

# Data Sheet

- ITEM : COMMON MODE ESD FILTER

- PART NO : ICMEF214P101MFR

- CONDITION : 1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_

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## 1. Generals

- This specification covers the engineering requirements for the ICMEF214P101MFR (Common Mode ESD Filter)

## 2. Features

- Effective for suppressing common mode noise and almost no effect for high speed differential data line
- Two common mode filters and four ESD suppression devices integrated
- Ultra low profile (2.0 x 1.2 x 0.8mm)
- Ceramic multilayer type SMD component
- Non-polarized product
- It is a product conforming to RoHS directive.

## 3. Applications

- LVDS lines in notebook computers
- USB2.0, IEEE1394, DVI, HDMI lines in PDP, LCD TV, DVD Player, PC, Audio player, DSC
- MDDI, MIPI in mobile phone

## 4. Product specifications

### 4. 1 PART NUMBER CODE

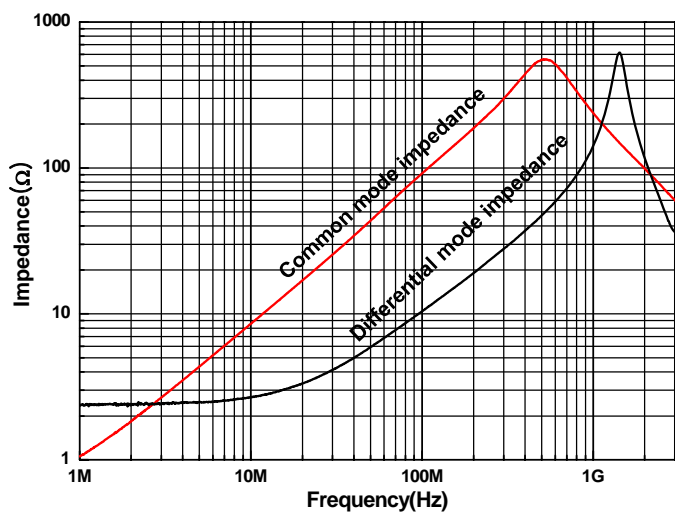
ICMEF    21    4P    101    M    F    R  
 ①            ②            ③            ④            ⑤            ⑥            ⑦

- ① Series name of ICT's Common Mode ESD Filter
- ② Dimensions, 2.0mm (L) x 1.2mm (W)
- ③ Number of lines, 4P= 4 lines
- ④ Common Mode Impedance (at 100MHz), 101= 100Ω
- ⑤ Tolerance of common mode impedance, M= ±25%
- ⑥ Type of electrode plating: F= Lead Free
- ⑦ Packing Type, R= Reel

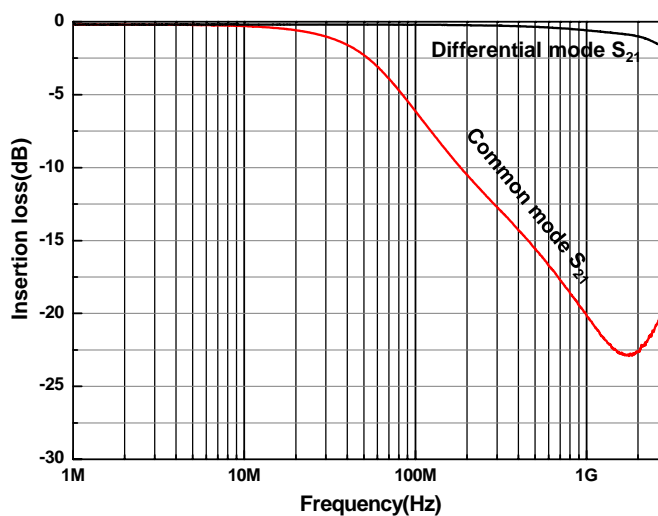
### 4. 3 Specification of electrical characteristics

Characteristics	Common Mode Impedance	Resistance	Leakage Current	Capacitance	Insulation Resistance (Max)	Rated Voltage	Rated Current
symbol	$Z_{CM}$	$R_{DC}$	$I_L$	C	$IR_{CR}$	$V_R$	$I_R$
Units	$\Omega$	$\Omega$	$\mu A$	pF	M $\Omega$	Volt	mA
Test Condition	@100MHz	25°C±2°C	5V	0.5Vrms @1MHz	10V	25°C±2°C	25°C±2°C
Value	100(±25%)	Max 4.0	Max 1.0	Max 1.7	Min 10	5	Max100

