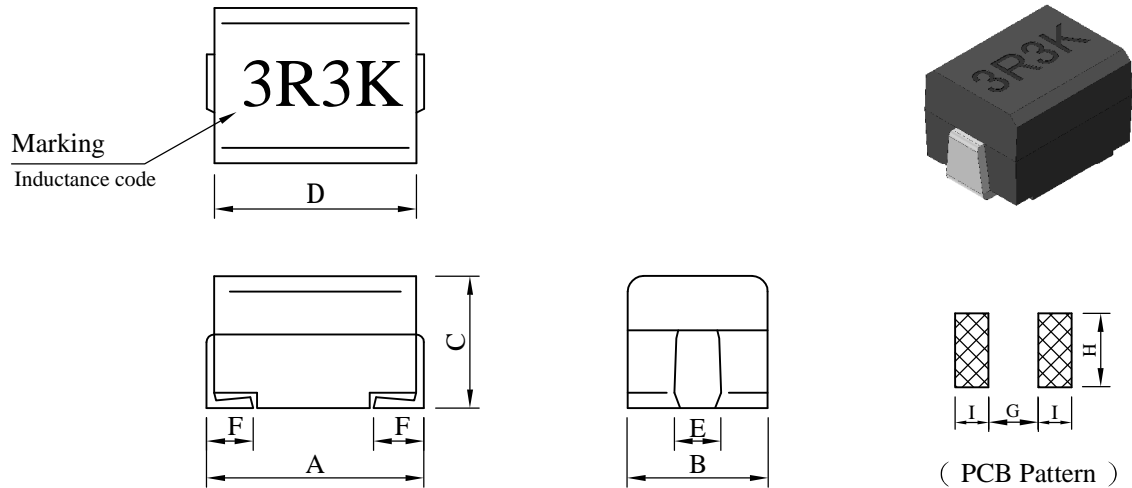


# SPECIFICATION FOR APPROVAL

REF. :

|            |                     |               |                  |      |   |
|------------|---------------------|---------------|------------------|------|---|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |   |
|            |                     | REV.          | 20160714-M       | PAGE | 1 |

## I . Configuration and dimensions :



Unit : m/m

| A         | B         | C         | D         | E    | F                                    | G    | H    | I    |
|-----------|-----------|-----------|-----------|------|--------------------------------------|------|------|------|
| 4.50 ±0.3 | 3.20 ±0.2 | 3.20 ±0.2 | 4.20 ±0.2 | 1.20 | 1.00 <sup>+0.3</sup> <sub>-0.0</sub> | 2.20 | 1.60 | 1.50 |

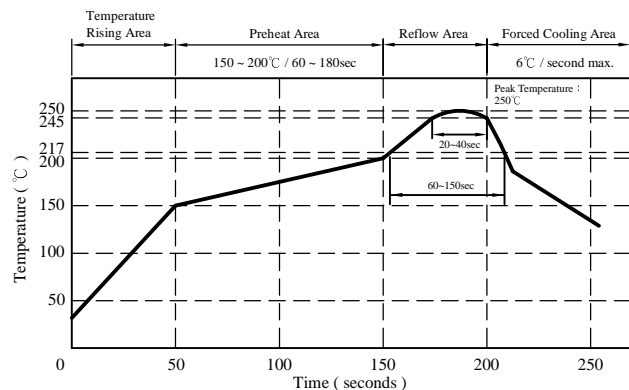
## II . Description :

- a . Ferrite drum core construction.
- b . Enamelled copper wire : H class
- c . Product weight : 0.110 g ( ref. )
- d . Moisture sensitivity Level 3
- e . Products comply with RoHS' requirements

## III . General specification :

- a . Temp. rise : 20°C max.
- b . Ambient temp. : 100°C max.
- c . Storage temp. : -40°C ----+125°C
- d . Operating temp. : -40°C ----+125°C  
(Temp. rise included)
- e . Terminal pull strength : 1.5 kg min.
- f . Rated current : Current cause  
inductance drop within 10%
- g . Resistance to solder heat : 250°C.10 secs.
- h . Resistance to solvent : Per MIL-STD-202F

Reflow profile  
 Peak Temp : 250°C max.  
 Max time above 245°C : 20~40sec max.  
 Max time above 217°C : 60~150sec max.  
 200°C~250°C Average Ramp-up Rate : 3°C/second max.



