

Specification For Approval



Item P/N	MP0412W-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 : MP0412W-Series

Revision No. : Version: 1.0

Date : _____

Notes : Standard



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Ht Documented		Customer Approval
Approved	Jack	
Checked	George	
Prepared	Cherrie	



HUNGTRON TECHNOLOGY Co., Ltd.

List of editions



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Version	Revision Item	Before Revision	After Revision	Date
1.0	First Version			2025/4/29

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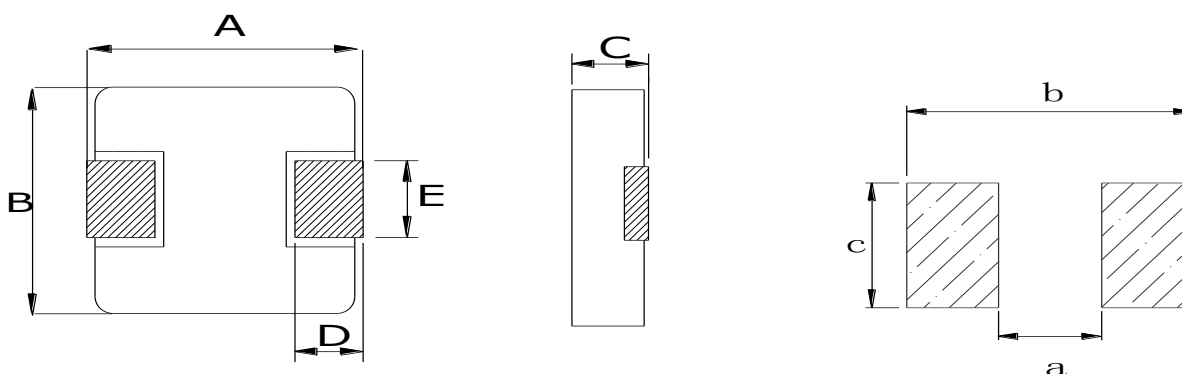
■ Introduction

- ROHS , Halogen Free and REACH compliance
- High rated current
- 125°C maximum total temperature operation
- 4.75 × 4.45 × 1.2mm maximum surface mount package
- Low core loss
- Ultralow buzz noise due to molding construction

■ Applications

- Laptops and PCs
- Switch and servers
- Base stations
- DC/DC converters
- Battery powered devices
- SSD modules

■ Style and Dimensions (mm)



ITEM	A	B	C	D	E	a (Typ.)	b (Typ.)	c (Typ.)
MP0412	4.1±0.2	4.1±0.2	0.8±0.2	0.8±0.2	1.8±0.2	2.2	4.4	2.2

■ Explanation Of Part Numbers

① ② ③ ④

MP 0412W - 1R5 M

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

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■ Marking

- The inductor is marked with a 3-digit code

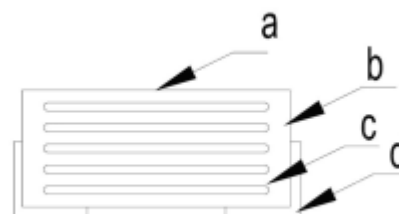
Nominal Inductance	
Example	Nominal Value
1R0	1.0 μ H
100	10 μ H
101	100 μ H

Note : Using Ink for marking



■ Structure and Components

Symbol	Components	Material
a	MARKING	Ink(black)
b	CORE	Alloy Sponge Powder
c	WIRE	Polyurethane copper wire
d	Terminal	Copper plated with Sn



