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October 28<sup>th</sup> 2016

SUB: EOL – End of Life Notification

Products impacted by this notice:

**NPC Series** – SMT Solid Polymer Aluminum Electrolytic Capacitors

Product specification: [www.niccomp.com/catalog/npc.pdf](http://www.niccomp.com/catalog/npc.pdf)

NIC Part Numbers affected: All **EOL Part Numbers** as listed in Table 1 below

Effective: October 28<sup>th</sup> 2016

Last time order supporting business from established customers: April 28<sup>th</sup> 2017

Last time delivery: October 28<sup>th</sup> 2017

**Table 1**

| <b>EOL Part Number</b> | <i>Voltage Rating</i> | <i>Capacitance Value</i> | <b>Alternate – Suggested Replacement Part Numbers</b> |
|------------------------|-----------------------|--------------------------|---|
| <b>NPC101M2D5ZATRF</b> | 2VDC                  | 100uF                    | NSP101M4D6ZATRF<br>NSP181M2D6ZATRF <sup>Δ</sup>       |
| <b>NPC101M2D1UATRF</b> | 2VDC                  | 100uF                    | NSP101M4D6ZATRF<br>NSP221M2D5YATRF <sup>Δ</sup>       |
| <b>NPC101M2D1ZATRF</b> | 2VDC                  | 100uF                    | NSP101M6.3D1ATRF                                      |
| <b>NPC101M2D6XATRF</b> | 2VDC                  | 100uF                    | NSP101M4D6ZATRF<br>NSP181M2D6ZATRF <sup>Δ</sup>       |
| <b>NPC101M2D6ZATRF</b> | 2VDC                  | 100uF                    | NSP101M4D6ZATRF<br>NSP181M2D6ZATRF <sup>Δ</sup>       |
| <b>NPC121M2D6ZATRF</b> | 2VDC                  | 120uF                    | NSP121M4DZATRF<br>NSP181M2D6ZATRF <sup>Δ</sup>        |
| <b>NPC151M2D5ZATRF</b> | 2VDC                  | 150uF                    | NSP151M2.5D6ZATRF<br>NSP221M2D5YATRF <sup>Δ</sup>     |
| <b>NPC151M2D6ZATRF</b> | 2VDC                  | 150uF                    | NSP151M2.5D6ZATRF<br>NSP181M2D6ZATRF <sup>Δ</sup>     |
| <b>NPC151M2D1UATRF</b> | 2VDC                  | 150uF                    | NSP151M2.5D6ZATRF<br>NSP181M2.5DYATRF <sup>Δ</sup>    |
| <b>NPC181M2D5ZATRF</b> | 2VDC                  | 180uF                    | NSP181M2D6ZATRF<br>NSP221M2D5YATRF <sup>Δ</sup>       |
| <b>NPC181M2D6ZATRF</b> | 2VDC                  | 180uF                    | NSP181M2D6ZATRF                                       |
| <b>NPC221M2D5ZATRF</b> | 2VDC                  | 220uF                    | NSP221M2D6ZATRF<br>NSP221M2D5YATRF                    |
| <b>NPC221M2D6YATRF</b> | 2VDC                  | 220uF                    | NSP221M2D5YATRF<br>NSP221M2D6ZATRF                    |
| <b>NPC221M2D6ZATRF</b> | 2VDC                  | 220uF                    | NSP221M2D6ZATRF                                       |
| <b>NPC271M2D6YATRF</b> | 2VDC                  | 270uF                    | NSP271M2D6YATRF                                       |
| <b>NPC271M2D6ZATRF</b> | 2VDC                  | 270uF                    | NSP271M2D6ZATRF                                       |
| <b>NPC271M2D8YATRF</b> | 2VDC                  | 270uF                    | NSP271M2D6YATRF                                       |
| <b>NPC331M2D6UATRF</b> | 2VDC                  | 330uF                    | NSP331M2D6UATRF                                       |
| <b>NPC331M2D6YATRF</b> | 2VDC                  | 330uF                    | NSP331M2D6YATRF                                       |
| <b>NPC331M2D6ZATRF</b> | 2VDC                  | 330uF                    | NSP331M2D6ZATRF                                       |
| <b>NPC331M2D8YATRF</b> | 2VDC                  | 330uF                    | NSP331M2D6YATRF                                       |
| <b>NPC391M2D8YATRF</b> | 2VDC                  | 390uF                    | NSP391M2D6YATRF                                       |
| <b>NPC471M2D8YATRF</b> | 2VDC                  | 470uF                    | NSP471M2D6YATRF                                       |
| <b>NPC471M2D6UATRF</b> | 2VDC                  | 470uF                    | NSP471M2D6UATRF                                       |



