

## SPECIFICATION FOR APPROVAL

客户名称:  
CUSTOMER: \_\_\_\_\_  
产品名称 多层片式瓷介电容器  
PARTNAME: \_\_\_\_\_  
Multilayer Chip Ceramic Capacitor

产品规格 通用系列

SPECIFICATION: \_\_\_\_\_

承认书编号  
APPROVAL SHEET NO.: \_\_\_\_\_  
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发出日期  
ISSUED DATE: \_\_\_\_\_

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| 梁俊                 | 王彬彬           | 张国信            |                |               |                |



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|                                         | DRAAW108J/1-2021    |

# 目 录

1. 电容器及介质分类..... 3

2. 产品结构..... 4

3. 产品规格型号命名规则..... 5

4. 产品容量范围..... 6

    0201（0603）尺寸..... 7

    0402（1005）尺寸..... 7

    0603（1608）尺寸..... 9

    0805（2012）尺寸..... 11

    1206（3216）尺寸..... 13

    1210（3225）尺寸..... 15

5. 产品尺寸..... 17

6. 技术要求和测试条件..... 18

7. 产品包装..... 29

8. MLCC 使用注意事项..... 34

|                            |                      |
|----------------------------|----------------------|
| 产 品 标 准 书                  | 编 号     Document No. |
| SPECIFICATION FOR APPROVAL | DRAAW108J/1-2021     |

## 1. 电容器及介质分类 Types of Capacitor and Dielectric Material

※COG：此类介质材料的电容器为 I 类电容器，包括常规、中高压 COG 产品。此类产品电性能稳定，几乎不随温度、电压和时间的变化而变化。适用于低损耗，稳定性要求高的电路中，如滤波器、谐振器和计时电路中。

※COG： The capacitor of this kind dielectric material is considered as Class I capacitor, including general capacitor and high frequency COG capacitor. The electrical properties of COG capacitor are the most stable one and have little change with temperature, voltage and time. They are suited for applications where low-losses and high-stability are required, such as filters, oscillators, and timing circuits.

※X7R、X5R、X6S、X7T：此类介质材料的电容器为 II 类电容器，具有较高的介电常数，容量比 I 类电容器高，具有较稳定的温度特性，适用于容量范围广，稳定性要求不高的电路中，如隔直、耦合、旁路、鉴频等电路中。

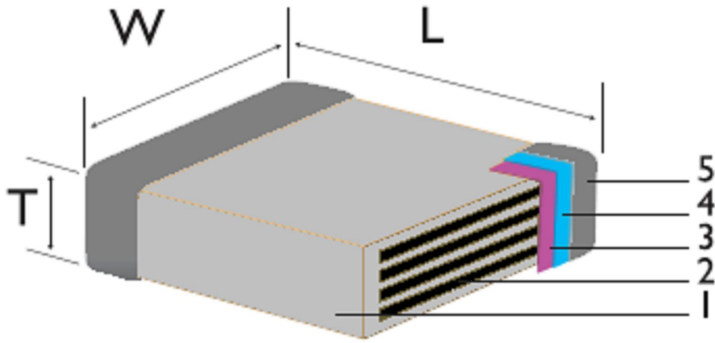
※ X7R、X5R、X6S、X7T： material is a kind of material has high dielectric constant. The capacitor made of this kind material is considered as Class II capacitor whose capacitance is higher than that of class I . These capacitors are classified as having a semi-stable temperature characteristic and used over a wide temperature range, such in these kinds of circuits, DC-blocking, decoupling, bypassing, frequency discriminating etc.

※Y5V：此类介质材料的电容器为 II 类电容器，是所有电容器中介电常数最大的电容器，但其容量稳定性较差，对温度、电压等条件较敏感，适用于要求大容量，温度变化不大的电路中。

※Y5V： The capacitor made of this kind of material is the highest dielectric constant of all ceramic capacitors. They are used over a moderate temperature range in application where high capacitance is required because of its unstable temperature coefficient, but where moderate losses and capacitance changes can be tolerated. Its capacitance and dissipation factors are sensible to measuring conditions, such as temperature and voltage, etc

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|                                                           | <div>DRAAW108J/1-2021</div>     |

2. 产品结构    Product Frame



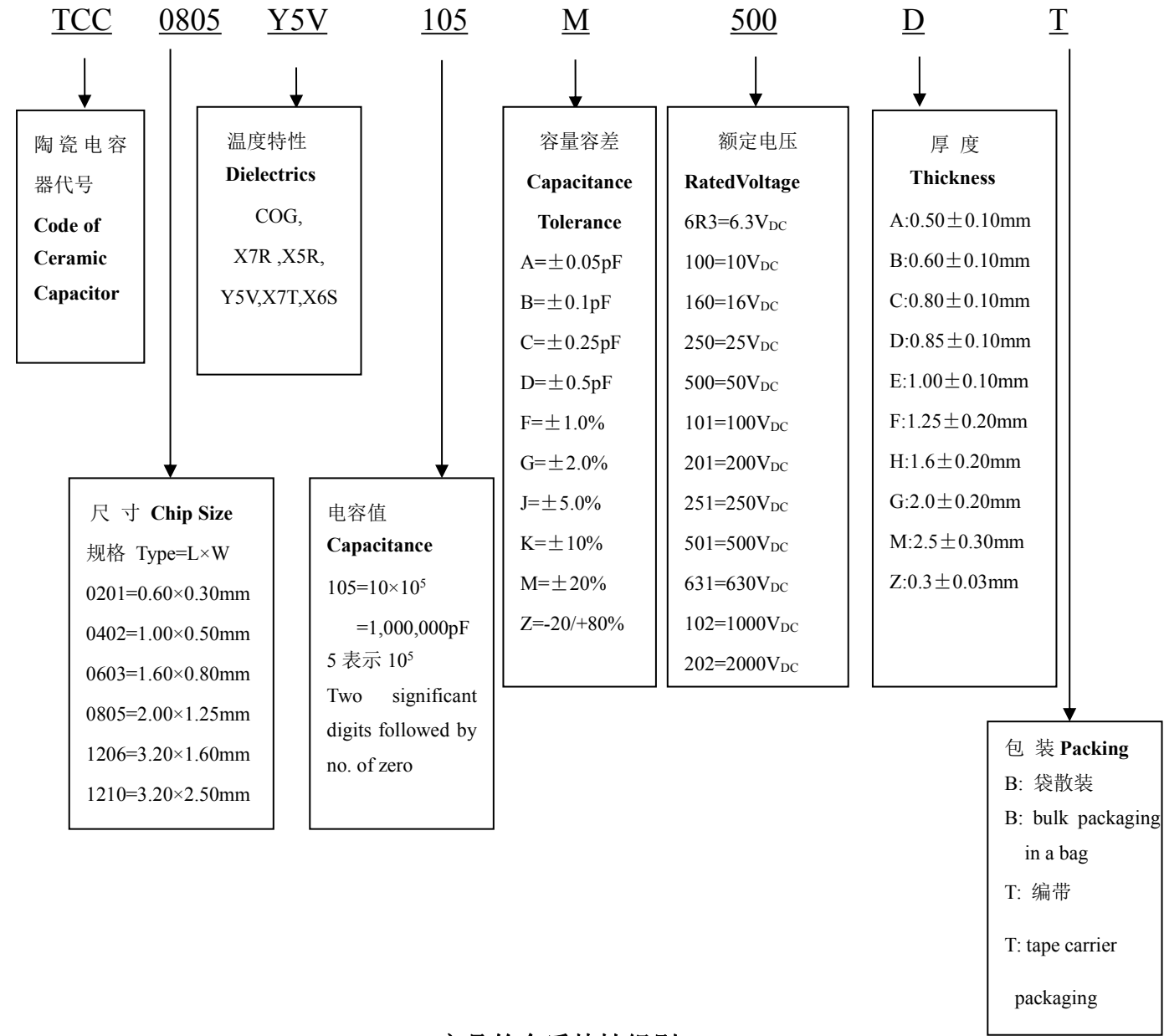
| 序号 | 名称   |
|----|------|
| 1  | 陶瓷介质 |
| 2  | 内电极  |
| 3  | 外电极  |
| 4  | 镍层   |
| 5  | 锡层   |

|                                         |                     |
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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号    Document No. |
|                                         | DRAAW108J/1-2021    |

### 3. 产品规格型号命名规则

#### General Product Parts Numbering System

(例) (example)



#### 产品的介质特性组别

| 材质  | 工作温度范围     | 温度系数或温度特性 |
|-----|------------|-----------|
| C0G | -55℃~+125℃ | 0±30ppm/℃ |
| X7R | -55℃~+125℃ | ±15%      |
| X5R | -55℃~+85℃  | ±15%      |
| X7T | -55℃~+125℃ | +22/-33%  |
| Y5V | -30℃~+85℃  | +22/-82%  |
| X6S | -55℃~+105℃ | ±22%      |

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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号    Document No. |
|                                         | DRAAW108J/1-2021    |

#### 4. 产品容量范围    Product Capacitance Range

0201(0603)尺寸

| 0201(0603)          |       |       |    |    |     |       |    |    |     |       |    |     |
|---------------------|-------|-------|----|----|-----|-------|----|----|-----|-------|----|-----|
|                     | COG系列 | X5R系列 |    |    |     | X6S系列 |    |    |     | X7T系列 |    |     |
| Cp /V <sub>DC</sub> | 50    | 25    | 16 | 10 | 6.3 | 25    | 16 | 10 | 6.3 | 16    | 10 | 6.3 |
| 100                 | Z     |       |    |    |     |       |    |    |     |       |    |     |
| 220                 | Z     |       |    |    |     |       |    |    |     |       |    |     |
| 330                 | Z     |       |    |    |     |       |    |    |     |       |    |     |
| 390                 | Z     |       |    |    |     |       |    |    |     |       |    |     |
| 470                 | Z     |       |    |    |     |       |    |    |     |       |    |     |
| 103                 |       | Z     |    |    |     | Z     |    |    |     | Z     |    |     |
| 223                 |       | Z     | Z  |    |     | Z     | Z  |    |     | Z     | Z  |     |
| 473                 |       | Z     | Z  |    |     | Z     | Z  |    |     | Z     | Z  |     |
| 863                 |       | Z     | Z  | Z  |     | Z     | Z  | Z  |     | Z     | Z  | Z   |
| 104                 |       | Z     | Z  | Z  |     | Z     | Z  | Z  |     | Z     | Z  | Z   |
| 224                 |       |       |    | Z  | Z   |       |    | Z  | Z   |       |    | Z   |

容量容差: COG:J( $\pm 5\%$ ); X5R/X6S/X7T: K( $\pm 10\%$ ); M( $\pm 20\%$ )

厚度: Z:  $0.30 \pm 0.03\text{mm}$  ;

以上容量仅供参考, 具体容量取决于使用要求。

Tolerance: COG:J( $\pm 5\%$ ); X5R/X6S/X7T: K( $\pm 10\%$ ); M( $\pm 20\%$ )

Thickness: Z:  $0.30 \pm 0.03\text{mm}$  ;

Above capacitance for reference only, actual cap. Range depends on the standard products.

