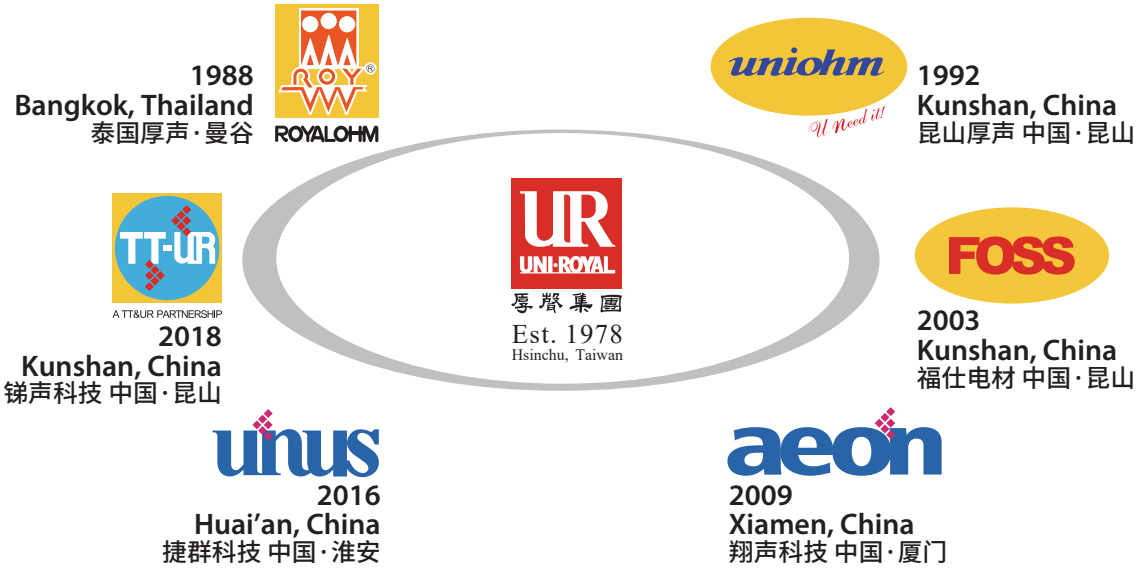
UR

UNI-ROYAL

厚聲集團

2019~2020

厚聲電阻



Our Mission:

Create value for customers, business associates and partners by providing reliable products and quality services.

我们的使命：

通过提供可信赖的产品和服务，为顾客、企业成员和合作伙伴创造价值。

Our Vision:

Become an excellent global supplier of passive components.

Be a respectable corporation to customers, business associates and partners.

我们的愿景：

以产品和服务成为电子制造业卓越的全球供货商。

做客户、企业成员、合作伙伴尊敬的企业。

厚声集团・昆山总部（Kunshan HQ)

UNI-ROYAL Group, founded in Hsinchu, Taiwan in 1978, has become a global leader in CHIP and DIP resistors industry. With more than 40 years of manufacturing experience, UNI-ROYAL has a profound industry insight and innovation leadership for the global electronics industry. UNI-ROYAL has a complete R&D team, manufacturing plants, global sales team and marketing service network located in Taiwan, Kunshan, Shenzhen, Xiamen, and Southeast Asia (Thailand). The group's four well-known brands: **ROYALOHM, UNIOHM, FOSS, AEON**, has become the world's favorite passive components suppliers and preferred partners.

UNI-ROYAL has successively been awarded many international standard system certifications such as QS9000, ISO14001, TL9000 and IATF16949. Products are widely used in microelectronics, mobile terminals, industrial equipment, automotive electronics, the Internet and other emerging civil and military high-tech industries. With the continuous development of the global economy, the iterative update of modern technology, especially the ever-changing application and innovation in the field of electronics, UNI-ROYAL has always provided cutting-edge technology, excellent products and leading solutions to supply a full range of products and services to well-known companies in the global industry.

