

I. High Q MLCC – JQ Series



1 What is High Q MLCC?

JQ series capacitor offers a very stable, High Q material system that provides excellent, low loss performance in application fields system below 4GHz.

The range is available in 1414 to 9694 case sizes with various capacitance and voltage rating. This range of high frequency capacitors is suitable for many applications where economical, high performance is required.

2 Features

- Low ESR, High Quality Factor
- Temperature compensation ceramic [C0G, M7G]
- Wide range of Cp & Vw spec.
- High range of resonance frequency
- EU-RoHS compliant

3 Applications

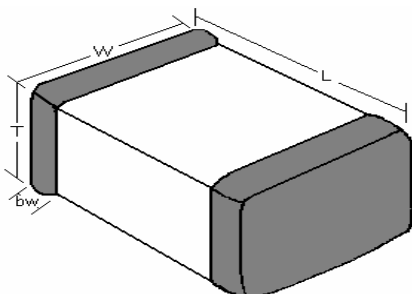
- RF Power / Low Noise Amplifiers
- Cellular Base Station Amplifiers, Filter Networks
- RF Impedance Matching, DC Blocking, By-Pass, Coupling

4 How to order

Part No. : JQ C B 101 J 501D N B
 (1) (2) (3) (4) (5) (6) (7) (8)

| | | | | | | | |
|-----|-------------|-----|---|-----|-------------|------|---|
| (1) | Product | JQ | Joinset High Q MLCC | (5) | Tolerance | J | B : +/- 0.1p C : +/- 0.2pF F : +/- 1%, J : +/- 5% |
| (2) | Dielectric | C | C0G : 0 +/- 30ppm/C | (6) | Voltage | 501D | Examples 251D : 250Vdc 501D : 500Vdc |
| | | P | M7G : 100 +/- 30ppm/C | | | | |
| (3) | Case Size | B | S : 1608, A : 1414, B : 2828, E : 9694 | (7) | Termination | N | Ni Barrier / Sn Solder Plating |
| (4) | Capacitance | 101 | Examples 1R2 : 1.2p 100 : 10p 101 : 100pF | (8) | Taping | B | B : Bulk, T : Taping |

5 Dimension



| Case Code | Dimension [mm] | | | |
|-----------|----------------|-------------|---------|-------------|
| | L | W | T [max] | BW |
| S | 1.6 +/- 0.2 | 0.8 +/- 0.1 | 0.9 | 0.2 +/- 0.1 |
| A | 1.4 +/- 0.4 | 1.4 +/- 0.4 | 1.2 | 0.3 +/- 0.2 |
| B | 2.8 +/- 0.5 | 2.8 +/- 0.4 | 2.5 | 0.4 +/- 0.2 |
| E | 10 +/- 1.0 | 10 +/- 1.0 | 7.0 | 0.4 +/- 0.3 |

6 Part List

High Q MLCC-JQ Series

TC 1 : EIA COG [NP0] Material

| Cp | | | Case Size | | | | Cp | | | Case Size | | | |
|------|------|------|-------------|-------------|-------------|-------------|------|------|------|-------------|-------------|-------------|-------------|
| code | [pF] | Tol. | S [1608] | A [1414] | B [2828] | E [9694] | code | [pF] | Tol. | S [1608] | A [1414] | B [2828] | E [9694] |
| 0R1 | 0.1 | B | | | | | 100 | 10 | J | | | | |
| 0R2 | 0.2 | B | | | | | 120 | 12 | J | | | | |
| 0R3 | 0.3 | B | | | | | 150 | 15 | J | | | 500V | |
| 0R4 | 0.4 | B | | | | | 160 | 16 | J | | | [2kV] | |
| 0R5 | 0.5 | B | | | | | 180 | 18 | J | | | | |
| 0R6 | 0.6 | B | | | | | 220 | 22 | J | 250V | | | |
| 0R8 | 0.8 | B | | | | | 270 | 27 | J | | 250V | | |
| 0R9 | 0.9 | B | | | | | 330 | 33 | J | | [500V] | 500V | |
| 1R0 | 1.0 | B | | | | | 360 | 36 | J | | | [1kV] | |
| 1R1 | 1.1 | B | | | | | 390 | 39 | J | | | | 7.2kV |
| 1R2 | 1.2 | B | | | | | 470 | 47 | J | | | | |
| 1R3 | 1.3 | B | | | | | 560 | 56 | J | | | | |
| 1R4 | 1.4 | B | | | | | 680 | 68 | J | | | | |
| 1R5 | 1.5 | B | | | | | 820 | 82 | J | | | | |
| 1R8 | 1.8 | B | 250V | 250V | | | 101 | 100 | J | | | | |
| 2R0 | 2.0 | B | [500V] | [1kV] | | | 121 | 120 | J | | | 500V | |
| 2R1 | 2.1 | J | | | 500V | | 131 | 130 | J | | | | |
| 2R2 | 2.2 | J | | | [2.5kV] | | 151 | 150 | J | | | | |
| 2R5 | 2.5 | J | | | | | 181 | 180 | J | | | | |
| 2R7 | 2.7 | J | | | | | 221 | 220 | J | | | | |
| 3R0 | 3.0 | J | | | | | 271 | 270 | J | | | | 5kV |
| 3R3 | 3.3 | J | | | | | 331 | 330 | J | | | | |
| 3R6 | 3.6 | J | | | | | 361 | 360 | J | | | | |
| 3R9 | 3.9 | J | | | | | 391 | 390 | J | | | | |
| 4R0 | 4.0 | J | | | | | 471 | 470 | J | | | 250V | 3kV |
| 4R7 | 4.7 | J | | | | | 561 | 560 | J | | | | |
| 5R6 | 5.6 | J | | | | | 681 | 680 | J | | | | |
| 6R8 | 6.8 | J | | | | | 821 | 820 | J | | | | 1kV |
| 8R2 | 8.2 | J | | | | | 102 | 1000 | J | | | | |

