

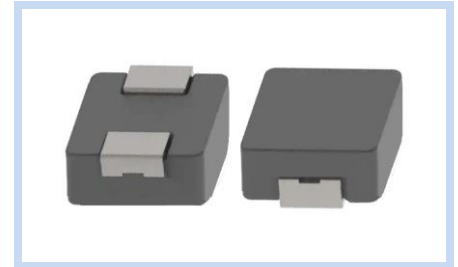
# Molded Power Inductor High Current AEC-Q200

PIM-053PMA1 series

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## 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



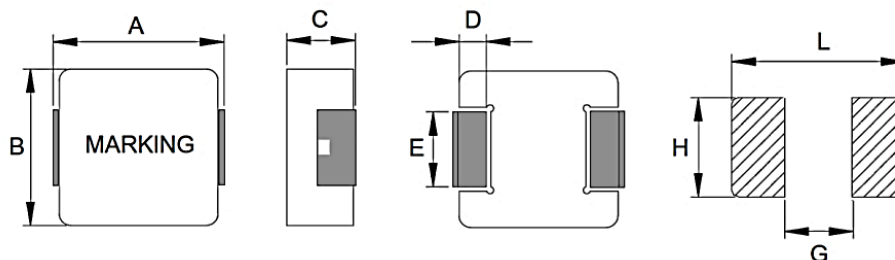
## ELECTRICAL CHARACTERISTICS

Item	Inductance (μH)	Tolerance (%)	DCR Typ. (mΩ)	DCR Max. (mΩ)	I <sub>SAT</sub> Typ. (A)	I <sub>RMS</sub> Typ. (A)
PIMR10N053PMA1	0.10	±30%	2.2	2.6	40.0	24.0
PIMR15N053PMA1	0.15	±30%	2.5	3.0	37.0	22.0
PIMR22M053PMA1	0.22	±20%	3.2	3.8	32.0	19.0
PIMR33M053PMA1	0.33	±20%	4.3	5.0	20.0	15.0
PIMR47M053PMA1	0.47	±20%	6.3	7.1	18.0	13.0
PIMR56M053PMA1	0.56	±20%	7.8	8.6	17.0	12.0
PIMR68M053PMA1	0.68	±20%	8.0	9.0	15.5	11.0
PIMR82M053PMA1	0.82	±20%	8.8	10.0	14.0	10.0
PIM1R0M053PMA1	1.0	±20%	11.0	12.7	13.0	9.0
PIM1R5M053PMA1	1.5	±20%	14.4	16.6	11.5	8.0
PIM2R2M053PMA1	2.2	±20%	26.0	29.2	11.0	7.0
PIM3R3M053PMA1	3.3	±20%	33.0	38.0	9.0	6.0
PIM4R7M053PMA1	4.7	±20%	48.0	53.0	8.0	5.5
PIM5R6M053PMA1	5.6	±20%	54.0	62.0	7.3	4.7
PIM6R8M053PMA1	6.8	±20%	68.0	76.2	6.0	4.2
PIM100M053PMA1	10.0	±20%	104	120	4.0	3.5
PIM150M053PMA1	15.0	±20%	165	190	3.2	2.7
PIM220M053PMA1	22.0	±20%	217	250	2.7	2.2

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)

