

背景和开发目的

在5G通讯技术的推动下，高速、低延迟和广泛覆盖的网络时代的到来，给无线通讯产品带来新的机会及挑战。尤其是射频前端方面，5G通信技术引入新的频段应用，手机用的频段大幅增加，为了提高各个频段的接受灵敏度和抗干扰能力，这就要求对射频器件的损耗进一步降低。射频电感作为射频前端电路最重要的元件之一，主要是阻抗匹配应用，以便实现数据传输线的阻抗平衡，因此对射频电感的Q值也提出了更高的要求。同时市场上对5G手机轻薄化设计趋势，对射频电感的体积也要求更小。

目前市面上用于智能手机的绕线射频电感主流尺寸为1005 (1.0*1.0*0.5 mm)。如果能开发出与1005性能相当的0603(0.53*0.4*0.4 mm)的绕线电感，将进一步满足中高端智能手机轻薄化的需求。因此顺络开发出性能满足上述需求的高Q值、低DCR的公制0603等系列的陶瓷绕线电感。

产品特点

线结构，超小尺寸

高品质因数

高自谐频率

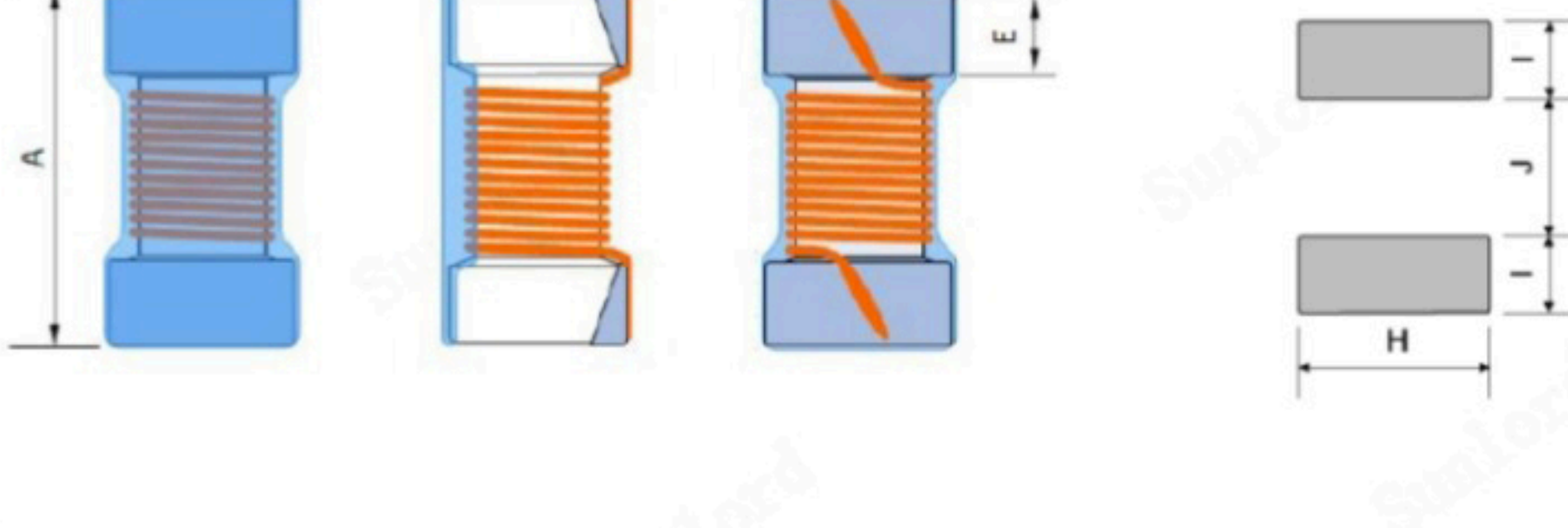
DCR小，大电流

应用

智能手机，智能穿戴设备的射频线路

Wi-Fi/Bluetooth等各种无线通讯模块

尺寸



| Series | A | B | C | D | E | H Ref. | I Ref. | J Ref. |
|-----------|-----------|-----------|-----------|----------|-----------|--------|--------|--------|
| MWSD0603C | 0.53±0.05 | 0.40±0.05 | 0.40±0.05 | 0.40±0.0 | 0.12±0.05 | 1.15 | 0.64 | 0.64 |
| MWSD0804C | 0.80±0.05 | 0.40±0.05 | 0.40±0.05 | 0.40±0.0 | 0.15±0.05 | 0.50 | 0.25 | 0.43 |