* Please contact to us for other specification which is not mentioned above table

TC 2 : EIA M7G [P100] Material

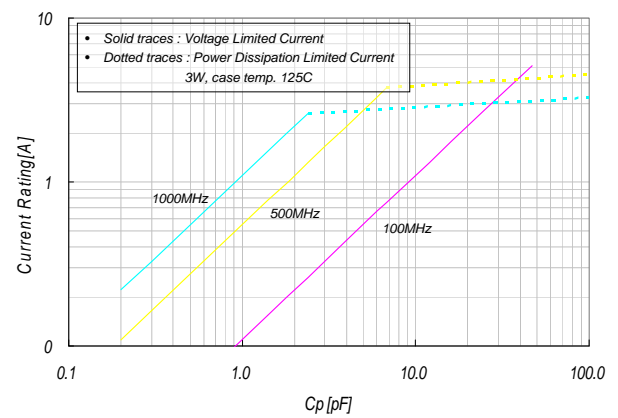
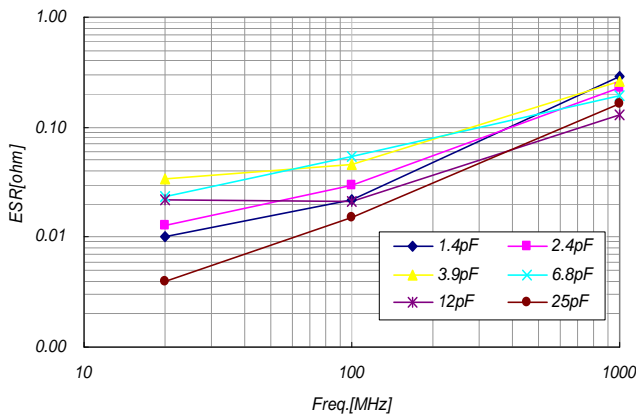
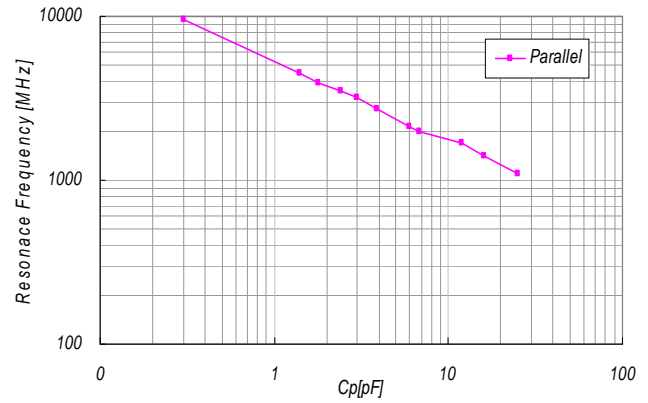
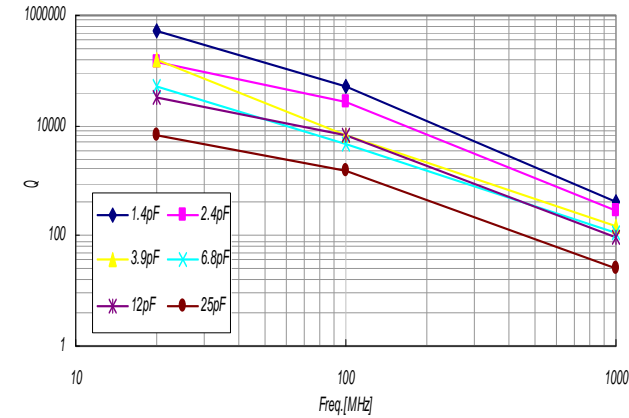
| Cp | | | Case Size | | | Cp | | | Case Size | | |
|------|------|------|---------------|-----------------|-------------|------|------|------|----------------|---------------|-------------|
| code | [pF] | Tol. | A [1414] | B [2828] | E [9694] | code | [pF] | Tol. | A [1414] | B [2828] | E [9694] |
| 0R1 | 0.1 | B | 250V [1kV] | 500V [2.5kV] | | 100 | 10 | J | 250V [500V] | 500V [2kV] | 7.2kV |
| 0R2 | 0.2 | B | | | | | | | | | |
| 0R3 | 0.3 | B | | | | | | | | | |
| 0R4 | 0.4 | B | | | | | | | | | |
| 0R5 | 0.5 | B | | | | | | | | | |
| 0R6 | 0.6 | B | | | | | | | | | |
| 0R8 | 0.8 | B | | | | | | | | | |
| 0R9 | 0.9 | B | | | | | | | | | |
| 1R0 | 1.0 | B | | | | | | | | | |
| 1R1 | 1.1 | B | | | | | | | | | |
| 1R2 | 1.2 | B | | | | | | | | | |
| 1R3 | 1.3 | B | | | | | | | | | |
| 1R4 | 1.4 | B | | | | | | | | | |
| 1R5 | 1.5 | B | | | | | | | | | |
| 1R8 | 1.8 | B | | | | | | | | | |
| 2R0 | 2.0 | B | | | | | | | | | |
| 2R1 | 2.1 | J | | | | | | | | | |
| 2R2 | 2.2 | J | | | | | | | | | |
| 2R5 | 2.5 | J | | | | | | | | | |
| 2R7 | 2.7 | J | | | | | | | | | |
| 3R0 | 3.0 | J | | | | | | | | | |
| 3R3 | 3.3 | J | | | | | | | | | |
| 3R6 | 3.6 | J | | | | | | | | | |
| 3R9 | 3.9 | J | | | | | | | | | |
| 4R0 | 4.0 | J | | | | | | | | | |
| 4R7 | 4.7 | J | | | | | | | | | |
| 5R6 | 5.6 | J | | | | | | | | | |
| 6R8 | 6.8 | J | | | | | | | | | |
| 8R2 | 8.2 | J | | | | | | | | | |

