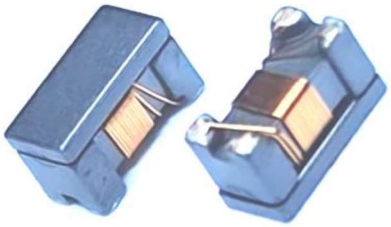
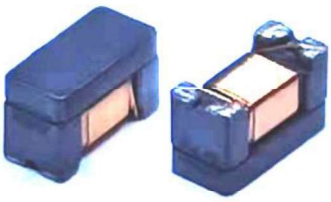
■ Common Mode Choke — ECM34-TWA Series



F Type



L Type

■ 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.
- — CM3416 series realizes small size and low profile 3.4*1.6*2.0 mm.
- — Compliant with ACE-Q200.

■ Parts Number Explanation

Example:

ECM	3416	L	—	510	F	—	T	W	A
Product Type	**Size (mm)**	**Application**		**Impedance Inductance**	**HSF**		**Package**	**Internal Code**	**Optional**
Common Mode Choke	3416	F: Impedance L: Inductance Products		L type: 510 : 51 uH +50/-30%	Products (Hazardous Substance Free Products)		T : Taping		A : For Automotive Electronics

Standard Electrical Specifications

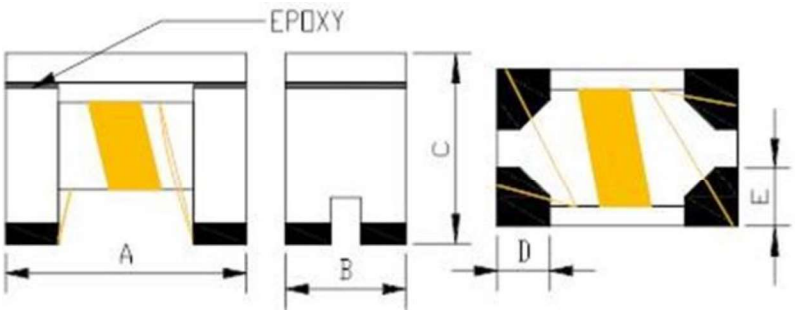
Part No.	Z (Impedance) @100MHZ	DCR	IR	Rated Current (Vdc)	Irms (A)
	Ω	mΩ	MΩ	V	mA
	±25%	MAX	MIN	/	MAX
ECM3416F-510F-TWA	51	2125	10	80	200

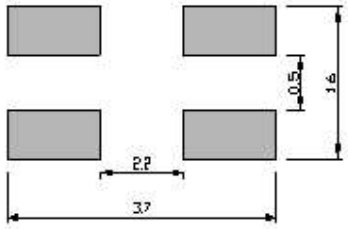
Part No.	Inductance (uH) [100kHz/0.1V]	DCR (1 Line)	IR	Rated Current (Vdc)	Irms (A)
	uH	mΩ	MΩ	V	mA
	Min	MAX	MIN	/	MAX
ECM3416L-510F-TWA	51	2125	10	80	200

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.
5. Solder standard according to IPC-A-610D 8.2.1 Chip Components –Bottom Only Terminations.

