香 港 電 阻 製 造 廠

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HONG KONG RESISTORS MANUFACTORY

(Wholly owned by Hong Kong Resistors Manufactory International Ltd.)

AN ISO 9001:2015 CERTIFIED MANUFACTURER
AN OHSAS 18001 : 2007 MANUFACTURER
AN ISO 14001 : 2015 MANUFACTURER

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Tel.: (86 737) 3800 399 Fax.: (86 737) 3800 199

SPECIFICATIONS FOR APPROVAL

Customer:

Name of Product: **Chip Resistor - General Purpose (RoHS)**

Sales Executive : _____ Date: 2020/5/9

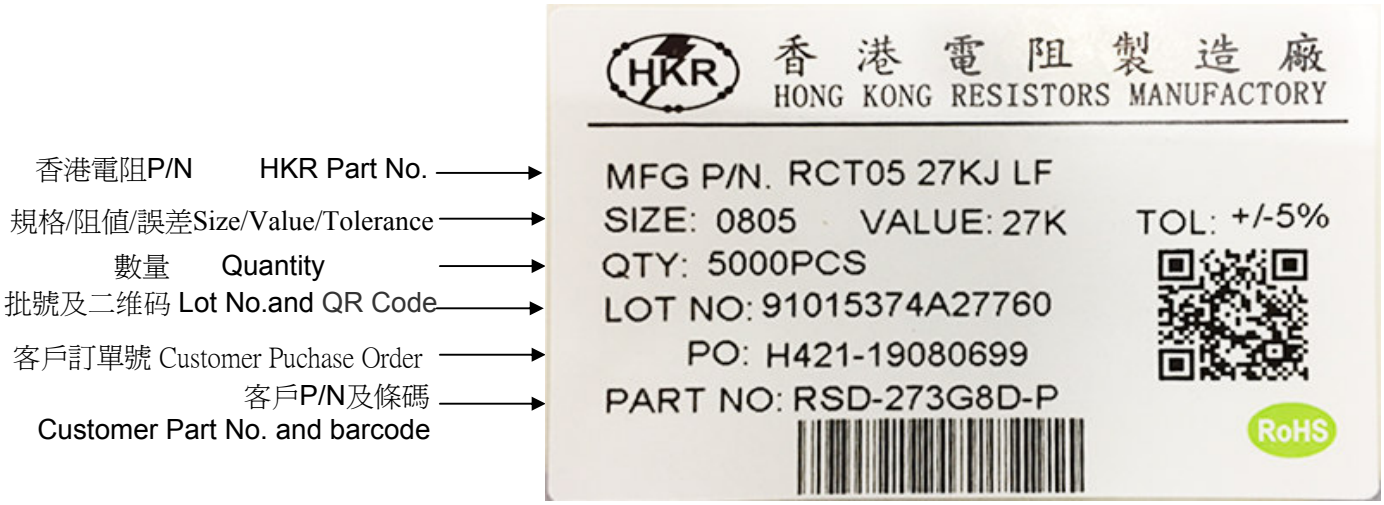
製造 Prepared by	品質 Quality by	業務 Sales by	核准 Authorized by
客戶 customer approval	客戶 customer approval	客戶 customer approval	客戶 customer approval

HKR Chip Resistor - General Purpose [RoHS]

■料號編碼 (Part Number)

RCT	05	27K	J	LF
Type 型號	Size 尺寸	Value 阻值	Tolerance 精度	Lead Free 不含鉛
RCT	01 : 0201 02 : 0402 03 : 0603 05 : 0805 06 : 1206 10 : 1210 12 : 1218 18 : 1812 20 : 2010 22 : 1225 25 : 2512		F : ±1% J : ±5%	

■標簽說明 (Label Explanation)



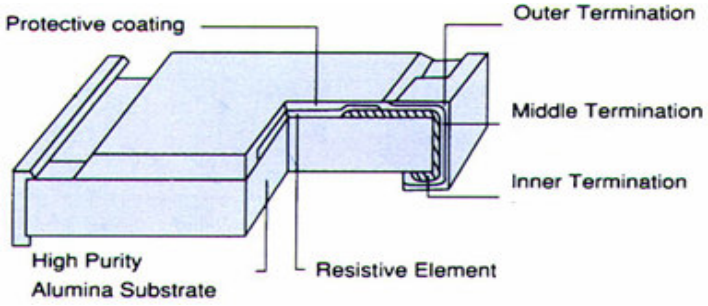
HKR Chip Resistor - General Purpose [RoHS]