* Please contact to us for other specification which is not mentioned above table

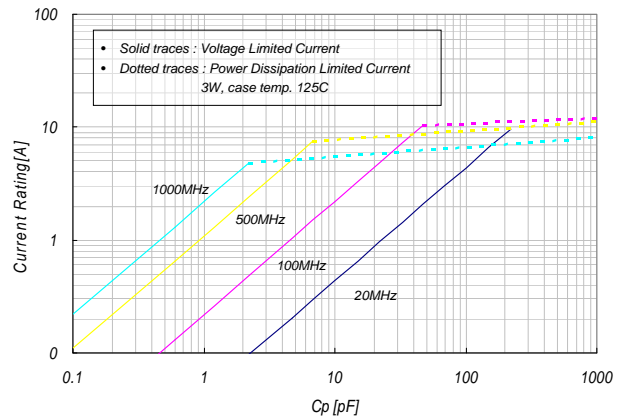
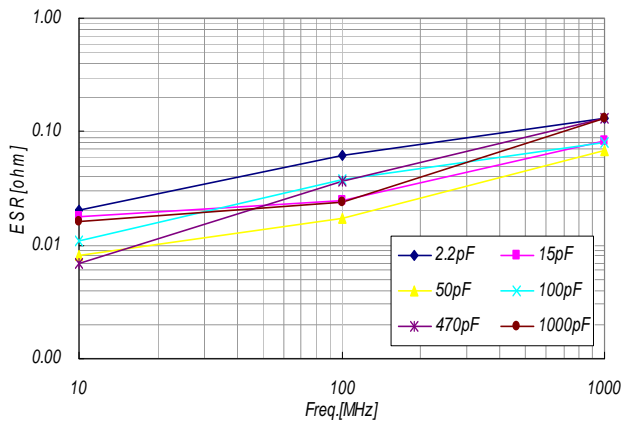
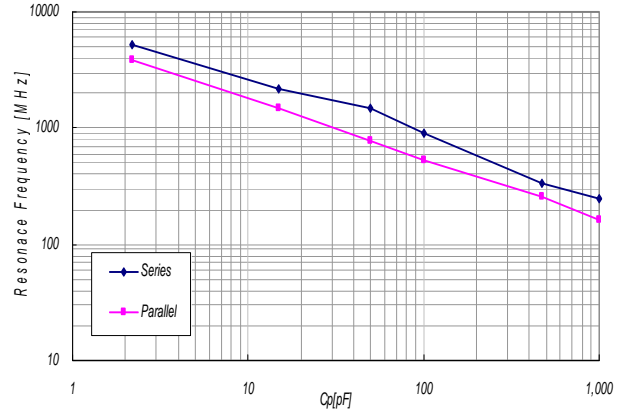
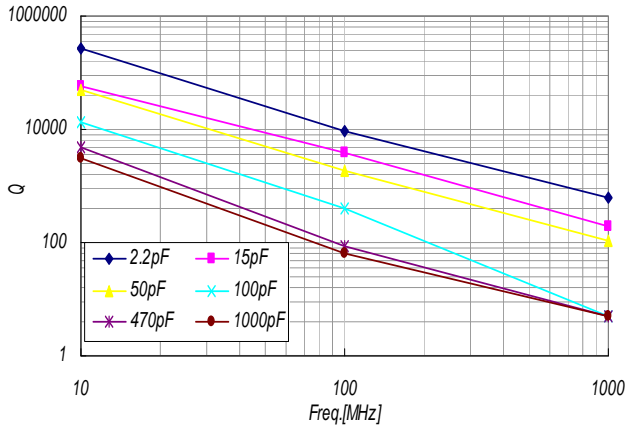
7 Electrical Characteristics

