



# SPECIFICATION

- Supplier : Samsung electro-mechanics
- Product : Multi-layer Ceramic Capacitor
- Samsung P/N : CL21Y475KAFNNNE
- Description : CAP, 4.7 $\mu$ F, 25V,  $\pm$ 10%, X7S, 0805

## A. Samsung Part Number

CL 21 Y 475 K A F N N N E  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

|                         |                                       |  |  |                     |                         |  |                      |  |  |  |  |  |  |  |
|-------------------------|---------------------------------------|--|--|---------------------|-------------------------|--|----------------------|--|--|--|--|--|--|--|
| ① Series                | Samsung Multi-layer Ceramic Capacitor |  |  |                     |                         |  |                      |  |  |  |  |  |  |  |
| ② Size                  | 0805 (inch code)                      |  |  | L: 2.0 $\pm$ 0.1 mm |                         |  | W: 1.25 $\pm$ 0.1 mm |  |  |  |  |  |  |  |
| ③ Dielectric            | X7S                                   |  |  | ⑧ Inner electrode   | Ni                      |  |                      |  |  |  |  |  |  |  |
| ④ Capacitance           | 4.7 $\mu$ F                           |  |  | Termination         | Cu                      |  |                      |  |  |  |  |  |  |  |
| ⑤ Capacitance tolerance | $\pm$ 10 %                            |  |  | Plating             | Sn 100% (Pb Free)       |  |                      |  |  |  |  |  |  |  |
| ⑥ Rated Voltage         | 25 V                                  |  |  | ⑨ Product           | Normal                  |  |                      |  |  |  |  |  |  |  |
| ⑦ Thickness             | 1.25 $\pm$ 0.1 mm                     |  |  | ⑩ Special           | Reserved for future use |  |                      |  |  |  |  |  |  |  |
|                         |                                       |  |  | ⑪ Packaging         | Embossed Type, 7" reel  |  |                      |  |  |  |  |  |  |  |

## B. Samsung Reliability Test and Judgement condition

|                                  | Performance   | Test condition   |
|----------------------------------|---|--|
| Capacitance                      | Within specified tolerance  | 1kHz $\pm$ 10% 1.0 $\pm$ 0.2Vrms   |
| Tan $\delta$ (DF)                | 0.1 max.  |  |
| Insulation Resistance            | 10,000Mohm or 100Mohm· $\mu$ F<br>Whichever is Smaller                      | Rated Voltage 60~120 sec.  |
| Appearance                       | No abnormal exterior appearance   | Microscope ( $\times$ 10)  |
| Withstanding Voltage             | No dielectric breakdown or mechanical breakdown                             | 250% of the rated voltage  |
| Temperature characteristics      | X7S<br>(From -55°C to 125°C, Capacitance change should be within $\pm$ 22%) |  |
| Adhesive Strength of Termination | No peeling shall occur on the terminal electrode                            | 500g·F, for 10 $\pm$ 1 sec.  |
| Bending Strength                 | Capacitance change : within $\pm$ 12.5%                                     | Bending to the limit (1mm) with 1.0mm/sec.   |
| Solderability                    | More than 75% of terminal surface is to be soldered newly                   | SnAg3.0Cu0.5 solder<br>245 $\pm$ 5°C, 3 $\pm$ 0.3sec.<br>(preheating : 80~120°C for 10~30sec.) |
| Resistance to Soldering heat     | Capacitance change : within $\pm$ 7.5%<br>Tan $\delta$ , IR : initial spec. | Solder pot : 270 $\pm$ 5°C, 10 $\pm$ 1sec.   |

|                                    | Performance   | Test condition  |
|------------------------------------|---|---|
| <b>Vibration Test</b>              | Capacitance change : within $\pm 5\%$<br>Tan $\delta$ , IR : initial spec.  | Amplitude : 1.5mm<br>From 10Hz to 55Hz (return : 1min.)<br>2hours $\times$ 3 direction (x, y, z)  |
| <b>Moisture Resistance</b>         | Capacitance change : within $\pm 12.5\%$<br>Tan $\delta$ : 0.2 max<br>IR : $12.5\text{M}\Omega \cdot \mu\text{F}$ or Over | With rated voltage<br>$40 \pm 2^\circ\text{C}$ , 90~95%RH, 500+12/-0hrs   |
| <b>High Temperature Resistance</b> | Capacitance change : within $\pm 12.5\%$<br>Tan $\delta$ : 0.2 max<br>IR : $25\text{M}\Omega \cdot \mu\text{F}$ or Over   | With 100% of the rated voltage<br>Max. operating temperature<br>1000+48/-0hrs   |
| <b>Temperature Cycling</b>         | Capacitance change : within $\pm 7.5\%$<br>Tan $\delta$ , IR : initial spec.  | 1 cycle condition<br>Min. operating temperature $\rightarrow 25^\circ\text{C}$<br>$\rightarrow$ Max. operating temperature $\rightarrow 25^\circ\text{C}$<br>5 cycle test |

**C. Recommended Soldering method :**

Reflow ( Reflow Peak Temperature :  $260 \pm 0/-5^\circ\text{C}$ , 10sec. Max )

\* For more detailed Specification, Please refer to the Samsung MLCC catalogue.