厚声集团，始创于 1978 年台湾新竹，迄今已经成为全球晶片电阻和插件电阻的行业领导者。凭借逾四十年的制造经验，厚声对全球电子行业拥有深刻的行业洞察与创新领导能力。集团在台湾、昆山、深圳、厦门与东南亚（泰国）拥有完善的电阻研发团队、制造工厂及遍布全球的销售团队和营销服务网络。集团旗下四大著名品牌：**ROYALOHM**、**UNIOHM**、**FOSS**、**AEON**，已成为全球各行业备受青睐的被动元器件重要供货商和首选合作伙伴。

厚声先后获得 QS9000、ISO14001、TL9000、IATF16949 等多项国际标准体系认证。产品广泛应用于微电子、移动终端、工業設備、汽车电子、物联网等新兴民用与军工众多高科技领域。随着全球经济的不断发展、现代化技术的迭代更新，特别是电子领域日新月异的应用革新，厚声始终以前沿的技术、出色的产品和领先的解决方案，向全球行业知名企业提供全方位的产品和服务。

Milestone

1978	Hsinchu, Taiwan	Uniroyal Taiwan
1988	Bangkok, Thailand	Royal Electronic Factory (Thailand) Co., Ltd.
1992	Kunshan, China	Uniroyal Electronics Industry Co., Ltd
2003	Kunshan, China	FOSS Electronics Material
2009	Xiamen, China	Aeon Technology (Xiamen) Corportation
2014	Kunshan, China	Uniroyal Electronics Industry Co., Ltd - New Area
2016	Kunshan, China	Uniroyal Electronics Global Co., Ltd.: KS HQ, Shenzhen Branch, Xiamen Branch

厚声集团沿革

1978	台湾新竹	台湾厚声
1988	泰国曼谷	泰国厚声
1992	中国昆山	昆山厚声
2003	中国昆山	昆山福仕电材
2009	中国厦门	厦门翔声科技
2014	中国昆山	昆山厚声 - 新厂区
2016	中国昆山	厚声国际贸易：昆山总公司、深圳分公司、厦门分公司

泰国一厂 (Thailand 1988)

厦门翔声厂 (Xiamen 2009)

昆山福仕厂 (Kunshan 2003)

泰国二厂 (Thailand 2015)

Resistor

Resistor is a basic component in electronic circuits to control current flow and voltage. They are widely used in electronic circuits and electronic products. Uniroyal Group's products include thin film, thick film chip resistors, DIP type resistors such as DIP array resistors, carbon film, metal film, metal oxide film, metal glaze, wire-wound resistors, cement type resistors, power-type resistors and customized products of various special requirements..

电阻器

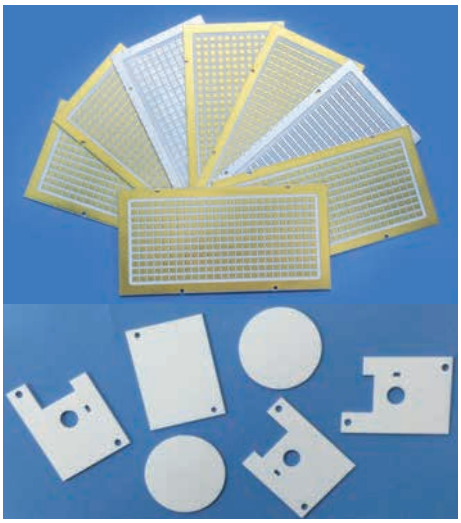
电阻器是电子线路中控制电流及电压的最基本元件 , 被广泛应用于电子电路及电子产品中 , 厚声集团的产品包括薄膜、厚膜晶片电阻，插件电阻如 DIP 排列电阻、碳膜、金属膜、金属氧化膜、玻璃釉、绕线电阻、水泥电阻、功率型电阻以及各种特殊要求的客制化产品。

Electronics Material

Foss Electronics Material Industry Co., Ltd. is one of the world's leading supplier of high quality electronic materials. Its products include all kinds of raw materials, including ceramic rods, capped white ceramic rods, capped sorted filmed-rods, filmed ceramic rods, etc, and various types of ceramic cases and different sizes of iron caps, tin-plated iron caps, etc.