AR-001C

# SPECIFICATION FOR APPROVAL

REF. :

|            |                     |               |                  |      |   |
|------------|---------------------|---------------|------------------|------|---|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |   |
|            |                     | REV.          | 20160714-M       | PAGE | 2 |

## IV . Electrical characteristics :

| DWG No.          | Inductance<br>( μH ) | Q<br>min. | Test<br>Freq.<br>( MHz ) | SRF<br>( MHz )<br>min. | RDC<br>( Ω )<br>max. | IDC<br>( mA )<br>max. |
|------------------|----------------------|-----------|--------------------------|------------------------|----------------------|-----------------------|
| CM4532R10ML□-□□□ | 0.10±20%             | 35        | 25.200                   | 300.0                  | 0.18                 | 800                   |
| CM4532R12ML□-□□□ | 0.12±20%             | 35        | 25.200                   | 280.0                  | 0.20                 | 770                   |
| CM4532R15ML□-□□□ | 0.15±20%             | 35        | 25.200                   | 250.0                  | 0.22                 | 730                   |
| CM4532R18ML□-□□□ | 0.18±20%             | 35        | 25.200                   | 220.0                  | 0.24                 | 700                   |
| CM4532R22ML□-□□□ | 0.22±20%             | 40        | 25.200                   | 200.0                  | 0.25                 | 665                   |
| CM4532R27ML□-□□□ | 0.27±20%             | 40        | 25.200                   | 180.0                  | 0.26                 | 635                   |
| CM4532R33ML□-□□□ | 0.33±20%             | 40        | 25.200                   | 165.0                  | 0.28                 | 605                   |
| CM4532R39ML□-□□□ | 0.39±20%             | 40        | 25.200                   | 150.0                  | 0.30                 | 575                   |
| CM4532R47ML□-□□□ | 0.47±20%             | 40        | 25.200                   | 145.0                  | 0.32                 | 545                   |
| CM4532R56ML□-□□□ | 0.56±20%             | 40        | 25.200                   | 140.0                  | 0.36                 | 520                   |
| CM4532R68ML□-□□□ | 0.68±20%             | 40        | 25.200                   | 135.0                  | 0.40                 | 500                   |
| CM4532R82ML□-□□□ | 0.82±20%             | 40        | 25.200                   | 130.0                  | 0.45                 | 475                   |
| CM45321R0KL□-□□□ | 1.00±10%             | 50        | 7.960                    | 100.0                  | 0.50                 | 450                   |
| CM45321R2KL□-□□□ | 1.20±10%             | 50        | 7.960                    | 80.0                   | 0.55                 | 430                   |
| CM45321R5KL□-□□□ | 1.50±10%             | 50        | 7.960                    | 70.0                   | 0.60                 | 410                   |
| CM45321R8KL□-□□□ | 1.80±10%             | 50        | 7.960                    | 60.0                   | 0.65                 | 390                   |
| CM45322R2KL□-□□□ | 2.20±10%             | 50        | 7.960                    | 55.0                   | 0.70                 | 380                   |
| CM45322R7KL□-□□□ | 2.70±10%             | 50        | 7.960                    | 50.0                   | 0.75                 | 370                   |
| CM45323R3KL□-□□□ | 3.30±10%             | 50        | 7.960                    | 45.0                   | 0.80                 | 355                   |
| CM45323R9KL□-□□□ | 3.90±10%             | 50        | 7.960                    | 40.0                   | 0.90                 | 330                   |
| CM45324R7KL□-□□□ | 4.70±10%             | 50        | 7.960                    | 35.0                   | 1.00                 | 315                   |
| CM45325R6KL□-□□□ | 5.60±10%             | 50        | 7.960                    | 33.0                   | 1.10                 | 300                   |
| CM45326R8KL□-□□□ | 6.80±10%             | 50        | 7.960                    | 27.0                   | 1.20                 | 285                   |
| CM45328R2KL□-□□□ | 8.20±10%             | 50        | 7.960                    | 25.0                   | 1.40                 | 270                   |
| CM4532100KL□-□□□ | 10.00±10%            | 50        | 2.520                    | 20.0                   | 1.60                 | 250                   |
| CM4532120KL□-□□□ | 12.00±10%            | 50        | 2.520                    | 18.0                   | 2.00                 | 225                   |
| CM4532150KL□-□□□ | 15.00±10%            | 50        | 2.520                    | 17.0                   | 2.50                 | 200                   |
| CM4532180KL□-□□□ | 18.00±10%            | 50        | 2.520                    | 15.0                   | 2.80                 | 190                   |
| CM4532220KL□-□□□ | 22.00±10%            | 50        | 2.520                    | 13.0                   | 3.20                 | 180                   |
| CM4532270KL□-□□□ | 27.00±10%            | 50        | 2.520                    | 12.0                   | 3.60                 | 170                   |
| CM4532330KL□-□□□ | 33.00±10%            | 50        | 2.520                    | 11.0                   | 4.00                 | 160                   |
| CM4532390KL□-□□□ | 39.00±10%            | 50        | 2.520                    | 10.0                   | 4.50                 | 150                   |
| CM4532470KL□-□□□ | 47.00±10%            | 50        | 2.520                    | 10.0                   | 5.00                 | 140                   |
| CM4532560KL□-□□□ | 56.00±10%            | 50        | 2.520                    | 9.0                    | 5.50                 | 135                   |
| CM4532680KL□-□□□ | 68.00±10%            | 50        | 2.520                    | 9.0                    | 6.00                 | 130                   |
| CM4532820KL□-□□□ | 82.00±10%            | 50        | 2.520                    | 8.0                    | 7.00                 | 120                   |
| CM4532101KL□-□□□ | 100.00±10%           | 40        | 0.796                    | 8.0                    | 8.00                 | 110                   |
| CM4532121KL□-□□□ | 120.00±10%           | 40        | 0.796                    | 6.0                    | 8.00                 | 110                   |
| CM4532151KL□-□□□ | 150.00±10%           | 40        | 0.796                    | 5.0                    | 9.00                 | 105                   |
| CM4532181KL□-□□□ | 180.00±10%           | 40        | 0.796                    | 5.0                    | 9.50                 | 102                   |
| CM4532221KL□-□□□ | 220.00±10%           | 40        | 0.796                    | 4.0                    | 10.00                | 100                   |
| CM4532271KL□-□□□ | 270.00±10%           | 40        | 0.796                    | 4.0                    | 12.00                | 92                    |
| CM4532331KL□-□□□ | 330.00±10%           | 40        | 0.796                    | 3.5                    | 14.00                | 85                    |
| CM4532391KL□-□□□ | 390.00±10%           | 40        | 0.796                    | 3.0                    | 18.00                | 80                    |
| CM4532471KL□-□□□ | 470.00±10%           | 40        | 0.796                    | 3.0                    | 26.00                | 62                    |
| CM4532561KL□-□□□ | 560.00±10%           | 30        | 0.796                    | 3.0                    | 30.00                | 50                    |
| CM4532681KL□-□□□ | 680.00±10%           | 30        | 0.796                    | 3.0                    | 30.00                | 50                    |
| CM4532821KL□-□□□ | 820.00±10%           | 30        | 0.796                    | 2.5                    | 35.00                | 30                    |
| CM4532102KL□-□□□ | 1000.00±10%          | 20        | 0.252                    | 2.5                    | 40.00                | 30                    |