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**Table 1** (continued)

| <b>EOL Part Number</b>   | <b>Voltage Rating</b> | <b>Capacitance Value</b> | <b>Alternate – Suggested Replacement Part Numbers</b> |
|--------------------------|-----------------------|--------------------------|---|
| <b>NPC820M2.5D1ZATRF</b> | 2.5VDC                | 82uF                     | NSP820M4D6ZATRF                                       |
| <b>NPC820M2.5D6XATRF</b> | 2.5VDC                | 82uF                     | NSP820M4D6ZATRF<br>NSP151M2.5D6ZATRF <sup>Δ</sup>     |
| <b>NPC820M2.5D6ZATRF</b> | 2.5VDC                | 82uF                     | NSP820M4D6ZATRF<br>NSP151M2.5D6ZATRF <sup>Δ</sup>     |
| <b>NPC101M2.5D5ZATRF</b> | 2.5VDC                | 100uF                    | NSP101M4D6ZATRF<br>NSP181M2.5DYATRF <sup>Δ</sup>      |
| <b>NPC101M2.5D1UATRF</b> | 2.5VDC                | 100uF                    | NSP101M4D6ZATRF<br>NSP181M2.5DYATRF <sup>Δ</sup>      |
| <b>NPC101M2.5D6ZATRF</b> | 2.5VDC                | 100uF                    | NSP101M4D6ZATRF<br>NSP151M2.5D6ZATRF <sup>Δ</sup>     |
| <b>NPC121M2.5D6ZATRF</b> | 2.5VDC                | 120uF                    | NSP121M4DZATRF<br>NSP151M2.5D6ZATRF <sup>Δ</sup>      |
| <b>NPC121M2.5D1UATRF</b> | 2.5VDC                | 120uF                    | NSP121M4DZATRF<br>NSP181M2.5DYATRF <sup>Δ</sup>       |
| <b>NPC151M2.5D5ZATRF</b> | 2.5VDC                | 150uF                    | NSP151M2.5D6ZATRF<br>NSP181M2.5DYATRF <sup>Δ</sup>    |
| <b>NPC151M2.5D6ZATRF</b> | 2.5VDC                | 150uF                    | NSP151M2.5D6ZATRF                                     |
| <b>NPC181M2.5D5ZATRF</b> | 2.5VDC                | 180uF                    | NSP181M2.5D6ZATRF<br>NSP181M2.5DYATRF                 |
| <b>NPC181M2.5D6ZATRF</b> | 2.5VDC                | 180uF                    | NSP181M2.5D6ZATRF                                     |
| <b>NPC181M2.5D7XATRF</b> | 2.5VDC                | 180uF                    | NSP181M2.5D6ZATRF                                     |
| <b>NPC221M2.5D6YATRF</b> | 2.5VDC                | 220uF                    | NSP221M2.5D6YATRF                                     |
| <b>NPC221M2.5D6ZATRF</b> | 2.5VDC                | 220uF                    | NSP221M2.5D6ZATRF                                     |
| <b>NPC221M2.5D8YATRF</b> | 2.5VDC                | 220uF                    | NSP221M2.5D6YATRF                                     |
| <b>NPC271M2.5D6YATRF</b> | 2.5VDC                | 270uF                    | NSP271M2.5D1YATRF                                     |
| <b>NPC271M2.5D6ZATRF</b> | 2.5VDC                | 270uF                    | NSP271M2.5D6YATRF                                     |
| <b>NPC271M2.5D8YATRF</b> | 2.5VDC                | 270uF                    | NSP271M2.5D6YATRF                                     |
| <b>NPC331M2.5D8YATRF</b> | 2.5VDC                | 330uF                    | NSP331M2.5D6YATRF                                     |
| <b>NPC331M2.5D6YATRF</b> | 2.5VDC                | 330uF                    | NSP331M2.5D6YATRF                                     |
| <b>NPC391M2.5D6YATRF</b> | 2.5VDC                | 390uF                    | NSP391M2.5D6YATRF                                     |
| <b>NPC391M2.5D8ZATRF</b> | 2.5VDC                | 390uF                    | NSP391M2.5D6ZATRF                                     |
| <b>NPC471M2.5D8YATRF</b> | 2.5VDC                | 470uF                    | NSP471M2.5D6YATRF                                     |
| <b>NPC471M2.5D6UATRF</b> | 2.5VDC                | 470uF                    | NSP471M2.5D6UATRF                                     |
| <b>NPC680M4D5XATRF</b>   | 4VDC                  | 68uF                     | NSP680M6.3DZATRF<br>NSP680M6.3D5ATRF                  |
| <b>NPC680M4D6XATRF</b>   | 4VDC                  | 68uF                     | NSP680M6.3DZATRF<br>NSP820M4D6ZATRF <sup>Δ</sup>      |
| <b>NPC680M4D1ZATRF</b>   | 4VDC                  | 68uF                     | NSP680M6.3DZATRF                                      |
| <b>NPC680M4D6ZATRF</b>   | 4VDC                  | 68uF                     | NSP680M6.3DZATRF<br>NSP820M4D6ZATRF <sup>Δ</sup>      |
| <b>NPC820M4D6XATRF</b>   | 4VDC                  | 82uF                     | NSP820M4D6ZATRF                                       |
| <b>NPC101M4D6XATRF</b>   | 4VDC                  | 100uF                    | NSP101M4D6ZATRF                                       |
| <b>NPC121M4D6XATRF</b>   | 4VDC                  | 120uF                    | NSP121M4DZATRF  |
| <b>NPC151M4D6XATRF</b>   | 4VDC                  | 150uF                    | NSP151M4D6ZATRF                                       |
| <b>NPC151M4D7XATRF</b>   | 4VDC                  | 150uF                    | NSP151M4D6ZATRF                                       |
| <b>NPC181M4D8ZATRF</b>   | 4VDC                  | 180uF                    | NSP181M4D6ZATRF                                       |

