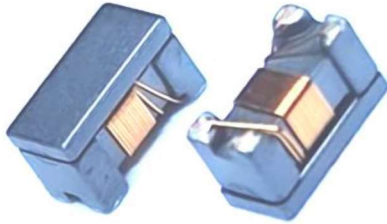




Common Mode Choke ECM2012F Series Product Specifications

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Common Mode Choke — ECM2012F Series



Application

- Power switch and servers.
- USB communication.
- Telecommunication applications.
- Panel link for LCD panels.
- Countering common mode noise affecting signals in high-speed lines.

Features

- 100% Lead (Pb)-Free and RoHS compliant.
- High common mode impedance at high frequency effects excellent noise suppression performance.

Parts Number Explanation

Example:

ECM	2012	F	300	F	T	W	Z
Product Type	Size (mm)	Application	impedance (Ω)	HSF	Package	Internal Code	Optional
Common Mode Choke	2012		300 : 30 Ω ±25% 900 : 90 Ω ±25% 501 : 500 Ω ±25% 102 : 1000 Ω ±25%	Products (Hazardous Substance Free Products)	T : Taping		Z : Default Code



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Standard Electrical Specifications

Part No.	Z (Impedance) @100MHZ	DCR (1 Line)	IR	Rated Current (Vdc)	Irms (A)
	Ω	mΩ	MΩ	V	mA
	±25%	MAX	MIN	/	MAX
ECM2012F-300F-TWZ	30	200	10	50	450
ECM2012F-500F-TWZ	50	250	10	50	550
ECM2012F-750F-TWZ	75	250	10	50	400
ECM2012F-900F-TWZ	90	300	10	50	400
ECM2012F-101F-TWZ	100	300	10	50	400
ECM2012F-121F-TWZ	120	300	10	50	370
ECM2012F-161F-TWZ	160	350	10	50	350
ECM2012F-181F-TWZ	180	350	10	50	350
ECM2012F-201F-TWZ	200	350	10	50	350
ECM2012F-221F-TWZ	220	350	10	50	350
ECM2012F-251F-TWZ	250	400	10	50	320
ECM2012F-261F-TWZ	260	400	10	50	300
ECM2012F-301F-TWZ	300	400	10	50	290
ECM2012F-361F-TWZ	360	400	10	50	280
ECM2012F-371F-TWZ	370	450	10	50	280
ECM2012F-481F-TWZ	480	550	10	50	200
ECM2012F-501F-TWZ	500	550	10	50	200
ECM2012F-601F-TWZ	600	550	10	50	200
ECM2012F-671F-TWZ	670	600	10	50	180
ECM2012F-681F-TWZ	680	700	10	50	180
ECM2012F-751F-TWZ	750	800	10	50	150
ECM2012F-801F-TWZ	800	1000	10	50	150
ECM2012F-901F-TWZ	900	1000	10	50	100
ECM2012F-102F-TWZ	1000	1000	10	50	100



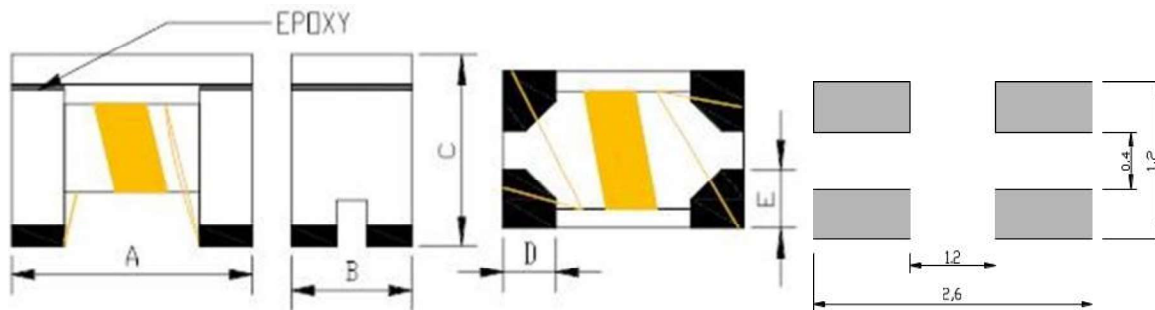
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Notes:

1. All test data is referenced to 25 °C ambient.
2. Operating temperature range - 40 °C to + 125 °C.
3. Irms (A): DC current (A) that will cause an approximate ΔT of 40 °C (reference ambient temperature is 25 °C).
4. The part temperature (ambient + temp rise) should not exceed 125 °C under worst case operating conditions.
Circuit design, component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

■ Dimensions



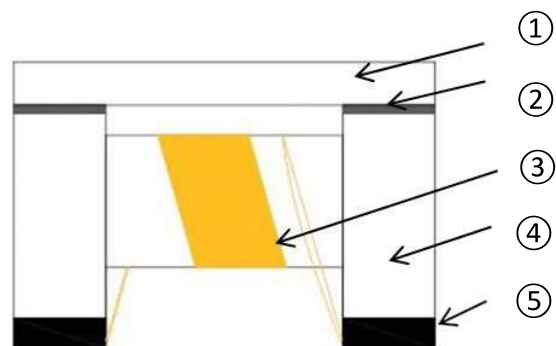
Recommend Land Pattern

Unit: mm

Type	A	B	C	D	E
ECM2012F	2.00 ±0.20	1.20 ±0.20	1.20 ±0.20	0.5 typ.	0.5 typ.

■ Structure and Components

Symbol	Components	Material name
①	LID	Ni-Zn Ferrite
②	EPOXY	Epoxy Resin
③	WIRE	Enameled copper wire
④	CORE	Ni-Zn Ferrite
⑤	Electrode structure	Ag + Ni + Sn plating

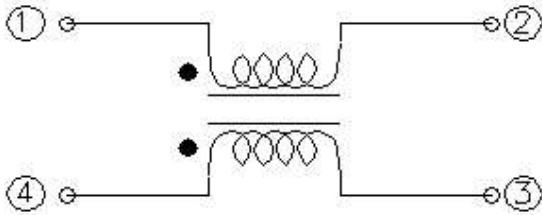




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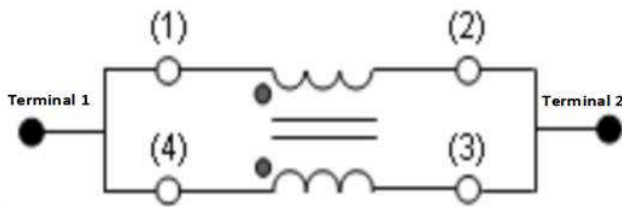
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■ Schematic Diagram

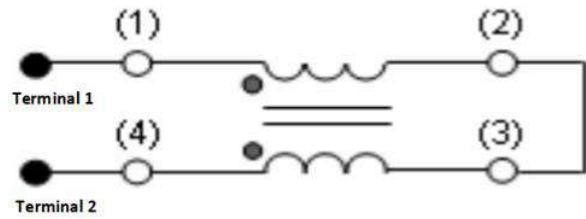


■ Measuring Circuits 2Line

1) Common mode :



2) Differential mode :