- 1). □ : Packaging information : □ Code
- 2). "- □□□ " : Reference code
- 3). Electrical specifications at 25°C

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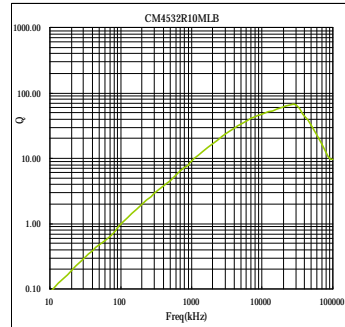
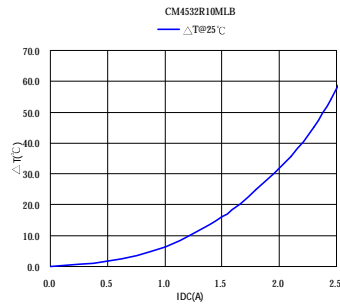
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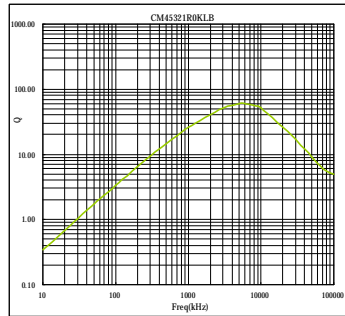
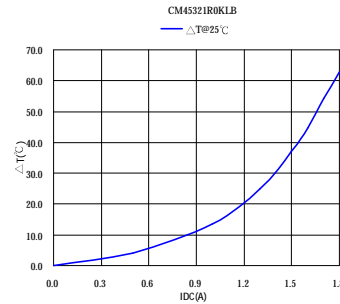
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|---------------|---------------------|---------------|------------------|------|---|
| PROD.<br>NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |   |
|               |                     | REV.          | 20160714-M       | PAGE | 3 |

V . Curve :