Unit: mm

产品型号

MWSD 0603 C 10N □ I

| ① | ② | ③ | ④ | ⑤ | ⑥ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|------------------------------------|---|----------------|--|---|--------------------|---------------|--|--------------------------|---------|---------------|-----|-------|--|-----|------|--|-----|-------|--|---|---------------------------|---|---|---|---|---|--|--------|--------|-----|-----|------|--|------------|---|---|--|-----------------|----------------|
| <table border="1"> <tr> <th>分类 Type</th> <td>绕线片式电感 Wire Wound Chip Inductor</td> </tr> </table> | 分类 Type | 绕线片式电感 Wire Wound Chip Inductor | <table border="1"> <tr> <th>外形尺寸(L×W) (mm)</th> <td>0603 [0201] 0.53×0.4 0804 [03015] 0.8×0.4</td> </tr> </table> | 外形尺寸(L×W) (mm) | 0603 [0201] 0.53×0.4 0804 [03015] 0.8×0.4 | <table border="1"> <tr> <th>材料代号 Material Code</th> <td>C 陶瓷体 Ceramic</td> </tr> </table> | 材料代号 Material Code | C 陶瓷体 Ceramic | <table border="1"> <tr> <th>公称电感量 Nominal Inductance</th> <th>Example</th> <th>Nominal Value</th> </tr> <tr> <td>4N7</td> <td>4.7nH</td> <td></td> </tr> <tr> <td>10N</td> <td>10nH</td> <td></td> </tr> <tr> <td>R10</td> <td>100nH</td> <td></td> </tr> </table> | 公称电感量 Nominal Inductance | Example | Nominal Value | 4N7 | 4.7nH | | 10N | 10nH | | R10 | 100nH | | <table border="1"> <tr> <th>电感公差 Inductance Tolerance</th> <th>C</th> <th>D</th> <th>H</th> <th>J</th> <th>K</th> </tr> <tr> <td></td> <td>±0.2nH</td> <td>±0.5nH</td> <td>±3%</td> <td>±5%</td> <td>±10%</td> </tr> </table> | 电感公差 Inductance Tolerance | C | D | H | J | K | | ±0.2nH | ±0.5nH | ±3% | ±5% | ±10% | <table border="1"> <tr> <th>包装 Packing</th> <th>B</th> <th>T</th> </tr> <tr> <td></td> <td>散装 Bulk Package</td> <td>编带 Tape & Reel</td> </tr> </table> | 包装 Packing | B | T | | 散装 Bulk Package | 编带 Tape & Reel |
| 分类 Type | 绕线片式电感 Wire Wound Chip Inductor | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 外形尺寸(L×W) (mm) | 0603 [0201] 0.53×0.4 0804 [03015] 0.8×0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 材料代号 Material Code | C 陶瓷体 Ceramic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 公称电感量 Nominal Inductance | Example | Nominal Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4N7 | 4.7nH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10N | 10nH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| R10 | 100nH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 电感公差 Inductance Tolerance | C | D | H | J | K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ±0.2nH | ±0.5nH | ±3% | ±5% | ±10% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 包装 Packing | B | T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 散装 Bulk Package | 编带 Tape & Reel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

