

The history of revision change for the specification

| Document      | REV. | Modified date | Description                                                                                                                                       |
|---------------|------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| CYNVC-224-013 | A0   | 2022.4.18     | New Approval                                                                                                                                      |
| CYNVC-224-013 | A1   | 2022.10.7     | 1. Apr -> Oct<br>2. Update Recommend Land Pattern Dimensions A:2.81->3.30                                                                         |
| CYNVC-224-013 | A2   | 2024.07.30    | 1. Oct., 2022 -> Jul., 2024<br>2. Year Code : 2022 = 2 -> 2024 = 4<br>3. Rated Voltage ( V ):45V -> 100V<br>4. Reflow Soldering : 217°C -> >217°C |
| CYNVC-224-013 | A3   | 2024.09.26    | 1. Jul. -> Sep.<br>2. Add notice 'Shielded construction' in Features<br>3. Reflow Soldering : >217°C -> ≥217°C                                    |

Power Choke Coil VCHW053T MS5 type

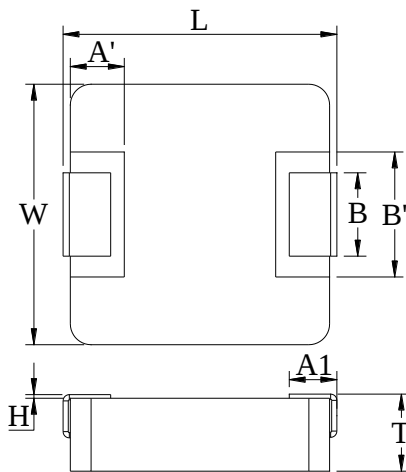
■ Features

High performance (Isat) realized by metal dust core  
Low profile : Thickness. 3.0mm Max.  
Low loss realized with low DCR  
Compliance with RoHS and Halogen Free  
Shielded construction

■ Application

Automotive applications

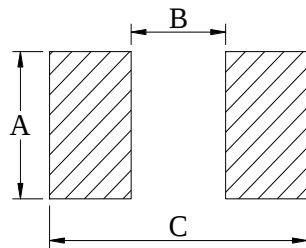
■ Outline Dimensions



| Code | Dimensions (mm) |
|------|-----------------|
| L    | $5.45 \pm 0.35$ |
| W    | $5.25 \pm 0.20$ |
| T    | $2.8 \pm 0.2$   |
| A1   | $1.4 \pm 0.3$   |
| A'   | $1.5 \pm 0.1$   |
| B    | $2.7 \pm 0.5$   |
| B'   | $3.5 \pm 0.2$   |
| H    | $0 \sim +0.15$  |

■ Recommend Land Pattern Dimensions

The customer shall determine the land dimensions shown below after confirming and safety.



|   |      |
|---|------|
| A | 3.30 |
| B | 2.58 |
| C | 6.75 |

Unit : mm

### ■ Marking and Date Code

The point on the top surface represents winding direction of choke.

#### (1) Marking

The inductor is marked with a 3-digit code.

Example -- 0.10 $\mu$ H → R10

#### (2) Date code

X    XX  
(1)    (2)  
XXX  
(3)

Where (1) Year code

Ex : 2024 = 4

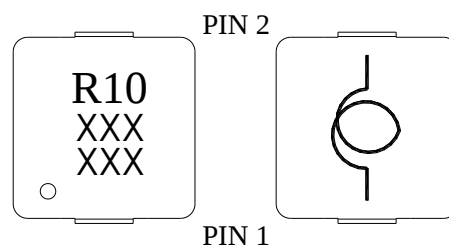
(2) Weekly code

Serial number : 01 ~ 53

(3) Taping no.