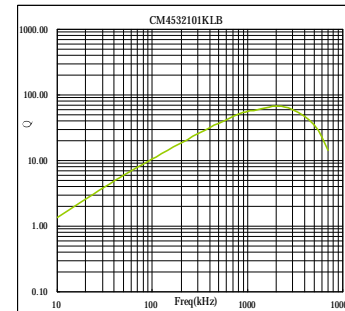
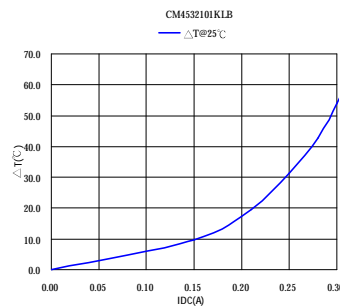
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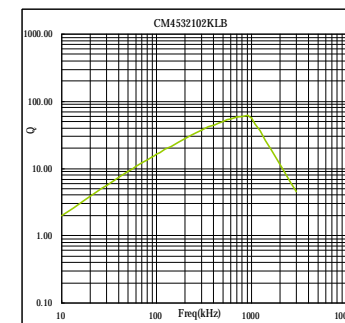
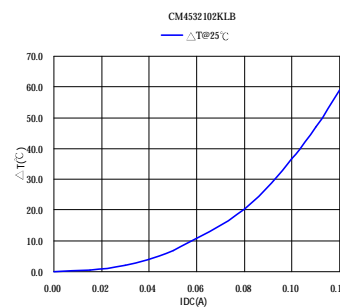
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CM4532101KL□-□□□



CM4532102KL□-□□□



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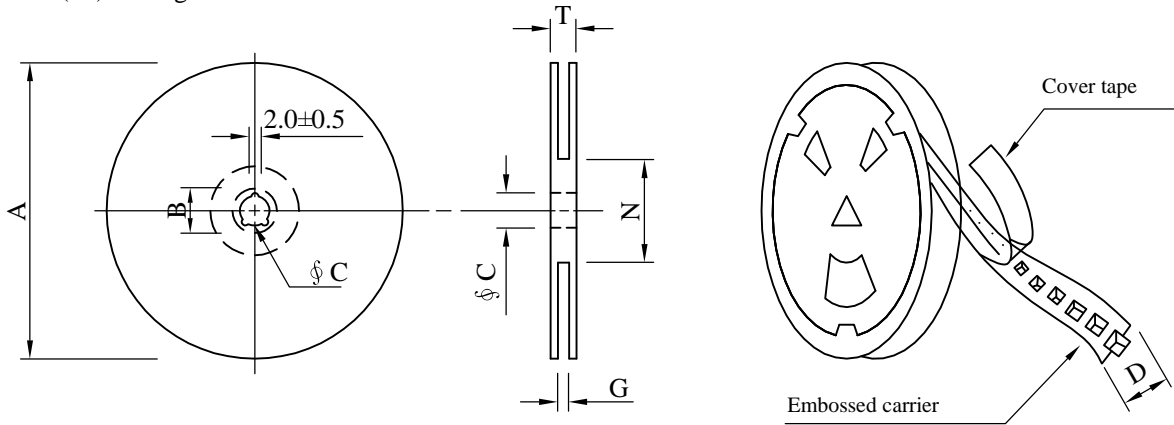
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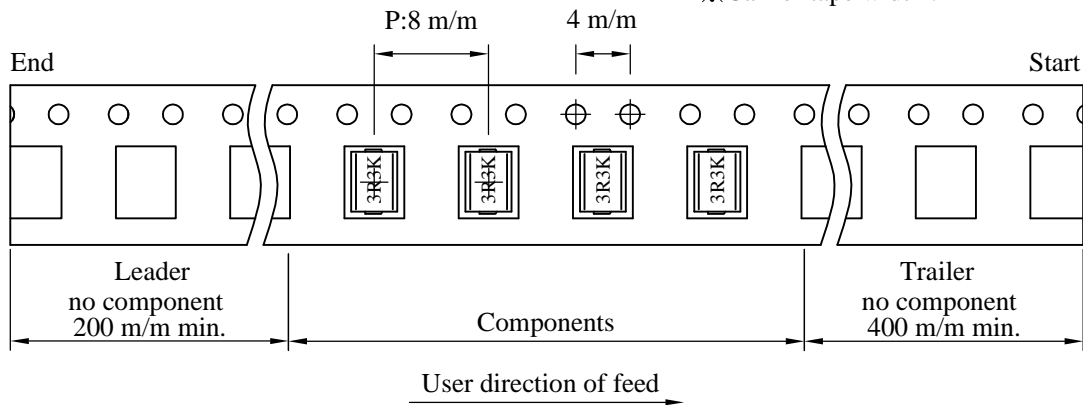
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|------------|---------------------|---------------|------------------|------|-----|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |     |
|            |                     | REV.          | 20160714-M       | PAGE | 4-1 |

