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EMI Common Mode Choke
Automotive Grade
APPM Series

Overview

An EMI common mode choke (CMC) for power lines is a passive component specifically designed to suppress electromagnetic interference (EMI) in power supply circuits
A full series of common mode choke is designed for excellent noise attenuation with compact sizing for use in wide range of applications. Both standard series and custom designs are available.

Benefits

1. Automotive DC Power Line Common Mode Filter
2. Ferrite NiZn core offers high Z@High frequency
3. Ferrite Ni-Zn+MnZn core offers High Z @ Low frequency
4. Operating temperature range－40°C～125°C
5. Excellent solderability

Applications

1. Networking
2. EMI solutions for charger
3. Media player, Dashboard
4. Battery management
5. Lighting, MCU, Infotainment

Product Information

Series	Size Code (JIS/EIA)	Impedance(Ω)
APPM	5050/2020 7060/2824 9070/3628 1211/4844 1513/6052 4850/1920	70 ~ 4300





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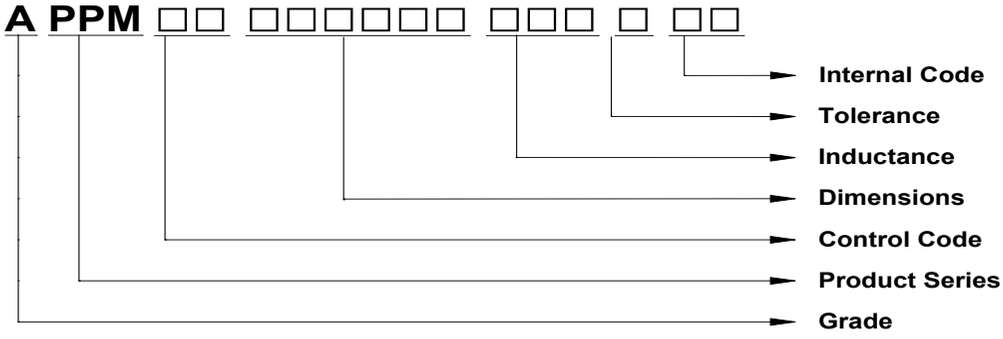
APPM00050524 Series Specification

AEC-Q200

1 Scope:

This specification applies to the Pb Free DC Power Line Common Mode Filter

2 Part Numbering:



3 Rating:

Operating Temperature range:-40°C ~ +125°C (Including self temp. rise)

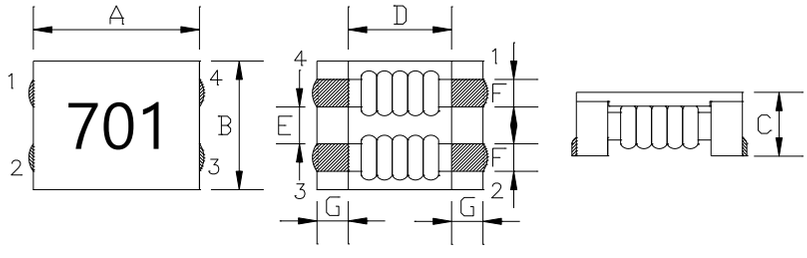
Storage Temperature range: -40°C ~ +125°C (For after the circuit board is mounted)

Storage Temperature: (on tape & reel): -20°C to +40°C; 75% RH max.

4 Standard Testing Condition:

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35℃)	20 to 30℃
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80 %RH

5 Configuration and Dimensions and Unit Weight:



A:	4.7±0.5	mm
B:	4.5±0.5	mm
C:	2.4Max.	mm
D:	2.7Typ.	mm
E:	0.75Typ.	mm
F:	1.25Typ.	mm
G:	1.0Typ.	mm

Marking：XXX

Marking color : Black

Net Weight (grms)

SIZE CODE	Net Weight (grms)
050524	0.12(Typ.)

