

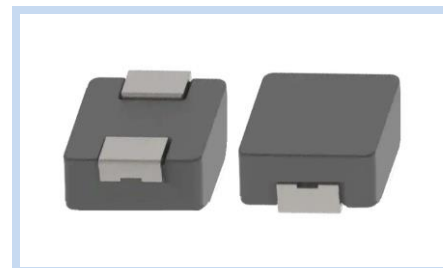
Molded Power Inductor High Current AEC-Q200

PIM-0415MA1 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



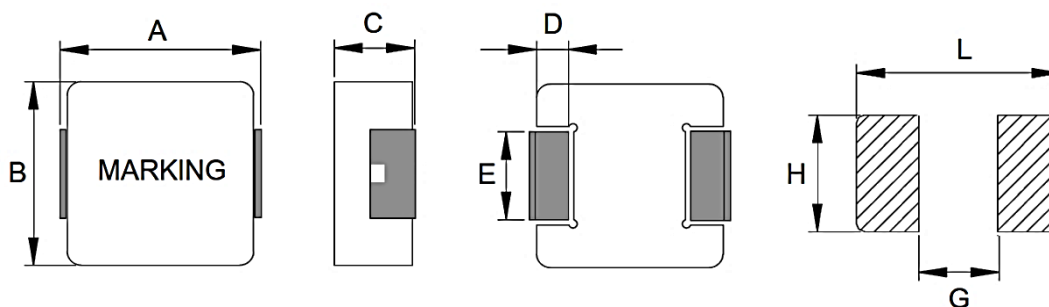
ELECTRICAL CHARACTERISTICS

| Item | Inductance (μH) | Tolerance (%) | DCR Typ. (mΩ) | DCR Max. (mΩ) | I _{SAT} Typ. (A) | I _{RMS} Typ. (A) |
|----------------|-----------------|---------------|---------------|---------------|---------------------------|---------------------------|
| PIMR22M0415MA1 | 0.22 | ±20% | 6.5 | 7.8 | 20.0 | 10.0 |
| PIMR47M0415MA1 | 0.47 | ±20% | 15.0 | 19.0 | 11.0 | 8.0 |
| PIMR68M0415MA1 | 0.68 | ±20% | 19.0 | 21.5 | 8.5 | 6.5 |
| PIM1R0M0415MA1 | 1.0 | ±20% | 34.0 | 40.0 | 7.0 | 5.0 |
| PIM2R2M0415MA1 | 2.2 | ±20% | 63.0 | 72.0 | 4.0 | 3.2 |
| PIM4R7M0415MA1 | 4.7 | ±20% | 120 | 140 | 2.8 | 2.2 |
| PIM6R8M0415MA1 | 6.8 | ±20% | 230 | 276 | 2.3 | 1.7 |
| PIM100M0415MA1 | 10.0 | ±20% | 345 | 400 | 1.9 | 1.5 |

Note:

1. Inductance test under 100KHz, 1.0V
2. All test data referenced to 25°C ambient
3. I_{SAT} based on inductance drop ($\Delta L/L0: \leq 30\%$) approximately
4. I_{RMS} 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)