High Q MLCC – JQ Series

JQCS Series

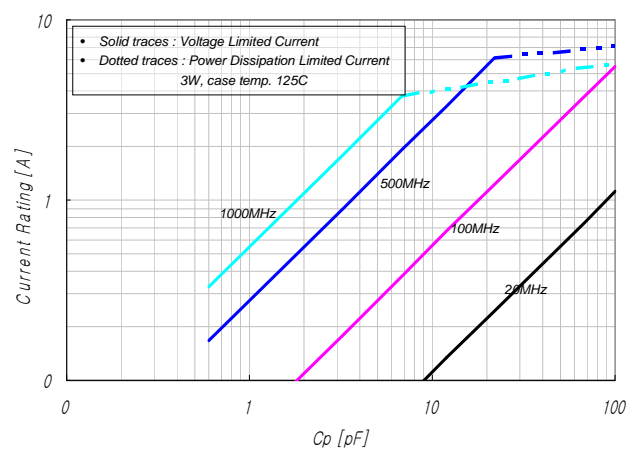
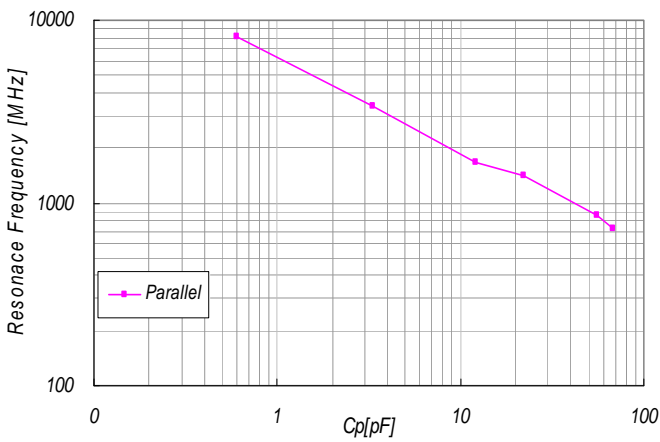
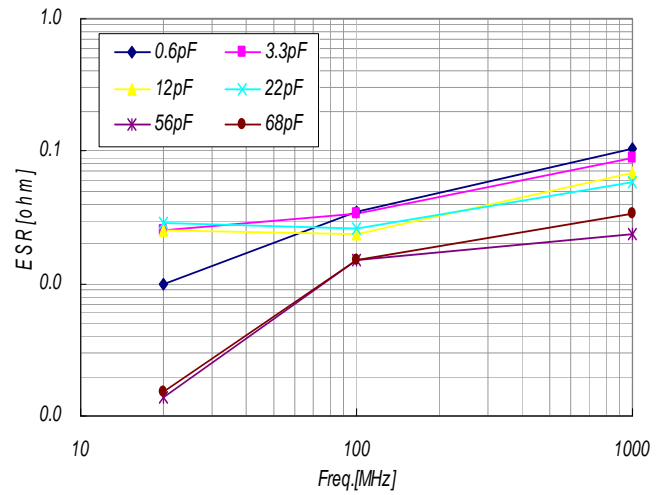
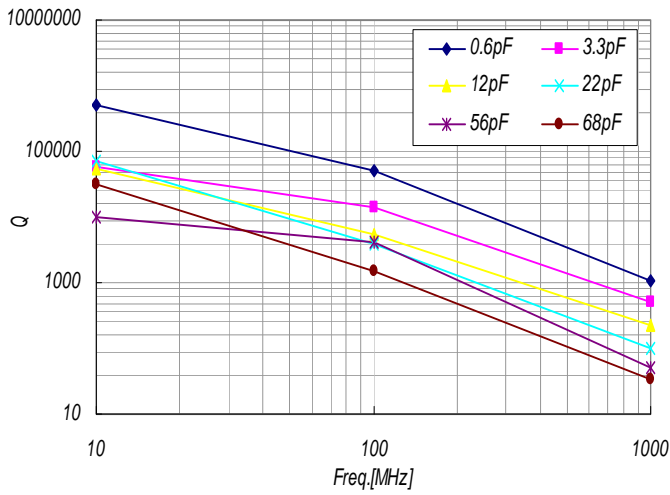


JQCB Series

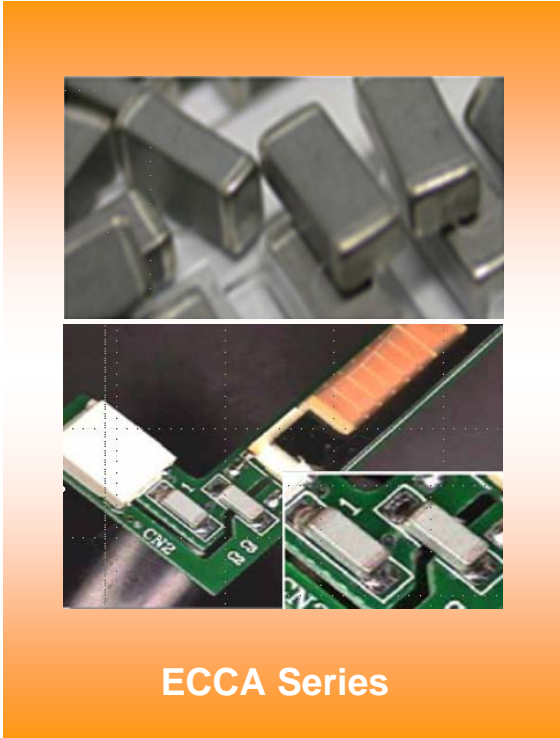


JQCA Series

High Q MLCC – JQ Series



II. High Voltage MLCC – ECCA Series



1 What is High Voltage MLCC?

Joinset's high voltage MLCC, ECCA series has a wide range of working voltage specification 100V to 5kVdc, it is designed that it can maintain its own high insulation resistance and low loss without degradation in the high voltage circuit. Especially, in case of 3kVdc products, it is certified by UL, TUV through their electrical safety recognition test, we hope that it can offer more stable reliability to application fields.

2 Features

- EU RoHS Compliant / Halogen Free
- Safety Recognition Certification [4520 3kVdc Product]
UL File No. : E248982 / TUV Certification No. : R50016122
- High Reliability in High Voltage Application Circuit

3 Applications

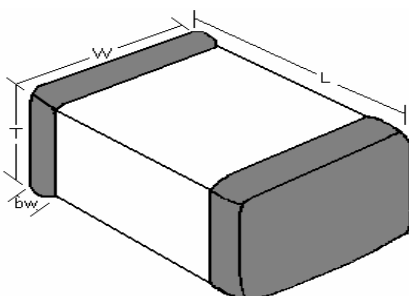
- LCD Backlight Inverter ; LCD TV, Monitor, Lap-top computer
- Ballast, SMPS Noise Filter
- Telecommunication unit [Modem/LAN] etc.

