



多层陶瓷电容 MLCC

产品手册



南京匯聚新材料科技有限公司

南京汇聚新材料科技有限公司

南京汇聚新材料科技有限公司成立于2016年，是一家专业从事电子陶瓷材料及片式电子元件研发、生产和销售的高新技术企业。专业专注于多层陶瓷电容、芯片电容、穿心电容、射频组件等，产品广泛应用于工业电子、汽车电子、信息和通信技术等领域。

公司科研技术力量雄厚，具有MLCC产业最高设计及产品规格广度、定制化能力、工艺技术及采用的陶瓷粉配方技术达到国际领先水平。同时，公司始终专注于快速发展的前沿技术市场的要求，设置有新材料研发实验室。

公司愿景：成为中国工业、军用电子陶瓷领军品牌

1. MLCC HV MLCC(X7R, NPO) ———— **Industrial Application** *中国领先*
2. MLCC High Cap(X7R) ———— **Industrial Application** *中国领先*
3. MLCC Low Profile & Pulse ———— **Medical & Military Application** *中国领先*
4. MLCC Automotive ———— **Car Application** *中国领先*
5. Hi-Q & RF MLCC ———— **HF Application** *国际领先*
6. Ultra High Frequency LTCC Material ———— **Microwave Application** *国际领先*



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| NL | 4 |
| 一般品 - 低压 $\leq 50V$ | |
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| 一般品 - 中压 100V ~ 630V | |
| NV | 12 |
| 一般品 - 高压 1KV ~ 3KV | |
| NH | 17 |
| 一般品 - 高压 $> 3KV \sim 6KV$ | |
| NC | 19 |
| 一般品 - 高电容系列 | |
| ND | 21 |
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| IR | 36 |
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| AN | 45 |
| 车载应用 - AEC-Q200 认证外系列 | |
| SX & SY | 50 |
| 安规 - X2 & X1/Y2 系列 | |

| NM | 1206 | B | 104 | K | 251 | C | E | G | N |
|-----|------|-----|-----|-----|------|-----|-----|-----|------|
| 系列 | 尺寸 | 介电质 | 容值 | 容差 | 额定电压 | 端电极 | 包装 | 厚度 | 管理码 |
| 表 1 | 表 2 | 表 3 | 表 4 | 表 5 | 表 6 | 表 7 | 表 8 | 表 9 | 表 10 |

| 表 1 | 系列 |
|-----|-----------------------|
| 代码 | 说明 |
| NL | 一般品 - 低压 $\leq 50V$ |
| NM | 一般品 - 中压 100V ~ 630V |
| NV | 一般品 - 高压 1KV ~ 3KV |
| NH | 一般品 - 高压 > 3KV ~ 6KV |
| NC | 一般品 - 高电容系列 |
| ND | 一般品 - 低损耗系列 |
| OP | 一般品 - 开路模式系列 |
| AB | 软端电极 - 抗弯曲裂纹系列 |
| IR | 工业应用 - 高可靠度系列 |
| AN | 车载应用 - AEC-Q200 认证外系列 |
| SX | 安规 - X2 系列 |
| SY | 安规 - X1/Y2 系列 |

| 表 2 | 尺寸 | | |
|------|----------------|------|----------------|
| 代码 | 说明: L x W (mm) | 代码 | 说明: L x W (mm) |
| 0603 | 1.60 x 0.80 | 1210 | 3.20 x 2.50 |
| 0805 | 2.00 x 1.25 | 1812 | 4.50 x 3.20 |
| 1206 | 3.20 x 1.60 | 2220 | 5.70 x 5.00 |

| 表 3 | 介电质 | | |
|-----|-----|----|-----|
| 代码 | 说明 | 代码 | 说明 |
| N | C0G | H | C0H |
| B | X7R | X | X5R |
| D | X7E | S | X7S |

| 表 4 | 容值 | | |
|-----|--------|-----|--------------------------|
| 代码 | 说明 | 代码 | 说明 |
| R47 | 0.47pF | 100 | $10 \times 10^0 = 10pF$ |
| 0R5 | 0.5pF | 104 | $10 \times 10^4 = 100nF$ |

| 表 5 | 容差 | | |
|-----|---------------|----|-------------|
| 代码 | 说明 | 代码 | 说明 |
| A | $\pm 0.05 pF$ | G | $\pm 2 \%$ |
| B | $\pm 0.10 pF$ | J | $\pm 5 \%$ |
| C | $\pm 0.25 pF$ | K | $\pm 10 \%$ |
| D | $\pm 0.50 pF$ | M | $\pm 20 \%$ |
| F | $\pm 1 \%$ | Z | -20% ~ +80% |

| 表 6 | 额定电压 | | |
|-----|--------------------------|-----|----------------------------|
| 代码 | 说明 | 代码 | 说明 |
| 6R3 | 6.3V | 101 | $(10) \times 10^1 = 100V$ |
| 100 | $(10) \times 10^0 = 10V$ | 102 | $(10) \times 10^2 = 1000V$ |

| 表 7 | 端电极 | | |
|-----|-----------------|----|-----------------|
| 代码 | 说明 | 代码 | 说明 |
| L | Ag+Ni+Sn | C | Cu+Ni+Sn |
| B | Ag+Soft E+Ni+Sn | E | Cu+Soft E+Ni+Sn |

| 表 8 | 包装 | | |
|-----|----------------|----|----------------|
| 代码 | 说明 | 代码 | 说明 |
| P | 7" Reel 卷装-纸带 | E | 7" Reel 卷装-塑料带 |
| R | 13" Reel 卷装-纸带 | L | 13" Reel 卷装-纸带 |
| B | 成品散料包装 | | |

| 表 9 | 厚度 | | |
|-----|--------------------|----|-------------------------|
| 代码 | 说明 | 代码 | 说明 |
| A | $0.60 \pm 0.10 mm$ | M | $2.50 \pm 0.30 mm$ |
| B | $0.8 \pm 0.10 mm$ | O | $3.50 \pm 0.20 mm$ |
| C | $0.95 \pm 0.10 mm$ | P | $1.60 + 0.30 / -0.10mm$ |
| D | $1.25 \pm 0.10 mm$ | R | $3.10 \pm 0.20 mm$ |
| G | $1.60 \pm 0.20 mm$ | S | $0.80 \pm 0.07 mm$ |
| J | $1.15 \pm 0.15 mm$ | U | $2.80 \pm 0.30 mm$ |
| K | $2.00 \pm 0.20 mm$ | X | $0.80 + 0.50 / -0.10mm$ |

| 表 10 | 管理码 | | |
|------|-------|----|----|
| 代码 | 说明 | 代码 | 说明 |
| N | 无特殊需求 | | |

Multilayer Ceramic Chip Capacitors





| 结构类别 | 英制尺寸 | 长度 (L) (mm) | 宽度 (W) (mm) | 厚度 (T) (mm) | 端电极宽 (E) (mm) |
|-------|------|----------------|----------------|-----------------|------------------|
| 非软端电极 | 0603 | 1.60±0.15 | 0.80±0.15 | 参阅 产品订货信息表 9 | 0.40±0.15 |
| | 0805 | 2.00±0.20 | 1.25±0.20 | | 0.50±0.20 |
| | 1206 | 3.20±0.20 | 1.60±0.20 | | 0.60±0.20 |
| | 1210 | 3.30±0.30 | 2.50±0.30 | | 0.75±0.35 |
| | 1808 | 4.50±0.40 | 2.00±0.25 | | 0.75±0.35 |
| | 1812 | 4.50±0.40 | 3.20±0.30 | | 0.75±0.35 |
| | 1825 | 4.50±0.40 | 6.30±0.40 | | 0.75±0.35 |
| | 2220 | 5.70±0.40 | 5.00±0.40 | | 0.85±0.35 |
| | 2225 | 5.70±0.40 | 6.30±0.40 | | 0.85±0.35 |

| 结构类别 | 英制尺寸 | 长度 (L) (mm) | 宽度 (W) (mm) | 厚度 (T) (mm) | 端电极宽 (E) (mm) |
|------|------|----------------|----------------|-----------------|------------------|
| 软端电极 | 0603 | 1.60±0.20 | 0.80±0.15 | 参阅 产品订货信息表 9 | 0.40±0.15 |
| | 0805 | 2.10±0.20 | 1.25±0.20 | | 0.50±0.20 |
| | 1206 | 3.30±0.30 | 1.60±0.20 | | 0.60±0.20 |
| | 1210 | 3.30±0.40 | 2.50±0.30 | | 0.75±0.35 |
| | 1808 | 4.60±0.50 | 2.00±0.25 | | 0.75±0.35 |
| | 1812 | 4.60±0.50 | 3.20±0.30 | | 0.75±0.35 |
| | 1825 | 4.60±0.50 | 6.30±0.40 | | 0.75±0.35 |
| | 2220 | 5.70±0.50 | 5.00±0.40 | | 0.85±0.35 |
| | 2225 | 5.70±0.50 | 6.30±0.40 | | 0.85±0.35 |

| 尺寸 | 产品厚度 (mm) | 纸带包装 | | 塑带包装 | |
|------|-----------------|-------|----------|-------|--------|
| | | 7" 卷轮 | 13" r 卷轮 | 7" 卷轮 | 13" 卷轮 |
| 0603 | 0.80±0.07 | 4 | 15 | - | - |
| | 0.80+0.15/-0.10 | 4 | 15 | | |
| 0805 | 0.60±0.10 | 4 | 15 | - | - |
| | 0.80±0.10 | 4 | 15 | - | - |
| | 1.25±0.10 | - | - | 3 | 10 |
| | 1.25±0.20 | - | - | 3 | - |
| 1206 | 0.80±0.10 | 4 | 15 | - | - |
| | 0.95±0.10 | - | - | 3 | 10 |
| | 1.25±0.10 | - | - | 3 | 10 |
| | 1.60±0.20 | - | - | 2 | - |
| 1210 | 0.95±0.10 | - | - | 3 | 10 |
| | 1.25±0.10 | - | - | 3 | 10 |
| | 1.60±0.20 | - | - | 2 | - |
| | 2.50±0.30 | - | - | 1 | - |
| 1808 | 1.25±0.10 | - | - | 2 | - |
| | 1.60±0.20 | - | - | 2 | - |
| | 2.00±0.20 | - | - | 1 | - |
| 1812 | 1.25±0.10 | - | - | 1 | - |
| | 1.60±0.20 | - | - | 1 | - |
| | 2.00±0.20 | - | - | 1 | - |
| | 2.50±0.30 | - | - | 0.5 | - |
| 1825 | 2.00±0.20 | - | - | 1 | - |
| | 2.50±0.30 | - | - | 0.5 | - |
| 2220 | 2.00±0.20 | - | - | 1 | - |
| | 2.50±0.30 | - | - | 0.5 | - |
| 2225 | 2.00±0.20 | - | - | 1 | - |
| | 2.50±0.30 | - | - | 0.5 | - |
| | | | | | |

单位:KPCS

■ 产品简介

汇聚低压系列产品使用无铅/镉元素材料制作，其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 高电容量
- ◆ EIA 0603-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 一般电子设备
- ◆ 电源输入/输出滤波
- ◆ 电源缓冲电路
- ◆ 电功率因素改善
- ◆ 噪音旁路

■ 一般电气规格

| 介电材料 | C0G | | X7R | |
|----------------------------------|--|------------------------------------|---|---------------------|
| EIA 尺寸 | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | |
| 额定电压 | 25V, 50V | | 25V, 50V | |
| 电容范围 | 0.5pF ~ 470nF | | 100pF ~ 10 μ F | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 电容量范围 | Q | 额定电压 | Tan δ (D.F.) |
| | Cap < 30pF | Q \geq 400+20C | 25V | \leq 3.5% |
| | Cap \geq 30pF | Q \geq 1000 | \geq 50V | \leq 2.5% |
| 检测条件 | 常温 25 $^{\circ}$ C 环境温度 | | 预处理 (2 类产品) 150 \pm 10 $^{\circ}$ C /1 小时热处理后静置于常温环境 24 \pm 2 小时再进行测量作业 | |
| | 电容量范围 | 检测条件 | 适用检测: 1.0 \pm 0.2Vrms 1.0kHz \pm 10% 25 $^{\circ}$ C 常温环境 | |
| | Cap \leq 1000pF | 1.0 \pm 0.2Vrms 1.0MHz \pm 10% | | |
| Cap > 1000pF | 1.0 \pm 0.2Vrms 1.0kHz \pm 10% | | | |
| 绝缘电阻 (IR) | \geq 100G Ω 或 R \cdot C \geq 500 Ω -F 任一较小值以上 | | \geq 10G Ω 或 R \cdot C \geq 100 Ω -F 任一较小值以上 | |
| 工作温度 | - 55 $^{\circ}$ C to + 125 $^{\circ}$ C | | | |
| 温度系数 | \pm 30ppm / $^{\circ}$ C | | \pm 15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

COG 容值表

| 尺寸 | | 0603 | | 0805 | | 1206 | | 1210 | | 1808 | | 1812 | | 1825 | | 2220 | | 2225 | |
|----------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V |
| 0.5 | 0R5 | S | S | A | A | | | | | | | | | | | | | | |
| 1 | 1R0 | S | S | A | A | | | | | | | | | | | | | | |
| 1.2 | 1R2 | S | S | A | A | B | B | | | | | | | | | | | | |
| 1.5 | 1R5 | S | S | A | A | B | B | | | | | | | | | | | | |
| 1.8 | 1R8 | S | S | A | A | B | B | | | | | | | | | | | | |
| 2.2 | 2R2 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 2.7 | 2R7 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 3.3 | 3R3 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 3.9 | 3R9 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 4.7 | 4R7 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 5.6 | 5R6 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 6.8 | 6R8 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 8.2 | 8R2 | S | S | A | A | B | B | | | D | D | | | | | | | | |
| 10 | 100 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 12 | 120 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 15 | 150 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 18 | 180 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 22 | 220 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 27 | 270 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 33 | 330 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 39 | 390 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 47 | 470 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 56 | 560 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 68 | 680 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 82 | 820 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 100 | 101 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 120 | 121 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 150 | 151 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 180 | 181 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 220 | 221 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 270 | 271 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 330 | 331 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 390 | 391 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 470 | 471 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 560 | 561 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 680 | 681 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 820 | 821 | S | S | A | A | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 1000 | 102 | S | S | B | B | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 1200 | 122 | S | S | B | B | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 1500 | 152 | | | B | B | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 1800 | 182 | | | C | C | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 2200 | 222 | | | C | C | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 2700 | 272 | | | D | D | B | B | C | C | D | D | D | D | G | G | G | G | G | G |
| 3300 | 332 | | | D | D | C | C | C | C | D | D | D | D | G | G | G | G | G | G |
| 3900 | 392 | | | D | D | C | C | C | C | D | D | D | D | G | G | G | G | G | G |
| 4700 | 472 | | | D | D | D | D | C | C | D | D | D | D | G | G | G | G | G | G |
| 5600 | 562 | | | D | D | D | D | C | C | D | D | D | D | G | G | G | G | G | G |
| 6800 | 682 | | | D | D | D | D | D | D | D | D | D | D | G | G | G | G | G | G |
| 8200 | 822 | | | D | D | G | G | D | D | D | D | D | D | G | G | G | G | G | G |
| 10000 | 103 | | | D | D | G | G | D | D | D | D | D | D | G | G | G | G | G | G |
| 12000 | 123 | | | D | D | G | G | G | G | G | G | D | D | G | G | G | G | G | G |
| 15000 | 153 | | | | | G | G | G | G | G | G | D | D | G | G | G | G | G | G |
| 18000 | 183 | | | | | G | G | K | K | K | K | D | D | G | G | G | G | G | G |
| 22000 | 223 | | | | | G | G | K | K | K | K | D | D | G | G | G | G | G | G |
| 27000 | 273 | | | | | G | G | M | M | K | K | G | G | G | G | G | G | G | G |
| 33000 | 333 | | | | | G | G | M | M | K | K | G | G | G | G | G | G | G | G |
| 39000 | 393 | | | | | | | M | M | K | K | K | K | G | G | G | G | G | G |
| 47000 | 473 | | | | | | | M | M | K | K | K | K | G | G | G | G | G | G |
| 56000 | 563 | | | | | | | M | M | K | K | M | M | G | G | G | G | G | G |
| 68000 | 683 | | | | | | | M | M | | | M | M | G | G | G | G | G | G |
| 82000 | 823 | | | | | | | M | M | | | M | M | K | K | K | K | K | K |
| 100000 | 104 | | | | | | | M | M | | | M | M | M | M | M | M | K | K |
| 120000 | 124 | | | | | | | | | | | M | M | M | M | M | M | M | M |
| 150000 | 154 | | | | | | | | | | | M | M | M | M | M | M | M | M |
| 180000 | 184 | | | | | | | | | | | M | M | M | M | M | M | M | M |
| 220000 | 224 | | | | | | | | | | | | | M | M | M | M | M | M |
| 270000 | 274 | | | | | | | | | | | | | M | M | M | M | M | M |
| 330000 | 334 | | | | | | | | | | | | | M | M | M | M | M | M |
| 390000 | 394 | | | | | | | | | | | | | M | M | | | M | M |
| 470000 | 474 | | | | | | | | | | | | | | | | | M | M |

