佳邦科技股份有限公司
INPAQ TECHNOLOGY CO., LTD.

AIP0650MB Series

Data Sheet

Product Name	AIP0650MB Series
Series	Molding Power Inductor
Size	0650
Version	A2

Molding Power Inductor

Scope

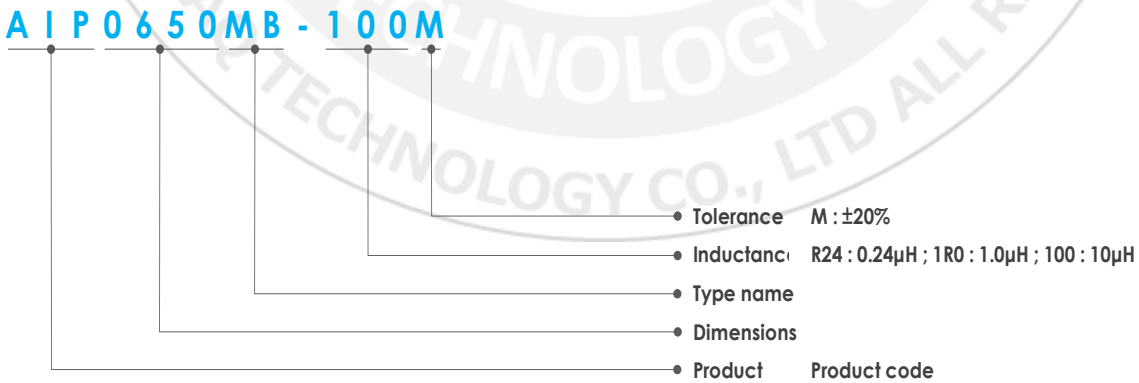
Features

- ROHS, Halogen Free and REACH compliance
- Flux shielded structure
- High rated current
- 125 °C maximum total temperature operation
- 7.3x6.8x5.0 mm maximum surface mount package
- Low core loss
- Ultra low buzz noise due to molding construction

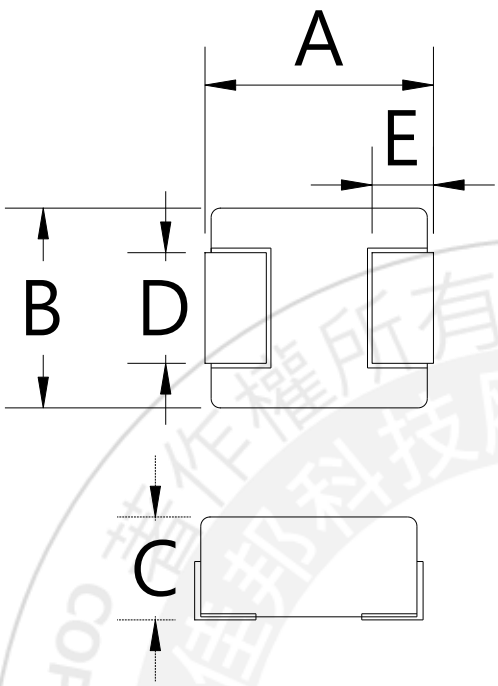
Applications

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

Explanation of Part Number

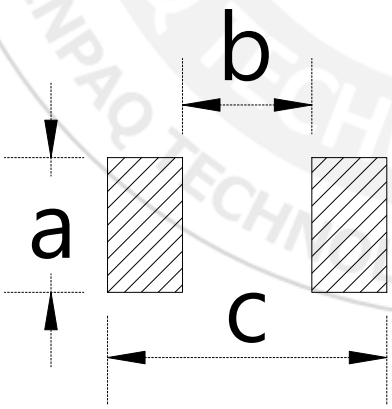


Dimensions



Code	Dimensions[mm]
A	7.0±0.3
B	6.6±0.2
C	4.8±0.2
D	3.0±0.3
E	1.6±0.3

Recommended land pattern



Code	Dimensions[mm]
a	3.5
b	3.7
c	8.4

Marking

The inductor is marked with a 3-digit code (using ink for marking).

