



## Power Inductor EBP17 P Series Product Specifications

Document No. S-10-12-113-01

Revision Date 2022/07/25

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### ■ Power Inductor — EBP17 P Series



#### ■ Application

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

#### ■ Features

- 100% Lead (Pb)-Free and RoHS compliant.
- High current, low DCR, high efficiency.
- Operating temperature  $-40^{\circ}\text{C}\sim+125^{\circ}\text{C}$  (Including self - temperature rise) .

### ■ Parts Number Explanation

Example:

<b>EBP</b>	<b>1770</b>	<b>P</b>	<b>R47</b>	<b>M</b>	<b>T</b>	<b>W</b>	<b>Z</b>
<b>Product Type</b>	<b>Size (mm)</b>	<b>Application</b>	<b>Inductance (uH)</b>	<b>Tolerance</b>	<b>Package</b>	<b>Internal Code</b>	<b>Optional</b>
Molding Power Inductor	1770		R47 : 0.47uH R68 : 0.68uH	M : $\pm 20\%$	T : Taping		Z : Default Code E : E size $\geq 4.5\text{mm}$



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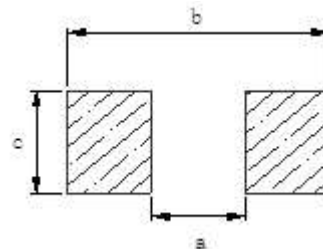
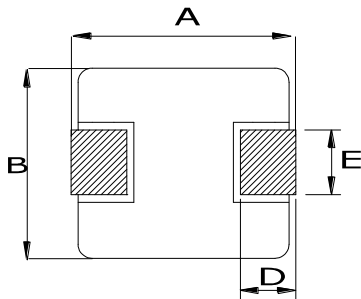
### Standard Electrical Specifications

Part No.	Inductance	DC Resistance	Saturation Current	Heating Rating Current
	L0 ( $\mu$ H)	DCR (m $\Omega$ )	Isat (A)	Irms (A)
	$\pm 20$ %, 100 kHz, 1V	MAX.	TYP.	TYP.
EBP1770P-1R0M-TWE	1.0	2.0	70	52
EBP1770P-1R5M-TWE	1.5	2.5	65	47
EBP1770P-2R2M-TWE	2.2	2.7	62	43.5
EBP1770P-3R3M-TWE	3.3	3.9	54	28
EBP1770P-4R7M-TWE	4.7	5.5	50	25
EBP1770P-6R8M-TWE	6.8	9.2	39	19
EBP1770P-8R2M-TWE	8.2	10.8	31	18
EBP1770P-100M-TWE	10	13	29	16.5
EBP1770P-150M-TWE	15	20.5	27	12.5
EBP1770P-220M-TWE	22	26.5	23	12
EBP1770P-330M-TWE	33	44	20	10.7
EBP1770P-390M-TWE	39	48	18	9.2
EBP1770P-470M-TWE	47	55	16	8.7
EBP1770P-560M-TWE	56	62	15	7.8
EBP1770P-680M-TWE	68	80	13	7
EBP1770P-101M-TWE	100	118	12	5.3

#### Notes:

1. All test data is referenced to 25 °C ambient.
2. Operating temperature range - 40 °C to + 125 °C.
3. Irms (A): DC current (A) that will cause an approximate  $\Delta T$  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.

## ■ Dimensions



Recommend Land Pattern

Unit: mm

Type	A	B	C	D	E	a typ	b typ	c typ
EBP1770P	17.5 ±0.5	17.0 ±0.3	7.0 Max.	2.5 ±0.5	12 ±0.3	11.2	18.2	12.8

## ■ Marking

- The inductor is marked with a 3-digit code

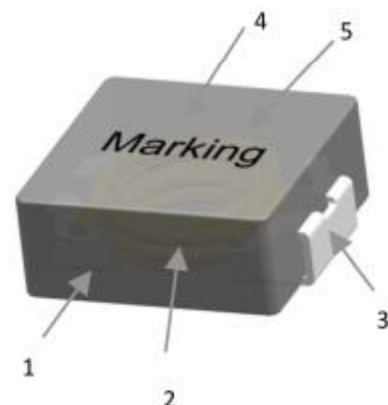
Nominal Inductance	
Example	Nominal Value
1R0	1.0 μH
100	10 μH
101	100 μH



