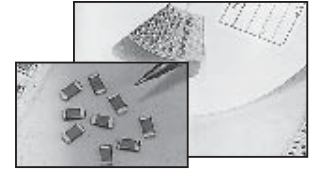


### FEATURES

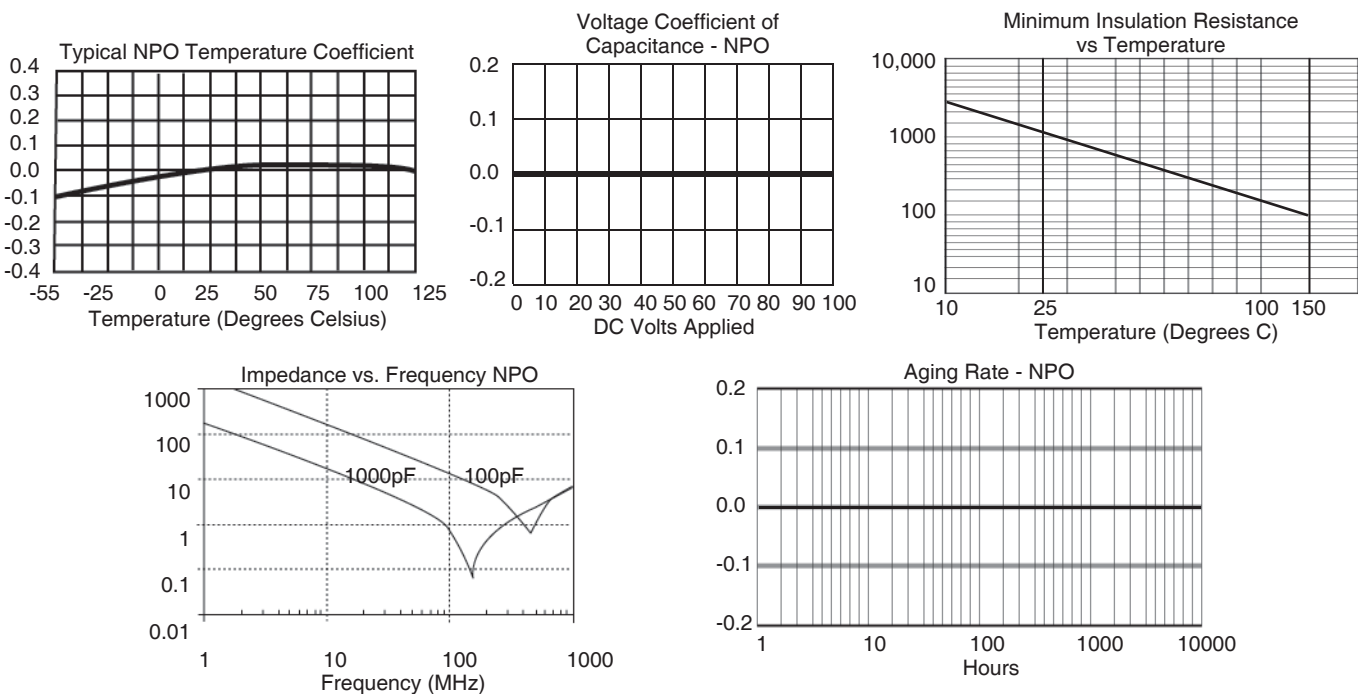
- CLASS I DIELECTRIC, TEMPERATURE COMPENSATING
- HIGH STABILITY OVER TIME, VOLTAGE AND TEMPERATURE CHANGES
- LOW DIELECTRIC LOSS
- NICKEL BARRIER TERMINATIONS AND EXCELLENT MECHANICAL STRENGTH