**VI-1 . Packaging information :**

( 1 ) Configuration



※Carrier tape width : D



( 2 ) Dimensions

Unit:m/m

| Style   | A   | B      | C  | D  | G                | N                | T    |
|---------|-----|--------|----|----|------------------|------------------|------|
| 07 - 12 | 178 | 21±0.8 | 13 | 12 | 14 <sup>+0</sup> | 50 <sup>-0</sup> | 16.5 |

( 3 ) Q'TY & G.W. Pe package

| Code | Inner : Reel |           |         | Outer : Carton |           |              |
|------|--------------|-----------|---------|----------------|-----------|--------------|
|      | Q'TY (pcs)   | G.W. (gw) | Style   | Q'TY (pcs)     | G.W. (Kg) | Size (cm)    |
| B    | 500          | 130       | 07 - 12 | 20,000         | 7.20      | 41 x 39 x 22 |
| D    | 500          | 130       | 07 - 12 | 20,000         | 7.20      | 41 x 39 x 22 |
| H    | 500          | 130       | 07 - 12 | 20,000         | 7.20      | 41 x 39 x 22 |

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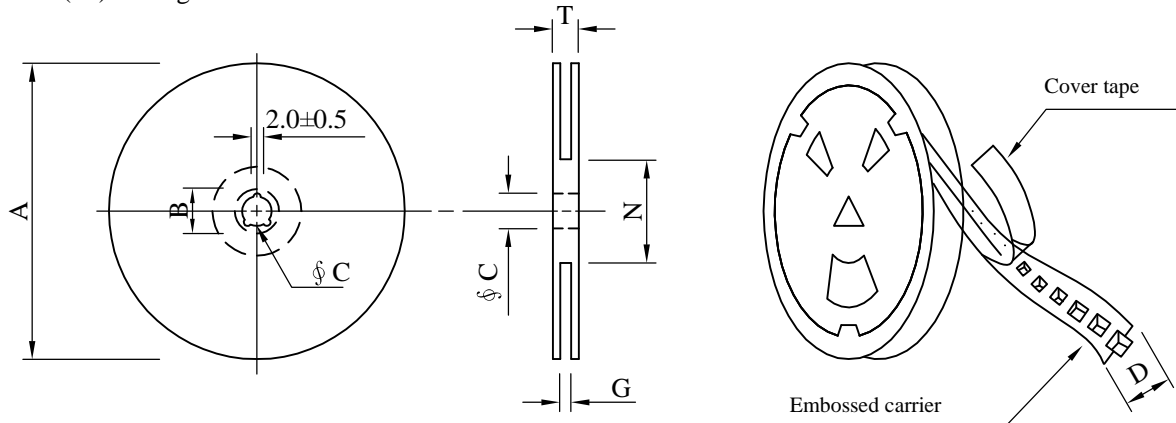
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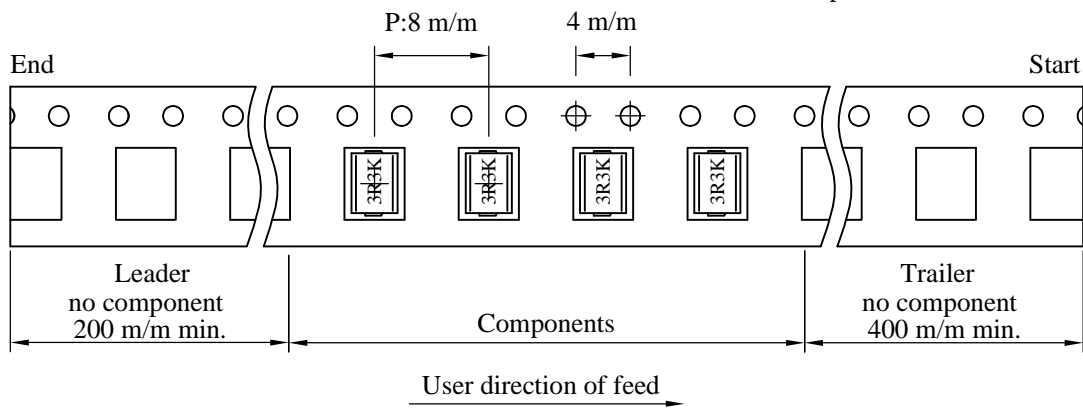
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|------------|---------------------|---------------|------------------|------|-----|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |     |
|            |                     | REV.          | 20160714-M       | PAGE | 4-2 |

