

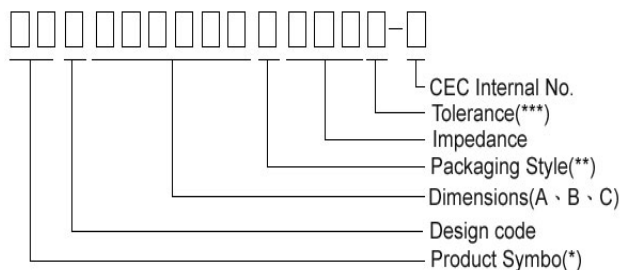
## Multilayer Ferrite Chip beads



Chilisin offers hundreds of multi-layered ferrite chip beads with various sizes, frequency characteristics, and a wide range of impedance values to provide powerful solutions for EMI problems.

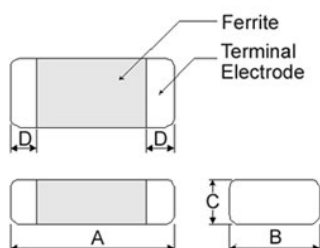
Three formulas of ferrite compose several types of EMI suppression chip beads that are classified into six categories- SB, GB, PB, UPB, NB, and HF series.

### Product Identification



- Product Symbol: SB, GB, PB, UPB, NB, HF
- Packaging: T : Tape and Reel ; B : Bulk
- Tolerance: Y =  $\pm 25\%$ ; M =  $\pm 20\%$ ; T:  $\pm 30\%$
- Note: RoHS Compliant

### Shapes and Dimensions



Dimensions in mm

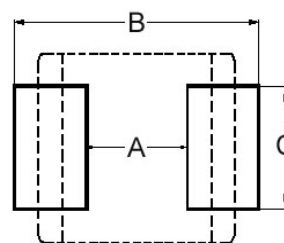
| TYPE    | A              | B               | C               | D               |
|---------|----------------|-----------------|-----------------|-----------------|
| ①060303 | 0.6 $\pm$ 0.03 | 0.30 $\pm$ 0.03 | 0.3 $\pm$ 0.03  | 0.15 $\pm$ 0.05 |
| ②100505 | 1.0 $\pm$ 0.10 | 0.50 $\pm$ 0.10 | 0.5 $\pm$ 0.10  | 0.25 $\pm$ 0.10 |
| ③160808 | 1.6 $\pm$ 0.15 | 0.80 $\pm$ 0.15 | 0.8 $\pm$ 0.15  | 0.3 $\pm$ 0.2   |
| ④201209 | 2.0 $\pm$ 0.20 | 1.25 $\pm$ 0.20 | 0.9 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |
| ⑤201212 | 2.0 $\pm$ 0.20 | 1.25 $\pm$ 0.20 | 1.25 $\pm$ 0.20 | 0.5 $\pm$ 0.3   |
| ④321611 | 3.2 $\pm$ 0.20 | 1.60 $\pm$ 0.20 | 1.1 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |
| ⑥321616 | 3.2 $\pm$ 0.20 | 1.60 $\pm$ 0.20 | 1.6 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |
| ⑦322513 | 3.2 $\pm$ 0.20 | 2.50 $\pm$ 0.20 | 1.3 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |
| ⑧451616 | 4.5 $\pm$ 0.25 | 1.60 $\pm$ 0.20 | 1.6 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |
| ⑧453215 | 4.5 $\pm$ 0.25 | 3.20 $\pm$ 0.20 | 1.5 $\pm$ 0.20  | 0.5 $\pm$ 0.3   |

① : SB / PB    ② : SB / PB / NB / HF    ④ : SB / PB / NB / GB / UPB \*  
 ③ : SB / PB / NB / GB / UPB / HF    ⑤ : UPB    ⑥ : SB / GB  
 ⑦ : SB / PB / GB    ⑧ : SB / PB / GB / UPB

### Dimension Conversion

| Code   | Dimension in mm<br>(AxBxC) | EIA  |
|--------|----------------------------|------|
| 060303 | 0.6X0.3X0.3                | 0201 |
| 100505 | 1.0X0.5X0.5                | 0402 |
| 160808 | 1.6x0.8x0.8                | 0603 |
| 201209 | 2.0x1.2x0.9                | 0805 |
| 321611 | 3.2x1.6x.1.1               | 1206 |
| 321616 | 3.2x1.6x1.6                | 1206 |
| 322513 | 3.2x2.5x1.3                | 1210 |
| 451616 | 4.5x1.6x1.6                | 1806 |
| 453215 | 4.5x3.2x1.5                | 1812 |