**Expanded  
01005  
Case Size**

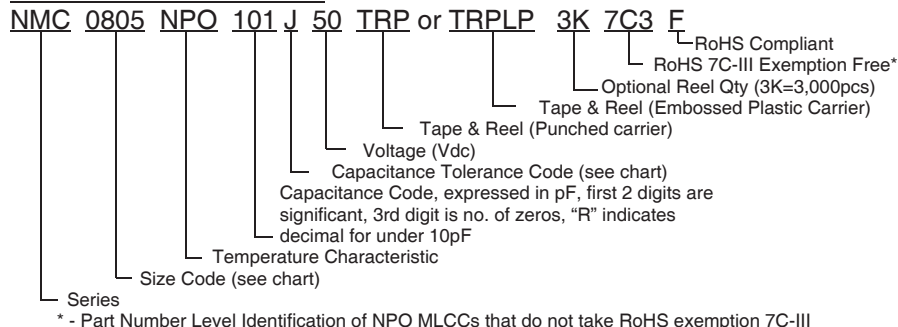


### SPECIFICATIONS NPO

|                                 |   |
|---------------------------------|---|
| Capacitance Range               | 0.47pF to 0.068μF   |
| Capacitance Tolerance           | Below 10pF: ±0.1pF(B), ±0.25pF(C), ±0.5pF(D)<br>10pF and above: ±1%(F), ±2%(G), ±5% (J) |
| Operating Temperature Range     | -55°C ~ +125°C  |
| Temperature Characteristics     | 0 ± 30ppm/°C  |
| Rated Voltages                  | 25Vdc, 35Vdc, 50Vdc (see NMC-H Series for higher voltages)                              |
| Dissipation Factor              | For values >30pF 0.1% @ 25°C; For values ≤ 30pF Q=400+20 x C (C in pF)                  |
| Insulation Resistance           | 10,000Megohms min. or 500Megohm/μF (min.), whichever is less @ +25°C                    |
| Dielectric Withstanding Voltage | 250% of Rated Voltage for 5 ±1 seconds, 50mA maximum current                            |
| Test Conditions (EIA-198-2E)    | <1000pF; 1MHz, 1.2Vrms max. or >1000pF; 1KHz, 1.2Vrms max.                              |



### PART NUMBER SYSTEM

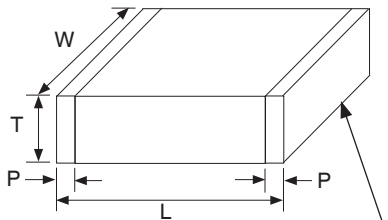


# Multilayer Ceramic Chip Capacitors

NMC Series NPO

|                       |                       |
|-----------------------|-----------------------|
| EIA Case Size         | 01005                 |
| Length (L)            | 0.4±0.02              |
| Width (W)             | 0.2±0.02              |
| Thickness max. (T)    | 0.22                  |
| Termination Width (P) | 0.1±0.03              |
| Capacitance           | Working Voltage (Vdc) |
|                       | 16                    |
| 0.5pF                 |                       |
| 1.0pF                 |                       |
| 1.5pF                 |                       |
| 2.0pF                 |                       |
| 3.0pF                 |                       |
| 4.0pF                 |                       |
| 5.0pF                 |                       |
| 6.0pF                 |                       |
| 7.0pF                 |                       |
| 8.0pF                 |                       |
| 9.0pF                 |                       |
| 10pF                  |                       |
| 12pF                  |                       |
| 15pF                  |                       |
| 18pF                  |                       |
| 22pF                  |                       |
| 27pF                  |                       |
| 33pF                  |                       |
| 39pF                  |                       |
| 47pF                  |                       |
| 56pF                  |                       |
| 68pF                  |                       |
| 82pF                  |                       |
| 100pF                 |                       |

| EIA Case Size         | 0201                  | 0402     | 0603        | 0805        |    |    |    |     |    |    |    |     |    |    |    |     |   |
|-----------------------|-----------------------|----------|-------------|-------------|----|----|----|-----|----|----|----|-----|----|----|----|-----|---|
| Length (L)            | 0.6±0.03              | 1.0±0.05 | 1.6±0.15    | 2.0±0.2     |    |    |    |     |    |    |    |     |    |    |    |     |   |
| Width (W)             | 0.3±0.03              | 0.5±0.05 | 0.8±0.15    | 1.25±0.2    |    |    |    |     |    |    |    |     |    |    |    |     |   |
| Thickness max. (T)    | 0.33                  | 0.6      | 1.0         | 1.35        |    |    |    |     |    |    |    |     |    |    |    |     |   |
| Termination Width (P) | 0.15±0.05             | 0.2±0.1  | 0.12 ~ 0.51 | 0.25 ~ 0.71 |    |    |    |     |    |    |    |     |    |    |    |     |   |
| Capacitance           | Working Voltage (Vdc) |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
|                       | 10                    | 16       | 25          | 50          | 16 | 25 | 50 | 100 | 16 | 25 | 50 | 100 | 16 | 25 | 50 | 100 |   |
| 0.47pF ~ 22pF         |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 24pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 27pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 30pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 33pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 36pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 39pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 43pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 47pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 51pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 56pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 62pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 68pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 75pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 82pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 91pF                  |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 100pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 110pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 120pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 130pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 150pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 160pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 180pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 200pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 220pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 240pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 270pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 300pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 330pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 360pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 390pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 430pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 470pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 510pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 560pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 620pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 680pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 750pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 820pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 910pF                 |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.001µF               |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.0012µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.0015µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.0018µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.0022µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     |   |
| 0.0027µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     | * |
| 0.0033µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    |     | * |
| 0.0039µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    | *   | * |
| 0.0047µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    |    | *   |   |
| 0.0056µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    | *  | *   |   |
| 0.0068µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    | *  | *   |   |
| 0.0082µF              |                       |          |             |             |    |    |    |     |    |    |    |     |    |    | *  | *   |   |