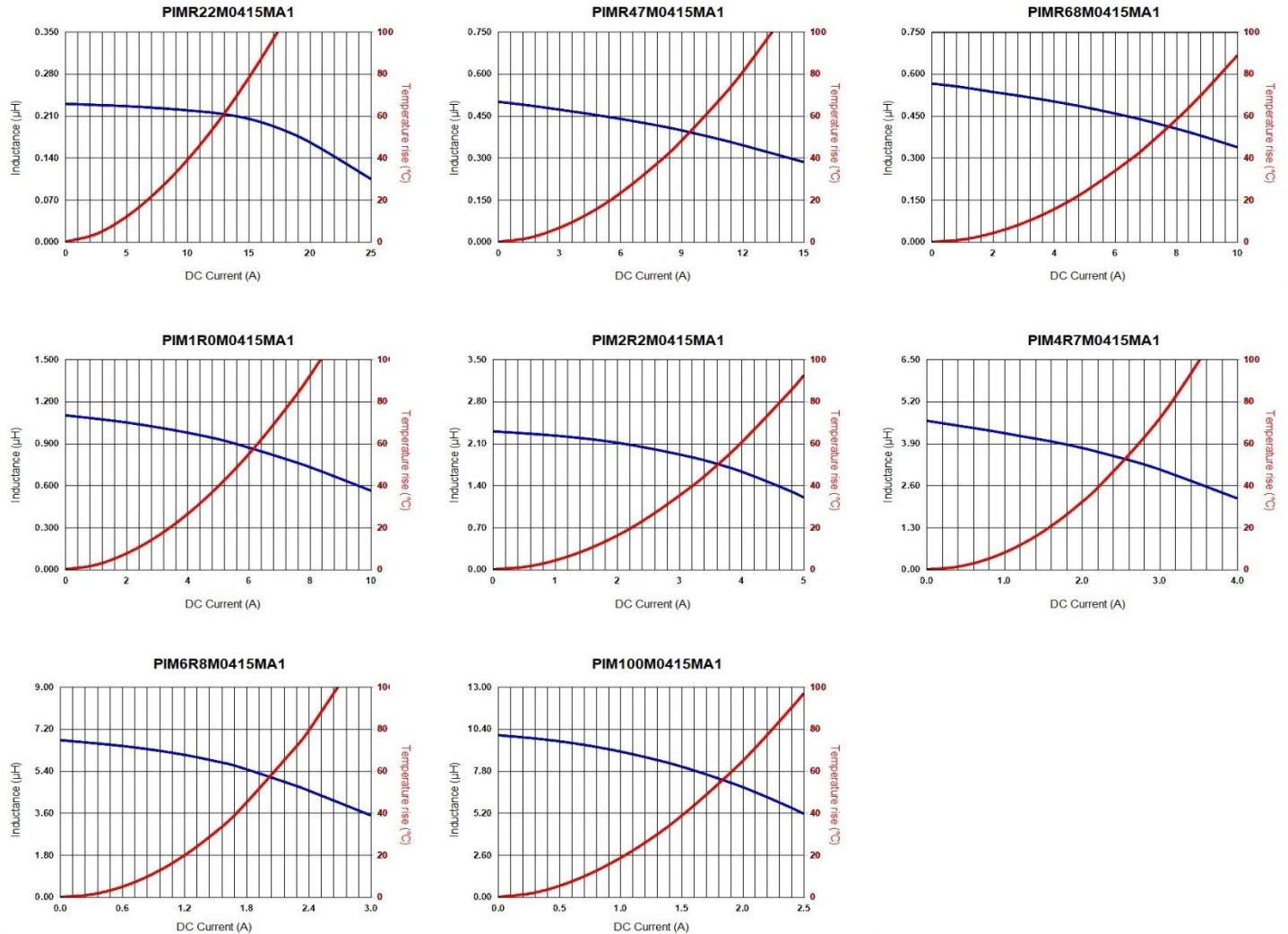
| Size Code | A | B | C | D | E | L | G | H |
|-----------|-----------|-----------|---------|-----------|----------|-----|-----|-----|
| 0415 | 4.45±0.25 | 4.06±0.25 | 1.3±0.2 | 0.76±0.30 | 2.0±0.20 | 5.2 | 2.2 | 2.4 |

