

CMLA

Automotive grade common-mode noise suppressor chip inductor



Product features

- AEC-Q200 qualified
- Square type closed magnetic core allows smaller inductor
- Low profile design
- 700 ohm impedance in 3 sizes
- Excellent impedance characteristics to suppress common and differential-mode noise
- Moisture sensitivity level (MSL): 1

Applications

- Automotive power line filter
- Automotive equipment and devices
- Infotainment
- Engine control unit (ECU)
- ECU Power filtering
- Electric power steering system (EPS)
- LED Lighting
- DC power lines
- Multi-media devices

Environmental compliance and general specifications

- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Storage temperature range (component): -40 °C to +125 °C



Powering Business Worldwide

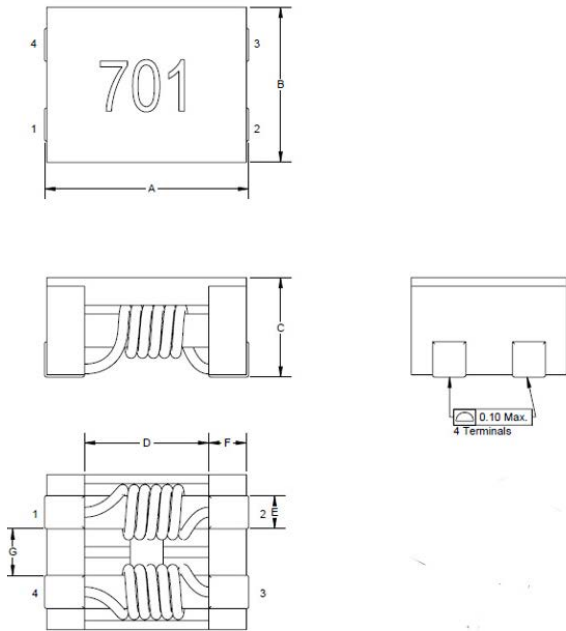
Product specifications

Part number ³	Common-mode impedance ¹ (Ω) typical	Common-mode impedance ¹ (Ω) minimum	DCR (mΩ) @ +25 °C maximum	Rated current ² (A) maximum	Rated voltage (Vdc) maximum	Insulation resistance @ 125 Vdc (MΩ) minimum
CMLA0706-701-R	700	500	15	4.0	125	10
CMLA0907-701-R	700	500	10	5.0	125	10
CMLA1211-701-R	700	500	6.0	8.0	125	10

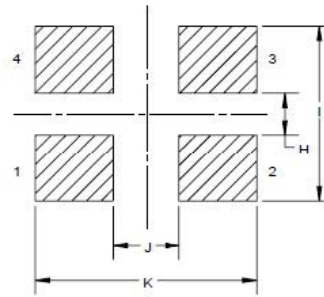
1. Common-mode impedance test parameters: 100 MHz, 0.5 Vrms, +25 °C
2. Rated current: DC current for an approximate temperature rise of 40 °C without core loss. It is recommended that the temperature of the part not exceed +125 °C under worst case operating conditions verified in the end application.

3. Part Number Definition: CMLAxxx-yyy-R
CMLA = Product code
xxx= Size indicator
yyy= Impedance value in ohms. R= decimal point, if no R is present then last digit indicates the number of zeros
-R suffix = RoHS compliant

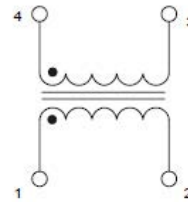
Mechanical parameters, schematic, pad layout (mm)