### Recommended Pattern



Dimensions in mm

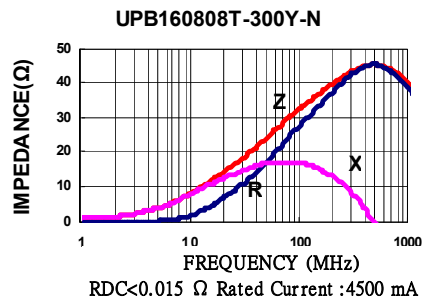
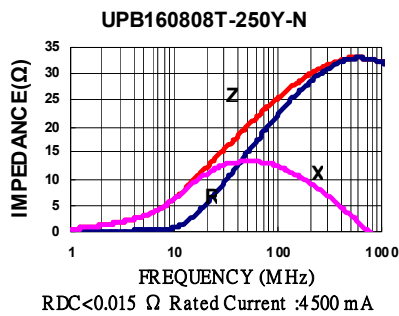
| TYPE    | A         | B           | C         |
|---------|-----------|-------------|-----------|
| ①060303 | 0.2 ~ 0.3 | 0.75 ~ 1.05 | 0.3       |
| ②100505 | 0.4       | 1.2 ~ 1.4   | 0.5       |
| ③160808 | 0.7 ~ 0.8 | 1.8 ~ 2.0   | 0.6 ~ 0.8 |
| ④201209 | 1.0 ~ 1.2 | 2.6 ~ 4.0   | 1.0 ~ 1.2 |
| ⑤201212 | 1.0 ~ 1.2 | 2.6 ~ 4.0   | 1.0 ~ 1.2 |
| ④321611 | 2.0       | 4.2 ~ 5.2   | 1.2       |
| ⑥321616 | 2.0       | 4.2 ~ 5.2   | 1.2       |
| ⑦322513 | 2.0       | 5.5 ~ 6.5   | 1.8       |
| ⑧451616 | 3.0       | 5.5 ~ 6.5   | 1.2       |
| ⑧453215 | 3.0       | 5.5 ~ 6.5   | 2.4       |

Don't apply narrower pattern than listed above to PB and UPB. Narrow pattern might cause excessive heat or open circuit.

## Electrical Characteristics

| Part Number       | Test Frequency (MHz) | Impedance ( $\Omega$ ) | D.C. Resistance ( $\Omega$ ) Max | Rated current (mA) Max |
|-------------------|----------------------|------------------------|----------------------------------|------------------------|
| UPB160808T-100Y-N | 100                  | 10                     | 0.010                            | 5000                   |
| UPB160808T-110Y-N | 100                  | 11                     | 0.015                            | 4500                   |
| UPB160808T-170Y-N | 100                  | 17                     | 0.015                            | 4500                   |
| UPB160808T-250Y-N | 100                  | 25                     | 0.015                            | 4500                   |
| UPB160808T-300Y-N | 100                  | 30                     | 0.015                            | 4500                   |
| UPB160808T-400Y-N | 100                  | 40                     | 0.015                            | 4500                   |
| UPB160808T-600Y-N | 100                  | 60                     | 0.020                            | 4000                   |
| UPB160808T-700Y-N | 100                  | 70                     | 0.020                            | 4000                   |
| UPB160808T-101Y-N | 100                  | 100                    | 0.030                            | 3000                   |
| UPB160808T-121Y-N | 100                  | 120                    | 0.030                            | 3000                   |
| UPB160808T-181Y-N | 100                  | 180                    | 0.050                            | 2000                   |