4 How to order

Part No. : ECCA C0G 452013 100 J 302D N T
 (1) (2) (3) (4) (5) (6) (7) (8)

| | | | | | | | |
|-----|-------------|--------|---|-----|-------------|------|---------------------------------------|
| (1) | Product | ECCA | Joinset Ceramic Capacitor | (5) | Tolerance | J | F : +/- 1%, J : +/- 5% K : +/- 10% |
| (2) | Dielectric | C0G | 0 +/- 30ppm/C | (6) | Voltage | 302D | Examples 301D : 3,000Vdc |
| | | X7R | +/- 15% | | | | |
| (3) | Case Size | 452013 | L4.5 x W2.0 x t1.3 [mm] "Refer to dimension" | (7) | Termination | N | Ni Barrier / Sn Solder Plating |
| (4) | Capacitance | 100 | Examples 5R6 : 5.6p 100 : 10p 101 :100pF | (8) | Taping | T | B : Bulk, T : Taping |

5 Dimension



| Size | Dimension [mm] | | | |
|------|----------------|-------------|---------|--------------|
| | L | W | T [max] | BW |
| 3225 | 3.2 +/- 0.3 | 2.5 +/- 0.3 | 2.0 | 0.2 +/- 0.15 |
| 4520 | 4.5 +/- 0.4 | 2.0 +/- 0.2 | 1.8 | 0.6 +/- 0.30 |
| 5730 | 5.7 +0.5/-0.1 | 3.0 +/- 0.5 | 2.5 | 0.3 +/- 0.10 |

6 Part List

COG Material

| Code | Cp[pF] | Tol. | 3225 | 4520 | 5730 | Code | Cp[pF] | Tol. | 3225 | 4520 | 5730 |
|------|--------|------|------|------|------|------|---------|------|------|------|------|
| 5R6 | 5.6 | J | | | | 331 | 330 | J | | | |
| 100 | 10 | J | | | | 471 | 470 | J | | 1kV | 3kV |
| 120 | 12 | J | | | | 561 | 560 | J | | | |
| 150 | 15 | J | | | | 681 | 680 | J | | | |
| 180 | 18 | J | | | | 102 | 1,000 | J, K | | | |
| 220 | 22 | J | | | | 152 | 1,500 | J, K | | | |
| 270 | 27 | J | | | | 222 | 2,200 | J, K | | | |
| 330 | 33 | J | 1kV | | | 252 | 2,500 | J, K | 200V | | |
| 360 | 26 | J | | 3kV | 5kV | 272 | 2,700 | J, K | | | |
| 390 | 29 | J | | | | 332 | 3,300 | J, K | | | |
| 470 | 47 | J | | | | 472 | 4,700 | J, K | | | |
| 560 | 56 | J | | | | 682 | 6,800 | J, K | | | |
| 680 | 68 | J | | | | 103 | 10,000 | J, K | | | |
| 820 | 82 | J | | | | 153 | 15,000 | J, K | | | |
| 101 | 100 | J | | | | 223 | 22,000 | J, K | N/A | N/A | N/A |
| 121 | 120 | J | | | | 333 | 33,000 | J, K | | | |
| 151 | 150 | J | 500V | | | 473 | 47,000 | J, K | | | |
| 181 | 180 | J | | 2kV | 3kV | 683 | 68,000 | J, K | | | |
| 221 | 220 | J | | | | 104 | 100,000 | K | | | |

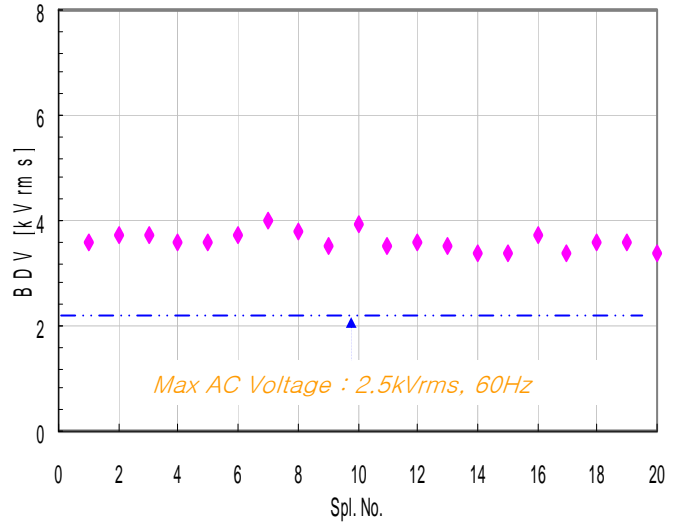
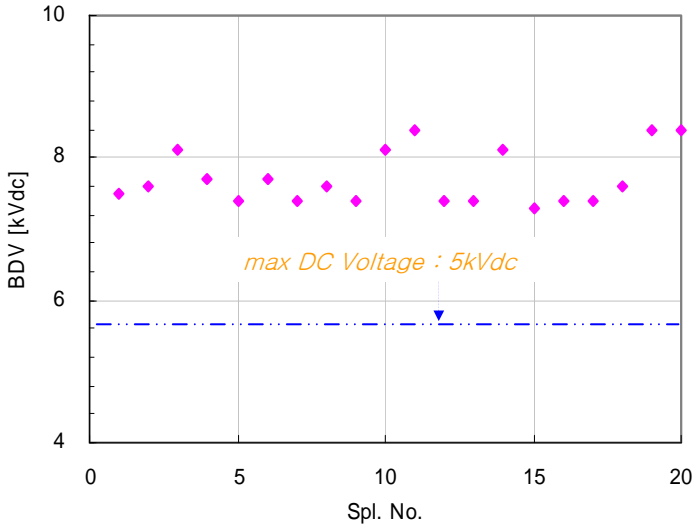
X7R Material