**Table 1** (continued)

| <b>EOL Part Number</b>   | <b>Voltage Rating</b> | <b>Capacitance Value</b> | <b>Alternate – Suggested Replacement Part Numbers</b> |
|--------------------------|-----------------------|--------------------------|---|
| <b>NPC181M4D6ZATRF</b>   | 4VDC                  | 180uF                    | NSP181M4D6ZATRF                                       |
| <b>NPC221M4D6ZATRF</b>   | 4VDC                  | 220uF                    | NSP221M4D6ZATRF                                       |
| <b>NPC221M4D8ZATRF</b>   | 4VDC                  | 220uF                    | NSP221M4D6ZATRF                                       |
| <b>NPC271M4D8ZATRF</b>   | 4VDC                  | 270uF                    | NSP271M4D6ZATRF                                       |
| <b>NPC331M4D8ZATRF</b>   | 4VDC                  | 330uF                    | NSP331M4D6ATRF  |
| <b>NPC471M4D8ZATRF</b>   | 4VDC                  | 470uF                    | - - -   |
| <b>NPC330M6.3D6XATRF</b> | 6.3VDC                | 33uF                     | NSPX330M16D6ATRF<br>NSP680M6.3DZATRF <sup>Δ</sup>     |
| <b>NPC470M6.3D5XATRF</b> | 6.3VDC                | 47uF                     | NSPX470M10D6ATRF<br>NSP680M6.3DZATRF <sup>Δ</sup>     |
| <b>NPC470M6.3D6XATRF</b> | 6.3VDC                | 47uF                     | NSPX470M10D6ATRF<br>NSP680M6.3DZATRF <sup>Δ</sup>     |
| <b>NPC470M6.3D1XATRF</b> | 6.3VDC                | 47uF                     | NSPX470M10D6ATRF<br>NSP680M6.3DZATRF <sup>Δ</sup>     |
| <b>NPC470M6.3D6ZATRF</b> | 6.3VDC                | 47uF                     | NSPX470M10D6ATRF<br>NSP680M6.3DZATRF <sup>Δ</sup>     |
| <b>NPC560M6.3D6XATRF</b> | 6.3VDC                | 56uF                     | NSP680M6.3DZATRF <sup>Δ</sup>                         |
| <b>NPC680M6.3D6XATRF</b> | 6.3VDC                | 68uF                     | NSP680M6.3DZATRF                                      |
| <b>NPC820M6.3D6XATRF</b> | 6.3VDC                | 82uF                     | NSP121M6.3D6ZATRF <sup>Δ</sup>                        |
| <b>NPC101M6.3D7XATRF</b> | 6.3VDC                | 100uF                    | NSP101M6.3D6ATRF                                      |
| <b>NPC101M6.3D6XATRF</b> | 6.3VDC                | 100uF                    | NSP101M6.3D6ATRF                                      |
| <b>NPC121M6.3D6ZATRF</b> | 6.3VDC                | 120uF                    | NSP121M6.3D6ZATRF                                     |
| <b>NPC121M6.3D8ZATRF</b> | 6.3VDC                | 120uF                    | NSP121M6.3D6ZATRF                                     |
| <b>NPC151M6.3D8ZATRF</b> | 6.3VDC                | 150uF                    | NSP151M6.3D6ZATRF                                     |
| <b>NPC151M6.3D6ZATRF</b> | 6.3VDC                | 150uF                    | NSP151M6.3D6ZATRF                                     |
| <b>NPC181M6.3D8ZATRF</b> | 6.3VDC                | 180uF                    | NSP181M6.3D6ZATRF                                     |
| <b>NPC221M6.3D8ZATRF</b> | 6.3VDC                | 220uF                    | NSP221M6.3D6ATRF                                      |
| <b>NPC150M8D6XATRF</b>   | 8VDC                  | 15uF                     | NSPX150M16D6ATRF                                      |
| <b>NPC220M8D6ATRF</b>    | 8VDC                  | 22uF                     | NSPX220M16D6ATRF                                      |
| <b>NPC330M8D6ATRF</b>    | 8VDC                  | 33uF                     | NSPX330M16D6ATRF                                      |
| <b>NPC330M8D7XATRF</b>   | 8VDC                  | 33uF                     | NSPX330M16D6ATRF                                      |
| <b>NPC470M8D6ATRF</b>    | 8VDC                  | 47uF                     | NSPX470M10D6ATRF                                      |
| <b>NPC680M8D7ATRF</b>    | 8VDC                  | 68uF                     | NSPX680M10D6ATRF                                      |
| <b>NPC101M8D7ATRF</b>    | 8VDC                  | 100uF                    | NSPX101M10D6ATRF                                      |
| <b>NPC101M8D7XATRSF</b>  | 8VDC                  | 100uF                    | NSPX101M10D6ATRF                                      |
| <b>NPC220M10D6ATRF</b>   | 10VDC                 | 22uF                     | NSPX220M16D6ATRF<br>NSPX470M10D6ATRF <sup>Δ</sup>     |
| <b>NPC470M10D6ATRF</b>   | 10VDC                 | 47uF                     | NSPX470M10D6ATRF                                      |