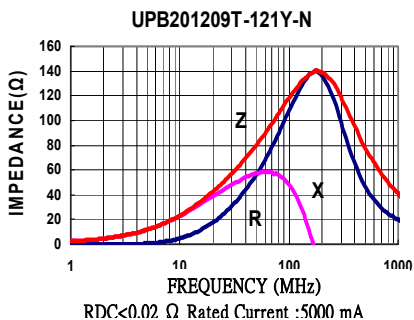
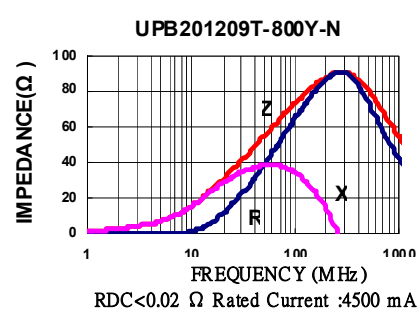
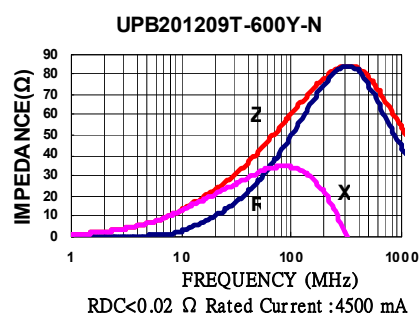
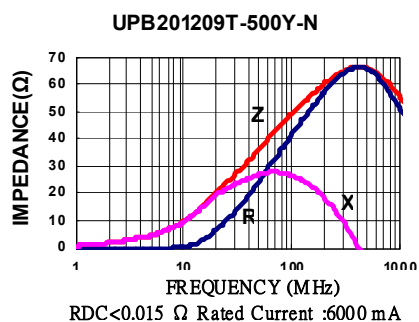
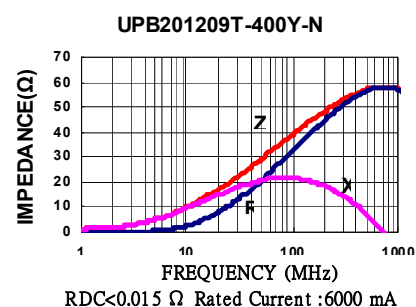
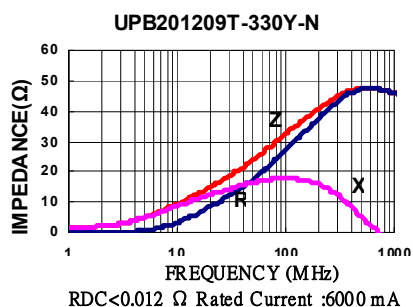
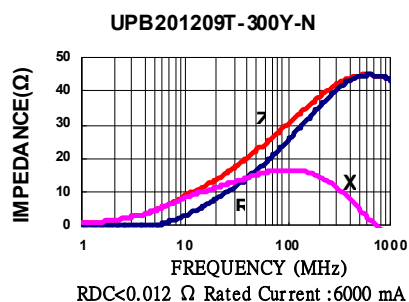
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

| Part Number       | Test Frequency (MHz) | Impedance ( $\Omega$ ) | D.C. Resistance ( $\Omega$ ) Max | Rated current (mA) Max |
|-------------------|----------------------|------------------------|----------------------------------|------------------------|
| UPB201209T-110Y-N | 100                  | 11                     | 0.012                            | 6000                   |
| UPB201209T-150Y-N | 100                  | 15                     | 0.012                            | 6000                   |
| UPB201209T-190Y-N | 100                  | 19                     | 0.012                            | 6000                   |
| UPB201209T-260Y-N | 100                  | 26                     | 0.012                            | 6000                   |
| UPB201209T-300Y-N | 100                  | 30                     | 0.012                            | 6000                   |
| UPB201209T-330Y-N | 100                  | 33                     | 0.012                            | 6000                   |
| UPB201209T-400Y-N | 100                  | 40                     | 0.015                            | 6000                   |
| UPB201209T-500Y-N | 100                  | 50                     | 0.015                            | 6000                   |
| UPB201209T-600Y-N | 100                  | 60                     | 0.02                             | 4500                   |
| UPB201209T-800Y-N | 100                  | 80                     | 0.02                             | 4500                   |
| UPB201209T-101Y-N | 100                  | 100                    | 0.02                             | 5000                   |
| UPB201209T-121Y-N | 100                  | 120                    | 0.02                             | 5000                   |
| UPB201209T-201Y-N | 100                  | 200                    | 0.04                             | 3000                   |
| UPB201209T-221Y-N | 100                  | 220                    | 0.04                             | 3000                   |
| UPB201209T-301Y-N | 100                  | 300                    | 0.05                             | 3000                   |
| UPB201209T-331Y-N | 100                  | 330                    | 0.05                             | 3000                   |