Serial number : 001 ~ ZZZ

Upside of Chip



■ Specifications

| Part Number     | L0 ◇<br>Inductance<br>( μH )<br>@ (0A) | R <sub>dc</sub> ( mΩ ) ◇ |         | Heat Rating Current<br>DC Amps. Idc ( A ) |         | Saturation Current<br>DC Amps. Isat ( A ) |         | Rated Voltage<br>( V ) |
|-----------------|----------------------------------------|--------------------------|---------|-------------------------------------------|---------|-------------------------------------------|---------|------------------------|
|                 |                                        | Typical                  | Maximum | Typical                                   | Maximum | Typical                                   | Maximum | Maximum                |
| VCHW053T-50NMS5 | 0.05                                   | 0.60                     | 0.66    | 44                                        | 40      | 64                                        | 55      | 100                    |
| VCHW053T-70NMS5 | 0.07                                   | 0.70                     | 0.77    | 40                                        | 36      | 50                                        | 42      | 100                    |
| VCHW053T-R10MS5 | 0.10                                   | 0.80                     | 0.88    | 37                                        | 33      | 44                                        | 38      | 100                    |

◇ : Significant Characteristic

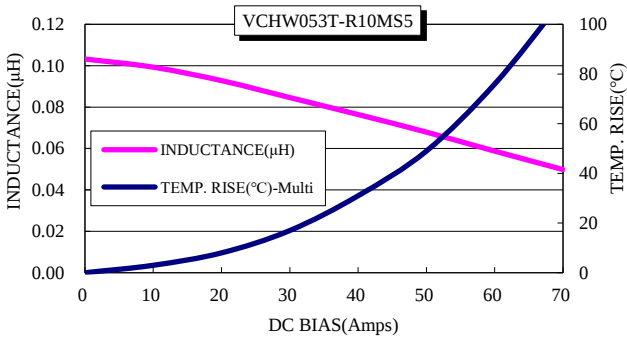
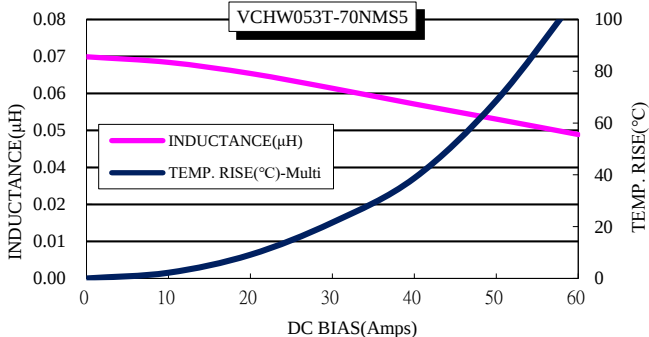
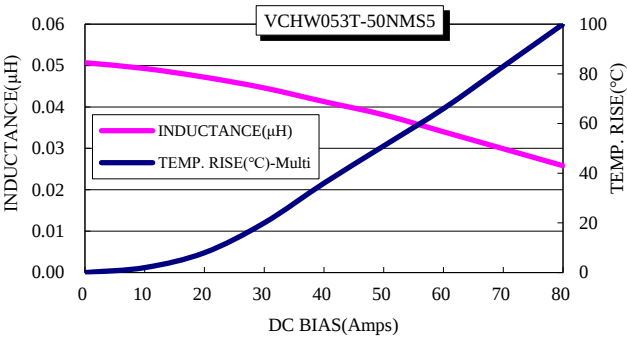
- Note 1. : Inductance tolerance ± 20%
- Note 2. : All test data is referenced to 25°C ambient.
- Note 3. : Test condition;100KHz, 1.0Vrms
- Note 4. : Idc : DC current (A) that will cause an approximate ΔT of 40°C (Multi-Layer PCB)
- Note 5. : Isat : DC current (A) that will cause L0 to drop approximately 30%
- Note 6. : Operating temperature range -55°C to +155°C
- Note 7. : The part temperature (ambient + temp rise) should not exceed 155°C under the worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provision all affect the part temperature. Part temperature should be verified in the end application.
- Note 8. : The rated current as listed is either the saturation current or the heating current depending on which value is lower.
- Note 9. : Cleaning process note

(a) If this power choke is dipped in the cleaning agent, such as toluene, xylene, ketone, and ether system, there is a possibility that the performance decreases greatly.

(b) The high power ultrasonic washing may damage the choke body.

