

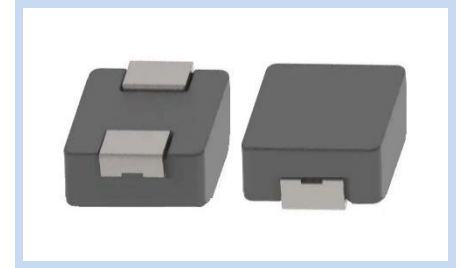
# Molded Power Inductor High Current AEC-Q200

PIM-0402MA1 series

**MERITEK**

## FEATURE

- High Current, Low DCR, High Efficiency
- Minimized Acoustic and Leakage Flux Noise
- Shielded and Compact Construction Design
- Aec-Q200 Compliant
- Application: Note PC Power System, incl. IMVP-6, DC/DC Converter



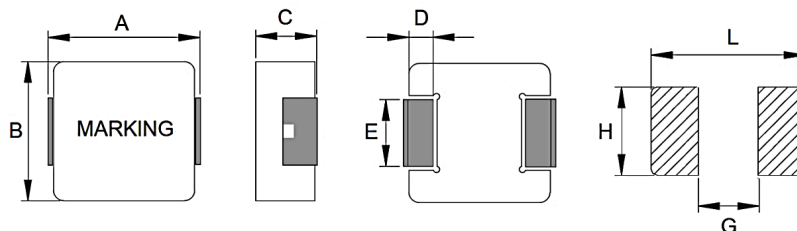
## ELECTRICAL CHARACTERISTICS

Item	Inductance (μH)	Tolerance (%)	DCR Typ. (mΩ)	DCR Max. (mΩ)	I <sub>SAT</sub> Typ. (A)	I <sub>RMS</sub> Typ. (A)
PIMR10N0402MA1	0.10	±30%	3.2	4.0	35	14
PIMR22N0402MA1	0.22	±30%	6.6	7.3	24	13
PIMR33M0402MA1	0.33	±20%	7.8	8.6	18	10
PIMR47M0402MA1	0.47	±20%	11.2	14	12	8.0
PIMR56M0402MA1	0.56	±20%	13.5	16	10	7.3
PIMR68M0402MA1	0.68	±20%	16.0	19	10	7.0
PIM1R0M0402MA1	1.0	±20%	22.0	27	8.5	5.0
PIM1R5M0402MA1	1.5	±20%	34.8	42	7.0	4.5
PIM2R2M0402MA1	2.2	±20%	51	61	6.0	4.0
PIM3R3M0402MA1	3.3	±20%	69	76	4.0	3.5
PIM4R7M0402MA1	4.7	±20%	95	105	3.5	2.6
PIM5R6M0402MA1	5.6	±20%	112	125	3.0	2.2
PIM6R8M0402MA1	6.8	±20%	150	172	2.8	2.1
PIM8R2M0402MA1	8.2	±20%	158	180	2.5	2.0
PIM100M0402MA1	10	±20%	215	243	2.3	1.8
PIM150M0402MA1	15	±20%	325	374	1.9	1.5
PIM220M0402MA1	22	±20%	470	500	1.4	1.2

Note:

1. Inductance test under 100KHz, 1.0V
2. All test data referenced to 25°C ambient
3. I<sub>SAT</sub> based on inductance drop ( $\Delta L/L_0: \leq 30\%$ ) approximately
4. I<sub>RMS</sub> based on temperature rise ( $\Delta T: 40^\circ\text{C}$ ) approximately
5. Operating temperature: -55°C ~ +125°C (Including Self-temperature rise)

## DIMENSIONS



(Unit: mm)