- Impedance Curves



-Transmission characteristics (S-parameter)



#### 4. 4 Operating Temperature

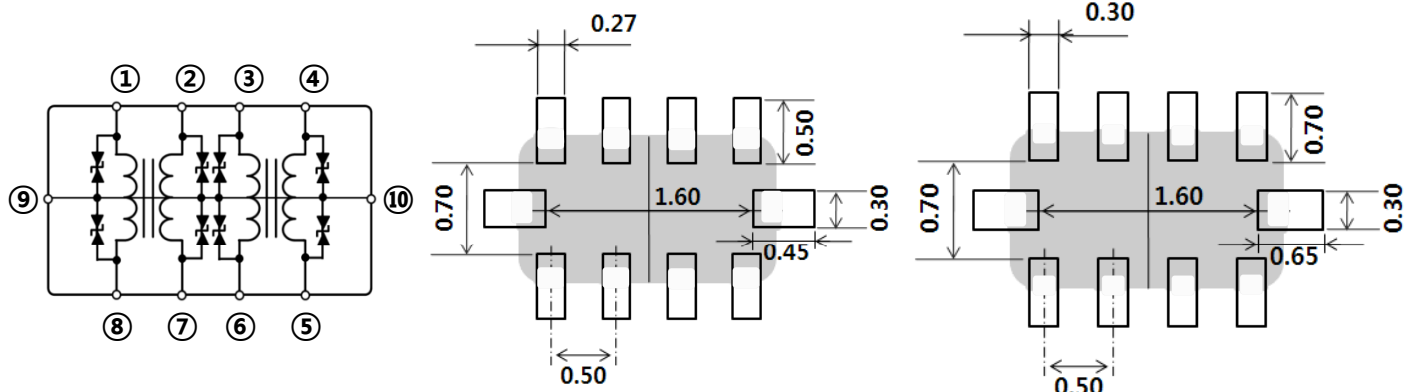
DESCRIPTION	REQUIREMENTS
Operating Temperature	-40℃ ~ + 85℃

### 5. Equivalent Circuit & Recommended Foot print & Stencil mask

PIN NUMBER	DESCRIPTION
①~⑧	DATA LINE
⑨, ⑩	GROUND

Unit : mm

Stencil Mask T : 0.10mm



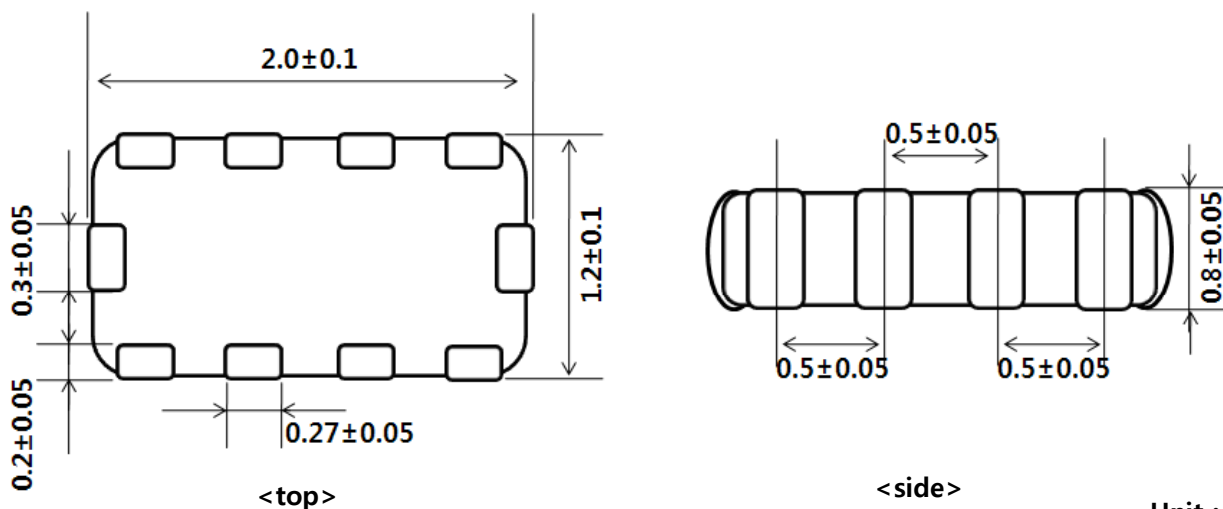
[ Equivalent circuit ]