Example: R24 means 0.24μH
1R0 means 1.0μH
100 means 10μH

Specifications

6x6 Series PN	Li [μH]	Rdc [mΩ]		Isat [A]		Irms [A]	
	Initial Value +/-20%	DC resistance typ.	max.	Li drop 30% typ.	max.	Temp. rising 40°C typ.	max.
AIP0650MB-R47M	0.47	3.2	3.7	24	20	20.2	18
AIP0650MB-R68M	0.68	3.8	4.2	17	15	18.2	16
AIP0650MB-1R0M	1.0	5.5	6.4	16.8	14.5	13.2	12.5
AIP0650MB-1R5M	1.5	6.0	7.5	12.7	11	12.3	11.2
AIP0650MB-2R2M	2.2	10.2	11.8	12.1	10	11	9.9
AIP0650MB-3R3M	3.3	16.5	18.5	9	8.1	9	8.5
AIP0650MB-4R7M	4.7	21	24	8	7	6.7	6
AIP0650MB-6R8M	6.8	36	40	7.3	6.5	5.5	5
AIP0650MB-8R2M	8.2	40	48	5.5	4.9	5.5	4.8
AIP0650MB-100M	10	47.1	54	5.3	4.7	4.7	4.3
AIP0650MB-150M	15	78	90	4	3.4	3.1	2.6
AIP0650MB-220M	22	110	140	3.5	3	2.6	2.2
AIP0650MB-330M	33	155	190	3	2.5	2.3	1.9
AIP0650MB-470M	47	215	230	2.6	2.1	2	1.6

Notes

1. Test environment of all data is referenced to 25 °C ambient.
2. Test conditions: 100 KHz, 1Vrms.
3. Isat : DC current (A) that will cause L to drop approximately 30 %.
4. Irms : DC current (A) that will cause an approximate ΔT of 40 °C (reference ambient temperature is 25°C).
5. Operating temperature range – 55 °C to + 125 °C.
6. 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.

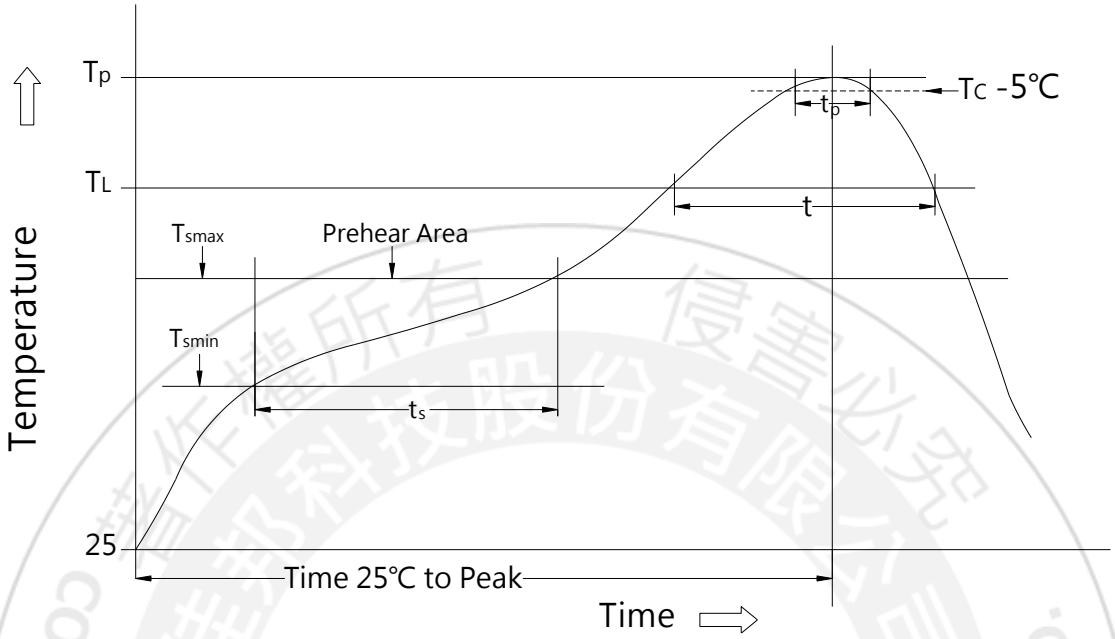
Mechanical Reliability

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. ΔL / Lo ≤ ± 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. ΔL / Lo ≤ ± 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 -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 ± 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 : -55 ± 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.

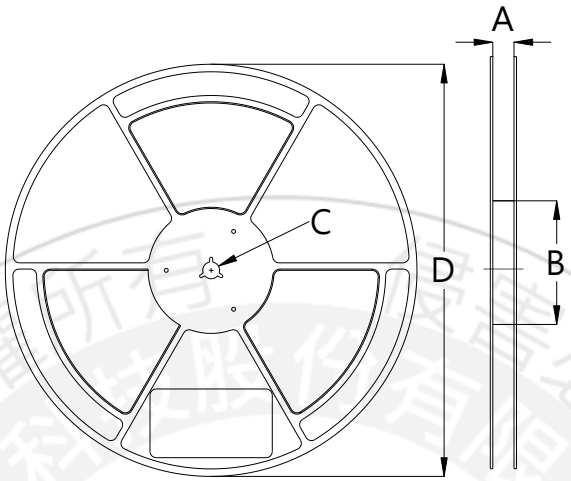
Recommendable Reflow Soldering



Profile Feature	Pb-Free Assembly
Preheat - Temperature Min(T_{smin}) - Temperature Max(T_{smax}) - Time (t_s) from (T_{smin} to T_{smax})	150°C 200°C 60-120 seconds
Ramp-up rate (T_L to T_P)	3°C / second max.
Liquidous temperature(T_L) Time (t) maintained above T_L	217°C 60-150 seconds
Peak package body temperature(T_P)	260°C +0/-5°C
Time within 5°C of actual peak temperature(t_p)	10-30 seconds
Ramp-down rate (T_P to T_L)	6°C / second max.
Time 25°C to peak temperature	8 minutes max.
Number of Reflow cycles allowed	2 cycles max.