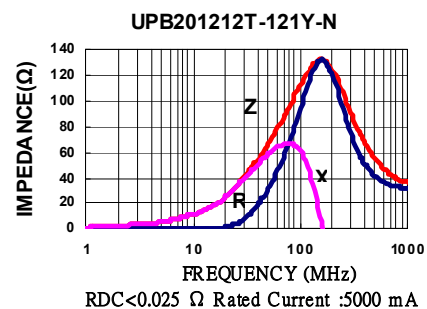
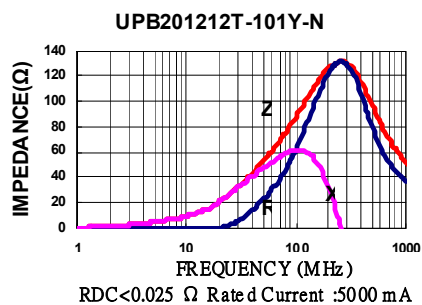
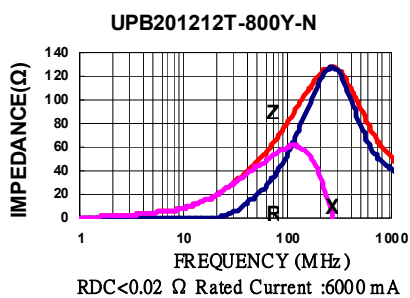
Test Instruments : HP4291A Impedance / Material Analyzer



## Electrical Characteristics

| Part Number       | Test Frequency (MHz) | Impedance ( $\Omega$ ) | D.C. Resistance ( $\Omega$ ) Max | Rated current (mA) Max |
|-------------------|----------------------|------------------------|----------------------------------|------------------------|
| UPB201212T-500Y-N | 100                  | 50                     | 0.018                            | 6000                   |
| UPB201212T-600Y-N | 100                  | 60                     | 0.018                            | 6000                   |
| UPB201212T-700Y-N | 100                  | 70                     | 0.018                            | 6000                   |
| UPB201212T-800Y-N | 100                  | 80                     | 0.020                            | 6000                   |
| UPB201212T-900Y-N | 100                  | 90                     | 0.025                            | 5000                   |
| UPB201212T-101Y-N | 100                  | 100                    | 0.025                            | 5000                   |
| UPB201212T-121Y-N | 100                  | 120                    | 0.025                            | 5000                   |

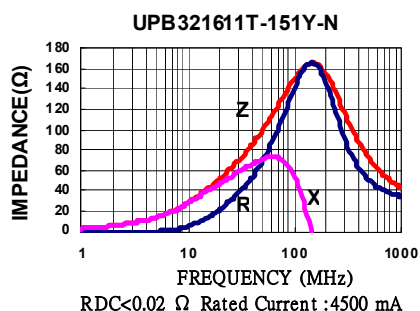
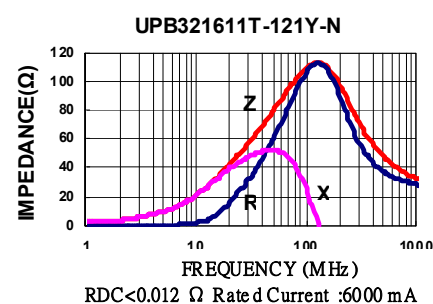
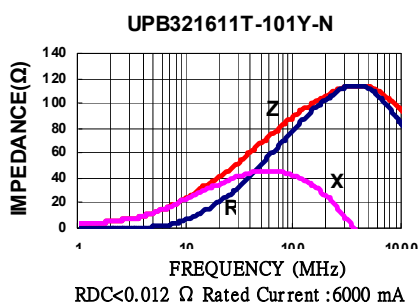
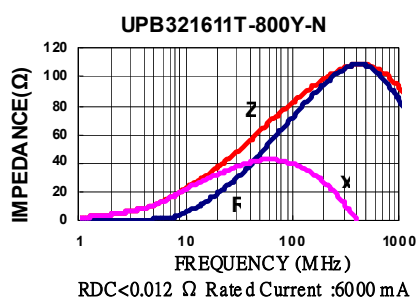
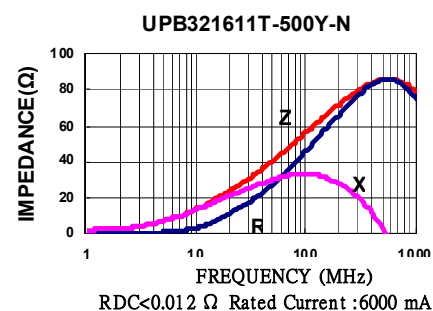
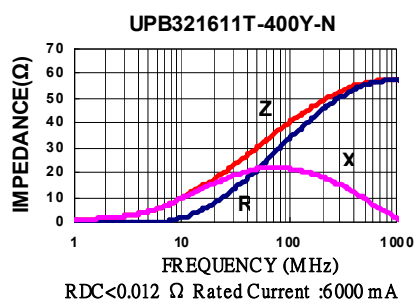
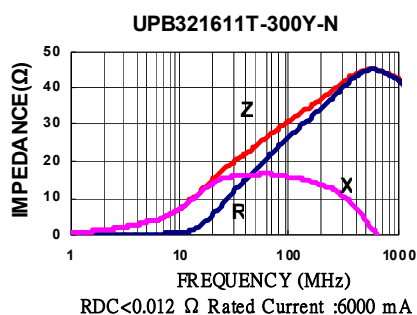
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