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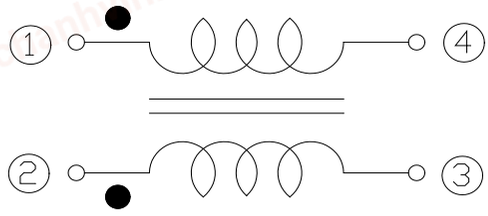
APPM00050524 Series Specification

AEC-Q200

6 Electrical Characteristics:

PT/NO.	Impedance(Ω) at 100MHz		Resistance RDC(mΩ) Max.(1 line)	Rated Current (A) Max.	Insulation Resistance (MΩ) Min.	Rated Voltage (V)Max.
	Min.	Typ.				
APPM00050524301XYE	100	300	45	3.0	10	50
APPM00050524401XYE	200	400	50	2.5	10	50
APPM00050524701XYE	500	700	59	2.2	10	50
APPM00050524102XYE	800	1000	68	2.1	10	50
APPM00050524122XYE	1000	1200	74	2.0	10	50
APPM00050524142XYE	1200	1400	81	1.9	10	50

CIRCUIT DIAGRAM



NOTE:

1.Rated DC Current：Based on temperature rise （△T：40°C Typ.)

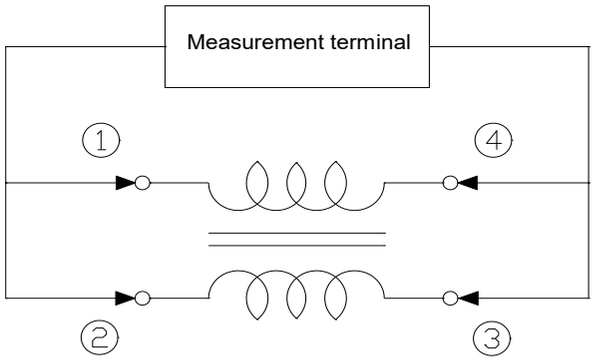
2.Hi-Pot(Pri-Sec) ：500V DC/ 1mA/ 3 seconds

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6 Electrical Characteristics:

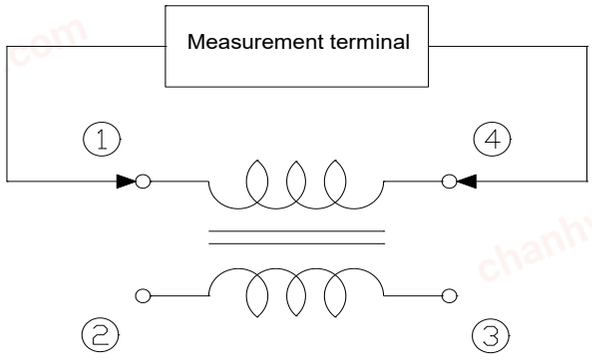
(6)-1 Impedance

Measured by HP4291B RF Impedance Analyzer.



(6)-2 DC Resistance

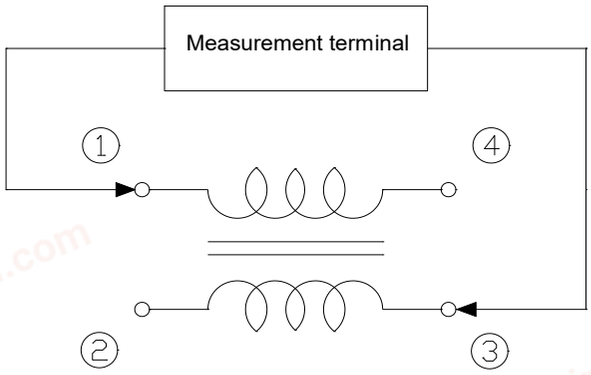
Measured by Chroma 16502 milliohm meter.



