# PCA1V3230

## Automotive power-over-coax inductors for decoupling circuits

### Product features

- AEC-Q200
- High reliability
- Ferrite core wire wound construction
- 1210 (3225 metric) package in 3.2 mm height
- 0.097 grams typical
- Moisture sensitivity level (MSL): 1

### Applications

- ADAS camera
- SRR (Short range radar)
- LiDAR (Light detection and ranging)
- Vehicle communications
- Autonomous driving (3D mapping)
- Transmitting signal and power over single cable
- Decoupling circuits

### Environmental compliance and general specifications

- Operating temperature range: -55 °C to +140 °C (ambient plus self-temperature rise)
- Storage temperature (component): -55 °C to +140 °C

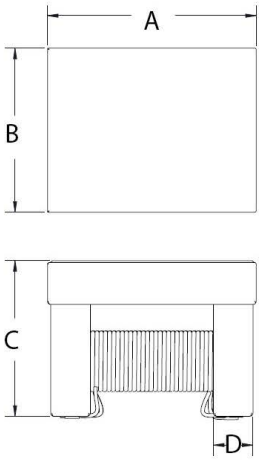
Powering Business Worldwide

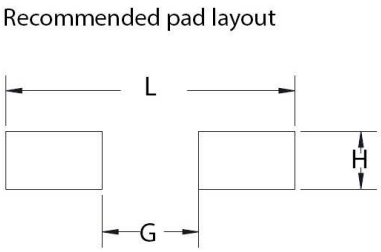
## Product specifications

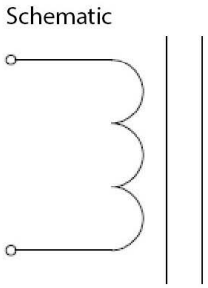
| Part number[4] | OCL[1] (µH) | DCR (Ω) @ +25 °C typical | DCR (Ω) @ +25 °C maximum | SRF (MHz) typical | $I_{sat}$[2] (mA) typical +25 °C | +85 °C | +105 °C | +125 °C | +140 °C | $I_{rms}$[3] (mA) typical +25 °C | +85 °C | +125 °C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCA1V3230-2R2-R | 2.2 ± 20% | 0.10 | 0.13 | 300 | 2200 | 1900 | 1700 | 1500 | 1300 | 1900 | 1730 | 1000 |
| PCA1V3230-6R8-R | 6.8 ± 20% | 0.20 | 0.24 | 120 | 1400 | 1000 | 930 | 800 | 700 | 1360 | 1230 | 800 |
| PCA1V3230-100-R | 10 ± 20% | 0.29 | 0.34 | 95 | 1100 | 850 | 760 | 660 | 560 | 1130 | 1020 | 570 |
| PCA1V3230-220-R | 22 ± 20% | 0.76 | 0.88 | 70 | 720 | 580 | 520 | 450 | 390 | 700 | 630 | 400 |

1. Open Circuit Inductance (OCL): Test frequency parameters: 100 kHz, 0.1 V @ 25 °C
2. $I_{sat}$: DC current that causes ≤ 30% inductance drop from its initial value.
3. $I_{rms}$: Rated current that will cause an approximate temperature rise of 40 °C @ +25 °C; 40 °C rise @ +85 °C; 15 °C rise @ +125 °C without core loss. Maximum part temperature: +140 °C (ambient temperature plus self-temperature rise).
4. Part number definition: PCA1V3230-xxx-R
   PCA1V3230= Product code and size
   xxx= inductance value in ,µH, R= decimal point, if no R is present then last character equals number of zeros
   -R suffix = RoHS compliant

## Mechanical parameters (mm)



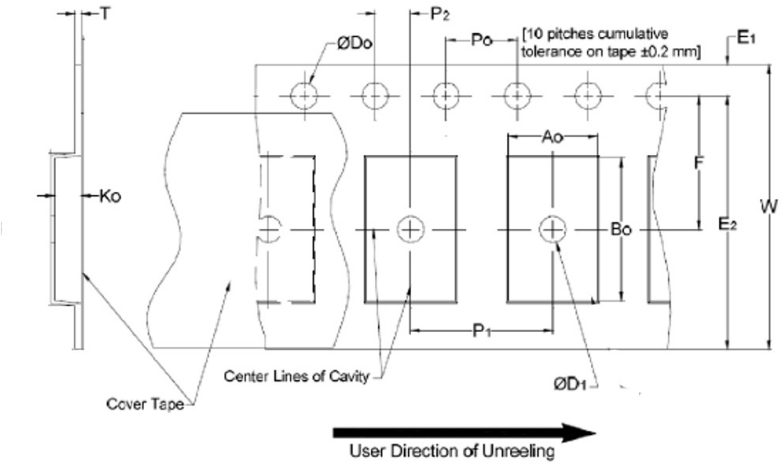

| Part number | A | B | C | D | L | G | H |
|---|---|---|---|---|---|---|---|
| PCA1V3230-XXX-R | 3.20 ± 0.20 | 2.50 ± 0.20 | 3.00 ± 0.20 | 0.58 ± 0.10 | 3.80 ref | 2.20 ref | 2.80 ref |

