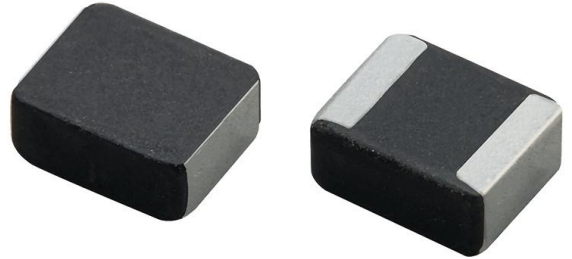


## Mini Molding Power Inductors

### 1. FEATURES

- ◆ High saturation current realized by material properties and structure design.
- ◆ Low DC resistance to achieve high conversion efficiency and lower temperature rising.
- ◆ Magnetically shielded structure to accomplish high resolution in EMC protection.



### 2. APPLICATIONS

- ◆ Smart phone, PAD
- ◆ DC/DC converter
- ◆ Thin-type power supply module

### 3. Product Identification

MCP252010S-R33M

a    b    c    d

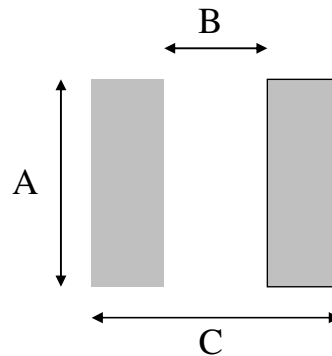
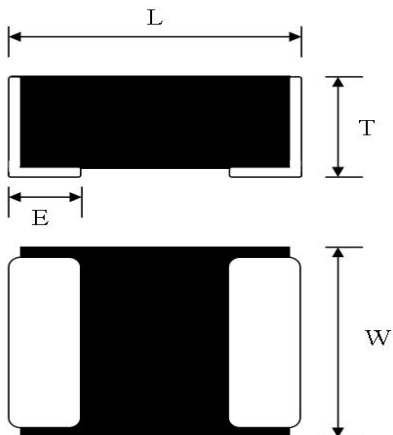
a: Series name

b: Product dimensions (a x b x c)

c: Inductance Value(1R0:1.0uH; 100: 10uH; 101:100uH)

d: Inductance Tolerance (K:10% ; M:20% ; N:30%)

### 4. SHAPES AND DIMENSIONS



※All products are printed No Marking

## Dimensions (unit:mm)

TYPE(型号)	L	W	T Max	E	A	B	C
MCP201610P&S	2.0±0.2	1.6±0.2	1.0	0.5±0.3	1.60	0.90	2.0
MCP252010S	2.5±0.2	2.0±0.2	1.0	0.6±0.3	2.0	1.2	2.80
MCP252012P	2.5±0.2	2.0±0.2	1.2	0.6±0.3	2.0	1.2	2.80

## 5. Electrical characteristics

### MCP201610P Series

Aillen Part Number	Li [ $\mu$ H] Initial inductance	R <sub>dc</sub> [m $\Omega$ ] DC Resistance		Isat [A] Saturation Current		Irms [A] Heat Rating Current	
		Typical	Maximum	Typical	Maximum	Typical	Maximum
MCP201610P-R24M	0.24	17	21	5.6	5.05	5.0	4.50
MCP201610P-R33M	0.33	24	29	5	4.50	4.1	3.69
MCP201610P-R47M	0.47	33	40	4.4	4.00	3.5	3.15
MCP201610P-R68M	0.68	41	49	3.7	3.33	3.4	3.06
MCP201610P-1R0M	1.0	60	69	2.9	2.61	2.6	2.26
MCP201610P-1R5M	1.5	114	129	2.5	2.25	2.0	1.81
MCP201610P-2R2M	2.2	135	150	1.9	1.71	1.7	1.50

### MCP201610S Series

Aillen Part Number	Li [ $\mu$ H] Initial inductance	RDC [m $\Omega$ ] DC Resistance		Isat [A] Saturation Current		Irms [A] Heat Rating Current	
		Typical	Maximum	Typical	Maximum	Typical	Maximum
MCP201610S-R47M	0.47	23	30	6.1	5.3	4.5	4.05
MCP201610S-1R0M	1	48	60	3.9	3.3	3.2	3.0
MCP201610S-1R5M	1.5	86	99	3.4	3.1	2.4	2.2
MCP201610S-2R2M	2.2	117	140	2.6	2.45	2.2	2.0

## MCP252010S Series

Aillen Part Number	Li [ $\mu$ H] Initial inductance	RDC [ $m\Omega$ ] DC Resistance		Isat [A] Saturation Current		Irms [A] Heat Rating Current	
		Typical	Maximum	Typical	Maximum	Typical	Maximum
MCP252010S-R33M	0.33	17	22	7.8	7.0	5.6	4.8
MCP252010S-R47M	0.47	23	29	6.6	6.0	5.2	4.4
MCP252010S-1R0M	1	41	52	4.4	4.0	3.4	3.1
MCP252010S-1R5M	1.5	67	77	3.8	3.5	2.6	2.3
MCP252010S-2R2M	2.2	88	110	3.3	3.0	2.4	2.1

## MCP252012P Series

Aillen Part Number	Li [ $\mu$ H] Initial inductance	R <sub>DC</sub> [ $m\Omega$ ] DC Resistance		Isat [A] Saturation Current		Irms [A] Heat Rating	
		Typical	Maximum	Typical	Maximum	Typical	Maximum
MCP252012P-R47M	0.47	21	25	5.3	4.77	4.5	4.05
MCP252012P-R68M	0.68	29	35	4.1	3.69	3.7	3.33
MCP252012P-1R0M	1.0	41	49	3.4	3.06	3.4	3.06
MCP252012P-1R5M	1.5	64	77	3.2	2.88	2.5	2.25
MCP252012P-2R2M	2.2	88	104	3	2.70	2.1	1.89
MCP252012P-4R7M	4.7	196	235	1.9	1.58	1.55	1.40

Note 1: Customized design is available, please contact us.

