

## Multilayer Ferrite Chip Inductor



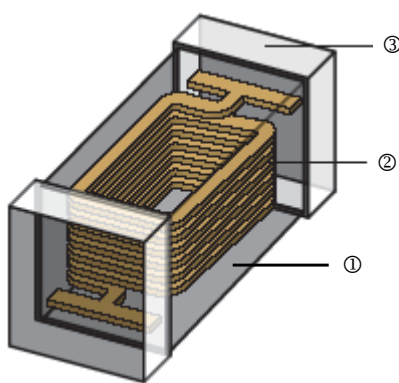
### ■ Features

- Closed magnetic circuit avoids crosstalk
- Suitable for high density installation and re-flow soldering
- Sizes 0603 / 0805 / 1206

### ■ Applications

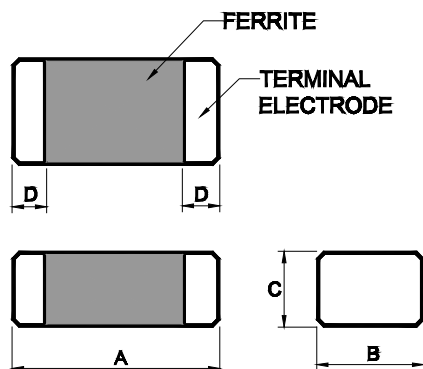
- Personal Computers
- Portable Equipment
- CD-ROM, Hard Disk, Modem, Printers
- DC-DC Converters
- DSC, DVC, PDA, DVD and HDD

### ■ Construction



|           |                      |                                |
|-----------|----------------------|--------------------------------|
| ① Ferrite | ② Internal Electrode | ③ Electrode Plating (Ag/Ni/Sn) |
|-----------|----------------------|--------------------------------|

### ■ Dimensions



Unit: mm

| Type          | Size (Inch) | A         | B         | C         | D         | Weight (g)<br>(1000pcs) |
|---------------|-------------|-----------|-----------|-----------|-----------|-------------------------|
| ML03          | 0603        | 1.60±0.20 | 0.80±0.20 | 0.80±0.20 | 0.30±0.20 | 6.2                     |
| ML05 (≤2.2μH) | 0805        | 2.00±0.20 | 1.25±0.20 | 0.90±0.20 | 0.50±0.30 | 10                      |
| ML05 (≥2.7μH) | 0805        | 2.00±0.20 | 1.25±0.20 | 1.25±0.20 | 0.50±0.30 | 10                      |
| ML06          | 1206        | 3.20±0.20 | 1.60±0.20 | 1.10±0.20 | 0.50±0.30 | 30                      |
| MLH05         | 0805        | 2.00±0.20 | 1.25±0.20 | 0.90±0.10 | 0.50±0.20 | 10                      |
| MLH06         | 0806        | 2.00±0.15 | 1.60±0.15 | 0.90±0.10 | 0.50±0.20 | 12                      |
| MLH08         | 1008        | 2.50±0.20 | 2.00±0.20 | 0.90±0.10 | 0.60±0.20 | 21                      |

**Part Numbering**

| ML                                | 05   | K                              | T              | 1R0                                    |
|-----------------------------------|--|--------------------------------|----------------|--|
| Product Type                      | Dimensions   | Inductance Tolerance           | Packaging Code | Inductance                             |
| ML :Standard<br>MLH :High Current | 03: 0603<br>05: 0805<br>06: 0806<br>08: 1008<br>06: 1206 | K: $\pm 10\%$<br>M: $\pm 20\%$ | T: Taping Reel | 47N: 47nH<br>R27: 270nH<br>1R0: 1000nH |