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|                                         | DRAAW108J/1-2021     |

# 0402 (1005) 尺寸

|     |                 | 0402(1005) |    |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
|-----|-----------------|------------|----|-------|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|-----|
|     |                 | COG系列      |    | X7R系列 |    |    |    | X6S系列 |    |    |    |    | X5R系列 |    |    |    |    | X7T系列 |    |    |    |     | Y5V系列 |    |    |    |    |     |
| Cp  | V <sub>DC</sub> | 50         | 25 | 50    | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 25 | 16 | 10 | 6.3 | 4     | 50 | 25 | 16 | 10 | 6.3 |
| 0R5 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 1R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 2R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 3R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 4R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 5R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 6R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 7R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 8R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 9R0 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 100 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 120 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 150 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 180 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 200 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 220 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 270 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 300 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 330 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 390 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 470 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 560 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 680 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 820 |                 | A          | A  |       |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 101 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 121 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 151 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 181 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 201 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 221 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 271 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 331 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 391 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 471 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 561 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 681 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 821 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  |    |    |    |     |
| 102 |                 | A          | A  | A     | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A  | A     | A  | A  | A  | A   | A     | A  | A  | A  | A  | A   |

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|                    | 0402(1005) |    |       |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |     |
|--------------------|------------|----|-------|----|----|----|-----|-------|----|----|----|-----|-------|----|----|----|-----|-------|----|----|-----|---|-------|----|----|----|-----|
|                    | COG系列      |    | X7R系列 |    |    |    |     | X6S系列 |    |    |    |     | X5R系列 |    |    |    |     | X7T系列 |    |    |     |   | Y5V系列 |    |    |    |     |
| Cp V <sub>DC</sub> | 50         | 25 | 50    | 25 | 16 | 10 | 6.3 | 50    | 25 | 16 | 10 | 6.3 | 50    | 25 | 16 | 10 | 6.3 | 25    | 16 | 10 | 6.3 | 4 | 50    | 25 | 16 | 10 | 6.3 |
| 152                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 182                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 222                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 272                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 332                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 472                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 562                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 103                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 153                |            |    | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A  | A   | A     | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 183                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 223                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 273                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 333                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 393                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 473                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A | A     | A  | A  | A  | A   |
| 563                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A |       | A  | A  | A  | A   |
| 683                |            |    |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A  | A   |       | A  | A  | A   | A |       | A  | A  | A  | A   |
| 104                |            |    |       | A  | A  | A  | A   |       |    | A  | A  | A   |       |    | A  | A  | A   |       |    | A  | A   | A |       | A  | A  | A  | A   |
| 154                |            |    |       |    | A  | A  | A   |       |    | A  | A  | A   |       |    | A  | A  | A   |       |    | A  | A   | A |       |    | A  | A  | A   |
| 184                |            |    |       |    |    | A  | A   |       |    |    | A  | A   |       |    |    | A  | A   |       |    |    | A   | A |       |    | A  | A  | A   |
| 224                |            |    |       |    |    | A  | A   |       |    |    | A  | A   |       |    |    | A  | A   |       |    |    | A   | A |       |    | A  | A  | A   |
| 274                |            |    |       |    |    |    | A   |       |    |    |    | A   |       |    |    |    | A   |       |    |    |     | A |       |    |    | A  | A   |
| 334                |            |    |       |    |    |    | A   |       |    |    |    | A   |       |    |    |    | A   |       |    |    |     |   |       |    |    | A  | A   |
| 474                |            |    |       |    |    |    | A   |       |    |    |    | A   |       |    |    |    | A   |       |    |    |     |   |       |    |    | A  | A   |
| 684                |            |    |       |    |    |    | A   |       |    |    |    | A   |       |    |    |    | A   |       |    |    |     |   |       |    |    |    | A   |
| 105                |            |    |       |    |    |    | A   |       |    |    |    | A   |       |    |    |    | A   |       |    |    |     |   |       |    |    |    | A   |

容量容差: COG(0.5pF~4.9pF): B/C; COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ ), K( $\pm 10\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ )

Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

厚度: A:  $0.50 \pm 0.10$ mm ;

以上容量仅供参考, 具体容量取决于使用要求。

Tolerance: COG(0.5pF~4.9pF): C COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ )

Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

Thickness: A:  $0.50 \pm 0.10$ mm ;

Above capacitance for reference only, actual cap. Range depends on the standard products.

|                                         |                     |
|-----------------------------------------|---------------------|
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|                                         | DRAAW108J/1-2021    |

# 0603(1608)尺寸

|     |                 | 0603(1608) |     |     |    |    |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
|-----|-----------------|------------|-----|-----|----|----|-------|-----|-----|----|----|----|----|-----|-------|----|----|----|-----|-------|----|----|----|-----|-------|----|----|-----|---|-------|----|----|----|
|     |                 | COG系列      |     |     |    |    | X7R系列 |     |     |    |    |    |    |     | X6S系列 |    |    |    |     | X5R系列 |    |    |    |     | X7T系列 |    |    |     |   | Y5V系列 |    |    |    |
| Cp  | V <sub>DC</sub> | 250        | 200 | 100 | 50 | 25 | 250   | 200 | 100 | 50 | 25 | 16 | 10 | 6.3 | 50    | 25 | 16 | 10 | 6.3 | 50    | 25 | 16 | 10 | 6.3 | 25    | 16 | 10 | 6.3 | 4 | 50    | 25 | 16 | 10 |
| 0R5 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 1R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 2R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 3R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 4R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 5R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 6R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 7R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 8R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 9R0 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 100 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 120 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 150 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 180 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 200 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 220 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 270 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 300 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 330 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 390 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 470 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 560 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 680 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 820 |                 | C          | C   | C   | C  | C  |       |     |     |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 101 |                 | C          | C   | C   | C  | C  | C     | C   | C   |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 121 |                 | C          | C   | C   | C  | C  | C     | C   | C   |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 151 |                 | C          | C   | C   | C  | C  | C     | C   | C   |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 181 |                 | C          | C   | C   | C  | C  | C     | C   | C   |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 201 |                 | C          | C   | C   | C  | C  | C     | C   | C   |    |    |    |    |     |       |    |    |    |     |       |    |    |    |     |       |    |    |     |   |       |    |    |    |
| 221 |                 | C          | C   | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 271 |                 | C          | C   | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 331 |                 | C          | C   | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 391 |                 | C          | C   | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 471 |                 | C          | C   | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 561 |                 |            |     | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 681 |                 |            |     | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 821 |                 |            |     | C   | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  |    |
| 102 |                 |            |     |     | C  | C  | C     | C   | C   | C  | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C  | C   | C     | C  | C  | C   | C | C     | C  | C  | C  |

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|                                         | DRAAW108J/1-2021    |

|     | 0603(1608)      |     |     |     |    |       |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |
|-----|-----------------|-----|-----|-----|----|-------|-----|-----|-----|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|
|     | COG系列           |     |     |     |    | X7R系列 |     |     |     |    |    |    |    | X6S系列 |    |    |    |    | X5R系列 |    |    |    |    | X7T系列 |    |    |    |     | Y5V系列 |    |    |    |    |
| Cp  | V <sub>DC</sub> | 250 | 200 | 100 | 50 | 25    | 250 | 200 | 100 | 50 | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 25 | 16 | 10 | 6.3 | 4     | 50 | 25 | 16 | 10 |
| 152 |                 |     |     |     | C  | C     | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 182 |                 |     |     |     |    | C     | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 222 |                 |     |     |     |    | C     | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 272 |                 |     |     |     |    |       | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 332 |                 |     |     |     |    |       | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 472 |                 |     |     |     |    |       | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 562 |                 |     |     |     |    |       | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 682 |                 |     |     |     |    |       | C   | C   | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 103 |                 |     |     |     |    |       |     |     | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 153 |                 |     |     |     |    |       |     |     | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 183 |                 |     |     |     |    |       |     |     | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 223 |                 |     |     |     |    |       |     |     | C   | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 273 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 333 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 393 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 473 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 563 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 683 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 104 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 154 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 184 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 224 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 274 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 334 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 474 |                 |     |     |     |    |       |     |     |     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 684 |                 |     |     |     |    |       |     |     |     |    | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 105 |                 |     |     |     |    |       |     |     |     |    | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 225 |                 |     |     |     |    |       |     |     |     |    |    | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 475 |                 |     |     |     |    |       |     |     |     |    |    |    | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |
| 106 |                 |     |     |     |    |       |     |     |     |    |    |    |    | C     | C  | C  | C  | C  | C     | C  | C  | C  | C  | C     | C  | C  | C  | C   | C     | C  | C  | C  | C  |

容量容差: COG(0.5pF~4.9pF): B/C; COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ ), K( $\pm 10\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

厚度: C:  $0.80 \pm 0.1\text{mm}$  ( $0.80 \pm 0.2\text{mm}$ ) ; 以上容量仅供参考, 具体容量取决于使用要求。

Tolerance: COG(0.5pF~4.9pF): C COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

Thickness: C:  $0.80 \pm 0.1\text{mm}$  ( $0.80 \pm 0.2\text{mm}$ ) ; Above capacitance for reference only, actual cap. Range depends on the standard products.

|                                         |                     |  |
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|                                         | DRAAW108J/1-2021    |  |

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|                    | 0805(2012) |     |    |    |    |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
|--------------------|------------|-----|----|----|----|-------|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|
|                    | COG系列      |     |    |    |    | X7R系列 |     |     |     |     |     |     | X6S系列 |     |     |     |     | X5R系列 |     |     |     |     | X7T系列 |     |     |     |     | Y5V系列 |     |     |     |     |
| Cp V <sub>DC</sub> | 250        | 100 | 50 | 25 | 16 | 250   | 100 | 50  | 25  | 16  | 10  | 6.3 | 50    | 25  | 16  | 10  | 6.3 | 50    | 25  | 16  | 10  | 6.3 | 25    | 16  | 10  | 6.3 | 4   | 50    | 25  | 16  | 10  | 6.3 |
| 0R5                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 1R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 2R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 3R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 4R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 5R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 6R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 7R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 8R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 9R0                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 100                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 120                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 150                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 180                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 200                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 220                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 270                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 300                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 330                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 390                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 470                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 560                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 680                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 820                | B          | B   | B  | B  | B  |       |     |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 101                | B          | B   | B  | B  | B  | B     | B   |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 121                | B          | B   | B  | B  | B  | B     | B   |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 151                | B          | B   | B  | B  | B  | B     | B   |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 181                | B          | B   | B  | B  | B  | B     | B   |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 201                | B          | B   | B  | B  | B  | B     | B   |     |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |       |     |     |     |     |
| 221                | B          | B   | B  | B  | B  | D     | D   | D   | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   |
| 271                | B          | B   | B  | B  | B  | D     | D   | D   | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   | D     | D   | D   | D   | D   |
| 331                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 391                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 471                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 561                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 681                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 821                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D |
| 102                | B          | B   | B  | B  | B  | D/F   | D/F | B/D | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | B/D | B/D   | B/D | B/D | B/D | D   |

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|                    | 0805(2012) |     |    |    |    |       |     |     |     |     |    |     |       |     |     |    |     |       |     |     |    |     |        |     |     |     |   |       |     |     |     |     |   |
|--------------------|------------|-----|----|----|----|-------|-----|-----|-----|-----|----|-----|-------|-----|-----|----|-----|-------|-----|-----|----|-----|--------|-----|-----|-----|---|-------|-----|-----|-----|-----|---|
|                    | COG系列      |     |    |    |    | X7R系列 |     |     |     |     |    |     | X6S系列 |     |     |    |     | X5R系列 |     |     |    |     | X7T 系列 |     |     |     |   | Y5V系列 |     |     |     |     |   |
| Cp V <sub>DC</sub> | 250        | 100 | 50 | 25 | 16 | 250   | 100 | 50  | 25  | 16  | 10 | 6.3 | 50    | 25  | 16  | 10 | 6.3 | 50    | 25  | 16  | 10 | 6.3 | 25     | 16  | 10  | 6.3 | 4 | 50    | 25  | 16  | 10  | 6.3 |   |
| 152                | B          | B   | B  | B  | B  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 182                |            | B   | B  | B  | B  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 222                |            | B   | B  | B  | B  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 272                |            |     | B  | B  | B  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 332                |            |     |    | D  | D  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 472                |            |     |    | D  | D  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 562                |            |     |    | D  | D  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 682                |            |     |    |    | D  | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 103                |            |     |    |    |    | D/F   | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 153                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 183                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 223                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 273                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 333                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 393                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 473                |            |     |    |    |    | F     | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 563                |            |     |    |    |    |       | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 683                |            |     |    |    |    |       | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 104                |            |     |    |    |    |       | D/F | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 154                |            |     |    |    |    |       |     | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 184                |            |     |    |    |    |       |     | D   | D   | D   | D  | D   | D     | D   | D   | D  | D   | D     | D   | D   | D  | D   | D      | D   | D   | D   | D | D     | D   | D   | D   | D   |   |
| 224                |            |     |    |    |    |       |     | D/F | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F    | D   | D   | D   | D | D/F   | D   | D   | D   | D   |   |
| 274                |            |     |    |    |    |       |     | D/F | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F    | D   | D   | D   | D | D/F   | D   | D   | D   | D   |   |
| 334                |            |     |    |    |    |       |     | D/F | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F   | D   | D   | D  | D   | D/F    | D   | D   | D   | D | D/F   | D   | D   | D   | D   |   |
| 474                |            |     |    |    |    |       |     | D/F | D/F | D/F | D  | D   | D/F   | D/F | D/F | D  | D   | D/F   | D/F | D/F | D  | D   | D/F    | D/F | D/F | D   | D | D/F   | D/F | D/F | D   | D   |   |
| 684                |            |     |    |    |    |       |     | D   | D/F | D/F | D  | D   | D     | D/F | D/F | D  | D   | D     | D/F | D/F | D  | D   | D      | D/F | D/F | D   | D | D     | D   | D/F | D/F | D   | D |
| 105                |            |     |    |    |    |       |     | F   | D/F | D/F | D  | D   | F     | D/F | D/F | D  | D   | F     | D/F | D/F | D  | D   | F      | D/F | D/F | D   | D | F     | D/F | D/F | D   | D   |   |
| 225                |            |     |    |    |    |       |     |     | F   | F   | F  | F   |       | F   | F   | F  | F   |       | F   | F   | F  | F   |        | F   | F   | F   | F |       | F   | F   | F   | F   |   |
| 475                |            |     |    |    |    |       |     |     | F   | F   | F  | F   |       | F   | F   | F  | F   |       | F   | F   | F  | F   |        | F   | F   | F   | F |       |     | F   | F   | F   |   |
| 106                |            |     |    |    |    |       |     |     |     | F   | F  | F   |       |     | F   | F  | F   |       |     | F   | F  | F   |        |     | F   | F   | F |       |     |     | F   | F   |   |
| 226                |            |     |    |    |    |       |     |     |     |     | F  | F   |       |     |     | F  | F   |       |     |     | F  | F   |        |     |     | F   | F |       |     |     |     | F   |   |
| 476                |            |     |    |    |    |       |     |     |     |     | F  |     |       |     |     | F  |     |       |     |     |    | F   |        |     |     |     | F |       |     |     |     |     |   |

容量容差: COG(0.5pF~4.9pF): B/C; COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ ), K( $\pm 10\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

厚度: B:  $0.60 \pm 0.1$ mm、D:  $0.85 \pm 0.1$ mm、F:  $1.25 \pm 0.2$ mm; 以上容量仅供参考, 具体容量取决于使用要求。

Tolerance: COG(0.5pF~4.9pF): C COG(5.0pF~9.9pF): D; COG( $\geq 10$ pF): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ )

X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

Thickness: B:  $0.60 \pm 0.1$ mm、D:  $0.85 \pm 0.1$ mm、F:  $1.25 \pm 0.2$ mm; Above capacitance for reference only, actual cap. Range depends on the standard products.