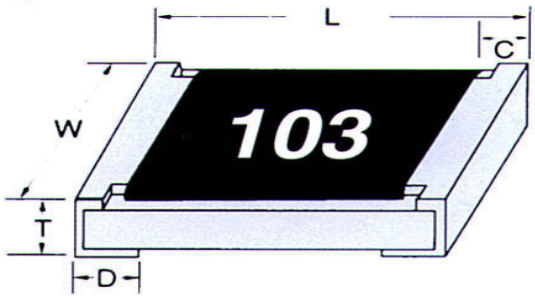
本公司產品遵循 SONY SS-00259 環境要求,不含 10 大環境相關有害禁用物質。
HKR products comply with environmental requirement in accordance with SONY of code no. SS-00259 for not related in 10 harmful materials.

■特性(*Features)*

- 輕薄短小：小型輕量,大幅縮小 PC 板面積及重量。
  Small size and ligtweight with size range per international standard
- 裝配性佳：外觀尺寸均勻精確,易於裝配。
  Highly stable in auto-placement surface mounting application
- 可使用於波峰焊及迴流焊。
  Compatible with both wave soldering and reflow soldering

■構造圖(*Configuration)*



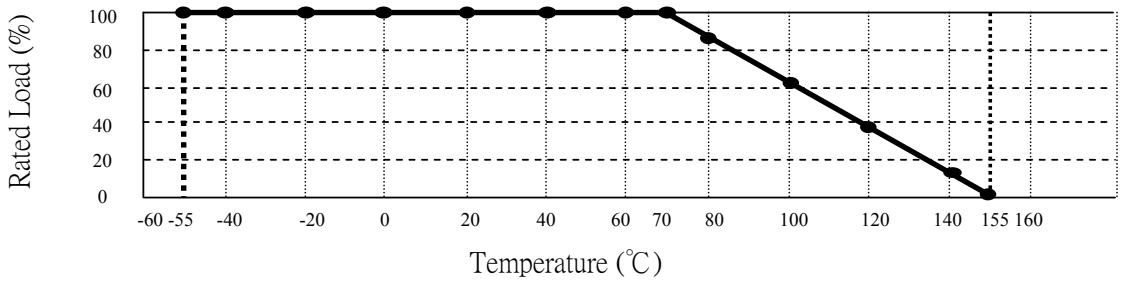


■尺寸(*Dimensions)*

(unit: mm)

Size	L	W	T	C	D
0201	0.60 ±0.03	0.30 ±0.03	0.23 ±0.03	0.15 ±0.05	0.15 ±0.05
0402	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.30 ±0.15
0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.30 ±0.20
1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
1210	3.10 ±0.10	2.50 ±0.10	0.55 ±0.10	0.45 ±0.25	0.45 ±0.25
1218	3.10 ±0.10	4.60 ±0.10	0.55 ±0.10	0.45 ±0.25	0.45 ±0.25
1812	4.50 ±0.10	3.10 ±0.20	0.55 ±0.05	0.55 ±0.20	0.70 ±0.20
2010	5.00 ±0.20	2.50 ±0.15	0.55 ±0.10	0.60 ±0.25	0.50 ±0.25
1225	3.10 ±0.15	6.30 ±0.15	0.90 ±0.15	0.60 ±0.30	0.80 ±0.25
2512	6.35 ±0.20	3.10 ±0.15	0.55 ±0.10	0.60 ±0.25	0.60 ±0.25

■功率衰減曲線(*Power Derating Curve)*



當使用於環境溫度 70℃ 以上時,額定功率將如上圖之曲線衰減。
For resistors operated in ambient temperatures above 70℃, power rating must be derated in accordance with the curve as above.