■ Dimensions





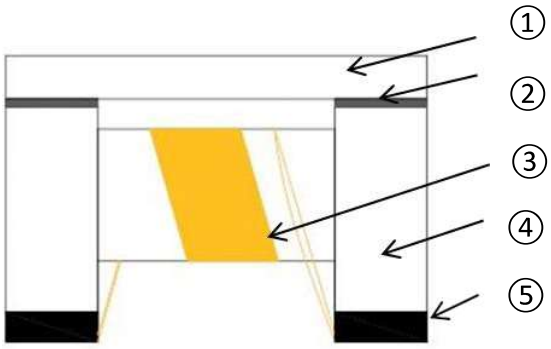
Recommend Land Pattern

Unit: mm

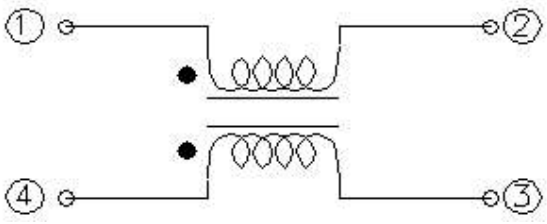
Type	A	B	C	D	E
ECM3416F	3.40 ±0.20	1.60 ±0.20	2.00 ±0.20	0.5 typ.	0.5 typ.
ECM3416L	3.40 ±0.20	1.60 ±0.20	2.00 ±0.20	0.5 typ.	0.5 typ.

