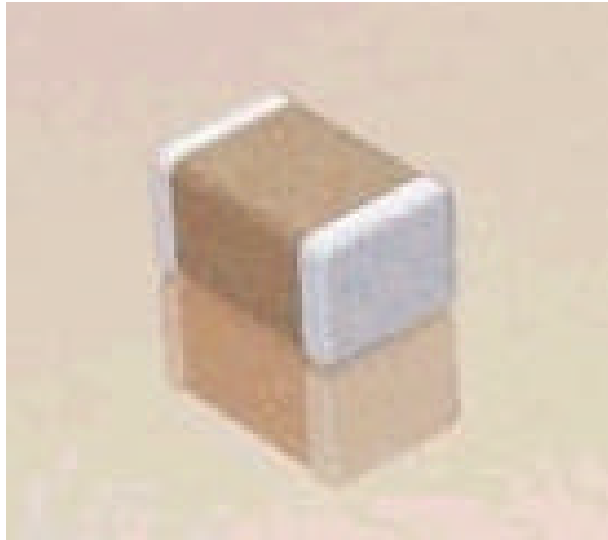


# Multilayer Ceramic Chip Capacitor



**PART NUMBER  
CROSS REFERENCE GUIDE**

## Chip Case Size / Style Cross Reference Chart

| AVX            | 0201        | 0402        | 0603         | 0805        | 1005   | 1206         | 1210        | 1805   | 1808        | 1812        | 1825  | 2220        | 2225    |
|----------------|-------------|-------------|--------------|-------------|--------|--------------|-------------|--------|-------------|-------------|-------|-------------|---------|
| ATC            |             | ATC0402     | ATC0603      | ATC0805     |        | ATC1206      | ATC1210     |        |             | ATC1812     |       |             | ATC2225 |
| Cal-Chip       |             | GMC-04      | GMC-10       | GMC-21      |        | GMC-31       | GMC-32      |        |             | GMC-43      |       | GMC-56      | GMC-57  |
| Johanson       |             | R07         | R14          | R15         |        | R18          | S41         |        | R29         | S43         | S49   | S47         | S48     |
| KEMET          |             | C0402       | C0603        | C0805       | C1005  | C1206        | C1210       |        |             | C1812       | C1825 | C2220       | C2225   |
| Koa            |             | 0402        | 0603         | 0805        |        | 1206         | 1210        |        |             | 1812        | 1825  |             |         |
| <b>Kyocera</b> | <b>CM03</b> | <b>CM05</b> | <b>CM105</b> | <b>CM21</b> |        | <b>CM316</b> | <b>CM32</b> |        | <b>CM42</b> | <b>CM43</b> |       | <b>CM55</b> |         |
| Murata OLD     |             | GRM36       | GRM39        | GRM40       |        | GRM42-6      | GRM42-2     |        |             | GRM43-2     |       | GRM44-1     |         |
| Murata         | GRM03       | GRM15       | GRM18        | GRM21       |        | GRM31        | GRM32       |        | GRM42       | GRM43       |       | GRM55       |         |
| NIC            | NMC0201     | NMC0402     | NMC0603      | NMC0805     |        | NMC1206      | NMC1210     |        |             | NMC1812     |       |             | NMC2225 |
| Novacap        |             | 0402        | 0603         | 0805        | 1005   | 1206         | 1210        |        | 1808        | 1812        | 1825  |             | 2225    |
| Panasonic      | Z           | 0           | 1            | 2           |        | 3            | 4           |        |             |             |       |             |         |
| Philips        |             |             | 0603         | 0805        |        | 1206         | 1210        |        |             | 1812        |       | 2220        |         |
| Rohm           |             | MCH15       | MCH18        | MCH21       |        | MCH31        | MCH32       |        |             | MCH43       |       | MCH53       |         |
| EPCOS          |             | B379XX      | B379XX       | B379XX      |        | B379XX       | B379XX      |        |             |             |       |             |         |
| Samsung        |             |             | CL10         | CL21        |        | CL31         | CL32        |        |             |             |       |             |         |
| TDK            | C0603       | C1005       | C1608        | C2012       |        | C3216        | C3225       |        |             | C4532       |       | C5650       |         |
| Taiyo Yuden    |             | UMK105      | UMK107       | UMK212      |        | UMK316       | UMK325      |        |             | UMK432      |       | UMK550      |         |
| Tecate         |             | 0402        | 0603         | 0805        |        | 1206         | 1210        |        |             | 1812        | 1825  |             | 2225    |
| UCC            |             |             |              | 20          |        | 30           | 40          |        |             | 50          |       | 60          |         |
| Vitramon       |             | VJ0402      | VJ0603       | VJ0805      | VJ0905 |              | VJ1210      | VJ1805 | VJ1808      | VJ1812      |       |             | VJ2224  |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## ATC - 0805X7R104KL2ST