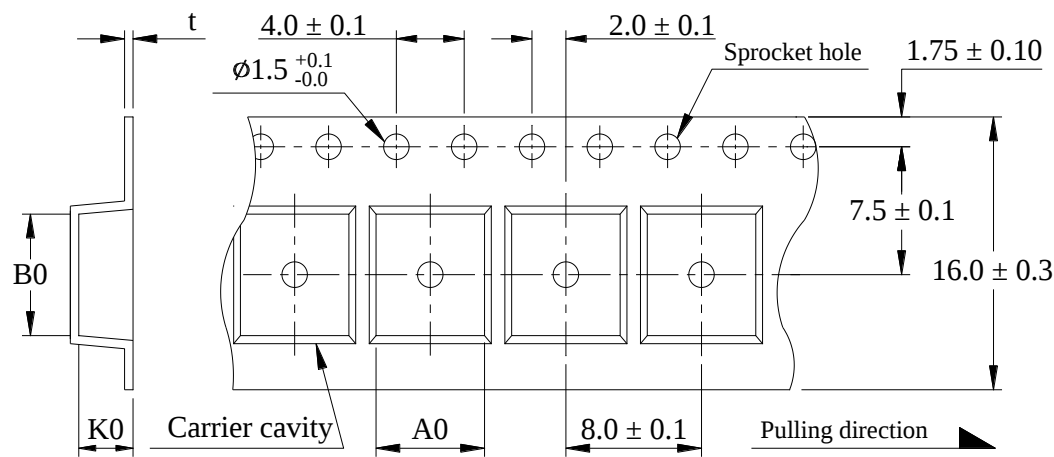
(c) Please contact us if you need the cleaning via the above agents or ultrasonic washing.
- Note 10. : If you require another part number, please contact with us.