■ 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

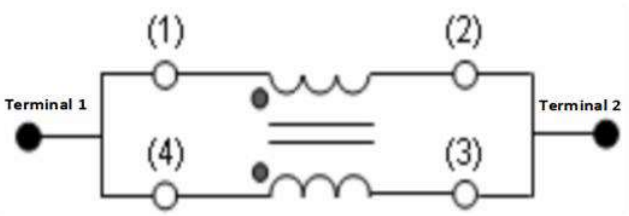


■ Schematic Diagram

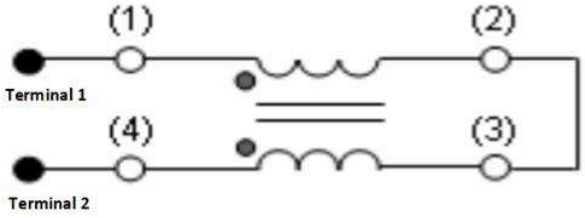


■ Measuring Circuits 2Line

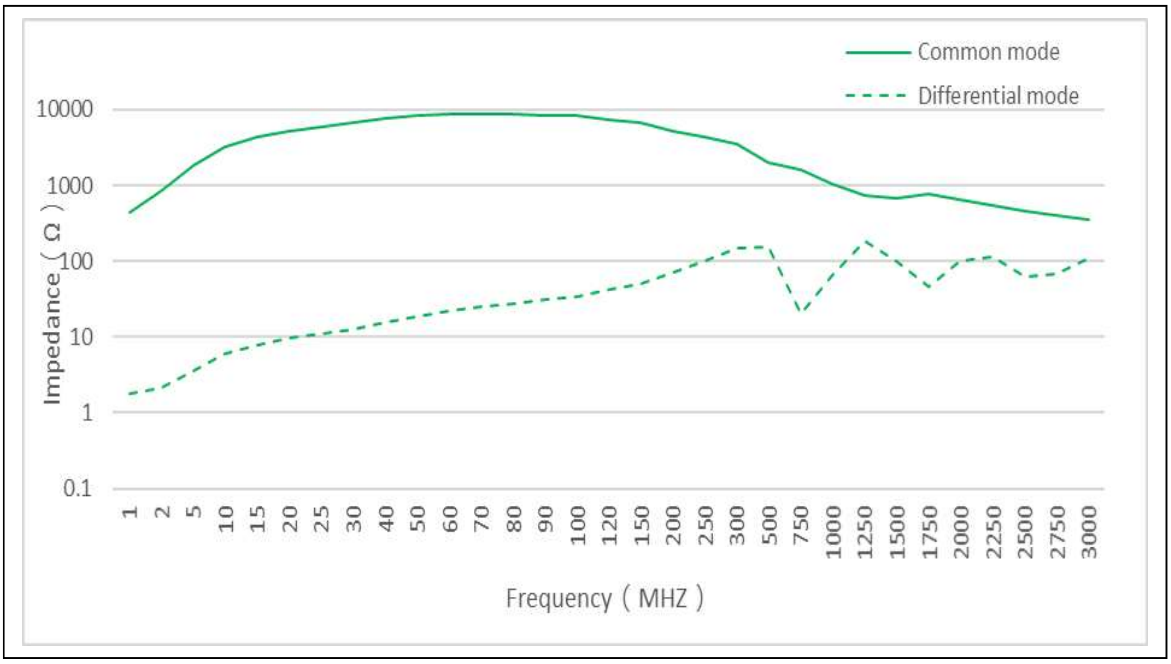
1）Common mode：



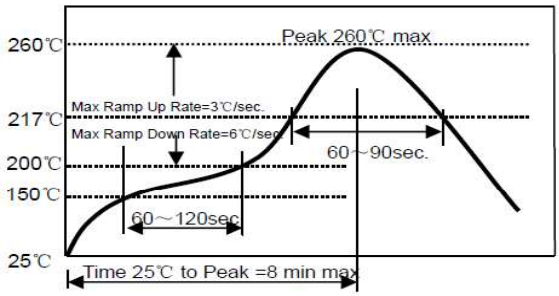
2）Differential mode：

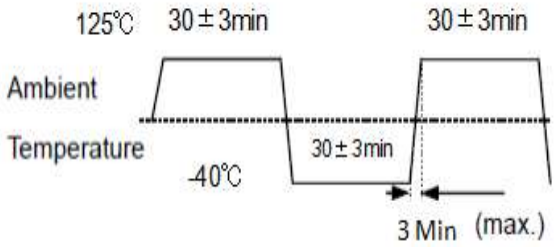
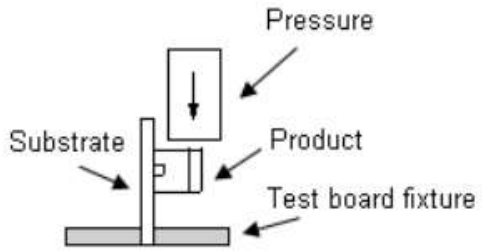


■ Typical impedance vs. frequency



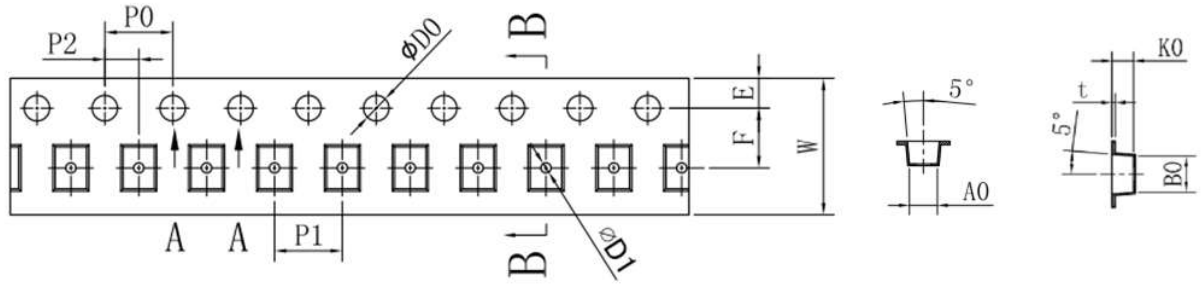
● Reliability test and requirement

Items	Requirements	Test Methods and Remarks
Resistance to Soldering Heat	1. No visible mechanical damage 2. Impedance change: Within ±20%	1. Solder on PCB to Reflow test Peak Temp. 260±5℃ 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. **Fig-1** 
High Temperature	1. No visible mechanical damage 2. Impedance change: Within ±20%	1. Temperature: 125±2℃ 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 ±20%	1. Temperature:85℃ 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 ±20%	1.Frequency: 10HZ～55HZ～10HZ/Min Cycles 2.Amplitude: 1.5 mm 3.Directions: X, Y, Z 4.Time: 2 hours in each direction (total of 6 hours)

