# Specification For Approval

| | | | |
|---|---|---|---|
| **Item P/N** | TP0420W-Series | **Test Instrument** | HP4285A / 16034E |
| **Product** | Molding Type Power Inductor | **Test Frequency** | 100KHz / 1.0V |

Customer：

Customer P/N：

Description： Molding Type Power Inductor

HT P/N： TP0420W-Series

Revision No.： Version: 1.0

Date：

Notes： Standard


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IATF 16949:2016 / ISO 9001:2015 / ISO 14001:2015


| Ht Documented | | Customer Approval |
|---|---|---|
| **Approved** | Jack | |
| **Checked** | George | |
| **Prepared** | Cherrie | |

# List of editions

| | | | |
|---|---|---|---|
| **Item P/N** | MP0420W-Series | **Test Instrument** | HP4285A / 16034E |
| **Product** | Molding Type Power Inductor | **Test Frequency** | 100KHz / 1.0V |

| Version | Revision Item | Before Revision | After Revision | Date |
|---|---|---|---|---|
| 1.0 | First Version | | | 2025/4/29 |
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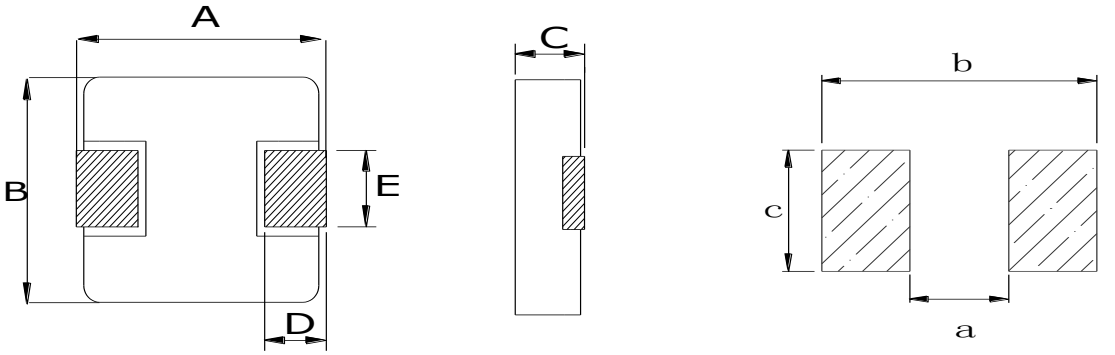
## ■ Introduction

- 100% Lead (Pb)-Free and RoHS compliant.
- High current，low DCR，high efficiency.
- 4.75×4.45×2.0 mm maximum surface mount package.
- Operating temperature -55℃~+125℃ (Including self - temperature rise).

## ■ Applications

- Note PC power system.
- DC/DC converter.

## ■ Style and Dimensions: (Unit: mm)




Recommend Land Pattern

| ITEM | A | B | C | D | E | a (Typ.) | b (Typ.) | c (Typ.) |
|---|---|---|---|---|---|---|---|---|
| TP0420 | 4.4 ±0.35 | 4.2 ±0.25 | 1.8 ±0.2 | 0.8 ±0.3 | 2.0 ±0.3 | 2.2 | 5.2 | 2.5 |

## ■ Explanation Of Part Numbers

| ① | ② | | ③ | ④ |
|---|---|---|---|---|
| TP | 0420W | - | 1R5 | M |

① Product name
② Shapes and dimensions W: Internal code
③ Inductance 1R5 =1.5 μH
④ Tolerance：J= ±5%；K= ±10%；M= ±20%

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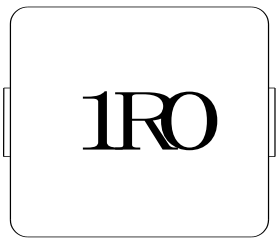
## ■ Marking:

The inductor is marked with a 3-digit code

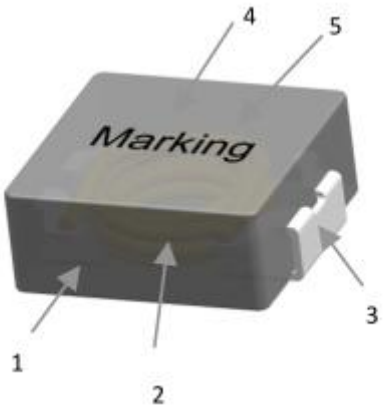
| Nominal Inductance | |
|---|---|
| Example | Nominal Value |
| 1R0 | 1.0 μH |
| 100 | 10 μH |
| 101 | 100 μH |