Part marking: No marking
All soldering surfaces to be coplanar within 0.1 millimeters
Pad layout dimensions are reference only
Traces or vias underneath the inductor is not recommended

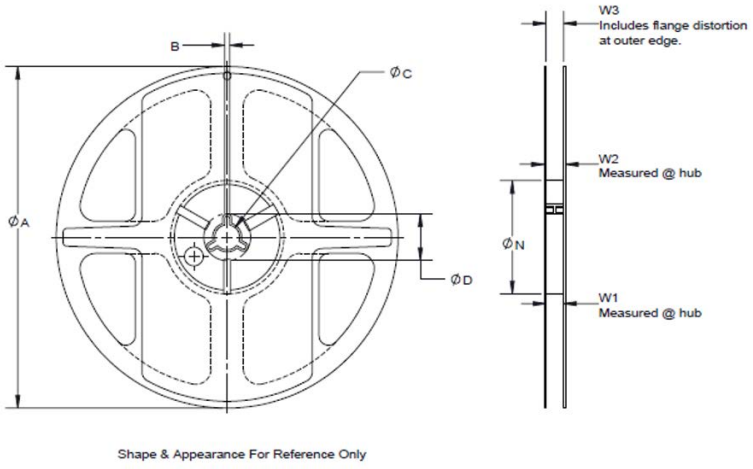
**Packaging information (mm)**

Drawing not to scale

Supplied in tape and reel packaging, 500 parts per 7" diameter reel (EIA-481 compliant)



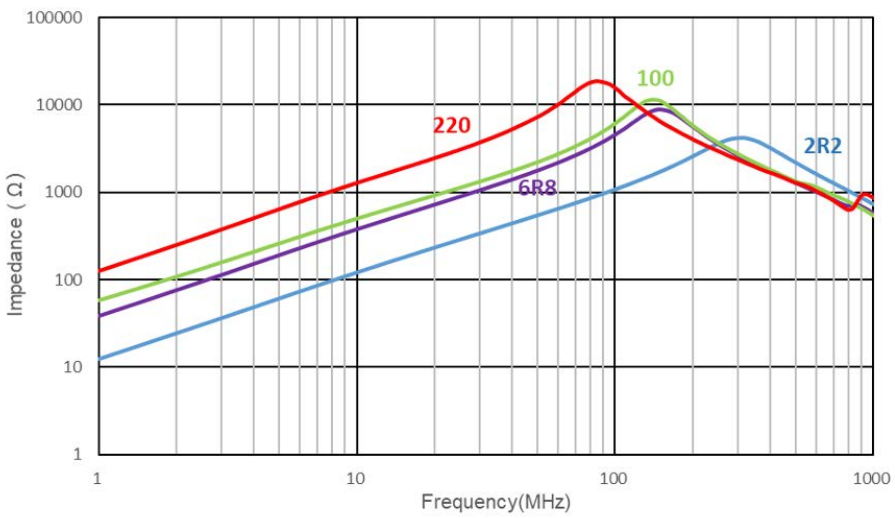

| | |
|---|---|
| Ao | 2.85 ± 0.1 |
| Bo | 3.55 ± 0.1 |
| Ko | 3.1 ± 0.1 |
| T | 0.35 ± 0.05 |
| W | 12 ± 0.1 |
| F | 5.5 ± 0.05 |
| E1 | 1.75 ± 0.1 |
| E2 | N/A |
| P0 | 4 ± 0.1 |
| P1 | 8 ± 0.1 |
| P2 | 2 ± 0.05 |
| D0 | 1.5 + 0.1/-0 |
| D1 | 1.5 ± 0.1 |