## VI-2 . Packaging information :

### ( 1 ) Configuration



※Carrier tape width : D



### ( 2 ) Dimensions

Unit:m/m

| Style   | A   | B      | C      | D  | G                | N                | T    |
|---------|-----|--------|--------|----|------------------|------------------|------|
| 13 - 12 | 330 | 21±0.8 | 13±0.5 | 12 | 14 <sup>+0</sup> | 50 <sup>-0</sup> | 18.4 |

### ( 3 ) Q'TY & G.W. Pe package

| Code | Inner : Reel |           |         | Outer : Carton |           |              |
|------|--------------|-----------|---------|----------------|-----------|--------------|
|      | Q'TY (pcs)   | G.W. (gw) | Style   | Q'TY (pcs)     | G.W. (Kg) | Size (cm)    |
| C    | 2,000        | 540       | 13 - 12 | 12,000         | 5.60      | 38 x 37 x 22 |
| F    | 2,000        | 540       | 13 - 12 | 12,000         | 5.60      | 38 x 37 x 22 |
| I    | 2,000        | 540       | 13 - 12 | 12,000         | 5.60      | 38 x 37 x 22 |
| G    | 1,000        | 270       | 13 - 12 | 6,000          | 2.80      | 38 x 37 x 22 |

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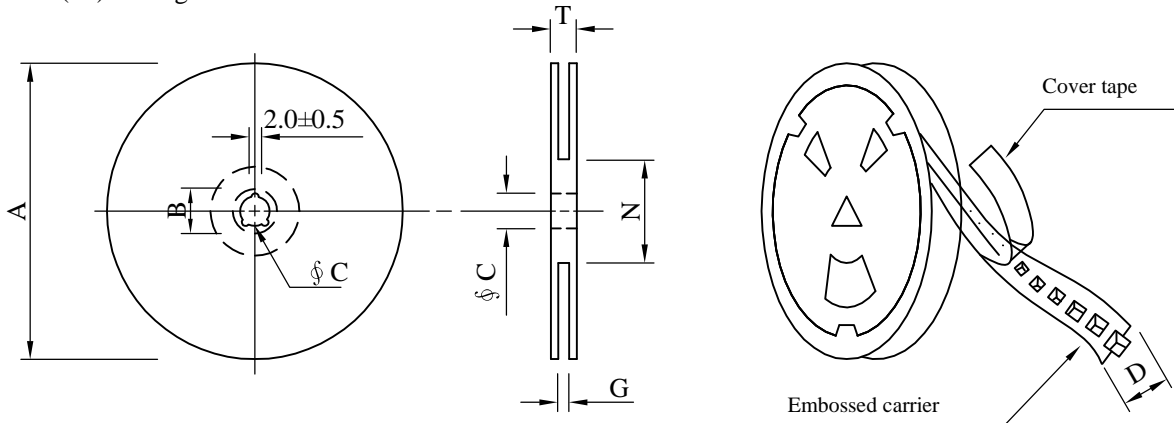
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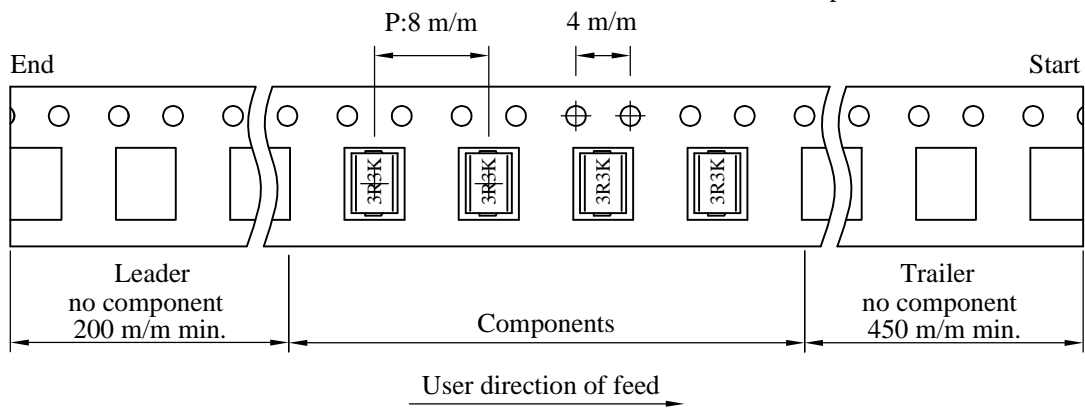
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|------------|---------------------|---------------|------------------|------|-----|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |     |
|            |                     | REV.          | 20160714-M       | PAGE | 4-3 |

