Technical Data **ELX1114** Effective December 2021

# ECMS1V1306

## Common mode choke, surface mount

### Product features

- High frequency filter
- Square type closed magnetic core
- Current rating up to 10 A
- 13 mm x 11.3 mm surface mount package in a 6.4 mm height
- Moisture sensitivity level (MSL): 1

### Applications

- Battery backup
- Renewable energy products
- High tech consumer products
- Appliances
- LED lighting
- Smart meters
- Industrial IoT equipment
- Motion controls
- Power supplies
- Medical equipment

### Environmental compliance and general specifications

- Storage temperature (component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant

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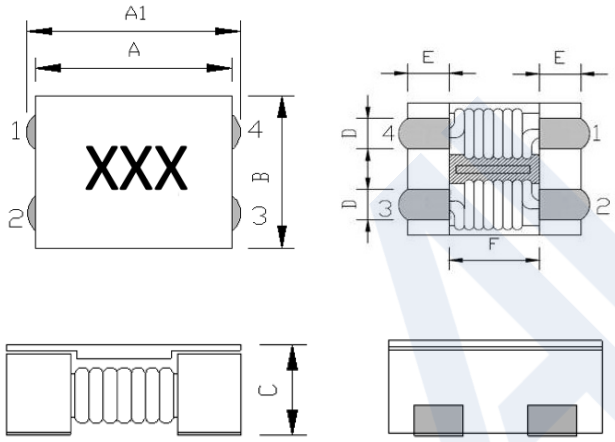
## Product specifications

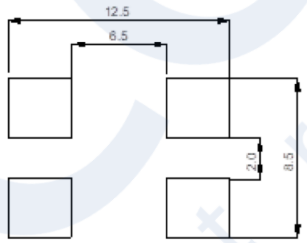
| Part number[5] | Impedance[1] (Ω) mimimum | Impedance[1] (Ω ) typical | DCR[2] (mΩ) @ +25 °C maximum | Rated current[3] (A) maximum | Rated voltage (Vdc) maximum | Insulation resistance[4] @ (MΩ) minimum |
|---|---|---|---|---|---|---|
| ECMS1V1306-231-R | 80 | 230 | 2.0 | 10 | 80 | 10 |
| ECMS1V1306-701-R | 500 | 700 | 6.0 | 8.0 | 80 | 10 |
| ECMS1V1306-801-R | 600 | 800 | 8.0 | 8.0 | 80 | 10 |
| ECMS1V1306-102-R | 750 | 1000 | 14 | 6.0 | 80 | 10 |

1. Impedance test parameters: 100 MHz, 0.1 Vrms, parallel connection (1,2 - 4,3), +25 °C
2. DCR test parameters: parallel connection (1,2 - 4,3), 4-wire method measured at +25°C
3. 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.
4. Insulation resistance: Coil to coil
5. Part Number Definition: ECMS1Vxxxx-yyy-R
   ECMS1V = Product code
   xxxx= Size indicator
   yyy= Typical impedance value in ohms. R= decimal point, if no R is present then last digit indicates the number of zeros
   -R suffix = RoHS compliant

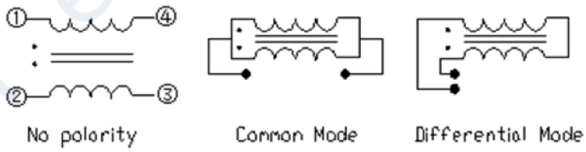
## Mechanical parameters, schematic, pad layout (mm)




