



ISND

Multilayer Ceramic Chip Capacitors

HCM-Mid-High Voltage Capacitors

HCP-For General Application

HCK-For Large Capacitance



Multilayer Ceramic Chip Capacitor

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

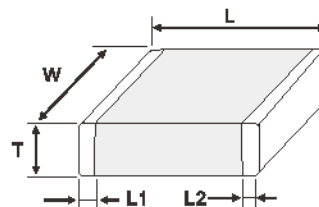
HCK: 高大容量型 (1.0~100 μF)

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

HCP: For General Application

HCK: Large Capacitance (1.0~100 μF)

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	1.60±0.2	1.00±0.25
				2.00±0.3	
				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

HCP — 一般通用品(C0G特性) HCP Series (C0G)

特点：

- 小型化的外形尺寸 (0402~1206)
- 额定工作电压：16V, 25V, 50V
- 低等效串联电感(ESL)和低等效串联电阻(ESR),极好的频率响应特性
- 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指令要求
- 工作温度范围：-55°C~+125°C

FEATURES：

- Small size (0402~1206)
- Working Voltage:16V,25V,50V
- Lower ESR and ESL assure superior frequency characteristics.
- High accuracy of capacitance.
- No polarity and high size accuracy suitable for SMT process.
- Ni/Sn plating terminations provide extreme solderability.
- Comply with RoHS directives.
- Working temperature range:-55°C~+125°C

应用：

用于一般电子线路中作耦合，滤波，谐振等。如手机，无绳电话，CD/DVD，MP3/MP4；液晶电视，机顶盒，PC主板等。

APPLICATIONS：

General purpose function such as coupling filtering resonating. Applications in mobile phones, cordless telephone, CD/DVD player, MP3/MP4 player, LCD TV, PC.

品名规格 SPECIFICATIONS

尺寸 Size	额定电压 (DC) Rated Voltage	容量范围(uF) Capacitance Range			
		0.50	0.75	1.00	1.50
0402 (1005)	50V,DC	2.0	3.0	4.0	5.0
		6.0	7.0	8.0	9.0
		10.0			
		12	15	18	22
		27	33	39	47
		56	68	82	100
		120	150	180	220
		270	330		
		0603 (1608)	50V,DC	1.0	1.5
4.0	5.0			6.0	7.0
8.0	9.0			10	
12	15			18	22
27	33			39	47
56	68			82	100
120	150			180	220
270	330			470	560
680	820			1000	1200
0805 (2012)	50V,DC	1200	1500	1800	2700
		3300	3900	4700	5600
		6800	8200	10000	
1206 (3216)	50V,DC	3900	4700	5600	6800
		8200	10000	12000	15000
		18000	22000	27000	

HCP — 一般通用品(X7R特性) HCP Series (X7R)

特点：

- 小型化的外形尺寸 (0402~1206)
- 额定工作电压：16V, 25V, 50V
- 低等效串联电感(ESL)和低等效串联电阻(ESR),极好的频率响应特性
- 较高的容量及容量精度
- 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指令要求
- 工作温度范围：-55℃~+125℃

FEATURES :

- Small size (0402~1206)
- Working Voltage:16V,25V,50V
- Lower ESR and ESL assure superior frequency characteristics.
- Large capacitance and accuracy.
- No polarity and high size accuracy suitable for SMT process.
- Ni/Sn plating terminations provide extreme solderability.
- Comply with RoHS directives.
- Working temperature range:-55℃~+125℃

应用：

用于一般电子线路中作耦合,滤波,谐振等。如手机,无绳电话, CD/DVD, MP3/MP4; 液晶电视,机顶盒,PC主板等。

APPLICATIONS :

General purpose function such as coupling filtering, resonating. Applications in mobile phones, cordless telephone, CD/DVD player, MP3/MP4 player, LCD TV, PC.

