

The history of revision change for the specification

| Document | REV. | Modified date | Description |
|---------------|------|---------------|--|
| CYNVC-174-005 | A0 | 2017.04.07 | New Approval |
| CYNVC-174-005 | A1 | 2017.06.08 | 1. Add spec of 100 2. Apr. -> Jun. 3. Add symbol \diamond in Specifications |
| CYNVC-174-005 | A2 | 2018.08.17 | 1. Jun., 2017 -> Aug., 2018 2. Remove "Simulation data" 3. Add curve of 6R8, 8R2, 100 |
| CYNVC-174-005 | A3 | 2019.05.13 | 1. Aug., 2018 -> May, 2019 2. Add notice "AEC-Q200 qualified" in Features 3. Remove notice "Preliminary specification" 4. Add "AEC-Q200" logo on page 2 |
| CYNVC-174-005 | A4 | 2019.10.02 | 1. May -> Oct. 2. Remove spec & curve of 5R6, 8R2 |
| CYNVC-174-005 | A5 | 2020.01.31 | 1. Oct., 2019 -> Jan., 2020 2. Year Code: 2019 = 9 -> 2020 = 0 |
| CYNVC-174-005 | A6 | 2020.06.15 | 1. Jan. -> Jun. 2. Add Rated voltage |
| CYNVC-174-005 | A7 | 2024.09.26 | 1. Jun., 2020 -> Sep., 2024 2. Add notice 'Shielded construction' in Features 3. Reflow Soldering : 217°C -> $\geq 217^\circ\text{C}$ |

Power Choke Coil VCHW042A MS5 type

AEC-Q200

■ Features

High performance (Isat) realized by metal dust core

Low profile : Thickness 2.1mm Max.

Low loss realized with low DCR

Compliance with RoHS and Halogen Free

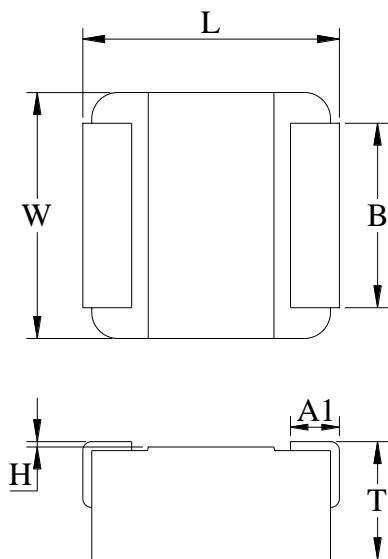
Shielded construction

AEC-Q200 qualified

■ Application

Automotive applications

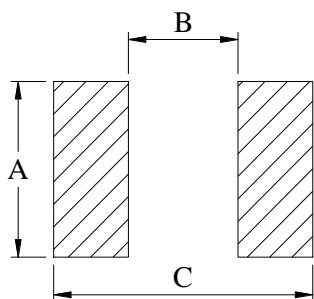
■ Outline Dimensions



| Code | Dimensions (mm) |
|------|-----------------|
| L | 4.2 ± 0.3 |
| W | 4.0 ± 0.3 |
| T | 2.1 Max. |
| A1 | 0.8 ± 0.3 |
| B | 3.0 ± 0.3 |
| H | 0 ~ + 0.15 |

■ Recommend Land Pattern Dimensions

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



| | |
|---|-----|
| A | 3.5 |
| B | 2.2 |
| C | 5.2 |

Unit : mm

■ Marking

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

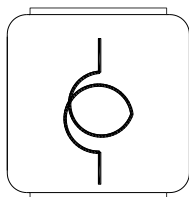
The inductor is marked with a 3-digit code.

Example -- $3.3\mu\text{H}$ → 3R3

Upside of Chip



PIN 2



PIN 1

Coil clockwise around

■ Specifications

| Part Number | L0 ◇ Inductance (μ H) @ (0A) | R _{dc} (m Ω) ◇ | | Heat Rating Current DC Amps. Idc (A) | | Saturation Current DC Amps. Isat (A) | | Rated Voltage (V) |
|-----------------|--|----------------------------------|---------|---|---------|---|---------|------------------------|
| | | Typical | Maximum | Typical | Maximum | Typical | Maximum | Maximum |
| VCHW042A-3R3MS5 | 3.3 | 38.0 | 43.7 | 4.9 | 4.4 | 5.0 | 4.3 | 50 |
| VCHW042A-4R7MS5 | 4.7 | 48.6 | 53.8 | 4.0 | 3.6 | 4.6 | 3.9 | 40 |
| VCHW042A-6R8MS5 | 6.8 | 88.5 | 106.2 | 3.0 | 2.7 | 3.9 | 3.4 | 40 |
| VCHW042A-100MS5 | 10.0 | 160.0 | 192.0 | 2.3 | 2.0 | 3.5 | 3.0 | 40 |