Note：Using Ink for marking:




## ■ Structure and Components:

| NO | Components | Material |
|---|---|---|
| 1 | CORE | Carbonyl Powder |
| 2 | WIRE | Polyester Wire or equivalent. |
| 3 | Clip | 100% Pb free solder (Ni + Sn-Plating) |
| 4 | paint | Epoxy resin |
| 5 | Ink | Halogen-free ketone |



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## ■ Electrical Characteristics

| Part No. | Inductance | DC Resistance | Saturation Current | Heating Rating Current |
|---|---|---|---|---|
| | L0 (μH) | DCR (mΩ) | Isat (A) | Irms (A) |
| | ±20 %, 100 kHz, 1V | MAX. | TYP. | TYP. |
| TP0420W-R33M | 0.33 | 8.6 | 18 | 10 |
| TP0420W-R47M | 0.47 | 14 | 12 | 8 |
| TP0420W-R68M | 0.68 | 19 | 10 | 7 |
| TP0420W-1R0M | 1.0 | 27 | 8.5 | 5 |
| TP0420W-1R5M | 1.5 | 42 | 7 | 4.5 |
| TP0420W-2R2M | 2.2 | 61 | 6 | 4 |
| TP0420W-3R3M | 3.3 | 76 | 4 | 3.5 |
| TP0420W-4R7M | 4.7 | 105 | 3.5 | 2.6 |
| TP0420W-6R8M | 6.8 | 172 | 2.8 | 2.1 |
| TP0420W-100M | 10 | 243 | 2.3 | 1.8 |

Notes

1. All test data is referenced to 25 °C ambient
2. Operating temperature range - 55 °C to + 125 °C
3. Irms (A): DC current (A) that will cause an approximate ΔT of 40 °C (reference ambient temperature is 25 °C)
4. Isat (A): DC current (A) that will cause L0 to drop approximately 30 %
5. The part temperature (Ambient + temp rise) should not exceed 125 °C under worst case operating conditions. Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

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| Mechanical Reliability | | |
|---|---|---|
| Item | Specification and Requirement | Test Method |
| Solderability | 1. No case deformation or change in appearance<br>2. New solder coverage More than 95% | 1.Preheat：155℃±5℃ ，60S±2S<br>2.Tin: lead-free.<br>3.Temperature:240℃±5℃，flux 3.0S±0.5S. |
| Mechanical shock | 1. No case deformation or change in appearance<br>2. △L/Lo≦±10% | 1. Acceleration：100G<br>2. Pulse time:：6ms<br>3. 3 times in each positive and negative direction of 3 mutual perpendicular directions |
| Mechanical vibration | 1. No case deformation or change in appearance<br>2. △L/Lo≦±10% | 1. Reflow: 2times<br>2. Frequency: 10HZ～55HZ～10HZ，20 Min/Cycles<br>3. Amplitude: 1.52 mm<br>4. Directions: X, Y, Z<br>5. Time: 12 cycles / direction |
| Endurance Reliability | | |
| Item | Specification and Requirement | Test Method |
| Thermal Shock | Inductance change:<br>Within ±10% Without distinct damage in appearance | 1. First -55℃ for 30 minutes，last 125℃ for 30 minutes as 1 cycle. Go through 1000 cycles.<br>2. Max transfer time is 3 minutes.<br>3. Measured at room temperature after placing for 24 ±2 hours. |
| Humidity Resistance | Inductance change:<br>Within ±10% Without distinct damage in appearance | 1.Reflow 2 times,<br>2.85℃,85%RH,1000 hours<br>3.Measured at room temperature after placing for 24 ±2 hours. |
| Low temperature storage | Inductance change:<br>Within ±10% Without distinct damage in appearance | 1. Temperature：-55 ± 2℃<br>2. Time：1000 hours<br>3. Measured at room temperature after placing for 24 ±2 hours |
| High temperature storage | Inductance change:<br>Within ±10% Without distinct damage in appearance | 1. Temperature：+125 ± 2℃<br>2. Time：1000 hours.<br>3. Measured at room temperature after placing for 24 ±2 hours. |

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## ■ Recommended Soldering Technologies:

### (1) Re-flowing Profile

Preheat condition: 150 ~200℃ / 60~120sec.