品名规格 SPECIFICATIONS

尺寸 Size	额定电压 (DC) Rated Voltage	容量范围(uF) Capacitance Range			
		220	330	470	680
0402 (1005)	50V,DC	1000	1500	2200	3300
		4700	6800	10000	22000
	25V,DC	10000	15000	22000	33000
		47000			
0603 (1608)	50V,DC	220	330	470	680
		1000	1500	2200	3300
		4700	6800	10000	22000
		47000			
0805 (2012)	50V,DC	100000	150000	220000	
		1000	1500	2200	3300
		4700	6800	10000	15000
		22000	33000	47000	
	25V,DC	68000	100000		
		150000	220000	330000	
1206 (3216)	50V, DC	470000	680000	1000000	
		220000	330000	470000	
		680000	1000000		
	25V,DC	1500000	2200000		
		470000	680000	1000000	
		1500000	2200000		
16V,DC	2200000	3300000	4700000		
	2200000	3300000	4700000		

HCP — 一般通用品(Y5V特性) HCP Series (Y5V)

特点：

- 小型化的外形尺寸 (0402~1206)
- 额定工作电压：10V,16V, 25V, 50V
- 低等效串联电感(ESL)和低等效串联电阻(ESR),极好的频率响应特性
- 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指令要求
- 工作温度范围：-30°C~+85°C

FEATURES :

- Small size (0402~1206)
- Working Voltage:16V,25V,50V
- 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 directives.
- Working temperature range:-30°C~+85°C

应用：

用于一般电子线路中作耦合，滤波等。如手机，无绳电话，CD/DVD，液晶电视，机顶盒，PC主板，家用电器控制板等。

APPLICATIONS :

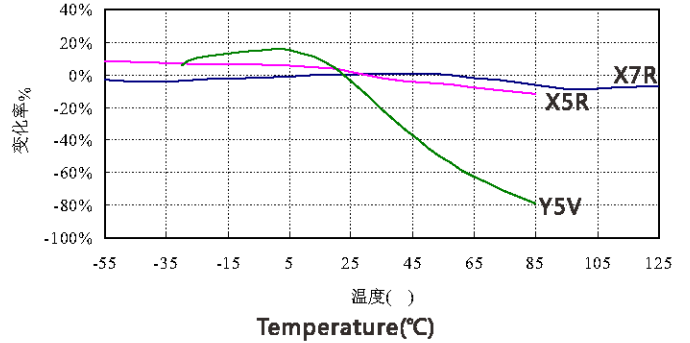
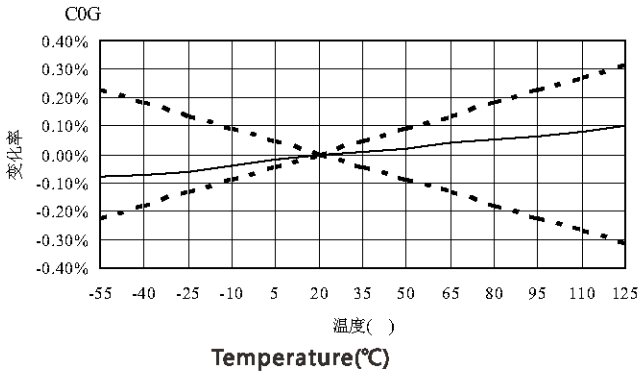
General purpose function such as coupling, filtering. Applications in mobile phone, cordless telephone, CD/DVD player, MP3/MP4 player, LCD TV, PC, controllers of household applications.

品名规格 SPECIFICATIONS

尺寸 Size	额定电压 (DC) Rated Voltage	容量范围(uF) Capacitance Range
0402 (1005)	16V,DC	0.10
	10V,DC	0.22
		0.47
0603 (1608)	50V,DC	0.10
		0.22
	25V,DC	0.47
		1.00
0805 (2012)	50V,DC	0.47
		1.00
	2.20	
1206 (3216)	25V,DC	2.20
	16V,DC	4.70
	50V,DC	2.20
	25V,DC	4.70
	16V,DC	10.00