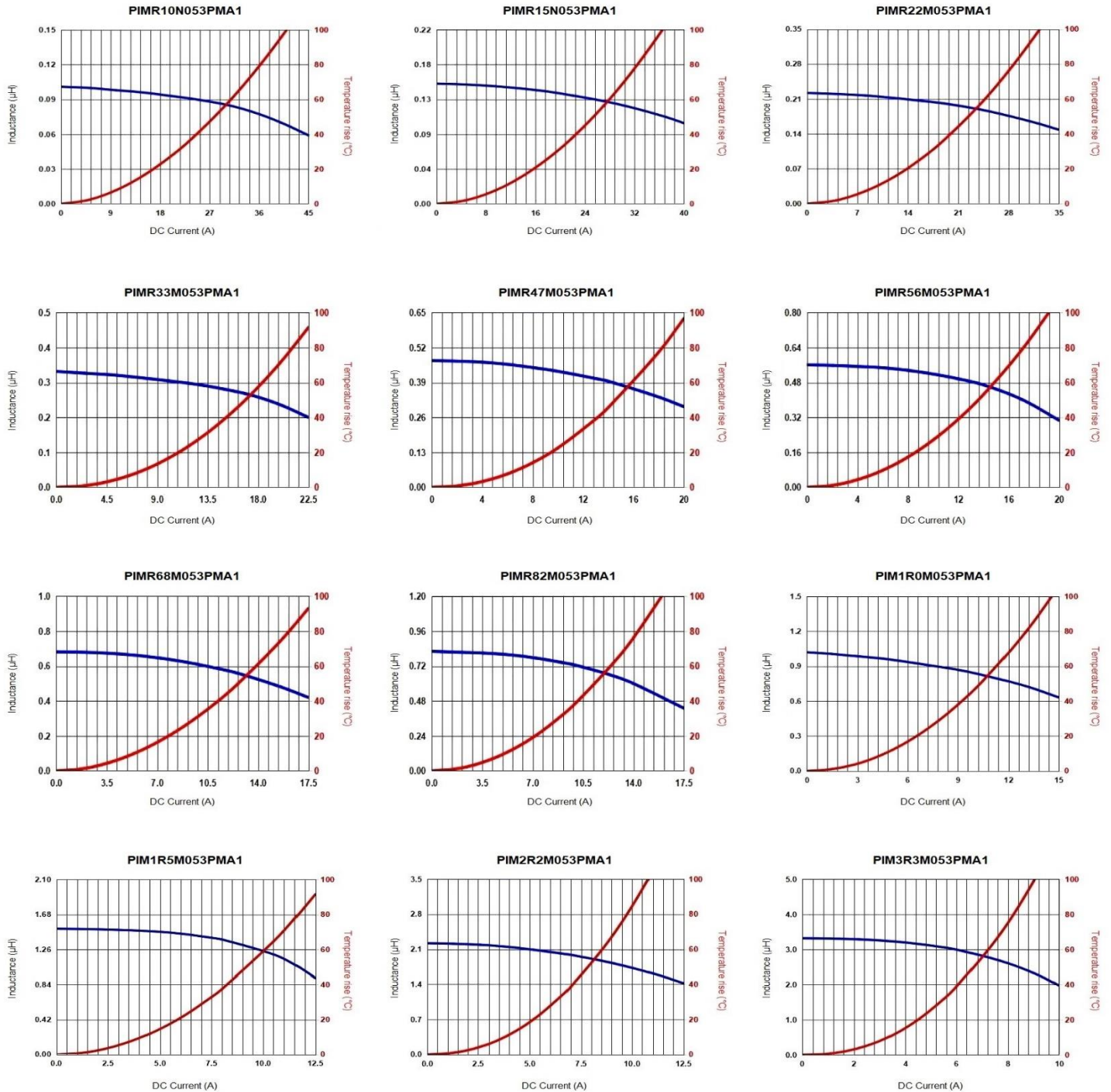
## DIMENSIONS



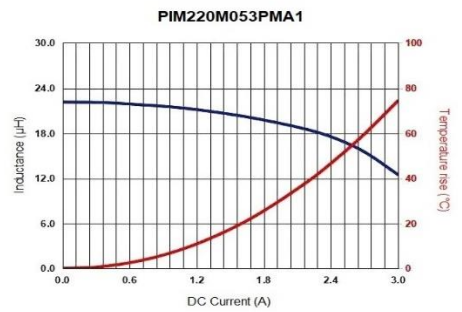
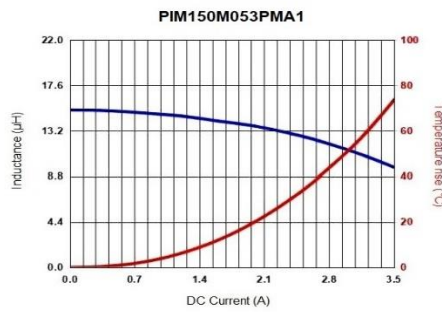
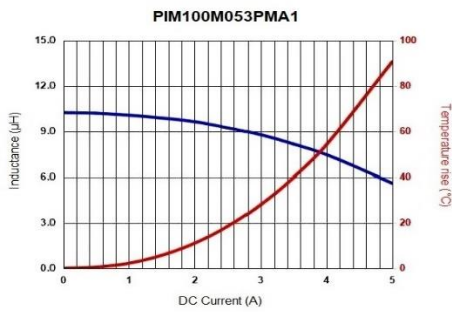
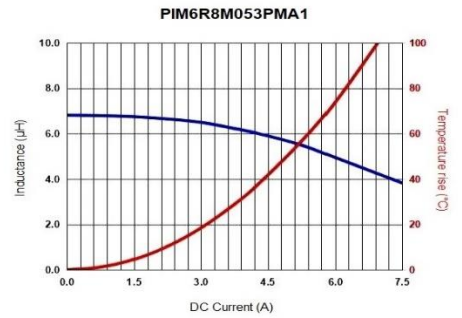
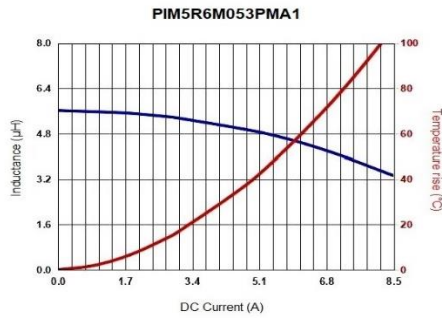
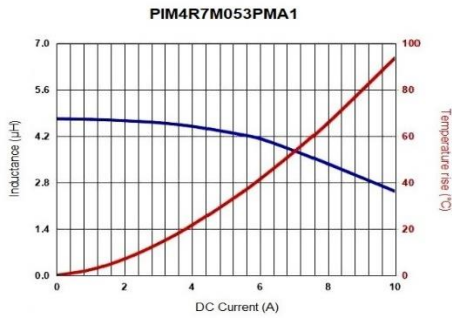
(Unit: mm)

Size Code	A	B	C	D	E	L	G	H
053P	5.7±0.30	5.2±0.20	2.8±0.2	1.1±0.30	2.5±0.30	6.5	2.5	2.8