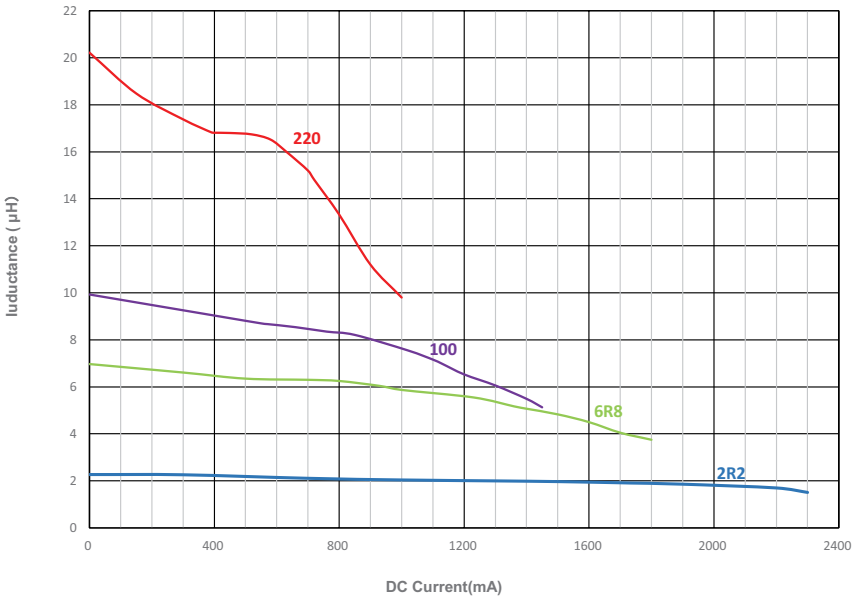

Shape & Appearance For Reference Only

| | |
|---|---|
| Type | 7"*12 |
| A | 178 ± 2 |
| B | 2 ± 0.5 |
| C | 13.5 ± 0.5 |
| D | 21 |
| N | 60 ± 2 |
| W1 | 13.5 ± 0.5 |
| W2 | N/A |
| W3 | N/A |

## Impedance vs frequency




## Inductance vs DC current



## Solder reflow profile

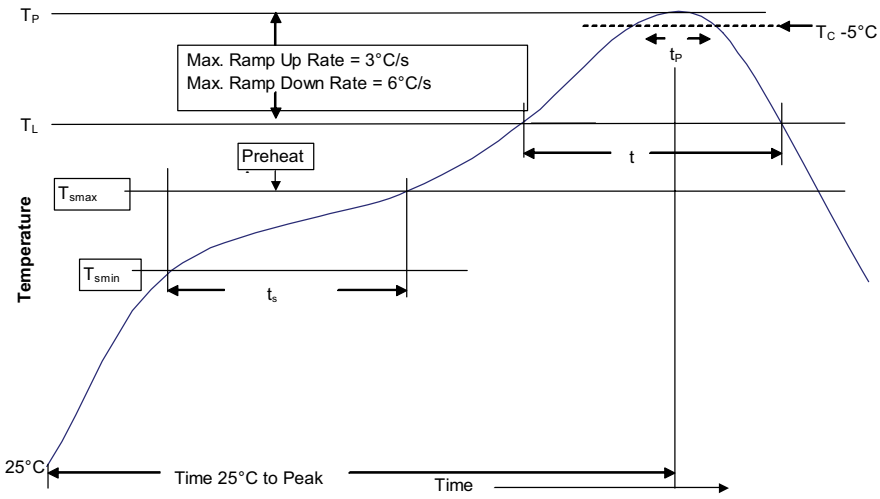



**Table 1 - Standard SnPb solder ($T_C$)**

| Package thickness | Volume mm3 <350 | Volume mm3 ≥350 |
|---|---|---|
| <2.5 mm | 235 °C | 220 °C |
| ≥2.5 mm | 220 °C | 220 °C |

**Table 2 - Lead (Pb) free solder ($T_C$)**

| Package thickness | Volume mm³ <350 | Volume mm³ 350 - 2000 | Volume mm³ >2000 |
|---|---|---|---|
| <1.6 mm | 260 °C | 260 °C | 260 °C |
| 1.6 – 2.5 mm | 260 °C | 250 °C | 245 °C |
| >2.5 mm | 250 °C | 245 °C | 245 °C |

## Reference J-STD-020

| Profile feature | | Standard SnPb solder | Lead (Pb) free solder |
|---|---|---|---|
| Preheat and soak | • Temperature min. ($T_{smin}$) | 100 °C | 150 °C |
| | • Temperature max. ($T_{smax}$) | 150 °C | 200 °C |
| | • Time ($T_{smin}$ to $T_{smax}$) ($t_s$) | 60-120 seconds | 60-120 seconds |
| Ramp up rate $T_L$ to $T_p$ | | 3 °C/ second max. | 3 °C/ second max. |
| Liquidous temperature ($T_L$)<br>Time ($t_L$) maintained above $T_L$ | | 183 °C<br>60-150 seconds | 217 °C<br>60-150 seconds |
| Peak package body temperature ($T_P$)* | | Table 1 | Table 2 |
| Time ($t_p$)* within 5 °C of the specified classification temperature ($T_C$) | | 20 seconds* | 30 seconds* |
| Ramp-down rate ($T_p$ to $T_L$) | | 6 °C/ second max. | 6 °C/ second max. |
| Time 25 °C to peak temperature | | 6 minutes max. | 8 minutes max. |

* Tolerance for peak profile temperature ($T_p$) is defined as a supplier minimum and a user maximum.



**Eaton**
**Electronics Division**
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com/electronics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