**Standard Electrical Specifications**

ML03 Multilayer Ferrite Chip Inductors Type

| Codes | Inductance (nH) | Tolerance          | L/Q Freq. (MHz) | Q min. | SRF (MHz) min. | DCR ( $\Omega$ ) max. | IDC (mA) max. |
|-------|-----------------|--------------------|-----------------|--------|----------------|-----------------------|---------------|
| 47N   | 47              | $\pm 20\%$         | 50MHz, 200mV    | 10     | 260            | 0.30                  | 50            |
| 56N   | 56              | $\pm 20\%$         | 50MHz, 200mV    | 10     | 255            | 0.30                  | 50            |
| 68N   | 68              | $\pm 20\%$         | 50MHz, 200mV    | 10     | 250            | 0.30                  | 50            |
| 82N   | 82              | $\pm 20\%$         | 50MHz, 200mV    | 10     | 245            | 0.30                  | 50            |
| R10   | 100             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 240            | 0.50                  | 50            |
| R12   | 120             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 205            | 0.50                  | 50            |
| R15   | 150             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 180            | 0.60                  | 50            |
| R18   | 180             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 165            | 0.60                  | 50            |
| R22   | 220             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 150            | 0.80                  | 50            |
| R27   | 270             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 136            | 0.80                  | 50            |
| R33   | 330             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 125            | 0.85                  | 35            |
| R39   | 390             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 110            | 1.00                  | 35            |
| R47   | 470             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 105            | 1.35                  | 35            |
| R56   | 560             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 95             | 1.55                  | 35            |
| R68   | 680             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 85             | 1.70                  | 35            |
| R82   | 820             | $\pm 10, \pm 20\%$ | 25MHz, 200mV    | 15     | 75             | 2.10                  | 35            |
| 1R0   | 1000            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 65             | 0.60                  | 25            |
| 1R2   | 1200            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 60             | 0.80                  | 25            |
| 1R5   | 1500            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 55             | 0.80                  | 25            |
| 1R8   | 1800            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 50             | 0.95                  | 25            |
| 2R2   | 2200            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 45             | 1.55                  | 15            |
| 2R7   | 2700            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 40             | 1.35                  | 15            |
| 3R3   | 3300            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 38             | 1.55                  | 15            |
| 3R9   | 3900            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 35             | 1.70                  | 15            |
| 4R7   | 4700            | $\pm 10, \pm 20\%$ | 10MHz, 200mV    | 35     | 33             | 2.10                  | 15            |
| 5R6   | 5600            | $\pm 10, \pm 20\%$ | 4MHz, 200mV     | 35     | 22             | 1.55                  | 5             |
| 6R8   | 6800            | $\pm 10, \pm 20\%$ | 4MHz, 200mV     | 35     | 20             | 1.70                  | 5             |
| 8R2   | 8200            | $\pm 10, \pm 20\%$ | 4MHz, 60 mV     | 30     | 18             | 2.10                  | 5             |
| 100   | 10000           | $\pm 10, \pm 20\%$ | 2MHz, 60mV      | 30     | 17             | 1.85                  | 3             |