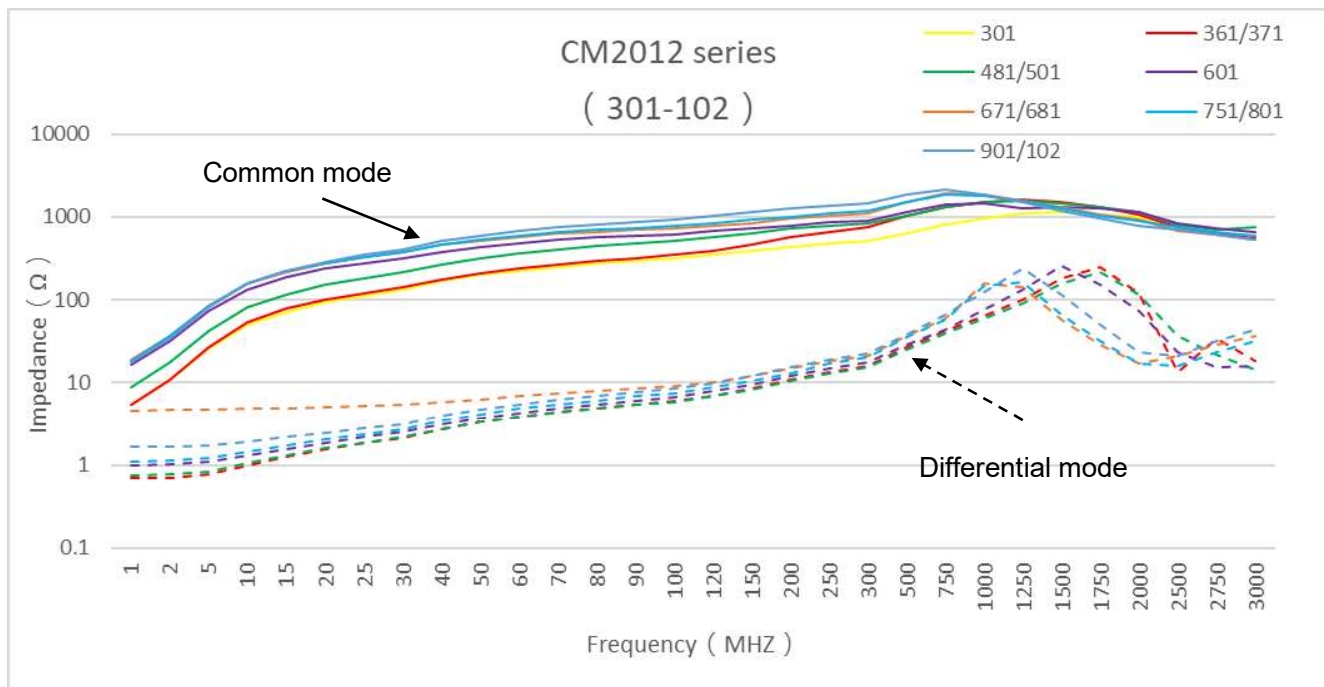
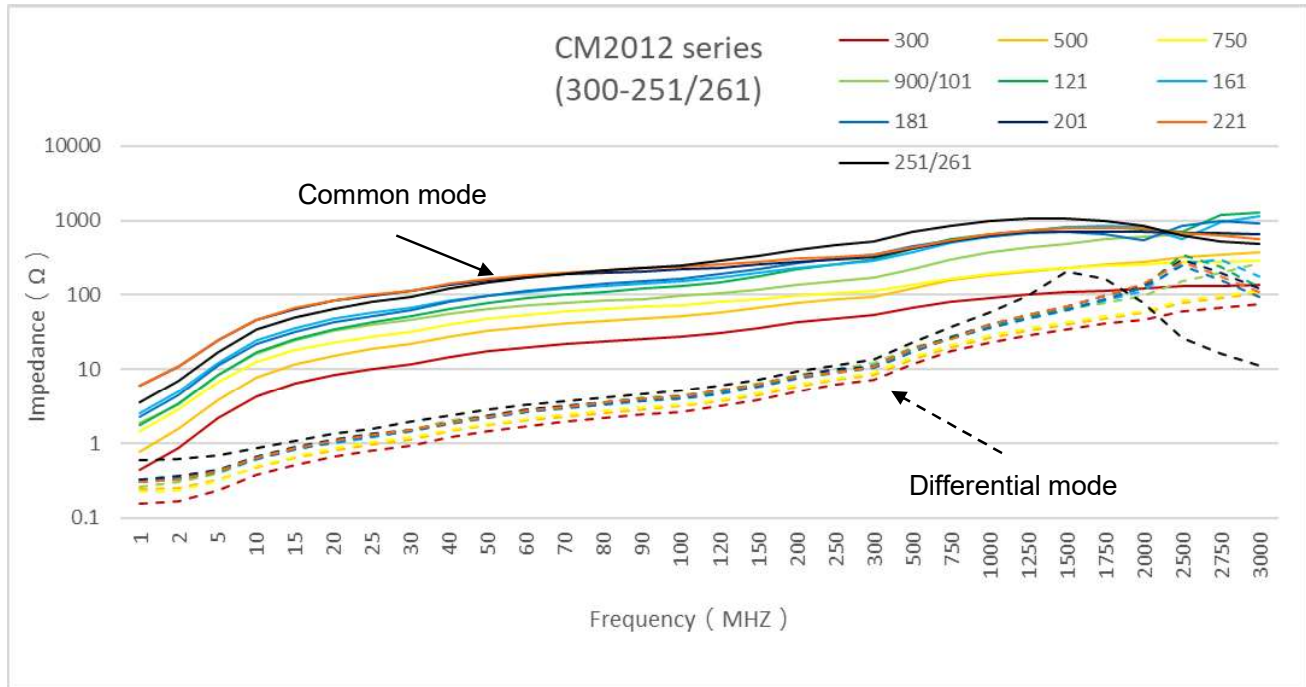