| <u>0805</u> | <u>X7R</u> | <u>104</u>    | <u>K</u>            | <u>L</u>       | <u>2</u>  | <u>S</u>        | <u>T</u>     |
|-------------|------------|---------------|---------------------|----------------|-----------|-----------------|--------------|
| Case Size   | Dielectric | Capacitance   | Tolerance           | Terminations   | Voltage   | Marking         | Packaging    |
| 0402        | NP0        | 2 Sig. Fig +  | B = $\pm 1$ pF      | L = Ni Barrier | A = 10V   | A = No Marking  | T = 7" Reel  |
| 0603        | X7R        | No. of Zeros  | C = $\pm 25$ pF     |                | 7 = 16V   | S = EIA Marking | R = 13" Reel |
| 0805        | Z5U        | Use "R" for   | D = $\pm 50$ pF     |                | 1 = 25V   |                 | B = Bulk     |
| 1206        |            | Decimal point | F = $\pm 1\%$       |                | 2 = 50V   |                 |              |
| 1210        |            |               | G = $\pm 2\%$       |                | 3 = 100V  |                 |              |
| 1812        |            |               | J = $\pm 5\%$       |                | 4 = 200V  |                 |              |
| 2225        |            |               | K = $\pm 10\%$      |                | 5 = 500V  |                 |              |
|             |            |               | M = $\pm 20\%$      |                | 6 = 1000V |                 |              |
|             |            |               | Z = +80%, -20%      |                |           |                 |              |
|             |            |               | P = GMV, +100%, -0% |                |           |                 |              |

## CAL CHIP - GMC21X7R104K50NEM

| <u>GMC21</u> | <u>X7R</u> | <u>104</u>    | <u>K</u>            | <u>50</u>  | <u>N</u>           | <u>E</u>         | <u>M</u>             |
|--------------|------------|---------------|---------------------|------------|--------------------|------------------|----------------------|
| Series/Size  | Dielectric | Capacitance   | Tolerance           | Voltage    | Termination        | Packaging        | Marking              |
| GMC04 = 0402 | CG         | 2 Sig. Fig +  | B = $\pm 1$ pF      | 16 = 16V   | N = Nickel Barrier | T = Paper Tape   | M = Marked           |
| GMC10 = 0603 | X7R        | No. of Zeros  | C = $\pm 25$ pF     | 25 = 25V   |                    | E = Plastic Tape | (0805 and 1206 Only) |
| GMC21 = 0805 | Z5U        | Use "R" for   | D = $\pm 50$ pF     | 50 = 50V   |                    |                  |                      |
| GMC31 = 1206 | Y5V        | Decimal point | F = $\pm 1\%$       | 100 = 100V |                    |                  |                      |
| GMC32 = 1210 |            |               | G = $\pm 2\%$       | 200 = 200V |                    |                  |                      |
| GMC43 = 1812 |            |               | H = $\pm 3\%$       |            |                    |                  |                      |
| GMC56 = 2220 |            |               | J = $\pm 5\%$       |            |                    |                  |                      |
| GMC57 = 2225 |            |               | K = $\pm 10\%$      |            |                    |                  |                      |
|              |            |               | M = $\pm 20\%$      |            |                    |                  |                      |
|              |            |               | Z = +80%, -20%      |            |                    |                  |                      |
|              |            |               | P = GMV, +100%, -0% |            |                    |                  |                      |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1$ % ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2$ % ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5$ %                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10$ %                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20$ %                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## EPCOS(SIEMENS/MATSUSHITA) - B37941K5104K-82

| <u>B37941</u>    |        |        |        |        | <u>K</u>               | <u>5</u> | <u>104</u>          | <u>K</u>        | <u>-</u>                               | <u>82</u>             |
|------------------|--------|--------|--------|--------|------------------------|----------|---------------------|-----------------|--|-----------------------|
| Style/Dielectric |        |        |        |        | Termination            | Voltage  | Capacitance         | Tolerance       | Decimals                               | Packaging             |
| Size             | NP0    | X7R    | X8R    | Z5U    | K = Ni/Sn<br>J = Ag/Pd | 9 = 16V  | 2 Sig. Fig +        | B = $\pm 1$ pF  | Used only for<br>low cap below<br>10pF | 60 = 7" Reel Paper    |
| 0402             | B37920 | B37921 |        | B37922 |                        | 0 = 25V  | No. of Zeros        | C = $\pm 25$ pF |  | 62 = 7" Reel Plastic  |
| 0603             | B37930 | B37931 |        | B37932 |                        | 5 = 50V  | Use "R" for         | D = $\pm 50$ pF |  | 70 = 13" Reel Paper   |
| 0805             | B37940 | B37941 | B37541 | B37942 |                        | 1 = 100V | Decimal point       | F = $\pm 1$ %   |  | 72 = 13" Reel Plastic |
| 1206             | B37971 | B37872 | B37472 | B37873 |                        | 2 = 200V |                     | G = $\pm 2$ %   |  | 01 = Bulk Cassette    |
| 1210             | B37949 | B37950 | B37550 | B37951 |                        | 3 = 500V |                     | J = $\pm 5$ %   |  |                       |
| 1812             |        | B37953 |        | B37954 |                        |          |                     | K = $\pm 10$ %  |  |                       |
| 2220             |        | B37956 |        | B37957 |                        |          |                     | M = $\pm 20$ %  |  |                       |
|                  |        |        |        |        |                        |          | Z = +80%, -20%      |                 |  |                       |
|                  |        |        |        |        |                        |          | P = GMV, +100%, -0% |                 |  |                       |