■額定(*Rating*)

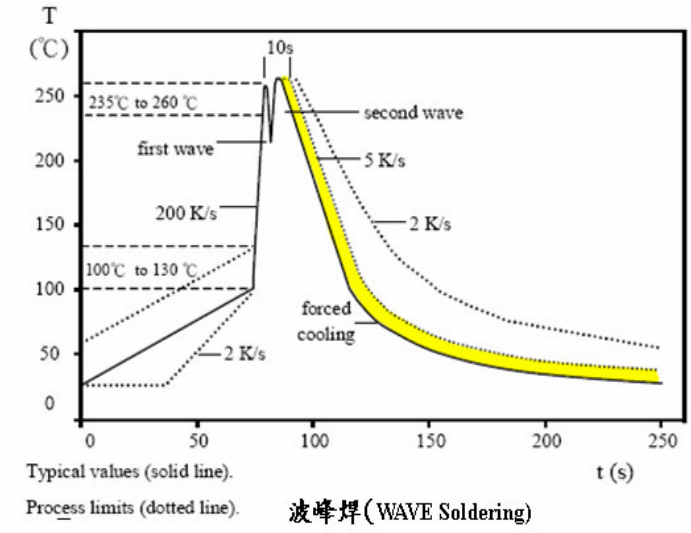
RCT 系列 (RCT *Series*)

型號 Type		RCT01	RCT02	RCT03	RCT05	RCT06	RCT10	RCT18	RCT12	RCT20	RCT25	RCT22
尺寸 Size		0201	0402	0603	0805	1206	1210	1812	1218	2010	2512	1225
額定功率 Power Rating at 70℃		1/20W	1/16W	1/10W	1/8W	1/4W	1/3W	1/2W	1W	1/2W	1W	2W
最高使用電壓 Max RCWV		15V	50V	50V	150V	200V	200V	200V	200V	200V	200V	200V
最高過負荷電壓 Max Overload Voltage		30V	100V	100V	300V	400V	400V	400V	400V	400V	400V	400V
最高使用電流 Jumper<50mΩ		0.5A	1A	1A	2A	2A	2A	2A	2A	2A	2A	10A
使用溫度范圍 Operating Temperature Range		-55~+155℃										
標准阻值范圍 Standard Resistance Range	0Ω	0~50mΩ										
	±1% (E-96)	1Ω~10MΩ		1Ω~10MΩ								10Ω~20KΩ
	±5% (E-24)	1Ω~10MΩ		1Ω~22MΩ								

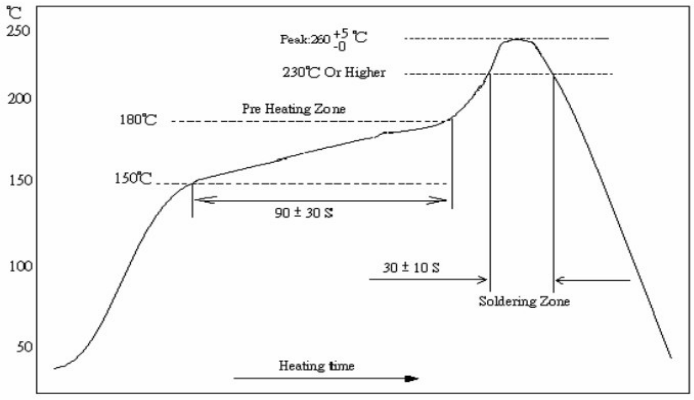
* 工作電壓根據阻值按公式V=√(P*R)計算，或者采用上面提供的最高使用電壓。
The working voltage is calculated based on the resistance value following the formula of V=√(P*R) or to its maximum extent as indicated above.

* 過負荷電壓根據阻值按公式V=2.5√(P*R)計算，或者采用上面提供的最高過負荷電壓。
The overload voltage is calculated based on the resistance value following the formula of V=2.5√(P*R) or to its maximum extent as indicated above.

■ 焊接溫度曲線(Soldering Temperature Curve)



波峰焊(WAVE Soldering)



回流焊(IR Reflow Soldering)

HKR Chip Resistor - General Purpose [RoHS]