| Part Number       | Test Frequency (MHz) | Impedance ( $\Omega$ ) | D.C. Resistance ( $\Omega$ ) Max | Rated current (mA) Max |
|-------------------|----------------------|------------------------|----------------------------------|------------------------|
| UPB321611T-110Y-N | 100                  | 11                     | 0.012                            | 6000                   |
| UPB321611T-190Y-N | 100                  | 19                     | 0.012                            | 6000                   |
| UPB321611T-260Y-N | 100                  | 26                     | 0.012                            | 6000                   |
| UPB321611T-300Y-N | 100                  | 30                     | 0.012                            | 6000                   |
| UPB321611T-400Y-N | 100                  | 40                     | 0.012                            | 6000                   |
| UPB321611T-500Y-N | 100                  | 50                     | 0.012                            | 6000                   |
| UPB321611T-600Y-N | 100                  | 60                     | 0.012                            | 6000                   |
| UPB321611T-800Y-N | 100                  | 80                     | 0.012                            | 6000                   |
| UPB321611T-101Y-N | 100                  | 100                    | 0.012                            | 6000                   |
| UPB321611T-121Y-N | 100                  | 120                    | 0.012                            | 6000                   |
| UPB321611T-151Y-N | 100                  | 150                    | 0.020                            | 4500                   |
| UPB321611T-181Y-N | 100                  | 180                    | 0.020                            | 4500                   |
| UPB321611T-221Y-N | 100                  | 220                    | 0.020                            | 4500                   |

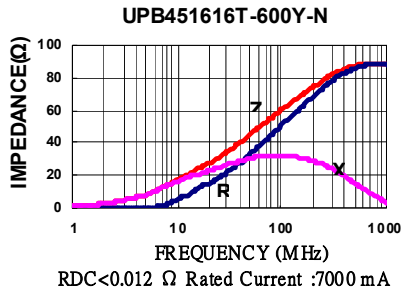
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

| Part Number       | Test Frequency<br>(MHz) | Impedance<br>( $\Omega$ ) | D.C. Resistance<br>( $\Omega$ ) Max | Rated current<br>(mA) Max |
|-------------------|-------------------------|---------------------------|-------------------------------------|---------------------------|
| UPB451616T-600Y-N | 100                     | 60                        | 0.012                               | 7000                      |
| UPB451616T-111Y-N | 100                     | 110                       | 0.020                               | 4000                      |

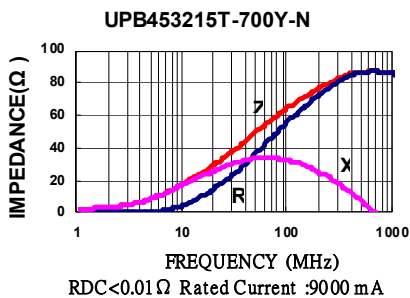
**Test Instruments :** HP4291A Impedance / Material Analyzer