电气特性

MWSD0603C Series

| Part Number 型号 | Inductance 电感量 | Tolerance 公差 | Min. Quality Factor 品质因子 | L/Q Test Freq. 测试频率 | Min. Self-resonant Frequency 自谐频率 | Max. DC Resistance 直流电阻 | Max. Rated Current 额定电流 |
|-------------------|-------------------|-----------------|-----------------------------|------------------------|--------------------------------------|----------------------------|----------------------------|
| Units 单位 | nH | - | - | MHz | GHz | Ω | mA |
| Symbol 符号 | L | - | Q | Freq. | S.R.F | DCR | I _r |
| MWSD0603C1N0□T | 1.0 | C,D | 48 | 250/900 | 19.0 | 0.03 | 900 |
| MWSD0603C1N1□T | 1.1 | C,D | 41 | 250/900 | 19.0 | 0.06 | 660 |
| MWSD0603C1N7□T | 1.7 | C,D | 41 | 250/900 | 19.0 | 0.07 | 600 |
| MWSD0603C1N8□T | 1.8 | C,D | 37 | 250/900 | 19.0 | 0.10 | 520 |
| MWSD0603C1N9□T | 1.9 | C,D | 41 | 250/900 | 19.0 | 0.08 | 620 |
| MWSD0603C2N0□T | 2.0 | C,D | 42 | 250/900 | 19.0 | 0.10 | 490 |
| MWSD0603C2N1□T | 2.1 | C,D | 35 | 250/900 | 19.0 | 0.16 | 400 |
| MWSD0603C2N2□T | 2.2 | C,D | 33 | 250/900 | 19.0 | 0.16 | 400 |
| MWSD0603C2N7□T | 2.7 | C,D | 46 | 250/900 | 15.0 | 0.06 | 720 |
| MWSD0603C2N8□T | 2.8 | C,D | 44 | 250/900 | 14.0 | 0.08 | 600 |
| MWSD0603C2N9□T | 2.9 | C,D | 41 | 250/900 | 13.0 | 0.10 | 540 |
| MWSD0603C3N0□T | 3.0 | C,D | 34 | 250/900 | 14.0 | 0.22 | 350 |
| MWSD0603C3N1□T | 3.1 | C,D | 48 | 250/900 | 12.0 | 0.07 | 720 |
| MWSD0603C3N2□T | 3.2 | C,D | 48 | 250/900 | 10.0 | 0.08 | 580 |
| MWSD0603C3N3□T | 3.3 | C,D | 47 | 250/900 | 11.0 | 0.11 | 520 |
| MWSD0603C3N4□T | 3.4 | C,D | 43 | 250/900 | 11.0 | 0.15 | 440 |
| MWSD0603C3N5□T | 3.5 | C,D | 43 | 250/900 | 12.0 | 0.15 | 440 |
| MWSD0603C3N6□T | 3.6 | C,D | 36 | 250/900 | 11.0 | 0.23 | 340 |
| MWSD0603C3N7□T | 3.7 | C,D | 38 | 250/900 | 11.0 | 0.23 | 340 |
| MWSD0603C3N9□T | 3.9 | C,D | 38 | 250/900 | 11.0 | 0.25 | 500 |
| MWSD0603C4N1□T | 4.1 | C,D | 48 | 100/900 | 11.0 | 0.07 | 650 |
| MWSD0603C4N3□T | 4.3 | D,J | 45 | 100/900 | 11.0 | 0.12 | 480 |
| MWSD0603C4N7□T | 4.7 | D,J | 45 | 100/900 | 9.5 | 0.09 | 620 |
| MWSD0603C5N1□T | 5.1 | D,J | 45 | 100/900 | 9.5 | 0.14 | 480 |
| MWSD0603C5N4□T | 5.4 | D,J | 46 | 100/900 | 9.5 | 0.21 | 420 |