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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### ● Reliability test and requirement

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: 2 times 2. Frequency: 10HZ ~ 55HZ ~ 10HZ, 20 Min/Cycles 3. Amplitude: 1.52 mm 4. Directions: X, Y, Z 5. Time: 12 cycle / direction
Endurance Reliability		
Item	Specification and Requirement	Test Method
Thermal Shock	Inductance change: Within ± 10% Without distinct damage in appearance	1. First -40°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 ± 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 ± 10% Without distinct damage in appearance	1. Temperature: -40 ± 2°C 2. Time: 1000 hours 3. Measured at room temperature after placing for 24 ± 2 hours
High temperature storage	Inductance change: Within ± 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/60~180sec.

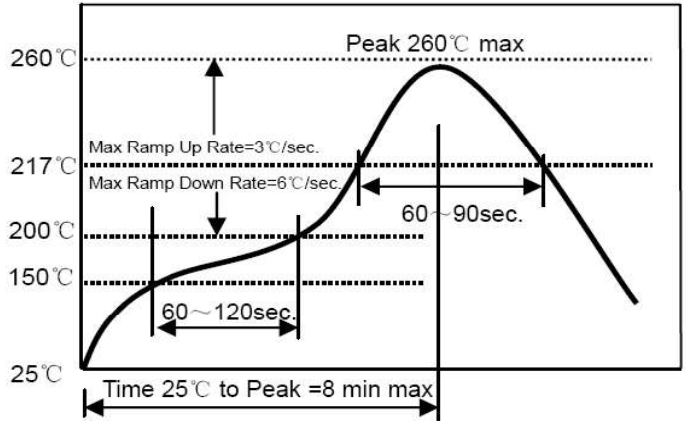
Allowed time above 217°C: 80~120sec.

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

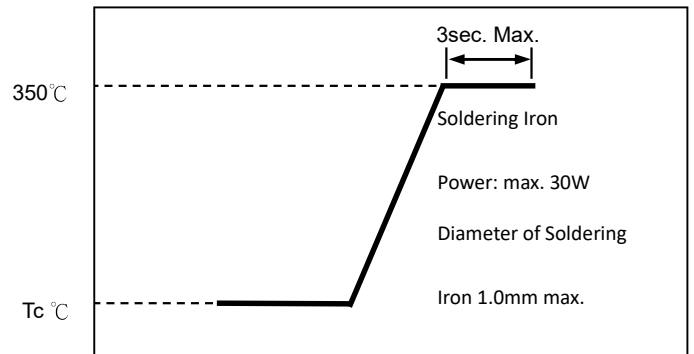
Pre-heating: 150°C/60sec.

Soldering Tip temperature: 350°C Max.

Soldering time: 3sec. Max.