### CHARACTERISTIC CURVES

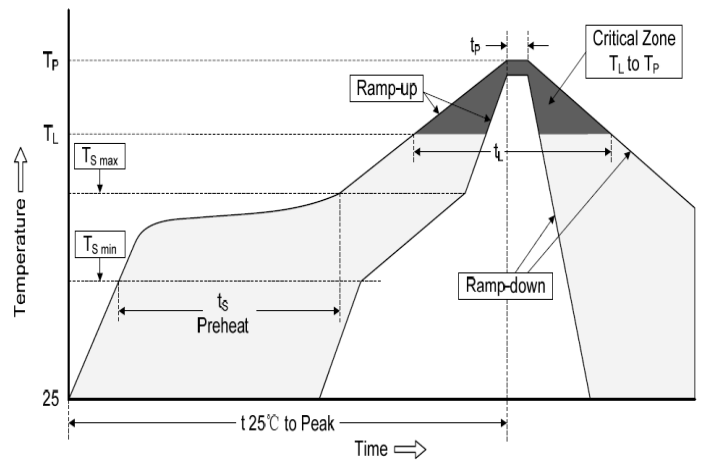


## CHARACTERISTIC CURVES



## 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.



# Molded Power Inductor High Current AEC-Q200

PIM-053PMA1 series

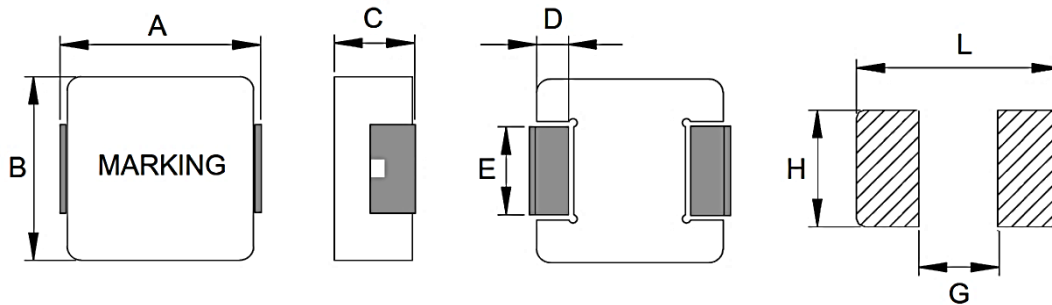
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## PART NUMBERING SYSTEM

$\frac{\text{PIM}}{(1)}$      $\frac{\text{R47}}{(2)}$      $\frac{\text{M}}{(3)}$      $\frac{\text{053P}}{(4)}$      $\frac{\text{MA1}}{(5)}$

No	item	Code	Description	
(1)	Product Code	PIM	Power Inductor Series, Molded Surface Mount Type	
(2)	Inductance	R47	R47: 0.47 $\mu$ H	2R2: 2.2 $\mu$ H, 100: 10 $\mu$ H
(3)	Tolerance	M	M: $\pm$ 20%	N: $\pm$ 30%
(4)	Size Code	053P	053P: 5.7x2.8mm	Width x Height (mm)
(5)	Series Code	MA1	High Current AEC-Q200	Internal control or project reference

## DIMENSIONS – PIM-MA1 series



(Unit: mm)

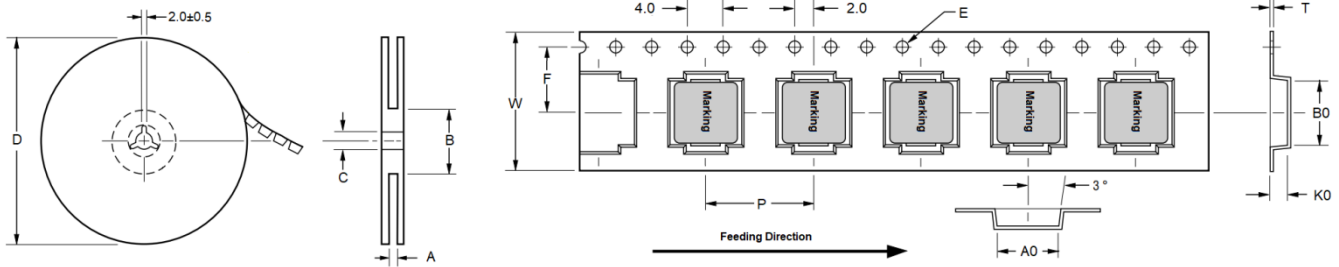
Size Code	A	B	C	D	E	L	G	H
0312	3.5 $\pm$ 0.20	3.2 $\pm$ 0.20	1.0 $\pm$ 0.2	0.7 $\pm$ 0.20	1.2 $\pm$ 0.20	4.1	1.9	1.45
0315	3.5 $\pm$ 0.20	3.2 $\pm$ 0.20	1.3 $\pm$ 0.2	0.7 $\pm$ 0.20	1.2 $\pm$ 0.20	4.1	1.9	1.45