◇ : Significant Characteristic

Note 1. : Inductance tolerance \pm 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 Δ T of 40°C

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

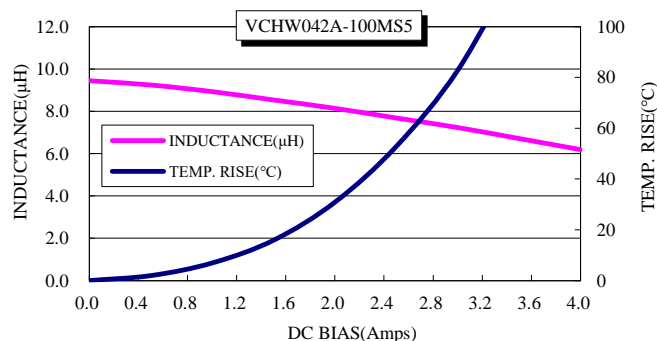
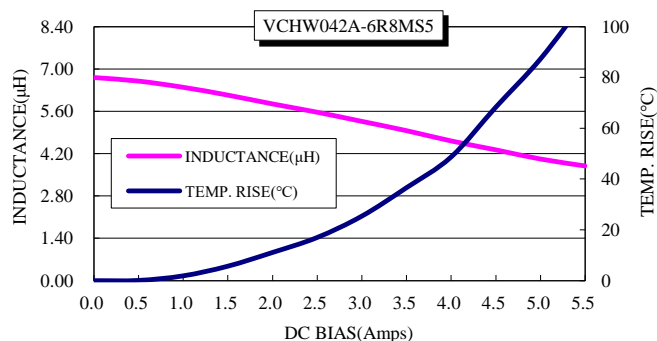
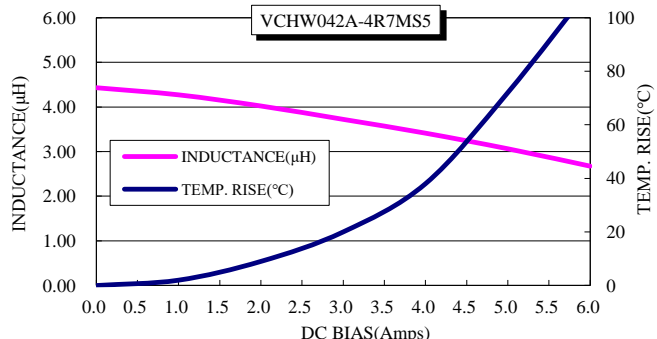
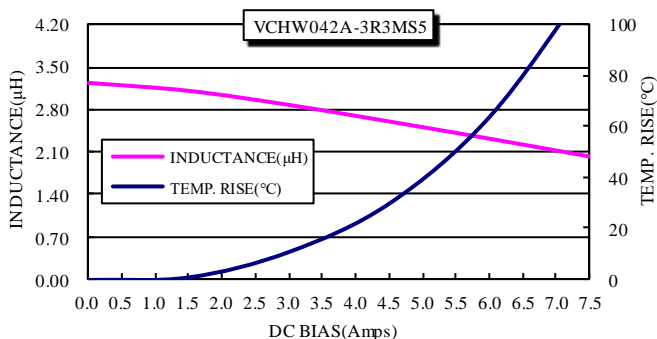
(a) If this power choke is dipped in the cleaning agent, such as toluene, xylene, ketone, and ether system, there is a possibility that the performance decreases greatly.

(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.

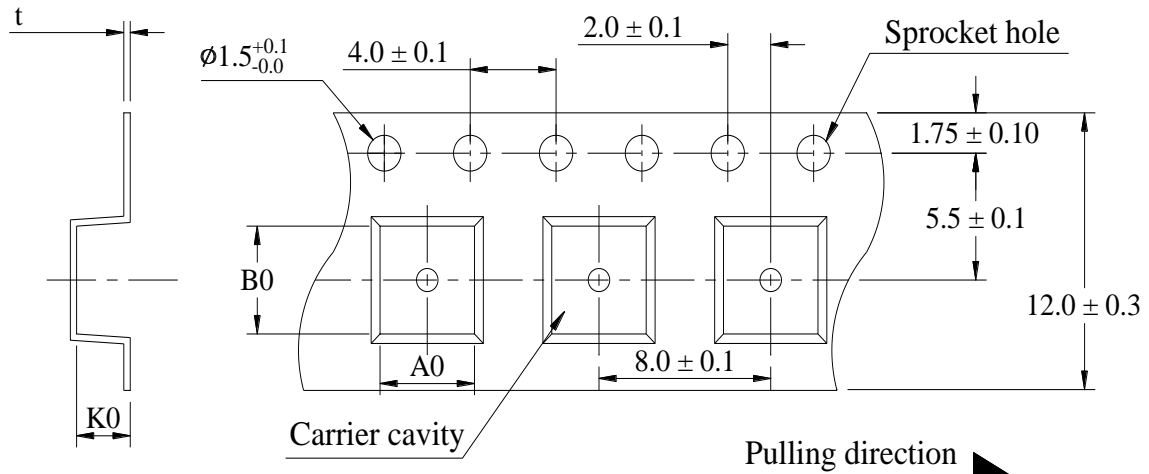
Note 10. : If you require another part number, please contact with us.

