

Specification



Item P/N	TP1770W-Series	Test Instrument	HP4285A / 16034E
Product	Molding Type Power Inductor	Test Frequency	100KHz / 1.0V

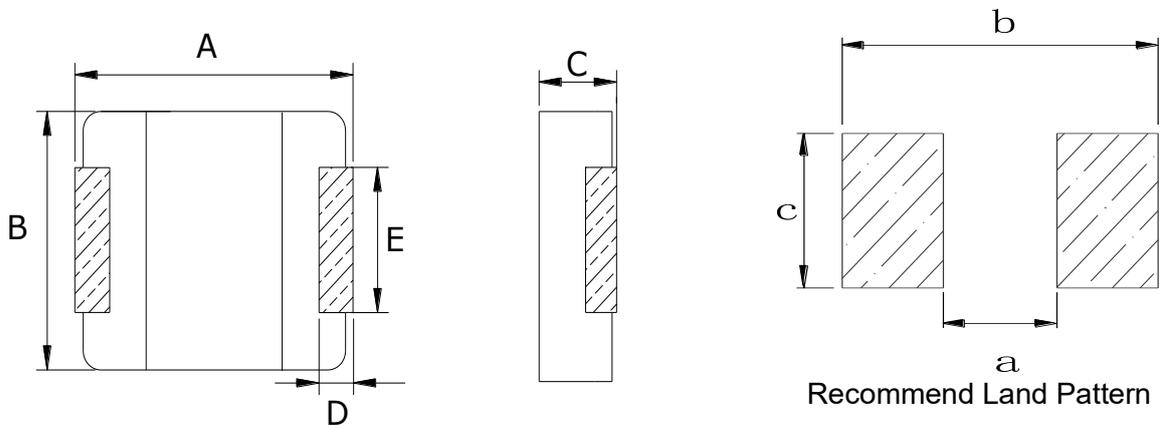
■ Introduction

- 100% Lead (Pb)-Free and RoHS compliant.
- High current , low DCR , high efficiency.
- 18.0×17.3×7.0 mm maximum surface mount package.
- Operating temperature -55°C~+125°C (Including self - temperature rise).

■ Applications

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

■ Style and Dimensions: (Unit: mm)



ITEM	A	B	C	D	E	a (Typ.)	b (Typ.)	c (Typ.)
TP1770	17.5 ±0.5	17.0 ±0.3	7.0 Max.	2.5 ±0.5	12±0.3	11.2	18.2	12.8

■ Explanation Of Part Numbers

① ② ③ ④

TP 1770W - 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

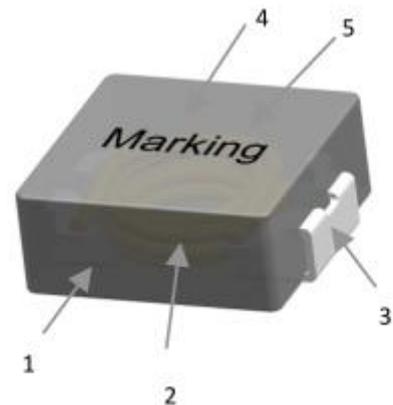
Nominal Inductance	
Example	Nominal Value
1R0	1.0 μ H
100	10 μ H
101	100 μ H

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	Saturation Current	Heating Rating Current
	L0 (μH)	DCR (mΩ)	Isat 1 (A)	Isat 2 (A)	Irms (A)
	±20 %, 100 kHz, 1V	MAX.	TYP.	TYP.	TYP.
TP1770W-1R0M	1.0	2.0	60	70	52
TP1770W-1R5M	1.5	2.5	52	65	47
TP1770W-2R2M	2.2	2.7	47	62	43.5
TP1770W-3R3M	3.3	3.9	45	54	28
TP1770W-4R7M	4.7	5.5	41	50	25
TP1770W-6R8M	6.8	9.2	32	39	19
TP1770W-8R2M	8.2	10.8	25	31	18
TP1770W-100M	10	13	24	29	16.5
TP1770W-150M	15	20.5	23	27	12.5
TP1770W-220M	22	26.5	18	23	12
TP1770W-330M	33	44	15	20	10.7
TP1770W-390M	39	48	11	18	9.2
TP1770W-470M	47	55	9.5	16	8.7
TP1770W-560M	56	62	9	15	7.8
TP1770W-680M	68	80	8	13	7
TP1770W-101M	100	118	6.5	12	5.3