## JOHANSON - 500R15W104KV6E

| <u>500</u>  | <u>R15</u> | <u>W</u>    | <u>104</u>    | <u>K</u>            | <u>V</u>       | <u>6</u>    | <u>E</u>             |
|-------------|------------|-------------|---------------|---------------------|----------------|-------------|----------------------|
| Voltage     | Case Size  | Dielectric  | Capacitance   | Tolerance           | Termination    | Marking     | Packaging            |
| 100 = 10V   | R07 = 0402 | N = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF      | V = Ni Barrier | 4 = No Mark | E = 7" Reel Plastic  |
| 160 = 16V   | R14 = 0603 | W = X7R     | No. of Zeros  | C = $\pm 25$ pF     |                | 6 = Marking | T = 7" Reel Paper    |
| 250 = 25V   | R15 = 0805 | X = X5R     | Use "R" for   | D = $\pm 50$ pF     |                |             | R = 13" Reel Paper   |
| 500 = 50V   | R18 = 1206 | Z = Z5U     | Decimal point | F = $\pm 1$ %       |                |             | U = 13" Reel Plastic |
| 101 = 100V  | S41 = 1210 | Y = Y5V     |               | G = $\pm 2$ %       |                |             | None = Bulk          |
| 201 = 200V  | R29 = 1808 |             |               | J = $\pm 5$ %       |                |             |                      |
| 251 = 250V  | S43 = 1812 |             |               | K = $\pm 10$ %      |                |             |                      |
| 501 = 500V  | S47 = 2220 |             |               | M = $\pm 20$ %      |                |             |                      |
| 102 = 1000V | S48 = 2225 |             |               | Z = +80%, -20%      |                |             |                      |
|             | S49 = 1825 |             |               | P = GMV, +100%, -0% |                |             |                      |
|             | S54 = 3640 |             |               |                     |                |             |                      |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## KEMET - C0805C104K5RAC

| <u>C</u> | <u>0805</u>        | <u>C</u>      | <u>104</u>     | <u>K</u>        | <u>5</u> | <u>R</u>     | <u>A</u>              | <u>C</u>            |
|----------|--------------------|---------------|----------------|-----------------|----------|--------------|-----------------------|---------------------|
| Style    | Case Size          | Specification | Capacitance    | Tolerance       | Voltage  | Dielectric   | Failure Rate          | Terminations        |
| 0402     | C - Standard       |               | 2 Sig. Fig +   | B = $\pm 1$ pF  | 9 = 6.3V | G = NP0/COG  | A = Standard          | C = Ni w/ Tin Plate |
| 0603     | A - GR900          |               | No. of Zeros   | C = $\pm 25$ pF | 8 = 10V  | R = X7R      | M - 1.0 (Military)    | H = Ni w/ Solder    |
| 0805     | P - Mil-C-55681    |               | Use "9" or     | D = $\pm 50$ pF | 4 = 16V  | P = X5R      | P - 0.1 (Military)    | T = Silver          |
| 1005     | CDR01-CDR06        |               | "8" as Decimal | F = $\pm 1\%$   | 3 = 25V  | U = Z5U      | R - 0.01 (Military)   | G = Gold Plated     |
| 1206     | N - Mil -C-55681   |               | point          | G = $\pm 2\%$   | 5 = 50V  | X = BX (Mil) | S - 0.0001 (Military) |                     |
| 1210     | CDR31-CDR35        |               |                | J = $\pm 5\%$   | 1 = 100V | V = Y5V      |                       |                     |
| 1812     | Z - Mil-C-123      |               |                | K = $\pm 10\%$  | 2 = 200V |              |                       |                     |
| 1825     | E - Mil Equivalent |               |                | M = $\pm 20\%$  |          |              |                       |                     |
| 2220     | (Group A Only)     |               |                | Z = +80%, -20%  |          |              |                       |                     |
| 2225     |                    |               |                | P = +100%, -0%  |          |              |                       |                     |

## KOA - 0805X7RHTE104K

| <u>0805</u> | <u>X7R</u> | <u>H</u> | <u>TE</u>            | <u>104</u>    | <u>K</u>        |
|-------------|------------|----------|----------------------|---------------|-----------------|
| Style       | Dielectric | Voltage  | Packaging            | Capacitance   | Tolerance       |
| 0402        | NP0        | C = 16V  | TE = 7" Reel Plastic | 2 Sig. Fig +  | B = $\pm 1$ pF  |
| 0603        | X7R        | E = 25V  | T = 7" Reel Paper    | No. of Zeros  | C = $\pm 25$ pF |
| 0805        | Z5U        | H = 50V  | D = 13" Reel Paper   | Use "R" for   | D = $\pm 50$ pF |
| 1206        | Y5V        | I = 100V | B = 13" Reel Plastic | Decimal point | F = $\pm 1\%$   |
| 1210        |            | J = 200V |                      |               | G = $\pm 2\%$   |
| 1812        |            |          |                      |               | J = $\pm 5\%$   |
| 1825        |            |          |                      |               | K = $\pm 10\%$  |
|             |            |          |                      |               | M = $\pm 20\%$  |
|             |            |          |                      |               | Z = +80%, -20%  |
|             |            |          |                      |               | P = +100%, -0%  |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>I</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1$ % ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2$ % ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5$ %                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10$ %                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20$ %                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## KYOCERA(AVX) - CM21X7R104K50AT