**Operating temperature range: -40~+125°C**

**ML05 Multilayer Ferrite Chip Inductors Type**

| Codes | Inductance<br>(nH) | Tolerance | L/Q<br>Freq.<br>(MHz) | Q<br>min. | SRF<br>(MHz) min. | DCR<br>(Ω) max. | IDC<br>(mA) max. |
|-------|--------------------|-----------|-----------------------|-----------|-------------------|-----------------|------------------|
| 47N   | 47                 | ±20%      | 50MHz, 200mV          | 20        | 320               | 0.20            | 300              |
| 56N   | 56                 | ±20%      | 50MHz, 200mV          | 20        | 320               | 0.20            | 300              |
| 68N   | 68                 | ±20%      | 50MHz, 200mV          | 20        | 280               | 0.20            | 300              |
| 82N   | 82                 | ±20%      | 50MHz, 200mV          | 20        | 255               | 0.20            | 300              |
| R10   | 100                | ±10, ±20% | 25MHz, 200mV          | 25        | 235               | 0.30            | 250              |
| R12   | 120                | ±10, ±20% | 25MHz, 200mV          | 25        | 220               | 0.30            | 250              |
| R15   | 150                | ±10, ±20% | 25MHz, 200mV          | 25        | 200               | 0.40            | 250              |
| R18   | 180                | ±10, ±20% | 25MHz, 200mV          | 25        | 185               | 0.40            | 250              |
| R22   | 220                | ±10, ±20% | 25MHz, 200mV          | 25        | 170               | 0.50            | 250              |
| R27   | 270                | ±10, ±20% | 25MHz, 200mV          | 25        | 150               | 0.50            | 250              |
| R33   | 330                | ±10, ±20% | 25MHz, 200mV          | 25        | 145               | 0.55            | 250              |
| R39   | 390                | ±10, ±20% | 25MHz, 200mV          | 25        | 135               | 0.65            | 200              |
| R47   | 470                | ±10, ±20% | 25MHz, 200mV          | 25        | 125               | 0.65            | 200              |
| R56   | 560                | ±10, ±20% | 25MHz, 200mV          | 25        | 115               | 0.75            | 150              |
| R68   | 680                | ±10, ±20% | 25MHz, 200mV          | 25        | 105               | 0.80            | 150              |
| R82   | 820                | ±10, ±20% | 25MHz, 200mV          | 25        | 100               | 1.00            | 150              |
| 1R0   | 1000               | ±10, ±20% | 10MHz, 200mV          | 45        | 75                | 0.40            | 50               |
| 1R2   | 1200               | ±10, ±20% | 10MHz, 200mV          | 45        | 65                | 0.50            | 50               |
| 1R5   | 1500               | ±10, ±20% | 10MHz, 200mV          | 45        | 60                | 0.50            | 50               |
| 1R8   | 1800               | ±10, ±20% | 10MHz, 200mV          | 45        | 55                | 0.60            | 50               |
| 2R2   | 2200               | ±10, ±20% | 10MHz, 200mV          | 45        | 50                | 0.65            | 30               |
| 2R7   | 2700               | ±10, ±20% | 10MHz, 200mV          | 45        | 45                | 0.75            | 30               |
| 3R3   | 3300               | ±10, ±20% | 10MHz, 200mV          | 45        | 41                | 0.80            | 30               |
| 3R9   | 3900               | ±10, ±20% | 10MHz, 200mV          | 45        | 38                | 0.90            | 30               |
| 4R7   | 4700               | ±10, ±20% | 10MHz, 200mV          | 45        | 35                | 1.00            | 30               |
| 5R6   | 5600               | ±10, ±20% | 4MHz, 200mV           | 50        | 32                | 0.90            | 15               |
| 6R8   | 6800               | ±10, ±20% | 4MHz, 200mV           | 50        | 29                | 1.00            | 15               |
| 8R2   | 8200               | ±10, ±20% | 4MHz, 200mV           | 50        | 26                | 1.10            | 15               |
| 100   | 10000              | ±10, ±20% | 2MHz, 60mV            | 50        | 24                | 1.15            | 15               |
| 120   | 12000              | ±10, ±20% | 2MHz, 60mV            | 50        | 22                | 1.25            | 15               |
| 150   | 15000              | ±10, ±20% | 1MHz, 60mV            | 30        | 19                | 0.80            | 5                |
| 180   | 18000              | ±10, ±20% | 1MHz, 60mV            | 30        | 18                | 0.90            | 5                |
| 220   | 22000              | ±10, ±20% | 1MHz, 60mV            | 30        | 16                | 1.10            | 5                |

