



**INPAQ**

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# Product Specification

Document NO.ENS000071680

Description	Drawn by	Designed by	Checked by	Approved by
<b>MIP-P Series</b>	陳曉慧 Sharon Chen	賴柏志 Kidd Lai	賴柏志 Kidd Lai	吳維政 Albert Wu




## Multilayer Power Inductor (MIP-P Series) Engineering Spec.

This product belongs to the industrial grade standard, not the vehicle gauge product! Can not use auto parts, if the customer is not expressly informed and privately used to auto parts, produce any consequences, the original is not responsible for after-sales service, thank you!

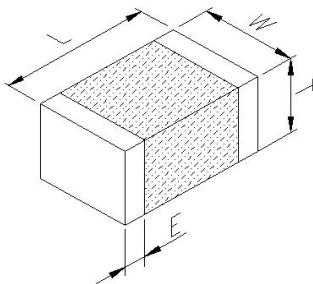
### ■ Features

- The monolithic construction performs high reliability and ensures a closed magnetic flux in a component avoids magnetic leakage and interference .
- Allow for higher mounting density.
- Low DC resistance.

### ■ Applications

Suitable for DVD , DSC , PND , PC , NB , Power Line

### ■ Shapes and Dimensions



Type (mm)	1608 (EIA0603)
L	1.60±0.15
W	0.80±0.15
T	0.80±0.15
E	0.30±0.20

■ Part Number and Characteristics Table

Part Number.	Inductance ±20% (μH)	DCR ±25% (Ω)	Rated Current (mA)	SRF (MHz)
MIP1608PR47MBPDG	0.47	0.100	1200	70
Test Instruments and Conditions	•HP4291B-RF Impedance / Material Analyzer •HP4338A/B Milliohm meter Test Frequency : 1MHz / OSC Level : 100mV			

\*\* For special part number which is not shown in the above table, please refer to appendix.

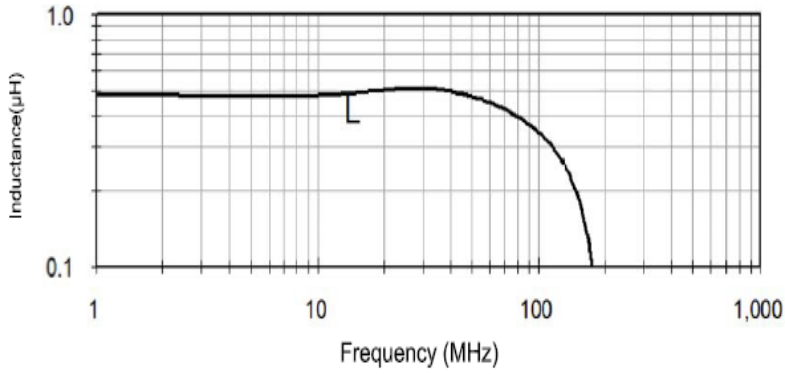
■ Part Number Code

MIP 1608 P R47 M B P DG  
 1 2 3 4 5 6 7 8

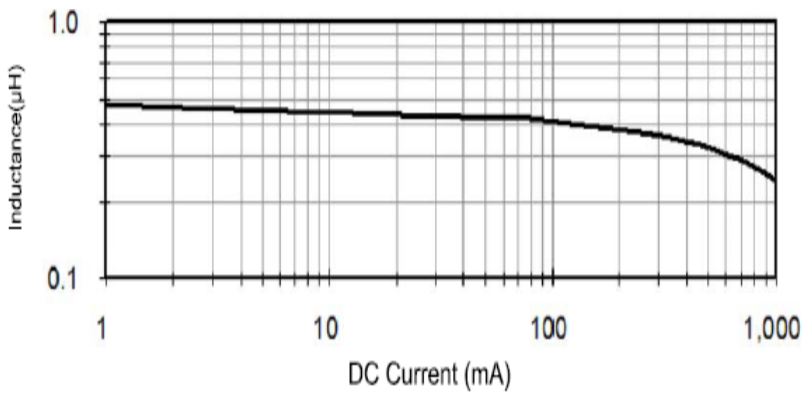
- 1 Series Name
- 2 Size Code : The first two digitals: length(mm) , the last two digitals: width(mm)
- 3 Material code
- 4 Inductance : R = Decimal point , Unit = μH
- 5 Tolerance : M = ±20%
- 6 Soldering : Green Parts , B= Lead-Free for whole chip
- 7 Packaging : P = Paper tape, 7" reel.
- 8 INPAQ internal code