| Code | Cp[pF] | Tol. | 3225 | 4520 | 5730 | Code | Cp[pF] | Tol. | 3225 | 4520 | 5730 |
|------|--------|------|------|------|------|------|---------|------|------|------|------|
| 101 | 100 | J | | | | 252 | 2,500 | J | | | |
| 121 | 120 | J | | | | 272 | 2,700 | J | | 1kV | |
| 151 | 150 | J | | | | 332 | 3,300 | J | 200V | | |
| 181 | 180 | J | | | 5kV | 472 | 4,700 | J | | | |
| 221 | 220 | J | | | | 682 | 6,800 | J, K | | | |
| 331 | 330 | | 500V | 3kV | | 103 | 10,000 | J, K | | | |
| 471 | 470 | | | | | 153 | 15,000 | J, K | | | |
| 561 | 560 | | | | | 223 | 22,000 | J, K | | | |
| 681 | 680 | | | | | 333 | 33,000 | J, K | | | |
| 102 | 1,000 | | | | 3kV | 473 | 47,000 | J, K | 100V | | |
| 152 | 1,500 | | | 2kV | | 683 | 68,000 | J, K | | 100V | |
| 222 | 2,200 | | | | | 104 | 100,000 | J, K | | | |

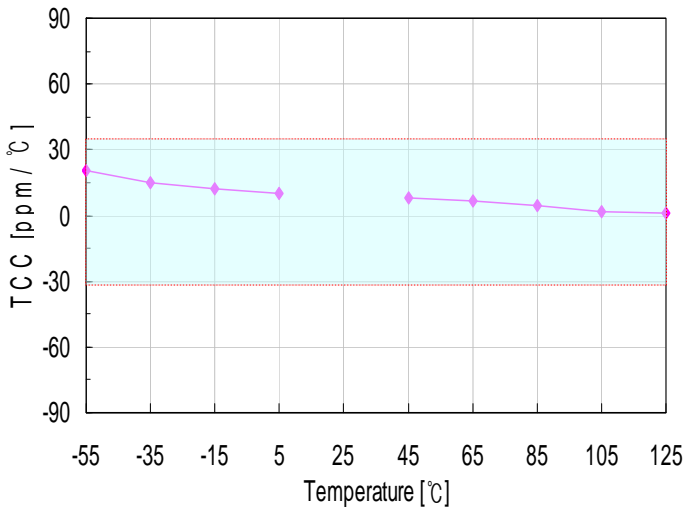
7 Electrical Properties [ECCAC0G573018680J502DNT]

High Voltage MLCC-ECCA Series

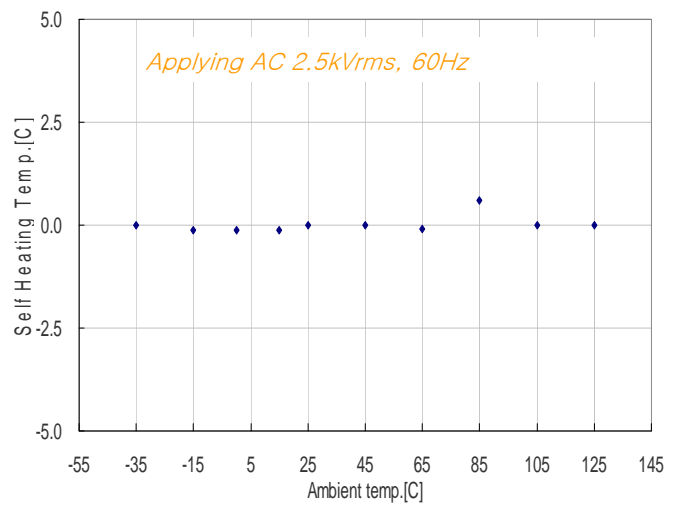
Breakdown Voltage, BDV



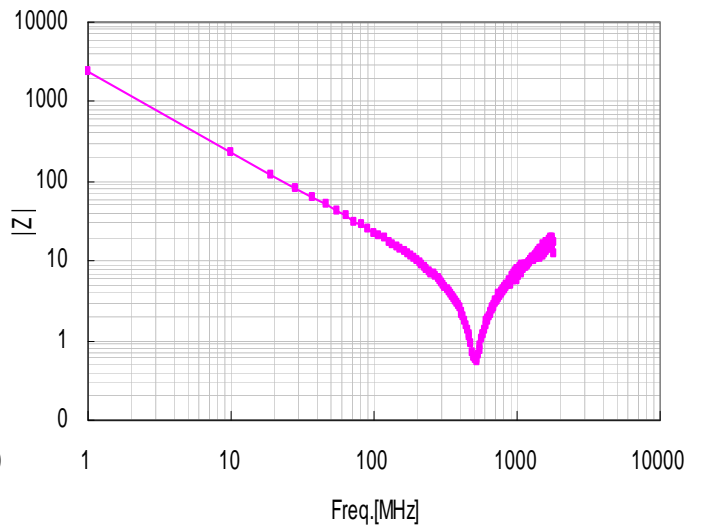
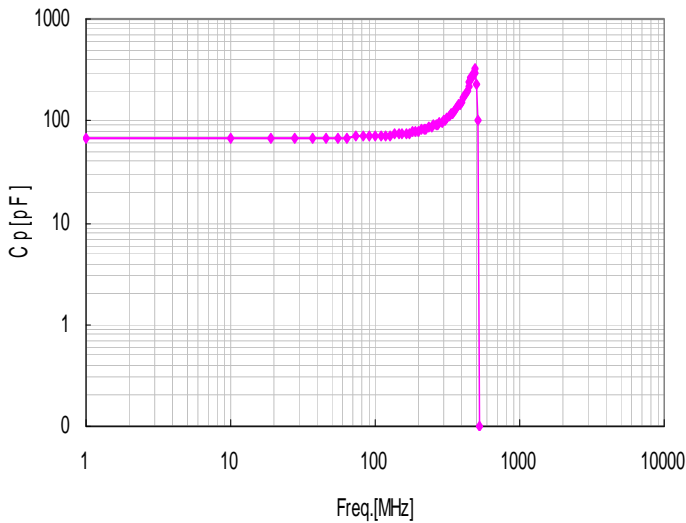
Temperature Change of Capacitance, TCC