■ X7R 容值表

| 尺寸 | | 0603 | | 0805 | | 1206 | | 1210 | | 1808 | | 1812 | | 1825 | | 2225 | |
|----------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V | 25V | 50V |
| 100 | 101 | S | S | B | B | B | B | | | | | | | | | | |
| 120 | 121 | S | S | B | B | B | B | | | | | | | | | | |
| 150 | 151 | S | S | B | B | B | B | | | D | D | | | | | | |
| 180 | 181 | S | S | B | B | B | B | | | D | D | | | | | | |
| 220 | 221 | S | S | B | B | B | B | C | C | D | D | | | | | | |
| 270 | 271 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 330 | 331 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 390 | 391 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 470 | 471 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 560 | 561 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 680 | 681 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 820 | 821 | S | S | B | B | B | B | C | C | D | D | D | D | | | | |
| 1000 | 102 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 1200 | 122 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 1500 | 152 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 1800 | 182 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 2200 | 222 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 2700 | 272 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 3300 | 332 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 3900 | 392 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 4700 | 472 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 5600 | 562 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 6800 | 682 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 8200 | 822 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 10000 | 103 | S | S | B | B | B | B | C | C | D | D | D | D | K | K | K | K |
| 12000 | 123 | S | S | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 15000 | 153 | S | S | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 18000 | 183 | S | S | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 22000 | 223 | S | S | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 27000 | 273 | S | S | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 33000 | 333 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 39000 | 393 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 47000 | 473 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 56000 | 563 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 68000 | 683 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 82000 | 823 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 100000 | 104 | X | X | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 120000 | 124 | | | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 150000 | 154 | | | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 180000 | 184 | | | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 220000 | 224 | | | B | B | B | B | C | C | G | G | D | D | K | K | K | K |
| 270000 | 274 | | | D | D | B | B | C | C | K | K | D | D | K | K | K | K |
| 330000 | 334 | | | D | D | B | B | C | C | K | K | D | D | K | K | K | K |
| 390000 | 394 | | | | | | | D | D | C | C | | | D | D | K | K |
| 470000 | 474 | | | | | | | D | D | C | C | | | D | D | K | K |
| 560000 | 564 | | | | | | | D | D | C | C | | | D | D | K | K |
| 680000 | 684 | | | | | | | D | D | C | C | | | D | D | K | K |
| 820000 | 824 | | | | | | | G | G | D | D | | | D | D | K | K |
| 1000000 | 105 | | | | | | | P | P | D | D | | | D | D | K | K |
| 1200000 | 125 | | | | | | | | | P | P | | | D | D | K | K |
| 1500000 | 155 | | | | | | | | | K | K | | | D | D | K | K |
| 1800000 | 185 | | | | | | | | | M | M | | | G | G | K | K |
| 2200000 | 225 | | | | | | | | | M | M | | | G | G | K | K |
| 2700000 | 275 | | | | | | | | | M | M | | | K | K | K | K |
| 3300000 | 335 | | | | | | | | | | | | | K | K | K | K |
| 3900000 | 395 | | | | | | | | | | | | | | | K | K |
| 4700000 | 475 | | | | | | | | | | | | | | | K | K |
| 5600000 | 565 | | | | | | | | | | | | | | | K | K |
| 6800000 | 685 | | | | | | | | | | | | | | | K | K |
| 8200000 | 825 | | | | | | | | | | | | | | | M | M |
| 10000000 | 106 | | | | | | | | | | | | | | | M | M |

■ 产品简介

汇聚中压系列产品使用无铅/镉元素材料制作，其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 电压使用选择范围广
- ◆ EIA 0603-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 一般电子设备
- ◆ 电源输入/输出滤波
- ◆ 电源缓冲电路
- ◆ 功率因素改善
- ◆ 噪音旁路

■ 一般电气规格

| 介电材料 | COG | | X7R | |
|--------------------------|--|------------------------|---|--------------|
| EIA 尺寸 | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | |
| 额定电压 | 100V~630V | | 100V~630V | |
| 电容范围 | 0.5pF ~ 270nF | | 100pF ~ 10μF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 电容量范围 | Q | 额定电压 | Tan δ (D.F.) |
| | Cap<30pF | Q≥400+20C | 100V~630V | ≤ 2.5% |
| | Cap≥30pF | Q≥1000 | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C /1 小时热处理后静置于常温环境 24±2 小时,再进行测量作业 | |
| | 电容量范围 | 检测条件 | 适用检测: 1.0±0.2Vrms 1.0kHz±10% 25°C 常温环境 | |
| | Cap≤1000pF | 1.0±0.2Vrms 1.0MHz±10% | | |
| Cap>1000pF | 1.0±0.2Vrms 1.0kHz±10% | | | |
| 绝缘电阻 (IR) | ≥100GΩ 或 R•C≥ 500Ω-F 任一较小值以上 | | ≥10GΩ或 R•C≥100Ω-F 任一较小值以上 | |
| 工作温度 | - 55°C to + 125 °C | | | |
| 温度系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

NM: 一般品 - 中压 100V ~ 630V



COG 容值表 (2)

| 尺寸 | | 1812 | | | | | 1825 | | | | | 2220 | | | | | 2225 | | | | |
|----------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V |
| 0.5 | 0R5 | | | | | | | | | | | | | | | | | | | | |
| 1 | 1R0 | | | | | | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | | | | | | | | | | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | | | | | | | | | | | | | | | | | | | | |
| 2.7 | 2R7 | | | | | | | | | | | | | | | | | | | | |
| 3.3 | 3R3 | | | | | | | | | | | | | | | | | | | | |
| 3.9 | 3R9 | | | | | | | | | | | | | | | | | | | | |
| 4.7 | 4R7 | | | | | | | | | | | | | | | | | | | | |
| 5.6 | 5R6 | | | | | | | | | | | | | | | | | | | | |
| 6.8 | 6R8 | | | | | | | | | | | | | | | | | | | | |
| 8.2 | 8R2 | | | | | | | | | | | | | | | | | | | | |
| 10 | 100 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 12 | 120 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 15 | 150 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 18 | 180 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 22 | 220 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 27 | 270 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 33 | 330 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 39 | 390 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 47 | 470 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 56 | 560 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 68 | 680 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 82 | 820 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 100 | 101 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 120 | 121 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 150 | 151 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 180 | 181 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 220 | 221 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 270 | 271 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 330 | 331 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 390 | 391 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 470 | 471 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 560 | 561 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 680 | 681 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 820 | 821 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 1000 | 102 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 1200 | 122 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 1500 | 152 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 1800 | 182 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 2200 | 222 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 2700 | 272 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 3300 | 332 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 3900 | 392 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 4700 | 472 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 5600 | 562 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 6800 | 682 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 8200 | 822 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 10000 | 103 | D | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 12000 | 123 | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 15000 | 153 | D | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 18000 | 183 | G | K | K | K | K | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 22000 | 223 | G | K | K | K | K | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 27000 | 273 | K | M | M | M | M | G | G | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 33000 | 333 | K | M | M | M | M | G | G | G | G | G | K | K | K | K | G | G | G | G | G | G |
| 39000 | 393 | M | M | M | | | G | K | K | K | K | G | K | K | K | K | G | K | K | K | K |
| 47000 | 473 | M | M | M | | | G | K | K | K | K | G | M | M | M | M | G | K | K | K | K |
| 56000 | 563 | M | | | | | K | M | M | M | M | K | M | M | M | M | G | M | M | M | M |
| 68000 | 683 | M | | | | | K | M | M | | | K | M | M | | | K | M | M | M | M |
| 82000 | 823 | M | | | | | M | M | M | | | M | M | M | | | K | M | M | M | M |
| 100000 | 104 | M | | | | | M | | | | | M | | | | | M | M | M | | |
| 120000 | 124 | M | | | | | M | | | | | M | | | | | M | M | M | | |
| 150000 | 154 | | | | | | M | | | | | M | | | | | M | | | | |
| 180000 | 184 | | | | | | M | | | | | M | | | | | M | | | | |
| 220000 | 224 | | | | | | M | | | | | | | | | | M | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | M | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | | | | | | |

NM: 一般品 - 中压 100V ~ 630V



■ X7R 容值表 (1)

| 尺寸 | | 0603 | | | 0805 | | | | | 1206 | | | | | 1210 | | | | | 1808 | | | | |
|----------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 100V | 200V | 250V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V |
| 100 | 101 | S | X | X | B | B | B | B | B | B | B | B | B | B | | | | | | | | | | |
| 120 | 121 | S | X | X | B | B | B | B | B | B | B | B | B | B | | | | | | | | | | |
| 150 | 151 | S | X | X | B | B | B | B | B | B | B | B | B | B | | | | | | D | D | D | D | D |
| 180 | 181 | S | X | X | B | B | B | B | B | B | B | B | B | B | | | | | | D | D | D | D | D |
| 220 | 221 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 270 | 271 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 330 | 331 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 390 | 391 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 470 | 471 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 560 | 561 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 680 | 681 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 820 | 821 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 1000 | 102 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 1200 | 122 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 1500 | 152 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 1800 | 182 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 2200 | 222 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 2700 | 272 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 3300 | 332 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 3900 | 392 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 4700 | 472 | S | X | X | B | B | B | B | B | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 5600 | 562 | S | X | X | B | B | B | C | C | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 6800 | 682 | S | X | X | B | B | B | D | D | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 8200 | 822 | S | X | X | B | B | B | D | D | B | B | B | B | B | C | C | C | C | C | D | D | D | D | D |
| 10000 | 103 | S | X | X | B | B | B | D | D | B | B | B | C | C | C | C | C | C | C | D | D | D | D | D |
| 12000 | 123 | X | X | X | B | B | B | D | D | B | B | B | D | D | C | C | C | C | C | G | G | G | G | G |
| 15000 | 153 | X | X | X | B | B | B | D | D | B | B | B | D | D | C | C | C | C | C | G | G | G | G | G |
| 18000 | 183 | X | | | B | B | B | D | D | B | B | B | D | D | C | C | C | D | D | G | G | G | K | K |
| 22000 | 223 | X | | | B | B | B | D | D | B | B | B | G | G | C | C | C | D | D | G | G | G | K | K |
| 27000 | 273 | X | | | C | C | C | | | B | B | B | G | G | C | C | C | D | D | G | G | G | K | K |
| 33000 | 333 | X | | | C | D | D | | | B | B | B | G | G | C | C | C | G | G | G | G | G | K | K |
| 39000 | 393 | X | | | C | D | | | | B | B | B | G | G | C | C | C | G | G | G | G | G | K | K |
| 47000 | 473 | X | | | C | D | | | | B | B | B | G | G | C | C | C | G | G | G | G | G | K | K |
| 56000 | 563 | | | | C | D | | | | B | C | C | | | C | C | C | G | G | G | G | G | K | K |
| 68000 | 683 | | | | C | D | | | | B | D | D | | | C | C | C | K | K | G | G | G | K | K |
| 82000 | 823 | | | | C | | | | | B | D | D | | | C | C | C | M | M | G | G | G | K | K |
| 100000 | 104 | | | | D | | | | | B | G | G | | | C | C | C | M | M | G | G | G | | |
| 120000 | 124 | | | | D | | | | | B | | | | | C | G | G | M | M | G | G | G | | |
| 150000 | 154 | | | | D | | | | | B | | | | | C | G | G | M | M | G | G | G | | |
| 180000 | 184 | | | | D | | | | | C | | | | | C | G | G | | | G | K | K | | |
| 220000 | 224 | | | | D | | | | | C | | | | | C | G | G | | | G | | | | |
| 270000 | 274 | | | | | | | | | D | | | | | C | K | K | | | K | | | | |
| 330000 | 334 | | | | | | | | | G | | | | | C | K | K | | | | | | | |
| 390000 | 394 | | | | | | | | | G | | | | | D | M | M | | | | | | | |
| 470000 | 474 | | | | | | | | | G | | | | | D | M | M | | | | | | | |
| 560000 | 564 | | | | | | | | | P | | | | | G | M | M | | | | | | | |
| 680000 | 684 | | | | | | | | | P | | | | | G | M | M | | | | | | | |
| 820000 | 824 | | | | | | | | | P | | | | | P | | | | | | | | | |
| 1000000 | 105 | | | | | | | | | P | | | | | P | | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | K | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | K | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | M | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | M | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | | | | | | | | |

■ X7R 容值表 (2)

| 尺寸 | | 1812 | | | | | 1825 | | | | | 2220 | | | | | 2225 | | | | |
|----------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V | 100V | 200V | 250V | 500V | 630V |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | | | | | | |
| 270 | 271 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 330 | 331 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 390 | 391 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 470 | 471 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 560 | 561 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 680 | 681 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 820 | 821 | D | D | D | D | D | | | | | | | | | | | | | | | |
| 1000 | 102 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1200 | 122 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1500 | 152 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1800 | 182 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 2200 | 222 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 2700 | 272 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 3300 | 332 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 3900 | 392 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 4700 | 472 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 5600 | 562 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 6800 | 682 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 8200 | 822 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 10000 | 103 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 12000 | 123 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 15000 | 153 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 18000 | 183 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 22000 | 223 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 27000 | 273 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 33000 | 333 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 39000 | 393 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 47000 | 473 | D | D | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 56000 | 563 | D | D | D | G | G | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 68000 | 683 | D | D | D | G | G | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 82000 | 823 | D | D | D | G | G | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 100000 | 104 | D | D | D | G | G | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 120000 | 124 | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 150000 | 154 | D | D | D | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 180000 | 184 | D | D | D | M | M | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 220000 | 224 | D | D | D | M | M | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 270000 | 274 | D | G | G | M | | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 330000 | 334 | D | G | G | M | | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 390000 | 394 | D | K | K | M | | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 470000 | 474 | D | K | K | M | | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 560000 | 564 | D | M | M | | | K | K | K | M | M | K | K | K | M | M | K | K | K | K | K |
| 680000 | 684 | D | M | M | | | K | K | K | M | M | K | K | K | M | M | K | K | K | K | K |
| 820000 | 824 | D | M | M | | | K | K | K | U | U | K | K | K | U | U | K | K | K | M | M |
| 1000000 | 105 | D | M | | | | K | K | K | | | K | K | K | U | U | K | K | K | M | M |
| 1200000 | 125 | D | | | | | K | M | M | | | K | M | M | | | K | M | M | U | U |
| 1500000 | 155 | D | | | | | K | M | M | | | K | M | M | | | K | M | M | U | U |
| 1800000 | 185 | G | | | | | K | M | M | | | K | M | M | | | K | M | M | | |
| 2200000 | 225 | G | | | | | K | M | M | | | K | M | M | | | K | M | M | | |
| 2700000 | 275 | K | | | | | K | U | U | | | K | U | U | | | K | M | M | | |
| 3300000 | 335 | K | | | | | K | | | | | K | | | | | K | U | U | | |
| 3900000 | 395 | | | | | | K | | | | | K | | | | | K | U | U | | |
| 4700000 | 475 | | | | | | K | | | | | K | | | | | K | | | | |
| 5600000 | 565 | | | | | | K | | | | | K | | | | | K | | | | |
| 6800000 | 685 | | | | | | K | | | | | K | | | | | K | | | | |
| 8200000 | 825 | | | | | | M | | | | | M | | | | | M | | | | |
| 10000000 | 106 | | | | | | M | | | | | M | | | | | M | | | | |

■ 产品简介

汇聚高压系列产品是通过多层电容器单元的串联，以实现高电压性能，其由精确的介电材料配制及适当的导电浆料搭配，以及自动化制程的稳定生产和严谨的质量把关，以精确控管了介电设计厚度、电极完整性还有外端电子端极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 特殊结构设计提供高耐压水准
- ◆ EIA 0602-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 直流对直流转换应用
- ◆ 高压耦合/直流阻断
- ◆ 背光逆变器
- ◆ LAN/WLAN 连接
- ◆ 调制解调器

■ 一般电气规格

| 介电质 | C0G | | X7R | |
|--------------------------|--|-------------------------|--|--------------|
| EIA 尺寸 | 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | | 1206, 1210, 1808, 1812, 1825, 2211, 2220, 2225 | |
| 直流额定电压 | 1000V~3000V | | 1000V~3000V | |
| 电容范围 | 1.5pF ~ 18nF | | 100pF ~ 390nF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 质量因子 (Q) | 电容量范围 | Q | 额定电压 | Tan δ (D.F.) |
| | Cap<30pF: | Q≥400+20C | 1000~3000V | ≤ 2.5% |
| | Cap≥30pF: | Q≥1000 | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C /1 小时热处理后静置于常温环境 24±2 小时,紧接再进行测量作业. | |
| | 电容量范围 | 检测条件 | 适用检测: 1.0±0.2Vrms, 1.0kHz±10%, 25°C 常温环境. | |
| | Cap≤1000pF | 1.0±0.2Vrms, 1.0MHz±10% | | |
| Cap>1000pF | 1.0±0.2Vrms, 1.0kHz±10% | | | |
| 绝缘组抗值 (IR) | ≥100Ω 或 R•C≥ 500Ω-F 任一较小值以上 | | ≥10Ω或 R•C≥100Ω-F 任一较小值以上 | |
| 操作环境温度 | - 55°C to + 125 °C | | | |
| 温度公差系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