| <u>CM</u> | <u>21</u>  | <u>X7R</u> | <u>104</u>    | <u>K</u>        | <u>50</u>    | <u>A</u>       | <u>I</u>                 |
|-----------|------------|------------|---------------|-----------------|--------------|----------------|--------------------------|
| Series    | Case Size  | Dielectric | Capacitance   | Tolerance       | Voltage      | Terminations   | Packaging                |
|           | 03 = 0201  | CG         | 2 Sig. Fig +  | B = $\pm 1$ pF  | 04 = 4V      | A = Ni Barrier | T = 7" Reel (4mm Pitch)  |
|           | 05 = 0402  | X5R        | No. of Zeros  | C = $\pm 25$ pF | 06 = 6.3V    |                | L = 13" Reel (4mm Pitch) |
|           | 105 = 0603 | X7R        | Use "R" for   | D = $\pm 50$ pF | 10 = 10V     |                | H = 7" Reel (2mm Pitch)  |
|           | 21 = 0805  | X8R        | Decimal point | F = $\pm 1$ %   | 16 = 16V     |                | N = 13" Reel (4mm Pitch) |
|           | 316 = 1206 | Z5U        |               | G = $\pm 2$ %   | 25 = 25V     |                | B = Bulk (Vinyl Bags)    |
|           | 32 = 1210  | Y5V        |               | J = $\pm 5$ %   | 50 = 50V     |                | C = Bulk Cassette        |
|           | 42 = 1808  | Y5U        |               | K = $\pm 10$ %  | 100 = 100V   |                |                          |
|           | 43 = 1812  |            |               | M = $\pm 20$ %  | 200 = 200V   |                |                          |
|           | 55 = 2220  |            |               | Z = +80%, -20%  | 250 = 250V   |                |                          |
|           |            |            |               | P = +100%, -0%  | 500 = 500V   |                |                          |
|           |            |            |               |                 | 650 = 650V   |                |                          |
|           |            |            |               |                 | 1000 = 1000V |                |                          |

## NIC - NMC0805X7R104K50TRPLP

| <u>NMC</u> | <u>0805</u> | <u>X7R</u> | <u>104</u>    | <u>K</u>        | <u>50</u>  | <u>TR</u> | <u>PL</u>    | <u>P</u>    |
|------------|-------------|------------|---------------|-----------------|------------|-----------|--------------|-------------|
| Series     | Case Size   | Dielectric | Capacitance   | Tolerance       | Voltage    | Packaging | Tape Type    | Reel Type   |
|            | 0201        | NP0        | 2 Sig. Fig +  | B = $\pm 1$ pF  | 10 = 10V   | B = Bulk  | _ = Paper    | _ = Paper   |
|            | 0402        | X7R        | No. of Zeros  | C = $\pm 25$ pF | 16 = 16V   | TR = Reel | PL = Plastic | P = Plastic |
|            | 0603        | Z5U        | Use "R" for   | D = $\pm 50$ pF | 25 = 25V   |           |              |             |
|            | 0805        | Y5V        | Decimal point | F = $\pm 1$ %   | 50 = 50V   |           |              |             |
|            | 1206        |            |               | G = $\pm 2$ %   | 100 = 100V |           |              |             |
|            | 1210        |            |               | J = $\pm 5$ %   |            |           |              |             |
|            | 1812        |            |               | K = $\pm 10$ %  |            |           |              |             |
|            | 2225        |            |               | M = $\pm 20$ %  |            |           |              |             |
|            |             |            |               | Z = +80%, -20%  |            |           |              |             |
|            |             |            |               | P = +100%, -0%  |            |           |              |             |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## MURATA (NEW GLOBAL) - GRM218R71H104KA01K

| <u>GRM</u> | <u>21</u> | <u>-</u>  | <u>R7</u>  | <u>1H</u>  | <u>104</u>    | <u>K</u>        | <u>A01</u>      | <u>K</u>             |
|------------|-----------|-----------|------------|------------|---------------|-----------------|-----------------|----------------------|
| Series     | Case Size | Thickness | Dielectric | Voltage    | Capacitance   | Tolerance       | Electrode       | Packaging            |
| Ni Barrier | 03 = 0201 |           | 5C = COG   | 0J = 6.3V  | 2 Sig. Fig +  | B = $\pm 1$ pF  | Specifies       | D = 7" Reel Paper    |
|            | 15 = 0402 |           | R6 = X5R   | 1A = 10V   | No. of Zeros  | C = $\pm 25$ pF | inner electrode | L = 7" Reel Plastic  |
|            | 18 = 0603 |           | R7 = X7R   | 1C = 16V   | Use "R" for   | D = $\pm 50$ pF | Material        | J = 13" Reel Paper   |
|            | 21 = 0805 |           | E4 = Z5U   | 1E = 25V   | Decimal point | F = $\pm 1\%$   | (BME or         | K = 13" Reel Plastic |
|            | 31 = 1206 |           | F5 = Y5V   | 1H = 50V   |               | G = $\pm 2\%$   | Precious)       | B = Bulk             |
|            | 32 = 1210 |           |            | 2A = 100V  |               | J = $\pm 5\%$   |                 | C = Bulk Cassette    |
|            | 42 = 1808 |           |            | 2D = 200V  |               | K = $\pm 10\%$  |                 | T = Bulk Tray        |
|            | 43 = 1812 |           |            | 2E = 250V  |               | M = $\pm 20\%$  |                 |                      |
|            | 55 = 2220 |           |            | YD = 300V  |               | Z = +80%, -20%  |                 |                      |
|            |           |           |            | 2H = 500V  |               | P = +100%, -0%  |                 |                      |
|            |           |           |            | 2J = 650V  |               |                 |                 |                      |
|            |           |           |            | 3A = 1000V |               |                 |                 |                      |