■ Typical Characteristic

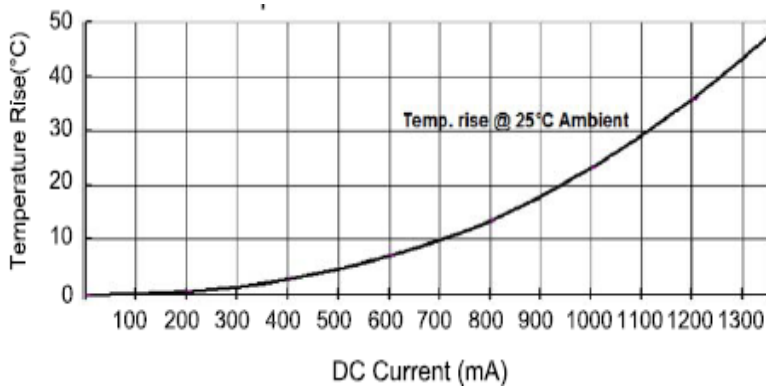
**Inductance @ Frequency**



**Inductance vs. DC-bias**

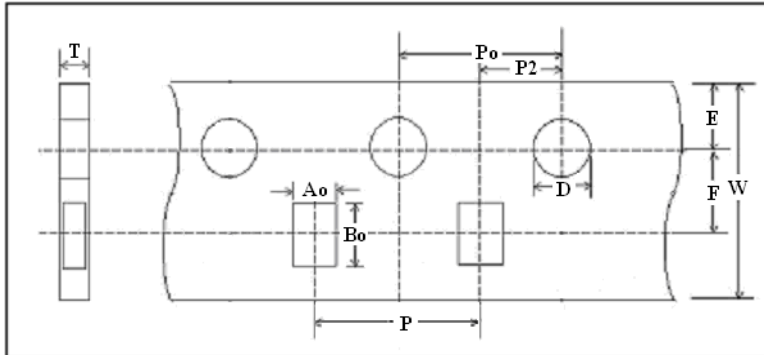


**Temperature rise vs. DC-bias**



■ **Tape and Reel Specifications**

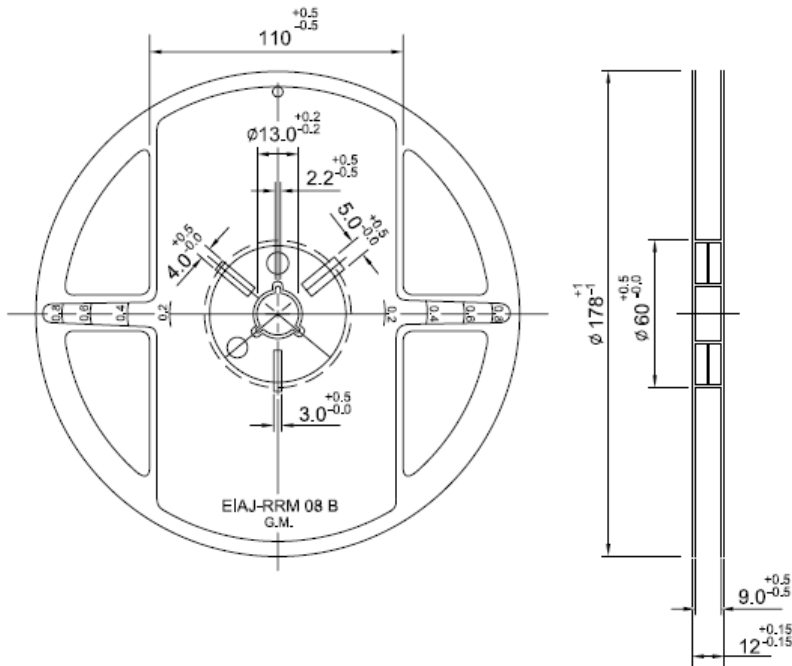
**Paper Carrier (P)**



**Taping Dimensions**

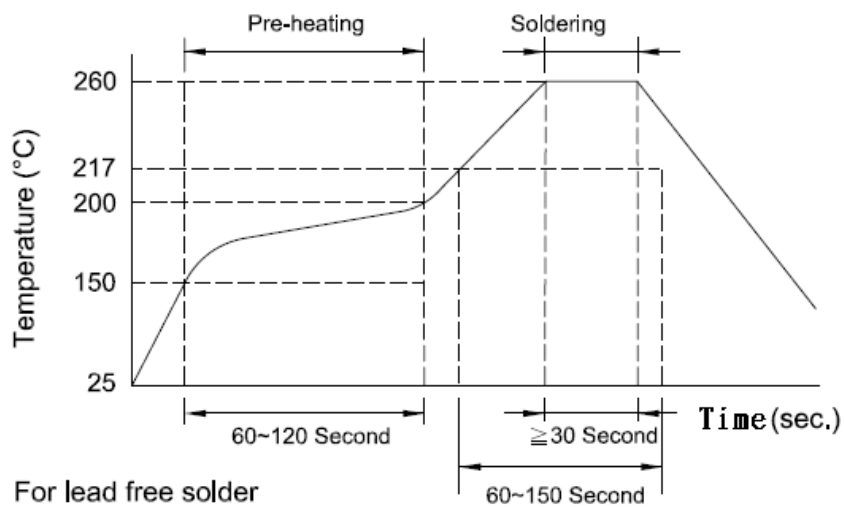
(mm)	<b>1608</b>
Symbol	<b>P</b>
W	8.00 ± 0.10
P	4.00 ± 0.10
E	1.75 ± 0.10
F	3.50 ± 0.10
D	1.56 ± 0.10
D1	NA
P <sub>0</sub>	4.00 ± 0.10
10P <sub>0</sub>	40.0 ± 0.20
P <sub>2</sub>	2.00 ± 0.10
A <sub>0</sub>	0.97 ± 0.05
B <sub>0</sub>	1.80 ± 0.05
Ko(T)	0.75 ± 0.05
t	NA

■ Reel Dimensions

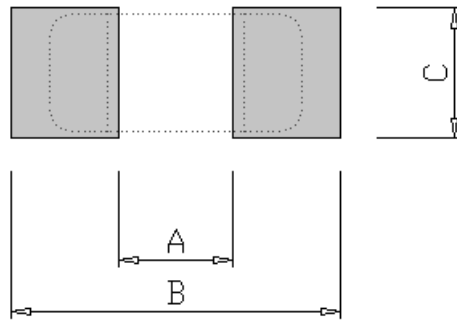


7" Reel Packaging Quantity	
PART SIZE	1608
Qty.(pcs)	4,000
BOX	5 reels / inner box

■ Recommended Soldering Conditions



■ Land Patterns for Reflow Soldering



Solder land information :

Size (mm)	A	B	C
1608	0.5 ~ 0.7	1.8 ~ 2.0	0.65 ~ 0.95

■ Reliability and Test Conditions

Test item	Test condition	Criteria
<b>Resistance to Solder Heat</b>	1. Solder temperature : $260 \pm 5^{\circ}\text{C}$ 2. Flux : Rosin 3. DIP time : $10 \pm 1$ sec	1. More than 95 % of terminal electrode should be covered with new solder 2. No mechanical damage 3. Inductance value should be within $\pm 20$ % of the initial value
<b>Solderability</b>	1. Solder temperature : $235 \pm 5^{\circ}\text{C}$ 2. Flux : Rosin 3. DIP time : $5 \pm 1$ sec	1. More than 95 % of terminal electrode should be covered with new solder 2. No mechanical damage