COG 容值表 (1)

| 尺寸 | | 0805 | 1206 | | 1210 | | | 1808 | | | | |
|----------|-----|------|------|-------|------|-----|-------|------|-----|-------|-----|-----|
| 电容量 (pF) | 代码 | 1KV | 1KV | 1.5KV | 2KV | 1KV | 1.5KV | 2KV | 1KV | 1.5KV | 2KV | 3KV |
| 0.5 | 0R5 | | | | | | | | | | | |
| 1 | 1R0 | | | | | | | | | | | |
| 1.2 | 1R2 | | B | B | B | | | | | | | |
| 1.5 | 1R5 | | B | B | B | | | | | | | |
| 1.8 | 1R8 | B | B | B | B | | | | | | | |
| 2.2 | 2R2 | B | B | B | B | | | | D | D | D | D |
| 2.7 | 2R7 | B | B | B | B | | | | D | D | D | D |
| 3.3 | 3R3 | B | B | B | B | | | | D | D | D | D |
| 3.9 | 3R9 | B | B | B | B | | | | D | D | D | D |
| 4.7 | 4R7 | B | B | B | B | | | | D | D | D | D |
| 5.6 | 5R6 | B | B | B | B | | | | D | D | D | D |
| 6.8 | 6R8 | B | B | B | B | | | | D | D | D | D |
| 8.2 | 8R2 | B | B | B | B | | | | D | D | D | D |
| 10 | 100 | B | B | B | B | C | C | C | D | D | D | D |
| 12 | 120 | B | B | B | B | C | C | C | D | D | D | D |
| 15 | 150 | B | B | B | B | C | C | C | D | D | D | D |
| 18 | 180 | B | B | B | B | C | C | C | D | D | D | D |
| 22 | 220 | B | B | B | B | C | C | C | D | D | D | D |
| 27 | 270 | B | B | B | B | C | C | C | D | D | D | D |
| 33 | 330 | B | B | B | B | C | C | C | D | D | D | D |
| 39 | 390 | B | B | B | B | C | C | C | D | D | D | D |
| 47 | 470 | B | B | B | B | C | C | C | D | D | D | D |
| 56 | 560 | B | B | B | B | C | C | C | D | D | D | D |
| 68 | 680 | B | B | B | B | C | C | C | D | D | D | D |
| 82 | 820 | B | B | B | B | C | C | C | D | D | D | D |
| 100 | 101 | B | B | B | B | C | C | C | D | D | D | D |
| 120 | 121 | B | B | B | B | C | C | C | D | D | D | D |
| 150 | 151 | B | C | C | C | C | C | C | D | D | D | D |
| 180 | 181 | D | C | C | C | C | C | C | D | D | D | D |
| 220 | 221 | D | C | D | D | C | C | C | D | D | D | D |
| 270 | 271 | D | C | D | D | C | C | C | D | D | D | D |
| 330 | 331 | D | D | G | G | C | C | C | D | D | D | G |
| 390 | 391 | D | D | G | G | C | C | C | D | D | D | G |
| 470 | 471 | | D | G | G | C | D | D | D | D | D | K |
| 560 | 561 | | G | | | D | D | D | D | D | D | K |
| 680 | 681 | | G | | | D | G | G | D | D | D | |
| 820 | 821 | | G | | | G | G | G | D | D | D | |
| 1000 | 102 | | G | | | G | K | K | D | G | G | |
| 1200 | 122 | | G | | | G | K | K | G | G | G | |
| 1500 | 152 | | | | | K | M | M | G | K | K | |
| 1800 | 182 | | | | | M | M | M | K | K | K | |
| 2200 | 222 | | | | | M | | | K | | | |
| 2700 | 272 | | | | | M | | | K | | | |
| 3300 | 332 | | | | | M | | | K | | | |
| 3900 | 392 | | | | | M | | | | | | |
| 4700 | 472 | | | | | | | | | | | |
| 5600 | 562 | | | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | |
| 10000 | 103 | | | | | | | | | | | |
| 12000 | 123 | | | | | | | | | | | |
| 15000 | 153 | | | | | | | | | | | |
| 18000 | 183 | | | | | | | | | | | |
| 22000 | 223 | | | | | | | | | | | |
| 27000 | 273 | | | | | | | | | | | |
| 33000 | 333 | | | | | | | | | | | |
| 39000 | 393 | | | | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | |
| 82000 | 823 | | | | | | | | | | | |
| 100000 | 104 | | | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | |

COG 容值表 (2)

| 尺寸 | | 1812 | | | | 1825 | | | | 2220 | | | | 2225 | | | |
|----------|-----|------|-------|-----|-----|------|-------|-----|-----|------|-------|-----|-----|------|-------|-----|-----|
| 电容量 (pF) | 代码 | 1KV | 1.5KV | 2KV | 3KV | 1KV | 1.5KV | 2KV | 3KV | 1KV | 1.5KV | 2KV | 3KV | 1KV | 1.5KV | 2KV | 3KV |
| 0.5 | 0R5 | | | | | | | | | | | | | | | | |
| 1 | 1R0 | | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | | | | | | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | | | | | | | | | | | | | | | | |
| 2.7 | 2R7 | | | | | | | | | | | | | | | | |
| 3.3 | 3R3 | | | | | | | | | | | | | | | | |
| 3.9 | 3R9 | | | | | | | | | | | | | | | | |
| 4.7 | 4R7 | | | | | | | | | | | | | | | | |
| 5.6 | 5R6 | | | | | | | | | | | | | | | | |
| 6.8 | 6R8 | | | | | | | | | | | | | | | | |
| 8.2 | 8R2 | | | | | | | | | | | | | | | | |
| 10 | 100 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 12 | 120 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 15 | 150 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 18 | 180 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 22 | 220 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 27 | 270 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 33 | 330 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 39 | 390 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 47 | 470 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 56 | 560 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 68 | 680 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 82 | 820 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 100 | 101 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 120 | 121 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 150 | 151 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 180 | 181 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 220 | 221 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 270 | 271 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 330 | 331 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 390 | 391 | D | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G |
| 470 | 471 | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 560 | 561 | D | D | D | G | G | G | G | G | G | G | G | G | G | G | G | G |
| 680 | 681 | D | D | D | K | G | G | G | G | G | G | G | G | G | G | G | G |
| 820 | 821 | D | D | D | M | G | G | G | G | G | G | G | G | G | G | G | G |
| 1000 | 102 | D | D | D | M | G | G | G | G | G | G | G | G | G | G | G | G |
| 1200 | 122 | D | G | G | | G | G | G | G | G | G | G | G | G | G | G | G |
| 1500 | 152 | D | G | G | | G | G | G | K | G | G | G | K | G | G | G | G |
| 1800 | 182 | G | K | K | | G | G | G | K | G | G | G | M | G | G | G | K |
| 2200 | 222 | G | K | K | | G | G | G | M | G | G | G | M | G | G | G | K |
| 2700 | 272 | K | M | M | | G | G | G | M | G | G | G | M | G | G | G | M |
| 3300 | 332 | K | M | M | | G | G | G | | G | G | G | | G | G | G | M |
| 3900 | 392 | M | | | | G | G | G | | G | G | G | | G | G | G | |
| 4700 | 472 | M | | | | G | K | K | | G | K | K | | G | G | G | |
| 5600 | 562 | M | | | | K | K | K | | K | K | K | | G | K | K | |
| 6800 | 682 | | | | | K | M | M | | K | M | M | | G | K | K | |
| 8200 | 822 | | | | | M | M | M | | M | M | M | | K | M | M | |
| 10000 | 103 | | | | | M | | | | M | | | | M | M | M | |
| 12000 | 123 | | | | | M | | | | | | | | M | | | |
| 15000 | 153 | | | | | | | | | | | | | M | | | |
| 18000 | 183 | | | | | | | | | | | | | M | | | |
| 22000 | 223 | | | | | | | | | | | | | | | | |
| 27000 | 273 | | | | | | | | | | | | | | | | |
| 33000 | 333 | | | | | | | | | | | | | | | | |
| 39000 | 393 | | | | | | | | | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | | | | | | |
| 82000 | 823 | | | | | | | | | | | | | | | | |
| 100000 | 104 | | | | | | | | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | | |

■ X7R 容值表 (1)

| 尺寸 | | 0805 | | 1206 | | | 1210 | | | 1808 | | | | 1812 | | | |
|----------|-----|------|-----|------|-----|-------|------|------|-----|------|------|-----|-----|------|------|-----|-----|
| 电容量 (pF) | 代码 | 1KV | 1KV | 1.5V | 2KV | 2.5KV | 1KV | 1.5V | 2KV | 1KV | 1.5V | 2KV | 3KV | 1KV | 1.5V | 2KV | 3KV |
| 100 | 101 | B | B | B | B | B | | | | | | | | | | | |
| 120 | 121 | B | B | B | B | B | | | | | | | | | | | |
| 150 | 151 | B | B | B | B | B | | | | D | D | D | D | | | | |
| 180 | 181 | B | B | B | B | B | | | | D | D | D | D | | | | |
| 220 | 221 | B | B | B | B | B | C | C | C | D | D | D | D | | | | |
| 270 | 271 | B | B | B | B | B | C | C | C | D | D | D | D | D | D | D | D |
| 330 | 331 | B | B | B | B | B | C | C | C | D | D | D | D | D | D | D | D |
| 390 | 391 | B | B | B | B | B | C | C | C | D | D | D | D | D | D | D | D |
| 470 | 471 | B | B | B | B | B | C | C | C | D | D | D | D | D | D | D | D |
| 560 | 561 | B | B | B | B | B | C | C | C | D | D | D | G | D | D | D | D |
| 680 | 681 | B | B | C | C | C | C | C | C | D | D | D | G | D | D | D | D |
| 820 | 821 | B | B | C | C | C | C | C | C | D | D | D | G | D | D | D | D |
| 1000 | 102 | B | B | D | D | D | C | D | D | D | D | D | K | D | D | D | G |
| 1200 | 122 | B | B | G | G | G | C | G | G | D | D | D | K | D | D | D | K |
| 1500 | 152 | B | B | G | G | G | C | G | G | D | D | D | K | D | D | D | K |
| 1800 | 182 | D | B | G | G | G | C | G | G | D | D | D | K | D | D | D | M |
| 2200 | 222 | D | B | G | G | G | C | K | K | D | G | G | K | D | D | D | M |
| 2700 | 272 | D | B | G | G | G | C | K | M | D | K | K | | D | D | D | M |
| 3300 | 332 | D | B | G | G | G | C | K | M | D | K | K | | D | G | G | M |
| 3900 | 392 | D | B | G | | | C | M | M | D | K | K | | D | K | K | |
| 4700 | 472 | D | B | G | | | C | M | M | D | K | K | | D | K | K | |
| 5600 | 562 | D | B | | | | C | M | M | D | K | K | | D | M | M | |
| 6800 | 682 | D | C | | | | C | M | M | D | K | K | | D | M | M | |
| 8200 | 822 | D | C | | | | C | M | M | D | | | | D | M | M | |
| 10000 | 103 | | C | | | | D | | | D | | | | D | M | M | |
| 12000 | 123 | | D | | | | D | | | G | | | | D | | | |
| 15000 | 153 | | G | | | | G | | | G | | | | D | | | |
| 18000 | 183 | | | | | | G | | | K | | | | G | | | |
| 22000 | 223 | | | | | | G | | | K | | | | G | | | |
| 27000 | 273 | | | | | | G | | | K | | | | K | | | |
| 33000 | 333 | | | | | | G | | | K | | | | K | | | |
| 39000 | 393 | | | | | | M | | | K | | | | M | | | |
| 47000 | 473 | | | | | | M | | | K | | | | M | | | |
| 56000 | 563 | | | | | | M | | | K | | | | M | | | |
| 68000 | 683 | | | | | | M | | | | | | | M | | | |
| 82000 | 823 | | | | | | | | | | | | | M | | | |
| 100000 | 104 | | | | | | | | | | | | | M | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | | |
| 560000 | 564 | | | | | | | | | | | | | | | | |
| 680000 | 684 | | | | | | | | | | | | | | | | |
| 820000 | 824 | | | | | | | | | | | | | | | | |
| 1000000 | 105 | | | | | | | | | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | |

■ X7R 容值表 (2)

| 尺寸 | | 1825 | | | | 2211 | 2220 | | | | 2225 | | | |
|----------|-----|------|------|-----|-----|------|------|------|-----|-----|------|------|-----|-----|
| 电容量 (pF) | 代码 | 1KV | 1.5V | 2KV | 3KV | 3KV | 1KV | 1.5V | 2KV | 3KV | 1KV | 1.5V | 2KV | 3KV |
| 100 | 101 | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | |
| 270 | 271 | | | | | K | | | | | | | | |
| 330 | 331 | | | | | K | | | | | | | | |
| 390 | 391 | | | | | K | | | | | | | | |
| 470 | 471 | | | | | K | | | | | | | | |
| 560 | 561 | | | | | K | | | | | | | | |
| 680 | 681 | | | | | K | | | | | | | | |
| 820 | 821 | | | | | K | | | | | | | | |
| 1000 | 102 | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1200 | 122 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 1500 | 152 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 1800 | 182 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 2200 | 222 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 2700 | 272 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 3300 | 332 | K | K | K | K | M | K | K | K | K | K | K | K | K |
| 3900 | 392 | K | K | K | K | | K | K | K | K | K | K | K | K |
| 4700 | 472 | K | K | K | K | | K | K | K | K | K | K | K | K |
| 5600 | 562 | K | K | K | M | | K | K | K | K | K | K | K | M |
| 6800 | 682 | K | K | K | M | | K | K | K | M | K | K | K | M |
| 8200 | 822 | K | K | K | M | | K | M | M | M | K | K | K | M |
| 10000 | 103 | K | K | K | M | | K | M | M | M | K | K | K | M |
| 12000 | 123 | K | M | M | U | | K | M | M | U | K | M | M | M |
| 15000 | 153 | K | M | M | U | | K | M | M | U | K | M | M | M |
| 18000 | 183 | K | U | U | U | | K | U | U | U | K | M | M | U |
| 22000 | 223 | K | U | U | | | K | U | U | | K | M | M | |
| 27000 | 273 | K | U | U | | | K | U | U | | K | M | M | |
| 33000 | 333 | K | U | U | | | K | U | U | | K | M | M | |
| 39000 | 393 | K | U | U | | | K | U | U | | K | U | U | |
| 47000 | 473 | K | U | U | | | K | U | U | | K | U | U | |
| 56000 | 563 | K | U | U | | | K | U | U | | K | U | U | |
| 68000 | 683 | K | | | | | K | | | | K | | | |
| 82000 | 823 | K | | | | | K | | | | K | | | |
| 100000 | 104 | M | | | | | M | | | | M | | | |
| 120000 | 124 | U | | | | | M | | | | U | | | |
| 150000 | 154 | U | | | | | U | | | | U | | | |
| 180000 | 184 | U | | | | | U | | | | U | | | |
| 220000 | 224 | U | | | | | U | | | | U | | | |
| 270000 | 274 | U | | | | | U | | | | U | | | |
| 330000 | 334 | U | | | | | U | | | | U | | | |
| 390000 | 394 | | | | | | U | | | | U | | | |
| 470000 | 474 | | | | | | | | | | | | | |
| 560000 | 564 | | | | | | | | | | | | | |
| 680000 | 684 | | | | | | | | | | | | | |
| 820000 | 824 | | | | | | | | | | | | | |
| 1000000 | 105 | | | | | | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | |

■ 产品简介

汇聚高压系列产品是通过多层电容器单元的串联，以实现高电压性能，其由精确的介电材料配制及适当的导电浆料搭配，以及自动化制程的稳定生产和严谨的质量把关，以精确控管了介电设计厚度、电极完整性还有外端电子端极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 特殊结构设计提供高耐压水准
- ◆ EIA 1808-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 直流对直流转换应用
- ◆ 高压耦合/直流阻断
- ◆ 背光逆变器
- ◆ LAN/WLAN 连接
- ◆ 调制解调器

■ 一般电气规格

| 介电质 | C0G | | X7R | |
|--------------------------|-----------------------------------|-------------------------|--|--------------|
| EIA 尺寸 | 1808, 1812, 1825, 2220, 2225 | | 1808, 1812, 1825, 2211, 2220, 2225 | |
| 直流额定电压 | >3000V | | >3000V | |
| 电容范围 | 2.2pF ~ 330pF | | 150pF ~ 1.8nF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 质量因子 (Q) | 电容量范围 | Q | 额定电压 | Tan δ (D.F.) |
| | Cap < 30pF: | Q ≥ 400+20C | 3000~6000V | ≤ 2.5% |
| | Cap ≥ 30pF: | Q ≥ 1000 | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C / 1 小时热处理后静置于常温环境 24±2 小时, 紧接再进行测量作业. | |
| | 电容量范围 | 检测条件 | 适用检测: 1.0±0.2Vrms, 1.0kHz±10%, 25°C 常温环境. | |
| | Cap ≤ 1000pF | 1.0±0.2Vrms, 1.0MHz±10% | | |
| Cap > 1000pF | 1.0±0.2Vrms, 1.0kHz±10% | | | |
| 绝缘组抗值 (IR) | ≥ 100GΩ 或 R•C ≥ 500Ω-F 任一较小值以上 | | ≥ 10GΩ 或 R•C ≥ 100Ω-F 任一较小值以上 | |
| 操作环境温度 | - 55°C to + 125 °C | | | |
| 温度公差系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