Recommended PCB Layout




Schematic

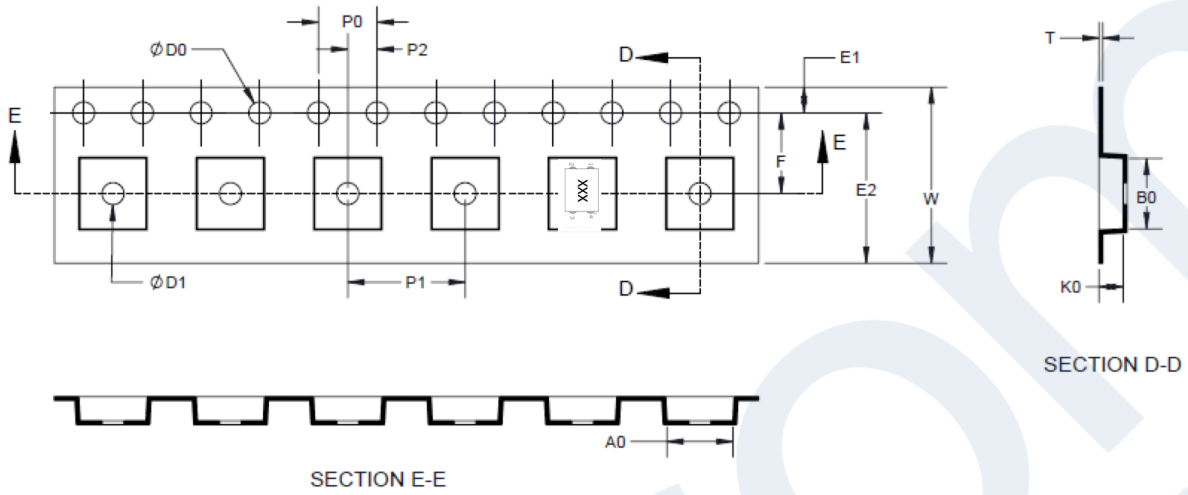



| Dimension | Value |
|---|---|
| A | 12.0 ±0.5 |
| A1 | 12.5 ±0.5 |
| B | 10.8 ±0.5 |
| C | 6.4 maximum |
| D | 2.7 typical |
| E | 2.5 typical |
| F | 7.0 typical |

Part marking: xxx= Typical impedance value in ohms
All soldering surfaces to be coplanar within 0.1 millimeters
Tolerances are ±0.5 millimeters unless stated otherwise
Traces or vias underneath the inductor is not recommended

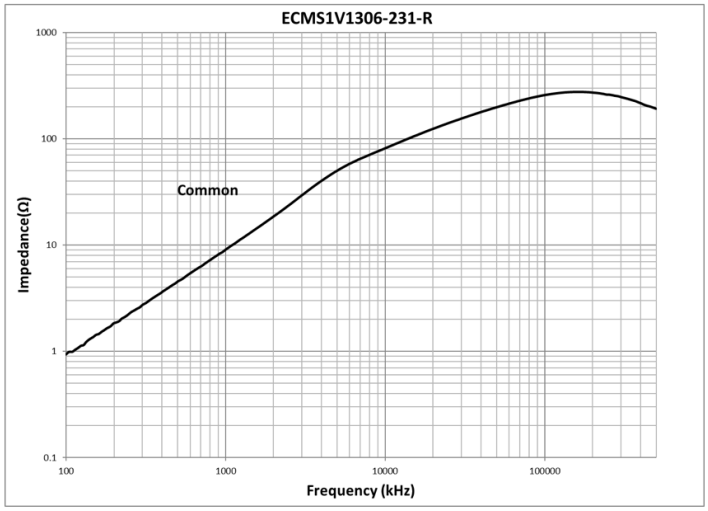
### Packaging information (mm)

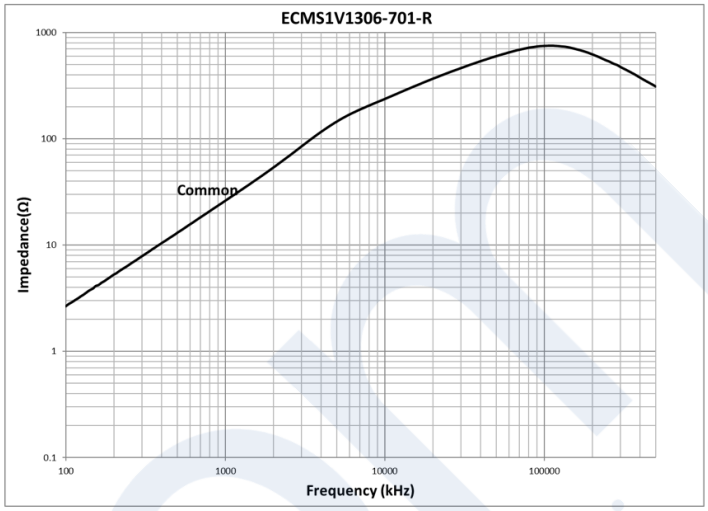
Supplied in tape and reel packaging, 13" diameter reel (EIA-481 compliant)
500 parts per reel