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|                                         | DRAAW108J/1-2021     |

### 1206(3216)尺寸

|                    | 1206(3216) |      |     |     |     |     |    |    |    |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
|--------------------|------------|------|-----|-----|-----|-----|----|----|----|-------|------|-----|-----|-----|-----|----|----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------|----|----|----|-----|-------|----|----|----|----|-----|
|                    | C0G系列      |      |     |     |     |     |    |    |    | X7R系列 |      |     |     |     |     |    |    |    |    | X6S系列 |    |    |    |    | X5R系列 |    |    |    |    | X7T系列 |    |    |    |     | Y5V系列 |    |    |    |    |     |
| Cp V <sub>DC</sub> | 2000       | 1000 | 630 | 500 | 250 | 100 | 50 | 25 | 16 | 2000  | 1000 | 630 | 500 | 250 | 100 | 50 | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3   | 25 | 16 | 10 | 6.3 | 4     | 50 | 25 | 16 | 10 | 6.3 |
| 0R5                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 1R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 2R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 3R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 4R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 5R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 6R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 7R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 8R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 9R0                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 100                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 120                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 150                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 180                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 200                | D          | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 220                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 270                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 300                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 330                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 390                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 470                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 560                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 680                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 820                | D/E/<br>F  | D    | D   | D   | D   | D   | D  | D  | D  |       |      |     |     |     |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 101                | D/E/<br>F  | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 121                | D/E/<br>F  | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 151                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 181                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 201                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   |     |    |    |    |    |       |    |    |    |    |       |    |    |    |    |       |    |    |    |     |       |    |    |    |    |     |
| 221                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 271                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 331                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 391                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 471                |            | D/E  | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 561                |            |      | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 681                |            |      | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 821                |            |      | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  |    |     |
| 102                |            |      | D   | D   | D   | D   | D  | D  | D  | F     | F    | F   | F   | F   | D   | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D  | D     | D  | D  | D  | D   | D     | D  | D  | D  | D  | D   |



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1210(3225)尺寸

|                    | 1210(3225) |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
|--------------------|------------|------|-----|-----|-----|----|-------|------|-----|-----|-----|-----|----|-----|----|----|-------|-----|----|----|----|-------|----|----|----|----|--------|----|----|----|-----|-------|----|----|----|----|-----|
|                    | COG系列      |      |     |     |     |    | X7R系列 |      |     |     |     |     |    |     |    |    | X6S系列 |     |    |    |    | X5R系列 |    |    |    |    | X7I 系列 |    |    |    |     | Y5V系列 |    |    |    |    |     |
| Cp V <sub>DC</sub> | 2000       | 1000 | 500 | 250 | 100 | 50 | 2000  | 1000 | 630 | 500 | 250 | 100 | 50 | 25  | 16 | 10 | 6.3   | 50  | 25 | 16 | 10 | 6.3   | 50 | 25 | 16 | 10 | 6.3    | 25 | 16 | 10 | 6.3 | 4     | 50 | 25 | 16 | 10 | 6.3 |
| 100                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 120                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 150                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 180                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 200                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 220                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 270                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 300                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 330                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 390                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 470                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 560                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 680                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 820                | D          |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 101                | D          | D    | D   | D   |     | D  |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 121                | F          | D    | D   | D   |     | D  |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 151                | F          | D    | D   | D   |     | D  |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 181                | F          | D    | D   | D   |     | D  |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 201                | F          | D    | D   | D   |     | D  |       |      |     |     |     |     |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 221                | F          | D    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 271                |            | D    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 331                |            | D    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 391                |            | D    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 471                |            | D    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 561                |            | F    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 681                |            | F    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 821                |            | F    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 102                |            | F    | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 152                |            |      | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 182                |            |      | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 222                |            |      | D   | D   |     | D  | F     | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 272                |            |      | F   | D   |     | D  |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 332                |            |      |     | D   |     | D  |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 472                |            |      |     | D   |     |    |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 562                |            |      |     |     |     |    |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 682                |            |      |     |     |     |    |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 103                |            |      |     |     |     |    |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 153                |            |      |     |     |     |    |       | F    | F   | F   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 223                |            |      |     |     |     |    |       |      | H   | H   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 333                |            |      |     |     |     |    |       |      | H   | H   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 473                |            |      |     |     |     |    |       |      | G   | G   | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 563                |            |      |     |     |     |    |       |      |     |     | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 683                |            |      |     |     |     |    |       |      |     |     | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 104                |            |      |     |     |     |    |       |      |     |     | F   | F   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 154                |            |      |     |     |     |    |       |      |     |     | H   | H   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 224                |            |      |     |     |     |    |       |      |     |     | G   | H   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 334                |            |      |     |     |     |    |       |      |     |     |     | G   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 394                |            |      |     |     |     |    |       |      |     |     |     | G   |    |     |    |    |       |     |    |    |    |       |    |    |    |    |        |    |    |    |     |       |    |    |    |    |     |
| 474                |            |      |     |     |     |    |       |      |     |     |     | G   | G  | G   | G  | G  | G     | G   | G  | G  | G  | G     | G  | G  | G  | G  | G      | G  | G  | G  | G   | G     | G  | G  | G  |    |     |
| 684                |            |      |     |     |     |    |       |      |     |     |     | H   | H  | H   | H  | H  | H     | H   | H  | H  | H  | H     | H  | H  | H  | H  | H      | H  | H  | H  | H   | H     | H  | H  | H  |    |     |
| 105                |            |      |     |     |     |    |       |      |     |     |     | H   | H  | H   | H  | H  | H     | H   | H  | H  | H  | H     | H  | H  | H  | H  | H      | H  | H  | H  | H   | H     | H  | H  | H  |    |     |
| 225                |            |      |     |     |     |    |       |      |     |     |     | H   | H  | H   | H  | H  | H     | H   | H  | H  | H  | H     | H  | H  | H  | H  | H      | H  | H  | H  | H   | H     | H  | H  | H  |    |     |
| 475                |            |      |     |     |     |    |       |      |     |     |     |     |    | H/G | H  | H  | H     | H/G | H  | H  | H  | H/G   | H  | H  | H  | H  | H      | H  | H  | H  | H   | H/G   | H  | H  | H  | H  |     |
| 106                |            |      |     |     |     |    |       |      |     |     |     |     |    | M   | G  | M  | M     | M   | G  | M  | M  | M     | M  | G  | M  | M  |        | M  | G  | M  | M   |       | M  | G  | M  | M  |     |
| 226                |            |      |     |     |     |    |       |      |     |     |     |     |    |     | M  | M  | M     |     | M  | M  | M  |       |    | M  | M  | M  |        |    | M  | M  | M   |       | M  | M  | M  | M  |     |
| 476                |            |      |     |     |     |    |       |      |     |     |     |     |    |     |    | M  | M     |     |    |    | M  | M     |    |    |    |    |        | M  | M  |    |     | M     | M  |    | M  | M  |     |
| 107                |            |      |     |     |     |    |       |      |     |     |     |     |    |     |    |    | M     |     |    |    |    |       |    |    |    |    |        |    |    |    |     | M     |    |    |    | M  |     |

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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号    Document No. |
|                                         | DRAAW108J/1-2021    |

容量容差： COG( $\geq 10\text{pF}$ ): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ ), K( $\pm 10\%$ ); X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

厚度： D:  $0.85 \pm 0.1\text{mm}$ 、F:  $1.25 \pm 0.2\text{mm}$ 、H:  $1.60 \pm 0.2\text{mm}$ 、G:  $2.00 \pm 0.20\text{mm}$  、M:  $2.50 \pm 0.30\text{mm}$ ;

以上容量仅供参考，具体容量取决于使用要求。

Tolerance: COG( $\geq 10\text{pF}$ ): F( $\pm 1\%$ ), G( $\pm 2\%$ ), J( $\pm 5\%$ ); X7R/X5R/X6S/X7T: J( $\pm 5.0\%$ ); K( $\pm 10\%$ ); M( $\pm 20\%$ ); Y5V: M( $\pm 20\%$ ); Z(-20,+80%)

Thickness: D:  $0.85 \pm 0.1\text{mm}$ 、F:  $1.25 \pm 0.2\text{mm}$ 、H:  $1.60 \pm 0.2\text{mm}$  、G:  $2.00 \pm 0.20\text{mm}$       M:  $2.50 \pm 0.30\text{mm}$ ;

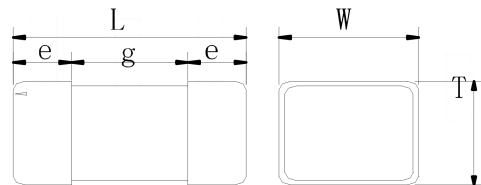
Above capacitance for reference only, actual cap. Range depends on the standard products.

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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号    Document No. |
|                                         | DRAAW108J/1-2021    |

## 5. 产品尺寸 Dimensions

规格：0201、0402、0603、0805、1206、1210。

Chip Size: 0201,0402,0603,0805,1206 and 1210



| 规格<br>Type | L<br>(mm)   | W<br>(mm)   | e<br>(mm) | g min<br>(mm) | T<br>(mm)   |           |           |             |           |
|------------|-------------|-------------|-----------|---------------|-------------|-----------|-----------|-------------|-----------|
| 0201       | 0.60±0.03   | 0.30±0.03   | 0.1~0.2   | 0.2           | 0.30±0.03   |           |           |             |           |
| 0402       | 1.00±0.10   | 0.50±0.10   | 0.15~0.3  | 0.4           | 0.50±0.10   | —         | —         | —           | —         |
| 0603       | 1.60±0.10   | 0.80±0.10   | 0.2~0.6   | 0.5           | 0.80±0.10   | —         | —         | —           | —         |
| 0603*1     | 1.60±0.20*1 | 0.80±0.20*1 | 0.2~0.6   | 0.5           | 0.80±0.20*1 | —         | —         | —           | —         |
| 0805       | 2.00±0.10   | 1.25±0.10   | 0.2~0.7   | 0.7           | 0.60±0.10   | 0.85±0.10 | 1.25±0.20 | —           | —         |
| 0805*1     | 2.00±0.20*1 | 1.25±0.20*1 | 0.2~0.7   | 0.7           | 0.60±0.10   | 0.85±0.10 | 1.25±0.20 | —           | —         |
| 1206       | 3.20±0.20   | 1.60±0.20   | 0.3~0.8   | 1.6           | 0.85±0.10   | 1.00±0.10 | 1.25±0.20 | 1.60±0.20   | —         |
| 1206*1     | 3.20±0.30*1 | 1.60±0.30*1 | 0.3~0.8   | 1.6           | 0.85±0.10   | 1.00±0.10 | 1.25±0.20 | 1.60±0.30*1 | —         |
| 1210       | 3.20±0.30   | 2.5±0.20    | 0.3~0.8   | 1.6           | 0.85±0.10   | 1.25±0.20 | 1.60±0.20 | 2.00±0.20   | 2.50±0.30 |
| 1210*1     | 3.20±0.40*1 | 2.5±0.30*1  | 0.3~0.8   | 1.6           | 0.85±0.10   | 1.25±0.20 | 1.60±0.30 | 2.00±0.20   | 2.50±0.30 |

