

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



Product specifications

Part number ⁴	OCL ¹ (μH)	DCR (Ω) @ +25 °C		SRF (MHz) typical	I _{sat} ² (mA) typical					I _{rms} ³ (mA) typical		
		typical	maximum		+25 °C	+85 °C	+105 °C	+125 °C	+140 °C	+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).

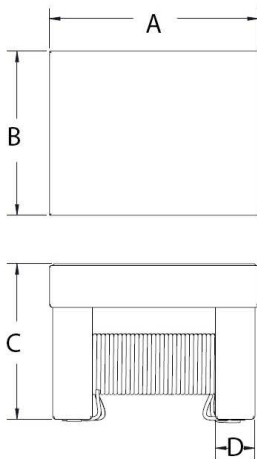
4. Part number definition: PCA1V3230-xxx-R

PCA1V3230= Product code and size

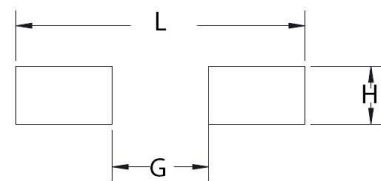
xxx= inductance value in μH, R= decimal point, if no R is present then last character equals number of zeros

-R suffix = RoHS compliant

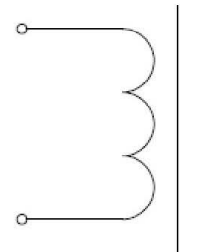
Mechanical parameters (mm)



Recommended pad layout



Schematic



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

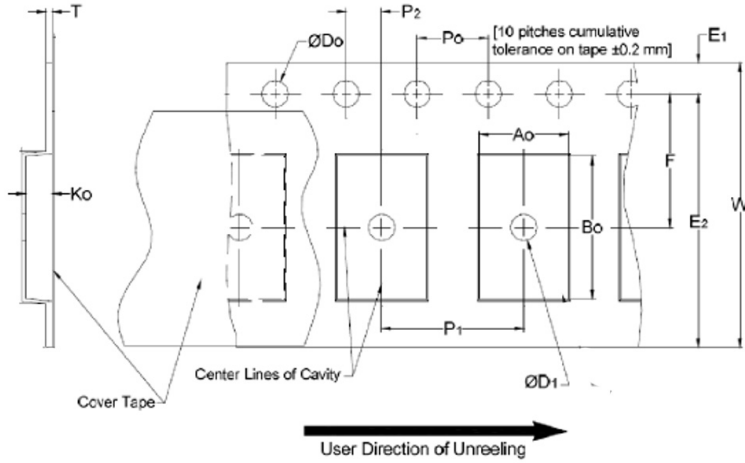
Pad layout dimensions are reference only

Traces or vias underneath the inductor is not recommended

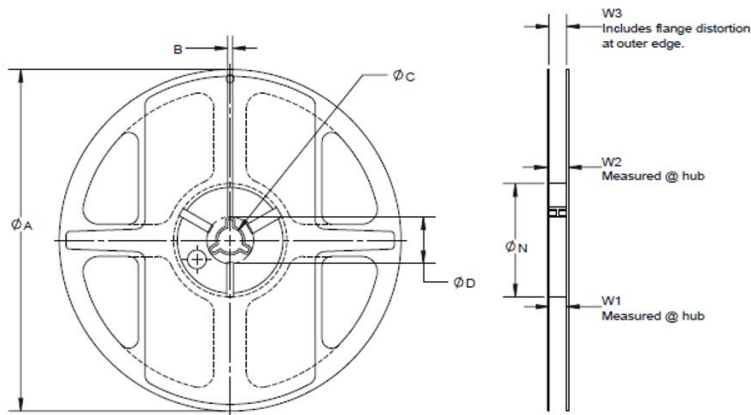
Packaging information (mm)

