



# ISND

## Multilayer Ceramic Chip Capacitors

HCM-Mid-High Voltage Capacitors

HCP-For General Application

HCK-For Large Capacitance



## 概述

多层片式陶瓷电容器是通过采用性能优异的材料及先进积层技术而制成的一种陶瓷电容器，与传统的陶瓷电容器相比，它具有体积小、容量大、容量精度等特点。

由于采用积层技术与工艺制造，多层片式陶瓷电容器现在的容量范围已可达数十微法（ $10^1 \sim 10^2 \mu\text{F}$ ）的范围，因此可以取代部分铝电解电容的应用。同时它具有比铝电解电容器更低的等效串联电感（ESL）等效串联电阻（ESR）以及更好的电压承受能力。

通过特殊的内部结构的设计，现在可以使MLCC的工作达到5KV DC,极大地扩大了MLCC的应用范围。

多层片式陶瓷电容器是一种表面贴装元件，体积小，无极性，便于表面贴装及满足回流焊工艺。

本制品是绿色化产品，符合RoHS指令要求。

## OUTLINE

Multilayer Ceramic chip Capacitor (MLCC) is made by excellent ceramic powder, and the advanced lamination technology is used to produce the capacitors. Compared with the traditional Through-Hole type ceramic capacitors, MLCC has the features such as small size and wide capacitance ranges and high precision of capacitance.

Due to the use of lamination technology, the capacitance of MLCC has achieved the range of  $10^1 \mu\text{F}$  it can be used to replace some aluminum capacitors. Compared with tantalum capacitors MLCC has lower Equivalent Series Resistance (ESR) and lower Equivalent Series Inductors (ESL) and over-voltage capability.

Through a special internal structure design, the rated voltage of the MLCC is up to 5KV DC and it greatly expand the scope of application of the MLCC.

MLCC is the SMD type device which is small size and no polarity. It is suitable for SMT and re-flow process.

MLCC is green product and accord with RoHS directives.

## 品名构成说明 (Part Name)

[e.g]	HCM	1206	X7R	102	K	202	P	T	A
	①	②	③	④	⑤	⑥	⑦	⑧	设计代码

### ① 多层片式陶瓷电容器代码 (Product code of MLCC)

HCM: 中高压型 (100V~5KV,DC)

HCP: 一般通用品

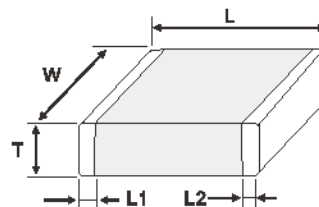
HCK: 高大容量型 (1.0~100 $\mu\text{F}$ )

HCM: High Voltage (100V~5KV,DC)

HCP: For General Application

HCK: Large Capacitance (1.0~100 $\mu\text{F}$ )

### ② SIZE 代码 (Size Code)



EIA 代码 EIA CODE	公制 Metric Sys	L(mm)	W(mm)	T(mm)	L1/L2(mm)
0402	1005	1.00±0.1	0.50±0.1	0.50±0.1	0.30±0.10
0603	1608	1.60±0.2	0.80±0.1	0.60±0.1	0.30±0.10
0805	2012	2.00±0.2	1.20±0.2	0.85±0.2	0.50±0.20
				1.25±0.2	
				0.85±0.2	
1206	3216	3.20±0.2	1.60±0.2	1.25±0.2	0.50±0.25
				1.60±0.2	
				1.25±0.2	
1210	3225	3.20±0.2	2.50±0.2	1.60±0.2	0.75±0.25
				2.00±0.3	
				1.25±0.2	
1808	4520	4.50±0.4	2.00±0.3	1.60±0.2	0.75±0.25
				1.25±0.2	
				1.60±0.2	
1812	4532	3.20±0.2	1.60±0.2	2.00±0.3	0.75±0.25
				1.60±0.2	
				1.60±0.2	
2220	5750	3.20±0.2	2.50±0.2	2.00±0.3	1.00±0.25
				1.60±0.2	
				2.30±0.3	

### ③ 温度特性代码 ( Code of temperature characteristics )

代码 CODE	温度特性 Temp.Charat	温度范围 Temperature Range	容量变化率 Capacitance Change	工作温度范围 Range of Working Temperature
C0G	C0G	-55~125°C	-0±30ppm/°C	-55~125°C
X5R	X5R	-55~85°C	±15%	-55~85°C
X7R	X7R	-55~125°C	±15%	-55~125°C
Y5U	Y5U	-30~85°C	+22,-56%	-30~85°C
Y5V	Y5V	-30~85°C	+22,82%	-30~85°C

### ④ 静电容量 ( Nominal Capacitance Unit:pF )

三数学法：前二位数字表示有效值，第三位字表示“0”的个数。小数用“R”表示。

Expressde by three figures.The first and secind figures are significant digits,and the thid figure dentes the number of zeros,

“R” is used to denote the decimal point.