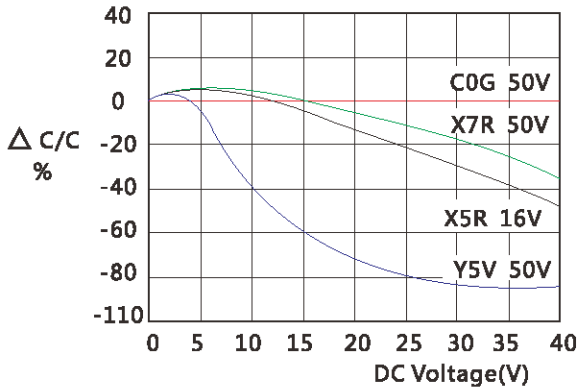
电气特性 Electrical Characteristics

电容量-温度特性 CAPACITANCE-TEMPERATURE CHARACTERISTICS



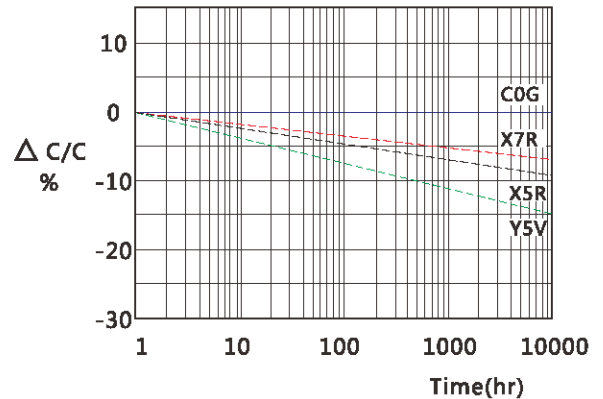
电容量-直流偏压特性

CAPACITANCE-DC VOLTAGE BIAS CHARACTERISTICS

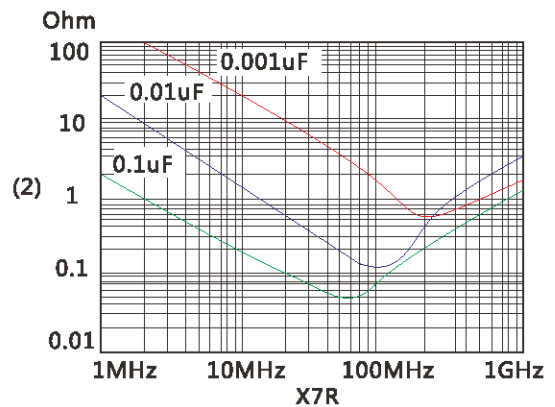
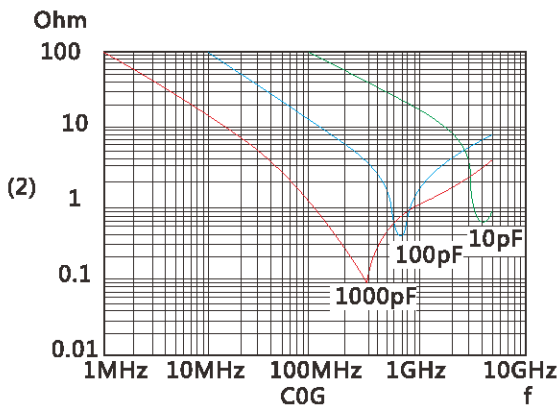