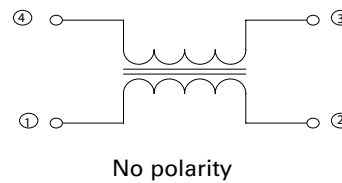
Recommended pad layout



Schematic



Equivalent circuit



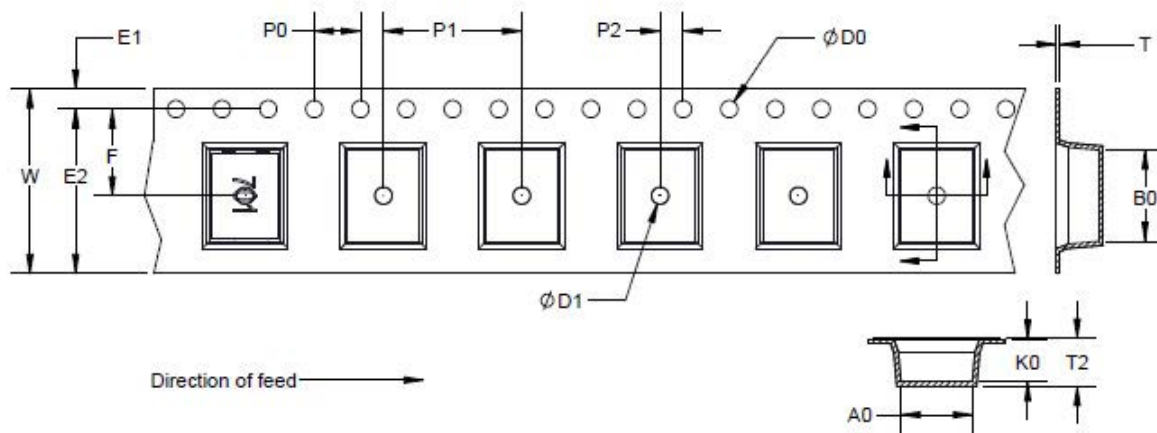
Dimension	CMLA0706-701-R	CMLA0907-701-R	CMLA1211-701-R
A	8.0 maximum	10 maximum	13 maximum
B	6.2 maximum	7.5 maximum	11.5 maximum
C	4.0 maximum	4.8 maximum	7.0 maximum
D	3.5 ref	5.6 ref	7 ref
E	1.5 ref	1.5 ref	2.7 ref
F	1.7 ref	1.7 ref	2.5 ref
G	1.5 ref	1.8 ref	2.5 ref
H	1.2 ref	1.5 ref	2.0 ref
I	4.8 ref	5.2 ref	8.5 ref
J	3.0 ref	5.0 ref	6.5 ref
K	8.0 ref	10.5 ref	12.5 ref

Part marking: xxx= Impedance value in ohms
All soldering surfaces to be coplanar within 0.1 millimeters
Traces or vias underneath the inductor is not recommended

Packaging information (mm)

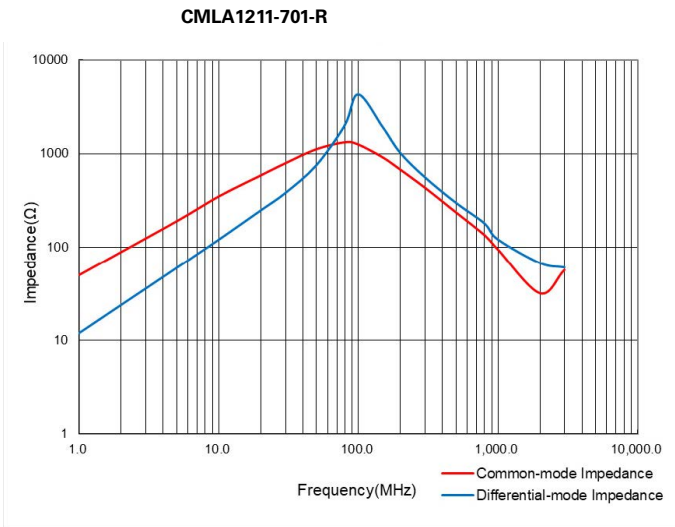
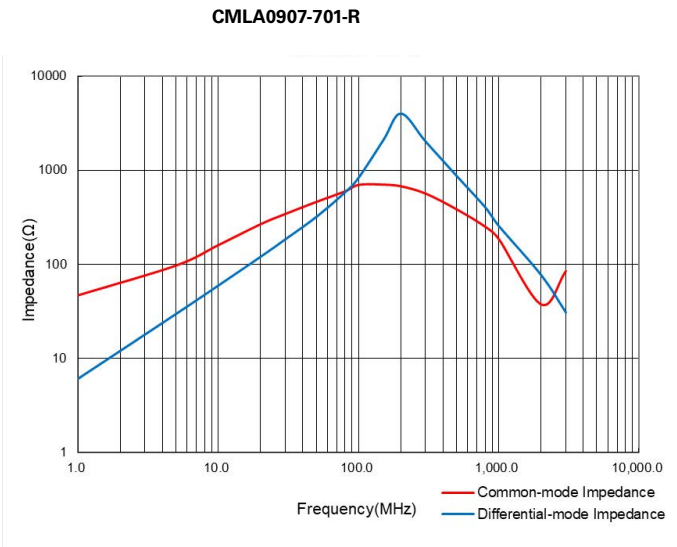
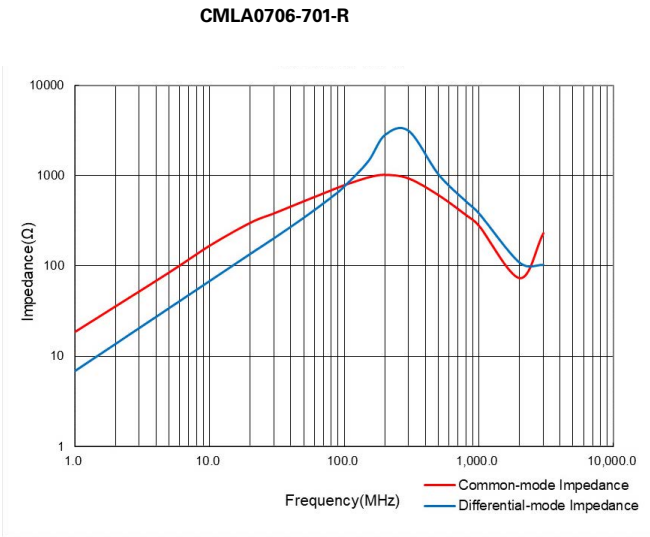
Supplied in tape and reel packaging, 13" diameter reel