Alternate – Suggested **Replacement Part Numbers** (as shown in Table 1 above) are closest same footprint, same or higher VDC rated alternates. <sup>Δ</sup> – Identifies replacement part numbers to consider in higher capacitance values

Please review NIC NSP & NSPX series product specification (i.e. ESR, RCR, and Height) to assure replacement part numbers meet your circuit requirements

- NSP series specification: [www.niccomp.com/catalog/nsp.pdf](http://www.niccomp.com/catalog/nsp.pdf)
- NSPX series specification: [www.niccomp.com/catalog/nspx.pdf](http://www.niccomp.com/catalog/nspx.pdf)

→ For assistance in comparing part numbers, please contact NIC technical support at [tpmg@niccomp.com](mailto:tpmg@niccomp.com)



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Please use **NIC QuickBUILDER** tool to select – review and compare potential replacement part numbers  
[www.nicomp.com/quickbuilder/qb\\_capacitor.php](http://www.nicomp.com/quickbuilder/qb_capacitor.php)

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# Surface Mount Solid Polymer Aluminum Electrolytic Capacitors

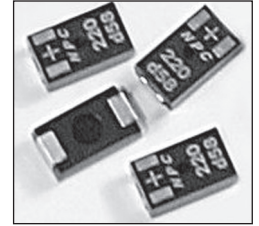
NPC Series

## FEATURES

- LOW IMPEDANCE & ESR AT HIGH FREQUENCY
- HIGH RIPPLE CURRENT
- REPLACES MULTIPLE TANTALUM CHIPS IN POWER SUPPLIES
- FITS EIA (7343) "D" LAND PATTERNS
- Pb-FREE (GOLD TERMINATION PLATING)
- COMPATIBLE WITH +260°C\* REFLOW SOLDERING

**RoHS Compliant**  
includes all homogeneous materials

\*See Part Number System for Details



## CHARACTERISTICS

|   |  |   |  |     |              |      |      |  |
|---|--|---|--|-----|--------------|------|------|--|
| Rated Working Range   | 2.0 ~ 10VDC                            |   |  |     |              |      |      |  |
| Rated Capacitance Range   | 22 ~ 470μF                             |   |  |     |              |      |      |  |
| Operating Temperature Range   | -55 ~ +105°C                           |   |  |     |              |      |      |  |
| Capacitance Tolerance   | ± 20% (M)                              |   |  |     |              |      |      |  |
| Max. Leakage Current (μA)<br>After 5 Minutes (+20°C)  | ≤0.04CV                                |   |  |     |              |      |      |  |
| Surge Voltage<br>(1000 cycles, 30 sec. on,<br>5 min. 30 sec. off, 1KΩ)  | Working Voltage (Vdc)                  | 2.0   | 2.5                                    | 4.0 | 6.3          | 8.0  | 10   |  |
|   | Surge Voltage (Vdc)                    | 2.6   | 3.2                                    | 5.2 | 8.2<br>7.8** | 10.4 | 11.5 |  |
| Max. Tan δ, 120Hz, +20°C  | D1, D6                                 | ≤0.05   |  |     |              |      |      |  |
|   | D5, D7, D8                             | ≤0.1  |  |     |              |      |      |  |
| High Temperature Load Life<br>2,000 Hours @ 105°C<br>at Rated Working Voltage<br>after 2x recommended reflow profile                      | Capacitance Change                     | Within ±20% of initial measured value                 |  |     |              |      |      |  |
|   |  | **/**/*Within ±30% of initial measured value          |  |     |              |      |      |  |
|   | Tan δ                                  | D7, D8  | Less than 150% of specified max. value |     |              |      |      |  |
|   |  | D1, D5, D6  | Less than 200% of specified max. value |     |              |      |      |  |
| Leakage Current   | Less than specified max. value         |   |  |     |              |      |      |  |
| Moisture Resistance<br>500 Hours @ +60°C at 90 ~ 95% RH<br>and No Voltage Applied<br>after 2x recommended reflow profile<br>(JEDEC MSL-3) | Capacitance Change                     | Within -20%/+40% of initial measured value            |  |     |              |      |      |  |
|   |  | D5, **/**/*Within -20%/+60% of initial measured value |  |     |              |      |      |  |
|   | Tan δ                                  | D7, D8  | Less than 150% of specified max. value |     |              |      |      |  |
|   |  | D1, D5, D6  | Less than 200% of specified max. value |     |              |      |      |  |
| Leakage Current   | Less than 300% of specified max. value |   |  |     |              |      |      |  |

## STANDARD PRODUCTS AND SPECIFICATIONS

\*\*/\*\*/\*Applies to values with asterisk in column "NIC Part Number"