## Electrical Characteristics

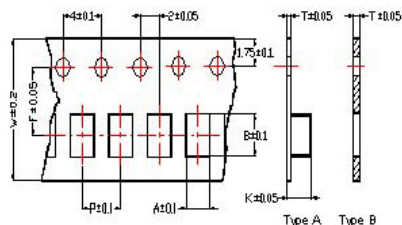
| Part Number       | Test Frequency<br>(MHz) | Impedance<br>( $\Omega$ ) | D.C. Resistance<br>( $\Omega$ ) Max | Rated current<br>(mA) Max |
|-------------------|-------------------------|---------------------------|-------------------------------------|---------------------------|
| UPB453215T-400Y-N | 100                     | 40                        | 0.010                               | 9000                      |
| UPB453215T-560Y-N | 100                     | 56                        | 0.010                               | 9000                      |
| UPB453215T-700Y-N | 100                     | 70                        | 0.010                               | 9000                      |
| UPB453215T-800Y-N | 100                     | 80                        | 0.010                               | 9000                      |
| UPB453215T-900Y-N | 100                     | 90                        | 0.015                               | 6000                      |
| UPB453215T-121Y-N | 100                     | 120                       | 0.020                               | 6000                      |
| UPB453215T-151Y-N | 100                     | 150                       | 0.020                               | 6000                      |

**Test Instruments :** HP4291A Impedance / Material Analyzer

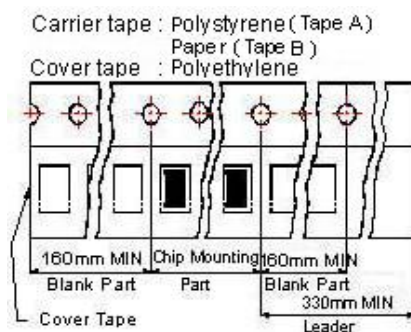


## Packaging Specifications

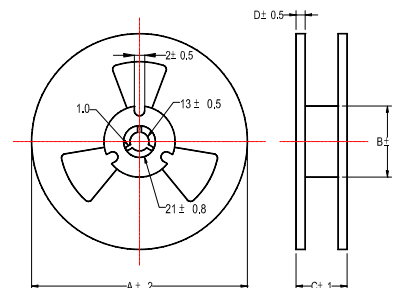
Tape Dimensions



Tape Material



Reel Dimensions



①: SB / PB ②: SB / PB / NB / HF ③: SB / PB / NB / GB / UPB  
④: SB / PB / NB / GB / UPB / HF ⑤: UPB ⑥: SB / GB  
⑦: SB / PB / GB ⑧: SB / PB / GB / UPB

## Dimensions in mm

| TYPE    | Tape Dimensions |      |      |     |     |     |      |            | Reel Dimensions |    |    |   | Quantity<br>PCS / REEL |
|---------|-----------------|------|------|-----|-----|-----|------|------------|-----------------|----|----|---|------------------------|
|         | A               | B    | T    | W   | P   | F   | K    | Tape Type. | A               | B  | C  | D |                        |
| ①060303 | 0.38            | 0.67 | 0.45 | 8.0 | 2.0 | 3.5 | -    | B          | 178             | 60 | 10 | 2 | 15000                  |
| ②100505 | 0.65            | 1.15 | 0.60 | 8.0 | 2.0 | 3.5 | -    | B          | 178             | 60 | 12 | 2 | 10000                  |
| ③160808 | 1.05            | 1.85 | 0.95 | 8.0 | 4.0 | 3.5 | -    | B          | 178             | 60 | 12 | 2 | 4000                   |
| ④201209 | 1.50            | 2.30 | 0.97 | 8.0 | 4.0 | 3.5 | -    | B          | 178             | 60 | 12 | 2 | 4000                   |
| ⑤201212 | 1.35            | 2.25 | 0.22 | 8.0 | 4.0 | 3.5 | 1.35 | A          | 178             | 60 | 12 | 2 | 3000                   |
| ④321611 | 1.88            | 3.50 | 0.22 | 8.0 | 4.0 | 3.5 | 1.27 | A          | 178             | 60 | 12 | 2 | 3000                   |
| ⑥321616 | 1.88            | 3.53 | 0.22 | 8.0 | 4.0 | 3.5 | 1.80 | A          | 178             | 60 | 12 | 2 | 2000                   |
| ⑦322513 | 2.77            | 3.42 | 0.22 | 8.0 | 4.0 | 3.5 | 1.55 | A          | 178             | 60 | 12 | 2 | 2500                   |
| ⑧451616 | 1.93            | 4.95 | 0.24 | 12  | 4.0 | 5.5 | 1.93 | A          | 178             | 60 | 14 | 2 | 2000                   |
| ⑧453215 | 3.66            | 4.95 | 0.24 | 12  | 8.0 | 5.5 | 1.85 | A          | 178             | 60 | 14 | 2 | 1000                   |