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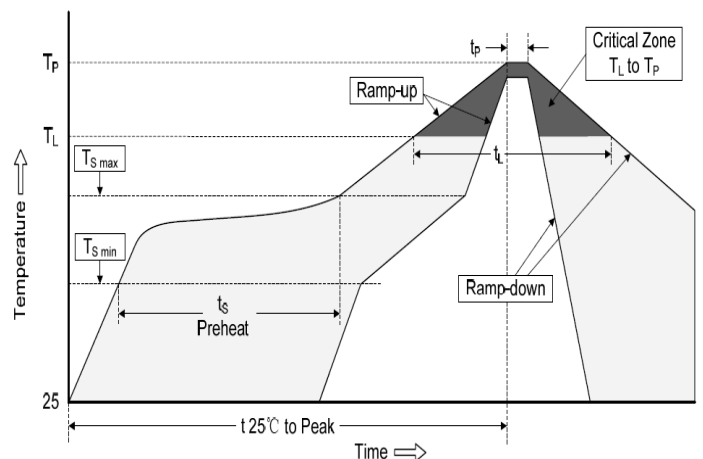
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CHARACTERISTIC CURVES



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. |



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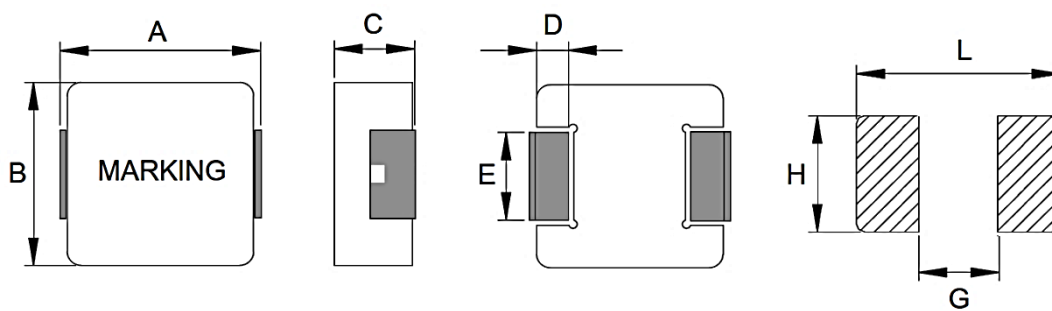
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PART NUMBERING SYSTEM

$\frac{\text{PIM}}{(1)}$ $\frac{\text{R47}}{(2)}$ $\frac{\text{M}}{(3)}$ $\frac{\text{0415}}{(4)}$ $\frac{\text{MA1}}{(5)}$

| No | item | Code | Description | |
|-----|--------------|------|--|---------------------------------------|
| (1) | Product Code | PIM | Power Inductor Series, Molded Surface Mount Type | |
| (2) | Inductance | R47 | R47: 0.47 μ H | 2R2: 2.2 μ H, 100: 10 μ H |
| (3) | Tolerance | M | M: \pm 20% | N: \pm 30% |
| (4) | Size Code | 0415 | 0415: 4.45x1.3mm | 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 |

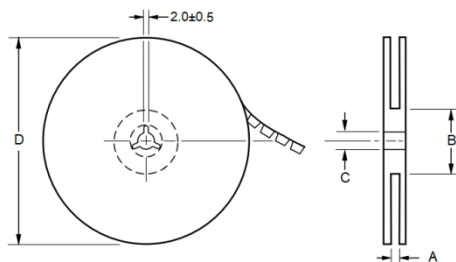
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PIM-0415MA1 series

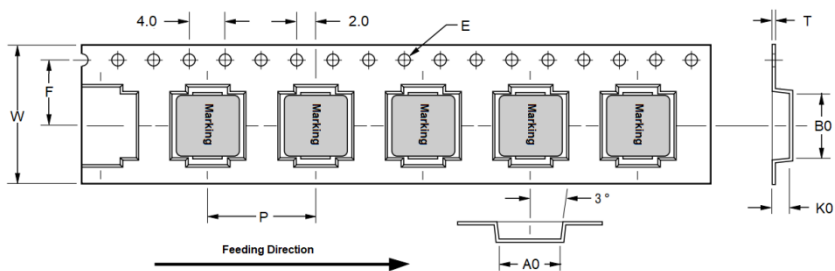
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PACKAGING DIMENSION

REEL DIMENSION



TAPE 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.