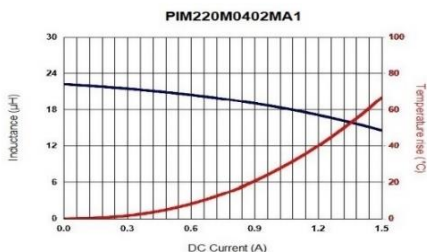
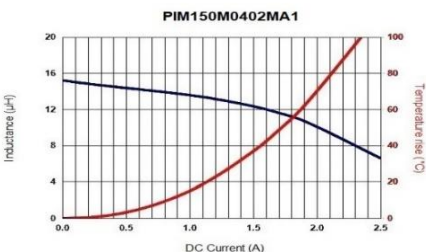
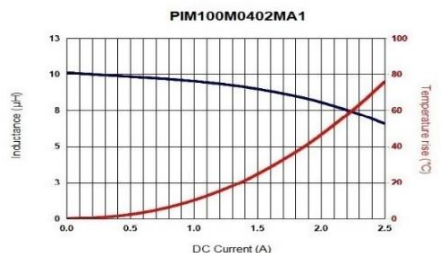
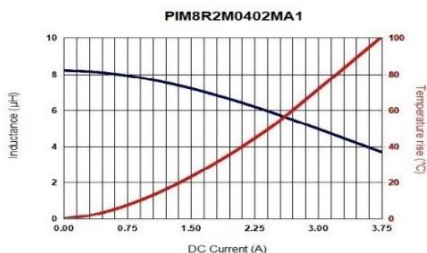
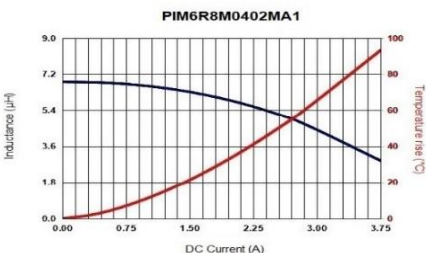
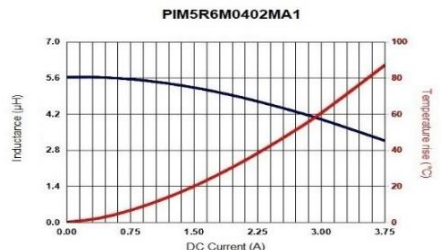
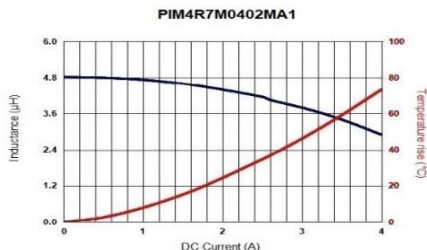
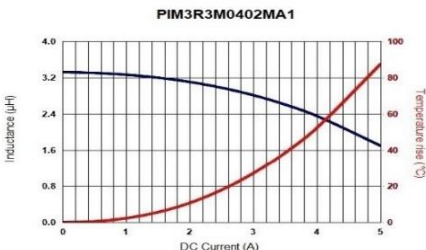
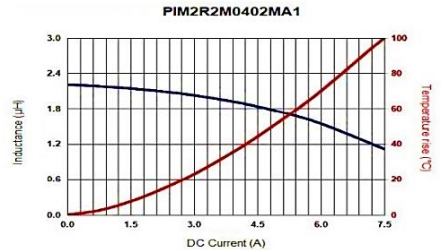
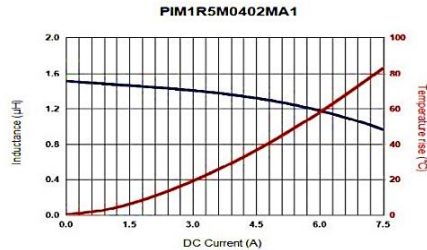
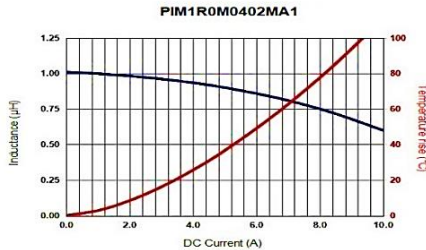
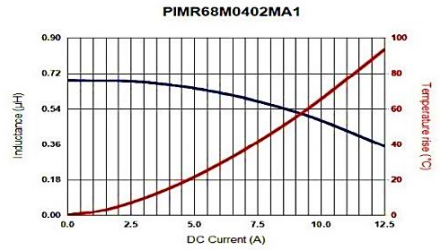
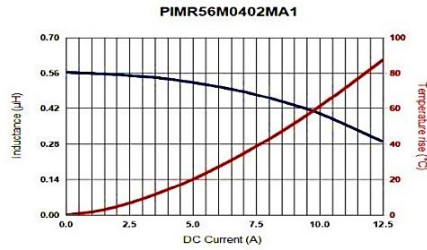
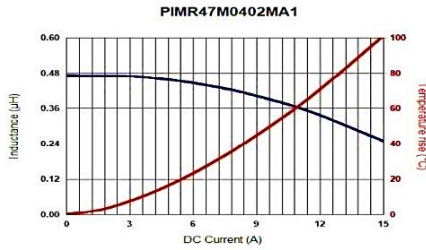
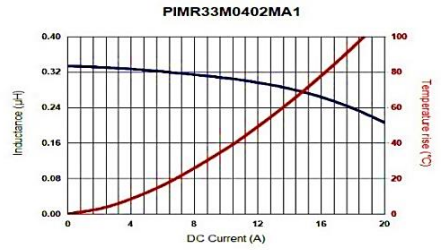
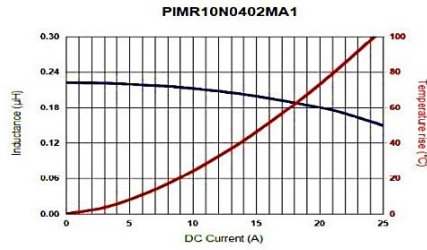
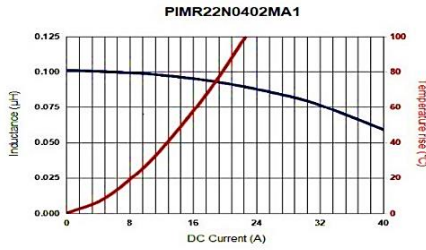
Size Code	A	B	C	D	E	L	G	H
0402	4.45±0.25	4.06±0.25	1.8±0.2	0.76±0.30	2.0±0.20	5.2	2.2	2.4