Current Characteristic



■ Packaging

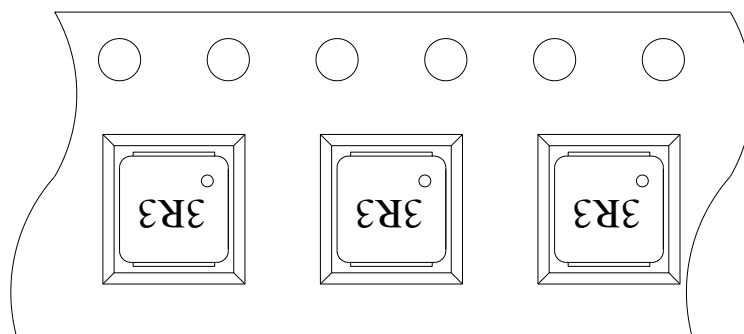
(1) Tape packaging dimensions



| Dimensions Code (mm) | | | | Units/Reel |
|----------------------|-----------|-------------|-------------|------------|
| A0 | B0 | K0 | t | |
| 4.4 ± 0.1 | 4.7 ± 0.1 | 2.50 ± 0.15 | 0.30 ± 0.05 | 2,000 |

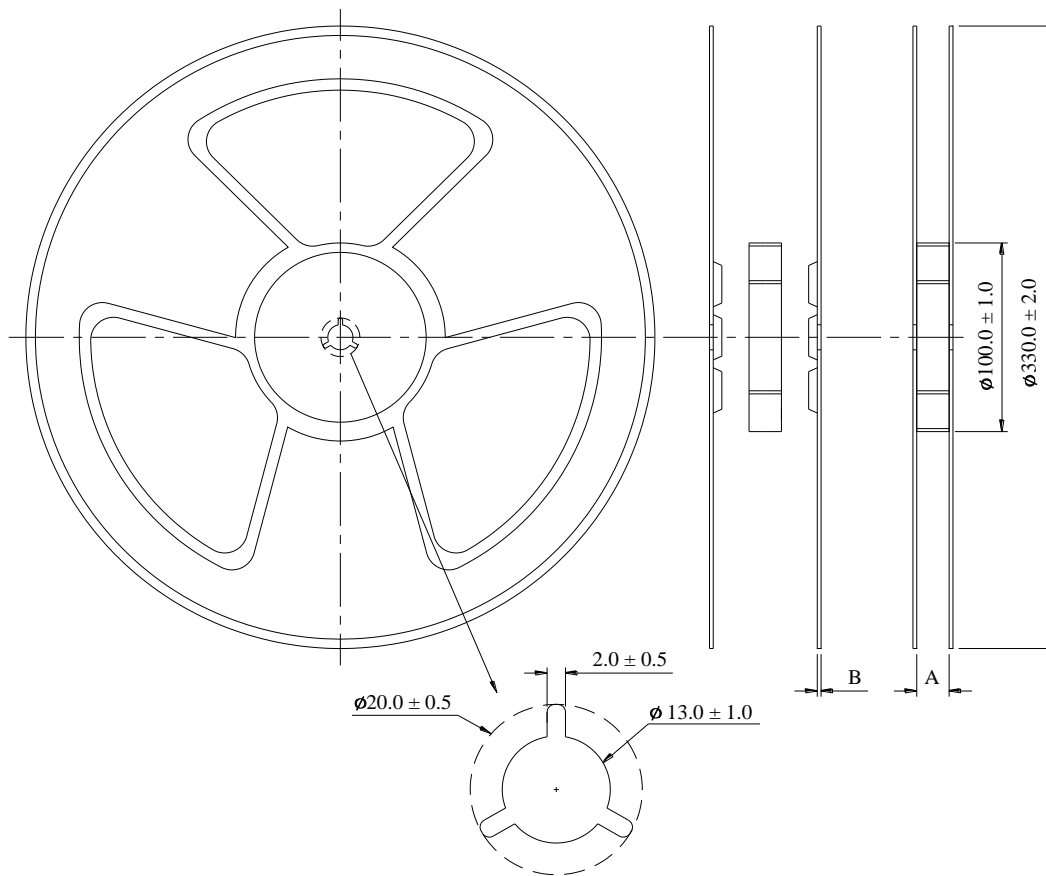
(2) Tape direction

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



Pulling direction