Drawing not to scale

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



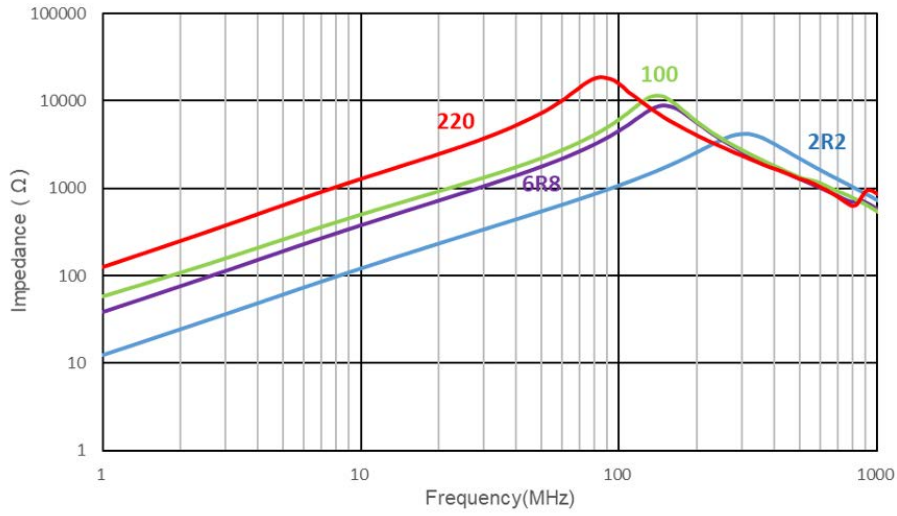
Ao	2.85 ± 0.1
Bo	3.55 ± 0.1
Ko	3.1 ± 0.1
T	0.35 ± 0.05
W	12 ± 0.1
F	5.5 ± 0.05
E1	1.75 ± 0.1
E2	N/A
P0	4 ± 0.1
P1	8 ± 0.1
P2	2 ± 0.05
D0	1.5 + 0.1/-0
D1	1.5 ± 0.1



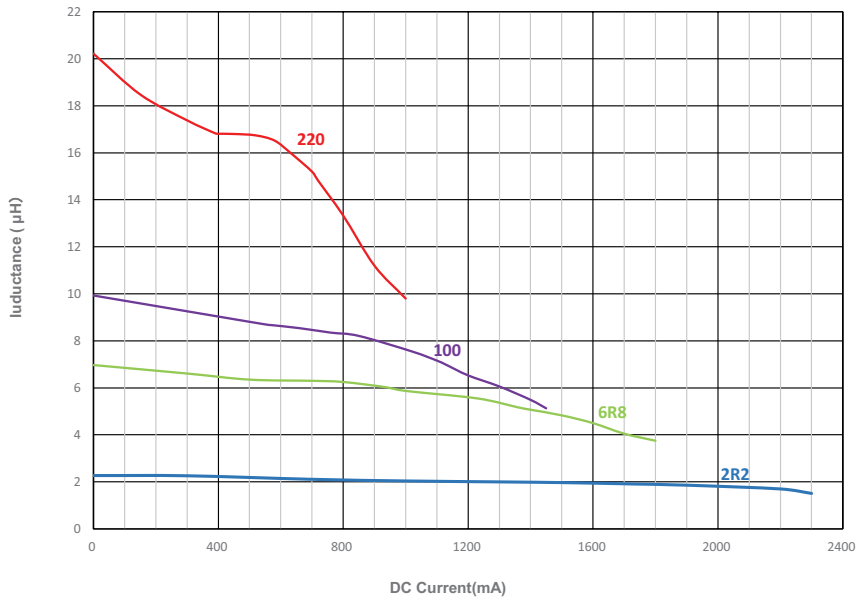
Shape & Appearance For Reference Only

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

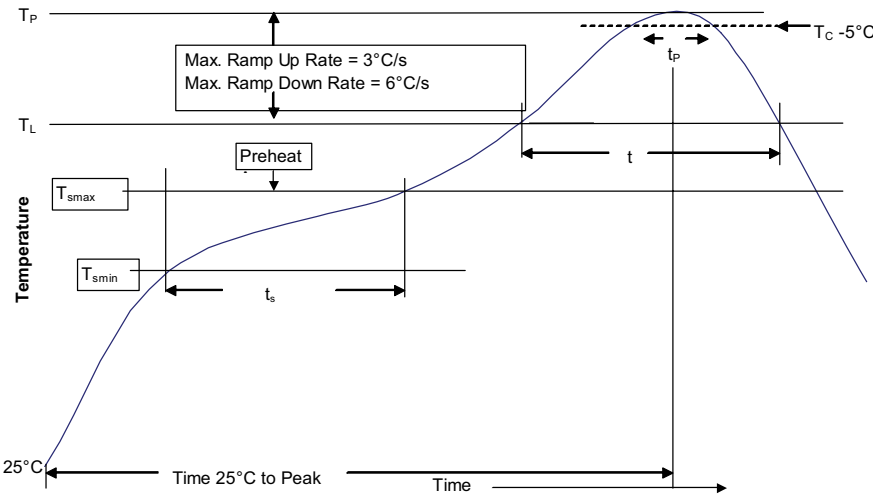


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥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 mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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)	183 °C	217 °C
Time (t _L) maintained above T _L	60-150 seconds	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.

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