■ Current Characteristic



■ Packaging

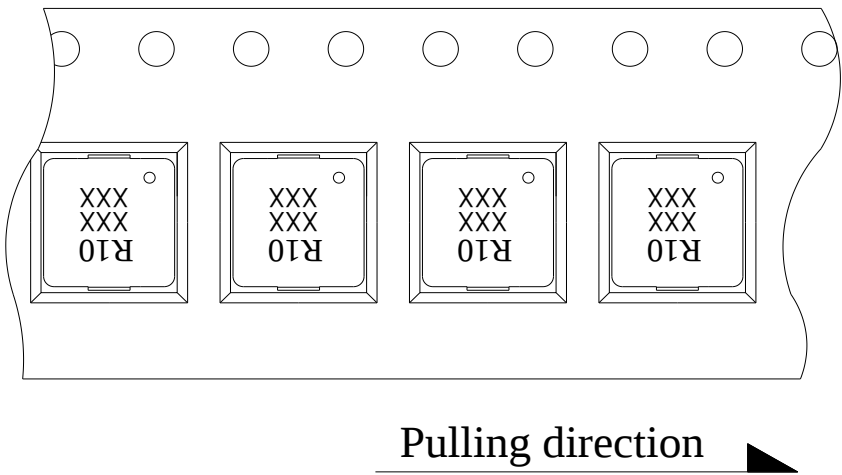
(1) Tape packaging dimensions



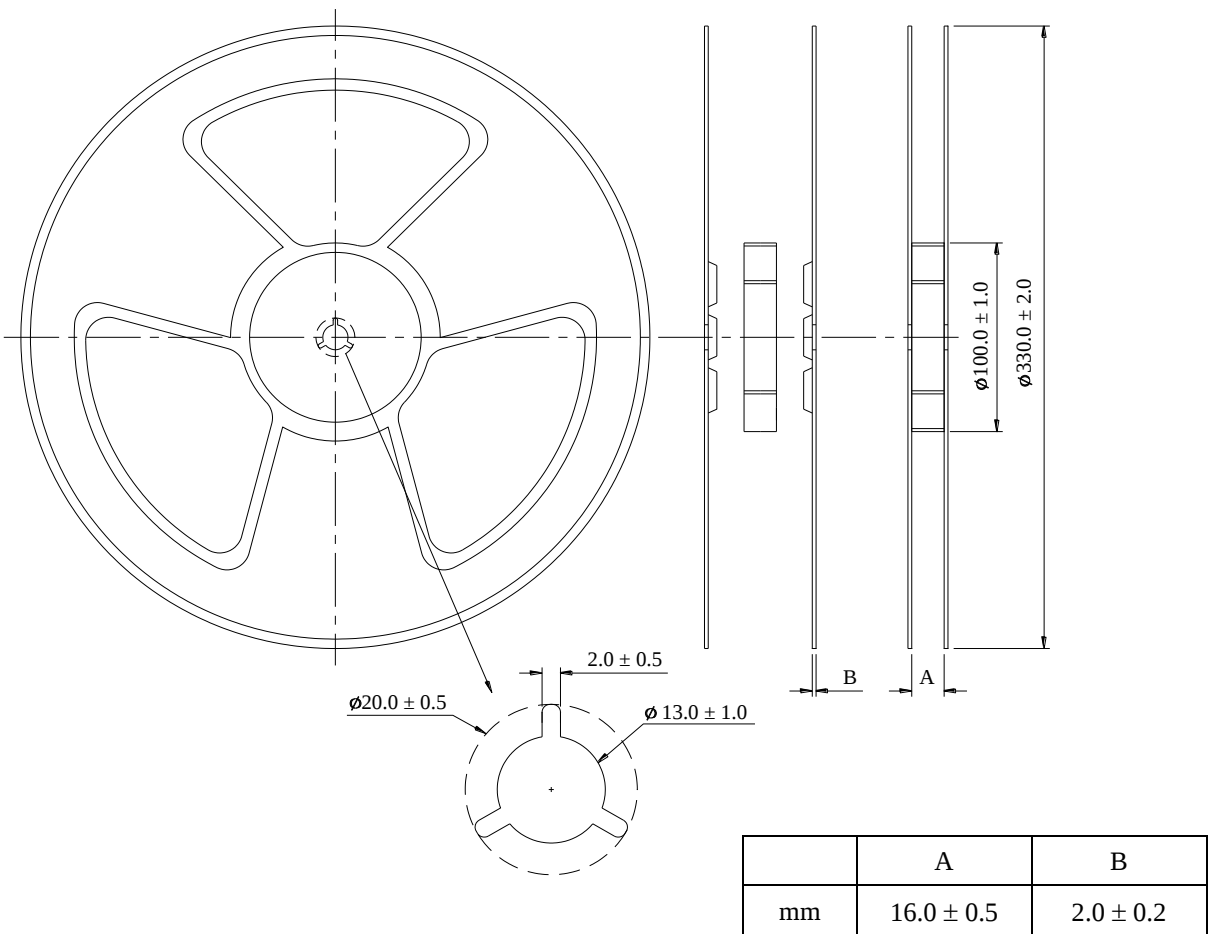
| Dimensions Code (mm) |             |           |             | Units/Reel |
|----------------------|-------------|-----------|-------------|------------|
| A0                   | B0          | K0        | t           |            |
| 5.75 ± 0.10          | 6.05 ± 0.10 | 3.6 ± 0.1 | 0.35 ± 0.05 | 2,000      |

(2) Tape direction

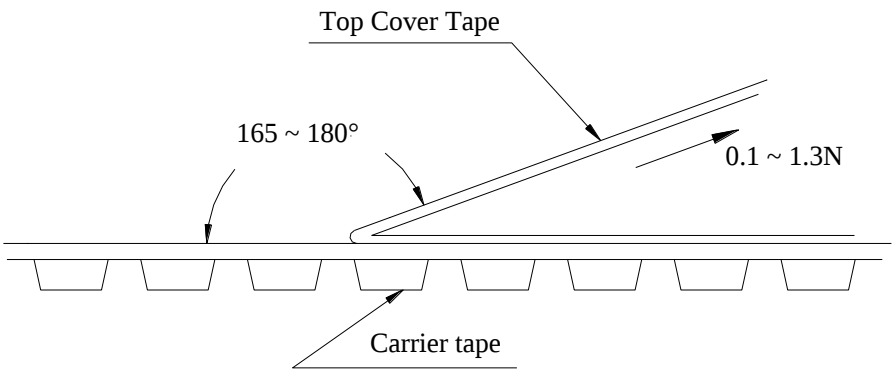
The direction shall be seen from the top cover tape side.