电容量老化特性

CAPACITANCE CHANGE-AGING

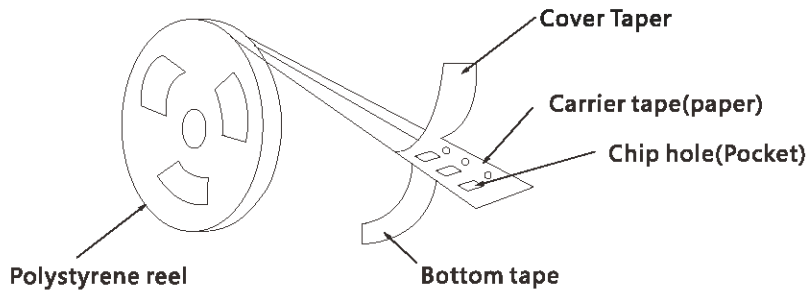


阻抗-频率特性 IMPEDANCE-FREQUENCY CHARACTERISTICS

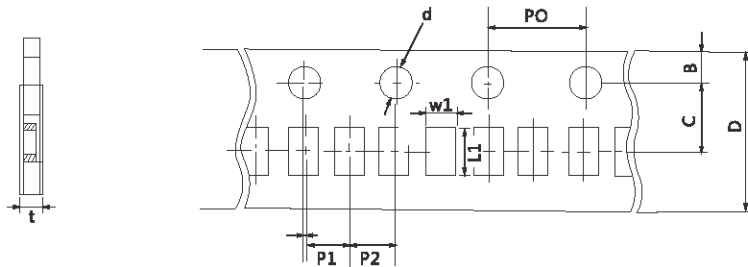


编带和包装 Taping and Package

PAPER TAPING

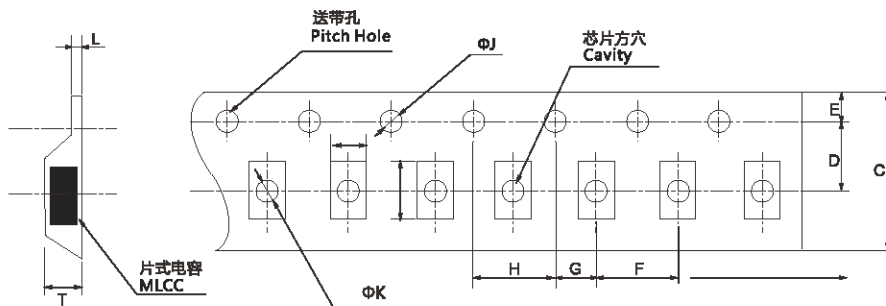


Dimensions of paper taping for 0402 type



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

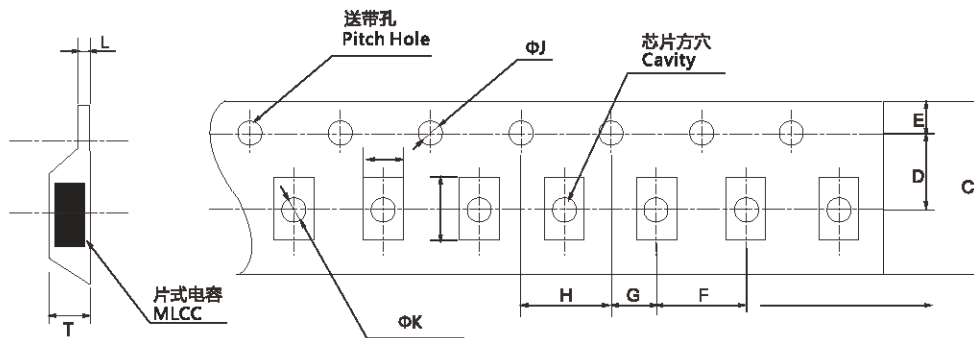
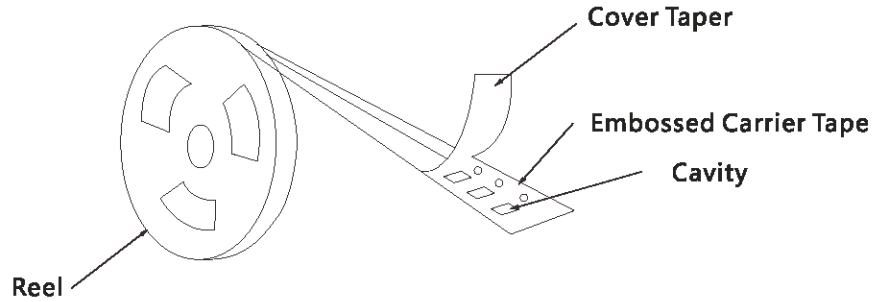
Dimensions of paper taping for 0603, 0805, 1206 types.