■Operating temperature range: -40~+125℃

## Multilayer Ferrite Chip Inductor

## ML06 Multilayer Ferrite Chip Inductors Type

| Codes | Inductance<br>(nH) | Tolerance | L/Q<br>Freq.<br>(MHz) | Q<br>min. | SRF<br>(MHz) min. | DCR<br>(Ω) max. | IDC<br>(mA) max. |
|-------|--------------------|-----------|-----------------------|-----------|-------------------|-----------------|------------------|
| 47N   | 47                 | ±20%      | 50MHz, 200mV          | 20        | 320               | 0.15            | 300              |
| 56N   | 56                 | ±20%      | 50MHz, 200mV          | 20        | 280               | 0.25            | 300              |
| 68N   | 68                 | ±20%      | 50MHz, 200mV          | 20        | 280               | 0.25            | 300              |
| 82N   | 82                 | ±20%      | 50MHz, 200mV          | 20        | 250               | 0.25            | 300              |
| R10   | 100                | ±10, ±20% | 25MHz, 200mV          | 20        | 235               | 0.25            | 250              |
| R12   | 120                | ±10, ±20% | 25MHz, 200mV          | 20        | 220               | 0.30            | 250              |
| R15   | 150                | ±10, ±20% | 25MHz, 200mV          | 20        | 200               | 0.30            | 250              |
| R18   | 180                | ±10, ±20% | 25MHz, 200mV          | 20        | 185               | 0.40            | 250              |
| R22   | 220                | ±10, ±20% | 25MHz, 200mV          | 20        | 170               | 0.40            | 250              |
| R27   | 270                | ±10, ±20% | 25MHz, 200mV          | 20        | 150               | 0.50            | 250              |
| R33   | 330                | ±10, ±20% | 25MHz, 200mV          | 20        | 145               | 0.60            | 250              |
| R39   | 390                | ±10, ±20% | 25MHz, 200mV          | 25        | 135               | 0.50            | 200              |
| R47   | 470                | ±10, ±20% | 25MHz, 200mV          | 25        | 125               | 0.60            | 200              |
| R56   | 560                | ±10, ±20% | 25MHz, 200mV          | 25        | 115               | 0.70            | 150              |
| R68   | 680                | ±10, ±20% | 25MHz, 200mV          | 25        | 105               | 0.80            | 150              |
| R82   | 820                | ±10, ±20% | 25MHz, 200mV          | 25        | 100               | 0.90            | 150              |
| 1R0   | 1000               | ±10, ±20% | 10MHz, 200mV          | 45        | 75                | 0.40            | 100              |
| 1R2   | 1200               | ±10, ±20% | 10MHz, 200mV          | 45        | 65                | 0.50            | 100              |
| 1R5   | 1500               | ±10, ±20% | 10MHz, 200mV          | 45        | 60                | 0.50            | 80               |
| 1R8   | 1800               | ±10, ±20% | 10MHz, 200mV          | 45        | 55                | 0.50            | 70               |
| 2R2   | 2200               | ±10, ±20% | 10MHz, 200mV          | 45        | 50                | 0.60            | 60               |
| 2R7   | 2700               | ±10, ±20% | 10MHz, 200mV          | 45        | 45                | 0.60            | 60               |
| 3R3   | 3300               | ±10, ±20% | 10MHz, 200mV          | 45        | 41                | 0.70            | 60               |
| 3R9   | 3900               | ±10, ±20% | 10MHz, 200mV          | 45        | 38                | 0.80            | 50               |
| 4R7   | 4700               | ±10, ±20% | 10MHz, 200mV          | 45        | 35                | 0.90            | 50               |
| 5R6   | 5600               | ±10, ±20% | 4MHz, 200mV           | 45        | 32                | 0.70            | 25               |
| 6R8   | 6800               | ±10, ±20% | 4MHz, 200mV           | 45        | 29                | 0.80            | 25               |
| 8R2   | 8200               | ±10, ±20% | 4MHz, 200mV           | 45        | 26                | 0.90            | 25               |
| 100   | 10000              | ±10, ±20% | 2MHz, 60mV            | 45        | 24                | 1.00            | 25               |
| 120   | 12000              | ±10, ±20% | 2MHz, 60mV            | 45        | 22                | 1.05            | 15               |
| 150   | 15000              | ±10, ±20% | 1MHz, 60mV            | 35        | 19                | 0.70            | 5                |
| 180   | 18000              | ±10, ±20% | 1MHz, 60mV            | 35        | 18                | 0.75            | 5                |
| 220   | 22000              | ±10, ±20% | 1MHz, 60mV            | 35        | 16                | 0.90            | 5                |
| 270   | 27000              | ±10, ±20% | 1MHz, 60mV            | 35        | 14                | 0.90            | 5                |
| 330   | 33000              | ±10, ±20% | 1MHz, 60mV            | 35        | 13                | 1.05            | 5                |