## MURATA (OLD) - GRM40X7R104K050AL

| <u>GRM</u> | <u>40</u>   | <u>- - -</u>    | <u>X7R</u> | <u>104</u>    | <u>K</u>        | <u>050</u> | <u>A</u>     | <u>L</u>               |
|------------|-------------|-----------------|------------|---------------|-----------------|------------|--------------|------------------------|
| Series     | Case Size   | Thickness       | Dielectric | Capacitance   | Tolerance       | Voltage    | Marking      | Packaging              |
|            | 36 = 0402   | Thickness,      | COG        | 2 Sig. Fig +  | B = $\pm 1$ pF  | 004 = 4V   | A = Unmarked | D = 7" Reel Paper      |
|            | 39 = 0603   | if specified.   | X5R        | No. of Zeros  | C = $\pm 25$ pF | 006 = 6.3V |              | L = 7" Reel Plastic    |
|            | 40 = 0805   | None, otherwise | X7R        | Use "R" for   | D = $\pm 50$ pF | 010 = 10V  |              | J = 13" Reel Paper     |
|            | 42-6 = 1206 |                 | Z5U        | Decimal point | F = $\pm 1\%$   | 016 = 16V  |              | K = 13" Reel Plastic   |
|            | 42-2 = 1210 |                 | Y5V        |               | G = $\pm 2\%$   | 025 = 25V  |              | B = Bulk               |
|            | 43-2 = 1812 |                 |            |               | J = $\pm 5\%$   | 050 = 50V  |              | C = Bulk Cassette      |
|            | 44-1 = 2220 |                 |            |               | K = $\pm 10\%$  | 100 = 100V |              | Q = 7" Paper 2mm Pitch |
|            |             |                 |            |               | M = $\pm 20\%$  | 200 = 200V |              |                        |
|            |             |                 |            |               | Z = +80%, -20%  | 250 = 250V |              |                        |
|            |             |                 |            |               | P = +100%, -0%  | 500 = 500V |              |                        |
|            |             |                 |            |               |                 | 650 = 650V |              |                        |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## NOVACAP - 0805B104K500P\_\*

| <u>0805</u> | <u>B</u>    | <u>104</u>    | <u>K</u>        | <u>500</u>   | <u>P</u>       | <u>=</u>      | <u>*</u>  |
|-------------|-------------|---------------|-----------------|--------------|----------------|---------------|-----------|
| Case Size   | Dielectric  | Capacitance   | Tolerance       | Voltage      | Termination    | Thickness     | Packaging |
| 0402        | N = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF  | 2 Sig. Fig + | P = Pd/Ag      | Per Specified | T = Reel  |
| 0603        | B = X7R     | No. of Zeros  | C = $\pm 25$ pF | No. of Zeros | S = Silver     |               | * = Bulk  |
| 0805        | X = BX      | Use "R" for   | D = $\pm 50$ pF |              | N = Ni Barrier |               |           |
| 1005        | Z = Z5U     | Decimal point | F = $\pm 1\%$   |              |                |               |           |
| 1206        | Y = Y5V     |               | G = $\pm 2\%$   |              |                |               |           |
| 1210        |             |               | J = $\pm 5\%$   |              |                |               |           |
| 1808        |             |               | K = $\pm 10\%$  |              |                |               |           |
| 1812        |             |               | M = $\pm 20\%$  |              |                |               |           |
| 1825        |             |               | Z = +80%, -20%  |              |                |               |           |
| 2220        |             |               | P = +100%, -0%  |              |                |               |           |

## PANASONIC - ECJ2YB1H104K

| <u>ECJ</u> | <u>2</u>  | <u>Y</u>            | <u>B</u>     | <u>1H</u> | <u>104</u>    | <u>K</u>        |
|------------|-----------|---------------------|--------------|-----------|---------------|-----------------|
| Series     | Case Size | Packaging           | Dielectric   | Voltage   | Capacitance   | Tolerance       |
|            | Z = 0201  | X = Bulk            | C* = NP0     | 0J = 6.3V | 2 Sig. Fig +  | C = $\pm 25$ pF |
|            | 0 = 0402  | E = Paper 2mm       | B = X7R, X5R | 1A = 10V  | No. of Zeros  | D = $\pm 50$ pF |
|            | 1 = 0603  | V = Paper 4mm       | F = Y5V      | 1C = 16V  | Use "R" for   | F = $\pm 1\%$   |
|            | 2 = 0805  | F, Y = Plastic 4mm  |              | 1E = 25V  | Decimal point | J = $\pm 5\%$   |
|            | 3 = 1206  | W = Large Reels 2mm |              | 1H = 50V  |               | K = $\pm 10\%$  |
|            | 4 = 1210  | Z = Large Reels 4mm |              | 2A = 100V |               | M = $\pm 20\%$  |
|            |           | C = Bulk Cassette   |              | 2D = 200V |               | Z = +80%, -20%  |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## PHYCOMP (PHILIPS) - 08052R104K9BB2EA