电子材料

福仕电子材料工业有限公司是全球主要的优质电子材料供货商之一。其产品包括各种原材料棒体，包括瓷棒、压帽白棒、组分棒、电阻着膜棒等 ; 各类陶瓷外壳及不同尺寸铁帽、镀锡铁帽等。

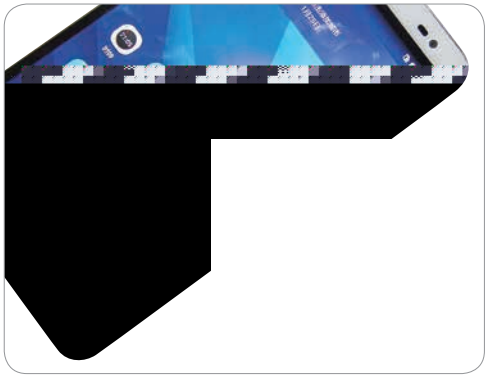


Ceramic Substrate

Aeon Technology (Xiamen) provides high-quality precision ceramic substrates that can meet high-end industry applications. Its products are widely used in commercial lighting, indoor lighting, outdoor lighting and decorative lighting applications.

散热基板

翔声科技提供的优质高精密陶瓷散热基板，能满足高端应用，可广泛应用于商业照明、室内照明、户外照明和装饰照明等。



High-Precision Thin Film Chip Resistors-TC

Precision thin film sputtering technology is used in this product. The resistance layer is made of high purity alloy target material. The film structure is compact and rules applied in the inter-ion alignment. It has good temperature stability, low noise coefficient and high reliability. The product can be widely used in medical equipments, precision measuring instruments, communication and precision industrial control equipments.

高精度薄膜晶片电阻器

产品采用精密薄膜溅射技术，电阻层采用高纯度合金靶材溅射而成，膜层结构致密，离子间排列有规则，具有良好的温度稳定性及噪音系数、可靠性高，产品可广泛应用于医疗器材、精密测量仪器、通讯及精密工业控制设备中。

Anti-Sulfurized Thick Film Chip Resistors – NS

NS series resistor is produced by high precision thick film printing technology, use special materials and production processes. The product has excellent corrosion resistance and anti-sulfur performance capability. It is widely used in automotive electronics, instruments and meters, mining machinery, farm equipment and instruments or equipment exposed to sulfur atmosphere.

抗硫化厚膜晶片电阻器

电阻采用高精密厚膜印刷技术制造，特殊的材料和生产工艺生产而成。产品具有优异的耐腐蚀性能和抗硫化能力。广泛应用于汽车电子、仪表、矿山机械、农场设备及含硫环境的仪器中。

Uni-Royal can produce multiple resistors and packaged wafer resistors and lead-type single-row in-line resistors. They can also be designed to meet the customer's requirements for RC or RL network Resistors. They can also be designed with customer-made temperature detection. Functional overcurrent soft protection component.

厚声电阻可生产多颗电阻封装于一体的晶片排阻和引线型单列直插式排阻，也可配合客户需求设计制做 RC 或 RL 网络排阻，还可以配合客户设计制做带温度检测功能的过流软保护元件。

High-Voltage Thick Film Chip Resistors-HV

HV series resistor uses precision thick film printing technology, with unique product design and manufacturing process, so that the product has excellent resistance to high voltage performance, high-voltage resistance is more than twice that of conventional thick film products. It saves cost and help reduce space on the circuit boards; thus effectively reducing the final size of the equipment.

高压厚膜晶片电阻器

电阻采用精密厚膜印刷技术，通过特有的产品设计及制做工艺，使产品具有极好的耐高电压性能，耐高电压特性是常规厚膜产品的 2 倍多，可减小电路板的安装空间及节约产品成本，同时可有效降低设备的最终尺寸。

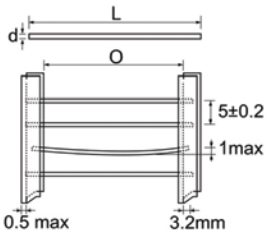
Metal Foil Current Sensing Chip Resistors - MS

MS series resistor uses photolithography technology allowing circuit patterns to be transferred on to the ceramic substrate. It has excellent temperature stability. The temperature coefficient is 30 PPM/°C or even lower. The product is widely used in current detection circuits and power management applications.