容值表

| 介电质 | | C0G | | | | | X7R | | | | | |
|---------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 尺寸 | | 1808 | 1812 | 1825 | 2220 | 2225 | 1808 | 1812 | 1825 | 2211 | 2220 | 2225 |
| 电容量(pF) | 代码 | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V | 4000V |
| 1.2 | 1R2 | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | |
| 2.2 | 2R2 | D | | | | | | | | | | |
| 2.7 | 2R7 | D | | | | | | | | | | |
| 3.3 | 3R3 | D | | | | | | | | | | |
| 3.9 | 3R9 | D | | | | | | | | | | |
| 4.7 | 4R7 | D | | | | | | | | | | |
| 5 | 5R0 | D | | | | | | | | | | |
| 5.6 | 5R6 | D | | | | | | | | | | |
| 6.8 | 6R8 | D | | | | | | | | | | |
| 8.2 | 8R2 | D | | | | | | | | | | |
| 10 | 100 | D | D | G | G | G | | | | | | |
| 12 | 120 | D | D | G | G | G | | | | | | |
| 15 | 150 | D | D | G | G | G | | | | | | |
| 18 | 180 | D | D | G | G | G | | | | | | |
| 22 | 220 | G | D | G | G | G | | | | | | |
| 27 | 270 | G | D | G | G | G | | | | | | |
| 33 | 330 | K | D | G | G | G | | | | | | |
| 39 | 390 | K | D | G | G | G | | | | | | |
| 47 | 470 | | G | G | G | G | | | | | | |
| 56 | 560 | | G | G | G | G | | | | | | |
| 68 | 680 | | K | G | G | G | | | | | | |
| 82 | 820 | | K | G | G | G | | | | | | |
| 100 | 101 | | | G | G | G | | | | | | |
| 120 | 121 | | | G | G | G | | | | | | |
| 150 | 151 | | | K | G | G | K | | | | | |
| 180 | 181 | | | K | K | K | K | | | | | |
| 220 | 221 | | | | K | K | K | | | | | |
| 270 | 271 | | | | M | M | K | K | K | K | K | K |
| 330 | 331 | | | | M | | K | K | K | K | K | K |
| 390 | 391 | | | | | | K | K | K | K | K | K |
| 470 | 471 | | | | | | K | K | K | K | K | K |
| 560 | 561 | | | | | | K | K | K | K | K | K |
| 680 | 681 | | | | | | K | K | K | K | K | K |
| 820 | 821 | | | | | | K | K | K | K | K | K |
| 1000 | 102 | | | | | | K | K | K | K | K | K |
| 1200 | 122 | | | | | | | M | M | M | M | M |
| 1500 | 152 | | | | | | | M | M | M | M | M |
| 1800 | 182 | | | | | | | M | M | M | M | M |
| 2200 | 222 | | | | | | | | | | | |

■ 产品简介

汇聚高电容产品使用无铅/锡元素材料制作，其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 大容量规格于限定尺寸产品
- ◆ EIA 1206-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 高频高密度应用电源
- ◆ 耦合/去耦应用
- ◆ 旁路应用
- ◆ 滤波应用

■ 一般电气规格

| | | |
|----------------------------------|---|--------------------------|
| 介电材料 | X7R | |
| EIA 尺寸 | 1206, 1210, 1812, 1825, 2220, 2225 | |
| 额定电压 | 50V~250V | |
| 电容范围 | 1 μ F ~ 10 μ F | |
| 电容公差值 | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 参阅*附表 1 | |
| 检测条件 (25 $^{\circ}$ C 常温环境) | 预处理 (2 类产品) 150 \pm 10 $^{\circ}$ C /1 小时热处理后静置于常温环境 24 \pm 2 小时再进行测量作业 | |
| | 电容范围 | 检测条件 |
| | 100pF < Cap \leq 10 μ F | 1.0 \pm 0.2Vrms 1.0kHz |
| Cap > 10 μ F | 0.5 \pm 0.2Vrms, 120Hz | |
| 绝缘电阻 (IR) | \geq 10G Ω 或 R \cdot C \geq 100 Ω -F 任一较小值以上 | |
| 工作温度 | - 55 $^{\circ}$ C to + 125 $^{\circ}$ C | |
| 温度系数 | \pm 15% | |
| 端电极材料 | 铜或银/ (软银) / 镍 / 锡 (无铅端电极) | |

*附表 1

| 额定电压 | D.F. \leq | 特殊控管 D.F. \leq | 尺寸容值 |
|------------|-------------|------------------|---|
| 25V | \leq 3.5% | \leq 5% | 0805 \geq 1 μ F; 1210 \geq 10 μ F |
| | | \leq 7% | 0603 \geq 0.33 μ F; 1206 \geq 4.7 μ F |
| | | \leq 10% | 0603 \geq 0.47 μ F; 0805 \geq 2.2 μ F; 1206 \geq 6.8 μ F ; 1210 \geq 22 μ F |
| \geq 50V | \leq 2.5% | \leq 3% | 0603 \geq 0.047 μ F; 0805 \geq 0.18 μ F; 1206 \geq 0.47 μ F |
| | | \leq 5% | 1210 \geq 4.7 μ F |
| | | \leq 10% | 0603 \geq 1 μ F; 0805 \geq 1 μ F; 1206 \geq 4.7 μ F; 1210 \geq 10 μ F |

NC: 一般品 - 高电容系列



■ X7R 容值表

| 尺寸 | | 1206 | | | 1210 | | | 1812 | | | | 1825 | | | | | 2220 | | | | | 2225 | | | | | |
|----------|-----|------|-----|------|------|-----|------|------|-----|------|------|------|-----|------|------|------|------|-----|------|------|------|------|-----|------|------|------|---|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 25V | 50V | 100V | 25V | 50V | 100V | 200V | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 330 | 331 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 390 | 391 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 470 | 471 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 560 | 561 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 680 | 681 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 820 | 821 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000 | 102 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1200 | 122 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500 | 152 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1800 | 182 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200 | 222 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2700 | 272 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300 | 332 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3900 | 392 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700 | 472 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5600 | 562 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10000 | 103 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12000 | 123 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15000 | 153 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18000 | 183 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22000 | 223 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27000 | 273 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33000 | 333 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39000 | 393 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 82000 | 823 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100000 | 104 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 560000 | 564 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 680000 | 684 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 820000 | 824 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1000000 | 105 | P | P | P | D | D | P | D | D | D | M | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1200000 | 125 | | | | P | P | K | D | D | D | | K | K | K | M | M | K | K | K | M | M | K | K | K | M | M | M |
| 1500000 | 155 | | | | K | K | K | D | D | D | | K | K | K | M | M | K | K | K | M | M | K | K | K | M | M | M |
| 1800000 | 185 | | | | M | M | M | G | G | G | | K | K | K | M | M | K | K | K | M | M | K | K | K | M | M | M |
| 2200000 | 225 | | | | M | M | M | G | G | G | | K | K | K | M | M | K | K | K | M | M | K | K | K | M | M | M |
| 2700000 | 275 | | | | M | M | | K | K | K | | K | K | K | U | U | K | K | K | U | U | K | K | K | M | M | M |
| 3300000 | 335 | | | | | | | K | K | K | | K | K | K | | | K | K | K | | | K | K | K | U | U | U |
| 3900000 | 395 | | | | | | | | | | | K | K | K | | | K | K | K | | | K | K | K | U | U | U |
| 4700000 | 475 | | | | | | | | | | | K | K | K | | | K | K | K | | | K | K | K | | | |
| 5600000 | 565 | | | | | | | | | | | K | K | K | | | K | K | K | | | K | K | K | | | |
| 6800000 | 685 | | | | | | | | | | | K | K | K | | | K | K | K | | | K | K | K | | | |
| 8200000 | 825 | | | | | | | | | | | M | M | M | | | M | M | M | | | M | M | M | | | |
| 10000000 | 106 | | | | | | | | | | | M | M | M | | | M | M | M | | | M | M | M | | | |

■ 产品简介

汇聚低损产品采用低损耗陶瓷材料设计，其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 低 ESR、低损耗
- ◆ EIA 0805-2220
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 数码相机触控应用
- ◆ 数字电信应用
- ◆ 音频电路
- ◆ 照明应用

■ 一般电气规格

| 介电材料 | X7R |
|--------------------------|--|
| EIA 尺寸 | 0805, 1206, 1210, 1812, 1825, 2220 |
| 额定电压 | 50V~500V |
| 电容范围 | 100pF ~ 1.2μF |
| 电容公差值 | 参阅产品订货信息表 5 |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | U _r < 200V: 1.4% max. U _r ≥ 200V: 1.0% max. |
| 检测条件 | 预处理 (2 类产品) 150±10°C / 1 小时热处理后静置于常温环境 24±2 小时再进行测量作业 适用检测: 1.0±0.2Vrms 1.0kHz±10% 25°C 常温环境 |
| 绝缘电阻 (IR) | ≥10GΩ或 R•C≥500Ω-F 任一较小值以上 |
| 工作温度 | - 55°C to + 125 °C |
| 温度系数 | ±15% |
| 端电极材料 | 铜或银 / 镍 / 锡 (无铅端电极) |

■ X7R 容值表

| 尺寸 | | 0805 | | 1206 | | 1210 | | | 1812 | 1825 | 2220 | |
|----------|-----|------|------|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 250V | 100V | 250V | 500V | 100V | 250V | 500V | 100V | 100V | 100V | 250V |
| 100 | 101 | B | | | | | | | | | | |
| 120 | 121 | B | | | | | | | | | | |
| 150 | 151 | B | D | D | D | | | | | | | |
| 180 | 181 | B | D | D | D | | | | | | | |
| 220 | 221 | B | D | D | D | | | | | | | |
| 270 | 271 | B | D | D | D | | | | | | | |
| 330 | 331 | B | D | D | D | | | | | | | |
| 390 | 391 | B | D | D | D | | | | | | | |
| 470 | 471 | B | D | D | D | G | G | F | G | G | K | K |
| 560 | 561 | B | D | D | D | G | G | F | G | G | K | K |
| 680 | 681 | B | D | D | D | G | G | F | G | G | K | K |
| 820 | 821 | B | D | D | D | G | G | F | G | G | K | K |
| 1000 | 102 | B | D | D | D | G | G | F | G | G | K | K |
| 1200 | 122 | B | D | D | D | G | G | F | G | G | K | K |
| 1500 | 152 | B | D | D | D | G | G | F | G | G | K | K |
| 1800 | 182 | B | D | D | D | G | G | F | G | G | K | K |
| 2200 | 222 | B | D | D | D | G | G | F | G | G | K | K |
| 2700 | 272 | B | D | D | D | G | G | F | G | G | K | K |
| 3300 | 332 | B | D | D | D | G | G | F | G | G | K | K |
| 3900 | 392 | B | D | D | D | G | G | F | G | G | K | K |
| 4700 | 472 | B | D | D | D | G | G | F | G | G | K | K |
| 5600 | 562 | B | D | D | D | G | G | F | G | G | K | K |
| 6800 | 682 | B | D | D | D | G | G | F | G | G | K | K |
| 8200 | 822 | B | D | D | D | G | G | F | G | G | K | K |
| 10000 | 103 | B | D | D | D | G | G | F | G | G | K | K |
| 12000 | 123 | B | D | D | D | G | G | F | G | G | K | K |
| 15000 | 153 | D | D | D | D | G | G | F | G | G | K | K |
| 18000 | 183 | D | D | D | G | G | G | F | G | G | K | K |
| 22000 | 223 | D | D | D | G | G | G | F | G | G | K | K |
| 27000 | 273 | | D | D | G | G | G | F | G | G | K | K |
| 33000 | 333 | | D | D | G | G | G | F | G | G | K | K |
| 39000 | 393 | | D | D | G | G | G | G | G | G | K | K |
| 47000 | 473 | | D | D | | G | G | G | G | G | K | K |
| 56000 | 563 | | D | G | | G | G | | G | G | K | K |
| 68000 | 683 | | D | G | | G | G | | G | G | K | K |
| 82000 | 823 | | D | G | | G | G | | G | G | K | K |
| 100000 | 104 | | D | G | | G | G | | G | G | K | K |
| 120000 | 124 | | D | | | G | G | | G | G | K | K |
| 150000 | 154 | | G | | | G | G | | G | G | K | K |
| 180000 | 184 | | G | | | G | | | G | G | K | K |
| 220000 | 224 | | G | | | G | | | G | G | K | K |
| 270000 | 274 | | | | | G | | | G | G | K | K |
| 330000 | 334 | | | | | G | | | G | G | K | K |
| 390000 | 394 | | | | | | | | G | G | K | K |
| 470000 | 474 | | | | | | | | G | G | K | K |
| 560000 | 564 | | | | | | | | G | K | K | K |
| 680000 | 684 | | | | | | | | K | K | K | M |
| 820000 | 824 | | | | | | | | K | K | K | |
| 1000000 | 105 | | | | | | | | M | K | K | |
| 1200000 | 125 | | | | | | | | | | M | |
| 1500000 | 155 | | | | | | | | | | | |

■ 产品简介

汇聚开路模式产品通过特殊的内部印刷电极网版设计，同时达到分压降低电压冲击效应以及避免因电路板弯曲使组件损伤所引起回路电流影响。其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 开路工作模式
- ◆ EIA 0805-1812
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 高电流回路应用
- ◆ 受到机械应力影响相关应用

■ 一般电气规格

| | | |
|----------------------------------|---|---------------------|
| 介电材料 | X7R | |
| EIA 尺寸 | 0805, 1206, 1210, 1808, 1812 | |
| 额定电压 | 50V~630V | |
| 电容范围 | 100pF ~ 390nF | |
| 电容公差值 | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 额定电压 | Tan δ (D.F.) |
| | 50V~630V | $\leq 2.5\%$ |
| 检测条件 | 预处理 (2 类产品) 150 \pm 10 $^{\circ}$ C /1 小时热处理后静置于常温环境 24 \pm 2 小时,再进行测量作业 | |
| | 适用检测: 1.0 \pm 0.2Vrms,1.0kHz \pm 10%, 25 $^{\circ}$ C 常温环境 | |
| 绝缘电阻 (IR) | $\geq 10G\Omega$ 或 $R \cdot C \geq 100\Omega \cdot F$,取任一较小值以上 | |
| 工作温度 | - 55 $^{\circ}$ C to + 125 $^{\circ}$ C | |
| 温度系数 | $\pm 15\%$ | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | |

■ X7R 容值表 (1)

| 尺寸 | | 805 | | | | | 1206 | | | | |
|-------------|-----|-----|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 50V | 100V | 250V | 500V | 630V | 50V | 100V | 250V | 500V | 630V |
| 100 | 101 | B | B | B | B | B | | | | | |
| 120 | 121 | B | B | B | B | B | | | | | |
| 150 | 151 | B | B | B | B | B | B | B | B | B | B |
| 180 | 181 | B | B | B | B | B | B | B | B | B | B |
| 220 | 221 | B | B | B | B | B | B | B | B | B | B |
| 270 | 271 | B | B | B | B | B | B | B | B | B | B |
| 330 | 331 | B | B | B | B | B | B | B | B | B | B |
| 390 | 391 | B | B | B | B | B | B | B | B | B | B |
| 470 | 471 | B | B | B | B | B | B | B | B | B | B |
| 560 | 561 | B | B | B | B | B | B | B | B | B | B |
| 680 | 681 | B | B | B | B | B | B | B | B | B | B |
| 820 | 821 | B | B | B | B | B | B | B | B | B | B |
| 1000 | 102 | B | B | B | B | B | B | B | B | B | B |
| 1200 | 122 | B | B | B | B | B | B | B | B | B | B |
| 1500 | 152 | B | B | B | B | B | B | B | B | B | B |
| 1800 | 182 | B | B | B | B | B | B | B | B | B | B |
| 2200 | 222 | B | B | B | C | C | B | B | B | B | B |
| 2700 | 272 | B | B | B | C | C | B | B | B | B | B |
| 3300 | 332 | B | B | B | D | D | B | B | B | B | B |
| 3900 | 392 | B | B | B | D | D | B | B | B | B | B |
| 4700 | 472 | B | B | B | D | D | B | B | B | B | B |
| 5600 | 562 | B | B | B | | | B | B | B | B | B |
| 6800 | 682 | B | B | B | | | B | B | B | B | B |
| 8200 | 822 | B | B | B | | | B | B | B | B | B |
| 10000 | 103 | B | B | B | | | B | B | B | C | C |
| 12000 | 123 | B | B | C | | | B | B | B | D | D |
| 15000 | 153 | B | B | D | | | B | B | B | D | D |
| 18000 | 183 | B | B | D | | | B | B | B | D | D |
| 22000 | 223 | B | B | D | | | B | B | B | G | G |
| 27000 | 273 | B | C | D | | | B | B | B | G | G |
| 33000 | 333 | B | C | | | | B | B | B | G | |
| 39000 | 393 | B | D | | | | B | B | B | G | |
| 47000 | 473 | C | D | | | | B | B | B | G | |
| 56000 | 563 | C | D | | | | B | B | C | | |
| 68000 | 683 | D | D | | | | B | B | D | | |
| 82000 | 823 | D | | | | | B | B | D | | |
| 100000 | 104 | D | | | | | B | B | G | | |
| 120000 | 124 | | | | | | B | B | | | |
| 150000 | 154 | | | | | | B | C | | | |
| 180000 | 184 | | | | | | B | D | | | |
| 220000 | 224 | | | | | | B | D | | | |
| 270000 | 274 | | | | | | D | G | | | |
| 330000 | 334 | | | | | | D | P | | | |
| 390000 | 394 | | | | | | D | | | | |
| 470000 | 474 | | | | | | P | | | | |
| 560000 | 564 | | | | | | | | | | |
| 680000 | 684 | | | | | | | | | | |
| 820000 | 824 | | | | | | | | | | |
| 1000000 | 105 | | | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | |

■ X7R 容值表 (2)

| 尺寸 | | 1210 | | | | | 1808 | | | | | 1812 | | | | |
|----------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 电容量 (pF) | 代码 | 50V | 100V | 250V | 500V | 630V | 50V | 100V | 250V | 500V | 630V | 50V | 100V | 250V | 500V | 630V |
| 100 | 101 | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | | | | | | |
| 330 | 331 | | | | | | | | | | | | | | | |
| 390 | 391 | | | | | | | | | | | | | | | |
| 470 | 471 | | | | | | | | | | | | | | | |
| 560 | 561 | | | | | | | | | | | | | | | |
| 680 | 681 | | | | | | | | | | | | | | | |
| 820 | 821 | | | | | | | | | | | | | | | |
| 1000 | 102 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1200 | 122 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1500 | 152 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1800 | 182 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2200 | 222 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2700 | 272 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3300 | 332 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3900 | 392 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 4700 | 472 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 5600 | 562 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 6800 | 682 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 8200 | 822 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 10000 | 103 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 12000 | 123 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 15000 | 153 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 18000 | 183 | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D |
| 22000 | 223 | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D |
| 27000 | 273 | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D |
| 33000 | 333 | C | C | C | G | G | D | D | D | G | G | D | D | D | D | D |
| 39000 | 393 | C | C | C | G | G | D | D | D | G | G | D | D | D | D | D |
| 47000 | 473 | C | C | C | G | G | D | D | D | G | G | D | D | D | D | D |
| 56000 | 563 | C | C | C | K | K | D | D | D | K | K | D | D | D | G | G |
| 68000 | 683 | C | C | C | M | M | D | D | D | K | K | D | D | D | G | G |
| 82000 | 823 | C | C | C | | | D | D | D | | | D | D | D | K | K |
| 100000 | 104 | C | C | C | | | D | D | D | | | D | D | D | K | K |
| 120000 | 124 | C | C | G | | | D | D | D | | | D | D | D | M | M |
| 150000 | 154 | C | C | G | | | D | D | D | | | D | D | D | M | M |
| 180000 | 184 | C | C | G | | | D | D | G | | | D | D | D | | |
| 220000 | 224 | C | C | G | | | D | D | G | | | D | D | D | | |
| 270000 | 274 | C | C | K | | | D | D | K | | | D | D | G | | |
| 330000 | 334 | C | C | K | | | D | D | | | | D | D | G | | |
| 390000 | 394 | C | D | M | | | D | G | | | | D | D | K | | |
| 470000 | 474 | C | D | | | | G | G | | | | D | D | K | | |
| 560000 | 564 | D | G | | | | G | G | | | | D | D | M | | |
| 680000 | 684 | D | G | | | | K | G | | | | D | D | M | | |
| 820000 | 824 | D | K | | | | K | K | | | | D | G | | | |
| 1000000 | 105 | P | M | | | | K | | | | | G | G | | | |
| 1200000 | 125 | K | | | | | | | | | | G | K | | | |
| 1500000 | 155 | M | | | | | | | | | | G | K | | | |
| 1800000 | 185 | | | | | | | | | | | K | M | | | |
| 2200000 | 225 | | | | | | | | | | | K | | | | |
| 2700000 | 275 | | | | | | | | | | | M | | | | |

■ 产品简介

汇聚软段电极产品是在端电极中加入特殊的具有柔软性导电性树脂层，介于端电极层与陶瓷之间。树脂层能吸收热冲击和基板弯曲应力，因此具有良好的对应机械应力和热冲击的能力，在应用过程中出现弯曲应力时提供了良好的缓冲性能。

■ 特点

- ◆ 高抗基板弯能力水平
- ◆ 抗热冲击能力
- ◆ EIA 0603-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 受机械应力影响相关应用
- ◆ 受热冲击力影响相关应用
- ◆ 跌落风险高的产品应用

■ 一般电气规格

| 介电材料 | COG | | X7R | |
|--------------------------|--|---------------------|--|---------------------|
| EIA 尺寸 | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | |
| 额定电压 | 25V~4000V | | 25V~4000V | |
| 电容范围 | 0.5pF ~ 470nF | | 100pF ~ 10μF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 电容量范围 | Q | | |
| | Cap<30pF | Q≥400+20C | | |
| | Cap≥30pF | Q≥1000 | | |
| 检测条件 (25°C 常温环境) | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C /1 小时热处理后静置于常温环境 24±2 小时再进行测量作业 | |
| | 电容量范围 | 检测条件 | 电容量范围 | 检测条件 |
| | Cap≤1000pF | 1.0±0.2Vrms, 1.0MHz | Cap≤100pF | 1.0±0.2Vrms, 1.0MHz |
| | Cap>1000pF | 1.0±0.2Vrms 1.0kHz | 100pF<Cap≤10μF | 1.0±0.2Vrms 1.0kHz |
| | | | Cap>10μF | 0.5±0.2Vrms, 120Hz |
| 绝缘电阻 (IR) | ≥100GΩ 或 R•C≥ 500Ω-F 任一较小值以上 | | ≥10GΩ或 R•C≥100Ω-F 任一较小值以上 | |
| 工作温度 | - 55°C to + 125 °C | | | |
| 温度系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银 / 软端 / 镍 / 锡 (无铅端电极) | | | |

*附表 1

| 额定电压 | D.F. ≤ | 特殊控管 D.F. ≤ | 尺寸容值 |
|-------|--------|-------------|---|
| 25V | ≤ 3.5% | ≤ 5% | 0805 ≥ 1μF; 1210 ≥ 10μF |
| | | ≤ 7% | 0603 ≥ 0.33μF; 1206 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 0.47μF; 0805 ≥ 2.2μF; 1206 ≥ 6.8μF ; 1210 ≥ 22μF |
| ≥ 50V | ≤ 2.5% | ≤ 3% | 0603 ≥ 0.047μF; 0805 ≥ 0.18μF; 1206 ≥ 0.47μF |
| | | ≤ 5% | 1210 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 1μF; 0805 ≥ 1μF; 1206 ≥ 4.7μF; 1210 ≥ 10μF |

AB: 软端电极 – 抗弯曲裂纹系列



■ X7R 容值表 (1)

| 尺寸 | | 0603 | | | | | 0805 | | | | | | | 1206 | | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|-----|------|------|------|------|------|------|-----|-----|------|------|------|------|------|-----|-----|-----|-------|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 15V | 2KV | 2.5KV |
| 100 | 101 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 120 | 121 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 150 | 151 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 180 | 181 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 220 | 221 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 270 | 271 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 330 | 331 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 390 | 391 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 470 | 471 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 560 | 561 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | |
| 680 | 681 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | C | C | |
| 820 | 821 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | C | C | |
| 1000 | 102 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | D | D | |
| 1200 | 122 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | G | G | |
| 1500 | 152 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | G | G | |
| 1800 | 182 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | G | |
| 2200 | 222 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | G | |
| 2700 | 272 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | G | |
| 3300 | 332 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | G | |
| 3900 | 392 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | | |
| 4700 | 472 | S | S | S | X | X | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | B | G | | |
| 5600 | 562 | S | S | S | X | X | B | B | B | B | C | C | D | B | B | B | B | B | B | B | B | B | | | |
| 6800 | 682 | S | S | S | X | X | B | B | B | B | D | D | D | B | B | B | B | B | B | B | B | C | | | |
| 8200 | 822 | S | S | S | X | X | B | B | B | B | D | D | D | B | B | B | B | B | B | B | B | C | | | |
| 10000 | 103 | S | S | S | X | X | B | B | B | B | D | D | | B | B | B | B | B | C | C | C | | | | |
| 12000 | 123 | S | S | X | X | X | B | B | B | B | D | D | D | B | B | B | B | B | D | D | D | | | | |
| 15000 | 153 | S | S | X | X | X | B | B | B | B | D | D | D | B | B | B | B | B | D | D | G | | | | |
| 18000 | 183 | S | S | X | | | B | B | B | B | D | D | | B | B | B | B | B | D | D | | | | | |
| 22000 | 223 | S | S | X | | | B | B | B | B | D | D | | B | B | B | B | B | G | G | | | | | |
| 27000 | 273 | S | S | X | | | B | B | C | C | C | | | B | B | B | B | B | G | G | | | | | |
| 33000 | 333 | X | X | X | | | B | B | C | D | D | | | B | B | B | B | B | G | G | | | | | |
| 39000 | 393 | X | X | X | | | B | B | C | D | | | | B | B | B | B | B | G | G | | | | | |
| 47000 | 473 | X | X | X | | | B | B | C | D | | | | B | B | B | B | B | G | G | | | | | |
| 56000 | 563 | X | X | | | | B | B | C | D | | | | B | B | B | C | C | | | | | | | |
| 68000 | 683 | X | X | | | | B | B | C | D | | | | B | B | B | D | D | | | | | | | |
| 82000 | 823 | X | X | | | | B | B | C | | | | | B | B | B | D | D | | | | | | | |
| 100000 | 104 | X | X | | | | B | B | D | | | | | B | B | B | G | G | | | | | | | |
| 120000 | 124 | | | | | | B | B | D | | | | | B | B | B | | | | | | | | | |
| 150000 | 154 | | | | | | B | B | D | | | | | B | B | B | | | | | | | | | |
| 180000 | 184 | | | | | | B | B | D | | | | | B | B | C | | | | | | | | | |
| 220000 | 224 | | | | | | B | B | D | | | | | B | B | C | | | | | | | | | |
| 270000 | 274 | | | | | | D | D | | | | | | B | B | D | | | | | | | | | |
| 330000 | 334 | | | | | | D | D | | | | | | B | B | G | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | D | D | G | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | D | D | G | | | | | | | | | |
| 560000 | 564 | | | | | | | | | | | | | D | D | P | | | | | | | | | |
| 680000 | 684 | | | | | | | | | | | | | D | D | P | | | | | | | | | |
| 820000 | 824 | | | | | | | | | | | | | G | G | P | | | | | | | | | |
| 1000000 | 105 | | | | | | | | | | | | | P | P | P | | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | | | | | | | | | |

AB: 软端电极 – 抗弯曲裂纹系列



■ X7R 容值表 (2)

| 尺寸 | | 1210 | | | | | | | | | | 1808 | | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|------|-----|------|-----|------|-----|------|------|------|------|------|-----|------|-----|-----|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | D | D | D | D | D | D | D | D | D | D | D | K |
| 180 | 181 | | | | | | | | | | | D | D | D | D | D | D | D | D | D | D | D | K |
| 220 | 221 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 270 | 271 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 330 | 331 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 390 | 391 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 470 | 471 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 560 | 561 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 680 | 681 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 820 | 821 | C | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | K |
| 1000 | 102 | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 1200 | 122 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 1500 | 152 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 1800 | 182 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 2200 | 222 | C | C | C | C | C | C | C | C | K | K | D | D | D | D | D | D | D | D | G | G | K | |
| 2700 | 272 | C | C | C | C | C | C | C | C | K | M | D | D | D | D | D | D | D | D | K | K | | |
| 3300 | 332 | C | C | C | C | C | C | C | C | K | M | D | D | D | D | D | D | D | D | K | K | | |
| 3900 | 392 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 4700 | 472 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 5600 | 562 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 6800 | 682 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 8200 | 822 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 10000 | 103 | C | C | C | C | C | C | C | D | | | D | D | D | D | D | D | D | D | | | | |
| 12000 | 123 | C | C | C | C | C | C | C | D | | | G | G | G | G | G | G | G | G | | | | |
| 15000 | 153 | C | C | C | C | C | C | C | G | | | G | G | G | G | G | G | G | G | | | | |
| 18000 | 183 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 22000 | 223 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 27000 | 273 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 33000 | 333 | C | C | C | C | C | G | G | G | | | G | G | G | G | G | K | K | K | | | | |
| 39000 | 393 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 47000 | 473 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 56000 | 563 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 68000 | 683 | C | C | C | C | C | K | K | M | | | G | G | G | G | G | K | K | K | | | | |
| 82000 | 823 | C | C | C | C | C | M | M | | | | G | G | G | G | G | K | K | | | | | |
| 100000 | 104 | C | C | C | C | C | M | M | | | | G | G | G | G | G | | | | | | | |
| 120000 | 124 | C | C | C | G | G | M | M | | | | G | G | G | G | G | | | | | | | |
| 150000 | 154 | C | C | C | G | G | M | M | | | | G | G | G | G | G | | | | | | | |
| 180000 | 184 | C | C | C | G | G | | | | | | G | G | G | K | K | | | | | | | |
| 220000 | 224 | C | C | C | G | G | | | | | | G | G | G | | | | | | | | | |
| 270000 | 274 | C | C | C | K | K | | | | | | K | K | K | | | | | | | | | |
| 330000 | 334 | C | C | C | K | K | | | | | | K | K | | | | | | | | | | |
| 390000 | 394 | C | C | D | M | M | | | | | | | | | | | | | | | | | |
| 470000 | 474 | C | C | D | M | M | | | | | | K | K | K | K | K | | | | | | | |
| 560000 | 564 | C | C | G | M | M | | | | | | K | K | K | K | K | | | | | | | |
| 680000 | 684 | C | C | G | M | M | | | | | | K | K | K | | | | | | | | | |
| 820000 | 824 | D | D | P | | | | | | | | | | K | | | | | | | | | |
| 1000000 | 105 | D | D | P | | | | | | | | | | | | | | | | | | | |
| 1200000 | 125 | P | P | K | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | K | K | K | | | | | | | | | | | | | | | | | | | |
| 1800000 | 185 | M | M | M | | | | | | | | | | | | | | | | | | | |
| 2200000 | 225 | M | M | M | | | | | | | | | | | | | | | | | | | |
| 2700000 | 275 | M | M | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | | | | | | | |

AB: 软端电极 – 抗弯曲裂纹系列



■ X7R 容值表 (4)

| 尺寸 | | 2211 | | | | | 2220 | | | | | | | | | |
|----------|-----|------|-----|-----|-----|------|------|------|------|------|-----|------|-----|-----|-----|--|
| 电容量 (pF) | 代码 | 3KV | 4KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV | |
| 100 | 101 | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | |
| 270 | 271 | K | K | | | | | | | | | | | | K | |
| 330 | 331 | K | K | | | | | | | | | | | | K | |
| 390 | 391 | K | K | | | | | | | | | | | | K | |
| 470 | 471 | K | K | | | | | | | | | | | | K | |
| 560 | 561 | K | K | | | | | | | | | | | | K | |
| 680 | 681 | K | K | | | | | | | | | | | | K | |
| 820 | 821 | K | K | | | | | | | | | | | | K | |
| 1000 | 102 | K | K | K | K | K | K | K | K | K | K | K | K | K | K | |
| 1200 | 122 | M | M | K | K | K | K | K | K | K | K | K | K | K | M | |
| 1500 | 152 | M | M | K | K | K | K | K | K | K | K | K | K | K | M | |
| 1800 | 182 | M | M | K | K | K | K | K | K | K | K | K | K | K | M | |
| 2200 | 222 | M | | K | K | K | K | K | K | K | K | K | K | K | | |
| 2700 | 272 | M | | K | K | K | K | K | K | K | K | K | K | K | | |
| 3300 | 332 | M | | K | K | K | K | K | K | K | K | K | K | K | | |
| 3900 | 392 | | | K | K | K | K | K | K | K | K | K | K | K | | |
| 4700 | 472 | | | K | K | K | K | K | K | K | K | K | K | K | | |
| 5600 | 562 | | | K | K | K | K | K | K | K | K | K | K | K | | |
| 6800 | 682 | | | K | K | K | K | K | K | K | K | K | K | M | | |
| 8200 | 822 | | | K | K | K | K | K | K | K | M | M | M | | | |
| 10000 | 103 | | | K | K | K | K | K | K | K | M | M | M | | | |
| 12000 | 123 | | | K | K | K | K | K | K | K | M | M | U | | | |
| 15000 | 153 | | | K | K | K | K | K | K | K | M | M | U | | | |
| 18000 | 183 | | | K | K | K | K | K | K | K | U | U | U | | | |
| 22000 | 223 | | | K | K | K | K | K | K | K | U | U | | | | |
| 27000 | 273 | | | K | K | K | K | K | K | K | U | U | | | | |
| 33000 | 333 | | | K | K | K | K | K | K | K | U | U | | | | |
| 39000 | 393 | | | K | K | K | K | K | K | K | U | U | | | | |
| 47000 | 473 | | | K | K | K | K | K | K | K | U | U | | | | |
| 56000 | 563 | | | K | K | K | K | K | K | K | U | U | | | | |
| 68000 | 683 | | | K | K | K | K | K | K | K | | | | | | |
| 82000 | 823 | | | K | K | K | K | K | K | K | | | | | | |
| 100000 | 104 | | | K | K | K | K | K | K | K | M | | | | | |
| 120000 | 124 | | | K | K | K | K | K | K | K | M | | | | | |
| 150000 | 154 | | | K | K | K | K | K | K | K | U | | | | | |
| 180000 | 184 | | | K | K | K | K | K | K | K | U | | | | | |
| 220000 | 224 | | | K | K | K | K | K | K | K | U | | | | | |
| 270000 | 274 | | | K | K | K | K | K | K | K | U | | | | | |
| 330000 | 334 | | | K | K | K | K | K | K | K | U | | | | | |
| 390000 | 394 | | | K | K | K | K | K | K | K | U | | | | | |
| 470000 | 474 | | | K | K | K | K | K | K | K | | | | | | |
| 560000 | 564 | | | K | K | K | K | K | M | M | | | | | | |
| 680000 | 684 | | | K | K | K | K | K | M | M | | | | | | |
| 820000 | 824 | | | K | K | K | K | K | U | U | | | | | | |
| 1000000 | 105 | | | K | K | K | K | K | U | U | | | | | | |
| 1200000 | 125 | | | K | K | K | M | M | | | | | | | | |
| 1500000 | 155 | | | K | K | K | M | M | | | | | | | | |
| 1800000 | 185 | | | K | K | K | M | M | | | | | | | | |
| 2200000 | 225 | | | K | K | K | M | M | | | | | | | | |
| 2700000 | 275 | | | K | K | K | U | U | | | | | | | | |
| 3300000 | 335 | | | K | K | K | | | | | | | | | | |
| 3900000 | 395 | | | K | K | K | | | | | | | | | | |
| 4700000 | 475 | | | K | K | K | | | | | | | | | | |
| 5600000 | 565 | | | K | K | K | | | | | | | | | | |
| 6800000 | 685 | | | K | K | K | | | | | | | | | | |
| 8200000 | 825 | | | M | M | M | | | | | | | | | | |
| 10000000 | 106 | | | M | M | M | | | | | | | | | | |

AB: 软端电极 – 抗弯曲裂纹系列



■ X7R 容值表 (5)

| 尺寸 | | 2225 | | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|------|-----|------|-----|-----|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV |
| 100 | 101 | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | |
| 270 | 271 | | | | | | | | | | | | K |
| 330 | 331 | | | | | | | | | | | | K |
| 390 | 391 | | | | | | | | | | | | K |
| 470 | 471 | | | | | | | | | | | | K |
| 560 | 561 | | | | | | | | | | | | K |
| 680 | 681 | | | | | | | | | | | | K |
| 820 | 821 | | | | | | | | | | | | K |
| 1000 | 102 | K | K | K | K | K | K | K | K | K | K | K | K |
| 1200 | 122 | K | K | K | K | K | K | K | K | K | K | K | M |
| 1500 | 152 | K | K | K | K | K | K | K | K | K | K | K | M |
| 1800 | 182 | K | K | K | K | K | K | K | K | K | K | K | M |
| 2200 | 222 | K | K | K | K | K | K | K | K | K | K | K | |
| 2700 | 272 | K | K | K | K | K | K | K | K | K | K | K | |
| 3300 | 332 | K | K | K | K | K | K | K | K | K | K | K | |
| 3900 | 392 | K | K | K | K | K | K | K | K | K | K | K | |
| 4700 | 472 | K | K | K | K | K | K | K | K | K | K | K | |
| 5600 | 562 | K | K | K | K | K | K | K | K | K | K | M | |
| 6800 | 682 | K | K | K | K | K | K | K | K | K | K | M | |
| 8200 | 822 | K | K | K | K | K | K | K | K | K | K | M | |
| 10000 | 103 | K | K | K | K | K | K | K | K | K | K | M | |
| 12000 | 123 | K | K | K | K | K | K | K | K | M | M | M | |
| 15000 | 153 | K | K | K | K | K | K | K | K | M | M | M | |
| 18000 | 183 | K | K | K | K | K | K | K | K | M | M | U | |
| 22000 | 223 | K | K | K | K | K | K | K | K | M | M | | |
| 27000 | 273 | K | K | K | K | K | K | K | K | M | M | | |
| 33000 | 333 | K | K | K | K | K | K | K | K | M | M | | |
| 39000 | 393 | K | K | K | K | K | K | K | K | U | U | | |
| 47000 | 473 | K | K | K | K | K | K | K | K | U | U | | |
| 56000 | 563 | K | K | K | K | K | K | K | K | U | U | | |
| 68000 | 683 | K | K | K | K | K | K | K | K | | | | |
| 82000 | 823 | K | K | K | K | K | K | K | K | | | | |
| 100000 | 104 | K | K | K | K | K | K | K | M | | | | |
| 120000 | 124 | K | K | K | K | K | K | K | U | | | | |
| 150000 | 154 | K | K | K | K | K | K | K | U | | | | |
| 180000 | 184 | K | K | K | K | K | K | K | U | | | | |
| 220000 | 224 | K | K | K | K | K | K | K | U | | | | |
| 270000 | 274 | K | K | K | K | K | K | K | U | | | | |
| 330000 | 334 | K | K | K | K | K | K | K | U | | | | |
| 390000 | 394 | K | K | K | K | K | K | K | U | | | | |
| 470000 | 474 | K | K | K | K | K | K | K | | | | | |
| 560000 | 564 | K | K | K | K | K | K | K | | | | | |
| 680000 | 684 | K | K | K | K | K | K | K | | | | | |
| 820000 | 824 | K | K | K | K | K | M | M | | | | | |
| 1000000 | 105 | K | K | K | K | K | M | M | | | | | |
| 1200000 | 125 | K | K | K | M | M | U | U | | | | | |
| 1500000 | 155 | K | K | K | M | M | U | U | | | | | |
| 1800000 | 185 | K | K | K | M | M | | | | | | | |
| 2200000 | 225 | K | K | K | M | M | | | | | | | |
| 2700000 | 275 | K | K | K | M | M | | | | | | | |
| 3300000 | 335 | K | K | K | U | U | | | | | | | |
| 3900000 | 395 | K | K | K | U | U | | | | | | | |
| 4700000 | 475 | K | K | K | | | | | | | | | |
| 5600000 | 565 | K | K | K | | | | | | | | | |
| 6800000 | 685 | K | K | K | | | | | | | | | |
| 8200000 | 825 | M | M | M | | | | | | | | | |
| 10000000 | 106 | M | M | M | | | | | | | | | |

■ 产品简介

汇聚工业应用产品按照工业级标准设计和生产，采取高可靠性筛选-Thermal Shock/Dual 85C/85%RH Mil Grad Bias Humidity Qualifications Plan(MIL-PRF-55681)，其由精确的介电材料和适当的导电浆料配制，自动化制程的稳定生产和严谨的质量精确管控了介电设计厚度、电极完整性以及端电极连接的良好特性，实现了最佳可靠度的产品性能。

■ 特点

- ◆ 工业级电容
- ◆ EIA 0603-2225
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 工业电子设备
- ◆ 电源输入/输出滤波
- ◆ 电源缓冲电路
- ◆ 电功率因素改善
- ◆ 噪音旁路

■ 一般电气规格

| 介电材料 | COG | | X7R | |
|--------------------------------|--|---------------------|--|---------------------|
| EIA 尺寸 | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225 | | 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2211, 2220, 2225 | |
| 额定电压 | 25V~4000V | | 25V~4000V | |
| 电容范围 | 0.5pF ~ 470nF | | 100pF ~ 10μF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 电容量范围 | Q | 参阅附表 1 | |
| | Cap<30pF | Q≥400+20C | | |
| | Cap≥30pF | Q≥1000 | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2类产品) 150±10°C /1 小时热处理后静置于常温环境 24±2 小时再进行测量作业 | |
| | 电容量范围 | 检测条件 | 电容量范围 | 检测条件 |
| | Cap≤1000pF | 1.0±0.2Vrms, 1.0MHz | Cap≤100pF | 1.0±0.2Vrms, 1.0MHz |
| | Cap>1000pF | 1.0±0.2Vrms 1.0kHz | 100pF<Cap≤10μF | 1.0±0.2Vrms 1.0kHz |
| | | Cap>10μF | 0.5±0.2Vrms, 120Hz | |
| 绝缘电阻 (IR) | ≥100GΩ 或 R·C≥ 500Ω·F 任一较小值以上 | | ≥10GΩ或 R·C≥ 100Ω·F 任一较小值以上 | |
| 工作温度 | - 55°C to + 125 °C | | | |
| 温度系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

*附表 1

| 额定电压 | D.F. ≤ | 特殊控管 D.F. ≤ | 尺寸容值 |
|-------|--------|-------------|---|
| 25V | ≤ 3.5% | ≤ 5% | 0805 ≥ 1μF; 1210 ≥ 10μF |
| | | ≤ 7% | 0603 ≥ 0.33μF; 1206 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 0.47μF; 0805 ≥ 2.2μF; 1206 ≥ 6.8μF ; 1210 ≥ 22μF |
| ≥ 50V | ≤ 2.5% | ≤ 3% | 0603 ≥ 0.047μF; 0805 ≥ 0.18μF; 1206 ≥ 0.47μF |
| | | ≤ 5% | 1210 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 1μF; 0805 ≥ 1μF; 1206 ≥ 4.7μF; 1210 ≥ 10μF |

■ X7R 容值表 (1)

| 尺寸 | | 0603 | | | | | 0805 | | | | | | | | 1206 | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|-----|------|------|------|------|------|-----|------|-----|------|------|------|------|------|-----|------|-----|-------|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 2.5KV |
| 100 | 101 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 120 | 121 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 150 | 151 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 180 | 181 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 220 | 221 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 270 | 271 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 330 | 331 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 390 | 391 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 470 | 471 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 560 | 561 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B |
| 680 | 681 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | C | C | C |
| 820 | 821 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | C | C | C |
| 1000 | 102 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | D | D | D |
| 1200 | 122 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | G | G | G |
| 1500 | 152 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | B | G | G | G |
| 1800 | 182 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | G | G |
| 2200 | 222 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | G | G |
| 2700 | 272 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | G | G |
| 3300 | 332 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | G | G |
| 3900 | 392 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | | |
| 4700 | 472 | S | S | S | X | X | B | B | B | B | B | B | B | D | B | B | B | B | B | B | B | B | G | | |
| 5600 | 562 | S | S | S | X | X | B | B | B | B | B | C | C | D | B | B | B | B | B | B | B | B | | | |
| 6800 | 682 | S | S | S | X | X | B | B | B | B | B | D | D | D | B | B | B | B | B | B | B | C | | | |
| 8200 | 822 | S | S | S | X | X | B | B | B | B | B | D | D | D | B | B | B | B | B | B | B | C | | | |
| 10000 | 103 | S | S | S | X | X | B | B | B | B | B | D | D | | B | B | B | B | B | C | C | C | | | |
| 12000 | 123 | S | S | X | X | X | B | B | B | B | B | D | D | | B | B | B | B | B | D | D | D | | | |
| 15000 | 153 | S | S | X | X | X | B | B | B | B | B | D | D | | B | B | B | B | B | D | D | G | | | |
| 18000 | 183 | S | S | X | | | B | B | B | B | B | D | D | | B | B | B | B | B | D | D | | | | |
| 22000 | 223 | S | S | X | | | B | B | B | B | B | D | D | | B | B | B | B | B | G | G | | | | |
| 27000 | 273 | S | S | X | | | B | B | C | C | C | | | | B | B | B | B | B | G | G | | | | |
| 33000 | 333 | X | X | X | | | B | B | C | D | D | | | | B | B | B | B | B | G | G | | | | |
| 39000 | 393 | X | X | X | | | B | B | C | D | | | | | B | B | B | B | B | G | G | | | | |
| 47000 | 473 | X | X | X | | | B | B | C | D | | | | | B | B | B | B | B | G | G | | | | |
| 56000 | 563 | X | X | | | | B | B | C | D | | | | | B | B | B | C | C | | | | | | |
| 68000 | 683 | X | X | | | | B | B | C | D | | | | | B | B | B | D | D | | | | | | |
| 82000 | 823 | X | X | | | | B | B | C | | | | | | B | B | B | D | D | | | | | | |
| 100000 | 104 | X | X | | | | B | B | D | | | | | | B | B | B | G | G | | | | | | |
| 120000 | 124 | | | | | | B | B | D | | | | | | B | B | B | | | | | | | | |
| 150000 | 154 | | | | | | B | B | D | | | | | | B | B | B | | | | | | | | |
| 180000 | 184 | | | | | | B | B | D | | | | | | B | B | C | | | | | | | | |
| 220000 | 224 | | | | | | B | B | D | | | | | | B | B | C | | | | | | | | |
| 270000 | 274 | | | | | | D | D | | | | | | | B | B | D | | | | | | | | |
| 330000 | 334 | | | | | | D | D | | | | | | | B | B | G | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | D | D | G | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | D | D | G | | | | | | | | |
| 560000 | 564 | | | | | | | | | | | | | | D | D | P | | | | | | | | |
| 680000 | 684 | | | | | | | | | | | | | | D | D | P | | | | | | | | |
| 820000 | 824 | | | | | | | | | | | | | | G | G | P | | | | | | | | |
| 1000000 | 105 | | | | | | | | | | | | | | P | P | P | | | | | | | | |
| 1200000 | 125 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | | | | | | | | | |

■ X7R 容值表 (2)

| 尺寸 | | 1210 | | | | | | | | | | 1808 | | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|------|-----|------|-----|------|-----|------|------|------|------|------|-----|------|-----|-----|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 180 | 181 | | | | | | | | | | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 220 | 221 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 270 | 271 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 330 | 331 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 390 | 391 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 470 | 471 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 560 | 561 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | G | K |
| 680 | 681 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 820 | 821 | C | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K |
| 1000 | 102 | C | C | C | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D | K | K |
| 1200 | 122 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 1500 | 152 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 1800 | 182 | C | C | C | C | C | C | C | C | G | G | D | D | D | D | D | D | D | D | D | D | D | K |
| 2200 | 222 | C | C | C | C | C | C | C | C | K | K | D | D | D | D | D | D | D | D | G | G | K | |
| 2700 | 272 | C | C | C | C | C | C | C | C | K | M | D | D | D | D | D | D | D | D | K | K | | |
| 3300 | 332 | C | C | C | C | C | C | C | C | K | M | D | D | D | D | D | D | D | D | K | K | | |
| 3900 | 392 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 4700 | 472 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 5600 | 562 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 6800 | 682 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | K | K | | |
| 8200 | 822 | C | C | C | C | C | C | C | C | M | M | D | D | D | D | D | D | D | D | | | | |
| 10000 | 103 | C | C | C | C | C | C | C | D | | | D | D | D | D | D | D | D | D | | | | |
| 12000 | 123 | C | C | C | C | C | C | C | D | | | G | G | G | G | G | G | G | G | | | | |
| 15000 | 153 | C | C | C | C | C | C | C | G | | | G | G | G | G | G | G | G | G | | | | |
| 18000 | 183 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 22000 | 223 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 27000 | 273 | C | C | C | C | C | D | D | G | | | G | G | G | G | G | K | K | K | | | | |
| 33000 | 333 | C | C | C | C | C | G | G | G | | | G | G | G | G | G | K | K | K | | | | |
| 39000 | 393 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 47000 | 473 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 56000 | 563 | C | C | C | C | C | G | G | M | | | G | G | G | G | G | K | K | K | | | | |
| 68000 | 683 | C | C | C | C | C | K | K | M | | | G | G | G | G | G | K | K | K | | | | |
| 82000 | 823 | C | C | C | C | C | M | M | | | | G | G | G | G | G | K | K | | | | | |
| 100000 | 104 | C | C | C | C | C | M | M | | | | G | G | G | G | G | | | | | | | |
| 120000 | 124 | C | C | C | G | G | M | M | | | | G | G | G | G | G | | | | | | | |
| 150000 | 154 | C | C | C | G | G | M | M | | | | G | G | G | G | G | | | | | | | |
| 180000 | 184 | C | C | C | G | G | | | | | | G | G | G | K | K | | | | | | | |
| 220000 | 224 | C | C | C | G | G | | | | | | G | G | G | | | | | | | | | |
| 270000 | 274 | C | C | C | K | K | | | | | | K | K | K | | | | | | | | | |
| 330000 | 334 | C | C | C | K | K | | | | | | K | K | | | | | | | | | | |
| 390000 | 394 | C | C | D | M | M | | | | | | | | | | | | | | | | | |
| 470000 | 474 | C | C | D | M | M | | | | | | K | K | K | K | K | | | | | | | |
| 560000 | 564 | C | C | G | M | M | | | | | | K | K | K | K | K | | | | | | | |
| 680000 | 684 | C | C | G | M | M | | | | | | K | K | K | | | | | | | | | |
| 820000 | 824 | D | D | P | | | | | | | | | | K | | | | | | | | | |
| 1000000 | 105 | D | D | P | | | | | | | | | | | | | | | | | | | |
| 1200000 | 125 | P | P | K | | | | | | | | | | | | | | | | | | | |
| 1500000 | 155 | K | K | K | | | | | | | | | | | | | | | | | | | |
| 1800000 | 185 | M | M | M | | | | | | | | | | | | | | | | | | | |
| 2200000 | 225 | M | M | M | | | | | | | | | | | | | | | | | | | |
| 2700000 | 275 | M | M | | | | | | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | | | | | | | | |

■ X7R 容值表 (3)

| 尺寸 | | 1812 | | | | | | | | | | | | 1825 | | | | | | | | | | | |
|----------|-----|------|-----|------|------|------|------|------|-----|------|-----|-----|-----|------|-----|------|------|------|------|------|-----|------|-----|-----|-----|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV | 25V | 50V | 100V | 200V | 250V | 500V | 630V | 1KV | 1.5V | 2KV | 3KV | 4KV |
| 100 | 101 | | | | | | | | | | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | | | | | | | | | | | | | | | | | | | |
| 180 | 181 | | | | | | | | | | | | | | | | | | | | | | | | |
| 220 | 221 | | | | | | | | | | | | | | | | | | | | | | | | |
| 270 | 271 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 330 | 331 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 390 | 391 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 470 | 471 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 560 | 561 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 680 | 681 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 820 | 821 | D | D | D | D | D | D | D | D | D | D | D | K | | | | | | | | | | | | K |
| 1000 | 102 | D | D | D | D | D | D | D | D | D | D | G | K | K | K | K | K | K | K | K | K | K | K | K | K |
| 1200 | 122 | D | D | D | D | D | D | D | D | D | D | K | M | K | K | K | K | K | K | K | K | K | K | K | M |
| 1500 | 152 | D | D | D | D | D | D | D | D | D | D | K | M | K | K | K | K | K | K | K | K | K | K | K | M |
| 1800 | 182 | D | D | D | D | D | D | D | D | D | D | M | M | K | K | K | K | K | K | K | K | K | K | K | M |
| 2200 | 222 | D | D | D | D | D | D | D | D | D | D | M | | K | K | K | K | K | K | K | K | K | K | K | |
| 2700 | 272 | D | D | D | D | D | D | D | D | D | D | M | | K | K | K | K | K | K | K | K | K | K | K | |
| 3300 | 332 | D | D | D | D | D | D | D | D | D | G | G | M | | K | K | K | K | K | K | K | K | K | K | |
| 3900 | 392 | D | D | D | D | D | D | D | D | K | K | | | K | K | K | K | K | K | K | K | K | K | K | |
| 4700 | 472 | D | D | D | D | D | D | D | D | K | K | | | K | K | K | K | K | K | K | K | K | K | K | |
| 5600 | 562 | D | D | D | D | D | D | D | D | M | M | | | K | K | K | K | K | K | K | K | K | K | M | |
| 6800 | 682 | D | D | D | D | D | D | D | D | M | M | | | K | K | K | K | K | K | K | K | K | K | M | |
| 8200 | 822 | D | D | D | D | D | D | D | D | M | M | | | K | K | K | K | K | K | K | K | K | K | M | |
| 10000 | 103 | D | D | D | D | D | D | D | D | M | M | | | K | K | K | K | K | K | K | K | K | K | M | |
| 12000 | 123 | D | D | D | D | D | D | D | D | | | | | K | K | K | K | K | K | K | K | M | M | U | |
| 15000 | 153 | D | D | D | D | D | D | D | D | | | | | K | K | K | K | K | K | K | K | M | M | U | |
| 18000 | 183 | D | D | D | D | D | D | D | G | | | | | K | K | K | K | K | K | K | K | U | U | U | |
| 22000 | 223 | D | D | D | D | D | D | D | G | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 27000 | 273 | D | D | D | D | D | D | D | K | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 33000 | 333 | D | D | D | D | D | D | D | K | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 39000 | 393 | D | D | D | D | D | D | D | M | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 47000 | 473 | D | D | D | D | D | D | D | M | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 56000 | 563 | D | D | D | D | D | G | G | M | | | | | K | K | K | K | K | K | K | K | U | U | | |
| 68000 | 683 | D | D | D | D | D | G | G | M | | | | | K | K | K | K | K | K | K | K | | | | |
| 82000 | 823 | D | D | D | D | D | G | G | M | | | | | K | K | K | K | K | K | K | K | | | | |
| 100000 | 104 | D | D | D | D | D | G | G | M | | | | | K | K | K | K | K | K | K | M | | | | |
| 120000 | 124 | D | D | D | D | D | K | K | | | | | | K | K | K | K | K | K | K | U | | | | |
| 150000 | 154 | D | D | D | D | D | K | K | | | | | | K | K | K | K | K | K | K | U | | | | |
| 180000 | 184 | D | D | D | D | D | M | M | | | | | | K | K | K | K | K | K | K | U | | | | |
| 220000 | 224 | D | D | D | D | D | M | M | | | | | | K | K | K | K | K | K | K | U | | | | |
| 270000 | 274 | D | D | D | G | G | M | | | | | | | K | K | K | K | K | K | K | U | | | | |
| 330000 | 334 | D | D | D | G | G | M | | | | | | | K | K | K | K | K | K | K | U | | | | |
| 390000 | 394 | D | D | D | K | K | M | | | | | | | K | K | K | K | K | K | K | | | | | |
| 470000 | 474 | D | D | D | K | K | M | | | | | | | K | K | K | K | K | K | K | | | | | |
| 560000 | 564 | D | D | D | M | M | | | | | | | | K | K | K | K | K | M | M | | | | | |
| 680000 | 684 | D | D | D | M | M | | | | | | | | K | K | K | K | K | M | M | | | | | |
| 820000 | 824 | D | D | D | M | M | | | | | | | | K | K | K | K | K | U | U | | | | | |
| 1000000 | 105 | D | D | D | M | | | | | | | | | K | K | K | K | K | | | | | | | |
| 1200000 | 125 | D | D | D | | | | | | | | | | K | K | K | M | M | | | | | | | |
| 1500000 | 155 | D | D | D | | | | | | | | | | K | K | K | M | M | | | | | | | |
| 1800000 | 185 | G | G | G | | | | | | | | | | K | K | K | M | M | | | | | | | |
| 2200000 | 225 | G | G | G | | | | | | | | | | K | K | K | M | M | | | | | | | |
| 2700000 | 275 | K | K | K | | | | | | | | | | K | K | K | U | U | | | | | | | |
| 3300000 | 335 | K | K | K | | | | | | | | | | K | K | K | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | K | K | K | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | K | K | K | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | K | K | K | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | K | K | K | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | M | M | M | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | M | M | M | | | | | | | | | |

■ 产品简介

汇聚车载应用系列产品采用车规级设计工艺、加强质量控制，符合 AEC-Q200 车载标准，提供了更高的电气精度，稳定性和可靠性，从而保证在汽车应用中的质量性能。

■ 特点

- ◆ 低 ESR、ESL
- ◆ EIA 0603-2220
- ◆ 高可靠性和稳定性
- ◆ 符合 AEC-Q200 车载标准

■ 用途

- ◆ 导航或相关信息设备
- ◆ 车载娱乐设备
- ◆ 车身电子设备
- ◆ 新能源汽车电子设备

■ 一般电气规格

| 介电材料 | COG | | X7R | |
|--------------------------|---------------------------------|---------------------|--|---------------------|
| EIA 尺寸 | 0603, 0805, 1206, 1210, 1812 | | 0603, 0805, 1206, 1210, 1812 | |
| 额定电压 | 25V~250V | | 25V~250V | |
| 电容范围 | 0.5pF ~ 180nF | | 100pF ~ 3.3μF | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | |
| 损耗角正切 (Tan δ) & 品质因数 (Q) | 电容范围 | Q | 参阅*附表 1 | |
| | Cap<30pF | Q≥400+20C | | |
| | Cap≥30pF | Q≥1000 | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C /1 小时热处理后静置于常温环境 24±2 小时再进行测量作业 | |
| | 电容范围 | 检测条件 | 电容范围 | 检测条件 |
| | Cap≤1000pF | 1.0±0.2Vrms, 1.0MHz | Cap≤100pF | 1.0±0.2Vrms, 1.0MHz |
| | Cap>1000pF | 1.0±0.2Vrms 1.0KHz | 100pF<Cap≤10μF | 1.0±0.2Vrms 1.0kHz |
| | | Cap>10μF | 0.5±0.2Vrms, 120Hz | |
| 绝缘电阻 (IR) | ≥100GΩ 或 R•C≥ 500Ω-F 任一较小值以上 | | ≥10GΩ或 R•C≥100Ω-F 任一较小值以上 | |
| 工作温度 | - 55°C to + 125 °C | | | |
| 温度系数 | ±30ppm / °C | | ±15% | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | |

*附表 1

| 额定电压 | D.F. ≤ | 特殊控管 D.F. ≤ | 尺寸容值 |
|-------|--------|-------------|--|
| 25V | ≤ 3.5% | ≤ 5% | 0805 ≥ 1μF; 1210 ≥ 10μF |
| | | ≤ 7% | 0603 ≥ 0.33μF; 1206 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 0.47μF; 0805 ≥ 2.2μF; 1206 ≥ 6.8μF; 1210 ≥ 22μF |
| ≥ 50V | ≤ 2.5% | ≤ 3% | 0603 ≥ 0.047μF; 0805 ≥ 0.18μF; 1206 ≥ 0.47μF |
| | | ≤ 5% | 1210 ≥ 4.7μF |
| | | ≤ 10% | 0603 ≥ 1μF; 0805 ≥ 1μF; 1206 ≥ 4.7μF; 1210 ≥ 10μF |

COG 容值表 (1)

| 尺寸 | | 0603 | | | | | 0805 | | | | | 1206 | | | | | |
|---------|-----|------|-----|------|------|------|------|-----|------|------|------|------|-----|-----|------|------|------|
| 电容量(pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 1KV | 25V | 50V | 100V | 200V | 250V |
| 0.5 | 0R5 | S | S | S | S | S | A | A | A | A | A | | | | | | |
| 1 | 1R0 | S | S | S | S | S | A | A | A | A | A | | | | | | |
| 1.2 | 1R2 | S | S | S | S | S | A | A | A | A | A | | B | B | B | | |
| 1.5 | 1R5 | S | S | S | S | S | A | A | A | A | A | | B | B | B | | |
| 1.8 | 1R8 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | | |
| 2.2 | 2R2 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | | |
| 2.7 | 2R7 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | | |
| 3.3 | 3R3 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 3.9 | 3R9 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 4.7 | 4R7 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 5.6 | 5R6 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 6.8 | 6R8 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 8.2 | 8R2 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 10 | 100 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 12 | 120 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 15 | 150 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 18 | 180 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 22 | 220 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 27 | 270 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 33 | 330 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 39 | 390 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 47 | 470 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 56 | 560 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 68 | 680 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 82 | 820 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 100 | 101 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 120 | 121 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 150 | 151 | S | S | S | S | S | A | A | A | A | A | B | B | B | B | B | B |
| 180 | 181 | S | S | S | S | S | A | A | A | A | A | D | B | B | B | B | B |
| 220 | 221 | S | S | S | S | S | A | A | A | A | A | D | B | B | B | B | B |
| 270 | 271 | S | S | S | S | S | A | A | A | A | A | D | B | B | B | B | B |
| 330 | 331 | S | S | S | S | S | A | A | A | A | A | D | B | B | B | B | B |
| 390 | 391 | S | S | S | S | S | A | A | A | A | A | D | B | B | B | B | B |
| 470 | 471 | S | S | S | S | S | A | A | A | B | B | | B | B | B | B | B |
| 560 | 561 | S | S | S | S | S | A | A | A | B | B | | B | B | B | B | B |
| 680 | 681 | S | S | S | S | S | A | A | A | B | B | | B | B | B | B | B |
| 820 | 821 | S | S | S | S | S | A | A | B | C | C | | B | B | B | B | B |
| 1000 | 102 | S | S | S | | | B | B | B | C | C | | B | B | B | B | B |
| 1200 | 122 | S | S | | | | B | B | C | D | D | | B | B | B | B | B |
| 1500 | 152 | | | | | | B | B | C | D | D | | B | B | B | C | C |
| 1800 | 182 | | | | | | C | C | C | D | D | | B | B | B | C | C |
| 2200 | 222 | | | | | | C | C | D | D | D | | B | B | C | D | D |
| 2700 | 272 | | | | | | D | D | D | D | D | | B | B | C | D | D |
| 3300 | 332 | | | | | | D | D | D | | | | C | C | D | D | D |
| 3900 | 392 | | | | | | D | D | D | | | | C | C | D | G | G |
| 4700 | 472 | | | | | | D | D | D | | | | D | D | D | G | G |
| 5600 | 562 | | | | | | D | D | D | | | | D | D | G | G | G |
| 6800 | 682 | | | | | | D | D | D | | | | D | D | G | G | G |
| 8200 | 822 | | | | | | D | D | D | | | | G | G | G | G | G |
| 10000 | 103 | | | | | | D | D | | | | | G | G | G | | |
| 12000 | 123 | | | | | | D | D | | | | | G | G | G | | |
| 15000 | 153 | | | | | | | | | | | | G | G | G | | |
| 18000 | 183 | | | | | | | | | | | | G | G | G | | |
| 22000 | 223 | | | | | | | | | | | | G | G | | | |
| 27000 | 273 | | | | | | | | | | | | G | G | | | |
| 33000 | 333 | | | | | | | | | | | | G | G | | | |
| 39000 | 393 | | | | | | | | | | | | | | | | |
| 47000 | 473 | | | | | | | | | | | | | | | | |
| 56000 | 563 | | | | | | | | | | | | | | | | |
| 68000 | 683 | | | | | | | | | | | | | | | | |
| 82000 | 823 | | | | | | | | | | | | | | | | |
| 100000 | 104 | | | | | | | | | | | | | | | | |
| 120000 | 124 | | | | | | | | | | | | | | | | |
| 150000 | 154 | | | | | | | | | | | | | | | | |
| 180000 | 184 | | | | | | | | | | | | | | | | |
| 220000 | 224 | | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | | |

COG 容值表 (2)

| 尺寸 | | 1210 | | | | | 1808 | | | | | 1812 | | | | |
|---------|-----|------|-----|------|------|------|------|-----|------|------|------|------|-----|------|------|------|
| 电容量(pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V |
| 0.5 | 0R5 | | | | | | | | | | | | | | | |
| 1 | 1R0 | | | | | | | | | | | | | | | |
| 1.2 | 1R2 | | | | | | | | | | | | | | | |
| 1.5 | 1R5 | | | | | | | | | | | | | | | |
| 1.8 | 1R8 | | | | | | | | | | | | | | | |
| 2.2 | 2R2 | | | | | | D | D | D | D | D | | | | | |
| 2.7 | 2R7 | | | | | | D | D | D | D | D | | | | | |
| 3.3 | 3R3 | | | | | | D | D | D | D | D | | | | | |
| 3.9 | 3R9 | | | | | | D | D | D | D | D | | | | | |
| 4.7 | 4R7 | | | | | | D | D | D | D | D | | | | | |
| 5.6 | 5R6 | | | | | | D | D | D | D | D | | | | | |
| 6.8 | 6R8 | | | | | | D | D | D | D | D | | | | | |
| 8.2 | 8R2 | | | | | | D | D | D | D | D | | | | | |
| 10 | 100 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 12 | 120 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 15 | 150 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 18 | 180 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 22 | 220 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 27 | 270 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 33 | 330 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 39 | 390 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 47 | 470 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 56 | 560 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 68 | 680 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 82 | 820 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 100 | 101 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 120 | 121 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 150 | 151 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 180 | 181 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 220 | 221 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 270 | 271 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 330 | 331 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 390 | 391 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 470 | 471 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 560 | 561 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 680 | 681 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 820 | 821 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1000 | 102 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1200 | 122 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1500 | 152 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1800 | 182 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2200 | 222 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2700 | 272 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3300 | 332 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3900 | 392 | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D |
| 4700 | 472 | C | C | C | D | D | D | D | D | D | D | D | D | D | D | D |
| 5600 | 562 | C | C | D | D | D | D | D | D | G | G | D | D | D | D | D |
| 6800 | 682 | D | D | D | G | G | D | D | D | G | G | D | D | D | D | D |
| 8200 | 822 | D | D | D | G | G | D | D | G | K | K | D | D | D | D | D |
| 10000 | 103 | D | D | G | K | K | D | D | G | K | K | D | D | D | D | D |
| 12000 | 123 | G | G | G | K | K | G | G | K | K | K | D | D | D | G | G |
| 15000 | 153 | G | G | K | M | M | G | G | K | K | K | D | D | D | G | G |
| 18000 | 183 | K | K | M | M | M | K | K | K | K | K | D | D | G | K | K |
| 22000 | 223 | K | K | M | M | M | K | K | K | K | K | D | D | G | K | K |
| 27000 | 273 | M | M | M | | | K | K | K | | | G | G | K | M | M |
| 33000 | 333 | M | M | M | | | K | K | K | | | G | G | K | M | M |
| 39000 | 393 | M | M | M | | | K | K | | | | K | K | M | M | M |
| 47000 | 473 | M | M | M | | | K | K | | | | K | K | M | M | M |
| 56000 | 563 | M | M | M | | | K | K | | | | M | M | M | | |
| 68000 | 683 | M | M | | | | | | | | | M | M | M | | |
| 82000 | 823 | M | M | | | | | | | | | M | M | M | | |
| 100000 | 104 | M | M | | | | | | | | | M | M | M | | |
| 120000 | 124 | | | | | | | | | | | M | M | M | | |
| 150000 | 154 | | | | | | | | | | | M | M | | | |
| 180000 | 184 | | | | | | | | | | | M | M | | | |
| 220000 | 224 | | | | | | | | | | | | | | | |
| 270000 | 274 | | | | | | | | | | | | | | | |
| 330000 | 334 | | | | | | | | | | | | | | | |
| 390000 | 394 | | | | | | | | | | | | | | | |
| 470000 | 474 | | | | | | | | | | | | | | | |