■規格說明及測試方法(*Specification and Test Methods)*

ITEM	SPECIFICATION	TEST METHOD
焊錫性 Solderability	Over 95% of termination must be covered with solder	**JIS C 5201 4.17 / MIL-STD-202G METHOD 208H / IEC 60115-1 4.17** Reflow Soldering：Bath temperature:(235±5)℃,Immersion time:(2±0.5)s WAVE Soldering：Bath temperature:(270±10)℃,Immersion time:(2±0.5)s
耐焊性 Resistance to Solder Heat	J、G: △R ≦ ±(1% + 0.05Ω) F: △R≦±(0.5% + 0.05Ω) No mechanical damage	**JIS C 5201 4.18 / MIL-STD-202G METHOD 210F / IEC 60115-1 4.18** The temperature of the solder bath shall be (260±5)℃,The immersion time shall be(5±0.5)s or(10±1)s as prescribed by the detail specification
溫度系數 Temperature Coefficient of Resistance (TCR)	0402以下規格(0402 & 0201)： 1Ω~10Ω;>3.3M：±400ppm/℃ 10Ω(excluding 10Ω)~3.3M: ±200ppm/℃ 0603以上規格(0603 or above)： 1Ω~10Ω;>1M：±200ppm/℃ 10Ω(excluding10Ω)~1M：±100ppm/℃	**JIS C 5201 4.8 / MIL-STD-202G METHOD 304 / IEC 60115-1 4.8** The temperature characteristic or temperature coefficient of resistance is not specified for resistance values of less than 5R owing to difficulty of accurate measurement
短時間過負荷 Short time Overload	J、G: △R ≦ ±(2% + 0.05Ω) F: △R ≦ ±(1% + 0.05Ω)	**JIS C 5201 4.13/IEC 60115-1 4.13** 2.5×Rated voltage or Max. Overload Voltage for 5 sec. measure resistance after 30 minutes
恒溫恒濕壽命試驗 Load Life Humidity	J、G: △R ≦ ±(3% + 0.05Ω) F: △R ≦ ±(1% + 0.05Ω)	**JIS C 5201 4.24/MIL-STD-202G Method 106G / IEC 60115-1 4.24** Maintain the temperature of the resistor at 40±2℃ and 90～95% RH with the rated voltage applied.Cycle ON for 1.5 hours and OFF for 0.5 hour for1000+48/-0 hours. After 1～4 hour, measure the resistance value.
耐久性 Load Life	J、G: △R ≦ ±(3% + 0.05Ω) F: △R ≦ ±(1% + 0.05Ω)	**JIS C 5201 4.25/MIL-STD-202G Method 108A / IEC 60115-1 4.25** 70 ±2℃，Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF".
高低溫試驗 Temperature Cycle	J、G: △R ≦ ±(1% + 0.05Ω) F: △R≦±(0.5% + 0.05Ω) No mechanical damage	**JIS C 5201 4.19/MIL-STD-202G Method 107G /IEC 60115-1 4.19** Repeat 5 cycles as follows -65℃(30 min.)+25℃(2～3 min.) +125℃(30 min.)+25℃(2～3 min.)
絕緣阻抗 Insulation Resistance	Between termination and coating must be over 1000MΩ	**JIS C 5201 4.6 / MIL-STD-202G Method 302 / IEC 60115-1 4.6** Test voltage: 100±15V
彎曲強度 Bending Strength	J、G: △R ≦ ±(1% + 0.05Ω) F: △R≦±(0.5% + 0.05Ω) No mechanical damage	**JIS C 5201 4.33 / MIL-STD-202G Method 211A / IEC 60115-1 4.33** Resistance change after bended on the 90mm PCB. Bend: 3mm for 0201、0402、0603、0805 、1206 2mm for 1210、1812 、1218、1225 1mm for 2010、2512

■字碼編碼說明 (*Markings*)







1.1. ±5% (IEC E–24系列 Series)0603、0805、1206及以上規格(0201、0402無字碼)均用三字碼表示。
No markings on 0201 and 0402. Markings on the other sizes are expressed by a 3-digit code in its exact value.
E. G. ： 6R8=6.8Ω；100=10×10^0=10Ω；472=47×10^2=4700Ω=4.7KΩ。

1.2. ±1% 阻值表示規則 (+/-1% Resistance value markings)

a. 0805、1206及以上規格 ±1% 阻值均用四字碼表示。
Markings on sizes 0805, 1206 and above are expressed by a 4-digit code.
E. G. ：82R5=82.5Ω；1000=100×10^0=100Ω；2212=221×10^2=22100Ω=22.1KΩ。

b. 0603 ±1%(IEC E–96系列)阻值均采用三代碼表示。前两位爲阻值的數字代碼；後一位爲英文大寫字母，表示倍率(10n次幂)。
Markings on 0603 ±1%(IEC E–96 Series) are expressed by a 3-digit code; the first two digits represent the value code and the last capital letter represents the multiplier.