| NIC Part Number<br>(+260°C Reflow) | WV<br>(Vdc) | Cap.<br>(μF) | Max. LC<br>(μA) | Tan δ | Max. Ripple Current (mArms) @ 100KHz |                |                 | Max. ESR<br>+20°C @<br>100KHz (Ω) | Height<br>H ± 0.1 |     |
|------------------------------------|-------------|--------------|-----------------|-------|--------------------------------------|----------------|-----------------|-----------------------------------|-------------------|-----|
|                                    |             |              |                 |       | ≤45°C                                | 45°C < T ≤85°C | 85°C < T ≤105°C |                                   |                   |     |
| NPC101M2D5ZATRF                    | 2           | 100          | 8.0             | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC101M2D1UATRF                    |             | 100          | 8.0             | 0.05  | 8,100                                | 5,600          | 3,000           | 0.005                             | 1.4               |     |
| NPC101M2D1ZATRF                    |             | 100          | 8.0             | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.4               |     |
| NPC101M2D6XATRF                    |             | 100          | 8.0             | 0.05  | 5,400                                | 3,700          | 3,000           | 0.013                             | 1.9               |     |
| NPC101M2D6ZATRF                    |             | 100          | 8.0             | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC121M2D6ZATRF                    |             | 120          | 9.6             | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC151M2D5ZATRF                    |             | 150          | 12.0            | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC151M2D1UATRF                    |             | 150          | 12.0            | 0.05  | 8,100                                | 5,600          | 3,000           | 0.005                             | 1.4               |     |
| NPC151M2D6ZATRF                    |             | 150          | 12.0            | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC181M2D5ZATRF                    |             | 180          | 14.4            | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC181M2D6ZATRF                    |             | 180          | 14.4            | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC221M2D5ZATRF                    |             | 220          | 17.6            | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC221M2D6YATRF                    |             | 220          | 17.6            | 0.05  | 7,000                                | 4,900          | 3,000           | 0.007                             | 1.9               |     |
| NPC221M2D6ZATRF                    |             | 220          | 17.6            | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC221M2D7XATRF                    |             | 220          | 17.6            | 0.10  | 6,000                                | 4,200          | 3,500           | 0.010                             | 2.7               |     |
| NPC271M2D6ZATRF*                   |             | 270          | 21.6            | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC271M2D6YATRF*                   |             | 270          | 21.6            | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC271M2D8YATRF                    |             | 270          | 21.6            | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC331M2D6ZATRF*                   |             | 330          | 26.4            | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC331M2D6YATRF*                   |             | 330          | 26.4            | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC331M2D6UATRF*                   |             | 330          | 26.5            | 0.05  | 8,500                                | 5,900          | 3,500           | 0.0045                            | 1.9****           |     |
| NPC331M2D8YATRF                    |             | 330          | 26.4            | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC391M2D8YATRF                    |             | 390          | 31.2            | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC471M2D6UATRF***                 |             | 470          | 37.6            | 0.05  | 8,500                                | 5,900          | 3,500           | 0.0045                            | 1.9****           |     |
| NPC471M2D8YATRF                    |             | 470          | 37.6            | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC820M2.5D1ZATRF                  |             | 2.5          | 82              | 8.2   | 0.05                                 | 6,300          | 4,400           | 3,000                             | 0.009             | 1.4 |
| NPC820M2.5D6XATRF                  |             |              | 82              | 8.2   | 0.05                                 | 5,400          | 3,700           | 3,000                             | 0.013             | 1.9 |
| NPC820M2.5D6ZATRF                  |             |              | 82              | 8.2   | 0.05                                 | 6,300          | 4,400           | 3,000                             | 0.009             | 1.9 |
| NPC101M2.5D5ZATRF                  |             |              | 100             | 10.0  | 0.10                                 | 6,300          | 4,400           | 2,700                             | 0.009             | 1.1 |
| NPC101M2.5D1UATRF                  |             |              | 100             | 10.0  | 0.05                                 | 8,100          | 5,600           | 3,000                             | 0.005             | 1.4 |

\*\*/\*\*/\*See note regarding capacitance change in characteristics table (Endurance & Moisture Resistance).  
\*\*\*\*height dimension tolerance ±0.2mm