VI-3 . Packaging information :

( 1 ) Configuration



※Carrier tape width : D



( 2 ) Dimensions

Unit:m/m

| Style   | A   | B      | C      | D  | G                | N                | T    |
|---------|-----|--------|--------|----|------------------|------------------|------|
| 13 - 12 | 330 | 21±0.8 | 13±0.5 | 12 | 14 <sup>+0</sup> | 50 <sup>-0</sup> | 18.4 |

( 3 ) Q'TY & G.W. Pe package

| Code | Inner : Reel |           |         | Outer : Carton |           |              |
|------|--------------|-----------|---------|----------------|-----------|--------------|
|      | Q'TY (pcs)   | G.W. (gw) | Style   | Q'TY (pcs)     | G.W. (Kg) | Size (cm)    |
| E    | 2,000        | 540       | 13 - 12 | 12,000         | 5.60      | 38 x 37 x 22 |

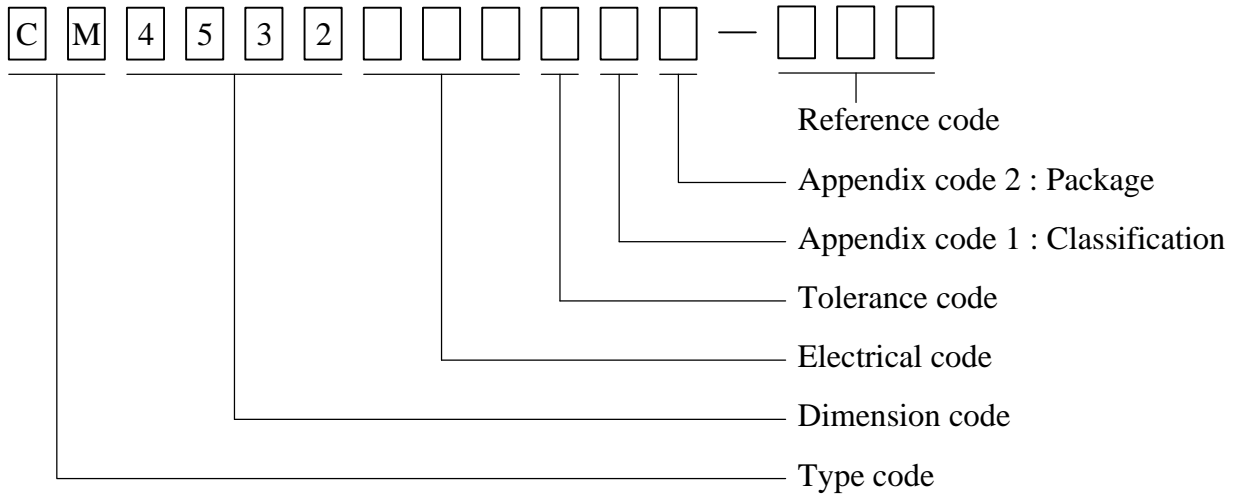
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# SPECIFICATION FOR APPROVAL

REF. :

|            |                     |               |                  |      |   |
|------------|---------------------|---------------|------------------|------|---|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |   |
|            |                     | REV.          | 20160714-M       | PAGE | 5 |

VI . Drawing number expression :



Appendix code 1 : Product Classification

Appendix code 2 : Package Information

| Code | Inner package       | Cover tape | Carrier tape   | Bag        | Package Q'TY | Remark |
|------|---------------------|------------|----------------|------------|--------------|--------|
| B    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 500 pcs      |        |
| C    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 2000 pcs     |        |
| D    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 500 pcs      |        |
| E    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 2000 pcs     |        |
| F    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 2000 pcs     |        |
| G    | T /R (Reel package) | UCT        | Non-antistatic | Antistatic | 1000 pcs     |        |
| H    | T /R (Reel package) | UCT        | Non-antistatic | MBB        | 500 pcs      |        |
| I    | T /R (Reel package) | UCT        | Non-antistatic | MBB        | 2000 pcs     |        |

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# SPECIFICATION FOR APPROVAL

REF. :

|            |                     |               |                  |      |   |
|------------|---------------------|---------------|------------------|------|---|
| PROD. NAME | Wound Chip Inductor | ABC'S DWG NO. | CM4532□□□□L□-□□□ |      |   |
|            |                     | REV.          | 20160714-M       | PAGE | 6 |