[e.g] 1R5: 1.5pF      0R5: 0.5pF      102: 1,000pF

### ⑤ 静电容量许允差 ( Code of Capacitance Tolerance )

代码 Code	许容差 Tolerance	对应标称容量范围 Capacitance range	温度特性 Temp.Charat
C	±0.25pF	10pF或以下 10pF or less	COG
D	±0.5pF		
J	±5%	10pF以上 Over 10pF	X5R,X7R Y5U Y5V
K	±10%		
M	±20%		
Z	-20%~+80%		

### ⑥ 额定工作电压 ( Working Voltage,Vdc )

三数学法：前二位数字表示有效值，第三位字表示“0”的个数。小数用“R”表示。

Expressde by three figures.The first and secind figures are significant digits,and the thid figure dentes the number of zeros,

“R” is used to denote the decimal point.

[e.g] 500: 50V      102: 1000V      6R3:6.3V

### ⑦ 端电极(Termination)

P : 三层电镀端电极

S : Ag端电极

P : plating terminations

S : Fired Ag terminations

### ⑧ 包装形式 (Package)

B : 袋装散装品 (Bulk)    C:盒装散装品 (Bulk)

T : 卷盘编带品 (Reel Taping)

### ⑨ 设计代码

空白 : 标准品    A-QE : 设计代码

## HCM—中高压系列 High Voltage Series

### 特点：

- 小型化的外形尺寸 ( 0603~2225)
- 额定工作电压：DC:100V~5KV
- 低等效串联电感(ESL)和低等效串联电阻(ESR), 具有良好的频率响应特性
- 高容量精度
- 小型化、无极性，高精度尺寸适合表面贴装工艺
- 端电极Ni+Sn电镀镀层，耐焊接性能优异
- 符合RoHS指令及REACH法规之高关注物质(SVHC)要求
- 工作温度范围：-55℃~+125℃

### FEATURES :

- Small size (0603~2225)
- Working Voltage:100V,250V,630V,1KV,2KV,3KV
- Lower ESR and ESL assure superior frequency characteristics.
- No polarity and high size accuracy suitable for SMT process.
- Ni/Sn plating terminations provide extreme solderability.
- Comply with RoHS and REACH directives.
- Working temperature range:-55℃~+125℃

### 应用：

用于高压电子线路中作耦合，滤波，谐振等。如开关、电源、AC-DC电源转换器、DC-DC电源转换器、网络/通讯接口、LCD模组背光电源供应器、节能灯镇流器等

### APPLICATIONS :

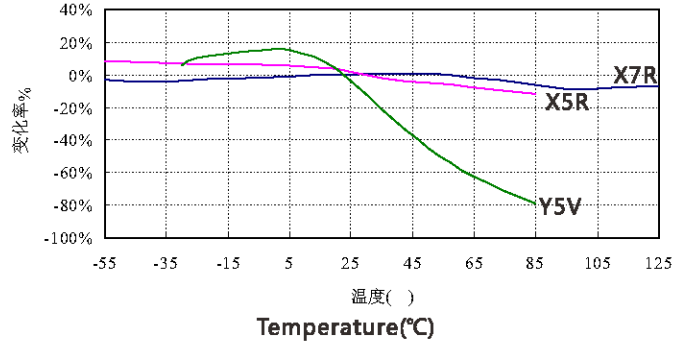
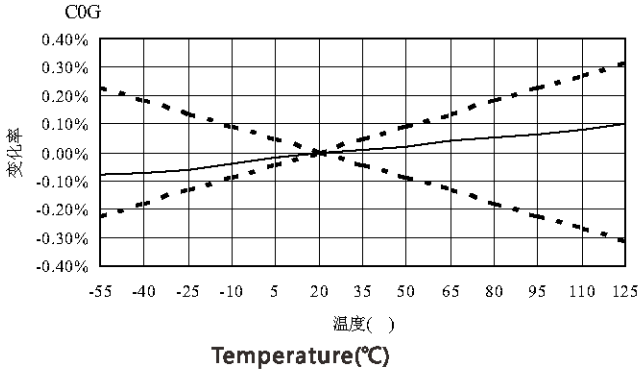
Use as coupling, filtering, resonating in high voltage circuit such as switching power supply DC-AC inverter, DC-DC converter, LAN, back-lighting power supply of LCD-module, blaster.