\*1 标识该规格型号标识为 1uF 及以上规格产品尺寸。

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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号 Document No. |
|                                         | DRAAW108J/1-2021 |

## 6. 技术要求和测试条件 Specification and Test Condition

### 6.1 外观 Appearance

| 类型 Dielectrics              | 技术要求 Specification                                                                                                                                 | 测试条件 Testing Condition     |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| COG/X7R/X5R/Y5V/<br>X7T/X6S | $1/10L < L \leq 1/8L, 1/10W < w \leq 1/8W,$<br>$1/10T < t \leq 1/8T$ (l、w、t 任意一项不符合, 均判定不合格)<br>(l、w、t None is acceptable, All judged unqualified) | 目视检查<br>Visual inspection. |

### 6.2 尺寸 Dimensions

| 类型 Dielectrics              | 技术要求 Specification                         | 测试条件 Testing Condition               |
|-----------------------------|--------------------------------------------|--------------------------------------|
| COG/X7R/X5R/Y5V/<br>X7T/X6S | 在要求的范围内<br>Within the specified dimensions | 用千分尺<br>Using calipers on micrometer |

### 6.3 容量 Capacitance

| 类型 Dielectrics                                                                                                                        | 技术要求 Specification                                                                                                                                                 | 测试条件 Testing Condition                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| COG                                                                                                                                   | 在要求的容值容差范围内<br>Within the specified tolerance<br>A: $\pm 0.05\text{pF}$ ; B: $\pm 0.1\text{pF}$ ; C: $\pm 0.25\text{pF}$ ;<br>D: $\pm 0.5\text{pF}$ ; J: $\pm 5\%$ | $1.0 \pm 0.2\text{Vrms}, 1\text{MHz} \pm 10\%$<br>(C > 1000 pF, $1.0 \pm 0.2\text{Vrms}, 1\text{KHz} \pm 10\%$ , ) |
| X7R/X5R/X7T/<br>X6S                                                                                                                   | 在要求的容值容差范围内<br>Within the specified tolerance<br>J: $\pm 5\%$ ; K: $\pm 10\%$ ; M: $\pm 20\%$                                                                      | $1.0 \pm 0.2\text{Vrms}, 1\text{KHz} \pm 10\%$<br>(Cp > 10uF, $0.5 \pm 0.1\text{Vrms}, 120 \pm 24\text{Hz}$ )      |
| Y5V                                                                                                                                   | 在要求的容值容差范围内<br>Within the specified tolerance<br>M: $\pm 20\%$ ; Z: -20%, +80%                                                                                     | $1.0 \pm 0.2\text{Vrms}, 1\text{KHz} \pm 10\%$<br>(Cp > 10uF, $0.5 \pm 0.1\text{Vrms}, 120 \pm 24\text{Hz}$ )      |
| 备注: 测试温度: $25^\circ\text{C} \pm 3^\circ\text{C}$ , 测试湿度: <70%RH. 针对二类介质规格需去老化处理, 条件: 电容器在 $150^\circ\text{C}$ 热处理 1 小时, 放置 48h 后进行测量。 |                                                                                                                                                                    |                                                                                                                    |

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| 产 品 标 准 书<br>SPECIFICATION FOR APPROVAL | 编 号    Document No. |
|                                         | DRAAW108J/1-2021    |

#### 6.4 损耗 Dissipation Factor

| 类型 Dielectrics        | 技术要求 Specification                      |                     |                                                       |                                                                      | 测试条件 Testing Condition                                         |  |
|-----------------------|-----------------------------------------|---------------------|-------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------|--|
| COG                   | Cp<30pF, Q≥400+20Cp;<br>Cp≥30pF, Q≥1000 |                     |                                                       |                                                                      | 1.0±0.2Vrms,1MHz±10% ,25℃<br>(Cp>1000pF,1.0±0.2Vrms,1KHz±10%)  |  |
| X7R/X5R/X7T/<br>X6S   |                                         |                     |                                                       |                                                                      | 1.0±0.2Vrms, 1KHz±10%,<br>(Cp > 10uF,0.5±0.1Vrms,<br>120±24Hz) |  |
|                       | 规格                                      | U <sub>R</sub>      | 容量范围                                                  | DF                                                                   |                                                                |  |
|                       | 0201                                    | ≤25V                | C≤0. 22 μF                                            | ≤10%                                                                 |                                                                |  |
|                       | 0402                                    | ≤25V                | C≤0. 47 μF                                            | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | C>0. 47 μF                                            | ≤10%                                                                 |                                                                |  |
|                       |                                         | >25V                | C≤0. 1 μF                                             | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | C>0. 1 μF                                             | ≤10%                                                                 |                                                                |  |
|                       | 0603                                    | ≤25V                | C≤0. 47 μF                                            | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | C>0. 47 μF                                            | ≤10. 0%                                                              |                                                                |  |
|                       |                                         | >25V                | C≤0. 1 μF                                             | ≤5. 0%                                                               |                                                                |  |
|                       |                                         |                     | 0. 1 μF<C≤0. 22 μF                                    | ≤7. 0%                                                               |                                                                |  |
|                       | 0805                                    | ≤25V                | C≤1 μF                                                | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | C>1 μF                                                | ≤10. 0%                                                              |                                                                |  |
|                       |                                         | >25V                | C≤0. 47 μF                                            | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | C>0. 47 μF                                            | ≤10. 0%                                                              |                                                                |  |
|                       | 1206                                    | ≤25V                | C<2. 2 μF                                             | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | 2. 2 μF≤C<47 μF                                       | ≤10. 0%                                                              |                                                                |  |
|                       |                                         | >25V                | C<1 μF                                                | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | 1 μF≤C<47 μF                                          | ≤10. 0%                                                              |                                                                |  |
|                       | 1210                                    | ≤25V                | C<2. 2 μF                                             | ≤7. 0%                                                               |                                                                |  |
|                       |                                         |                     | 2. 2 μF≤C<47 μF                                       | ≤10. 0%                                                              |                                                                |  |
|                       | Y5V                                     | U <sub>R</sub>      | DF                                                    | 备注                                                                   |                                                                |  |
|                       |                                         | U <sub>R</sub> ≥50V | DF≤7.0%                                               |                                                                      |                                                                |  |
|                       |                                         | U <sub>R</sub> =25V | DF≤7. 0%                                              | 683>0402≥473, 474>0603≥104, 105>0805≥334, 475>1206≥684, 106>1210≥105 |                                                                |  |
| DF≤9. 0%              |                                         |                     | 0402≥683, 0603≥474, 0805≥105,1206≥475, 1210≥106       |                                                                      |                                                                |  |
| U <sub>R</sub> =16V   |                                         | DF≤9. 0%            |                                                       |                                                                      |                                                                |  |
|                       |                                         | DF≤12. 5%           | 0402≥224、0603≥225、0805≥335、1206≥106、1210≥226、1812≥476 |                                                                      |                                                                |  |
| U <sub>R</sub> =10V   |                                         | DF ≤12. 5%          |                                                       |                                                                      |                                                                |  |
| U <sub>R</sub> =6. 3V |                                         | DF ≤15. 0%          |                                                       |                                                                      |                                                                |  |
|                       |                                         |                     |                                                       | 1.0±0.2Vrms, 1KHz±10%,<br>(Cp > 10uF,0.5±0.1Vrms,<br>120±24Hz)       |                                                                |  |
|                       |                                         |                     |                                                       | 25℃, 预处理后 48hrs。<br>at 25℃,48hrs after annealing                     |                                                                |  |
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|                                         | DRAAW108J/1-2021 |

## 6.5 绝缘电阻 Insulation Resistance

| 类型 Dielectrics                                                        | 技术要求 Specification                                                                                                                                                                   | 测试条件 Testing Condition                                                                                                                                                                              |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG/X7R/<br>X5R/Y5V/X7T/<br>X6S                                       | $U_R \leq 50V$ , 大于 $10\text{ G}\Omega$ 或 $100\Omega \cdot F / CR$ (大于其中较小的数值)<br>$U_R \leq 50V$ , More than $10\text{ G}\Omega$ or $100\Omega \cdot F / CR$ , whichever is smaller. | $U_R \leq 50V$ $U_{\text{测}} = U_R$ ;<br>充电时间: $60 \pm 5$ 秒<br>温度: $25^\circ\text{C}$<br>Charge Time: $60 \pm 5\text{sec}$<br>Temperture: $25^\circ\text{C}$                                        |
| COG/X7R/X7T/<br>X6S                                                   | $U_R > 50V$ , 大于 $4\text{ G}\Omega$ 或 $100\Omega \cdot F / CR$ (大于其中较小的数值)<br>$U_R > 50V$ , More than $4\text{ G}\Omega$ or $100\Omega \cdot F / CR$ , whichever is smaller.         | $U_R \leq 400V$ $U_{\text{测}} = U_R$<br>$U_R > 400V$ $U_{\text{测}} = 400V$ ;<br>充电时间: $60 \pm 5$ 秒<br>温度: $25^\circ\text{C}$<br>Charge Time: $60 \pm 5\text{sec}$<br>Temperture: $25^\circ\text{C}$ |
| 备注: 测试温度: $25^\circ\text{C} \pm 3^\circ\text{C}$ , 测试湿度: $< 70\%RH$ . |                                                                                                                                                                                      |                                                                                                                                                                                                     |

## 6.6 耐电压 Dielectric Strength

| 类型 Dielectrics          | 额定电压范围 Rated voltage range | 耐电压性能测试方法 Measuring Method                                                                                        |
|-------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------|
| COG                     | $U_R \leq 50V$             | 施加额定电压的 300%, 5 秒, 最大电流不超过 50mA<br>Force 300% Rated voltage for 5second.<br>Max..current should not exceed 50 mA. |
| X7R/X5R/Y5V/X7T/<br>X6S | $U_R \leq 50V$             | 施加额定电压的 250%, 5 秒, 最大电流不超过 50mA<br>Force 250% Rated voltage for 5second.<br>Max..current should not exceed 50 mA. |
| COG/X7R/X7T             | $100V \leq U_R < 500V$     | 施加额定电压的 200%, 5 秒, 最大电流不超过 50mA<br>Force 200% Rated voltage for 5second.<br>Max..current should not exceed 50 mA. |
|                         | $500V \leq U_R < 1000V$    | 施加额定电压的 150%, 5 秒, 最大电流不超过 50mA<br>Force 150% Rated voltage for 5second.<br>Max..current should not exceed 50 mA. |
|                         | $1000V \leq U_R < 2000V$   | 施加额定电压的 150%, 5 秒, 最大电流不超过 50mA<br>Force 150% Rated voltage for 5second.<br>Max..current should not exceed 50 mA. |
|                         | $U_R \geq 2000V$           | 施加额定电压的 120%, 5 秒, 最大电流不超过 30mA<br>Force 120% Rated voltage for 5second.<br>Max..current should not exceed 30 mA. |

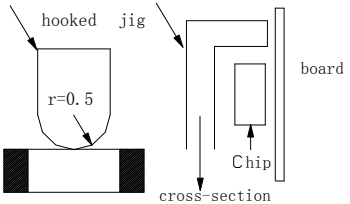
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## 6.7 静电容量温度特性 Temperature Coefficient of Capacitance