| <u>0805</u> | <u>2R</u>    | <u>104</u>    | <u>K</u>        | <u>9</u> | <u>B</u>      | <u>B</u>             | <u>2</u>        | <u>EA</u>      |
|-------------|--------------|---------------|-----------------|----------|---------------|----------------------|-----------------|----------------|
| Case Size   | Dielectric   | Capacitance   | Tolerance       | Voltage  | Termination   | Packaging            | Marking         | Series         |
| 0603        | CG = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF  | 6 = 10V  | B = Ni/Sn     | 2 = 7" Reel Paper    | 2 = 2 Character | EA = Compact   |
| 0805        | 2R = X7R     | No. of Zeros  | C = $\pm 25$ pF | 7 = 16V  | C = Ni/Solder | B = 7" Reel Plastic  | Marking         | MA = Microwave |
| 1206        | 2E = Z5U     | Use "R" for   | D = $\pm 50$ pF | 8 = 25V  |               | 3 = 13" Reel Paper   | 0 = No Marking  |                |
| 1210        | 2F = Y5V     | Decimal point | F = $\pm 1\%$   | 9 = 50V  |               | F = 13" Reel Plastic |                 |                |
| 1812        |              |               | G = $\pm 2\%$   | 0 = 100V |               | P = Bulk Cassette    |                 |                |
| 2220        |              |               | J = $\pm 5\%$   | B = 200V |               |                      |                 |                |
|             |              |               | K = $\pm 10\%$  | D = 500V |               |                      |                 |                |
|             |              |               | M = $\pm 20\%$  |          |               |                      |                 |                |
|             |              |               | Z = +80%, -20%  |          |               |                      |                 |                |
|             |              |               | P = +100%, -0%  |          |               |                      |                 |                |

## ROHM - MCH215C104KPN

| <u>MCH</u>      | <u>21</u> | <u>5</u> | <u>C</u>   | <u>104</u>    | <u>K</u>        | <u>P</u>             | <u>N</u>          |
|-----------------|-----------|----------|------------|---------------|-----------------|----------------------|-------------------|
| Series          | Case Size | Voltage  | Dielectric | Capacitance   | Tolerance       | Packaging            | Marking/Thickness |
| MCH = Ni/Solder | 15 = 0402 | 4 = 10V  | A =COG     | 2 Sig. Fig +  | B = $\pm 1$ pF  | K = 7" Reel Paper    | N = Marked        |
| MNA = Arrays    | 18 = 0603 | 3 = 16V  | C =X7R     | No. of Zeros  | C = $\pm 25$ pF | P = 7" Reel Plastic  | Special Thickness |
|                 | 21 = 0805 | 2 = 25V  | F =Y5V     | Use "R" for   | D = $\pm 50$ pF | L = 13" Reel Paper   |                   |
|                 | 31 = 1206 | 5 = 50V  |            | Decimal point | F = $\pm 1\%$   | Q = 13" Reel Plastic |                   |
|                 | 32 = 1210 |          |            |               | G = $\pm 2\%$   | B = Bulk Bags        |                   |
|                 | 43 = 1812 |          |            |               | J = $\pm 5\%$   | C = Bulk Cassette    |                   |
|                 |           |          |            |               | K = $\pm 10\%$  |                      |                   |
|                 |           |          |            |               | M = $\pm 20\%$  |                      |                   |
|                 |           |          |            |               | Z = +80%, -20%  |                      |                   |
|                 |           |          |            |               | P = +100%, -0%  |                      |                   |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1$ % ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2$ % ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5$ %                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10$ %                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20$ %                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## SAMSUNG - CL21B104KBNE

| <u>CL</u> | <u>21</u> | <u>B</u>   | <u>104</u>    | <u>K</u>        | <u>B</u> | <u>N</u>       | <u>E</u>          |
|-----------|-----------|------------|---------------|-----------------|----------|----------------|-------------------|
| Series    | Case Size | Dielectric | Capacitance   | Tolerance       | Voltage  | Termination    | Packaging         |
|           | 01 = 0603 | C = NP0    | 2 Sig. Fig +  | C = $\pm 25$ pF | O = 16V  | P = Pd/Ag      | C = Paper         |
|           | 21 = 0805 | B = X7R    | No. of Zeros  | D = $\pm 50$ pF | A = 25V  | S = Silver     | E = Plastic       |
|           | 31 = 1206 | E = Z5U    | Use "R" for   | F = $\pm 1$ %   | B = 50V  | N = Ni Barrier | P = Bulk Cassette |
|           | 32 = 1210 | Y = Y5V    | Decimal point | G = $\pm 2$ %   | C = 100V |                | B = Bulk          |
|           |           |            |               | J = $\pm 5$ %   |          |                |                   |
|           |           |            |               | K = $\pm 10$ %  |          |                |                   |
|           |           |            |               | M = $\pm 20$ %  |          |                |                   |
|           |           |            |               | P = GMV         |          |                |                   |
|           |           |            |               | Z = +80%, -20%  |          |                |                   |