## VII . Reliability test :

| Item                                | Reference documents                    | Test Condition   | Test Specification  |
|-------------------------------------|--|--|---|
| 1.High Temperature Exposure         | MIL-STD-202 Method 108                 | 1.Temperature: 125±2℃<br>2.Time:96±2 hours.  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 2.Temperature Cycling               | JESD22-A 104                           | 1.Temperature: -40℃ ~ +125℃<br>2.Number of cycle:100 cycle<br>3.Dwell time:30 minutes  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 3.Biased Humidity Test              | MIL-STD-202 Method 103                 | 1.Temperature : 85±2 ℃<br>2.Humidity: 85% RH.<br>3.Time:96±2 Hours   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 4.Operational Life                  | JESD22-A 108                           | 1.Temperature: 125℃ (Temp. rise included)<br>2.Time:96±2 hours.<br>3.Rated current   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 5.External Visual                   | JESD22-B 101 & MIL-STD-883 Method 2009 | Inspect product constructions, marking and workmanship.  | 1.No pollution on the surface of products.<br>2.Clear marking.<br>3.No crack.                             |
| 6.Physical Dimensions               | JESD22-B 100                           | Verify physical dimensions to the applicable product detail specification.   | Per product specification standard  |
| 7.Resistance to solvents            | MIL-STD-202 Method 215                 | Immerse into solvent for 3±0.5 minutes & brush 10 times for 3 cycles.  | 1.No body change in apperance.<br>2.No marking blurred.<br>3.Inductance shall not change more than ±10%.  |
| 8.Vibration Test                    | MIL-STD-202 Method 204                 | 1.Frequency and Amplitud : 10-2000-10 Hz, 1.5 mm.<br>2.Direction:X, Y, Z<br>3.Test duration:2 hours for each direction, 6 hours in total.                    | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 9.Resistance To Soldering Heat Test | MIL-STD-202 Method 210 & J-STD020D.1   | 1.Highest temperature : 250±5℃.<br>2.Time ( temp. ≥ 217℃ ) : 60~150 Second.<br>3.IR reflow times : 3 times.  | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 10.Saturation Current               | JIS C 6436 & User SPEC.                | 1.Applied rated current for 5 second.<br>2.Rated current   | Inductance shall not drop more than 10% max.  |
| 11.Over load                        | JIS C 6436 & User SPEC.                | 1.Applied one and half rated current for a period of 5 minutes.<br>2.Rated current   | No electrical or mechanical damage  |
| 12.Temperature Rise Current         | JIS C 6436 & User SPEC.                | 1.Applied rated current for 10 minutes.<br>2.Temperature measure by digital surface thermometer.<br>3.Irms current   | Surface temperature rise is less than 20℃ max.  |
| 13.Solderability Test               | J-STD-002 & JESD22-B 102               | 1.Baking in pre-testing : 150±5℃ / 16Hours±30 min.<br>2.Peak temperature : 240±5℃<br>3.Time ( temp. ≥ 217℃ ) : 60~150 second.<br>4.IR reflow times : 1 time. | More than 95% soldering coverage min on terminations.   |
| 14.Electrical Characteriazation     | MIL-STD-202 Method 304 & User SPEC.    | 1.Operating temperature : -40℃~125℃<br>2.Room temperature : 25℃.   | 1.No mechanical or electrical damage.<br>2.Inductance shall not change more than ±10%.                    |
| 15.Withstanding Voltage Test        | MIL-STD-202 Method 301 & User SPEC.    | 1.DC: 500 V (Terminal to Coating)<br>2.Time : 1minute.   | 1.During the test no breakdown.<br>2.No mechanical or electrical damage.                                  |
| 16.Insulation Resistance            | MIL-STD-202 Method 302                 | DC voltage 100V applied between inductor terminal and coating for 1 minute.  | 1.IR = 1000MΩ Min.<br>2.No mechanical or electrical damage.   |
| 17.Drop                             | CNS-C6354 & GB/T 2423.8                | 1.Products shall be mounted on SPEC. pcb and dropped down from a heigh of 1m<br>2.Drop total time : 6 time (Every side ofsample drop 2 times)                | 1. Adhesion on PCB shall be enough.<br>2. Product appearance shall not break.<br>3. No electrical damage. |
| 18.Terminal Strength Test           | IEC 60068-2-21                         | 1.Apply push force to samples mounted on PCB.<br>2.Force of 1.8 kg for 60±1 seconds.   | After test, inductors shall be no mechanical damage.  |

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