| 类型<br>Dielectrics | 技术要求<br>Specification                                                                                                                                                                                                | 测试条件<br>Testing Condition                                                                                                                                                                                                                                                                                                                         |                 |             |             |             |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------|-------------|-------------|
| COG               | 容量变化在 $\pm 30\text{ppm}/^\circ\text{C}$ 以内<br>容量漂移在 $\pm 0.2\%$ 或 $\pm 0.05\text{pF}$ 以内<br>Temperature coefficient within $\pm 30\text{ppm}/^\circ\text{C}$ ;<br>Cp drift within $\pm 0.2\%$ or $\pm 0.05\text{pF}$ | 按系列温度顺序测试电容容量<br>Measure capacitance under follow table list temperature:<br>在 $140\sim 150^\circ\text{C}$ 预处理 1 小时, 放置 24h 后进行测量。                                                                                                                                                                                                                |                 |             |             |             |
|                   |                                                                                                                                                                                                                      | 步骤<br>STEP                                                                                                                                                                                                                                                                                                                                        | COG,<br>X7R,X7T | X6S         | X5R         | Y5V         |
|                   |                                                                                                                                                                                                                      | 1                                                                                                                                                                                                                                                                                                                                                 | $25 \pm 2$      | $25 \pm 2$  | $25 \pm 2$  | $25 \pm 2$  |
|                   |                                                                                                                                                                                                                      | 2                                                                                                                                                                                                                                                                                                                                                 | $-55 \pm 3$     | $-55 \pm 3$ | $-55 \pm 3$ | $-30 \pm 3$ |
| X7R/X5R           | 容量变化在 $\pm 15\%$ 以内<br>Capacitance change within $\pm 15\%$                                                                                                                                                          | 3                                                                                                                                                                                                                                                                                                                                                 | $25 \pm 2$      | $25 \pm 2$  | $25 \pm 2$  | $25 \pm 2$  |
|                   |                                                                                                                                                                                                                      | 4                                                                                                                                                                                                                                                                                                                                                 | $125 \pm 3$     | $105 \pm 3$ | $85 \pm 3$  | $85 \pm 3$  |
|                   |                                                                                                                                                                                                                      | 5                                                                                                                                                                                                                                                                                                                                                 | $25 \pm 2$      | $25 \pm 2$  | $25 \pm 2$  | $25 \pm 2$  |
| X7T               | 容量变化在 $+22\%$ , $-33\%$ 以内<br>Capacitance change within $+22\%$ , $-33\%$                                                                                                                                            | 1) COG<br>容量漂移的计算方法为: 用步骤 3 测量的电容容值量除以在第 1、3 和 5 步骤测量得到的误差的最大值和最小值的差。<br>温度系数的计算以第 3 步骤测量电容容量为参考。<br>The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in the step 1,3 and 5.<br>The temperature coefficient is determined using the Capacitance measured in step 3 as a reference. |                 |             |             |             |
| X6S               | 容量变化在 $\pm 22\%$ 以内<br>Capacitance change within $\pm 22\%$                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                   |                 |             |             |             |
| Y5V               | 容量变化在 $+22\%$ , $-82\%$ 以内<br>Capacitance change within $+22\%$ , $-82\%$                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                   |                 |             |             |             |
|                   |                                                                                                                                                                                                                      | 2) X7R、X5R、X7T、X6S 和 Y5V<br>与 $25^\circ\text{C}$ 时的电容容量相比较, 电容容量在温度范围内的变化在要求的范围之内。<br>X7R 、X5R、X7T、X6S and Y5V<br>The ranges of capacitance change compared within the above $25^\circ\text{C}$ value over the temperature ranges shall be within the specified ranges.                                                                           |                 |             |             |             |

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|                                         | DRAAW108J/1-2021 |

## 6.8 附着力 Adhesion

| 类型 Dielectrics              | 技术要求 Specification                                                             | 测试条件 Testing Condition                                                                                                                                                                                             |
|-----------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG/X7R/X5R/<br>Y5V/X7T/X6S | 端电极无松动，也无其它不良现象<br>No removal of the terminations or other defect shall occur. | <p>施加 6N 的压力，并保持 10±1 秒<br/>The pressurizing force shall be 6N (=600g*f) and the duration of application shall be 10±1 sec.</p>  |

## 6.9 可焊性 Solderability of Termination

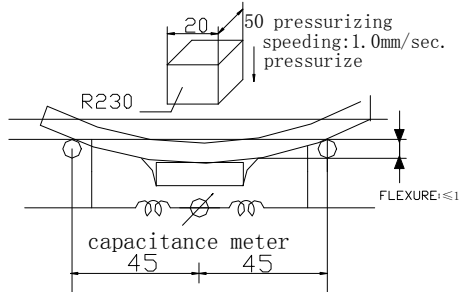
| 类型 Dielectrics                | 技术要求 Specification                                                                                                           | 测试条件 Testing Condition                                                                                                                                                  |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG<br>X7R/X5R<br>Y5V/X7T/X6S | 端电极挂锡面积不小于 95%，针孔或粗糙面积小于 5%<br>95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots. | <p>锡炉温度：245±5℃<br/>浸入时间：2±1 秒<br/>两侧端电极完全浸入焊锡炉<br/>Solder temperature: 245±5℃<br/>Dipping time: 2±1 seconds.<br/>Completely soak both terminal electrodes in solder</p> |

## 6.10 耐焊性 Resistance to leaching

| 类型 Dielectrics                | 技术要求 Specification                                                                                                                                                          | 测试条件 Testing Condition                                                                                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG<br>X7R/X5R<br>Y5V/X7T/X6S | <p>端电极挂锡面积不小于 95%，针孔或粗糙面积小于 5%，外观无开裂<br/>95% min. coverage of both terminal electrodes and less than 5% have pin holes or rough spots.<br/>No remarkable visual damage.</p> | <p>预热：120℃~150℃/60 秒<br/>锡炉温度：270±5℃<br/>浸入时间：10±1 秒<br/>两侧端电极完全浸入焊锡炉<br/>Solder temperature: 270±5℃<br/>preheated: 120℃~150℃/60sec<br/>Dipping time: 10±1 seconds.<br/>Completely soak both terminal electrodes in solder</p> |

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|                                         | DRAAW108J/1-2021 |

### 6.11 端电极结合强度 Bending

| 类型 Dielectrics  | 技术要求 Specification                                                                                                                                                       | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG             | 无可见损伤;<br>容量变化小于等于 $\pm 5\%$ 或 $\pm 0.5\text{pF}$ (取较大值)<br><br>No remarkable visual damage<br>Cp change within $\pm 5.0\%$ or $\pm 0.5\text{pF}$ , whichever is larger. | <p>将片状电容器安装在测试夹具上, 按图所示方向以 <math>1.0\text{mm/s}</math> 的速率施加压力, 弯曲 <math>1\text{mm}</math>。<br/>           Solder the capacitor on testing substrate and put it on testing stand. The middle part of substrate shall successively be pressurized by pressuring rod at a rated of about <math>1.0\text{mm/sec}</math>. Until the deflection become means of the <math>1.0\text{mm}</math>.</p>  |
| X7R/X5R/X7T/X6S | 无可见损伤;<br>容量变化小于等于 $\pm 10\%$<br><br>No remarkable visual damage<br>Cp change $\leq \pm 10\%$                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Y5V             | 无可见损伤;<br>容量变化小于等于 $\pm 30\%$<br><br>No remarkable visual damage<br>Cp change $\leq \pm 30\%$                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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|                                         | DRAAW108J/1-2021    |

## 6.12 耐焊接热 Resistance to Soldering Heat

| 类型 Dielectrics  | 技术要求 Specification                                                                                                                                                                                                                                                                                                                         | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG             | <p>无明显可见损伤<br/>容量变化在<math>\pm 2.5\%</math>或<math>\pm 0.25\text{pF}</math>（取较大值）以内<br/>DF 满足产品初始值的要求<br/>IR 满足产品初始值的要求</p> <p>No remarkable visual damage<br/>Cp change within <math>\pm 2.5\%</math> or <math>\pm 0.25\text{pF}</math>, whichever is larger.<br/>DF meets initial standard value.<br/>IR meets initial standard value.</p> | <p>焊接温度: <math>270\pm 5^\circ\text{C}</math><br/>预热: <math>120\sim 150^\circ\text{C}</math> 60 秒<br/>浸入时间: <math>10\pm 1</math> 秒<br/>在室温下放置 <math>24\pm 2</math> (COG) 或 <math>48\pm 4</math> (X7R、X5R、Y5V、X7T、X6S) 小时以后测量<br/>试验后在标准条件下恢复</p> <p>*高介电常数电容器的初始值测量<br/>在 <math>140\sim 150^\circ\text{C}</math> 进行 1 小时的热处理后在室温下放置 <math>48\pm 4</math> 小时<br/>测量初始值</p> <p>Soldering temperature: <math>270\pm 5^\circ\text{C}</math><br/>Preheating: <math>120\sim 150^\circ\text{C}</math> 60sec.<br/>Dipping time: <math>10\pm 1</math> seconds.<br/>Measurement to be made after being kept at room temperature for <math>24\pm 2</math> (COG) or <math>48\pm 4</math> (X7R, X5R, Y5V, X7T, X6S) hours.<br/>Recovery for the following period under the standard condition after test.</p> <p>*Initial measurement for high dielectric constant type</p> |
| X7R/X5R/X7T/X6S | <p>无明显可见损伤<br/>容量变化在<math>\pm 7.5\%</math>以内<br/>DF 满足产品初始值的要求<br/>IR 满足产品初始值的要求</p> <p>No remarkable visual damage<br/>Cp change within <math>\pm 7.5\%</math><br/>DF meets initial standard value.<br/>IR meets initial standard value.</p>                                                                                              | <p>Perform a heat treatment at <math>140\sim 150^\circ\text{C}</math> for 1hr and let sit for <math>48\pm 4</math>hrs at room temperature.<br/>Perform the initial measurement.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Y5V             | <p>无明显可见损伤<br/>容量变化在<math>\pm 20\%</math>以内<br/>DF 满足产品初始值的要求<br/>IR 满足产品初始值的要求</p> <p>No remarkable visual damage<br/>Cp change within <math>\pm 20\%</math><br/>DF meets initial standard value.<br/>IR meets initial standard value.</p>                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|                                         | DRAAW108J/1-2021    |

### 6.13 温度快速循环 Temperature Cycle

| 类型 Dielectrics  | 技术要求 Specification                                                                                                                                                           | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                                                                                             |                                   |             |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|
| COG             | 无明显可见损伤<br>容量变化在 $\pm 2.5\%$ 或 $\pm 0.25\text{pF}$ （取较大值）以内<br><br>No remarkable visual damage<br>Cp change within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ , whichever is larger. | 按下列步骤进行 5 次循环：<br>To perform 5 cycles of the stated environment                                                                                                                                                                                                                                                                                                                                    |                                   |             |
|                 |                                                                                                                                                                              | 步 骤<br>Step                                                                                                                                                                                                                                                                                                                                                                                        | 温 度<br>Temperature                | 时 间<br>Time |
|                 |                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                  | 下限类别温度<br>$+0/-3^{\circ}\text{C}$ | 30min       |
|                 |                                                                                                                                                                              | 2                                                                                                                                                                                                                                                                                                                                                                                                  | $25^{\circ}\text{C}$              | 2~3 min     |
| X7R/X5R/X7T/X6S | 无明显可见损伤<br>容量变化在 $\pm 7.5\%$ 以内<br><br>No remarkable visual damage<br>Cp change within $\pm 7.5\%$                                                                           | 3                                                                                                                                                                                                                                                                                                                                                                                                  | 上限类别温度<br>$+3/-0^{\circ}\text{C}$ | 30 min      |
|                 |                                                                                                                                                                              | 4                                                                                                                                                                                                                                                                                                                                                                                                  | $25^{\circ}\text{C}$              | 2~3 min     |
| Y5V             | 无明显可见损伤<br>容量变化在 $\pm 20\%$ 以内<br><br>No remarkable visual damage<br>Cp change within $\pm 20\%$                                                                             | 在室温下放置 $48 \pm 4$ X7R, X5R, Y5V、X7T、X6S) 小时以后测量<br>*高介电常数电容器的初始值测量<br>在 $140 \sim 150^{\circ}\text{C}$ 进行 1 小时的热处理后<br>在室温下放置 $48 \pm 4$ 小时                                                                                                                                                                                                                                                        |                                   |             |
|                 |                                                                                                                                                                              | 测量初始值<br>Measurement to be made after being kept at room temperature for $24 \pm 2$ hrs (COG) or $48 \pm 4$ hrs (X7R, X5R, Y5V、X7T、X6S) at room temperature, then measure.<br>*Initial measurement for high dielectric constant type<br>Perform a heat treatment at $140 \sim 150^{\circ}\text{C}$ for 1hr and let sit for $48 \pm 4$ hrs at room temperature.<br>Perform the initial measurement. |                                   |             |

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|                                         | DRAAW108J/1-2021    |