# Surface Mount Solid Polymer Aluminum Electrolytic Capacitors

NPC Series

## STANDARD PRODUCTS AND SPECIFICATIONS

| NIC Part Number<br>(+260°C Reflow) | WV    | Cap. | Max. LC | Tan δ | Max. Ripple Current (mArms) @ 100KHz |                |                 | Max. ESR<br>+20°C @<br>100KHz (Ω) | Height<br>H ± 0.1 |     |
|------------------------------------|-------|------|---------|-------|--------------------------------------|----------------|-----------------|-----------------------------------|-------------------|-----|
|                                    | (Vdc) | (μF) | (μA)    |       | ≤45°C                                | 45°C < T ≤85°C | 85°C < T ≤105°C |                                   |                   |     |
| NPC101M2.5D6ZATRF                  | 2.5   | 100  | 10.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC121M2.5D1UATRF                  |       | 120  | 12.0    | 0.05  | 8,100                                | 5,600          | 3,000           | 0.005                             | 1.4               |     |
| NPC121M2.5D6ZATRF                  |       | 120  | 12.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC151M2.5D5ZATRF                  |       | 150  | 15.0    | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC151M2.5D6ZATRF                  |       | 150  | 15.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC181M2.5D5ZATRF                  |       | 180  | 18.0    | 0.10  | 6,300                                | 4,400          | 2,700           | 0.009                             | 1.1               |     |
| NPC181M2.5D6ZATRF                  |       | 180  | 18.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC181M2.5D7XATRF                  |       | 180  | 18.0    | 0.10  | 6,000                                | 4,200          | 3,500           | 0.010                             | 2.7               |     |
| NPC221M2.5D6YATRF*                 |       | 220  | 22.0    | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC221M2.5D6ZATRF*                 |       | 220  | 22.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC221M2.5D8YATRF                  |       | 220  | 22.0    | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC271M2.5D6ZATRF*                 |       | 270  | 27.0    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC271M2.5D6YATRF*                 |       | 270  | 27.0    | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC271M2.5D8YATRF                  |       | 270  | 27.0    | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC331M2.5D6YATRF*                 |       | 330  | 33.0    | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC331M2.5D8YATRF                  |       | 330  | 33.0    | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC391M2.5D6YATRF*                 |       | 390  | 39.0    | 0.05  | 7,500                                | 5,200          | 3,500           | 0.006                             | 1.9****           |     |
| NPC391M2.5D8ZATRF                  |       | 390  | 39.0    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC471M2.5D8YATRF                  |       | 470  | 47.0    | 0.10  | 7,000                                | 4,900          | 3,500           | 0.007                             | 2.9               |     |
| NPC471M2.5D6UATRF***               |       | 470  | 47.0    | 0.10  | 8,500                                | 5,900          | 3,500           | 0.0045                            | 1.9****           |     |
| NPC680M4D5XATRF                    | 4.0   | 68   | 10.9    | 0.10  | 5,100                                | 3,500          | 2,100           | 0.015                             | 1.1               |     |
| NPC680M4D1ZATRF                    |       | 68   | 10.9    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.4               |     |
| NPC680M4D6XATRF                    |       | 68   | 10.9    | 0.05  | 5,400                                | 3,700          | 3,000           | 0.013                             | 1.9               |     |
| NPC680M4D6ZATRF                    |       | 68   | 10.9    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC820M4D6XATRF                    |       | 82   | 13.1    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC101M4D6XATRF                    |       | 100  | 16.0    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC121M4D6XATRF                    |       | 120  | 19.2    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC151M4D6XATRF                    |       | 150  | 24.0    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC151M4D7XATRF                    |       | 150  | 24.0    | 0.10  | 6,000                                | 4,200          | 3,500           | 0.010                             | 2.7               |     |
| NPC181M4D6ZATRF*                   |       | 180  | 28.8    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC181M4D8ZATRF                    |       | 180  | 28.8    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC221M4D6ZATRF*                   |       | 220  | 35.2    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC221M4D8ZATRF                    |       | 220  | 35.2    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC271M4D8ZATRF                    |       | 270  | 43.2    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC331M4D8ZATRF                    |       | 330  | 52.8    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC471M4D8ZATRF                    |       | 470  | 75.2    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC330M6.3D6XATRF                  |       | 6.3  | 33      | 8.3   | 0.05                                 | 5,100          | 3,500           | 3,000                             | 0.015             | 1.9 |
| NPC470M6.3D5XATRF                  |       |      | 47      | 11.8  | 0.10                                 | 5,100          | 3,500           | 2,100                             | 0.015             | 1.1 |
| NPC470M6.3D1XATRF                  |       |      | 47      | 11.8  | 0.05                                 | 6,000          | 4,200           | 3,000                             | 0.010             | 1.4 |
| NPC470M6.3D6XATRF                  |       |      | 47      | 11.8  | 0.05                                 | 5,400          | 3,700           | 3,000                             | 0.013             | 1.9 |
| NPC470M6.3D6ZATRF                  | 47    |      | 11.8    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9               |     |
| NPC560M6.3D6XATRF                  | 56    |      | 14.1    | 0.05  | 6,000                                | 4,400          | 3,000           | 0.010                             | 1.9               |     |
| NPC680M6.3D6XATRF                  | 68    |      | 17.1    | 0.05  | 6,000                                | 4,400          | 3,000           | 0.010                             | 1.9               |     |
| NPC820M6.3D6XATRF                  | 82    |      | 20.7    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC101M6.3D6XATRF                  | 100   |      | 25.2    | 0.05  | 6,000                                | 4,200          | 3,000           | 0.010                             | 1.9               |     |
| NPC101M6.3D7XATRF                  | 100   |      | 25.2    | 0.10  | 6,000                                | 4,200          | 3,500           | 0.010                             | 2.7               |     |
| NPC121M6.3D6ZATRF*                 | 120   |      | 30.2    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC121M6.3D8ZATRF                  | 120   |      | 30.2    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC151M6.3D6ZATRF*                 | 150   |      | 37.8    | 0.05  | 6,300                                | 4,400          | 3,000           | 0.009                             | 1.9****           |     |
| NPC151M6.3D8ZATRF                  | 150   |      | 37.8    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC181M6.3D8ZATRF                  | 180   |      | 45.4    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |
| NPC221M6.3D8ZATRF                  | 220   |      | 55.4    | 0.10  | 6,300                                | 4,400          | 3,500           | 0.009                             | 2.9               |     |

\*/\*\*\*See note regarding capacitance change in characteristics table (Endurance & Moisture Resistance).