| | | | | | | | |
|----------------|------|-----|----|---------|-----|------|-----|
| MWSD0603C5N6□T | 5.6 | D,J | 37 | 100/900 | 8.3 | 0.33 | 330 |
| MWSD0603C6N0□T | 6.0 | D,J | 47 | 100/900 | 8.8 | 0.16 | 460 |
| MWSD0603C6N2□T | 6.2 | D,J | 39 | 100/900 | 9.9 | 0.22 | 360 |
| MWSD0603C6N8□T | 6.8 | D,J | 42 | 100/900 | 7.7 | 0.18 | 460 |
| MWSD0603C7N5□T | 7.5 | D,J | 41 | 100/900 | 7.5 | 0.24 | 400 |
| MWSD0603C8N2□T | 8.2 | D,J | 40 | 100/900 | 8.5 | 0.26 | 290 |
| MWSD0603C8N7□T | 8.7 | D,J | 39 | 100/900 | 7.5 | 0.42 | 290 |
| MWSD0603C9N1□T | 9.1 | D,J | 46 | 100/900 | 6.4 | 0.22 | 460 |
| MWSD0603C10N□T | 10.0 | J | 37 | 100/900 | 7.2 | 0.46 | 250 |
| MWSD0603C11N□T | 11.0 | J | 37 | 100/900 | 7.0 | 0.47 | 260 |
| MWSD0603C12N□T | 12.0 | J | 39 | 100/900 | 6.0 | 0.54 | 280 |
| MWSD0603C13N□T | 13.0 | J | 39 | 100/900 | 5.9 | 0.54 | 280 |
| MWSD0603C14N□T | 14.0 | J | 37 | 100/900 | 6.0 | 0.53 | 240 |
| MWSD0603C15N□T | 15.0 | J | 38 | 100/900 | 5.7 | 0.60 | 230 |