Notes

- All test data is referenced to 25 °C ambient.
- Operating temperature range - 55 °C to + 125 °C.
- Irms (A): DC current (A) that will cause an approximate ΔT of 40 °C (reference ambient temperature is 25 °C).
- Testing Instrument: L/Q: HP4284A, CH11025, CH3302, CH1320, CH1320S LCR METER / Rdc:CH16502 MICRO OHMMETER
- Saturation Current (Isat1) will cause L0 to drop approximately 20%.
Saturation Current (Isat2) will cause L0 to drop approximately 30%.
- 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 ± 2 °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 ± 2 °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.

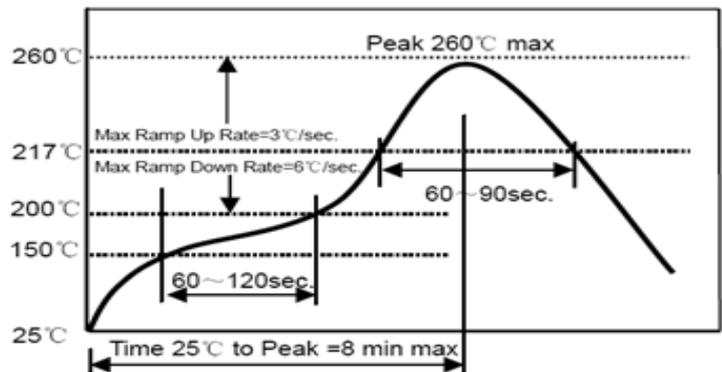
Allowed time above 217°C: 60~90sec.

Max temp: 260°C

Max time at max temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max



(1) Iron Soldering Profile

Iron soldering power: Max. 30W

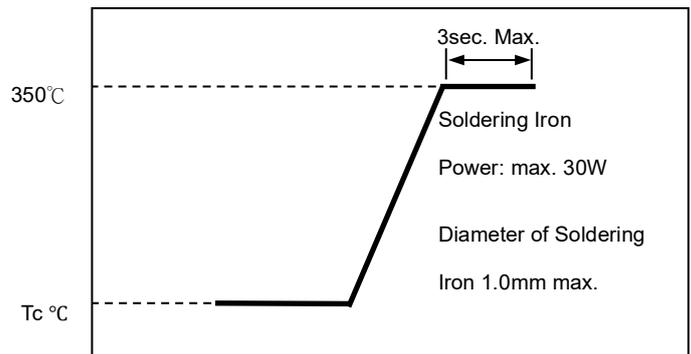
Pre-heating: 150°C/60sec.

Soldering Tip temperature: 350°C Max.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering



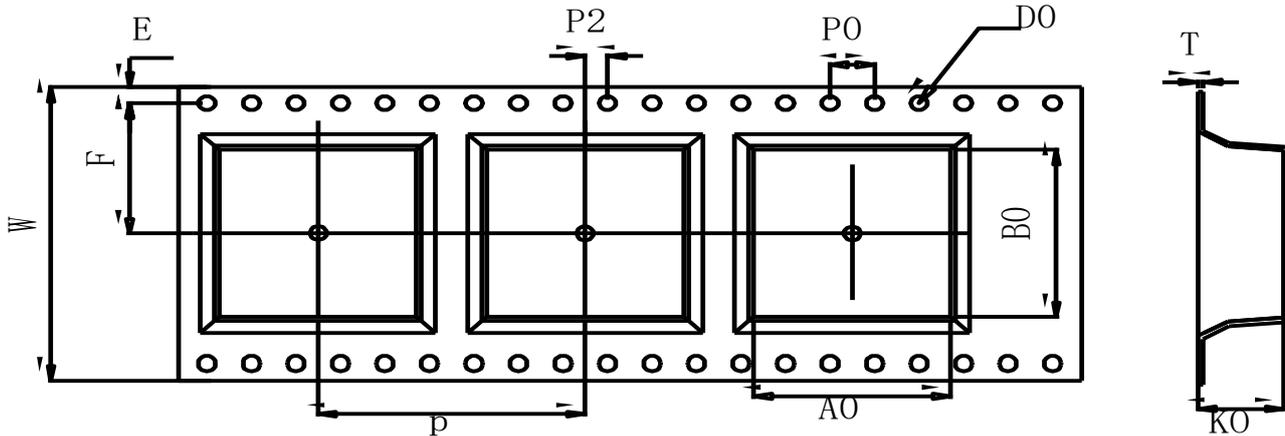
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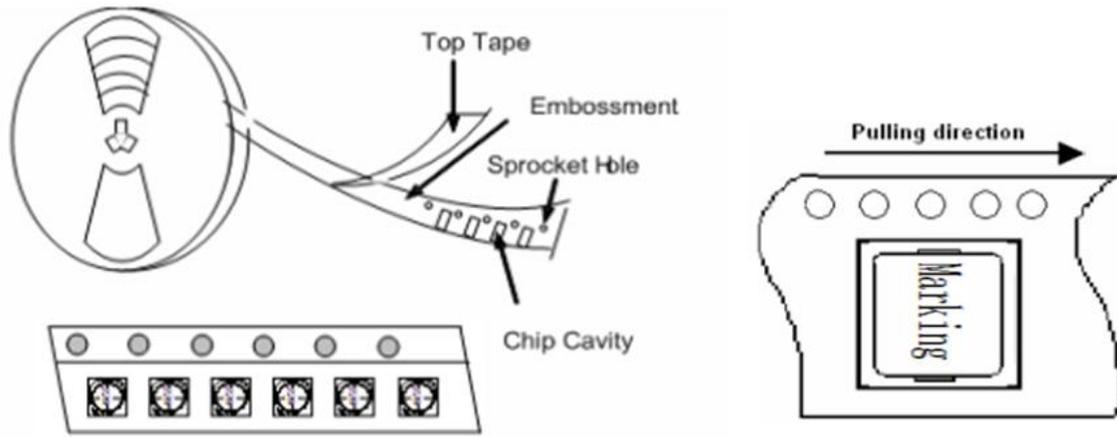
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■ Packaging Information

(1) Tape Packaging Dimensions (Unit : mm)



Type	Tape dimensions (mm)										
	W	P	P0	P2	D0	T	A0	B0	K0	E	F
TP1770	32 ±0.3	24 ±0.1	4.0 ±0.1	2.0 ±0.1	1.5 ±0.1	0.5 ±0.05	17.5 ±0.1	18.1 ±0.1	7.3 ±0.1	1.75 ±0.1	14.2 ±0.1

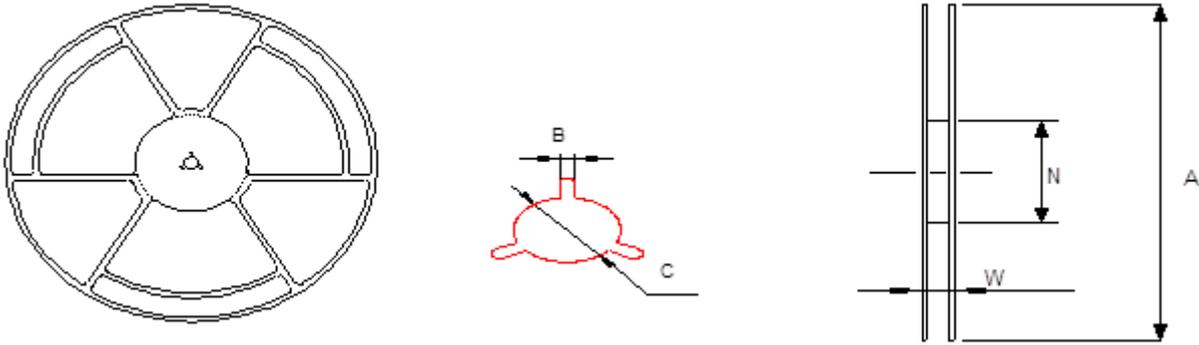


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(2) Reel Dimensions: (Unit : mm)



A	W	N	B	C
330 +2.0	32.0 ±0.5	97 ±0.5	2.3 +0.5	13.0 ±0.2

(3) Packaging Quantity:

Type	Standard Quantity		
	Reel	Inner box	Carton box
TP1770	200 pcs / reel	2Reel / box (400 pcs)	4 Middle boxes, (1,200 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