## 品名规格 SPECIFICATIONS

特性 Characteristic	尺寸代码 Size	额定电压 (DC) Rated Voltage							
		100V	200V	250V	500V	1KV	2KV	3KV	5KV
		容量范围(三数字法, 单位pF) Capacitance Range							
COG	0603(1608)	0R5-561	0R5-471	0R5-471	.....	.....	.....	.....	.....
	0805(2012)	1R0-152	1R0-102	1R0-102	1R0-561	1R0-101	.....	.....	.....
	1206(3216)	1R0-332	1R0-222	1R0-222	1R0-152	1R0-102	1R0-221	.....	.....
	1210(3225)	1R0-472	1R0-332	1R0-332	1R0-222	1R0-821	1R0-331	.....	.....
	1808(4520)	2R0-682	2R0-472	2R0-472	2R0-332	2R0-102	2R0-471	2R0-221	2R0-330
	1812(4532)	3R0-103	3R0-682	3R0-682	3R0-472	3R0-152	3R0-681	3R0-331	3R0-470
	2220(5750)	5R0-153	5R0-103	5R0-103	5R0-682	5R0-222	5R0-821	5R0-471	5R0-680
	2225(5763)	5R0-223	5R0-123	5R0-123	5R0-103	5R0-472	5R0-102	5R0-681	5R0-101
X7R	0603(1608)	680-223	680-103	680-103	.....	.....	.....	.....	.....
	0805(2012)	101-104	101-473	101-473	101-103	.....	.....	.....	.....
	1206(3216)	101-105	101-104	101-104	101-683	101-103	101-472	.....	.....
	1210(3225)	121-225	121-224	121-224	121-683	121-223	121-682	.....	.....
	1808(4520)	151-225	151-334	151-334	151-823	151-333	151-103	151-472	151-102
	1812(4532)	151-225	151-684	151-664	151-474	151-683	151-223	151-682	151-102
	2220(5750)	221-335	221-105	221-105	221-684	221-104	221-473	221-103	221-152
	2225(5763)	221-475	221-225	221-225	221-105	221-224	221-683	221-153	221-472