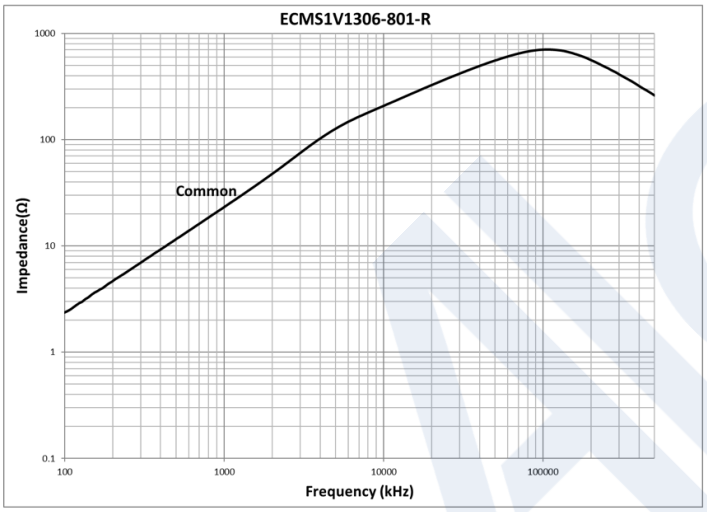


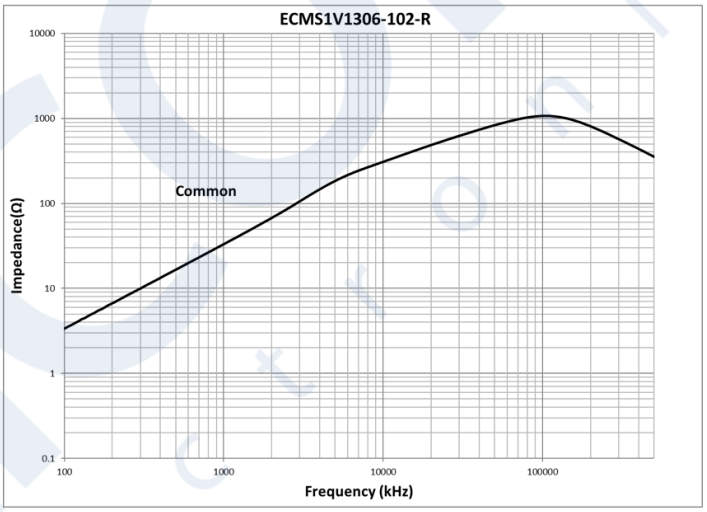

| Dimension | Value |
|---|---|
| W | 24.0 ±0.3 |
| F | 11.5 ±0.1 |
| E1 | 1.75 ±0.1 |
| E2 | na |
| P0 | 4.0 ±0.1 |
| P1 | 16 ±0.1 |
| P2 | 2.0 ±0.1 |
| D0 | 1.5 +0.1/-0 |
| D1 | 1.5 +0.1/-0 |
| A0 | 12.5 ±0.1 |
| B0 | 11.5 ±0.1 |
| K0 | 6.6 ±0.1 |
| T | 0.4 ±0.05 |

**Impedance vs frequency**



## Solder reflow profile

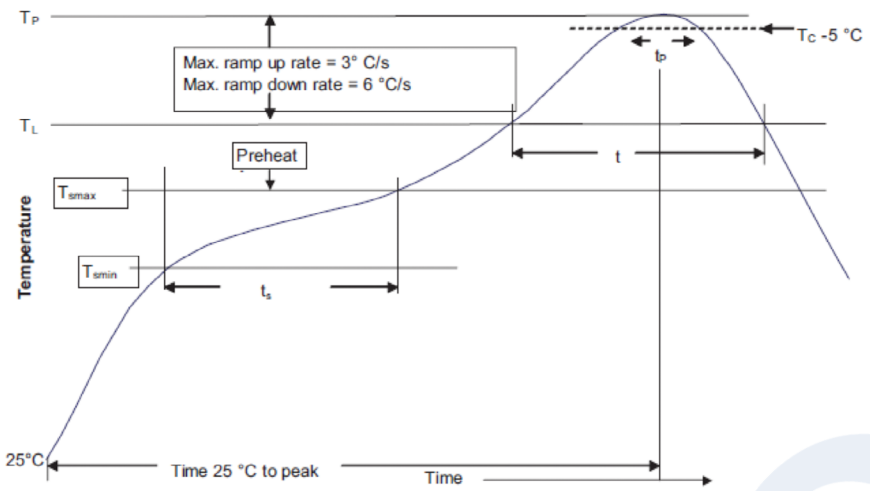



**Table 1 - Standard SnPb solder ($T_C$)**

| 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.



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