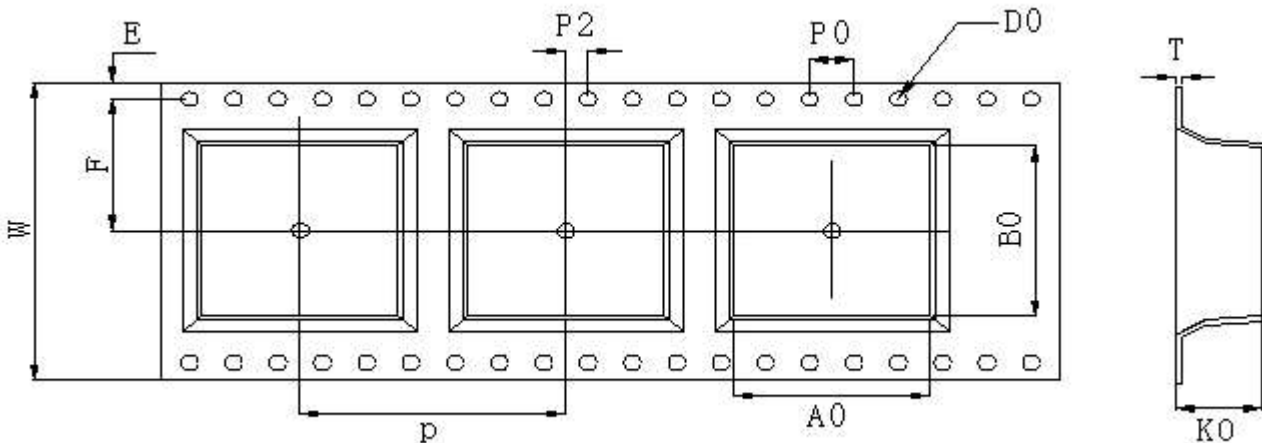
Solder paste: Sn/3.0Ag/0.5Cu

Max.1 times for iron soldering



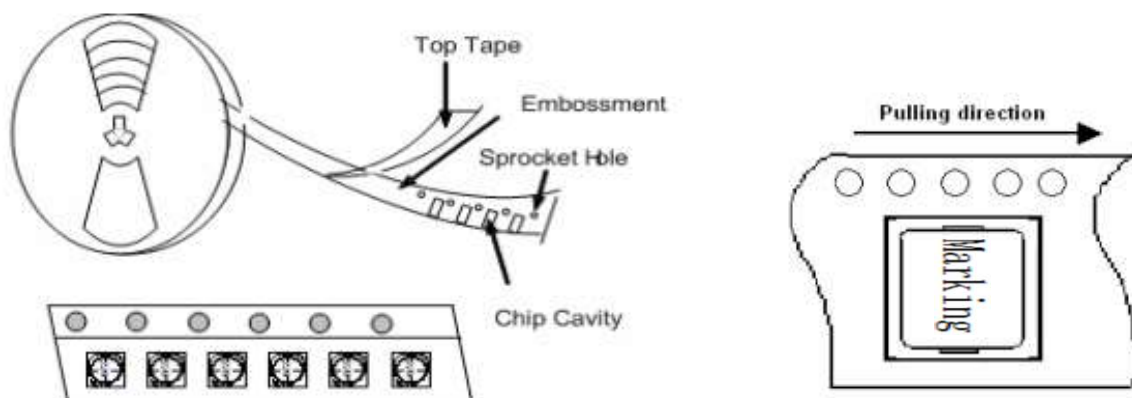
## ■ Packaging Information

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

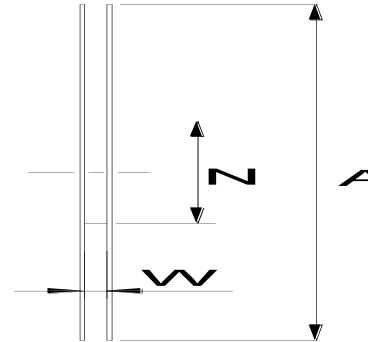
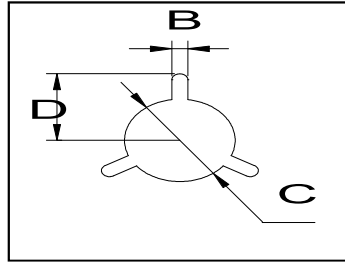
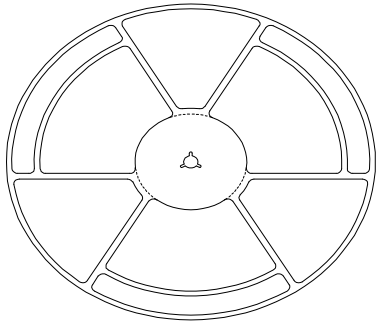