E-96系列阻值的數字代碼如下表： The coding system of the E-96 series is as follows :

阻值	代碼	阻值	代碼	阻值	代碼	阻值	代碼	阻值	代碼	阻值	代碼	阻值	代碼	阻值	代碼
100	**01**	133	**13**	178	**25**	237	**37**	316	**49**	422	**61**	562	**73**	750	**85**
102	**02**	137	**14**	182	**26**	243	**38**	324	**50**	432	**62**	576	**74**	768	**86**
105	**03**	140	**15**	187	**27**	249	**39**	332	**51**	442	**63**	590	**75**	787	**87**
107	**04**	143	**16**	191	**28**	255	**40**	340	**52**	453	**64**	604	**76**	806	**88**
110	**05**	147	**17**	196	**29**	261	**41**	348	**53**	464	**65**	619	**77**	825	**89**
113	**06**	150	**18**	200	**30**	267	**42**	357	**54**	475	**66**	634	**78**	845	**90**
115	**07**	154	**19**	205	**31**	274	**43**	365	**55**	487	**67**	649	**79**	866	**91**
118	**08**	158	**20**	210	**32**	280	**44**	374	**56**	499	**68**	665	**80**	887	**92**
121	**09**	162	**21**	215	**33**	287	**45**	383	**57**	511	**69**	681	**81**	909	**93**
124	**10**	165	**22**	221	**34**	294	**46**	392	**58**	523	**70**	698	**82**	931	**94**
127	**11**	169	**23**	226	**35**	301	**47**	402	**59**	536	**71**	715	**83**	953	**95**
130	**12**	174	**24**	232	**36**	309	**48**	412	**60**	549	**72**	732	**84**	976	**96**

倍率字母代碼如下表：(Multiplier code)

Code	A	B	C	D	E	F	G	X	Y	Z
Multiplier	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^{-1}	10^{-2}	10^{-3}

E. G. ：01Y=100× 10^{-2}=1Ω；68A=499×10^0=499Ω；02D=102×10^3=102KΩ

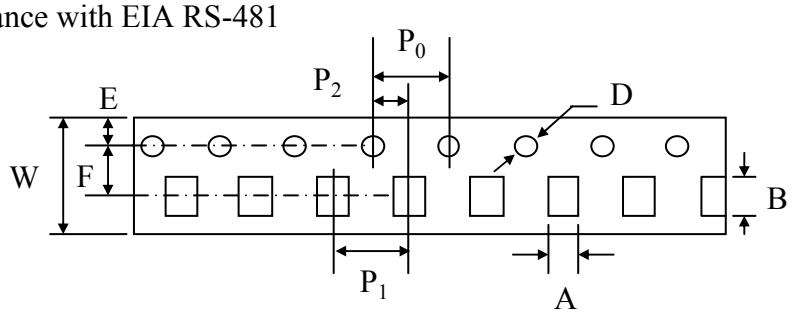
c. 任何 1%電阻其阻值不在 E-96 範圍系列中，則其字碼表示與E-24系列+/-5%字碼相同。僅用標簽注明誤差。
Any resistance values of 1% tolerance but not included in the E-96 series, the value markings are the same as +/-5% tolerance with labelling identification.
E. G.：120=12×10^0=12Ω；475=47×10^5=4.7MΩ。

d. 零歐姆晶片电阻字碼均用一個 “0”表示，其阻值在0~50mΩ 範圍內，並無誤差之分，所以我司標簽上無註明誤差值。

Marking of the 0 Ohm resistor is a '0' with its value range from 0-50mΩ. No tolerance shown on the product label.

■包裝及捲包規格(*Tape and Reel Package*)

