 [9.5 x 38.0]                  | 7.331  | 0.181   |
| 33.0   | 30D336M200EH2A     | 0.433 x 1.496 [11.0 x 38.0]                 | 4.880  | 0.241   |
| 47.0   | 30D476M200EK2A     | 0.492 x 1.752 [12.5 x 44.5]                 | 3.384  | 0.334   |
| 100.0  | 30D107M200LS2A     | 0.709 x 1.575 [18.0 x 40.0]                 | 1.609  | 0.571   |
| <b>250 WV<sub>DC</sub> AT +105 °C, SURGE = 300 V</b> |                    |   |  |   |
| 1.0  | 30D105M250BA2A     | 0.248 x 0.512 [6.3 x 13.0]                  | 160.97   | 0.021   |
| 3.3  | 30D335M250CC2A     | 0.315 x 0.807 [8.0 x 20.5]                  | 48.010   | 0.049   |
| 12.0   | 30D126M250DF2A     | 0.374 x 1.260 [9.5 x 32.0]                  | 13.210   | 0.124   |
| 47.0   | 30D476M250GH2A     | 0.630 x 1.496 [16.0 x 38.0]                 | 3.384  | 0.355   |

Statements about product lifetime are based on calculations and internal testing. They should only be interpreted as estimations. Also due to external factors, the lifetime in the field application may deviate from the calculated lifetime. In general, nothing stated herein shall be construed as a guarantee of durability.



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