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■ Typical impedance vs. frequency





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● **Reliability test and requirement**

Items	Requirements	Test Methods and Remarks
Resistance to Soldering Heat	1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$	1. Solder on PCB to Reflow test Peak Temp. $260 \pm 5^\circ\text{C}$ 5~10 secs, Cycles: 2 times Re-flowing Profile: Please refer to Fig-1. 2. Test board thickness: 1.5mm 3. Test board material: glass epoxy resin 4. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made product showed no damage under microscope. <div style="text-align: center;"> <p>Fig-1</p> </div>
High Temperature	1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$ 3. Insulation resistance: $10\text{M}\Omega$ min	1. Temperature: $125 \pm 2^\circ\text{C}$ 2. Duration: 1000 hours The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.
Steady damp-heat	1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$ 3. Insulation resistance: $10\text{M}\Omega$ min	1. Temperature: 85°C 2. Humidity: 85% RH 3. Duration: 1000 hours 4. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.
Mechanical Vibration	1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$	1. Frequency: $10\text{HZ} \sim 55\text{HZ} \sim 10\text{HZ/Min}$ Cycles 2. Amplitude: 1.5 mm 3. Directions: X, Y, Z 4. Time: 2 hours in each direction (total of 6 hours)



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Items	Requirements	Test Methods and Remarks
Thermal Shock	<ol style="list-style-type: none"> 1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$ 3. Insulation resistance: 10MΩ min 	<ol style="list-style-type: none"> 1. Temperature and time: -40°C for 30 ± 3 min \rightarrow 125°C for 30 ± 3 min, please refer to Fig-2 2. Transforming interval: Max. 3 Min 3. Tested cycle: 1000 cycles 4. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made. <p style="text-align: center;">Fig-2</p> <p>The diagram shows a temperature profile with a dashed horizontal line for 'Ambient Temperature'. The profile consists of a ramp up to 125°C, a dwell of 30 ± 3 min, a ramp down to -40°C, a dwell of 30 ± 3 min, a ramp up to 'Ambient Temperature', a dwell of 30 ± 3 min, and a final ramp down. The transition time between the -40°C dwell and the next ramp is labeled as '3 Min (max.)'.</p>
Salt Spray	<ol style="list-style-type: none"> 1. No visible mechanical damage 2. Impedance change: Within $\pm 20\%$ 	<ol style="list-style-type: none"> 1. Salt concentration: $(5 \pm 1) \%$ (mass percent) 2. pH value: 6.5 - 7.2 3. temperature: $35 \pm 2^{\circ}\text{C}$ 4. humidity: 85% 5. time: 24 hours in normal temperature and humidity for 1 ~ 2 hours, testing inductance, the inductance value change can not be more than before test $\pm 10\%$.
Terminal strength	No visible mechanical damage	<ol style="list-style-type: none"> 1. The electrode of the inductor is soldered to the PCB, to Fig-3 Then apply a force in the direction of the arrow. 2. 5N force. 3. Keep time: $10(\pm 1)$ s, The first three tests were OK, and the force was applied until the peak value of the product peeling. The test speed was set in the range of 3 ~ 8mm/min. <p style="text-align: center;">Fig-3</p> <p>The diagram shows a cross-section of the test setup. A 'Pressure' applicator is shown with a downward arrow, pressing on a 'Product' which is mounted on a 'Substrate'. The entire assembly is held in a 'Test board fixture'.</p>