[ Foot print ]

[ Stencil Mask ]

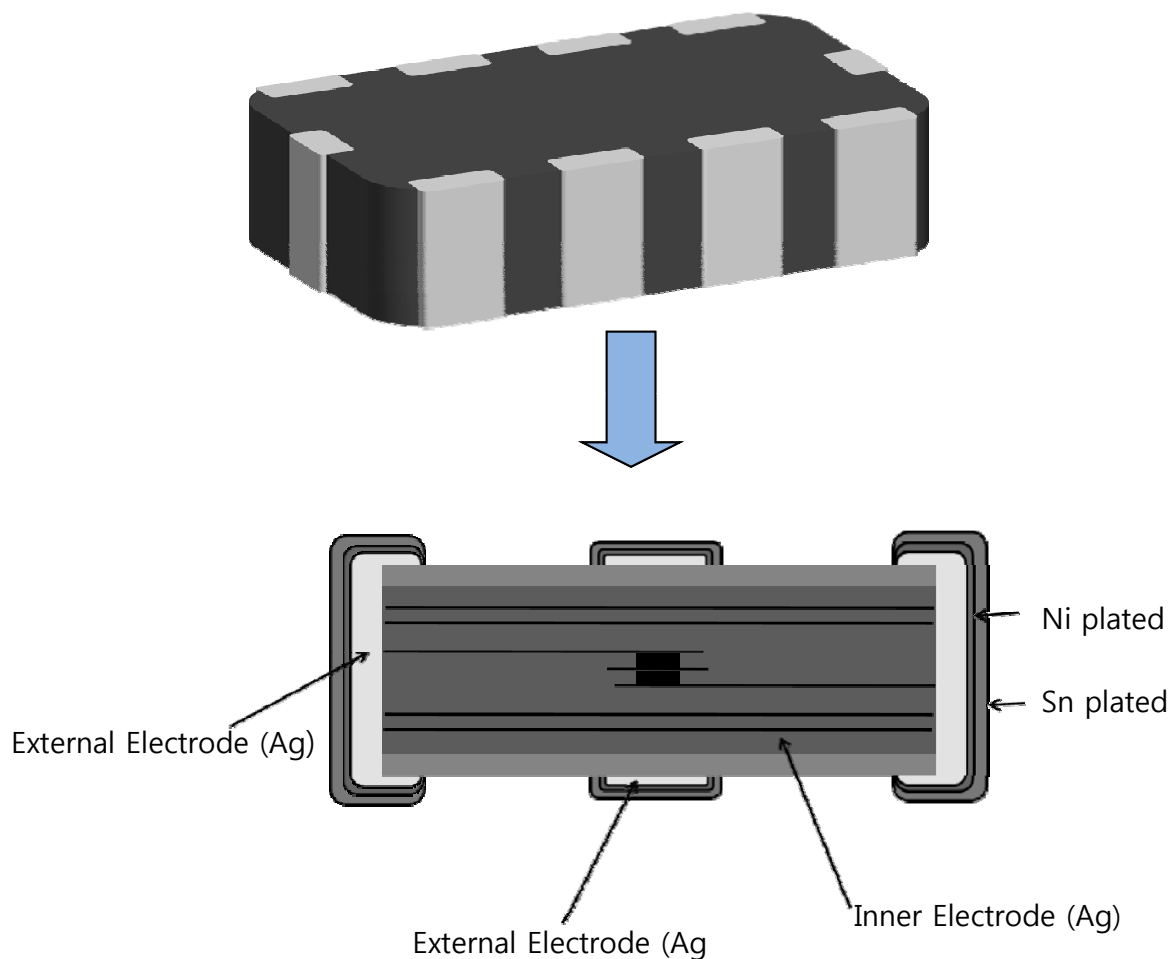
### 6. Mechanical Property

#### 6. 1 Appearance and Dimension



Unit : mm

## 6. 2 Structure of Product

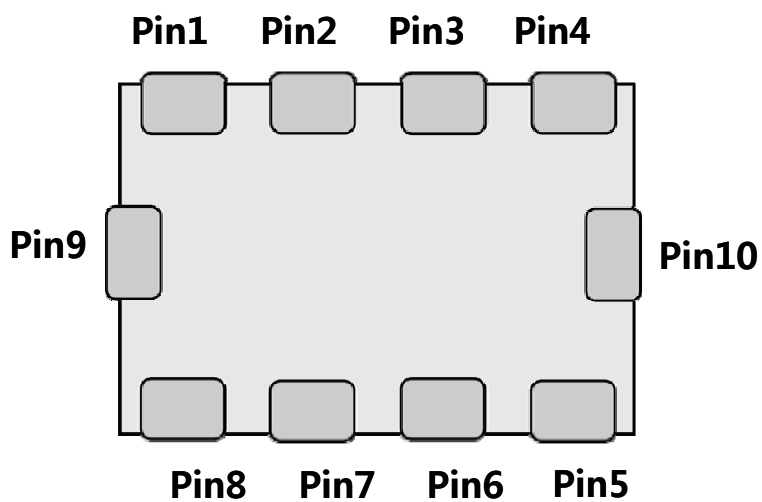


## 6. 3 List of Raw Material

NO	Material	Supplier
1	Ferrite powder	Restricted
2	LTCC glass powder	Restricted
3	Ag(Inner) paste	Restricted
4	Ag(Terminal) paste	Restricted
5	Ni plating solution	Restricted