金属带电流检测片式电阻器

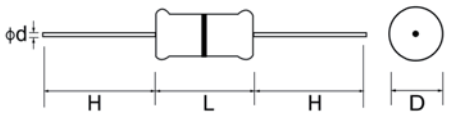
产品采用黄光影像转移技术，在陶瓷基板上形成电路，具有极好的温度稳定性，温度系数 30PPM/°C，甚至更低，产品广泛应用于电流检测电路及电源管理电路中。

ZW Type (ZW 型)

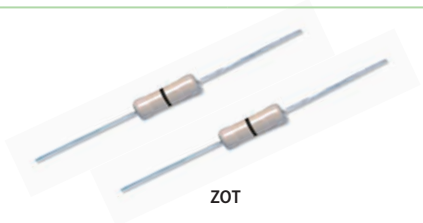


Part No 料号	Type 类型	L±3	d±0.05	O±1	
ZWA0	ZW-A	60/34	0.45	52	26
ZWB0	ZW-B	60/34	0.54	52	26
ZWB1	ZW-B1	60/34	0.60	52	26
ZWC0	ZW-C	60/34	0.70	52	26
ZWD0	ZW-D	60/34	0.75	52	26
ZWE0	ZW-E	60/34	1.00	52	26

ZO Type (ZO 型)



ZOC



ZOT

Part No 料号	Type	Power Rating 功率 70°C	Dimension (尺寸)(mm)				Resistance Range 阻值范围 (≤mΩ)
			D±0.3	L	d±0.05	H±3	
ZOT0W8/ZOCOW8	ZO-12	1/8W	1.9	3.3±0.3	0.45	28	ZOT：10 ZOC：50
ZOT0W4/ZOCOW4	ZO-25	1/4W	2.2	6.5±1.0	0.54	28	

Performance Specification(性能)

Lead material	引线材料	Tin-Plated copper（镀锡铜线）
Insulation resistance	绝缘阻值	Dry(干态)-10,000MΩ,Wet(湿态)-100MΩ
Dielectric withstanding voltage	绝缘耐压	Atmospheric（正常气压）-500V RMS; Reduced（减压）-325VRMS;
Rated current	额定电流	1/8W70°C 1.5A，1/4W 70°C 2.5A Derating to 0 Amps at 150°C 1/8W70°C 1.5A，1/4W 70°C 2.5A 150°C时，电流降低到 0A

Ordering Procedure (Example: ZOC 1/4W 0Ω T/R-5000)

订购方式 (例如: ZOC 1/4W 0Ω T/R-5000)

Z O C 0 W 4 0 0 0 0 0 0 T 5 0

Product Type (产品类型):
Zero Ohm Resistors(0Ω电阻)
ZOT0=0Ω(铁棒涂漆0Ω电阻)
ZOC0=0Ω(镀铜瓷棒0Ω电阻)
Jumper Wire(跳线）:
ZWA0=0.45mm ZWB0=0.54mm
ZWB1=0.60mm ZWC0=0.70mm
ZWD0=0.75mm ZWE0=1.0mm

Wattage (功率):
Zero Ohm Resistors(0Ω 电阻)
W8=1/8W
W4=1/4W
Jumper Wire(跳线):
00=NIL

Tolerance (公差):
0=NIL

Resistance Value (阻值):
Fill-in these 4digits with "0" specially 填 4 个 0 表示 0 阻值

Packing Type(包装类型):
A=Tape/Box (编带 / 盒装)
T=Tape/Reel (编带 / 卷装)
B=Bulk/Box (散装 / 盒装)
P=Tape/Box of PT-26 product
编带 /（PT-26 产品）盒装

Packing Qty. (包装数量):
5=5,000pcs
7=7,000pcs
8=8,000pcs
C=10,000pcs
0=Bulk/Box
（散装 / 盒装）

Additional Information(注):
0=NIL(标准品)

New/Old Part.no Contrast (新旧料号对照)

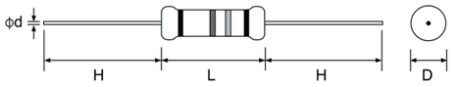
New Part.no 新料号	Old Part.no 旧料号
ZOC000000A*0**	CFR0**00000A*0
ZOT000000A*0**	ZO00**00000A*0

New Part.no 新料号	Old Part.no 旧料号
ZWB10000000A*0	ZWF00000000A*0
ZWE00000000A*0	ZWF00000000A*0