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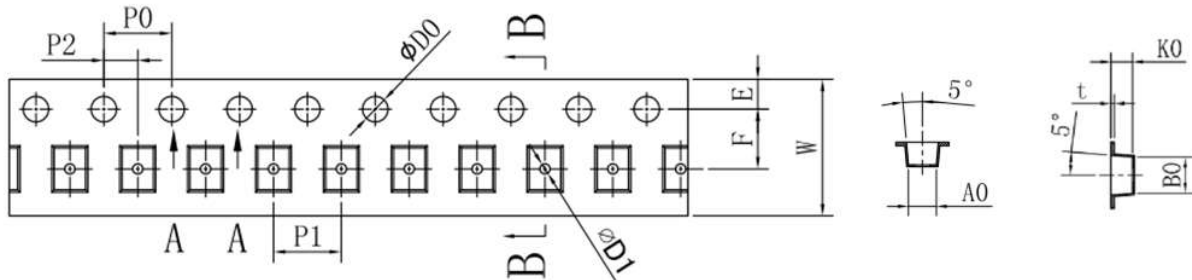
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■ Packaging Information

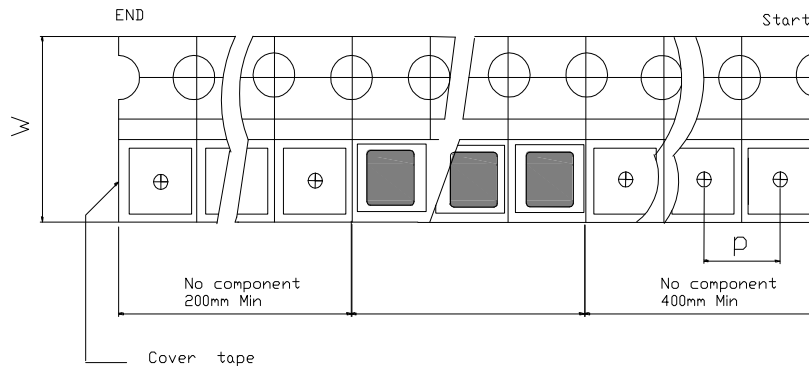
(1) Tape Packaging Dimensions (Unit : mm)



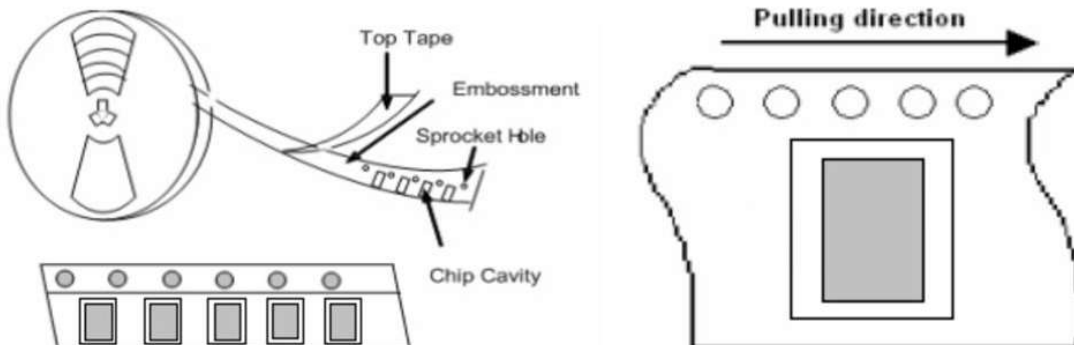
Unit : mm

Type	Tape dimensions (mm)											
	W	P1	A0	B0	K0	t	E	F	P2	D0	D1	P0
ECM2012F	8.00 ±0.10	4.00 ±0.10	1.50 ±0.10	2.30 ±0.10	1.45 ±0.10	0.20 ±0.05	1.75 ±0.10	3.50 ±0.10	2.00 ±0.10	1.55 ±0.05	0.80 ±0.05	4.00 ±0.10

(2) Leader and blank portion



(3) Taping Drawings (Unit: mm)