(3) Reel dimensions

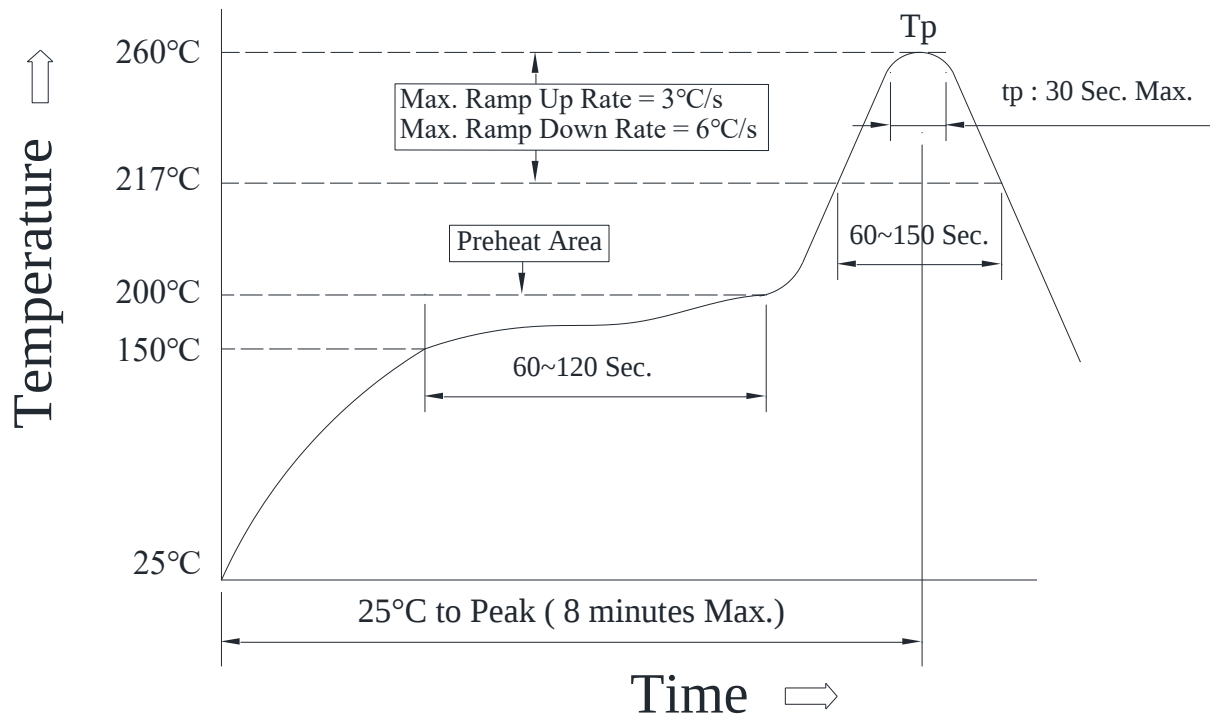


- (4) Peel force of top cover tape
- The peel speed shall be about 300 mm/minute.
- The peel force of top cover tape shall be between 0.1 to 1.3N.



■ Reflow Profile

Power Choke Coil Type



(1) Reflow soldering method :

|                               |                |                        |
|-------------------------------|----------------|------------------------|
| Reflow Soldering              | Tp : 255~260°C | Max. 30 seconds ( tp ) |
|                               | ≥ 217°C        | 60~150 seconds         |
| Preheat                       | 150~200°C      | 60~120 seconds         |
| Time 25°C to peak temperature | 8 minutes Max. |                        |

(2) Soldering iron method : 350 ± 5°C, 3 seconds Max.