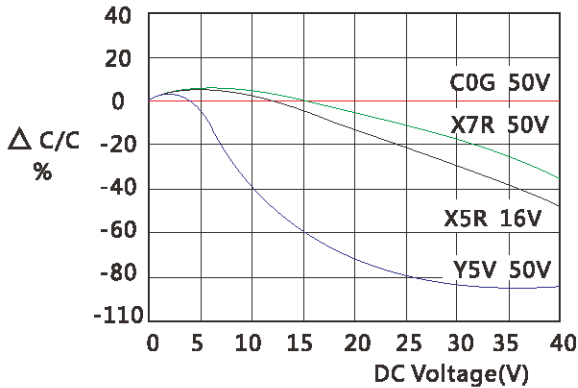
### 电气特性 Electrical Characteristics

#### 电容量-温度特性 CAPACITANCE-TEMPERATURE CHARACTERISTICS



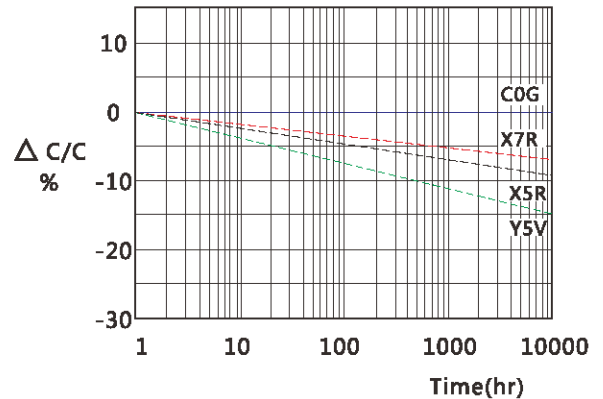
#### 电容量-直流偏压特性

##### CAPACITANCE-DC VOLTAGE BIAS CHARACTERISTICS

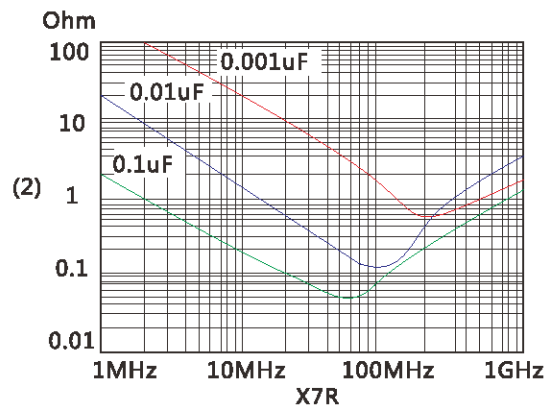
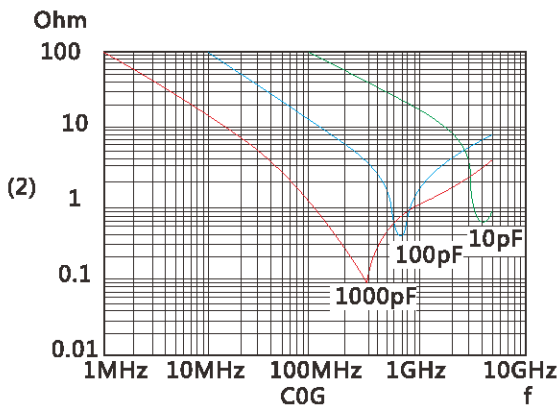


#### 电容量老化特性

##### CAPACITANCE CHANGE-AGING

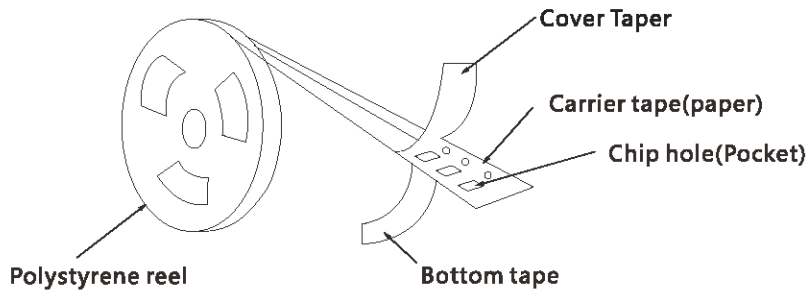


#### 阻抗-频率特性 IMPEDANCE-FREQUENCY CHARACTERISTICS

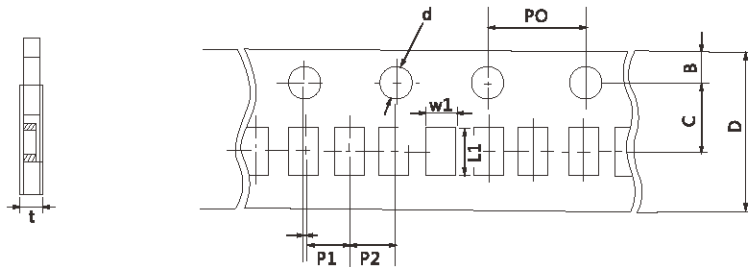


## 编带和包装 Taping and Package

### PAPER TAPING

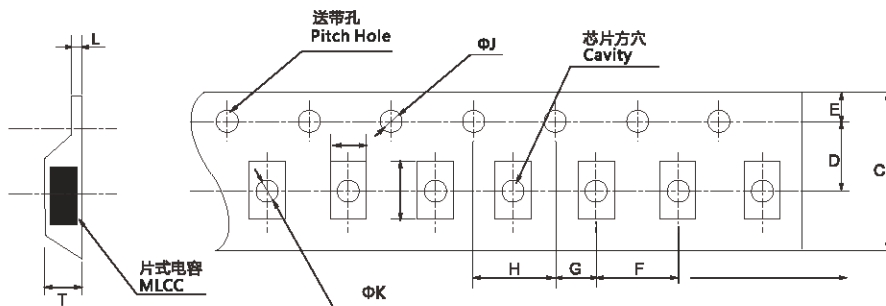


### Dimensions of paper taping for 0402 type



Code	W1	L1	D	C	B	P1	P2	P0	d	t
0402	0.65 ± 0.20	1.15 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	2.00 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	1.50-0/+0.1	0.8 Below