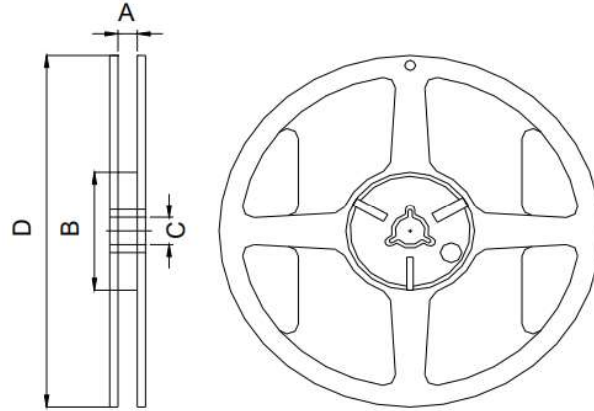




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(4) Reel Dimensions (Unit : mm)



Type	A	B	C	D
ECM2012F	9.50 ±1.0	60.0 ±1.0	13.0 ±0.2	178.0 ±1.0

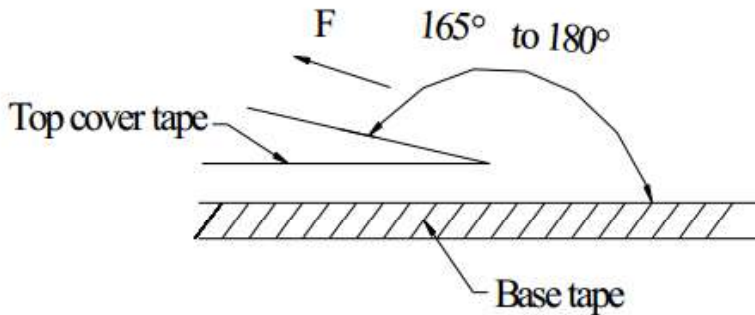
(5) Packaging Quantity (PCS)

Type	Standard Quantity		
	Reel	Inner box	Carton box
ECM2012F	2000 pcs / reel	5Reel / box (10,000 pcs)	10 Middle boxes, (100,000 pcs)

(5) Peel force of top cover tape

The peel speed shall be about 300mm/minute.

The peel force of top cover tape shall be between 10 to 100 gf



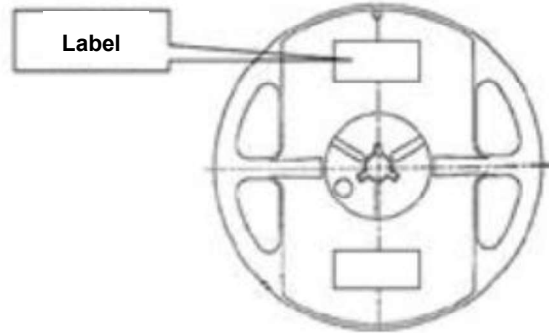


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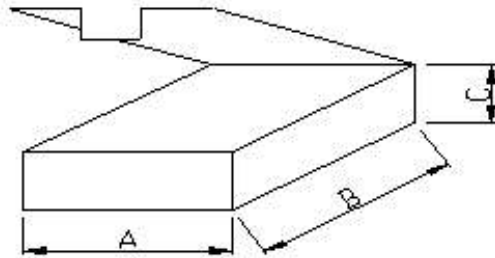
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(6) Reel Label

- Label on the reel
 - Everohms part Number.
 - Lot Number
 - Quantity
 - Description
- Shipping Label
 - Customer's part Number
 - Manufacturer's part Number
 - Quantity
 - date code

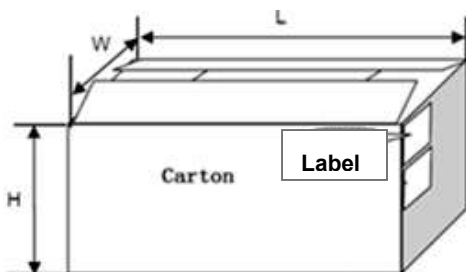


(7) Inner Box



Packaging Type	A (mm)	B (mm)	C (mm)
Inner box	188	195	67

(8) Carton



Packaging Type	L (mm)	W (mm)	H (mm)
Carton	390	350	215