Note 2: All test referenced to 26°C ambient

Note 3: Inductance tolerance +/- 20%

Note 4: Inductance is measured with Agilent® LCR meter 4285A. Test frequency at 1MHz.

Note 5: DC resistance is measured with HIOKI® micro-ohm meter RM3542-01.

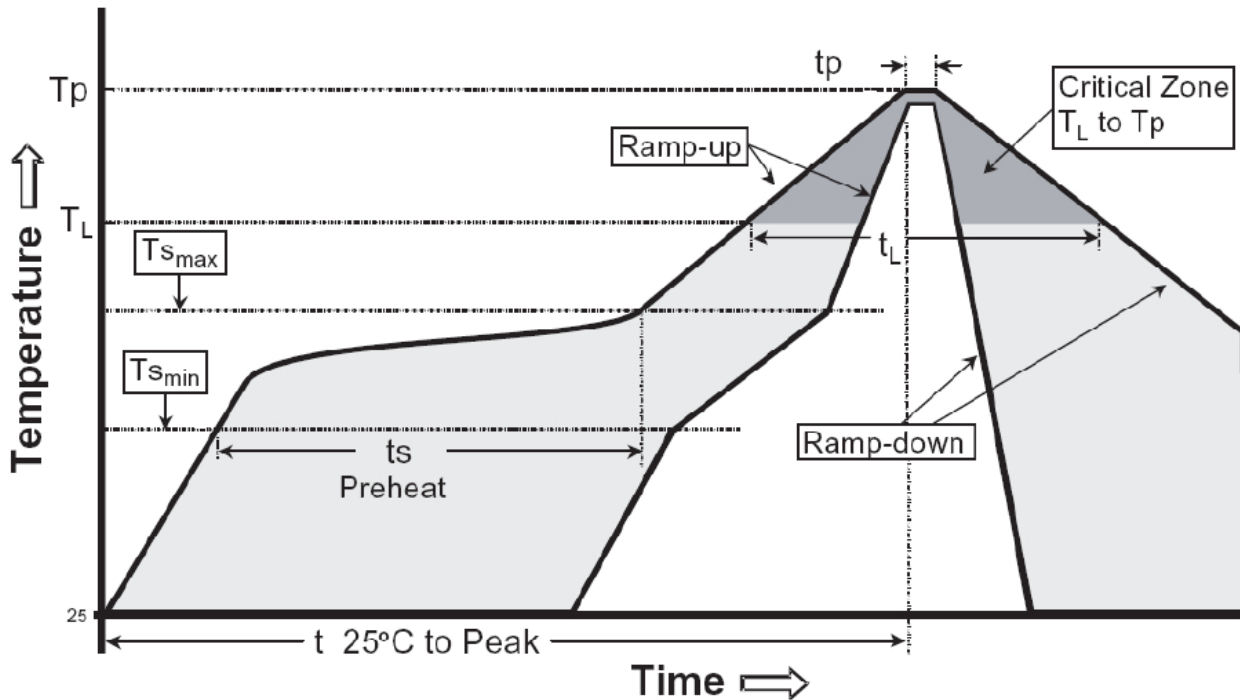
Note 6: Isat means that DC current will cause a 30% inductance reduction form initial value.

Note 7: Irms means that DC current will cause coil temp. rising to 40°C whichever is smaller.

## 6. Reliability and Test Condition

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>Adhesive Test</b>	1. Reflow temperature : $245^{\circ}\text{C}$ 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: $-50 \sim 125^{\circ}\text{C}$ For 30 minutes each 2. Cycle: 500 cycles 3. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value
<b>Dry Heat Test</b>	1. Temperature: $85 \pm 2^{\circ}\text{C}$ 2. Testing time: 500 hrs 3. Applied current: Full rated current 4. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value
<b>Humidity Test</b>	1. Temperature: $60 \pm 2^{\circ}\text{C}$ 2. Humidity: 90-95 % RH 3. Applied current: Full rated current 4. Testing time: 500 hrs 5. Measurement: At ambient temperature 24 hours after test completion	1. No mechanical damage 2. Inductance should be within $\pm 20\%$ of the initial value

## 7. Recommendable reflow soldering



Reference IPC-020c-5-1

Profile Feature	Pb free Assembly
Average Ramp Rate ( $T_s$ max to $T_p$ )	3 °C/second max
Preheat <ul style="list-style-type: none"> <li>- Temperature Min (<math>T_{Smin}</math>)</li> <li>- Temperature Min (<math>T_{Smax}</math>)</li> <li>- Time(<math>t_{Smin}</math> to <math>t_{Smin}</math>)</li> </ul>	150°C 200°C 60-180 seconds
Time maintained above: <ul style="list-style-type: none"> <li>- Temperature (<math>T_L</math>)</li> <li>- Time (<math>t_L</math>)</li> </ul>	217°C 60-150 seconds
Peak Temperature ( $T_p$ )	260°C +0/-5 °C
Time within 5 °C of actual Peak Temperature ( $T_p$ )	20-40 seconds
Ramp-Down Rate	6 °C/second max.
Time 25°C to Peak Temperature	8 minutes max