6	Sn plating solution	Restricted

## 7. TEST METHOD OF ELECTRICAL PROPERTY

### - PIN INDEX

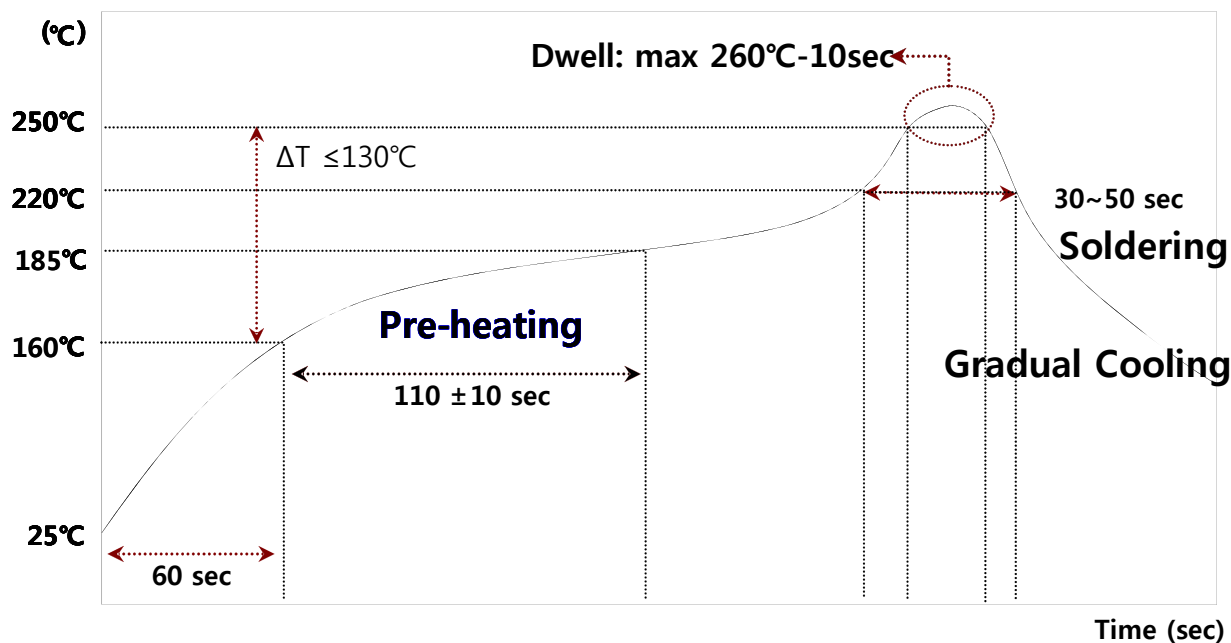


ITEM	DESCRIPTION	SOURCE	EQUIPMENT
<b>Rdc</b>	Pin 1-8, 2-7, 3-6, 4-5	10mA DC Source	Source Meter
<b>CM Impedance</b>	Pin 1-2(Short) to Pin 8-7(Short) Pin 3-4(Short) to Pin 6-5(Short)	500mV	LCR Meter (3GHz)
<b>IL</b>	Pin 9 or 10 to Pin 1~4 or 5~8	5V DC Source	Source Meter