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

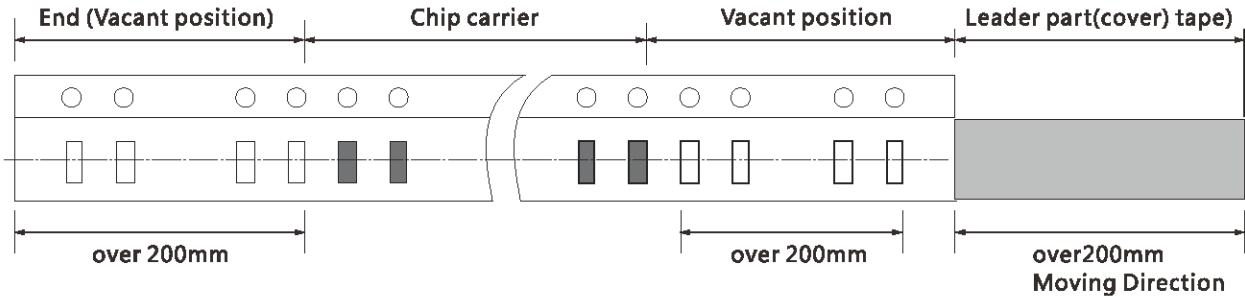


Code paper	A	B	C	D*	E	F	G*	H	J	T
1206 (3216)	1.95	3.60	8.00	3.50	1.75	4.00	2.00	4.00	1.50	1.85
	± 0.20	± 0.20	± 0.20	± 0.05	± 0.10	± 0.10	± 0.10	± 0.1	0.00	Max
1210 (3225)	2.70	3.42	8.00	3.50	1.75	4.00	2.00	4.00	1.55	3.20
	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.05	± 0.10	0.00	Max
1808 (4520)	2.20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

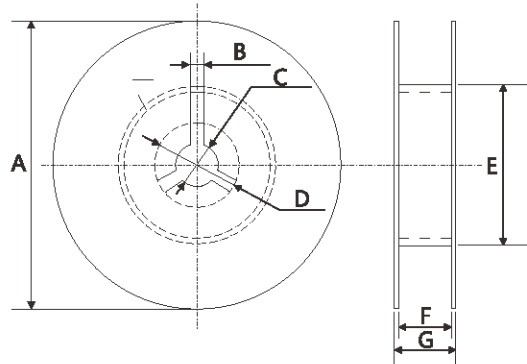
Note : The place with "*" means where needs exactly dimensions.

編帶和包裝 Taping and Package

Structure of leader part and end part of the carrier paper



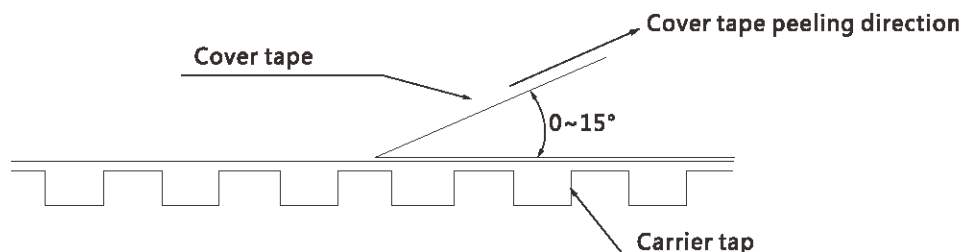
Reel Dimensions (unit: mm)



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 ± 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 ± 1.5	12max

Top tape peeling strength



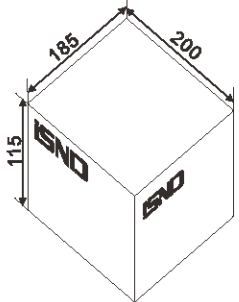
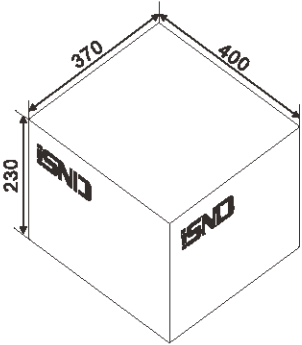
Standard: $0.1N < \text{peeling strength} < 0.7N$

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\(华信安\)](#)