\*\*\*\*height dimension tolerance ±0.2mm



# Surface Mount Solid Polymer Aluminum Electrolytic Capacitors

NPC Series

## STANDARD PRODUCTS AND SPECIFICATIONS

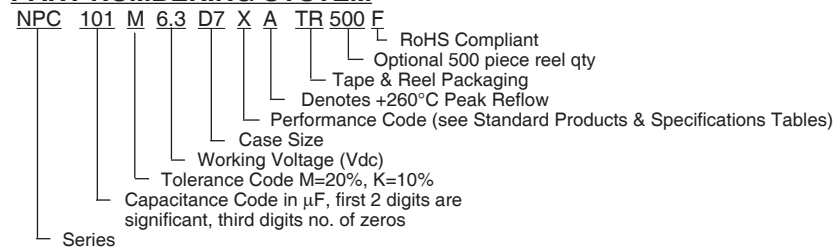
| NIC Part Number<br>(+260°C Reflow) | WV    | Cap. | Max. LC | Tan δ | Max. Ripple Current (mArms) @ 100KHz |                |                 | Max. ESR<br>+20°C @<br>100KHz (Ω) | Height<br>H ± 0.1 |
|------------------------------------|-------|------|---------|-------|--------------------------------------|----------------|-----------------|-----------------------------------|-------------------|
|                                    | (Vdc) | (μF) | (μA)    |       | ≤45°C                                | 45°C < T ≤85°C | 85°C < T ≤105°C |                                   |                   |
| NPC220M8D6ATRF                     | 8     | 22   | 7.0     | 0.05  | 4,700                                | 3,200          | 2,500           | 0.018                             | 1.9               |
| NPC330M8D6ATRF                     |       | 33   | 10.6    | 0.05  | 4,700                                | 3,200          | 2,500           | 0.018                             | 1.9               |
| NPC330M8D7XATRF                    |       | 33   | 10.6    | 0.10  | 5,400                                | 3,700          | 3,000           | 0.013                             | 2.7               |
| NPC470M8D6ATRF                     |       | 47   | 15.1    | 0.05  | 4,700                                | 3,200          | 2,500           | 0.018                             | 1.9               |
| NPC680M8D7ATRF                     |       | 68   | 21.8    | 0.10  | 4,700                                | 3,200          | 2,500           | 0.018                             | 2.7               |
| NPC101M8D7ATRF                     |       | 100  | 32.0    | 0.10  | 4,700                                | 3,200          | 2,500           | 0.018                             | 2.7               |
| NPC101M8D7XATRSF                   |       | 100  | 32.0    | 0.10  | 5,600                                | 3,900          | 3,300           | 0.012                             | 2.7               |
| NPC220M10D6ATRF                    | 10    | 22   | 8.8     | 0.10  | 3,700                                | 2,500          | 1,600           | 0.030                             | 1.9               |
| NPC470M10D6ATRF*                   |       | 47   | 18.8    | 0.10  | 4,000                                | 2,800          | 1,800           | 0.025                             | 1.9****           |

NPC101M8D7XATRSF 1,000 hour load life

\*/\*\*\*See note regarding capacitance change in characteristics table (Endurance & Moisture Resistance).

\*\*\*\*height dimension tolerance ±0.2mm

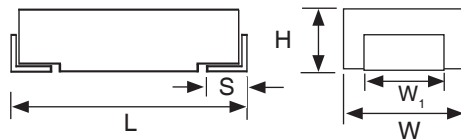
### PART NUMBERING SYSTEM



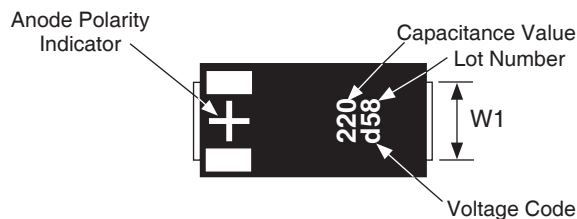
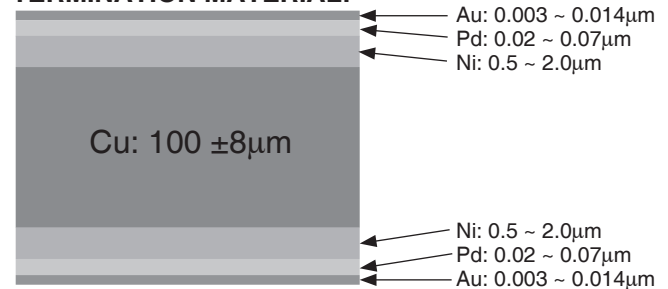
### DIMENSIONS (mm)

| Case Code | L ±0.2 | W ±0.2 | H ±0.1 | W1 ±0.1 | S ±0.2 |
|-----------|--------|--------|--------|---------|--------|
| D1        | 7.3    | 4.3    | 1.4    | 2.4     | 1.2    |
| D5        |        |        | 1.1    |         |        |
| D6        |        |        | 1.9*   |         |        |
| D7        |        |        | 2.7    |         |        |
| D8        |        |        | 2.9    |         |        |

\*D6 - See Standard Products & Specifications Tables for height tolerance.