Test item	Test condition	Criteria
<b>Adhesive Test</b>	1. Reflow temperature : 245°C It shall be soldered on the substrate applying direction parallel to the substrate 2. Apply force(F) : 5 N 3. Test time : 10 sec	1. No mechanical damage 2. Soldering the products on PCB after the pulling test force > 5 N
<b>Temperature Cycle</b>	1. Temperature:-40 ~ 85°C for 30 minutes each 2. Cycle: 100 cycles 3. Measurement: at ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within ±20% of the initial value (Inductance: ≤ 0.47μH) Inductance should be within ±30% of the initial value (Inductance: > 0.47μH)
<b>High Temperature Resistance</b>	1. Temperature: 85 ± 5°C 2. Testing time: 1000 hrs 3. Measurement: at ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within ±20% of the initial value (Inductance: ≤ 0.47μH) Inductance should be within ±30% of the initial value (Inductance: > 0.47μH)
<b>Humidity</b>	1. Temperature: 40°C ± 2°C 2. Humidity: 90-95 % RH 3. Testing time: 1000 hrs 4. Measurement: at ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within ±20% of the initial value
<b>Rated Current</b>	At ambient temperature & humidity Testing time:5 minutes ( under full rated current )	MIP product surface temp : below room temperature plus 40°C

■ **GENERAL TECHNICAL DATA**

Operating temperature range : - 40°C ~ +85°C

Storage Condition : Less than 40°C and 70% RH

Storage time : 12 months Max.

Soldering method : Reflow