#### 6.14 稳态湿热 Moisture Resistance ,steady state

| 类型 Dielectrics      | 技术要求 Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG                 | <p>外观无明显可见损伤<br/>容量变化在<math>\pm 5\%</math>或 <math>\pm 0.5\text{pF}</math>（取较大值）以内<br/><math>C_p &lt; 10\text{pF}</math>, <math>Q \geq 200 + 10C_p</math>;<br/><math>10 \leq C_p &lt; 30\text{pF}</math>, <math>Q \geq 275 + 2.5C_p</math><br/><math>C_p \geq 30\text{pF}</math>, <math>Q \geq 350</math><br/>IR: 大于 <math>1000\text{M}\Omega</math>或 <math>10\Omega \cdot \text{F}</math>(取较小值)</p> <p>No remarkable visual damage<br/>Cp change within <math>\pm 5\%</math> or <math>\pm 0.5\text{pF}</math>, whichever is larger.<br/><math>C_p &lt; 10\text{pF}</math>, <math>Q \geq 200 + 10C_p</math>;<br/><math>10 \leq C_p &lt; 30\text{pF}</math>, <math>Q \geq 275 + 2.5C_p</math><br/><math>C_p \geq 30\text{pF}</math>, <math>Q \geq 350</math><br/><math>R \cdot C \geq 1000\text{M}\Omega</math> or <math>10\Omega \cdot \text{F}</math>, whichever is smaller</p> | <p>测试温度: <math>40 \pm 2^\circ\text{C}</math><br/>湿度: <math>90 \sim 95\% \text{ RH}</math><br/>测试时间: <math>500 \pm 12\text{hrs}</math></p> <p>在室温下放置 <math>24 \pm 2</math> (COG) 或 <math>48 \pm 4</math> (X7R、X5R、Y5V、X7T、X6S) 小时以后测量</p> <p>*高介电常数电容器的初始值测量<br/>在 <math>140 \sim 150^\circ\text{C}</math> 进行 1 小时的热处理后在室温下放置 <math>48 \pm 4</math> 小时<br/>测量初始值</p> <p>Test temperature: <math>40 \pm 2^\circ\text{C}</math><br/>Humidity: <math>90 \sim 95\% \text{ RH}</math><br/>Testing time: <math>500 \pm 12\text{hrs}</math></p> |
| X7R/X5R/X7T/<br>X6S | <p>外观无明显可见损伤<br/>容量变化在<math>\pm 12.5\%</math>以内<br/>DF 为初始值的 2 倍以下<br/>IR: 大于 <math>1000\text{M}\Omega</math>或 <math>10\Omega \cdot \text{F}</math>(取较小值)</p> <p>Cp change within <math>\pm 12.5\%</math><br/>DF: Not more than 2 times of initial value<br/><math>R \cdot C \geq 1000\text{M}\Omega</math> or <math>10\Omega \cdot \text{F}</math>, whichever is smaller</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Measurement to be made after being kept at room temperature for <math>24 \pm 2\text{hrs}</math> (COG) or <math>48 \pm 4\text{hrs}</math> (X7R, X5R, Y5V, X7T, X6S)</p> <p>*Initial measurement for high dielectric constant type<br/>Perform a heat treatment at <math>140 \sim 150^\circ\text{C}</math> for 1hr and let sit for <math>48 \pm 4\text{hrs}</math> at room temperature.<br/>Perform the initial measurement.</p>                                                                                                       |
| Y5V                 | <p>外观无明显可见损伤<br/>容量变化在<math>\pm 30\%</math>以内<br/>DF 为初始值的 1.5 倍以下<br/>IR: 大于 <math>1000\text{M}\Omega</math>或 <math>10\Omega \cdot \text{F}</math>(取较小值)</p> <p>No remarkable visual damage<br/>Cp change within <math>\pm 30\%</math><br/>DF: Not more than 1.5 times of initial value<br/><math>R \cdot C \geq 1000\text{M}\Omega</math> or <math>10\Omega \cdot \text{F}</math>, whichever is smaller</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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|                                         | DRAAW108J/1-2021    |

### 6.15 耐湿负荷 Damp heat with load

| 类型 Dielectrics                  | 技术要求 Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG                             | 外观无明显可见损伤<br>容量变化在 $\pm 7.5\%$ 或 $\pm 0.75\text{pF}$ （取较大值）以内<br>$C_p < 30\text{pF}$ , $Q \geq 100 + 10/3 \cdot C_p$<br>$C_p \geq 30\text{pF}$ , $Q \geq 200$<br>$IR$ : 大于 $500\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>$C_p \text{ change} \leq \pm 7.5\%$ or $\pm 0.75\text{pF}$ , whichever is larger.<br>$C_p < 30\text{pF}$ , $Q \geq 100 + 10/3 \cdot C_p$<br>$C_p \geq 30\text{pF}$ , $Q \geq 200$<br>$R \cdot C \geq 500\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller | 测试温度: $40 \pm 2^\circ\text{C}$<br>湿度: $90 \sim 95\% \text{ RH}$<br>电压: 额定电压<br>测试时间: $500 \pm 12\text{hrs}$<br><br>在室温下放置 $24 \pm 2$ (COG) 或 $48 \pm 4$ (X7R、X5R、Y5V、X7T、X6S) 小时以后测量<br><br>*在 $40 \pm 2^\circ\text{C}$ 温度下, 将电容器加额定直流电压 1hrs.<br>去掉电压, 将电容器在室温下放置 $48 \pm 4\text{hrs}$<br>测量初始电容值。                            |
| X7R/X5R/X7T/X6S                 | 外观无明显可见损伤<br>容量变化在 $\pm 12.5\%$ 以内<br>$DF$ 为初始值的 2 倍以下<br>$IR$ : 大于 $500\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>$C_p \text{ change} \leq \pm 12.5\%$<br>$DF$ : Not more than 2 times of initial value<br>$R \cdot C \geq 500\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller                                                                                                                                                                                                    | Test temperature: $40 \pm 2^\circ\text{C}$<br>Humidity: $90 \sim 95\% \text{ RH}$<br>Voltage: 100% of the rated voltage<br>Testing time: $500 \pm 12\text{hrs}$                                                                                                                                                                |
| Y5V                             | 外观无明显可见损伤<br>容量变化在 $\pm 30\%$ 以内<br>$DF$ 为初始值的 1.5 倍以下<br>$IR$ : 大于 $500\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>$C_p \text{ change} \leq \pm 30\%$<br>$DF$ : Not more than 1.5 times of initial value<br>$R \cdot C \geq 500\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller                                                                                                                                                                                                    | Measurement to be made after being kept at room temperature for $24 \pm 2\text{hrs}$ (COG) or $48 \pm 4\text{hrs}$ (X7R, X5R, Y5V、X7T、X6S)<br><br>*Apply the rated DC voltage for 1 hour at $40 \pm 2^\circ\text{C}$ .<br>Remove and let sit for $48 \pm 4\text{hrs}$ at room temperature.<br>Perform the initial measurement. |
| 备注: 该项可靠性试验仅适用于常规产品, 不适用于中高压产品。 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                |

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|                                         | DRAAW108J/1-2021 |

## 6.16 耐久性 Life Test

| 类型 Dielectrics                  | 技术要求 Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 测试条件 Testing Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COG                             | 外观无明显可见损伤<br>容量变化在 $\pm 3\%$ 或 $\pm 0.3\text{pF}$ （取较大值）以内<br>容量在 $30\text{pF}$ 以上, $Q \geq 350$<br>容量在 $10\text{pF}$ 以上且小于 $30\text{pF}$ , $Q \geq 275 + (2.5 * C_p)$<br>容量小于 $10\text{pF}$ , $Q \geq 200 + 10 * C_p$<br>IR: 大于 $1000\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>Cp change $\leq \pm 3\%$ or $\pm 0.3\text{pF}$ , whichever is larger.<br>$Q \geq 350$ ( $C_p \geq 30\text{pF}$ )<br>$Q \geq 275 + (2.5 * C_p)$ ( $10\text{pF} \leq C_p < 30\text{pF}$ )<br>$Q \geq 200 + 10 * C_p$ ( $C_p < 10\text{pF}$ )<br>$R * C \geq 1000\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller | 测试温度: 上限类别温度 $\pm 3^\circ\text{C}$<br>电压:<br>$U_R < 100\text{V}$ 1.5 倍额定电压<br>测试时间: 1000 小时<br><br>在室温下放置 $24 \pm 2$ (COG) 或 $48 \pm 4$ (X7R、X5R、Y5V、X7T、X6S) 小时以后测量<br><br>*高介电常数电容器的初始值测量<br>在上限类别温度 $\pm 3^\circ\text{C}$ , 将电容器加 1.5 倍额定直流电压 1 小时<br>去掉电压, 将电容器在室温下放置 $48 \pm 4\text{hrs}$<br>测量初始电容值<br><br>Test temperature:<br>Max. Operating Temp. $\pm 3^\circ\text{C}$<br>Voltage:<br>$U_R < 100\text{V}$ 150% of the rated voltage<br>Testing time: 1000 hrs |
| X7R/X5R/X7T/X6S                 | 外观无明显可见损伤<br>容量变化在 $\pm 12.5\%$ 以内<br>DF 为初始值的 2 倍以下<br>IR: 大于 $1000\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>Cp change $\leq \pm 12.5\%$<br>DF: Not more than 2 times of initial value<br>$R * C \geq 1000\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller                                                                                                                                                                                                                                                                                                                                    | Measurement to be made after being kept at room temperature for $24 \pm 2\text{hrs}$ (COG) or $48 \pm 4\text{hrs}$ (X7R, X5R, Y5V, X7T, X6S)<br><br>*Initial measurement for high dielectric constant type<br>Apply 150% of the rated DC voltage for one hour at the maximum operating temperature $\pm 3^\circ\text{C}$ .<br>Remove and let sit for $48 \pm 4\text{hrs}$ at room temperature.<br>Perform the initial measurement                                       |
| Y5V                             | 外观无明显可见损伤<br>容量变化在 $\pm 30\%$ 以内<br>DF 为初始值的 1.5 倍以下<br>IR: 大于 $1000\text{M}\Omega$ 或 $5\Omega \cdot \text{F}$ (取较小值)<br>No remarkable visual damage<br>Cp change $\leq \pm 30\%$<br>DF: Not more than 1.5 times of initial value<br>$R * C \geq 1000\text{M}\Omega$ or $5\Omega \cdot \text{F}$ , whichever is smaller                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 备注: 该项可靠性试验仅适用于常规产品, 不适用于中高压产品。 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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|                                         | DRAAW108J/1-2021 |

## 7. 产品包装 Packing

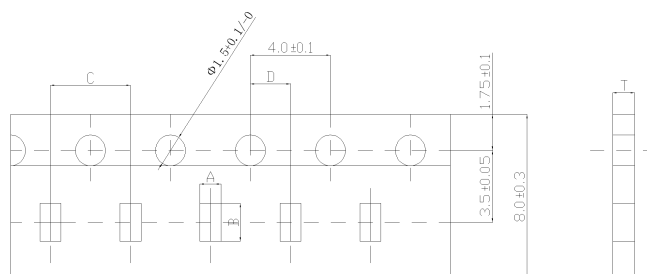
### 7.1 袋式散装 Bulk Packing

10000 个/袋或按客户要求。Standard packing 10Kpcs/bag; others are according to customer request.

### 7.2 编带式包装 Tape Packing

| 规格<br>Type | 尺寸 Size (mm) |      |             | 编带数量(个/盘 pcs/reel) |                  |
|------------|--------------|------|-------------|--------------------|------------------|
|            | 长度 L         | 宽度 W | 厚度 T        | 纸带 Paper Tape      | 塑料带 Plastic Tape |
| 0201       | 0.6          | 0.3  | 0.3         | 15,000             | N/A              |
| 0402       | 1.0          | 0.5  | 0.5         | 10,000             | N/A              |
| 0603       | 1.6          | 0.8  | 0.8         | 4,000              | N/A              |
| 0805       | 2.0          | 1.25 | $\leq 0.85$ | 4,000              | N/A              |
|            |              |      | $> 0.85$    | N/A                | 2,000 (或 3,000)  |
| 1206       | 3.2          | 1.6  | $\leq 0.85$ | 4,000              | N/A              |
|            |              |      | $> 0.85$    | N/A                | 2,000 (或 3,000)  |
| 1210       | 3.2          | 2.5  | $\leq 1.25$ | N/A                | 2,000            |
|            |              |      | $> 1.25$    | N/A                | 2,000            |

#### 7.2.1 纸带尺寸 Dimensions of Packing Paper

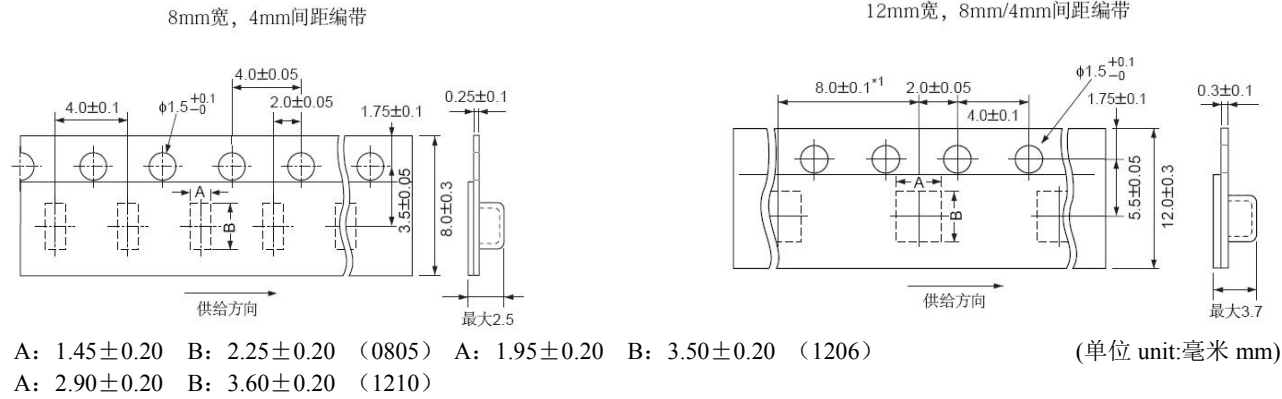


| Type | A               | B               | C              | D              | T       |
|------|-----------------|-----------------|----------------|----------------|---------|
| 0201 | $0.36 \pm 0.03$ | $0.67 \pm 0.03$ | $2.0 \pm 0.10$ | $2.0 \pm 0.05$ | 0.42max |
| 0402 | $0.65 \pm 0.10$ | $1.15 \pm 0.10$ | $2.0 \pm 0.05$ | $2.0 \pm 0.05$ | 0.8max  |
| 0603 | $1.05 \pm 0.10$ | $1.85 \pm 0.10$ | $4.0 \pm 0.10$ | $2.0 \pm 0.10$ | 1.1max  |
| 0805 | $1.55 \pm 0.15$ | $2.3 \pm 0.15$  | $4.0 \pm 0.10$ | $2.0 \pm 0.10$ | 1.1max  |
| 1206 | $1.95 \pm 0.15$ | $3.5 \pm 0.15$  | $4.0 \pm 0.10$ | $2.0 \pm 0.10$ | 1.1max  |