■ Operating temperature range: -40~+125℃

## ■High Current Electrical Specifications

### MLH05 Multilayer Ferrite Chip Inductors Type

| Codes | Inductance (uH) | Tolerance | Test Freq.  | SRF (MHz) min. | DCR (Ω)  | IDC (mA) max. |
|-------|-----------------|-----------|-------------|----------------|----------|---------------|
| R47   | 0.47            | ±20%      | 1MHz, 250mV | 100            | 0.10±25% | 1100          |
| R68   | 0.68            | ±20%      | 1MHz, 250mV | 100            | 0.12±25% | 1000          |
| R82   | 0.82            | ±20%      | 1MHz, 250mV | 90             | 0.14±25% | 900           |
| 1R0   | 1.0             | ±20%      | 1MHz, 250mV | 90             | 0.16±25% | 800           |
| 1R2   | 1.2             | ±20%      | 1MHz, 250mV | 80             | 0.16±25% | 800           |
| 1R5   | 1.5             | ±20%      | 1MHz, 250mV | 70             | 0.22±25% | 700           |
| 1R8   | 1.8             | ±20%      | 1MHz, 250mV | 60             | 0.22±25% | 700           |
| 2R2   | 2.2             | ±20%      | 1MHz, 250mV | 50             | 0.25±25% | 600           |
| 3R3   | 3.3             | ±20%      | 1MHz, 250mV | 40             | 0.22±25% | 500           |
| 4R7   | 4.7             | ±20%      | 1MHz, 250mV | 30             | 0.30±25% | 500           |

■Operating temperature range: -40~+125℃

### MLH06 Multilayer Ferrite Chip Inductors Type

| Codes | Inductance (uH) | Tolerance | Test Freq.  | SRF (MHz) min. | DCR (Ω)  | IDC (mA) max. |
|-------|-----------------|-----------|-------------|----------------|----------|---------------|
| R47   | 0.47            | ±20%      | 1MHz, 250mV | 100            | 0.14±30% | 1500          |
| R68   | 0.68            | ±20%      | 1MHz, 250mV | 90             | 0.15±30% | 1500          |
| R82   | 0.82            | ±20%      | 1MHz, 250mV | 80             | 0.16±30% | 1500          |
| 1R0   | 1.0             | ±20%      | 1MHz, 250mV | 60             | 0.16±30% | 1400          |
| 1R2   | 1.2             | ±20%      | 1MHz, 250mV | 60             | 0.16±30% | 1400          |
| 1R5   | 1.5             | ±20%      | 1MHz, 250mV | 50             | 0.20±30% | 1200          |
| 1R8   | 1.8             | ±20%      | 1MHz, 250mV | 50             | 0.20±30% | 1200          |
| 2R2   | 2.2             | ±20%      | 1MHz, 250mV | 40             | 0.22±30% | 1200          |
| 3R3   | 3.3             | ±20%      | 1MHz, 250mV | 30             | 0.24±30% | 1100          |
| 4R7   | 4.7             | ±20%      | 1MHz, 250mV | 20             | 0.30±30% | 1100          |

■Operating temperature range: -40~+125℃

### MLH08 Multilayer Ferrite Chip Inductors Type

| Codes | Inductance (uH) | Tolerance | Test Freq.  | SRF (MHz) min. | DCR (Ω)  | IDC (mA) max. |
|-------|-----------------|-----------|-------------|----------------|----------|---------------|
| R47   | 0.47            | ±20%      | 1MHz, 250mV | 100            | 0.07±25% | 1800          |
| R68   | 0.68            | ±20%      | 1MHz, 250mV | 90             | 0.09±25% | 1700          |
| R82   | 0.82            | ±20%      | 1MHz, 250mV | 80             | 0.10±25% | 1700          |
| 1R0   | 1.0             | ±20%      | 1MHz, 250mV | 60             | 0.11±25% | 1600          |
| 1R2   | 1.2             | ±20%      | 1MHz, 250mV | 60             | 0.11±25% | 1600          |
| 1R5   | 1.5             | ±20%      | 1MHz, 250mV | 50             | 0.13±25% | 1500          |
| 1R8   | 1.8             | ±20%      | 1MHz, 250mV | 50             | 0.13±25% | 1500          |
| 2R2   | 2.2             | ±20%      | 1MHz, 250mV | 40             | 0.17±25% | 1300          |
| 3R3   | 3.3             | ±20%      | 1MHz, 250mV | 30             | 0.16±25% | 1200          |
| 4R7   | 4.7             | ±20%      | 1MHz, 250mV | 25             | 0.20±25% | 1100          |