100% Sn over Ni barrier  
(CONSULT FACTORY FOR CAPACITANCE VALUES NOT LISTED)

\*1.45mm maximum thickness

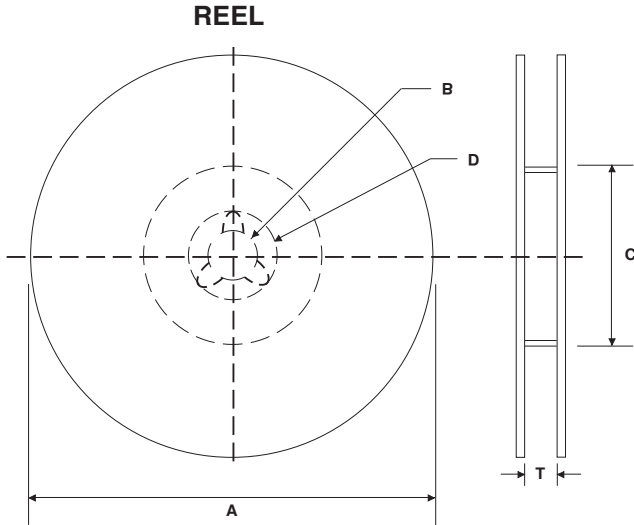


| EIA Case Size         | 0805                  |    |    |     | 1206        |    |    |    | 1210        |    |    |    | 1812        |     |    | 2225        |     |    |     |    |
|-----------------------|-----------------------|----|----|-----|-------------|----|----|----|-------------|----|----|----|-------------|-----|----|-------------|-----|----|-----|----|
| Length (L)            | 2.0±0.2               |    |    |     | 3,2±0.2     |    |    |    | 3.2±0.2     |    |    |    | 4.5±0.3     |     |    | 5.70±0.4    |     |    |     |    |
| Width (W)             | 1.25±0.2              |    |    |     | 1.6±0.2     |    |    |    | 2.5±0.2     |    |    |    | 3.2±0.25    |     |    | 6.35±0.25   |     |    |     |    |
| Thickness max. (T)    | 1.45                  |    |    |     | 1.80        |    |    |    | 1.80        |    |    |    | 1.80        |     |    | 1.80        |     |    |     |    |
| Termination Width (P) | 0.25 ~ 0.71           |    |    |     | 0.25 ~ 0.71 |    |    |    | 0.25 ~ 0.71 |    |    |    | 0.25 ~ 0.76 |     |    | 0.25 ~ 1.02 |     |    |     |    |
| Capacitance           | Working Voltage (Vdc) |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
|                       | 16                    | 25 | 50 | 100 | 10          | 16 | 25 | 50 | 100         | 10 | 16 | 25 | 50          | 100 | 25 | 50          | 100 | 50 | 100 |    |
| 0.47pF ~ 9.1pF        |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 10pF ~ 22pF           |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 24pF ~ 0.001µF        |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0012µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0015µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0018µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0022µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0027µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0033µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0039µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0047µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0056µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0068µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0075µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0082µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.0091µF              |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.01µF                |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.012µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.015µF               |                       |    |    |     |             |    |    |    |             | *  |    |    |             |     |    |             |     |    |     |    |
| 0.018µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.022µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     | ** |
| 0.027µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     | ** |
| 0.033µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     | ** |
| 0.039µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     | ** |
| 0.047µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |
| 0.056µF               |                       |    |    |     |             |    |    |    |             |    |    |    |             |     |    |             |     |    |     |    |

\*1.90mm maximum thickness, \*\*2.60mm maximum thickness

**See NMC High Capacitance datasheet for higher capacitance values  
or NMC-H High Voltage datasheet for higher voltage ratings**





### REEL DIMENSIONS (mm)

| Reel Diameter (A) | B        | C         | D        | T max.  |
|-------------------|----------|-----------|----------|---|
| 7" (178 ± 2.0)    | 13 ± 0.5 | 50 min.   | 21 ± 1.0 | 8.4 +1.0/-0<br>(1812 case size<br>12.4 +2.0/-0) |
| 10" (250 ± 2.0)   |          | 100 ± 1.0 |          |   |
| 13" (330 ± 2.0)   |          | 100 ± 1.0 |          |   |