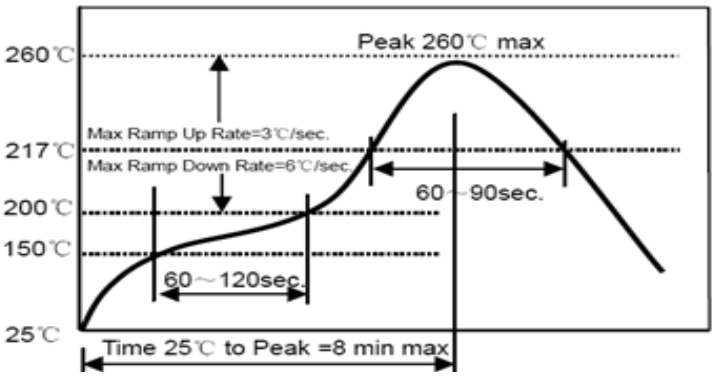
Allowed time above 217℃: 60~90sec.

Max temp: 260℃

Max time at max temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max




### (1) Iron Soldering Profile

Iron soldering power: Max. 30W

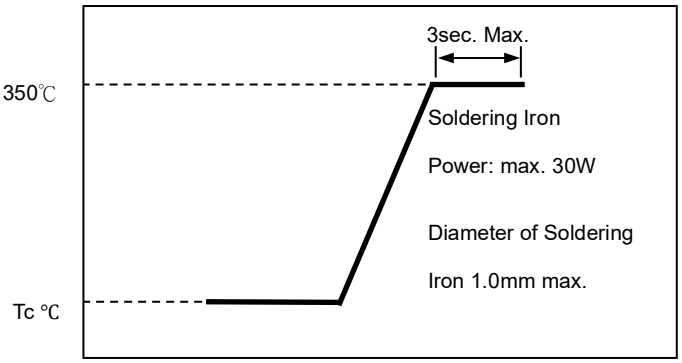
Pre-heating: 150℃/60sec.

Soldering Tip temperature: 350℃ Max.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering



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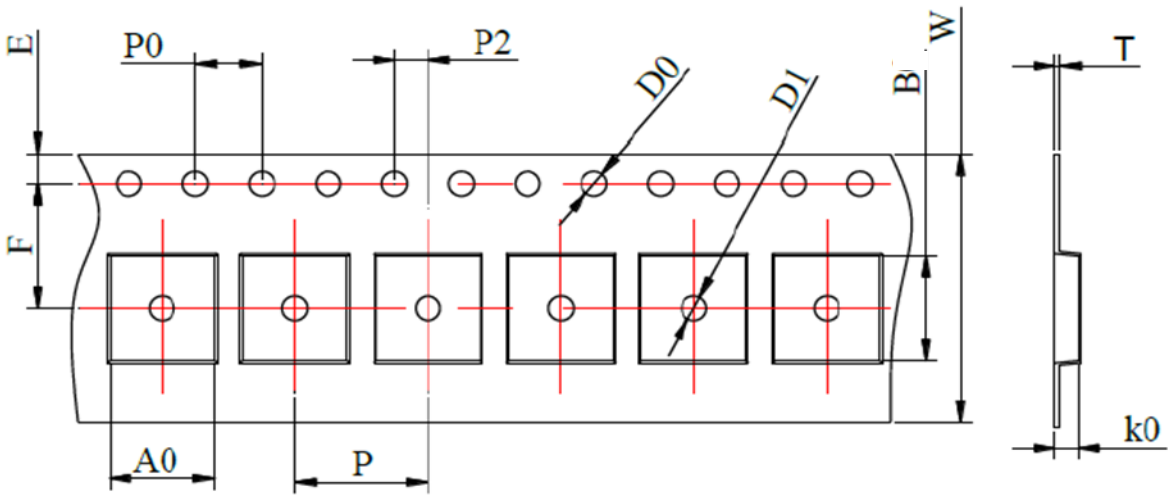
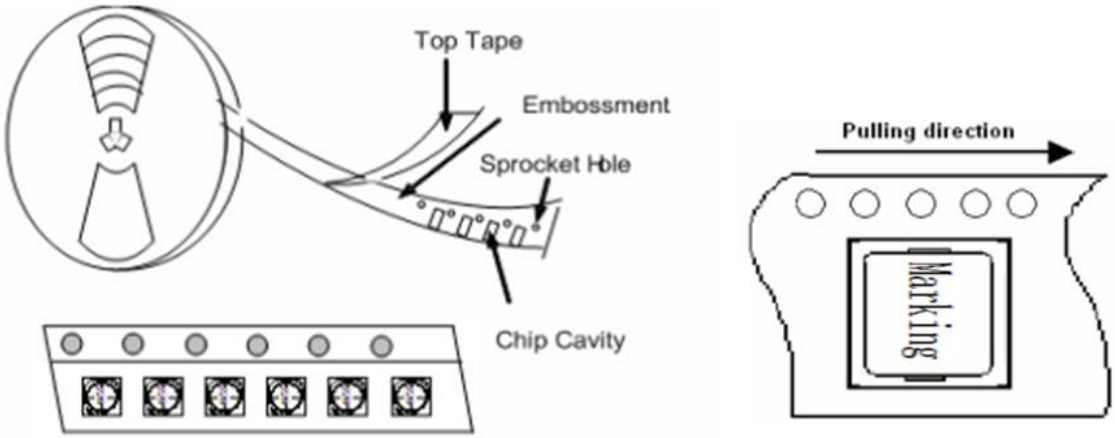
## ■ Packaging Information