Taping is in accordance with EIA RS-481

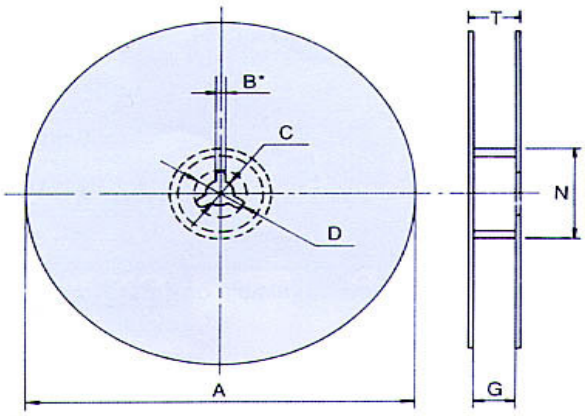


Accumulated dimensional tolerance 40±0.2mm

Size	A	B	W	F	E	P1	P2	P0	D
0201	0.40 ±0.10	0.75 ±0.10	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	2.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
0402	0.65 ±0.10	1.15 ±0.10	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	2.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
0603	1.10 ±0.20	1.90 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
0805	1.65 ±0.20	2.40 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1206	2.00 ±0.20	3.50 ±0.20	8.00 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1210	2.85 ±0.20	3.50 ±0.20	12.0 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1218	5.50 ±0.20	3.50 ±0.20	12.0 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1812	3.50 ±0.20	5.50 ±0.20	12.0 ±0.30	3.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
2010	2.80 ±0.20	5.50 ±0.20	12.0 ±0.30	5.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
1225	3.38 ±0.20	6.68 ±0.20	12.0 ±0.30	5.50 ±0.10	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10
2512	3.50 ±0.20	6.70 ±0.20	12.0 ±0.30	5.50 ±0.05	1.75 ±0.10	4.00 ±0.10	2.00 ±0.05	4.00 ±0.10	1.50 ±0.10

Size	Packaging Q'ty
0201	10Kpcs/Reel
0402	10Kpcs/Reel
0603	5Kpcs/Reel
0805	
1206	
1210	
1218	4Kpcs/Reel
1812	
2010	
2512	
1225	2Kpcs/Reel

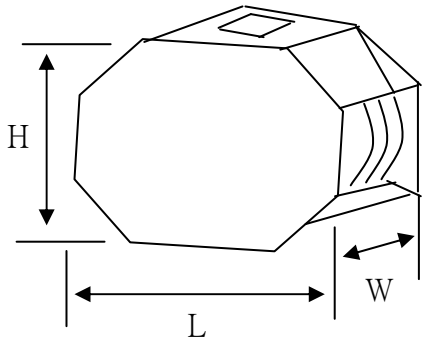
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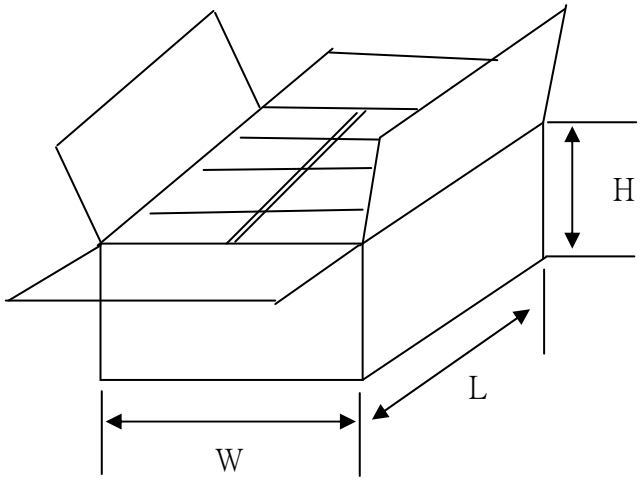


Symbol	A	N	C	D	B	G	T
Dimension	178 ±2.0	80.0 ±0.5	13.0 ±0.5	20min	2.00 ±0.5	10.0 ±1.5	14.9 max.
	178 ±2.0	80.0 ±0.5	13.0 ±0.5	20min	2.00 ±0.5	13.8 ±1.5	16.7 max.

Storage Condition 貯存環境	Temp 溫度:	Humidity 濕度:	Storage Time 儲存期	1 year
	5~35℃	20%-70%		

■外包裝(*Outer Packaging)*





第一次包装：1~10卷
First package：1~10 reels (inner box)

第二次包装：最多66卷
Second package：66 reels Max (export carton)

■当包装数量不能达到最大时，剩余空隙部位采用辅助材料填满。
When quantity shall not reach the max, the remaining empty space shall be filled up with buffer material.

■当包装数量为最小时，使用其它方法包装，确保运输过程中无问题是至关重要的。
When the quantity is a few, altemative packing methods may be used. It is important to ensure the safety of the products during transportation.

TYPE	PER CARTON	INNER BOX			EXPORT CARTON		
		L	W	H	L	W	H
0201	600,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
0402	600,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
0603	300,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
0805	300,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
1206	300,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
1210	300,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
1218	192,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
1812	192,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
2010	192,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
1225	84,000PCS	180mm	118mm	180mm	350mm	348mm	237mm
2512	192,000PCS	180mm	118mm	180mm	350mm	348mm	237mm