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## 8. REFLOW CONDITION

### 8. 1 RECOMMENDED SOLDERING PROFILE (Lead-free condition)



### 8. 2 RECOMMENDED LEAD-FREE SOLDER PASTE

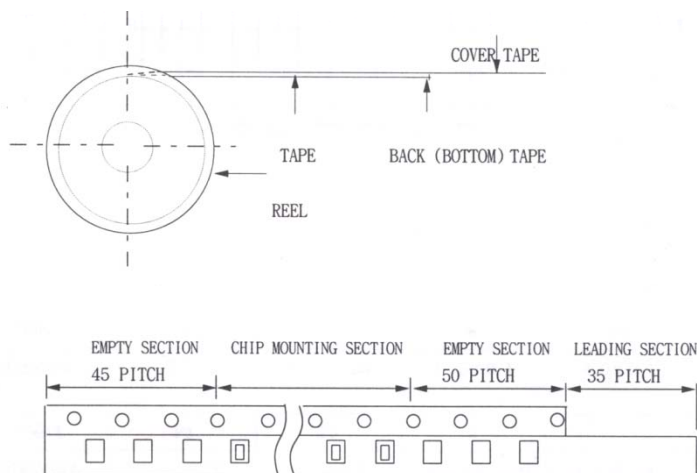
- Supplier : Tamura Donghwa
- Main composition : Sn-Ag-Cu
- Ratio of composition : 96.5%-3.0%-0.5%

### 8. 3 RECOMMENDED HAND SOLDER

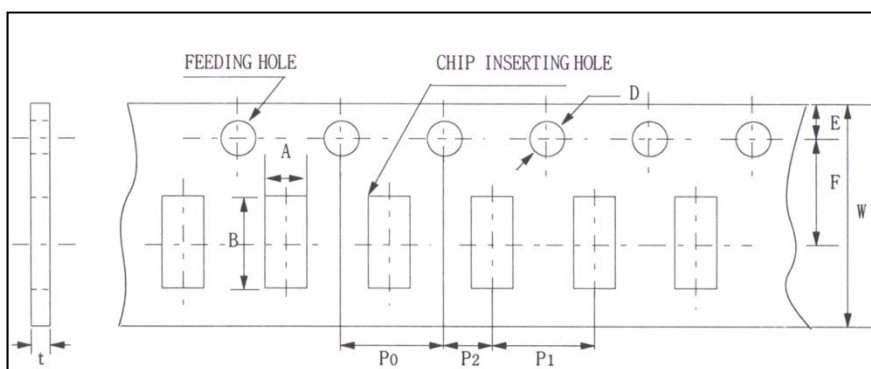
- Max Temperature: Max 380 °C(Max 5sec)

## 9. PACKING SPECIFICATION

### 9.1 TAPING FIGURE



### 9.2 CARRIER TAPE DIMENSIONS



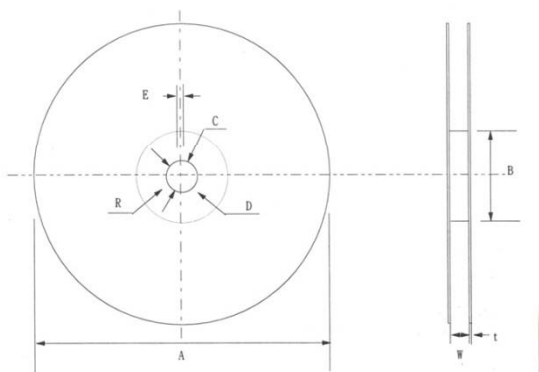
Unit : mm

SYMBOL	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D	T	
DIMENSION	21	1.55 ±0.05	2.3 ±0.05	8.0 ±0.1	3.5 ±0.05	1.75 ±0.05	4.0 ±0.1	2.0 ±0.05	4.0 ±0.1	1.55 ±0.03	0.95 ±0.05