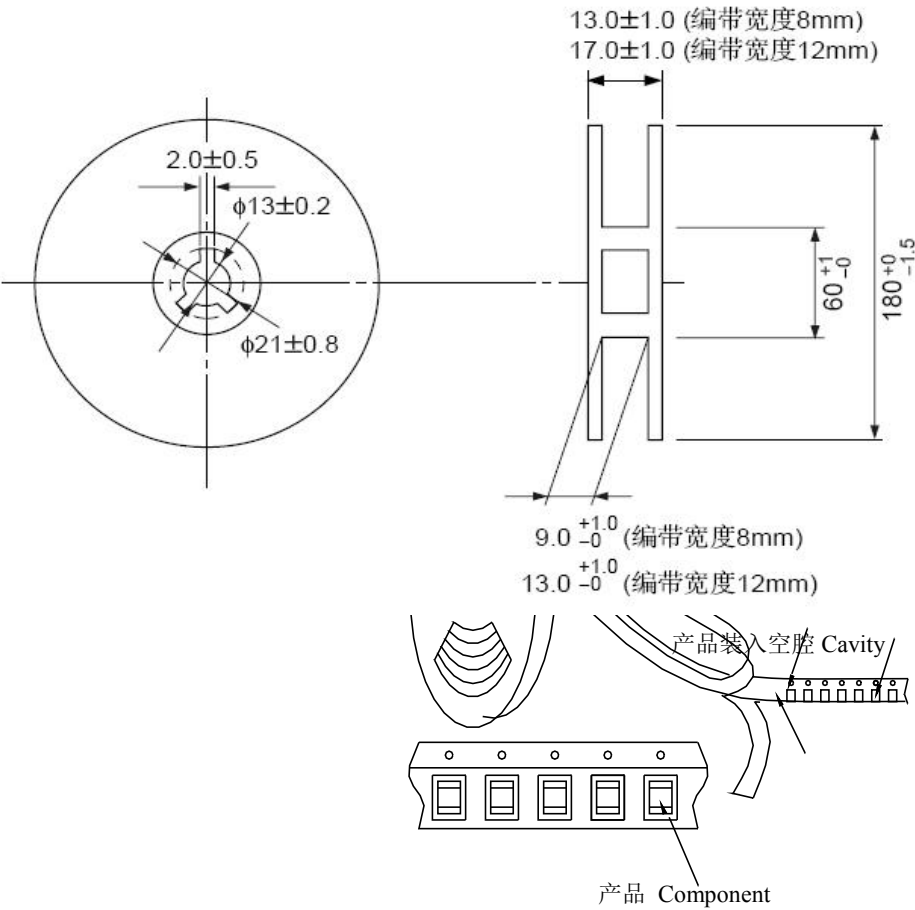
(单位 unit: 毫米 mm)

|                                                |                         |
|------------------------------------------------|-------------------------|
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|                                                | <p>DRAAW108J/1-2021</p> |

7.2.2 塑料带尺寸 Dimensions of Embossed Packing

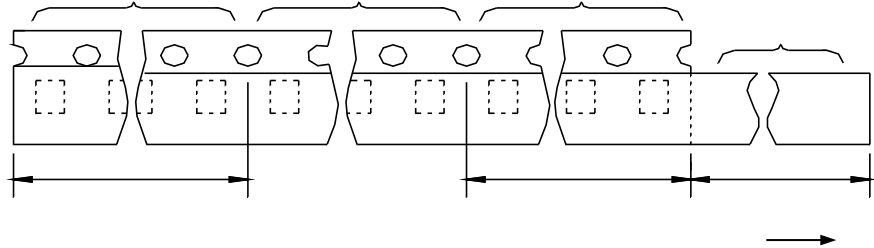


7.2.3 编带盘尺寸 Dimensions of Reel



|                                                    |                            |
|----------------------------------------------------|----------------------------|
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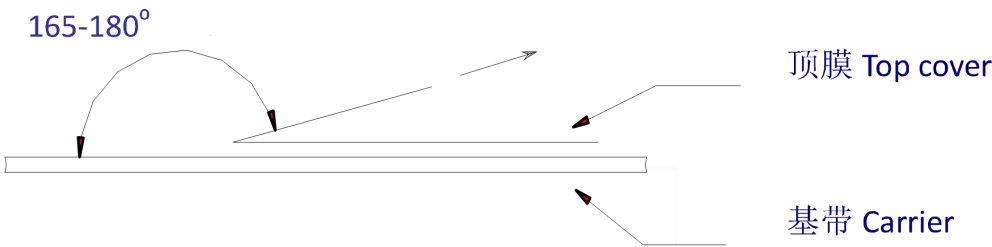
空白部分 Empty section    产品装入部分 Chip insertion section    空白部分 Empty section



### 7.2.5 编带方法 Taping Method

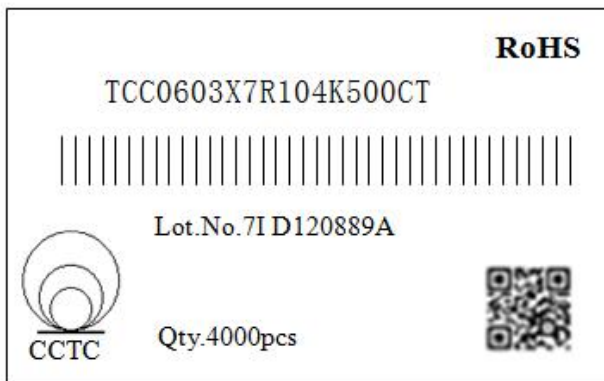
- ① 包装电容器的编带是顺时针卷绕的，由上往下的方向拉出编带时，传送孔处于编带的右侧。
- ② 在编带的前端，至少留出 5 个间距的引出带。
- ③ 在编带时，必须按下图留出引带部分或空白部分。
- ④ 在盘带的安装中的产品装错的数量每盘必须小于表示数量的 0.1%或 1 个为限，不连续发生错误。
- ⑤ 上胶带和下胶带不应超出编带的边缘，不能挡住传送孔。
- ⑥ 传送孔的累计误差为 10 个间距：±0.3 毫米以内。
- ⑦ 上胶带的剥离力矩应在 0.1 至 0.6 牛顿以内，其方向如下图所示。

- ①Tapes for capacitors are wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.
- ②The top tape and base tape are not attached at the end of the tape for a minimum of 5 pitches.
- ③Part of the leader and part of the empty tape shall be attached to the end of the tape as follows.
- ④Missing capacitors number within 0.1% of the number per reel or 1pc, whichever is greater, and are not continuous.
- ⑤The top tape and bottom tape shall not protrude beyond the edges of the tape and shall not cover sprocket holes.
- ⑥Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm.
- ⑦Peeling off force: 0.1 to 0.6N in the direction shown down.



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|                                         | DRAAW108J/1-2021 |

## 7.2.6 产品标签 Reel Label



标签内容 The Contents of Label

- (1) TCC   0603   X7R   104   K   500   C   T  
           ①        ②        ③        ④        ⑤        ⑥        ⑦        ⑧

①陶瓷电容器代号 Code of Ceramic Capacitor

②尺寸 chip size, ③温度特性 dielectrics, ④容量 capacitance, ⑤容量容差 tolerance,

⑥额定电压 rated voltage, ⑦厚度 thickness, ⑧包装 packing

(2) 产品批号 Lot. No.: 7ID120889A

(3) 数量 Qty: 4000pcs

(4) RoHS: GREEN PARTS 绿色物料

## 7.2.7.外包装 Package

### 7.2.7.1 包装箱 Carton

#### 7.2.7.1.1 包装箱尺寸 Carton Size

| L      | W      | H      |
|--------|--------|--------|
| 41.0cm | 38.5cm | 20.2cm |

7.2.7.1.2 数量: 240Kpcs /箱 The Quantity: 240Kpcs /one carton

1 内包装盒=40,000PCS      1 INNER BOX=40,000PCS

1 包装箱 =40,000PCS × 6 包装盒=240,000PCS    1 CARTON=40,000PCS × 6 INNER BOX =240,000PCS

RoHS 标识(根据客户要求张贴)    according to customer request

|                                        |                      |
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|                                        | DRAAW108J/1-2021     |

### 7.2.7.2 内包装盒 Inner Box

#### 7.2.7.2.1 包装盒尺寸 Size

|        |       |      |
|--------|-------|------|
| L      | W     | H    |
| 18.5cm | 6.5cm | 19cm |

#### 7.2.7.2.2 数量: 40Kpcs /盒

1 盘=4000PCS          1 REEL=4,000PCS

1 包装盒=4,000PCS × 10 盘 =40,000PCS      1 INNER BOX=4,000PCS × 10REEL =40,000PCS

|                                         |                  |
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|                                         | DRAAW108J/1-2021 |

## 8.MLCC 使用注意事项 Precautions on the use of MLCC

### 8.1 电路板设计 PCB Design

#### 8.1.1 电路板图案设计 Design of Land-patterns

下面图和表格给出了部分推荐的设计图案，可以防止安装时焊锡量过多。

同时也给出了不正确的图案。

The following diagrams and tables show some examples recommended patterns to prevent excessive solder amounts (larger fillets which above the component end terminations)

Examples of improper pattern designs are also shown.

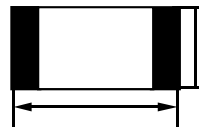
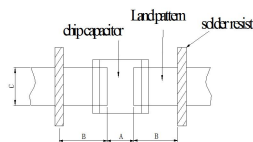
电路板设计推荐图案尺寸：

Recommended land dimensions for a typical chip capacitor land patterns for PCBs

波峰焊接时推荐设计的尺寸 (单位: mm):

Recommended land dimensions for wave-soldering (unit: mm)

| 规格 SIZE |   | 0603    | 0805    | 1206    |
|---------|---|---------|---------|---------|
| 尺寸      | L | 1.6     | 2.0     | 3.2     |
|         | W | 0.8     | 1.25    | 1.6     |
| A       |   | 0.8~1.0 | 1.0~1.4 | 1.8~2.5 |
| B       |   | 0.5~0.8 | 0.8~1.5 | 0.8~1.7 |
| C       |   | 0.6~0.8 | 0.9~1.2 | 1.2~1.6 |



再流焊接时推荐设计的尺寸 (单位: mm)

Recommended land dimensions for reflow-soldering (unit: mm)

| 规格 SIZE |   | 0201      | 0402      | 0603    | 0805    | 1206    | 1210    |
|---------|---|-----------|-----------|---------|---------|---------|---------|
| 尺寸      | L | 0.6       | 1.0       | 1.6     | 2.00    | 3.2     | 3.2     |
|         | W | 0.3       | 0.5       | 0.8     | 1.25    | 1.6     | 2.5     |
| A       |   | 0.20~0.25 | 0.35~0.45 | 0.6~0.8 | 0.8~1.2 | 1.8~2.5 | 1.8~2.5 |
| B       |   | 0.20~0.30 | 0.40~0.50 | 0.6~0.8 | 0.8~1.2 | 1.0~1.5 | 1.0~1.5 |
| C       |   | 0.25~0.35 | 0.45~0.55 | 0.6~0.8 | 0.9~1.6 | 1.2~2.0 | 1.6~3.2 |

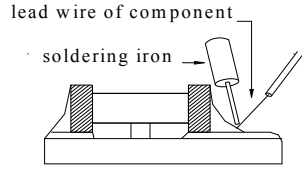
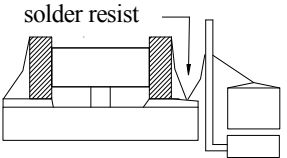
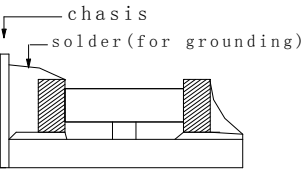
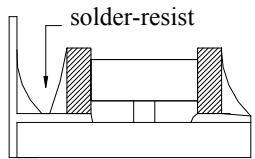
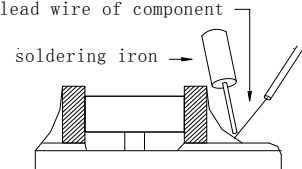
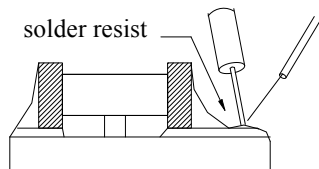
过量的焊锡会影响产品抵抗机械应力的能力，因此在设计图案时应引起注意。

Excess solder can affect the ability of chips to withstand mechanical stresses. Therefore, please take proper precautions when designing land-patterns.