(6)-3 Insulation Resistance

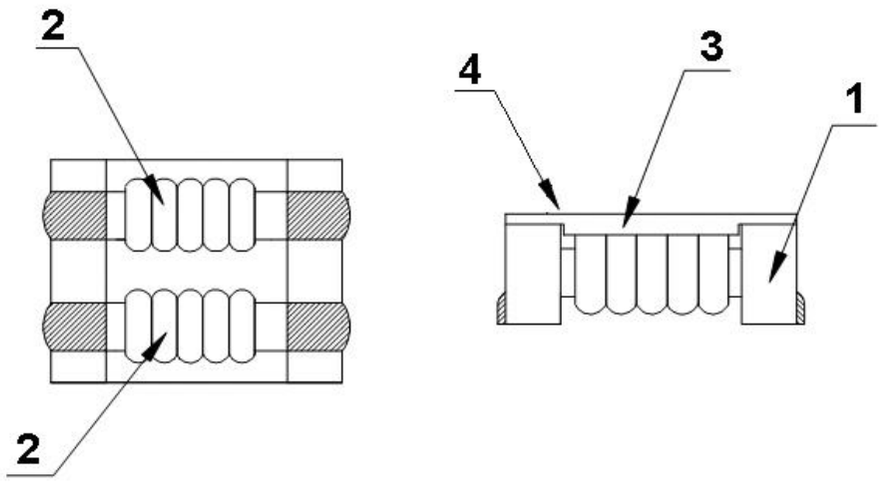
Measured by Chroma 19073

Measurement voltage : 50V ,Measurement time : 3 sec.



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6 6.1 Construction:

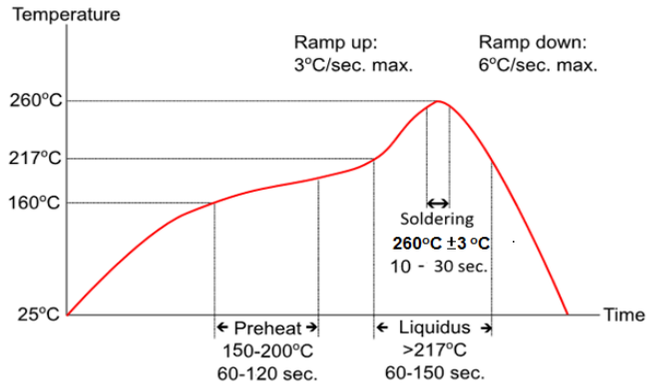
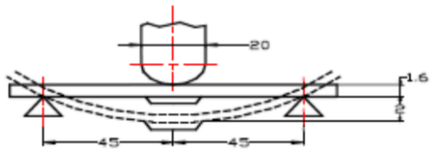


6.2 Material List:

NO.	ITEM	DESCRIPTION & TYPE
1	CORE	FERRITE
2	Wire	Magnet Wire
3	Cover	LCP
4	Marking	INK

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MECHANICAL

TEST ITEM	SPECIFICATIONS	TEST CONDITIONS
Solderability	No more than 5% of the solderable metalization exposed underlying, non-wettable base metal or metallization layers or portions of the ceramic substrate after expoisure to molten solder.	Refer to J-STD-002 For both Leaded & SMD. Electrical Test not required. Test Method B @ 245±5°C, dwell for 5+0/-0.5 seconds
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	Temperature profile of reflow soldering  Note: 1. Re-Flow Possible times:within 3 times 2. Nitrogen adopted is recommended while in re-flow
Terminal strength	The terminal electrode and the ferrite must not damaged.	With the component mounted on a PCB obtained from the Supplier with the device to be tested, apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.
Strength on PC board bending	The terminal electrode and the ferrite must not damaged.	Test device shall be soldered on the substrate Substrate Dimension: 100x40x1.6mm Deflection: 2.0mm Keeping Time: 60 sec 
High Temperature Exposure (Storage)	Impedance:Within±20% of the initial value. Insulation resistance and DC resistance on the specification shall be met. The terminal electrode and the ferrite must not damaged.	1000hrs. at rated operating temperature, part can be stored for 1000 hrs. @ 150°C. Unpowered. Measurement at 24±4 hours after test conclusion.