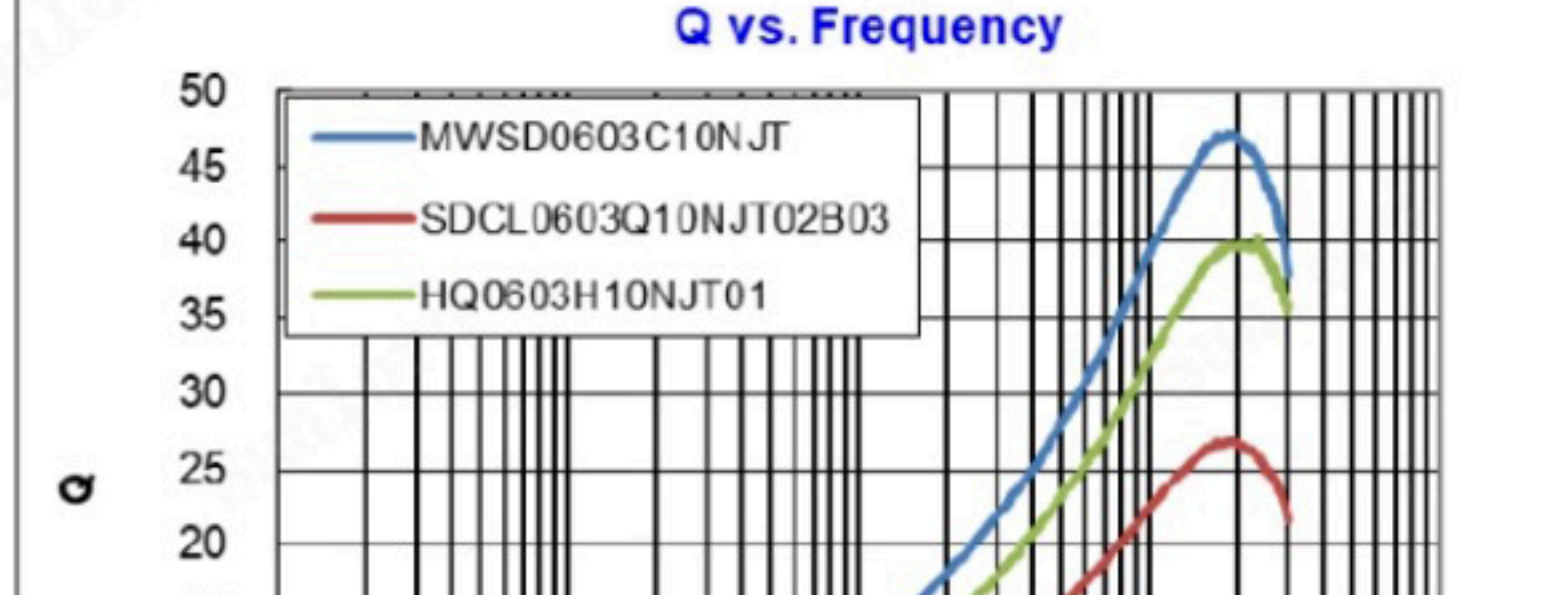
MWSD0804C Series

| Part Number 型号 | Inductance 电感量 | Tolerance 公差 | Min. Quality Factor 品质因子 | L/Q Test Freq. 测试频率 | Min. Self-resonant Frequency 自谐频率 | Max. DC Resistance 直流电阻 | Max. Rated Current 额定电流 |
|-------------------|-------------------|-----------------|-----------------------------|------------------------|--------------------------------------|----------------------------|----------------------------|
| Units 单位 | nH | - | - | MHz | GHz | Ω | mA |
| Symbol 符号 | L | - | Q | Freq. | S.R.F | DCR | I _r |
| MWSD0804C0N8□T | 0.8 | C,D | 23 | 100/250 | 20 | 0.02 | 1800 |
| MWSD0804C1N1□T | 1.1 | C,D | 15 | 100/250 | 20 | 0.03 | 990 |
| MWSD0804C1N3□T | 1.3 | C,D | 15 | 100/250 | 20 | 0.03 | 1500 |
| MWSD0804C1N6□T | 1.6 | C,D | 15 | 100/250 | 17 | 0.06 | 700 |
| MWSD0804C1N7□T | 1.7 | C,D | 15 | 100/250 | 17 | 0.06 | 700 |
| MWSD0804C1N8□T | 1.8 | C,D | 15 | 100/250 | 17 | 0.06 | 700 |
| MWSD0804C1N9□T | 1.9 | C,D | 10 | 100/250 | 15 | 0.12 | 490 |
| MWSD0804C2N3□T | 2.3 | C,D | 18 | 100/250 | 20 | 0.07 | 780 |
| MWSD0804C2N4□T | 2.4 | C,D | 15 | 100/250 | 15 | 0.07 | 570 |
| MWSD0804C2N5□T | 2.5 | C,D | 10 | 100/250 | 10 | 0.12 | 490 |
| MWSD0804C2N6□T | 2.6 | C,D | 15 | 100/250 | 15 | 0.07 | 620 |
| MWSD0804C2N7□T | 2.7 | C,D | 15 | 100/250 | 15 | 0.07 | 570 |
| MWSD0804C2N8□T | 2.8 | C,D | 15 | 100/250 | 15 | 0.07 | 620 |
| MWSD0804C3N0□T | 3.0 | C,D | 15 | 100/250 | 13 | 0.07 | 620 |
| MWSD0804C3N3□T | 3.3 | C,D | 10 | 100/250 | 10.0 | 0.14 | 440 |
| MWSD0804C3N4□T | 3.4 | C,D | 10 | 100/250 | 8.0 | 0.27 | 310 |
| MWSD0804C3N6□T | 3.6 | C,D | 15 | 100/250 | 13.0 | 0.10 | 530 |
| MWSD0804C3N7□T | 3.7 | C,D | 20 | 100/250 | 10.0 | 0.14 | 440 |
| MWSD0804C3N8□T | 3.8 | C,D | 15 | 100/250 | 11.0 | 0.10 | 530 |
| MWSD0804C3N9□T | 3.9 | C,D | 15 | 100/250 | 12.0 | 0.10 | 530 |
| MWSD0804C4N3□T | 4.3 | C,D | 15 | 100/250 | 11.0 | 0.10 | 530 |
| MWSD0804C4N5□T | 4.5 | C,D | 20 | 100/250 | 10.0 | 0.14 | 440 |
| MWSD0804C5N0□T | 5.0 | C,D | 15 | 100/250 | 9.0 | 0.23 | 350 |
| MWSD0804C5N1□T | 5.1 | C,D | 20 | 100/250 | 10.0 | 0.12 | 470 |
| MWSD0804C5N6□T | 5.6 | C,D | 20 | 100/250 | 9.0 | 0.12 | 470 |