Self Heating Temp.

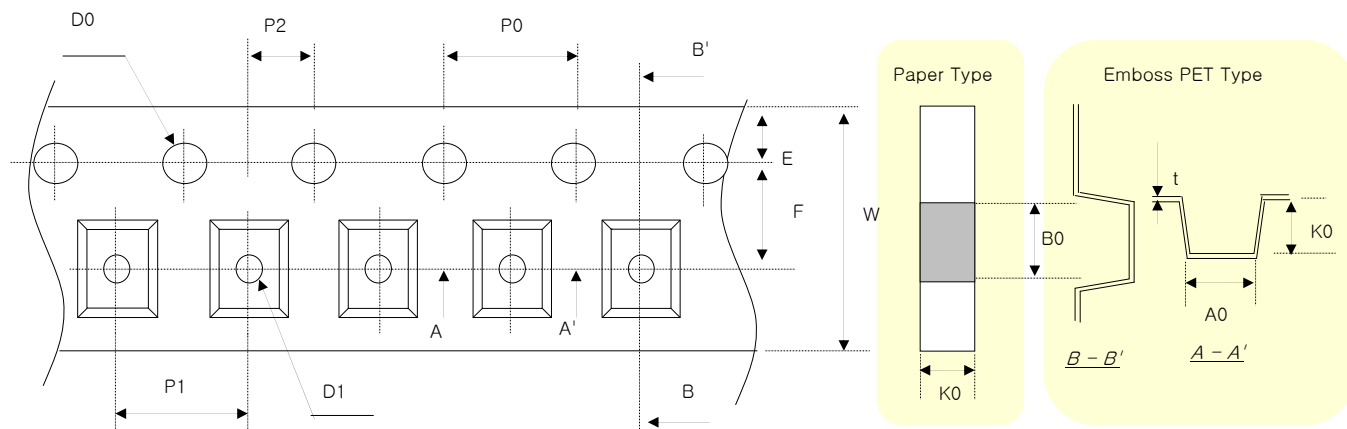


Frequency Characteristics



3 Packing Specification

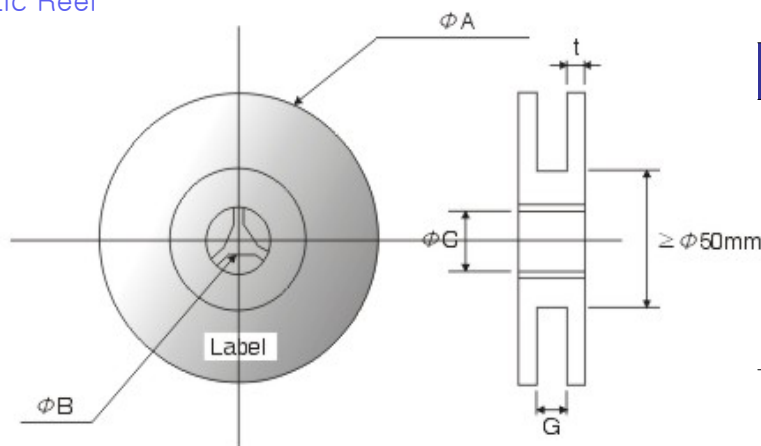
Carrier Pocket



Unit : [mm]

| Case | type | A0 | B0 | W | D | D1 | E | F | P | P0 | P2 | K0 | t |
|--------------|--------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|
| 1608 | Paper | 1.1 +/-0.1 | 1.9 +/-0.1 | 8.0 +/-0.2 | 1.55 +/-0.05 | | 1.75 +/-0.1 | 3.5 +/-0.05 | 4.0 +/-0.1 | 4.0 +/-0.1 | 2.0 +/-0.1 | 1.1max | |
| 1414 | Emboss | 1.40 +/-0.1 | 2.30 +/-0.1 | 8.0 +/-0.2 | 1.55 +/-0.05 | 1.0 +/-0.25 | 1.75 +/-0.1 | 3.5 +/-0.05 | 4.0 +/-0.1 | 4.0 +/-0.1 | 2.0 +/-0.1 | 1.1max | 0.23 +/-0.1 |
| 2828 3225 | Emboss | 2.8 +/-0.1 | 3.5 +/-0.1 | 12.0 +/-0.2 | 1.55 +/-0.05 | 1.5 +/-0.25 | 1.75 +/-0.1 | 5.5 +/-0.05 | 4.0 +/-0.1 | 4.0 +/-0.1 | 2.0 +/-0.1 | 2.2 +/-0.1 | 0.23 +/-0.1 |
| 4520 | Emboss | 2.35 +/-0.1 | 4.95 +/-0.1 | 12.0 +/-0.3 | 1.75 +/-0.1 | 1.5 +/-0.25 | 1.75 +/-0.1 | 5.5 +/-0.05 | 4.0 +/-0.1 | 4.0 +/-0.1 | 2.0 +/-0.05 | 1.60 +/-0.1 | 0.25 +/-0.1 |
| 5730 | Emboss | 5.3 +/-0.1 | 6.2 +/-0.1 | 12.0 +/-0.3 | 1.75 +/-0.1 | 1.5 +/-0.25 | 1.75 +/-0.1 | 5.5 +/-0.05 | 8.0 +/-0.1 | 4.0 +/-0.1 | 2.0 +/-0.05 | 2.8max | 0.25 +/-0.1 |