0320	3.5 $\pm$ 0.20	3.2 $\pm$ 0.20	1.8 $\pm$ 0.2	0.7 $\pm$ 0.20	1.2 $\pm$ 0.20	4.1	1.9	1.45
0412	4.45 $\pm$ 0.25	4.06 $\pm$ 0.25	1.0 $\pm$ 0.2	0.76 $\pm$ 0.30	2.0 $\pm$ 0.20	5.2	2.2	2.4
0415	4.45 $\pm$ 0.25	4.06 $\pm$ 0.25	1.3 $\pm$ 0.2	0.76 $\pm$ 0.30	2.0 $\pm$ 0.20	5.2	2.2	2.4
0418	4.45 $\pm$ 0.25	4.06 $\pm$ 0.25	1.6 $\pm$ 0.2	0.76 $\pm$ 0.30	2.0 $\pm$ 0.20	5.2	2.2	2.3
0420	4.45 $\pm$ 0.25	4.06 $\pm$ 0.25	1.8 $\pm$ 0.2	0.76 $\pm$ 0.30	2.0 $\pm$ 0.20	5.2	2.2	2.4
0512	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	1.0 $\pm$ 0.2	1.1 $\pm$ 0.30	2.5 $\pm$ 0.30	6.2	2.2	2.8
0515	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	1.3 $\pm$ 0.2	1.1 $\pm$ 0.30	2.5 $\pm$ 0.30	6.2	2.2	2.8
0518	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	1.6 $\pm$ 0.2	1.1 $\pm$ 0.30	2.5 $\pm$ 0.30	6.2	2.2	2.8
0520	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	1.8 $\pm$ 0.2	1.1 $\pm$ 0.30	2.5 $\pm$ 0.30	6.2	2.2	2.8
0530	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	2.8 $\pm$ 0.2	1.1 $\pm$ 0.30	1.5 $\pm$ 0.20	6.2	2.5	1.8
053P	5.7 $\pm$ 0.30	5.2 $\pm$ 0.20	2.8 $\pm$ 0.2	1.1 $\pm$ 0.30	2.5 $\pm$ 0.30	6.5	2.5	2.8
053T	4.9 $\pm$ 0.30	4.7 $\pm$ 0.20	2.8 $\pm$ 0.2	1.0 $\pm$ 0.30	1.5 $\pm$ 0.30	7.0	3.0	2.5