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APPM00050524 Series Specification

AEC-Q200

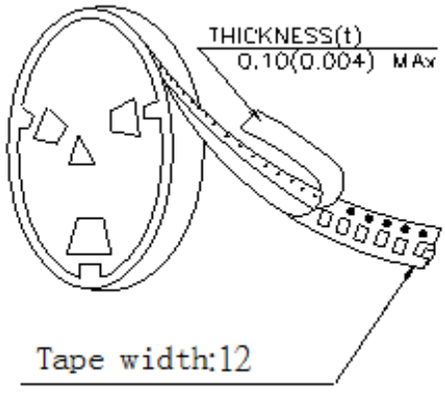
MECHANICAL

TEST ITEM	SPECIFICATIONS	TEST CONDITIONS
Humidity Bias	Impedance:Within±20% of the initial value. Insulation resistance and DC resistance on the specification shall be met. The terminal electrode and the ferrite must not damaged.	Precondition: Reflow peak temperature 260°C 3 times. (Reference: J-STD-020) 1000 hours 85°C/85%RH. Unpowered. Measurement at 24±4 hours after test conclusion.
Vibration	Impedance:Within±20% of the initial value. Insulation resistance and DC resistance on the specification,shall be met. The terminal electrode and the ferrite must not damaged.	MIL-STD-202 Method 204 5 g's for 20 minutes, 12 cycles each of 3 orientations. Test from 10-2000Hz.
Temperature Cycling	Impedance:Within±20% of the initial value. Insulation resistance and DC resistance on the specification,shall be met. The terminal electrode and the ferrite must not damaged.	Precondition: Reflow peak temperature 260°C 3 times. (Reference: J-STD-020) 1000 cycles (-55°C to +150°C). Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.
High Temperature Operating Life	Impedance:Within±20% of the initial value. Insulation resistance and DC resistance on the specification,shall be met. The terminal electrode and the ferrite must not damaged.	Precondition: Reflow peak temperature 260°C 3 times. (Reference: J-STD-020) 1000 hrs. @ 125 °C, apply maximum rated power. Measurement 24±4 hours after test conclusion.
Physical Dimensions	Verify physical dimensions to the applicable component detail specification.	Any applicable method using x10 magnification, micrometers, calipers, gauges, contour projectors, or other measuring equipment, capable of determining the actual specimen dimensions.
Mechanical Shock	1. Electrical characterization- Impedance:Within±20% change range 2. Appearance-No damage (OM)	Units are non-operating. Pulse shape : Half-sine waveform Impact acceleration : 100 g's Pulse duration : 6 ms Number of shocks : 18 shocks (3 shocks for each face)
Flammability	The marking and A side have no obvious broken, and the marking are clearly	Refer to UL 94 Burning stops within 10 seconds on a vertical specimen; drips of particles allowed as long as they are not inflamed.

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7 Packaging:

7.1 Packaging -Cover Tape

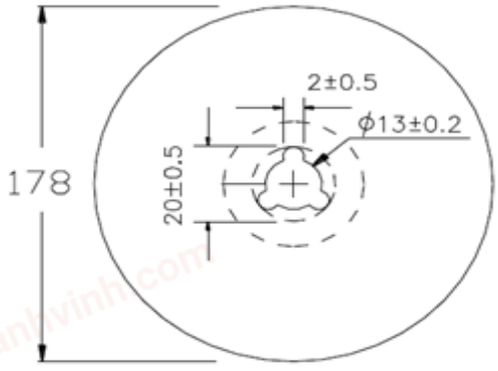


7.2 Packaging Quantity

TYPE	PCS/REEL
APPM00050524	1000

7.3 Reel Dimensions

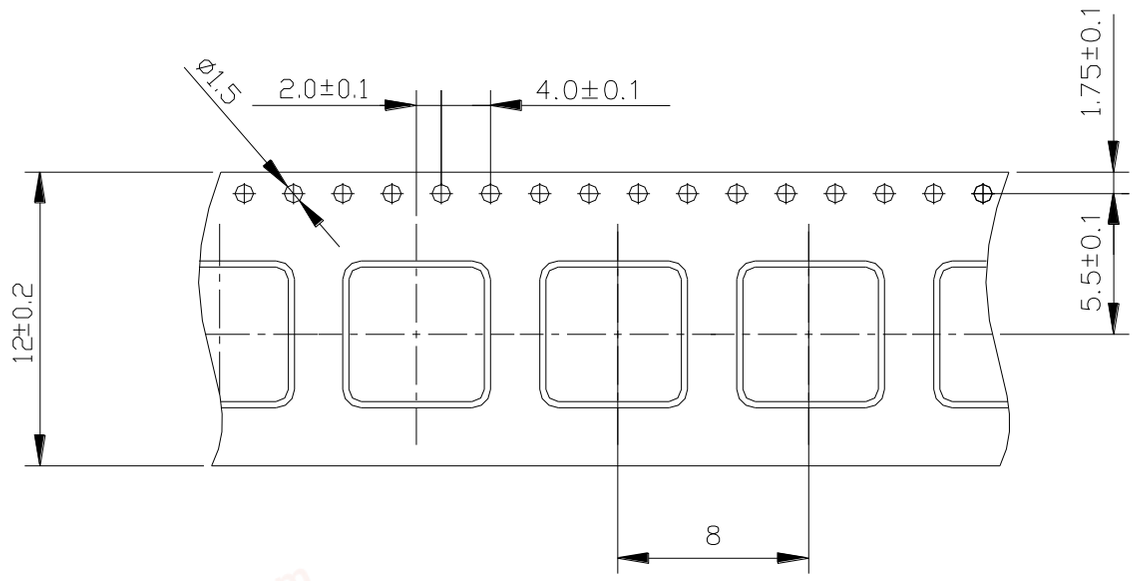
Unit : mm



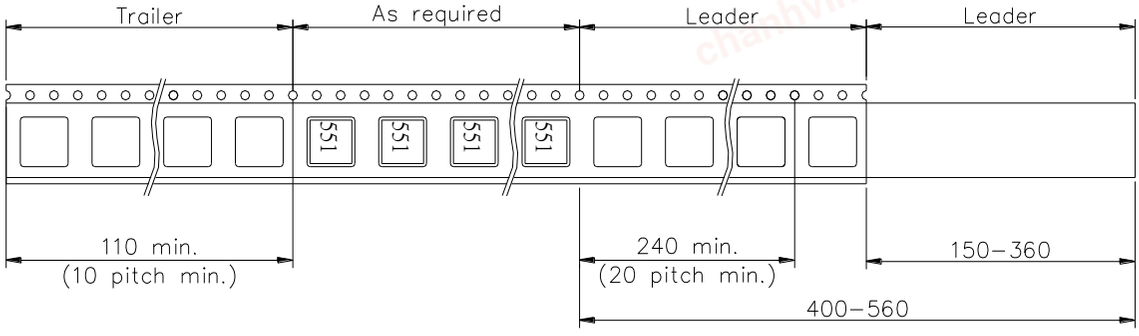
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7 Packaging:

7.4 Tape Dimensions in mm

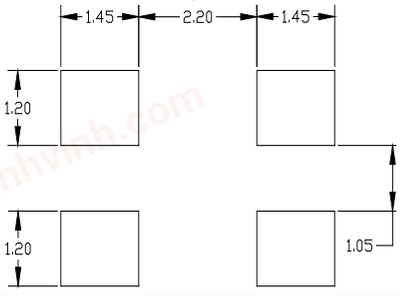


Unreeling Direction



8 Recommended Land Pattern:

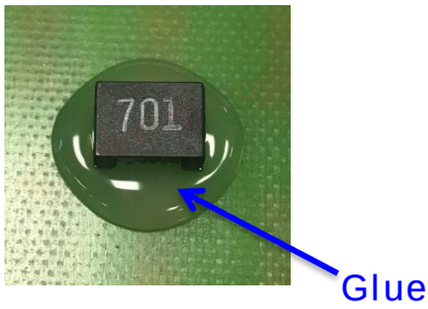
(STANDARD PATTERN) **Unit : mm**



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9 Note:

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock or drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose,under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. Please keep the distance between transformer/coil and other components
   (refer to the standard IEC 950)
5. The moisture sensitivity level (MSL) of products is classified as level 1.
6. Suggestion
   On customer side this product series need to be fixed by the glue after IR reflow.
   Please refer to below example photo:



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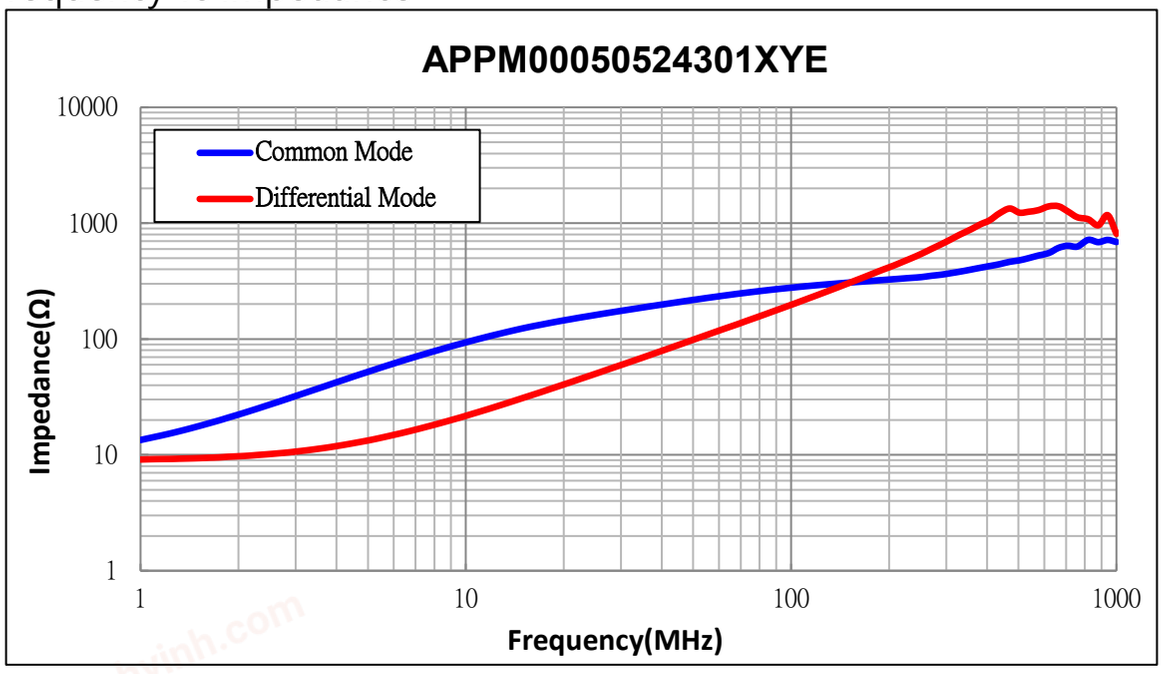
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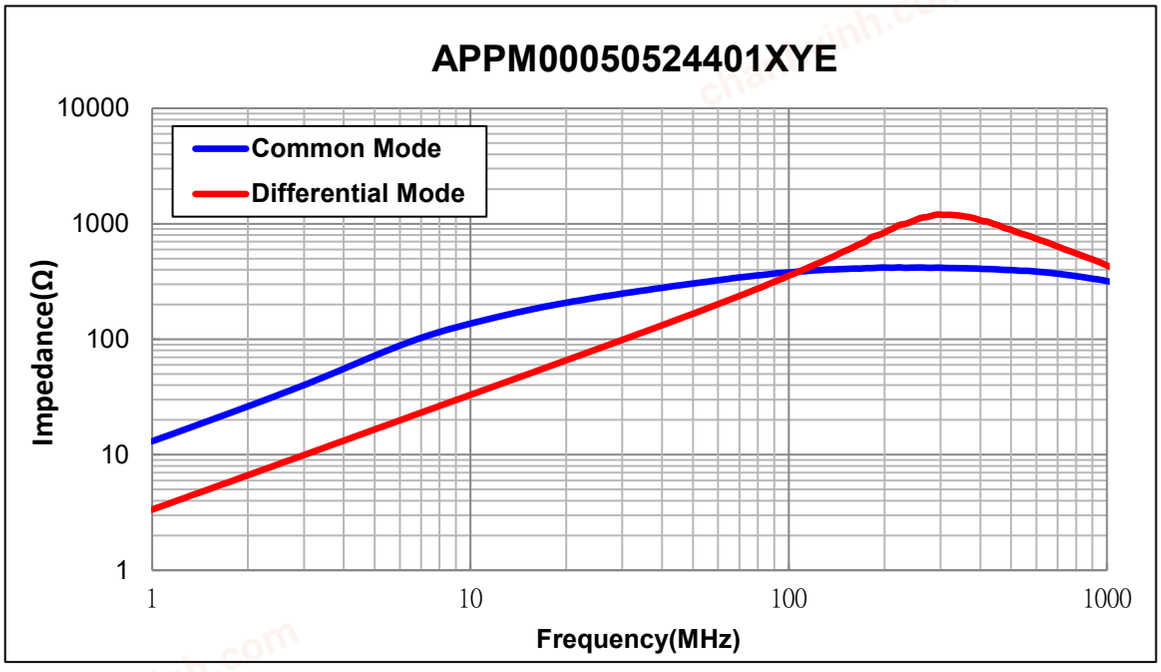
APPM00050524 Series Specification