Type	Tape dimensions (mm)										
	W	P	P0	P2	D0	T	A0	B0	K0	E	F
EBP1770P	32.0±0.3	24.0±0.1	4.0±0.1	2.0±0.1	1.5±0.1	0.5±0.05	17.5±0.1	18.1±0.1	7.3±0.1	1.75±0.1	14.2±0.1

### (2) Taping Drawings (Unit : mm)



**(3) Reel Dimensions (Unit : mm)**



Type	Reel dimensions (mm)					
	A	W	N	B	C	D
EBP1770P	330 ±2.0	32.0 ±0.5	97.0 ±0.5	2.3 +0.5	13.0 ±0.2	10.75 ±0.25

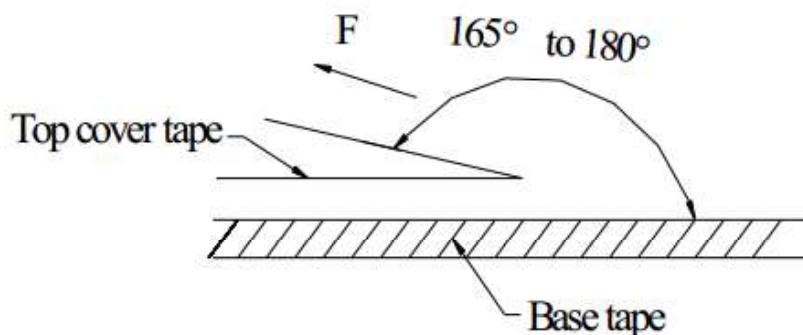
**(4) Packaging Quantity(PCS)**

Type	Standard Quantity		
	Reel	Inner box	Carton box
EBP1770P	200 pcs / reel	2Reel / box (400 pcs)	3 Middle boxes, (1,200 pcs)

**(5) Peel force of top cover tape**

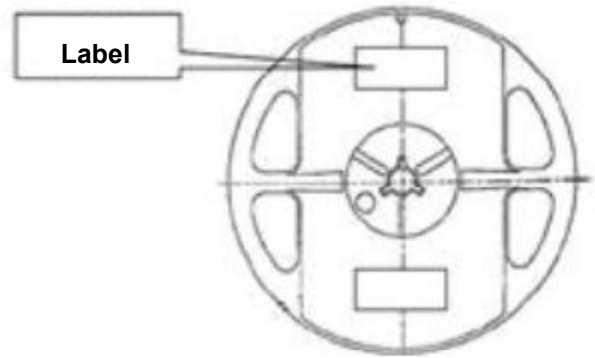
The peel speed shall be about 300mm/minute

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

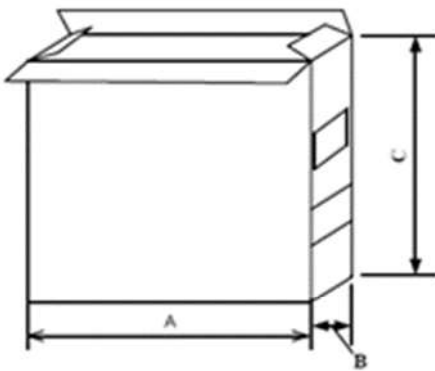


### (6) Reel Label

- Label on the reel
  - Everohms part Number.
  - Lot Number
  - Quantity
  - Description
  
- Shipping Label
  - Customer's part Number
  - Manufacturer's part Number
  - Quantity
  - date code

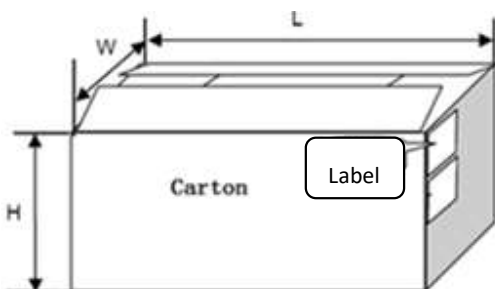


### (7) Inner Box



Packaging Type	A (mm)	B (mm)	C (mm)
Inner box	335	70	340

### (8) Carton



Packaging Type	L (mm)	W (mm)	H (mm)
Carton	360	360	360