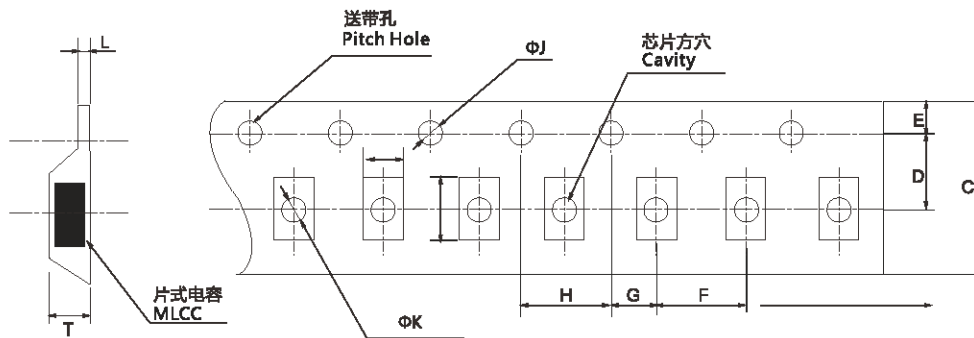
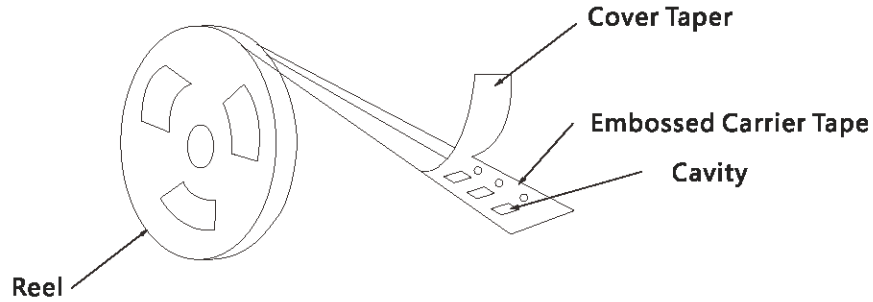
### Dimensions of paper taping for 0603, 0805, 1206 types.



Code paper	A	B	C	D*	E	F	G*	H	J	T
0603	1.10 ± 0.20	1.90 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 0.00	1.10 Max
0805	1.45 ± 0.20	2.30 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 0.00	1.10 Max
1206	1.80 ± 0.20	3.40 ± 0.20	8.00 ± 0.20	3.50 ± 0.05	1.75 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10	1.50 ± 0.10	1.10 Max

## 编带和包装 Taping and Package

### EMBOSSED TAPING

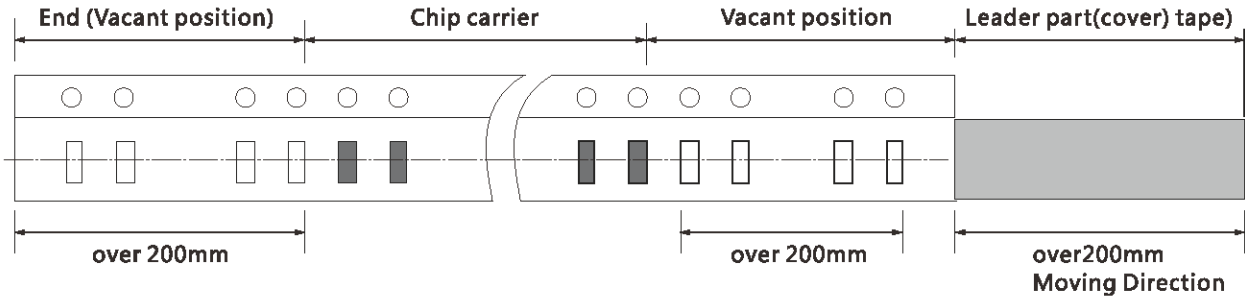


Code paper	A	B	C	D*	E	F	G*	H	J	T
1206 (3216)	1.95	3.60	8.00	3.50	1.75	4.00	2.00	4.00	1.50	1.85
	± 0.20	± 0.20	± 0.20	± 0.05	± 0.10	± 0.10	± 0.10	± 0.1	0.00	Max
1210 (3225)	2.70	3.42	8.00	3.50	1.75	4.00	2.00	4.00	1.55	3.20
	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05	± 0.10	0.00	Max
1808 (4520)	2.20	4.95	12.00	5.50	1.75	4.00	2.00	4.00	1.50	3.00
	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05	± 0.10	0.00	Max
1812 (4532)	3.66	4.95	12.00	5.50	1.75	8.00	2.00	4.00	1.55	4.00
	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05	± 0.10	0.00	Max