AEC-Q200

TYPICAL ELECTRICAL CHARACTERISTICS

Frequency vs impedance





ATTACHMENT

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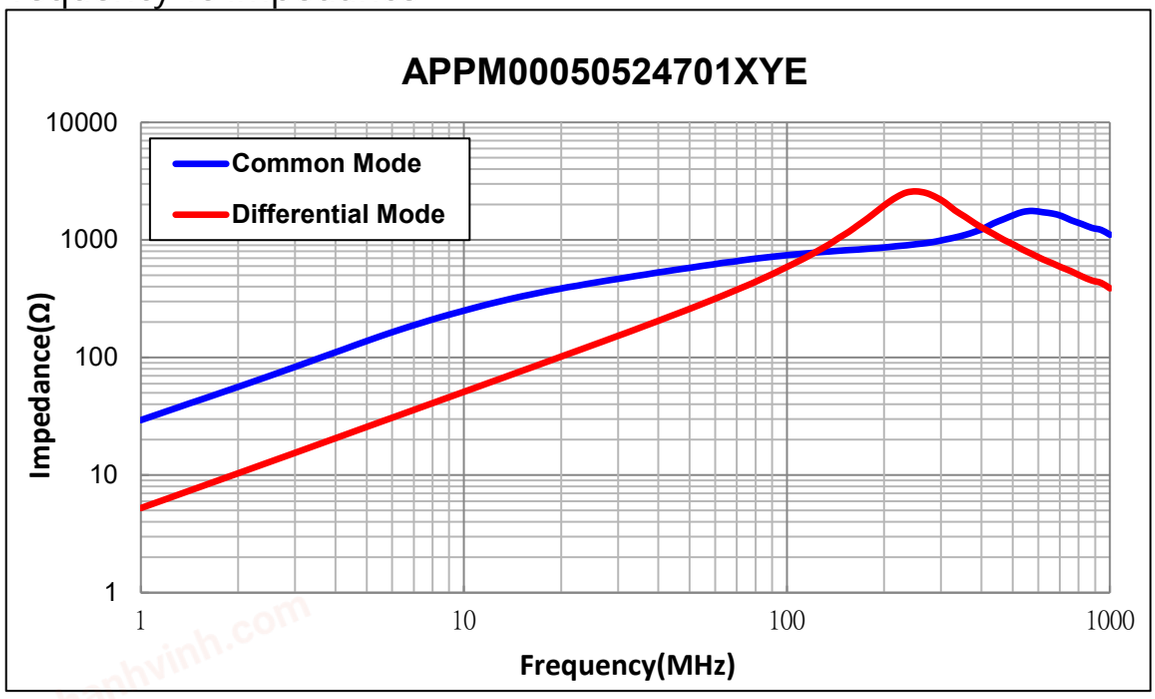
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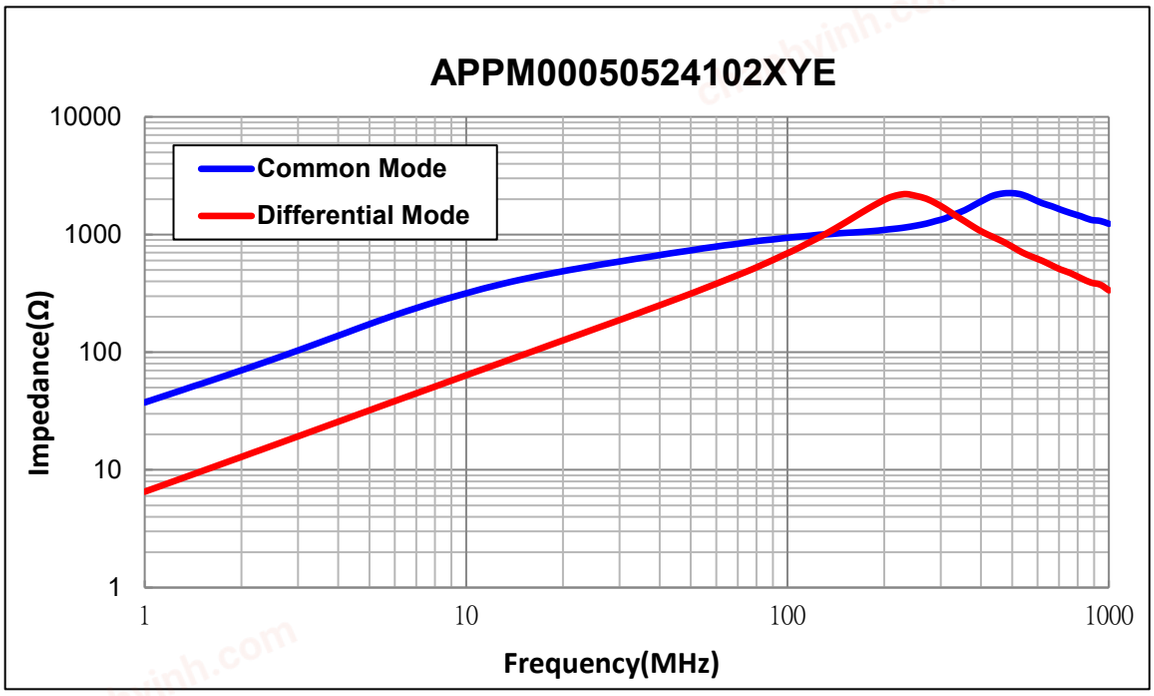
APPM00050524 Series Specification

AEC-Q200

TYPICAL ELECTRICAL CHARACTERISTICS

Frequency vs impedance





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TYPICAL ELECTRICAL CHARACTERISTICS

Frequency vs impedance