## TECATE - CMC050104KX0805TM

| <u>CMC</u> | <u>050</u> | <u>104</u>    | <u>K</u>        | <u>X</u>   | <u>0805</u> | <u>T</u>   | <u>M</u>      |
|------------|------------|---------------|-----------------|------------|-------------|------------|---------------|
| Series     | Voltage    | Capacitance   | Tolerance       | Dielectric | Case Size   | Packaging  | Marking       |
|            | 010 = 10V  | 2 Sig. Fig +  | B = $\pm 1$ pF  | N = NP0    | 0402        | T = Reel   | M = Marking   |
|            | 016 = 16V  | No. of Zeros  | C = $\pm 25$ pF | X5 = X5R   | 0603        | W = Waffle | (If Required) |
|            | 025 = 25V  | Use "R" for   | D = $\pm 50$ pF | X = X7R    | 0805        |            |               |
|            | 050 = 50V  | Decimal point | F = $\pm 1$ %   | Z = Z5U    | 1206        |            |               |
|            | 100 = 100V |               | G = $\pm 2$ %   | Y = Y5V    | 1210        |            |               |
|            |            |               | J = $\pm 5$ %   |            | 1812        |            |               |
|            |            |               | K = $\pm 10$ %  |            | 1825        |            |               |
|            |            |               | M = $\pm 20$ %  |            | 2225        |            |               |
|            |            |               | Z = +80%, -20%  |            |             |            |               |
|            |            |               | P = +100%, -0%  |            |             |            |               |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                      | <u>A</u>     | <u>I</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|-------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                     | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1$ pF                | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25$ pF               |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50$ pF               |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25$ pF) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13$ pF) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                 |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%           |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                               |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                               |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                               |              |                 |                   |                   |

## TDK - C2012X7R1H104KT

| <u>C2012</u> | <u>X7R</u> | <u>1H</u> | <u>104</u>    | <u>K</u>        | <u>I</u>  |
|--------------|------------|-----------|---------------|-----------------|-----------|
| Case Size    | Dielectric | Voltage   | Capacitance   | Tolerance       | Packaging |
| C0603 = 0201 | CG         | 0J = 6.3V | 2 Sig. Fig +  | C = $\pm 25$ pF | T = Reel  |
| C1005 = 0402 | X7R        | 1A = 10V  | No. of Zeros  | D = $\pm 50$ pF | B = Bulk  |
| C1608 = 0603 | Z5U        | 1C = 16V  | Use "R" for   | F = $\pm 1\%$   |           |
| C2012 = 0805 | Y5U        | 1E = 25V  | Decimal point | G = $\pm 2\%$   |           |
| C3216 = 1206 |            | 1H = 50V  |               | J = $\pm 5\%$   |           |
| C3225 = 1210 |            |           |               | K = $\pm 10\%$  |           |
| C4532 = 1812 |            |           |               | M = $\pm 20\%$  |           |
| C5650 = 2220 |            |           |               | P = GMV         |           |
|              |            |           |               | Z = +80%, -20%  |           |

## TAIYO YUDEN - UMK212BJ104KT

| <u>U</u> | <u>M</u>       | <u>K</u>       | <u>212</u> | <u>BJ</u>  | <u>104</u>    | <u>K</u>        | <u>I</u>          |
|----------|----------------|----------------|------------|------------|---------------|-----------------|-------------------|
| Voltage  | Type           | Termination    | Case Size  | Dielectric | Capacitance   | Tolerance       | Special Packaging |
| A = 4V   | M = Multilayer | K = Ni Barrier | 105 = 0402 | BJ = X7R   | 2 Sig. Fig +  | C = $\pm 25$ pF | Various T = Reel  |
| J = 6.3V | V = Hi Q       |                | 107 = 0603 | BJ = X5R   | No. of Zeros  | D = $\pm 50$ pF | B = Bulk          |
| L = 10V  |                |                | 212 = 0805 | F = Y5V    | Use "R" for   | F = $\pm 1\%$   |                   |
| E = 16V  |                |                | 316 = 1206 | CK = COG   | Decimal point | G = $\pm 2\%$   |                   |
| T = 25V  |                |                | 325 = 1210 | CJ = COG   |               | J = $\pm 5\%$   |                   |
| U = 50V  |                |                | 432 = 1812 | CH = COG   |               | K = $\pm 10\%$  |                   |
|          |                |                | 550 = 2220 | CG = COG   |               | M = $\pm 20\%$  |                   |
|          |                |                |            |            |               | P = GMV         |                   |
|          |                |                |            |            |               | Z = +80%, -20%  |                   |