| | | | | | | | |
|----------------|------|-----|----|---------|-----|------|-----|
| MWSD0804C6N5□T | 6.5 | C,D | 20 | 100/250 | 9.0 | 0.19 | 390 |
| MWSD0804C6N8□T | 6.8 | C,D | 20 | 100/250 | 9.0 | 0.14 | 440 |
| MWSD0804C7N5□T | 7.5 | C,D | 20 | 100/250 | 8.0 | 0.14 | 440 |
| MWSD0804C8N2□T | 8.2 | C,D | 20 | 100/250 | 8.0 | 0.23 | 350 |
| MWSD0804C9N0□T | 9.0 | C,D | 20 | 100/250 | 7.0 | 0.26 | 330 |
| MWSD0804C9N5□T | 9.5 | C,D | 20 | 100/250 | 7.0 | 0.26 | 330 |
| MWSD0804C10N□T | 10.0 | J | 20 | 100/250 | 7.0 | 0.26 | 330 |
| MWSD0804C12N□T | 12 | H,J | 15 | 100/250 | 6.0 | 0.28 | 310 |
| MWSD0804C18N□T | 18 | H,J | 15 | 100/250 | 5.0 | 0.54 | 220 |
| MWSD0804C24N□T | 24 | H,J | 15 | 100/250 | 4.0 | 0.95 | 160 |
| MWSD0804C33N□T | 33 | H,J | 15 | 100/250 | 4.0 | 1.11 | 140 |
| MWSD0804C43N□T | 43 | J | 15 | 100/250 | 1.6 | 1.20 | 180 |
| MWSD0804C56N□T | 56 | J | 13 | 100/250 | 1.2 | 1.60 | 130 |

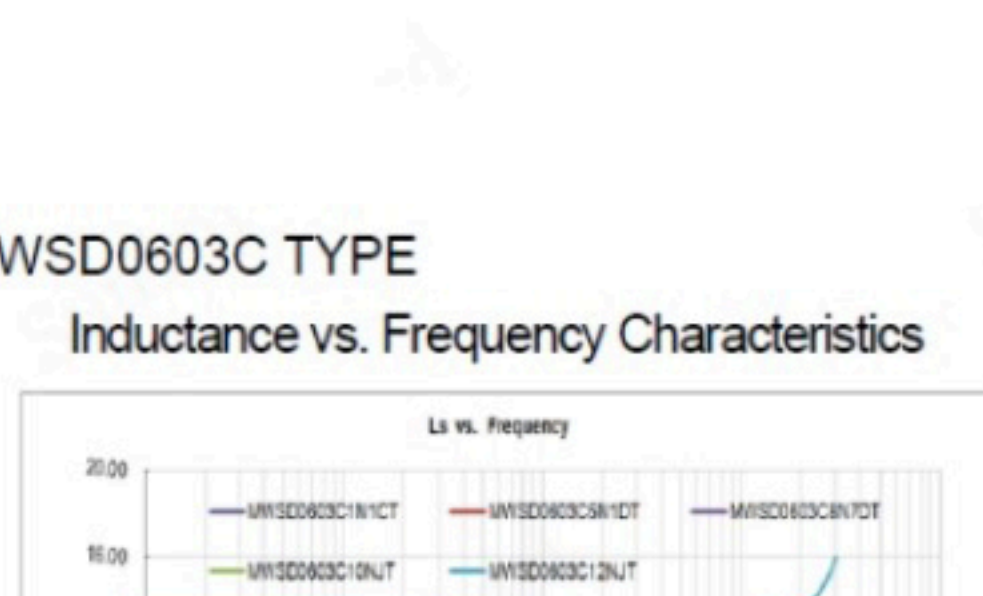
同尺寸同感值的绕线陶瓷电感 MWSD0603C 系列的 Q 值明显大于叠层陶瓷电感 SDCL0603Q 和

HQ0603H 系列。Q 值频谱对比图如下所示:

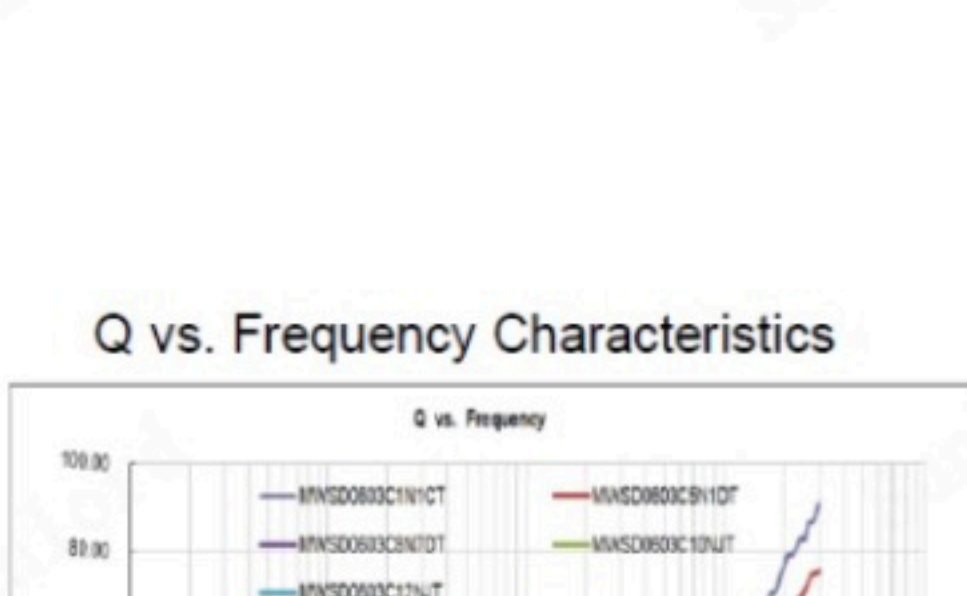


MWSD0603C TYPE

Inductance vs. Frequency Characteristics

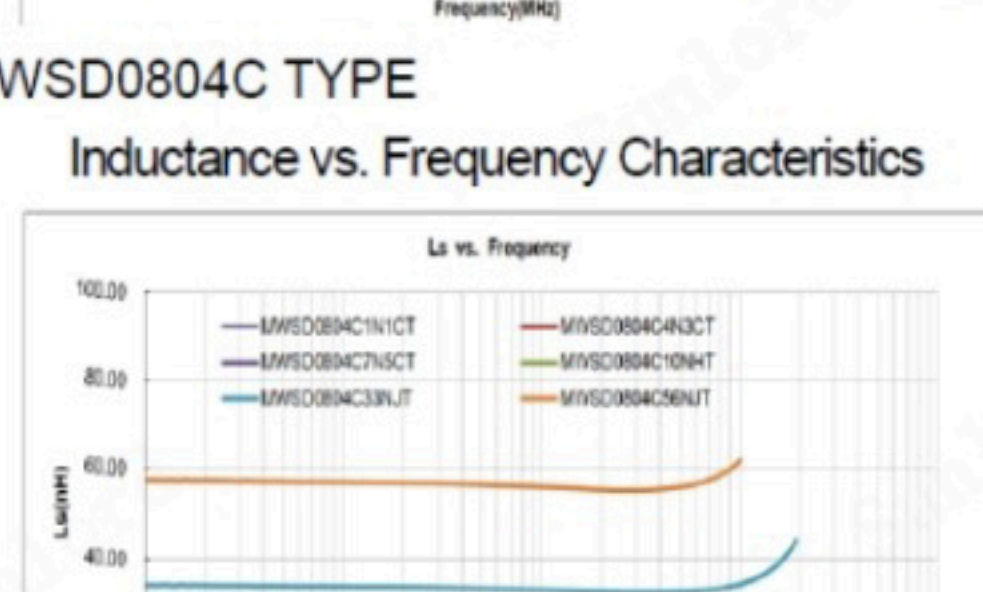


Q vs. Frequency Characteristics



MWSD0804C TYPE

Inductance vs. Frequency Characteristics



Q vs. Frequency Characteristics