# Molded Power Inductor High Current AEC-Q200

PIM-0402MA1 series

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## CHARACTERISTIC CURVES

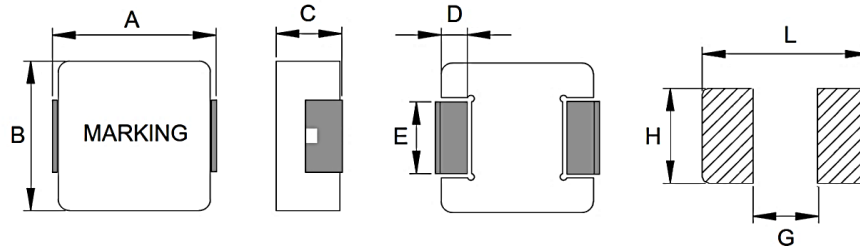


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## DIMENSIONS – PIM-MA1 series



(Unit: mm)

Size Code	A	B	C	D	E	L	G	H
0302	3.5±0.2	3.2±0.2	1.8±0.2	0.7±0.2	1.2±0.2	4.1	1.9	1.45
0312	3.5±0.2	3.2±0.2	1.0±0.2	0.7±0.2	1.2±0.2	4.1	1.9	1.45
0315	3.5±0.3	3.2±0.2	1.3±0.2	0.7±0.2	1.2±0.2	4.1	1.9	1.45
0402	4.45±0.25	4.06±0.25	1.8±0.2	0.76±0.30	2.0±0.20	5.2	2.2	2.4
0412	4.45±0.25	4.06±0.25	1.0±0.2	0.76±0.30	2.0±0.20	5.2	2.2	2.3
0415	4.45±0.25	4.06±0.25	1.3±0.2	0.76±0.3	2.0±0.2	5.2	2.2	2.3
0502	5.7±0.3	5.2±0.2	1.8±0.2	1.1±0.3	2.5±0.3	6.2	2.2	2.8
053P	5.7±0.3	5.2±0.2	2.8±0.2	1.1±0.3	2.5±0.3	6.5	2.5	2.8
0503	5.7±0.3	5.2±0.2	2.8±0.2	1.1±0.3	1.5±0.2	6.5	2.5	1.8
0512	5.7±0.3	5.2±0.2	1.0±0.2	1.1±0.3	2.5±0.3	6.2	2.2	2.8
0515	5.7±0.3	5.2±0.2	1.3±0.2	1.1±0.3	2.5±0.3	6.2	2.2	2.8
0518	5.7±0.3	5.2±0.2	1.6±0.2	1.1±0.3	2.5±0.3	6.2	2.2	2.8
053T	4.9±0.3	4.7±0.2	2.8±0.2	1.0±0.3	1.5±0.3	7.0	3.0	2.5
0602	7.0±0.3	6.6±0.3	1.8±0.2	1.8±0.3	3.0±0.3	7.7	2.5	3.5
0603	7.3±0.3	6.6±0.3	2.8±0.2	1.8±0.3	3.0±0.3	8.4	2.5	3.5
0604	7.3±0.3	6.6±0.3	3.8±0.2	1.8±0.30	3.0±0.3	8.4	2.5	3.5
0605	7.3±0.3	6.6±0.3	4.8±0.2	1.8±0.3	3.0±0.3	8.4	2.5	3.5
0612	7.0±0.3	6.6±0.3	1.0±0.2	1.8±0.3	2.5±0.3	7.7	2.5	3.0
0615	7.0±0.3	6.6±0.3	1.3±0.2	1.8±0.3	3.0±0.3	7.7	2.5	3.5
0618	7.0±0.3	6.6±0.3	1.6±0.2	1.8±0.3	3.0±0.3	7.7	2.5	3.5
0624	7.0±0.3	6.6±0.3	2.2±0.2	1.8±0.3	3.0±0.3	7.7	2.5	3.5