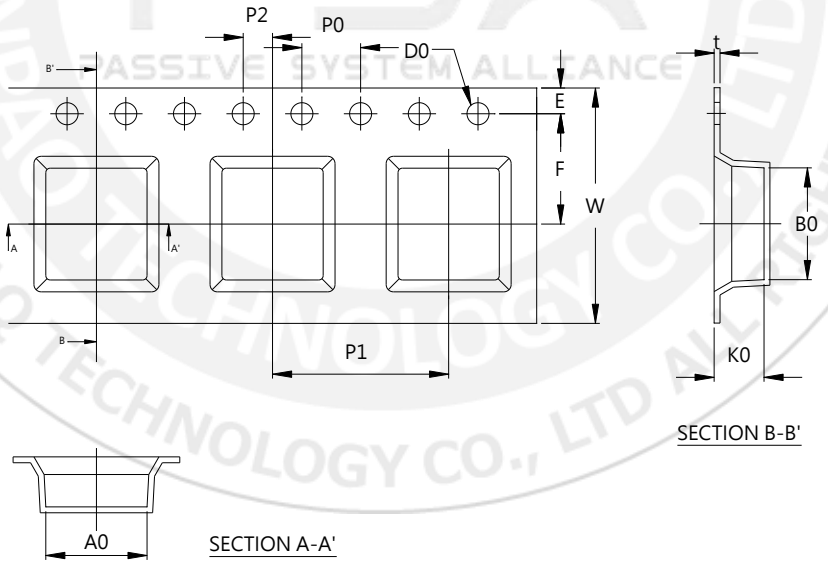
Tape & Reel

► Reel dimensions (unit: mm)



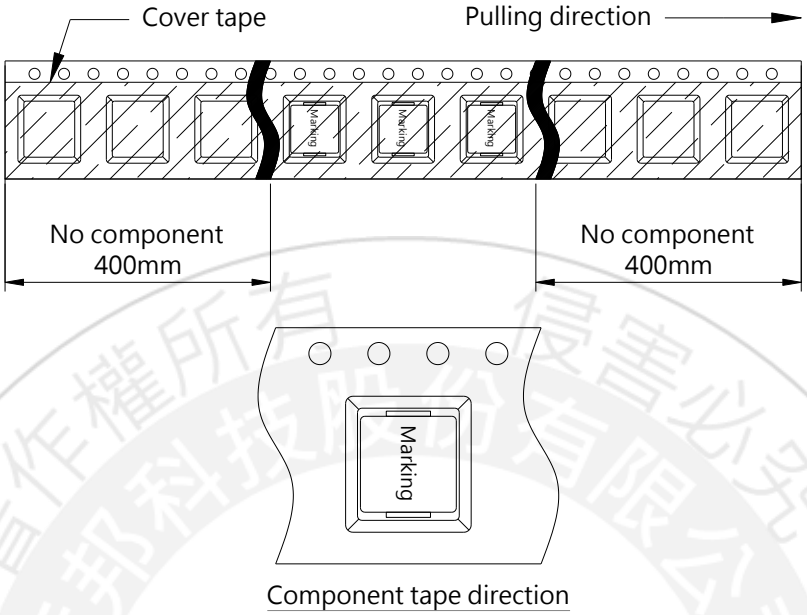
Type	A	B	C	D
13'x16	16.8+0.2	97+0.5	13.2±0.2	330+2.0

► Tape dimensions (unit: mm)



Type	W	P1	P0	P2	D0	t	A0	B0	K0	E	F
AIP0650MB	16 ±0.3	12 ±0.1	4 ±0.1	2 ±0.1	1.5 ±0.1	0.4 ±0.05	6.9 ±0.1	7.5 ±0.1	5.4 ±0.1	1.75 ±0.1	7.5 ±0.1

► Taping Drawings



► Taping Package Storage Condition

Storage Temperature: 5 to 40°C

Relative Humidity: < 65%RH

Storage Time: 12 months max

► Label Marking

The label specified as follows shall be put on the side of reel.

(1) Part No.

(2) Quantity.

(3) Lot No.

* Part No. And Quantity shall be marked on outer packaging.

► Quantity of products in the package

Type	Reel
AIP0650MB	1000