### TERMINATION MATERIAL:



### VOLTAGE CODES

| Voltage | Code |
|---------|------|
| 2.0VDC  | d    |
| 2.5VDC  | e    |
| 4.0VDC  | g    |
| 6.3VDC  | j    |
| 8.0VDC  | k    |
| 10VDC   | A    |

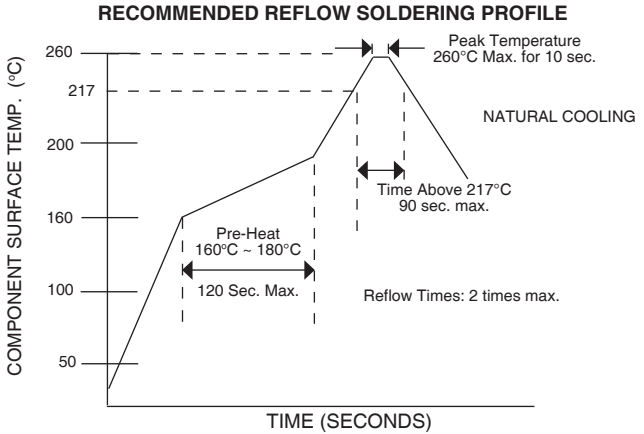
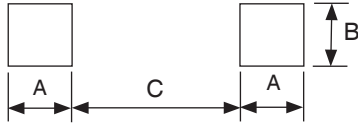


# Surface Mount Solid Polymer Aluminum Electrolytic Capacitors

NPC Series

## RECOMMENDED LAND PATTERNS (mm)

| Case Code          | a   | b   | c   |
|--------------------|-----|-----|-----|
| D1, D5, D6, D7, D8 | 2.4 | 2.9 | 3.7 |



### APPLICATION NOTES:

1. NPC Series cannot be used in coupling, time-constant or other circuits that are greatly affected by leakage current.
2. NPC parts are polarized so be sure to verify component orientation when mounting components.
3. Do not apply over voltage exceeding the rated voltage.
4. Do not apply ripple current over the specified maximum ripple current rating.

### NOTES ON REFLOW SOLDERING:

1. SAC alloy (+217°C) reflow soldering compatible
2. Soldering heat limits apply to the top surface of component
3. If you have concerns about your reflow soldering profile review them with NIC to insure compatible [tpmg@niccomp.com]

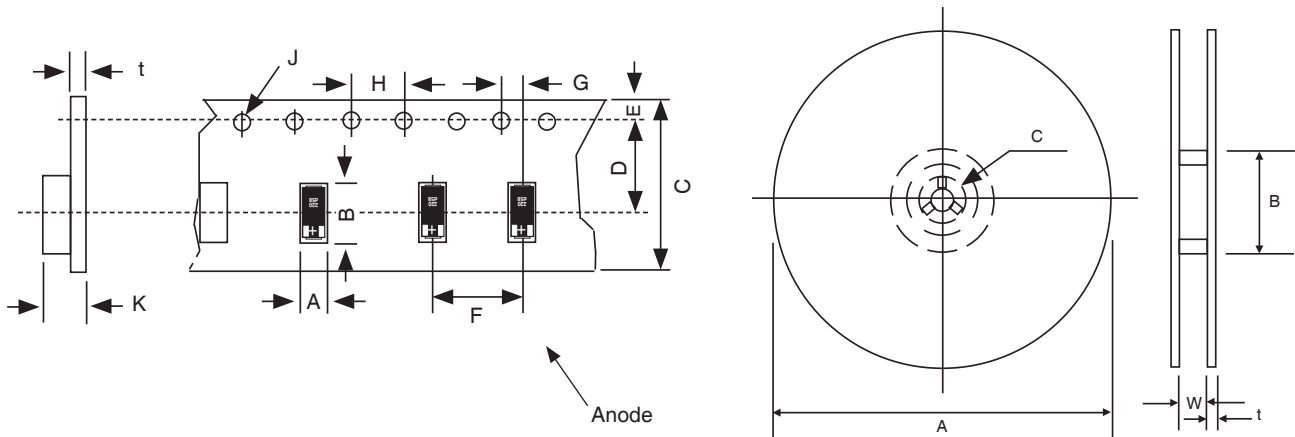
## REEL TAPE DIMENSIONS (mm)

| Case Code  | A ±2.0 | B ±1.0 | C ±0.2 | W ±1.0 | t ±0.5 | Reel Quantity |      |
|------------|--------|--------|--------|--------|--------|---------------|------|
| D1, D5, D6 | 330    | 80     | 13     | 13.5   | 2.0    | 3,500         | 500* |
| D7, D8     |        |        |        |        |        | 2,000         |      |

\*See part number system for details on designating reel quantity

## TAPE DIMENSIONS (mm)

| Case Code | A ±0.1 | B ±0.2 | C ±0.3 | D ±0.05 | E ±0.1 | F ±0.1 | G ±0.05 | H ±0.1 | J -0/+0.1 | K ±0.1 | t ±0.05 |
|-----------|--------|--------|--------|---------|--------|--------|---------|--------|-----------|--------|---------|
| D1        | 4.50   | 7.70   | 12.0   | 5.5     | 1.75   | 8.0    | 2.0     | 4.0    | 1.5       | 1.6    | 0.3     |
| D5        |        |        |        |         |        |        |         |        |           |        |         |
| D6        |        |        |        |         |        |        |         |        |           |        |         |
| D7        |        |        |        |         |        |        |         |        |           |        |         |
| D8        |        |        |        |         |        |        |         |        |           |        |         |



### PRECAUTIONS

Please review the notes on correct use, safety and precautions found at [www.niccomp.com/precautions](http://www.niccomp.com/precautions)  
 If in doubt or uncertainty, please review your specific application - process details with NIC's technical support personnel: [tpmg@niccomp.com](mailto:tpmg@niccomp.com)