■ X7R 容值表 (1)

| 尺寸 | | 0603 | | | | | 0805 | | | | | 1206 | | | | |
|----------|-----|------|-----|------|------|------|------|-----|------|------|------|------|-----|------|------|------|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V |
| 100 | 101 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 120 | 121 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 150 | 151 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 180 | 181 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 220 | 221 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 270 | 271 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 330 | 331 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 390 | 391 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 470 | 471 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 560 | 561 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 680 | 681 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 820 | 821 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 1000 | 102 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 1200 | 122 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 1500 | 152 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 1800 | 182 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 2200 | 222 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 2700 | 272 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 3300 | 332 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 3900 | 392 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 4700 | 472 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 5600 | 562 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 6800 | 682 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 8200 | 822 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 10000 | 103 | S | S | S | X | X | B | B | B | B | B | B | B | B | B | B |
| 12000 | 123 | S | S | X | X | X | B | B | B | B | B | B | B | B | B | B |
| 15000 | 153 | S | S | X | X | X | B | B | B | B | B | B | B | B | B | B |
| 18000 | 183 | S | S | X | | | B | B | B | B | B | B | B | B | B | B |
| 22000 | 223 | S | S | X | | | B | B | B | B | B | B | B | B | B | B |
| 27000 | 273 | S | S | X | | | B | B | C | C | C | B | B | B | B | B |
| 33000 | 333 | X | X | X | | | B | B | C | D | D | B | B | B | B | B |
| 39000 | 393 | X | X | X | | | B | B | C | D | | B | B | B | B | B |
| 47000 | 473 | X | X | X | | | B | B | C | D | | B | B | B | B | B |
| 56000 | 563 | X | X | | | | B | B | C | D | | B | B | B | C | C |
| 68000 | 683 | X | X | | | | B | B | C | D | | B | B | B | D | D |
| 82000 | 823 | X | X | | | | B | B | C | | | B | B | B | D | D |
| 100000 | 104 | X | X | | | | B | B | D | | | B | B | B | G | G |
| 120000 | 124 | | | | | | B | B | D | | | B | B | B | | |
| 150000 | 154 | | | | | | B | B | D | | | B | B | B | | |
| 180000 | 184 | | | | | | B | B | D | | | B | B | C | | |
| 220000 | 224 | | | | | | B | B | D | | | B | B | C | | |
| 270000 | 274 | | | | | | D | D | | | | B | B | D | | |
| 330000 | 334 | | | | | | D | D | | | | B | B | G | | |
| 390000 | 394 | | | | | | | | | | | D | D | G | | |
| 470000 | 474 | | | | | | | | | | | D | D | G | | |
| 560000 | 564 | | | | | | | | | | | D | D | P | | |
| 680000 | 684 | | | | | | | | | | | D | D | P | | |
| 820000 | 824 | | | | | | | | | | | G | G | P | | |
| 1000000 | 105 | | | | | | | | | | | P | P | P | | |
| 1200000 | 125 | | | | | | | | | | | | | | | |
| 1500000 | 155 | | | | | | | | | | | | | | | |
| 1800000 | 185 | | | | | | | | | | | | | | | |
| 2200000 | 225 | | | | | | | | | | | | | | | |
| 2700000 | 275 | | | | | | | | | | | | | | | |
| 3300000 | 335 | | | | | | | | | | | | | | | |
| 3900000 | 395 | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | |

■ X7R 容值表 (2)

| 尺寸 | | 1210 | | | | | 1808 | | | | | 1812 | | | | |
|----------|-----|------|-----|------|------|------|------|-----|------|------|------|------|-----|------|------|------|
| 电容量 (pF) | 代码 | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V | 25V | 50V | 100V | 200V | 250V |
| 100 | 101 | | | | | | | | | | | | | | | |
| 120 | 121 | | | | | | | | | | | | | | | |
| 150 | 151 | | | | | | D | D | D | D | D | | | | | |
| 180 | 181 | | | | | | D | D | D | D | D | | | | | |
| 220 | 221 | C | C | C | C | C | D | D | D | D | D | | | | | |
| 270 | 271 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 330 | 331 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 390 | 391 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 470 | 471 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 560 | 561 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 680 | 681 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 820 | 821 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1000 | 102 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1200 | 122 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1500 | 152 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 1800 | 182 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2200 | 222 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 2700 | 272 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3300 | 332 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 3900 | 392 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 4700 | 472 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 5600 | 562 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 6800 | 682 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 8200 | 822 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 10000 | 103 | C | C | C | C | C | D | D | D | D | D | D | D | D | D | D |
| 12000 | 123 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 15000 | 153 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 18000 | 183 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 22000 | 223 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 27000 | 273 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 33000 | 333 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 39000 | 393 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 47000 | 473 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 56000 | 563 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 68000 | 683 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 82000 | 823 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 100000 | 104 | C | C | C | C | C | G | G | G | G | G | D | D | D | D | D |
| 120000 | 124 | C | C | C | G | G | G | G | G | G | G | D | D | D | D | D |
| 150000 | 154 | C | C | C | G | G | G | G | G | G | G | D | D | D | D | D |
| 180000 | 184 | C | C | C | G | G | G | G | G | K | K | D | D | D | D | D |
| 220000 | 224 | C | C | C | G | G | G | G | G | | | D | D | D | D | D |
| 270000 | 274 | C | C | C | K | K | K | K | K | | | D | D | D | G | G |
| 330000 | 334 | C | C | C | K | K | K | K | | | | D | D | D | G | G |
| 390000 | 394 | C | C | D | M | M | | | | | | D | D | D | K | K |
| 470000 | 474 | C | C | D | M | M | K | K | K | K | K | D | D | D | K | K |
| 560000 | 564 | C | C | G | M | M | K | K | K | K | K | D | D | D | M | M |
| 680000 | 684 | C | C | G | M | M | K | K | K | | | D | D | D | M | M |
| 820000 | 824 | D | D | P | | | | | K | | | D | D | D | M | M |
| 1000000 | 105 | D | D | P | | | | | | | | D | D | D | M | |
| 1200000 | 125 | P | P | K | | | | | | | | D | D | D | | |
| 1500000 | 155 | K | K | K | | | | | | | | D | D | D | | |
| 1800000 | 185 | M | M | M | | | | | | | | G | G | G | | |
| 2200000 | 225 | M | M | M | | | | | | | | G | G | G | | |
| 2700000 | 275 | M | M | | | | | | | | | K | K | K | | |
| 3300000 | 335 | | | | | | | | | | | K | K | K | | |
| 3900000 | 395 | | | | | | | | | | | | | | | |
| 4700000 | 475 | | | | | | | | | | | | | | | |
| 5600000 | 565 | | | | | | | | | | | | | | | |
| 6800000 | 685 | | | | | | | | | | | | | | | |
| 8200000 | 825 | | | | | | | | | | | | | | | |
| 10000000 | 106 | | | | | | | | | | | | | | | |

■ 产品简介

安全规范认证电容器是针对现代传真及其他射频防护设备中的脉冲或避雷器而设计的，通过检验规范 (IEC60384-14 & UL60384-14 & UL60950) 认证 (CQC/TUV/UL)。SY 系列的电容器是 X1/Y2 兼容。

■ 特点

- ◆ 通过安规认证
- ◆ EIA 1808-2220
- ◆ 符合 RoHS 标准
- ◆ 高可靠性和稳定性

■ 用途

- ◆ 调制解调器
- ◆ 传真电子电路
- ◆ 电话接收电路
- ◆ 照明、脉冲保护、隔离等电子设备

■ 一般电气规格

| 介电质 | COG | | X7R | | | | | | | | | | | |
|---|--|---|--|------------------|-------------|---------------------|-------------|---------------------|--|--|------|--------------|-----|--------|
| EIA 尺寸 | 1808, 1812, 2211 | | 1808, 1812, 2211, 2220 | | | | | | | | | | | |
| 直流额定电压 | 250VAC | | | | | | | | | | | | | |
| 电容范围 | X1/Y2 Class (Impulse 6KV) | 4pF ~ 100pF | X1/Y2 Class | 100pF ~ 4700pF | | | | | | | | | | |
| | X1/Y2 Class (Impulse 5KV) | 4pF ~ 680pF | X2 Class | 150pF ~ 22,000pF | | | | | | | | | | |
| | X2 Class | 3pF ~ 1000pF | | | | | | | | | | | | |
| 电容公差值 | 参阅产品订货信息表 5 | | 参阅产品订货信息表 5 | | | | | | | | | | | |
| 损耗角正切 (Tan δ) & 质量因子 (Q) | <table border="1"> <thead> <tr> <th>电容量范围</th> <th>Q</th> </tr> </thead> <tbody> <tr> <td>Cap < 30pF:</td> <td>Q ≥ 400 + 20C</td> </tr> <tr> <td>Cap ≥ 30pF:</td> <td>Q ≥ 1000</td> </tr> </tbody> </table> | | 电容量范围 | Q | Cap < 30pF: | Q ≥ 400 + 20C | Cap ≥ 30pF: | Q ≥ 1000 | <table border="1"> <thead> <tr> <th>额定电压</th> <th>Tan δ (D.F.)</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>≤ 2.5%</td> </tr> </tbody> </table> | | 额定电压 | Tan δ (D.F.) | All | ≤ 2.5% |
| | 电容量范围 | Q | | | | | | | | | | | | |
| Cap < 30pF: | Q ≥ 400 + 20C | | | | | | | | | | | | | |
| Cap ≥ 30pF: | Q ≥ 1000 | | | | | | | | | | | | | |
| 额定电压 | Tan δ (D.F.) | | | | | | | | | | | | | |
| All | ≤ 2.5% | | | | | | | | | | | | | |
| 10kHz for Cap < 1μF (IEC60384-14 4.2.3) | | 10kHz for Cap < 1μF (IEC60384-14 4.2.3) | | | | | | | | | | | | |
| 检测条件 | 常温 25°C 环境温度 | | 预处理 (2 类产品) 150±10°C / 1 小时热处理后静置于常温环境 24±2 小时, 紧接再进行测量作业. | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>电容量范围</th> <th>检测条件</th> </tr> </thead> <tbody> <tr> <td>Cap ≤ 100pF</td> <td>1.0±0.2Vrms, 1.0MHz</td> </tr> <tr> <td>Cap > 100pF</td> <td>1.0±0.2Vrms, 1.0kHz</td> </tr> </tbody> </table> | | 电容量范围 | 检测条件 | Cap ≤ 100pF | 1.0±0.2Vrms, 1.0MHz | Cap > 100pF | 1.0±0.2Vrms, 1.0kHz | 适用检测: 1.0±0.2Vrms, 1.0kHz, 25°C 常温环境. | | | | | |
| | 电容量范围 | 检测条件 | | | | | | | | | | | | |
| Cap ≤ 100pF | 1.0±0.2Vrms, 1.0MHz | | | | | | | | | | | | | |
| Cap > 100pF | 1.0±0.2Vrms, 1.0kHz | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 绝缘组抗值 (IR) | ≥ 600MΩ (C _R ≤ 0.33μF, IEC60384-14 4.2.5) | | | | | | | | | | | | | |
| 操作环境温度 | - 55°C to + 125 °C | | | | | | | | | | | | | |
| 温度公差系数 | ±30ppm / °C | | ±15% | | | | | | | | | | | |
| 端电极材料 | 铜或银/ 镍 / 锡 (无铅端电极) | | | | | | | | | | | | | |

容值表

| 额定电压 | | 250Vac | | | | | | | | | | | | |
|-------|-----|--------|------|-------|------|------|------|------|------|------|------|------|------|------|
| 介电质 | | C0G | | X7R | | | C0G | | | | X7R | | | |
| 容值 | 脉冲 | 2.5KV | | 2.5KV | | | 5KV | | 6KV | 5KV | | | | |
| (pF) | 尺寸 | 1808 | 1812 | 1808 | 1812 | 2220 | 1808 | 1812 | 2211 | 2211 | 1808 | 1812 | 2211 | 2220 |
| 3 | 3R0 | G | | | | | G | | | | | | | |
| 3.3 | 3R3 | G | | | | | G | | | | | | | |
| 1 | 4R0 | G | | | | | G | | K | K | | | | |
| 1.7 | 4R7 | G | | | | | G | | K | K | | | | |
| 5 | 5R0 | G | | | | | G | | K | K | | | | |
| 5.6 | 5R6 | G | | | | | G | | K | K | | | | |
| 6.8 | 6R8 | G | | | | | G | | K | K | | | | |
| 8.2 | 8R2 | G | | | | | G | | K | K | | | | |
| 10 | 100 | G | G | | | | G | G | K | K | | | | |
| 12 | 120 | G | G | | | | G | G | K | K | | | | |
| 15 | 150 | G | G | | | | G | G | K | K | | | | |
| 18 | 180 | G | G | | | | G | G | K | K | | | | |
| 22 | 220 | G | G | | | | G | G | K | K | | | | |
| 27 | 270 | G | G | | | | G | G | K | K | | | | |
| 33 | 330 | G | G | | | | G | G | K | K | | | | |
| 39 | 390 | G | G | | | | G | G | K | K | | | | |
| 47 | 470 | G | G | | | | G | G | K | K | | | | |
| 56 | 560 | G | G | | | | G | G | K | K | | | | |
| 68 | 680 | G | G | | | | G | G | K | M | | | | |
| 82 | 820 | G | G | | | | G | G | K | M | | | | |
| 100 | 101 | K | G | | | | K | G | K | U | G | | | |
| 120 | 121 | K | G | | | | K | G | K | | G | | | |
| 130 | 131 | K | G | | | | K | G | M | | G | | | |
| 150 | 151 | K | G | G | | | K | K | M | | G | G | G | |
| 160 | 161 | K | G | G | | | K | K | M | | G | G | G | K |
| 180 | 181 | K | G | G | | | K | K | M | | G | G | G | K |
| 220 | 221 | K | G | G | | | K | K | M | | G | G | G | K |
| 270 | 271 | K | K | G | G | | K | K | M | | K | G | G | K |
| 300 | 301 | K | K | G | G | | | K | M | | K | G | G | K |
| 330 | 331 | K | K | G | G | | | K | M | | K | G | G | K |
| 390 | 391 | K | K | G | G | | | K | M | | K | G | G | K |
| 470 | 471 | K | K | G | G | | | K | M | | K | G | G | K |
| 560 | 561 | K | K | G | G | | | | M | | K | G | K | K |
| 680 | 681 | K | K | G | G | | | | M | | K | K | K | K |
| 820 | 821 | K | K | G | G | | | | | | K | K | K | K |
| 1000 | 102 | K | K | K | G | | | | | | K | K | K | K |
| 1200 | 122 | | | K | G | | | | | | | | K | K |
| 1500 | 152 | | | K | K | | | | | | | | M | M |
| 1800 | 182 | | | K | K | | | | | | | | M | M |
| 2200 | 222 | | | K | M | | | | | | | | M | M |
| 2700 | 272 | | | | M | | | | | | | | | M |
| 3300 | 332 | | | | M | | | | | | | | | M |
| 3900 | 392 | | | | M | | | | | | | | | M |
| 4700 | 472 | | | | M | | | | | | | | | M |
| 5600 | 562 | | | | M | | | | | | | | | |
| 6800 | 682 | | | | | | | | | | | | | |
| 8200 | 822 | | | | | | | | | | | | | |
| 10000 | 103 | | | | | M | | | | | | | | |
| 12000 | 123 | | | | | M | | | | | | | | |
| 15000 | 153 | | | | | M | | | | | | | | |
| 18000 | 183 | | | | | U | | | | | | | | |
| 22000 | 223 | | | | | U | | | | | | | | |

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