CMLA0706-xxx-R 1100 parts per reel, CMLA0907-xxx-R 800 parts per reel, CMLA1211-xxx-R 500 parts per reel



Dimension	CMLA0706-701-R	CMLA0907-701-R	CMLA1211-701-R
W	16 ±0.3	24 ±0.3	24 ±0.3
F	7.5 ±0.1	11.5 ±0.1	11.5 ±0.1
E1	1.75 ±0.1	1.75 ±0.1	1.75 ±0.1
E2	na	na	na
P0	4.0 ±0.1	4.0 ±0.1	4.0 ±0.1
P1	12 ±0.15	16 ±0.15	16 ±0.15
P2	2.0 ±0.1	2.0 ±0.1	2.0 ±0.1
D0	1.5 +0.1/-0	1.5 +0.1/-0	1.5 +0.1/-0
D1	1.5 +0.1/-0	1.5 +0.1/-0	1.5 +0.1/-0
A0	6.2 ±0.1	7.6 ±0.1	11.1 ±0.15
B0	7.7 ±0.1	9.6 ±0.1	12.9 ±0.15
K0	3.7 ±0.1	5.0 ±0.1	6.4 ±0.1
T	0.35 ±0.05	0.4 ±0.05	0.4 ±0.05
T2	4.28 max	5.61 max	7.01 max

Impedance vs frequency



Solder reflow profile

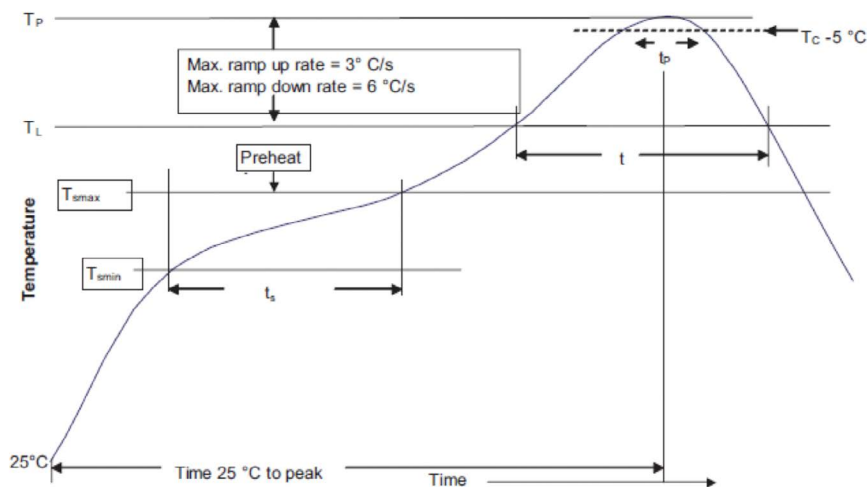


Table 1 - Standard SnPb solder (T_C)

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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