**(1) Tape Packaging Dimensions（Unit：mm）**




| Type | Tape dimensions (mm) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | W | P | P0 | P2 | D0 | D1 | T | A0 | B0 | K0 | E | F |
| TP0420 | 12 ±0.3 | 8 ±0.1 | 4 ±0.1 | 2 ±0.1 | 1.5 ±0.1 | 1.5 ±0.1 | 0.35 ±0.05 | 4.5 ±0.1 | 4.85 ±0.1 | 2.3 ±0.1 | 1.75 ±0.1 | 5.5 ±0.1 |



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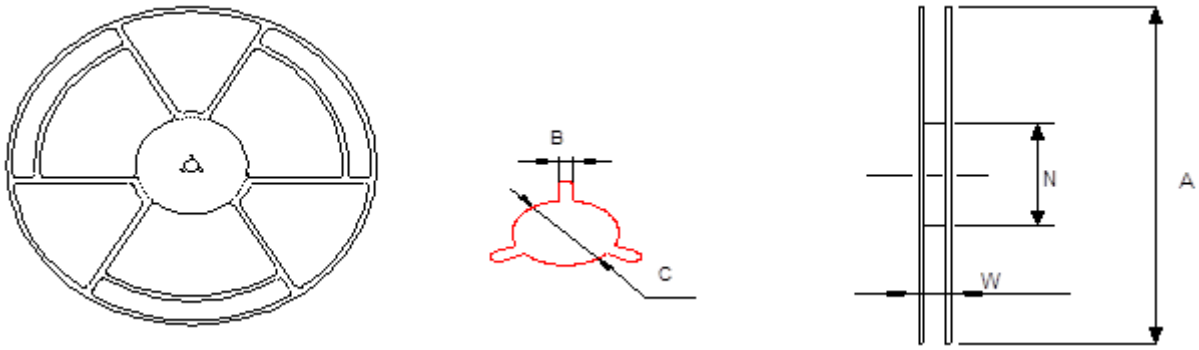
**(2) Reel Dimensions:（Unit：mm）**




| A | W | N | B | C |
|---|---|---|---|---|
| 330 +2.0 | 12.8 ±0.2 | 97 ±0.5 | 2.2 +0.5 | 13.0 ±0.2 |

**(3) Packaging Quantity:**

| Type | Standard Quantity | | |
|---|---|---|---|
| | Reel | Inner box | Carton box |
| TP0420 | 3,000 pcs / reel | 4Reel / box (12,000 pcs) | 4 Middle boxes, (48,000 pcs) |

**(4) Peel force of top cover tape:**

The peel speed shall be about 300mm/minute

The peel force of top cover tape shall be between 0.1 to 1.3 N