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## AVX - 08055C104KAT2A

| <u>0805</u> | <u>5</u>  | <u>C</u>    | <u>104</u>    | <u>K</u>                             | <u>A</u>     | <u>T</u>        | <u>2</u>          | <u>A</u>          |
|-------------|-----------|-------------|---------------|--------------------------------------|--------------|-----------------|-------------------|-------------------|
| Size        | Voltage   | Dielectric  | Capacitance   | Tolerance                            | Failure Rate | Terminations    | Packaging         | Special           |
| 0201        | 4 = 4V    | A = NP0/COG | 2 Sig. Fig +  | B = $\pm 1\text{pF}$                 | A = N/A      | T = 100% Tin    | 2 = 7" Reel       | A = Standard      |
| 0402        | 6 = 6.3V  | C = X7R     | No. of Zeros  | C = $\pm 25\text{pF}$                |              | 7 = Gold Plated | 4 = 13" Reel      | T = .66mm (.026") |
| 0603        | Z = 10V   | D = X5R     | Use "R" for   | D = $\pm 50\text{pF}$                |              | 1 = Pd/Ag       | 7 = Bulk Cassette | S = .56mm (.022") |
| 0805        | Y = 16V   | E = Z5U     | Decimal point | F = $\pm 1\%$ ( $\geq 25\text{pF}$ ) |              |                 | 9 = Bulk          | R = .46mm (.018") |
| 1005        | 3 = 25V   | G = Y5V     |               | G = $\pm 2\%$ ( $\geq 13\text{pF}$ ) |              |                 |                   |                   |
| 1206        | D = 35V   |             |               | J = $\pm 5\%$                        |              |                 |                   |                   |
| 1210        | 5 = 50V   |             |               | K = $\pm 10\%$                       |              |                 |                   |                   |
| 1805        | 1 = 100V  |             |               | M = $\pm 20\%$                       |              |                 |                   |                   |
| 1808        | 2 = 200V  |             |               | Z = +80%, -20%                       |              |                 |                   |                   |
| 1812        | V = 250V  |             |               | P = GMV, +100%, -0%                  |              |                 |                   |                   |
| 1825        | 7 = 500V  |             |               |                                      |              |                 |                   |                   |
| 2220        | C = 600V  |             |               |                                      |              |                 |                   |                   |
| 2225        | A = 1000V |             |               |                                      |              |                 |                   |                   |

## UCC United Chemi Con - TCCS20E1E104MT

| <u>TCC</u>                     | <u>S</u>                    | <u>20</u>  | <u>E</u>   | <u>1H</u>  | <u>104</u>   | <u>K</u>  | <u>T</u>    |
|--------------------------------|-----------------------------|--|------------|--|--|---|-------------|
| Series                         | Termination                 | Case Size  | Dielectric | Voltage  | Capacitance  | Tolerance   | Packaging   |
| TCC = Standard<br>THC = Hi Cap | R = Silver<br>S = Ni Solder | 20 = 0805<br>30 = 1206<br>40 = 1210<br>50 = 1812<br>60 = 2220<br>70 = 3025 | E = Y5U    | 1D = 20V<br>1E = 25V<br>1H = 50V<br>2A = 100V<br>2D = 200V | 2 Sig. Fig +<br>No. of Zeros<br>Use "R" for<br>Decimal point | B = $\pm 1\text{pF}$<br>C = $\pm 25\text{pF}$<br>D = $\pm 50\text{pF}$<br>F = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$<br>K = $\pm 10\%$<br>M = $\pm 20\%$<br>Z = +80%, -20%<br>P = +100%, -0% | T = 7" Reel |

## VITRAMON - VJ0805Y104KXAMT

| <u>VJ</u> | <u>0805</u> | <u>Y</u>      | <u>104</u>    | <u>K</u>              | <u>X</u>    | <u>A</u> | <u>M</u>       | <u>T</u>             |
|-----------|-------------|---------------|---------------|-----------------------|-------------|----------|----------------|----------------------|
| Series    | Case Size   | Dielectric    | Capacitance   | Tolerance             | Termination | Voltage  | Marking        | Packaging            |
|           | 0402        | X = BX        | 2 Sig. Fig +  | B = $\pm 1\text{pF}$  | X = Silver, | J = 16V  | M = Marking    | C = 7" Reel Paper    |
|           | 0603        | A,N = NP0/COG | No. of Zeros  | C = $\pm 25\text{pF}$ | Ni Barrier, | X = 25V  | A = No Marking | T = 7" Reel Plastic  |
|           | 0805        | Y = X7R       | Use "R" for   | D = $\pm 50\text{pF}$ | Tin plated  | A = 50V  |                | P = 13" Reel Paper   |
|           | 1005        | U = Z5U       | Decimal point | F = $\pm 1\%$         |             | B = 100V |                | R = 13" Reel Plastic |
|           | 1210        | H = X8R       |               | G = $\pm 2\%$         |             | C = 200V |                | B = Bulk             |
|           | 1805        |               |               | J = $\pm 5\%$         |             |          |                |                      |
|           | 1808        |               |               | K = $\pm 10\%$        |             |          |                |                      |
|           | 1812        |               |               | M = $\pm 20\%$        |             |          |                |                      |
|           | 2225        |               |               | Z = +80%, -20%        |             |          |                |                      |
|           |             |               |               | P = +100%, -0%        |             |          |                |                      |

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