



SPECIFICATION

(Reference sheet)

- Supplier : Samsung electro-mechanics - Samsung P/N : CL31C221JHFNNWE

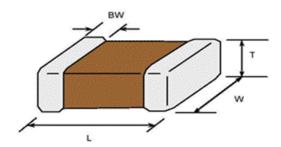
Product : Multi-layer Ceramic Capacitor
 Description : CAP, 220pF, 630V, ± 5%, C0G, 1206

A. Samsung Part Number

<u>CL</u> <u>31</u> <u>C</u> <u>221</u> <u>J</u> <u>H</u> <u>F</u> <u>N</u> <u>N</u> <u>W</u> <u>E</u> ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

| 1 | Series | Samsung Multi-layer Ceramic Capacitor | | | |
|-----|---------------|---------------------------------------|-------------------|--------------------------|--|
| 2 | Size | 1206 (inch code) | L: 3.20 ± 0.15 mm | W: 1.60 ± 0.15 mm | |
| | | | | | |
| 3 | Dielectric | C0G | 8 Inner electrode | Ni | |
| 4 | Capacitance | 220 pF | Termination | Cu | |
| (5) | Capacitance | ± 5% | Plating | Sn 100% (Pb Free) | |
| | tolerance | | Product | Normal | |
| 6 | Rated Voltage | 630 V | Special | Industrial (Network,etc) | |
| 7 | Thickness | 1.25 ± 0.15 mm | ① Packaging | Embossed Type, 7" reel | |

B. Structure and dimension



| Samouna D/N | Dimension(mm) | | | | |
|-----------------|---------------|-------------|-------------|-------------|--|
| Samsung P/N | L | W | Т | BW | |
| CL31C221JHFNNWE | 3.20 ± 0.15 | 1.60 ± 0.15 | 1.25 ± 0.15 | 0.50 ± 0.30 | |

C. Samsung Reliability Test and Judgement condition

| | Performance | Test condition | | | |
|-------------------|---|---|--|--|--|
| Capacitance | Within specified tolerance | 1 ^{Mlz} ±10% / 0.5~5Vrms | | | |
| Q | 1,000 min | 7 | | | |
| Insulation | 10,000Mohm or 500Mohm× <i>μ</i> F | 500 ±50 Vdc 60±5 sec. | | | |
| Resistance | Whichever is smaller | | | | |
| Appearance | No abnormal exterior appearance | Microscop (X10) | | | |
| Withstanding | No dielectric breakdown or | 150% of the rated voltage | | | |
| Voltage | mechanical breakdown | | | | |
| Temperature | COG | | | | |
| Characteristics | (From -55℃ to 125℃, Capacitance change should be within ±30PPM/℃) | | | | |
| Adhesive Strength | No peeling shall be occur on the | 500g×F, for 10±1 sec. | | | |
| of Termination | terminal electrode | | | | |
| Bending Strength | Capacitance change : | Bending to the limit (1mm) | | | |
| | within ±5% or ±0.5pF whichever is larger | with 1.0mm/sec. | | | |
| Solderability | More than 75% of terminal surface | SnAg3.0Cu0.5 solder | | | |
| | is to be soldered newly | 245±5℃, 3±0.3sec. | | | |
| | | (preheating : 80~120 ℃ for 10~30sec.) | | | |
| | | , | | | |
| Resistance to | Capacitance change : | Solder pot : 270±5℃, 10±1sec. | | | |
| Soldering heat | within ±2.5% or ±0.25pF whichever is larger | | | | |
| | Tan δ, IR : initial spec. | | | | |
| Vibration Test | Capacitance change : | Amplitude: 1.5mm | | | |
| | within ±2.5% or ±0.25pF whichever is larger | From 10Hz to 55Hz (return : 1min.) | | | |
| | Tan δ, IR : initial spec. | 2hours ´ 3 direction (x, y, z) | | | |
| Moisture | Capacitance change : | With rated voltage | | | |
| Resistance | within ±7.5% or ±0.75pF whichever is larger | 40±2℃, 90~95%RH, 500+12/-0hrs | | | |
| | Q: 200 min | | | | |
| | IR: 500Mohm or 25Mohm × μ F | | | | |
| | Whichever is smaller | | | | |
| High Temperature | Capacitance change : | With 120% of the rated voltage | | | |
| Resistance | within ±3% or ±0.3pF whichever is larger | Max. operating temperature | | | |
| | Q: 350 min | 1000+48/-0hrs | | | |
| | IR: 1,000Mohm or 50Mohm × μ F | | | | |
| | Whichever is smaller | | | | |
| Temperature | Capacitance change : | 1 cycle condition | | | |
| Cycling | within ±2.5% or ±0.25pF whichever is larger | Min. operating temperature → 25°C | | | |
| - | Tan δ, IR : initial spec. | \rightarrow Max. operating temperature \rightarrow 25°C | | | |
| | · | | | | |
| | | | | | |
| | | 5 cycle test | | | |

^{*} The reliability test condition can be replaced by the corresponding accelerated test condition.

D. Recommended Soldering method:

Reflow (Reflow Peak Temperature: 260+0/-5°C, 10sec. Max)



A Product specifications included in the specifications are effective as of March 1, 2013.

Please be advised that they are standard product specifications for reference only.

We may change, modify or discontinue the product specifications without notice at any time.

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Should you have any question regarding the product specifications,

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- ② Automotive or Transportation equipment (vehicles, trains, ships, etc)
- 3 Medical equipment
- Military equipment
- 5 Disaster prevention/crime prevention equipment
- Any other applications with the same as or similar complexity or reliability to the applications set forth above.