1003	11.0±0.5	10.0±0.3	2.8±0.2	2.3±0.3	Spec table	13.6	5.4	3.5
1004	11.0±0.5	10.0±0.3	3.8±0.2	2.3±0.3	3.0±0.3	13.6	5.4	3.5
1005	11.0±0.5	10.0±0.3	4.8±0.2	2.3±0.3	3.0±0.3	13.6	5.4	3.5
1205	13.5±0.5	12.5±0.3	4.8±0.2	2.3±0.3	4.7±0.3	14.2	8.0	5.0
1206	13.5±0.5	12.5±0.3	5.7±0.3	2.3±0.3	4.7±0.3	14.2	8.0	5.0
1235	13.5±0.5	12.5±0.3	3.3±0.2	2.3±0.3	4.7±0.3	14.2	8.0	5.0
1265	13.5±0.5	12.5±0.3	6.2±0.3	2.3±0.3	4.7±0.3	14.2	8.0	5.0
1707	17.6±0.4	16.9±0.3	6.7±0.3	2.1±0.3	11.9±0.3	18.5	12.2	12.5

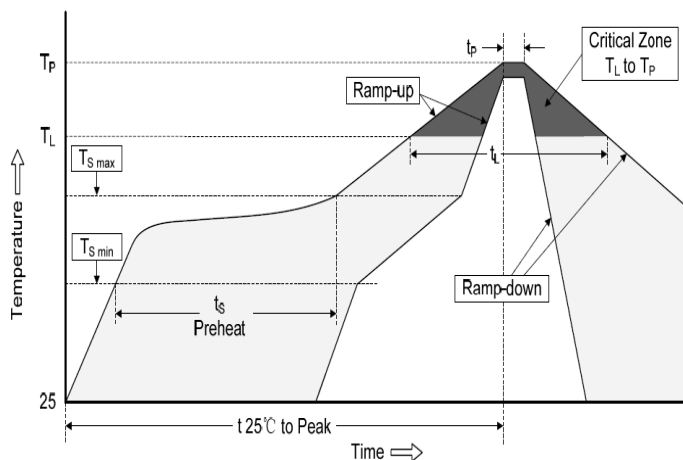
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PIM-0402MA1 series

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## RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) ( $t_s$ )	60~120 seconds
Average ramp up rate $T_{s(max)}$ to $T_L$		3°C/second max.
Average ramp up rate $T_L$ to peak		3°C/second max.
Reflow	Temp. ( $T_L$ )	217°C
	Time (min. to max.) ( $t_L$ )	60~150 seconds
Peak Temperature ( $T_P$ )		245°C
Time within 5°C of actual peak Temperature ( $t_p$ )		10 seconds
Ramp-down Rate		6°C/second max.
Reflow Times		3 times max.



## PART NUMBERING SYSTEM

PIM (1)    R47 (2)    M (3)    0402 (4)    MA1 (5)

No	Item	Code	Description
(1)	Product Code	PIM	Power Inductor Series, Molded Surface Mount Type
(2)	Inductance	R47	R47: 0.47μH      2R2: 2.2μH, 100: 10μH
(3)	Tolerance	M	M: ±20%      N: ±30%
(4)	Size Code	0402	0402: 4.45 x 1.8mm      Width x Height (mm)
(5)	Series Code	MA1	High Current AEC-Q200

\*Specifications subject to change without notice.