Plastic Reel



Unit : [mm]

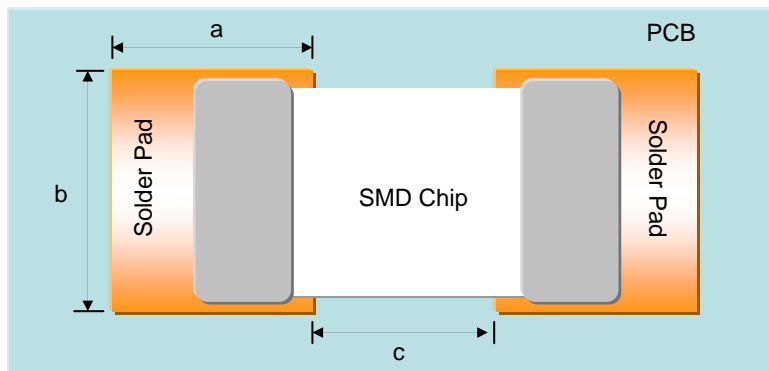
| code | 1608/1414 | 2828~5730 |
|------|------------|------------|
| ΦA | 178+/-2.0 | 178+/-2.0 |
| ΦB | 13.0+/-0.5 | 13.0+/-0.5 |
| ΦC | 22.0+/-2.0 | 22.0+/-2.0 |
| G | 10.0+/-1.5 | 14.0+/-1.5 |
| t | 2.5+/-0.5 | 2.5+/-0.5 |

Packing Unit

| Size [mm] | 1608 | 1414 | 2828 | 3225 | 4520 | 5730 | 9694 |
|-----------------|---------|---------|--------|---------|---------|--------|----------------------|
| pcs/reel | 4,000 | 4,000 | 1,500 | 3,000 | 3,000 | 1,000 | |
| Inner Box [pcs] | 20,000 | 20,000 | 7,500 | 12,000 | 12,000 | 4,000 | Please Contact To us |
| Outer Box [pcs] | 200,000 | 200,000 | 75,000 | 120,000 | 120,000 | 40,000 | |

IV. Recommended Soldering Condition

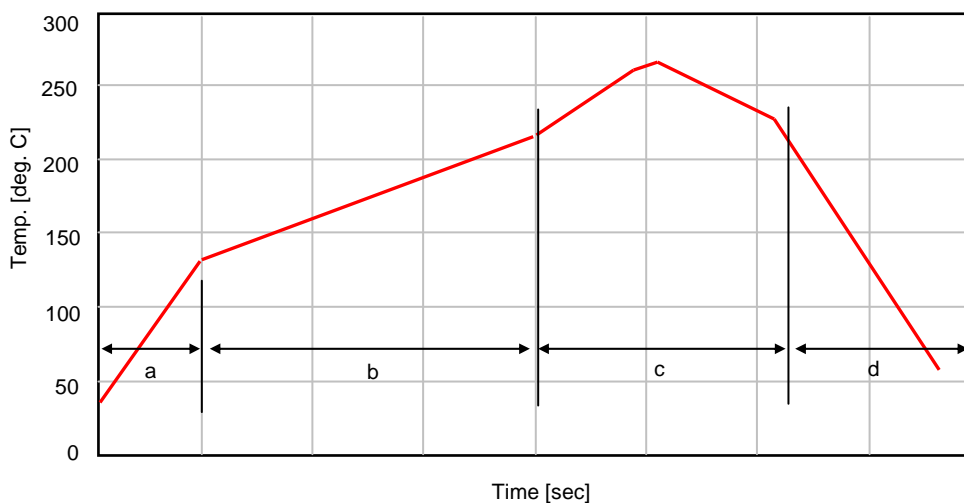
Solder Pad



Unit : mm

| | Chip Size | | | | | | |
|---|-----------|------|------|------|------|------|------|
| | 1608 | 1414 | 2828 | 3225 | 4520 | 5730 | 9694 |
| a | 0.70 | 1.30 | 1.30 | 1.30 | 1.3 | 1.6 | 2.5 |
| b | 0.80 | 2.08 | 3.30 | 3.30 | 2.0 | 3.5 | 10.5 |
| c | 0.80 | 0.80 | 1.88 | 1.88 | 3.5 | 4.7 | 7.5 |

Reflow Soldering



| Zone | | temp. range [deg. C] | time [sec] | Remark |
|------|-----------|----------------------|------------|--|
| a | Curing | RT ~ 130 | 60 | |
| b | Preheat | max 220 | 90 ~ 150 | |
| c | Soldering | 220 ~ 260 [max 270] | 90 ~ 150 | * Solder : Sn-Ag-Cu * 260deg. C, over 10sec |
| d | Cooling | 220 ~ RT | min 60 | |