在应用中一些焊接好与坏的情况：

Examples of good and bad solder application

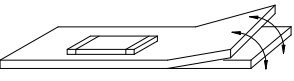
|                                                    |                            |
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| 项目 Item                                                                                   | 不推荐结构 Not recommended                                                              | 推荐结构 Recommended                                                                     |
|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <p>片状元件和带引线的元件的混合焊接</p> <p>Mixed mounting of SMD and leaded component</p>                 |   |   |
| <p>靠近底座的焊接</p> <p>Component placement close to the chassis</p>                            |   |   |
| <p>在片状元件附近带引线元件的焊接</p> <p>Hand-soldering of leaded components near mounted components</p> |  |  |

### 8.1.2 图案结构 Pattern configurations

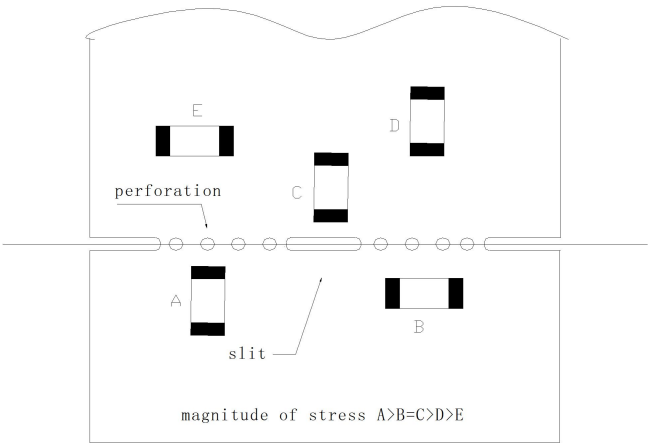
下面是电容器安装好与坏例子。选择贴装位置，应尽可能减小电路板在弯曲时受到的机械应力。

The following are examples of good and bad capacitor layout, SMD capacitors should be located to minimize any possible mechanical stresses from board warp or deflection.

|                                             | 不推荐结构 Not recommended                                                               | 推荐结构 Recommended                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <p>电路板弯曲</p> <p>Deflection of the board</p> |  |  |

对于电路板分拨的电容器，在分拨时受到的机械应力大小与电容器的安装有关。下面推荐了一些好的设计。To layout the capacitors for the breakaway PC board, it should be noted that the amount of mechanical stresses given depending on capacitor layout. The example below shows recommendations for better design.

|                                                |                         |
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在沿着分拨线分拨电路板时，对产品施加的机械应力与使用的方法关系很大。分折电路板时片状元件受到的疲劳按照如下顺序增大：分折、剪切、V 型槽、穿孔。因此，贴装时应该考虑电路板的分拨过程。

When breaking PC boards along their perforations, the amount If mechanical stress on the capacitors can vary according to the method used. The following methods are listed in order from least stressful to most stressful: push-back, silt, -grooving, and perforation. Thus, any ideal SMD capacitor layout must also consider the PCB splitting procedure.

## 8.2 自动贴装注意事项 Considerations for automatic placement

### 贴装机的调整 Adjustment of mounting machine

- ①. 产品在电路板贴装时，不应该受到过大的冲击。
- ②. 必须定期对吸头和定位爪进行检查、维修和更换
- ①. Excessive impact load should not be imposed on the capacitors when mounting the PC boards.
- ②. The maintenance and inspection of the mounters should be conducted periodically.

|                               | 不推荐结构 Not recommended | 推荐结构 Recommended |
|-------------------------------|-----------------------|------------------|
| 单面贴装<br>Single-sided mounting |                       |                  |
| 双面贴装<br>Double-sided mounting |                       |                  |

|                                         |                     |
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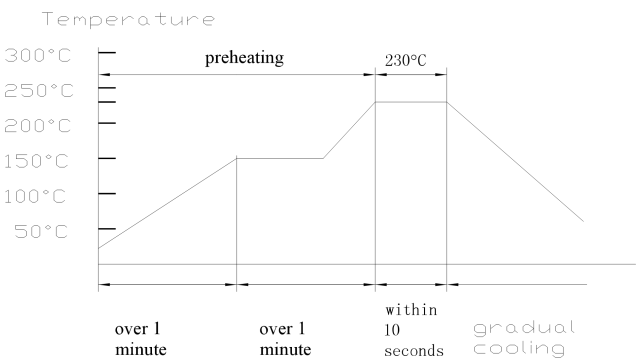
### 8.3 推荐焊接曲线 Recommended soldering profile

8.3.1 说明：① 产品推荐使用回流焊接工艺；② 大尺寸产品适用于回流焊接工艺

Re: ①flow Soldering is recommended; ②flow soldering is suitable for bigger size MLCCs

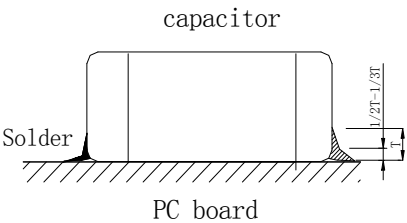
### 8.3.2 锡铅焊接曲线 Recommended Sn&Pb soldering profile

#### 回流焊 Reflow soldering



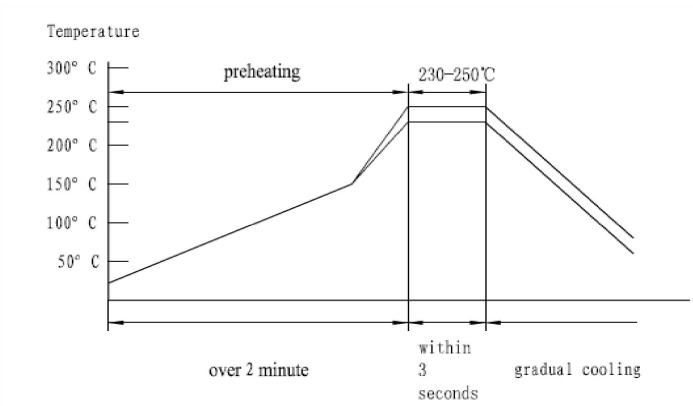
#### 注意 Caution

- ① . 理想状况的焊锡高度为电容器厚度的 1/3 ~1/2，如下图所示：
- ①.The ideal condition is to have solder mass (fillet) controlled to 1/2 to 1/3of the thickness of the capacitor, as shown below:



- ②. 过长的焊接时间会影响端头的可焊性，焊接时间尽可能保持与推荐时间一致。
- ②. Because excessive dwell times can detrimentally affect solderability, soldering duration should be kept as close to recommended times as possible.

#### 波峰焊 Wave solder profile



|                                         |                     |
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#### 注意 Caution

- ①.确保电容器充分预热。
- ②.产品预热和焊接温度差不超过 100~130℃。
- ③.焊接后尽可能慢速冷却。
- ①.Make sure the capacitors are preheated sufficiently.
- ②.The temperature difference between the capacitor and melted solder should not be greater than 100 to 130℃.
- ③. Cooling after soldering should be gradual as possible.

#### 手工焊接 Hand soldering

条件:

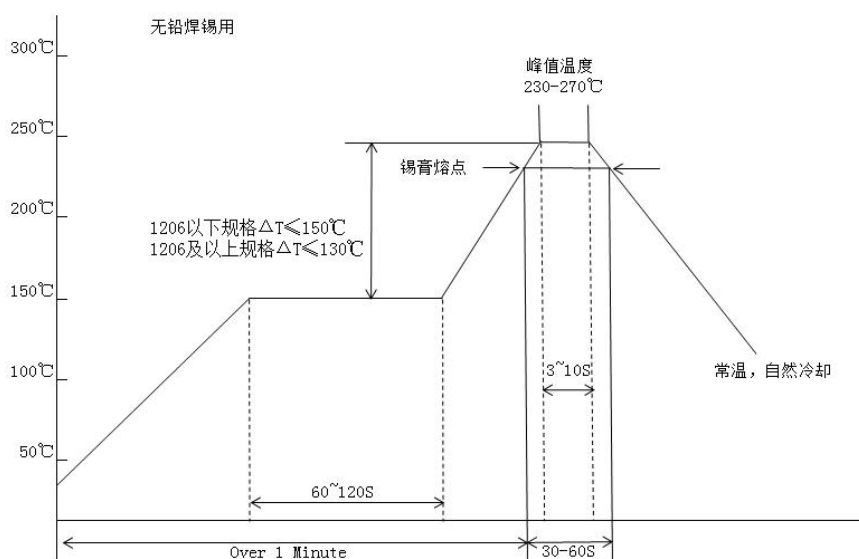
| 预热                                | 烙铁头温度  | 烙铁功率  | 烙铁头直径 | 焊接时间 | 锡膏量             | 限制条件            |
|-----------------------------------|--------|-------|-------|------|-----------------|-----------------|
| $\Delta \leq 130^{\circ}\text{C}$ | 最高350℃ | 最大20W | 建议1mm | 最长5s | $\leq 1/2$ 芯片厚度 | 请勿使用烙铁头直接接触陶瓷原件 |

#### 注意 Caution

- ①.用尖端最大直径 1.0mm 功率 20W 的焊接烙铁。
- ②.焊接烙铁不要直接接触产品。
- ①.Use a 20w soldering iron with a maximum tip diameter of 1.0mm.
- ②. The soldering iron should not directly touch the capacitor.

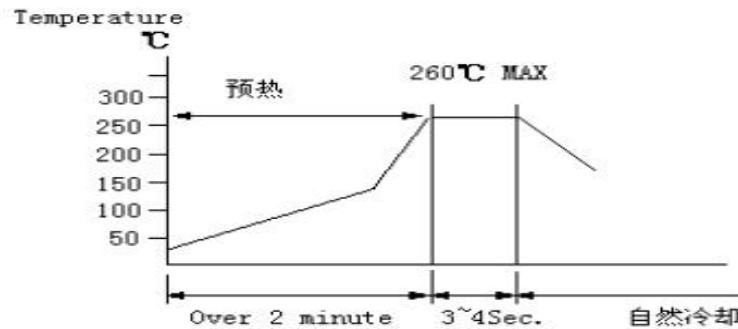
### 8.3.3 无铅焊接曲线 Recommended Pb-Free soldering profile

#### 回流焊接 Reflow solder



|                                         |                     |
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### 波峰焊接 Wave solder profile



## 8.4 分拨电路板 Handling

Breakaway PC boards (splitting along perforations)

(1).在电容器或其它贴装后，必须注意因电路板弯曲或变形带来的应力。

(2).分拨电路板时必须使用专用的夹具，不可以用手拨断。

(1).When splitting the PC board after mounting capacitors and other components, care is required so as not to give any stresses of deflection or twisting to the board.

(2).Board separation should not be done manually, but by using the appropriate devices.

## 8.5 保存 Storage

(1).在下列环境中保存产品：温度 5~40℃；湿度 ≤70% RH

(2).产品自生产之日保存期为一年，产品使用之前请勿拆开编带。

(3).编带拆开后，产品应在三个月内使用。

(4).高介电常数电容器 (X7R,X5R,Y5V、X7T、X6S) 的容值随时间会逐渐减小，所以在电路设计时应充分考虑这一现象。容值减小的电容器在 150℃热处理 1 小时后容值会恢复到初始值。

(1). Keep the storage environment conditions as following: Temperature: 5~40℃； Humidity: ≤70% RH

(2). Don't open the tape until the parts are to be used, and store them within one year since the date printed on the reel.

(3). Use the chips within 3 months after the tape is opened.

(4). The capacitance value of high dielectric constant capacitors (X7R,X5R,Y5V、X7T、X6S) will gradually decrease with the passage of time, so this should be taken into consideration in the circuit design. If such a capacitance reduction occurs, a heat treatment of 150℃ for 1 hour will return the capacitance to its initial level.