*M-type jumpers can be customized on request *M型跳線可特別提供

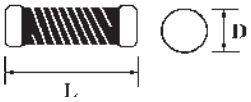
Copper Plated Steel Wire [铜包钢 (CP型)]

Tin Plated Copper Steel Lead Wire[镀锡铜包钢 (CT型)]



Part No 料号	Type 类型	Power Rating 功率 70°C	Dimension (尺寸)(mm)				MAX.Working Voltage 最大工作电压	MAX.Overlaod Voltage 最大过负荷电压	Dielectric Withstanding Voltage 绝缘耐压	Resistance Range 阻值范围
			D	L	d ±0.05	H±3				
CPXXW8/CTXXW8	CP/CT12	1/8W	1.9±0.3	3.3±0.3	0.54	28	200V	400V	400V	1Ω~10MΩ
CPXXW4/CTXXW4	CP/CT25	1/4W	2.2±0.5	6.5±1.0	0.54	28/38	250V	500V	500V	1Ω~10MΩ
CPXXS3/CTXXS3	CP/CT33-S	1/3W-S	2.2±0.5	6.5±1.0	0.54	28/38	300V	600V	500V	1Ω~10MΩ
CPXXW3/CTXXW3	CP/CT33	1/3W	3±0.5	9.0±1.0	0.54	28	300V	600V	700V	1Ω~10MΩ
CPXXS2/CTXXS2	CP/CT50-S	1/2W-S	3±0.5	9.0±1.0	0.54	28	350V	700V	700V	1Ω~10MΩ

Cutting Type (CO) [切割半成品型 (CO) 型]



Part No. 料号	Type 类型	Power Rating 功率 70°C	Dimension (尺寸)(mm)		Resistance Range 阻值范围
			D	L	
CO...W8	CO-12	1/8W	1.6 +0.10 -0.00	3.2 ±0.10	1Ω ~ 10MΩ
CO...W4	CO-25	1/4W	2.1 +0.09 -0.00	5.6 +0.10 -0.20	1Ω ~ 10MΩ
CO...W4...A	CO-25-A	1/4W	2.1 +0.09 -0.00	5.9 +0.10 -0.15	1Ω ~ 10MΩ
CO...W4...B	CO-25-B	1/4W	2.1 +0.09 -0.01	6.4 +0.10 -0.15	1Ω ~ 10MΩ

- Cutting type resistors are produced without lead-wire and without coating
  切割型半成品型电阻无导线，无涂装
- Cap plated option: 1. Tin-plated 2. Nickel-Plated
  铁帽：1 镀锡 2 镀镍

Ordering Procedure (Example: CTO 1/4W 5% 10Ω T/B-5000, CTO lead wire)

订购方式 (例如: CTO 1/4W 5% 10Ω T/B-5000, CTO导线)

C T O O W 4 J 0 1 0 0 A 5 0

Product Type (产品类型):
CPO=Copper plated steel lead wire
铜包钢线 (H=28mm)
CPL=Copper plated steel lead wire
铜包钢线 (H=38mm)
CTO=Tin Plated copper steel lead wire
镀锡铜包钢线 (H=28mm)
CTL=Tin Plated copper steel lead wire
镀锡铜包钢线(H=38mm)
COT= Cutting type (Tin-Plated Cap)
[切割型 (镀锡铁帽)]
CON= Cutting type (Nickel-Plated Cap)
[切割型 (镀镍铁帽)]

Special Feature (特征):
O=Standard(标准品)
F=Flame Retardant (阻燃型)
I=Non-Inductive (无感型)

Wattage (功率):
W8=1/8W
W4=1/4W
W3=1/3W
S3=1/3WS
S2=1/2WS

Tolerance (公差):
G = ±2%
J = ±5%
K = ±10%

Resistance Value (阻值):
2%, 5%, 10% (E-24 series):
the 1st digit is "0", the 2nd & 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following;
2%, 5%, 10% 产品 (E-24 系列阻值):
第 1 位是 0, 第 2、3 位表示阻值的有效数 , 第 4 位表示有几个 0.