### 7 INCH REEL QUANTITIES\*

| Size              | 01005  | 0201   | 0402   | 0603  | 0805  | 1206  | 1210  | 1812  |
|-------------------|--------|--------|--------|-------|-------|-------|-------|-------|
| Tape Size         | 8mm    | 8mm    | 8mm    | 8mm   | 8mm   | 8mm   | 8mm   | 12mm  |
| Min. Qty Per Reel | 20,000 | 20,000 | 10,000 | 4,000 | 4,000 | 4,000 | 2,000 | 1,000 |
| Max. Qty Per Reel | 20,000 | 20,000 | 10,000 | 4,000 | 5,000 | 5,000 | 5,000 | 2,000 |

\*Quantity dependent on chip thickness. Contact NIC for reel quantities on larger diameter reels.

### CARRIER TAPE MATERIAL

Parts with a thickness of ≥1mm will be taped on embossed plastic carrier. Parts with a thickness of less than 1mm will be taped on paper carrier

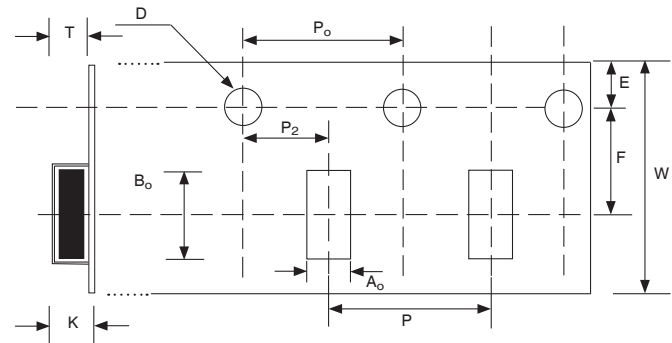
### EMBOSSED PLASTIC CARRIER TAPE DIMENSIONS (mm)

| Tape Size | W         | F          | E           | P <sub>0</sub> | P <sub>2</sub> | D                                   | K max. | T max. | P         |
|-----------|-----------|------------|-------------|----------------|----------------|-------------------------------------|--------|--------|-----------|
| 8mm       | 8.0 ± 0.2 | 3.5 ± 0.05 | 1.75 ± 0.10 | 4.0 ± 0.1      | 2.0 ± 0.5      | 1.5 <sup>+0.1</sup> <sub>-0.0</sub> | 3.0    | 2.0    | 4.0 ± 0.1 |
| 12mm      | 12 ± 0.2  | 5.5 ± 0.05 |             |                |                |                                     |        | 4.5    | 8.0 ± 0.1 |

#### Notes:

- Specifications are in compliance with EIA RS481-1-A "Taping of surface Mount Components for Automatic Placement"
- Dimensions A<sub>0</sub> (max.) equals component width dimension plus 0.5mm
- Dimension B<sub>0</sub> (max.) equals component length dimension plus 0.5mm

### EMBOSSED PLASTIC CARRIER TAPE



See notes 2 & 3 regarding dimensions A<sub>0</sub> and B<sub>0</sub>

### PUNCHED CARRIER TAPE DIMENSIONS (mm)

| Type  | A <sub>0</sub> | B <sub>0</sub> | W         | F          | E          | P1         | P0        | D0                       | T1 max. | T2 max. | Mounting Hole      |
|-------|----------------|----------------|-----------|------------|------------|------------|-----------|--------------------------|---------|---------|--------------------|
| 01005 | 0.25 ± 0.04    | 0.45 ± 0.04    | 8.0 ± 0.3 | 3.5 ± 0.05 | 1.75 ± 0.1 | 2.0 ± 0.05 | 4.0 ± 0.1 | 1.5 <sup>+0.1/-0.0</sup> | 0.27    | 0.36    | Angular Punch Hole |
| 0201  | 0.37 ± 0.03    | 0.67 ± 0.05    |           |            |            |            |           |                          | 0.45    | 0.80    |                    |
| 0402  | 0.65 ± 0.05    | 1.15 ± 0.05    |           |            |            |            |           |                          | 1.1     | 1.4     |                    |
| 0603  | 1.1 ± 0.2      | 1.9 ± 0.2      |           |            |            | 4.0 ± 0.10 |           |                          | 1.1     | 1.4     |                    |
| 0805  | 1.65 ± 0.2     | 2.4 ± 0.2      |           |            |            |            |           |                          |         |         |                    |
| 1206  | 2.0 ± 0.2      | 3.6 ± 0.2      |           |            |            |            |           |                          |         |         |                    |

### PUNCHED CARRIER TAPE