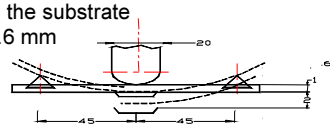
■Operating temperature range: -40~+125℃

## Environmental Characteristics

### Electrical Performance Test

| Item              | Requirement                                       | Test Method    |
|-------------------|---|----------------|
| Inductance        | Refer to standard electrical characteristic spec. | HP4291B        |
| Q                 |   | HP4291B        |
| SRF               |   | HP4291B        |
| DC Resistance RDC |   | Agilent 34401A |

### Mechanical Performance Test

| Item                         | Requirement   | Test Method   |
|------------------------------|---|---|
| Resistance to Soldering Heat | Appearance: No damage<br>More than 75% of the terminal.<br>Electrode should be covered with solder. | Pre-heating: 150°C, 1min.<br>Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free)<br>Solder Temperature: 260±5°C (Pb-Free)<br>Immersion Time: 10±1 sec.   |
| Solderability                | The electrodes shall be at least 90% covered with new solder coating                                | Pre-heating: 150°C, 1min.<br>Solder Composition: Sn/Ag3.0/Cu0.5 (Pb-Free)<br>Solder Temperature: 245±5°C (Pb-Free)<br>Immersion Time: 4±1 sec.  |
| Flexure Strength             | The forces applied on the right conditions must not damage the terminal electrode and the ferrite.  | Test device shall be soldered on the substrate<br>Substrate Dimension: 100x40x1.6 mm<br>Deflection: 2.0 mm<br>Keeping Time: 30 sec.<br><br>*For 0402, substrate dimension is 100x40x0.8 mm |
| Vibration                    |   | Test device shall be soldered on the substrate<br>Oscillation Frequency: 10 to 55 to 10Hz for 1 min.<br>Amplitude: 1.5 mm<br>Time: 2 hrs for each axis (X, Y & Z), total 6 hrs  |

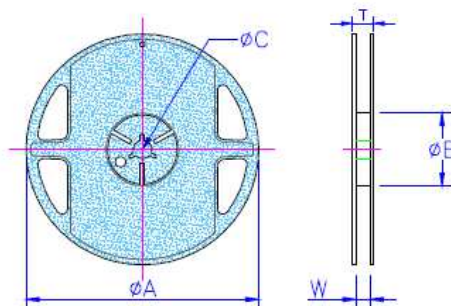
### Climatic Test

| Item                        | Requirement   | Test Method  |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
|-----------------------------|---|--|-------------|------------------|-------------|---|-------|----|---|------|---|---|------|----|---|------|---|
| Damp Heat with Load         | Appearance: No damage<br>L change: within±20% of initial value  | Temperature: 40±2°C<br>Relative Humidity: 90 ~ 95%<br>Time: 1000 hrs<br>Measured after exposure in the room condition for 24 hrs   |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| Temperature Cycle           |   | One cycle: <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time (min.)</th></tr><tr><td>1</td><td>-40±3</td><td>30</td></tr><tr><td>2</td><td>25±2</td><td>3</td></tr><tr><td>3</td><td>85±3</td><td>30</td></tr><tr><td>4</td><td>25±2</td><td>3</td></tr></table> Total: 100 cycles<br>Measured after exposure in the room condition for 24 hrs | Step        | Temperature (°C) | Time (min.) | 1 | -40±3 | 30 | 2 | 25±2 | 3 | 3 | 85±3 | 30 | 4 | 25±2 | 3 |
| Step                        |   | Temperature (°C)   | Time (min.) |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| 1                           |   | -40±3  | 30          |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| 2                           |   | 25±2   | 3           |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| 3                           | 85±3  | 30   |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| 4                           | 25±2  | 3  |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| High Temperature Resistance | Temperature: 85±3°C<br>Relative Humidity: 20%<br>Applied Current: Rated Current<br>Time: 1000 hrs<br>Measured after exposure in the room condition for 24 hrs |  |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |
| Low Temperature Resistance  | Temperature: -40±3°C<br>Relative Humidity: 0%<br>Time: 1000 hrs<br>Measured after exposure in the room condition for 24 hrs                                   |  |             |                  |             |   |       |    |   |      |   |   |      |    |   |      |   |