Items	Requirements	Test Methods and Remarks
Thermal Shock	1. No visible mechanical damage 2. Impedance change: Within ±20%	1.Temperature and time: -40℃ for 30±3 min→125℃ for 30±3min, 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. **Fig-2** 
Salt Spray	1. No visible mechanical damage 2. Impedance change: Within ±20%	1. Salt concentration: (5 ± 1) % (mass percent) 2. pH value:6.5 - 7.2 3. Temperature: 35 ± 2 ℃ 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 ± 10%.
Terminal strength	No visible mechanical damage	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. 8N force. 3. Keep time: 10(±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. **Fig-3** 

■ Packaging Information

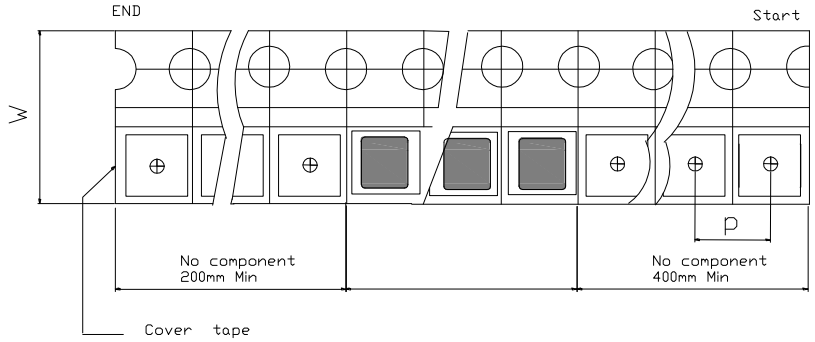
(1) Tape Packaging Dimensions（Unit：mm）



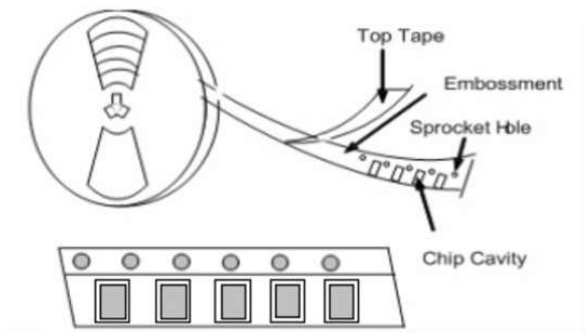
Unit：mm

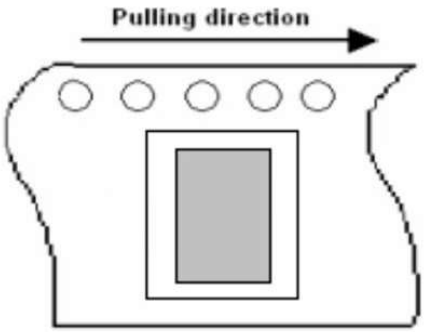
Type	Tape dimensions (mm)											
	W	P1	A0	B0	K0	t	E	F	P2	D0	D1	P0
ECM3416F	8.0±0.10	4.0±0.10	1.9±0.10	3.7±0.10	2.25 ±0.10	0.25 ±0.05	1.75 ±0.10	3.5±0.10	2.0±0.10	1.55 ±0.05	1.0±0.10	4.0±0.10
ECM3416L	8.0±0.10	4.0±0.10	1.9±0.10	3.7±0.10	2.25 ±0.10	0.25 ±0.05	1.75 ±0.10	3.5±0.10	2.0±0.10	1.55 ±0.05	1.0±0.10	4.0±0.10

(2) Leader and blank portion

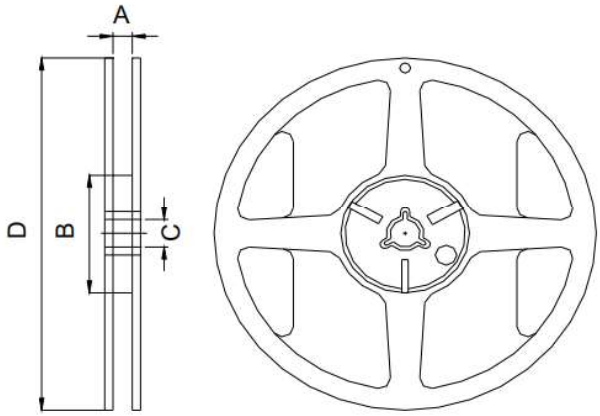


(3) Taping Drawings (Unit: mm)