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### 9. 3 REEL DIMENSIONS

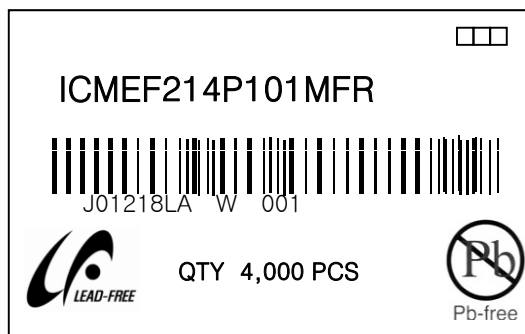
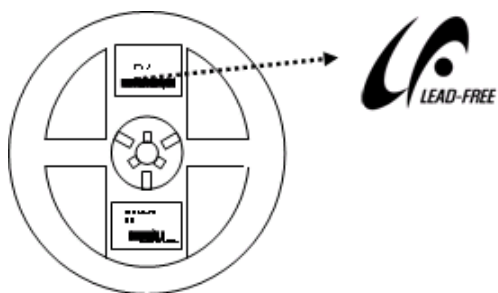


- (1) Reel Materials: Polystyrene
- (2) Label
- (3) Taping
  - Standard Packing Quantity per Reel ( $\phi 178$ )
  - Paper Tape: 4,000pcs

**Unit : mm**

CODE	A	B	C	D	E	W	t	R
DIMENSION	$\phi 178 \pm 2$	Min. $\phi 50$	$\phi 13 \pm 0.5$	$\phi 21 \pm 0.8$	$2.0 \pm 0.5$	$10 \pm 1.5$	$0.8 \pm 0.2$	1.0

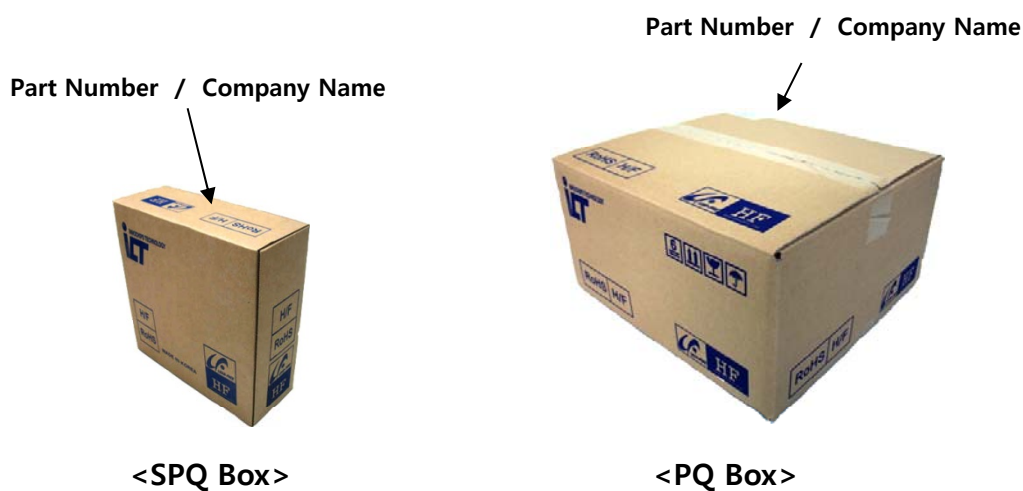
### 9. 4 LABEL CODE



- P/N : Part Number
- L/N : Lot Number
- C/N : Customer Number
- SPEC : Size, Line numbers & CM Impedance
- DATE : Date code
- Q'TY : Quantity

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## 9. 5 REEL PACKING



- Product box material : Card board
- 5 Reels in each SPQ Box
- PQ Box contains 10 SPQ Boxes (50 Reels)

### Packing box + Product weight

Size		S-box + 5reel		M-box + 5S-box		L-box + 10S-box		
Product	L x W x H(mm)		185 x 70 x 185		370 x 190 x 200		380 x 370 x 200	
	Size	weight(g) /1 unit	Total(g)	Chip(g)	Total(g)	Chip(g)	Total(g)	Chip(g)
CMF	0806	0.00124	643	62	3215	310	6147	620
	1210	0.00480	750	96	3758	480	7503	960
	2012	0.00750	804	150	4028	750	8043	1500
CMEF	0806	0.00128	646	65	3230	325	6177	650
	1210	0.00490	752	98	3768	490	7523	980
	2012	0.00760	806	152	4038	760	8063	1520