Storage Temperature: 15~28°C; Humidity < 80%RH

## ■Packaging

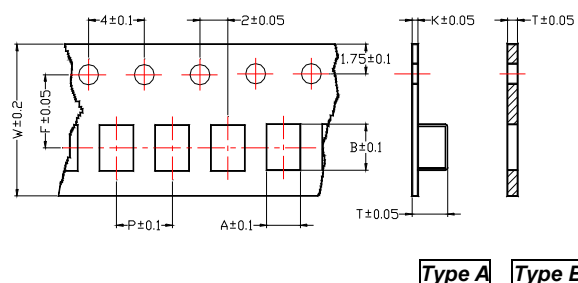
### Reel Specifications



Unit: mm

| Type                          | A     | B        | C        | W        | T         | Quantity (EA)       |                           |
|-------------------------------|-------|----------|----------|----------|-----------|---------------------|---------------------------|
|                               |       |          |          |          |           | Paper Tape (Type B) | Polystyrene Tape (Type A) |
| ML03                          | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | 4,000               | -                         |
| ML05( $\leq 2.2\mu\text{H}$ ) | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | 4,000               | -                         |
| ML05( $\geq 2.7\mu\text{H}$ ) | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | -                   | 3,000                     |
| ML06                          | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | -                   | 3,000                     |
| MLH05                         | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | 4,000               | -                         |
| MLH06                         | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | -                   | 3,000                     |
| MLH08                         | 178±1 | 60.0±0.5 | 13.0±0.2 | 9.00±0.5 | 12.0±0.15 | -                   | 3,000                     |

### Tape Specifications



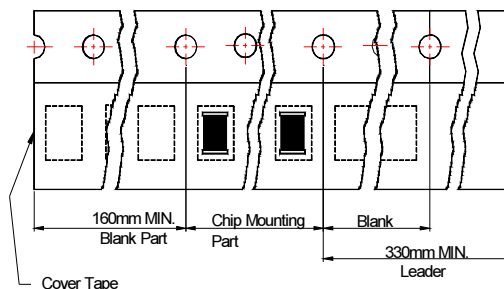
**Type A** **Type B**

### Tape Material

Carrier tape : Polystyrene for 0805( $\leq 2.2\mu\text{H}$ ) 1206

Paper for 0603 0805( $\geq 2.7\mu\text{H}$ )

Cover type : Polystyrene



Unit: mm

| Type                          | A    | B    | T    | W   | P   | F   | K    | Tape Type |
|-------------------------------|------|------|------|-----|-----|-----|------|-----------|
| ML03                          | 1.05 | 1.85 | 0.95 | 8.0 | 4.0 | 3.5 | -    | B         |
| ML05( $\leq 2.2\mu\text{H}$ ) | 1.50 | 2.42 | 0.95 | 8.0 | 4.0 | 3.5 | -    | B         |
| ML05( $\geq 2.7\mu\text{H}$ ) | 1.50 | 2.35 | 1.45 | 8.0 | 4.0 | 3.5 | 0.22 | A         |
| ML06                          | 1.88 | 3.50 | 1.27 | 8.0 | 4.0 | 3.5 | 0.22 | A         |
| MLH05                         | 1.45 | 2.25 | 0.95 | 8.0 | 4.0 | 3.5 | -    | B         |
| MLH06                         | 1.88 | 2.40 | 1.23 | 8.0 | 4.0 | 3.5 | 0.23 | A         |
| MLH08                         | 2.20 | 2.85 | 1.40 | 8.0 | 4.0 | 3.5 | 0.23 | A         |

### Note:

- Please make sure that your product is has been evaluated and confirmed against your specifications when our product is mounted to your product.
- Do not knock nor drop.
- All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.