(4) Reel Dimensions（Unit：mm）



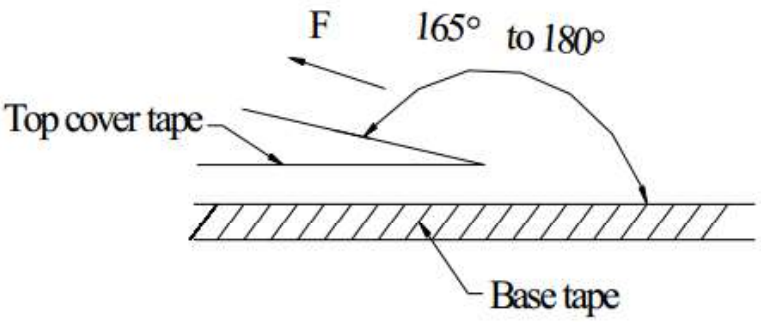
Type	A	B	C	D
ECM3416F	9.50 ±1.0	60.0 ±1.0	13.0 ±0.2	178.0 ±1.0
ECM3216L	9.50 ±1.0	60.0 ±1.0	13.0 ±0.2	178.0 ±1.0

(5) Packaging Quantity (PCS)

Type	Standard Quantity		
	Reel	Inner box	Carton box
ECM3416F	2000 pcs / reel	5Reel / box (10,000 pcs)	10 Middle boxes, (100,000 pcs)
ECM3216L	2000 pcs / reel	5Reel / box (10000 pcs)	10 Middle boxes, (100,000 pcs)

(5) Peel force of top cover tape

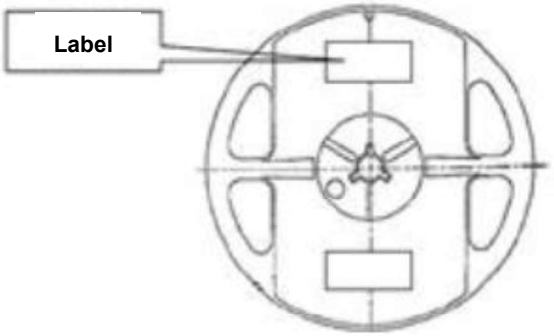
The peel speed shall be about 300mm/minute.
The peel force of top cover tape shall be between 10 to 100 gf



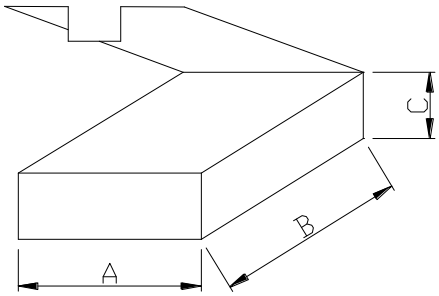
(6) Reel Label

●Label on the reel
- Everohms part Number.
- Lot Number
- Quantity
- Description

●Shipping Label
- Customer's part Number
- Manufacturer's part Number
- Quantity
- date code

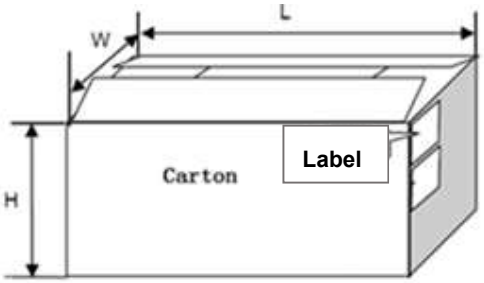


(7) Inner Box



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