# Molded Power Inductor High Current AEC-Q200

PIM-053PMA1 series

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## PACKAGING DIMENSION



Size Code	Reel Dimension (mm)				Tape Dimensions (mm)								Qty 13"
	A +2/-0	B ±2.0	C ±0.5	D	W ±0.3	F ±0.1	P ±0.1	E ±0.1	A0 ±0.1	B0 ±0.1	K0 ±0.1	T ±0.05	
0312	12.4	100	13.5	330	12.0	5.5	8.0	1.5	3.5	3.8	1.5	0.35	4000
0315	12.4	100	13.5	330	12.0	5.5	8.0	1.5	3.5	3.8	1.8	0.35	4000
0320	12.4	100	13.5	330	12.0	5.5	8.0	1.5	3.5	3.8	2.3	0.35	3000
0412	12.4	100	13.5	330	12.0	5.5	8.0	1.5	4.4	5.0	1.5	0.35	4000
0415	12.4	100	13.5	330	12.0	5.5	8.0	1.5	4.4	5.0	1.8	0.35	4000
0418	12.4	100	13.5	330	12.0	5.5	8.0	1.5	4.4	5.0	2.1	0.35	3000
0420	12.4	100	13.5	330	12.0	5.5	8.0	1.5	4.4	5.0	2.3	0.35	3000
0512	12.4	100	13.5	330	12.0	5.5	8.0	1.5	5.5	6.2	1.5	0.35	4000
0515	12.4	100	13.5	330	12.0	5.5	8.0	1.5	5.5	6.2	1.8	0.35	3500
0518	12.4	100	13.5	330	12.0	5.5	8.0	1.5	5.5	6.2	2.1	0.35	3000
0520	12.4	100	13.5	330	12.0	5.5	8.0	1.5	5.5	6.2	2.3	0.35	3000
0530 (053P)	12.4	100	13.5	330	12.0	5.5	8.0	1.5	5.5	6.2	3.3	0.35	2000
053T	16.4	100	13.5	330	16.0	7.5	12.0	1.5	5.1	5.4	3.3	0.35	1000

\*Specifications subject to change without notice.