(3) Reel dimensions

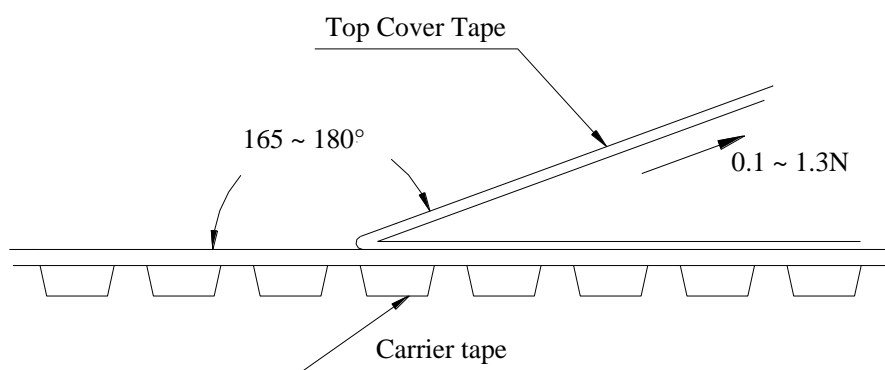


| | A | B |
|----|----------------|---------------|
| mm | 12.5 ± 0.5 | 2.0 ± 0.2 |

(4) Peel force of top cover tape

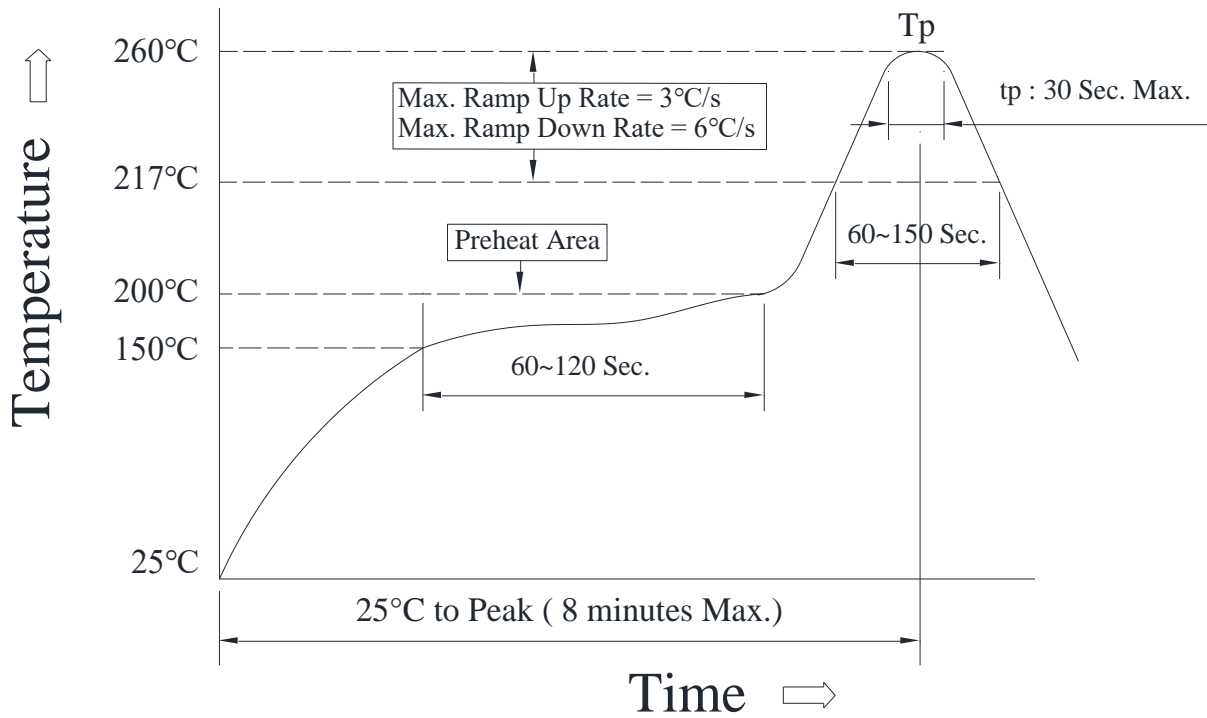
The peel speed shall be about 300 mm/minute.

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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Cyntec:](#)

[VCHW042A-6R8MS5](#) [VCHW042A-3R3MS5](#) [VCHW042A-100MS5](#) [VCHW042A-4R7MS5](#)