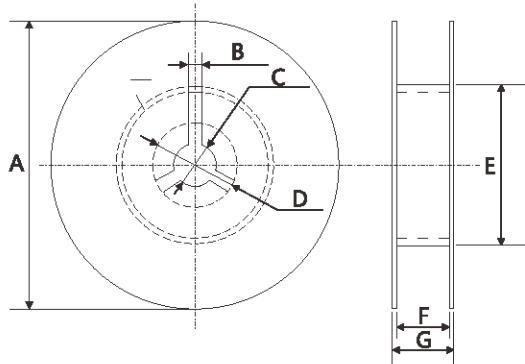
Note : The place with "\*" means where needs exactly dimensions.

## 編帶和包裝 Taping and Package

### Structure of leader part and end part of the carrier paper



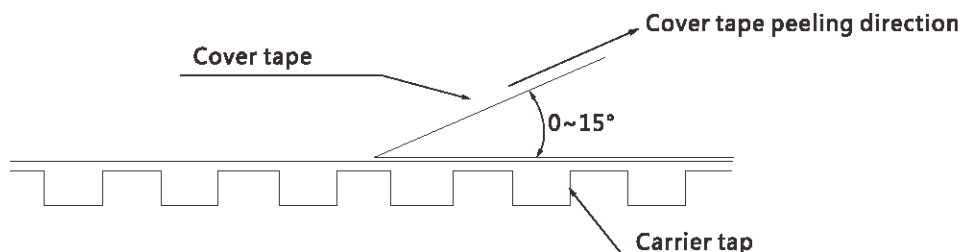
### Reel Dimensions (unit: mm)



### CODE

TYPE	A	B	C	D	E	F	G
7'REEL	$\Phi 178 \pm 2.0$	3	$\Phi 13 \pm 0.5$	$\Phi 21 \pm 0.8$	$\Phi 50$ or more	$10.0 \pm 1.5$	12max
13'REEL	$\Phi 330 \pm 2.0$	3	$\Phi 13 \pm 0.5$	$\Phi 21 \pm 0.8$	$\Phi 50$ or more	$10.0 \pm 1.5$	12max

### Top tape peeling strength



Standard:  $0.1N < \text{peeling strength} < 0.7N$

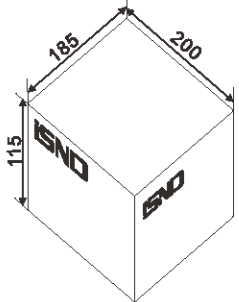
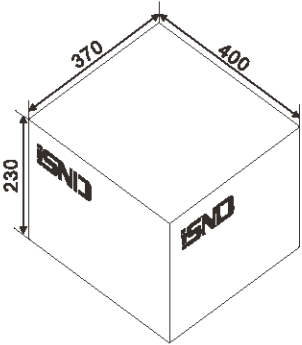
No paper dirty remains on the scotch when peeling, and sticks to top and bottom tape



**編帶和包裝 Ctaping and Package Packing Quantity**

SIZE	PACKAGE STYLE & QUANTITY				unit: pcs
	PT	ET	BC	BP	
0402(1005)	10000	-----	20000	5000	
0603(1608)	5000	-----	15000	5000	
0805(2012)	5000	2500	10000	5000	
1206(3216)	5000	2500	5000	5000	
1210(3225)	-----	2000	-----	2000	
1808(4520)	-----	2000	-----	2000	
1812(4532)	-----	2000	-----	2000	
2220(5750)	-----	-----	-----	500	
2225(5763)	-----	-----	-----	500	

**Carton**

Carton	Figure
<p>*Inner carton(A Type)Size: 200*185*115mm10 Reel in*</p>	
<p>*Out carton (W Type)Size: 400*370*220mm6pcs A Type carton in*</p>	

单击下面可查看定价，库存，交付和生命周期等信息

[>>ISND\(华信安\)](#)