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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.
MP0412W-R15M	0.15	9	15	7.5
MP0412W-R22M	0.22	11	11	7
MP0412W-R33M	0.33	19	8.4	6.5
MP0412W-R47M	0.47	21	6.8	6
MP0412W-R68M	0.68	36	6	4.7
MP0412W-1R0M	1.0	47	5.5	4.5
MP0412W-1R5M	1.5	75	4	3.25
MP0412W-2R2M	2.2	83.5	3	2.75
MP0412W-4R7M	4.7	195	2.2	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. 2. New solder coverage More than 95%.	1. Preheat : 155°C±5°C , 60S ±2S 2. Tin: lead-free. 3. Temperature:240°C±5°C , flux 3.0S±0.5S.
Mechanical shock	1. No case deformation or change in appearance. 2. $\Delta L/L_0 \leq \pm 10\%$.	1. Acceleration : 100G. 2. Pulse time: : 6ms. 3. 3 times in each positive and negative direction of 3 mutual perpendicular directions.
Mechanical vibration	1. No case deformation or change in appearance. 2. $\Delta L/L_0 \leq \pm 10\%$.	1. Reflow: 2times. 2. Frequency: 10HZ~55HZ~10HZ , 20 Min/Cycles. 3. Amplitude: 1.52 mm. 4. Directions: X, Y, Z. 5. Time: 12 cycles / direction.
Endurance Reliability		
Item	Specification and Requirement	Test Method
Thermal Shock	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance.	1. First -55°C for 30 minutes , last 125°C for 30 minutes as 1 cycle. Go through 1000 cycles. 2. Max transfer time is 3 minutes. 3. Measured at room temperature after placing for 24 ± 2 hours.
Humidity Resistance	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance.	1. Reflow 2 times, 2. 85°C ,85%RH,1000 hours 3. Measured at room temperature after placing for 24 ± 2 hours.
Low temperature storage	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance.	1. Temperature : -55 $\pm 2^\circ\text{C}$. 2. Time : 1000 hours. 3. Measured at room temperature after placing for 24 ± 2 hours.
High temperature storage	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance.	1. Temperature : +125 $\pm 2^\circ\text{C}$. 2. Time : 1000 hours. 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°C/60~120sec.

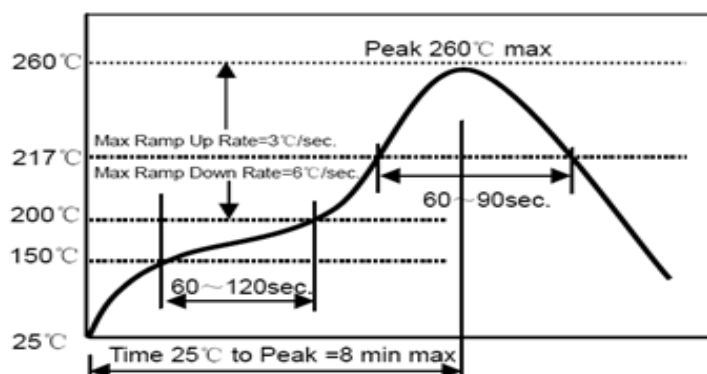
Allowed time above 217°C: 60~90sec.

Max temp: 260°C

Max time at max temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max



(2) Iron Soldering Profile

Iron soldering power: Max. 30W

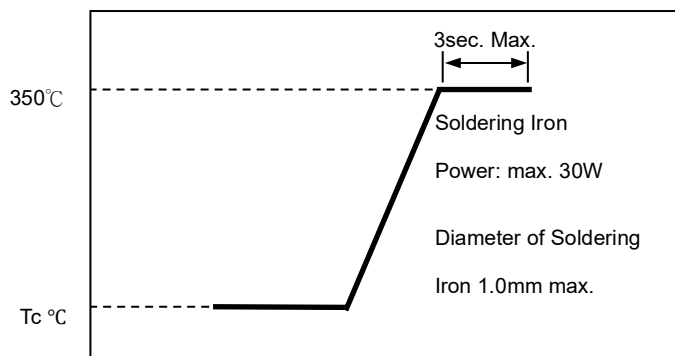
Pre-heating: 150°C/60sec.

Soldering Tip temperature: 350°C Max.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering



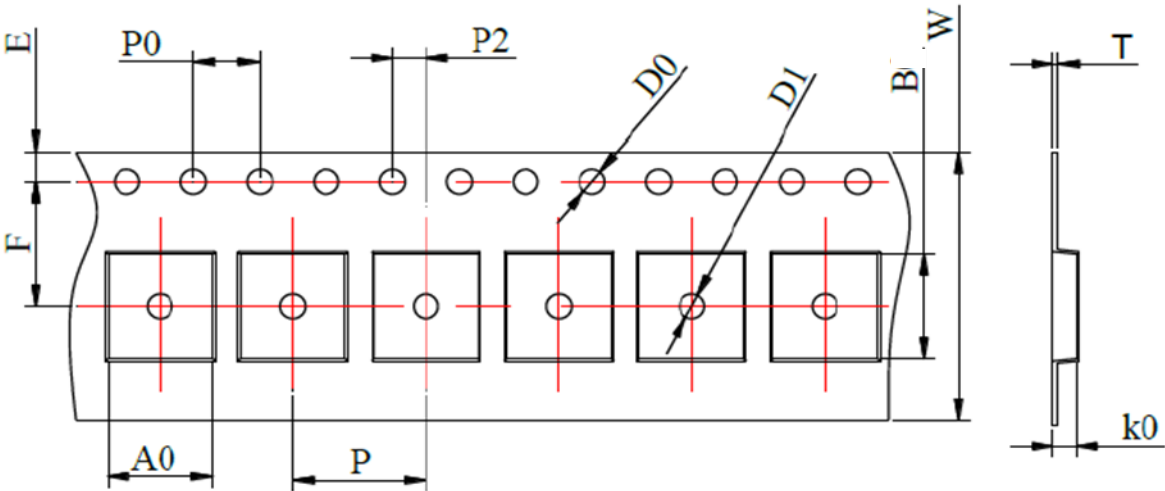
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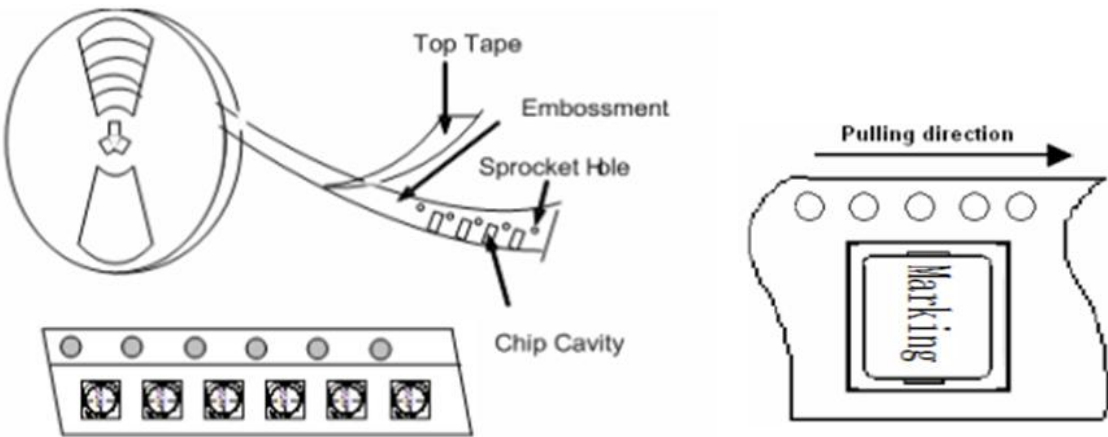
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■ Packaging Information

(1) Tape Packaging Dimensions (Unit : mm)



Type	Tape dimensions (mm)											
	W	P	P0	P2	D0	D1	T	A0	B0	K0	E	F
MP0412	12 ±0.3	8 ±0.1	4 ±0.1	2 ±0.1	1.5 ±0.1	1.5 ±0.1	0.30 ±0.05	4.5 ±0.1	4.5 ±0.1	1.1 ±0.1	1.75 ±0.1	5.5 ±0.1

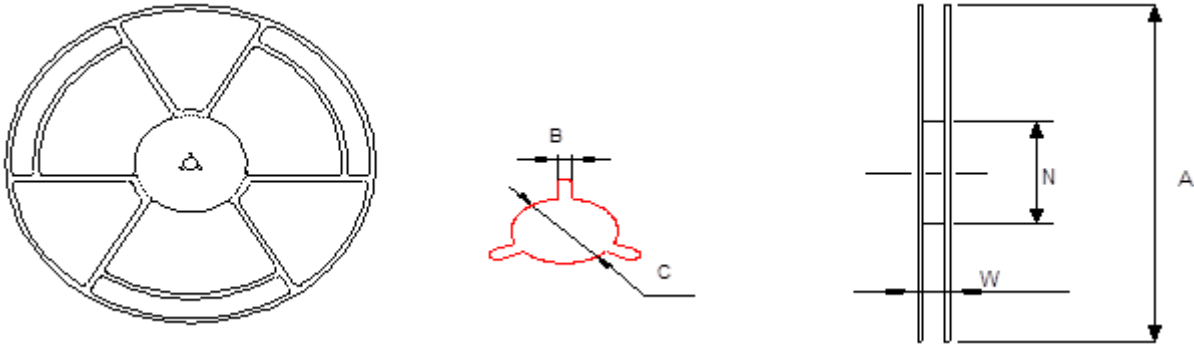


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(2) Reel Dimensions (Unit : mm)



A	W	N	B	C
330±2.0	24±0.5	97±0.5	2.2±0.5	13.0±0.2

(3) Packaging Quantity

Type	Standard Quantity		
	Reel	Inner box	Carton box
MP0412	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