≤1% (E-96 series):
the 1st to 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following.
≤1% 产品 (E-96 系列阻值):
第 1~3 位表示阻值的有效数 , 第 4 位表示有几个 0.

Packing Type(包装类型):
A=Tape/Box (编带 / 盒装)
T=Tape/Reel (编带 / 卷装)
B=Bulk/Box (散装 / 盒装)
P=Tape/Box of PT-26 product
编带 (PT-26 产品) / 盒装

Packing Qty. (包装数量):
1=1,000pcs,
2=2,000pcs
3=3,000pcs,
4=4,000pcs
5=5,000pcs,
A=500pcs
B=2,500pcs
0=Bulk/Box
(散装 / 盒装)

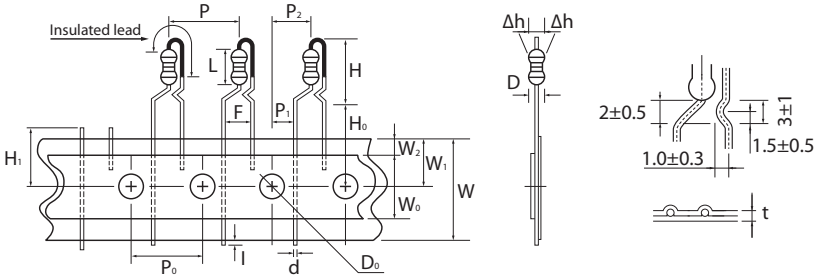
Additional Information(注):
0=CP/CT Type
A=Co-25-A,
B=CO-25-B

Feature (特性)

- This specification is applicable for CFR 1/4W,1/2W,1WS&CPR1/2W&MF1/4W,1/2WS,1/2W,1WS,2WS&MOR1/4W,1WS,2WS, KNP1/4W,1/2WS,1WS,2WS product only. KNP2WS product only; For other product (size), please consult factory for the available specification and drawing..

  下图规格适用于 CFR1/4W,1/2W,1WS&CPR1/2W&MF1/4W,1/2WS,1/2W,1WS,2WS&MOR1/4W,1WS,2WS,KNP1/4W,1/2WS,1WS,2WS. 其它产品的立 式加工，可洽询工厂以取得可生产的 规格图样。
- Standard product is insulated lead wire, insulated coating length 1/4W: 9.5±1mm; 1WS:13±1mm; 2WS:15±1mm
  标准品为绝缘引线，绝缘涂层长度为:
  1/4W: 9.5±1mm
  1WS: 13±1mm
  2WS: 15±1mm

Panasert Type 1:



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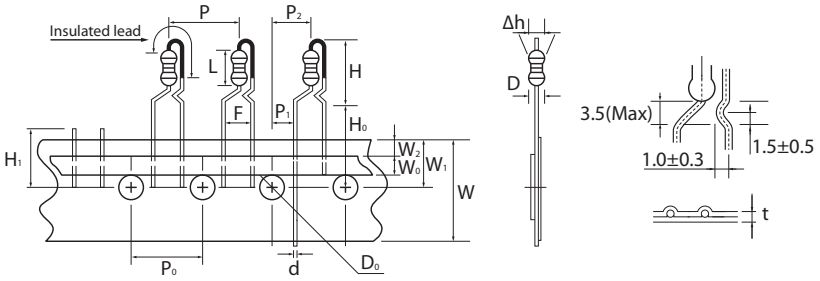
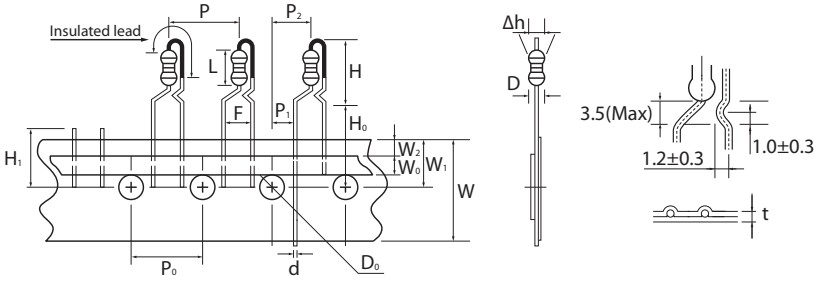


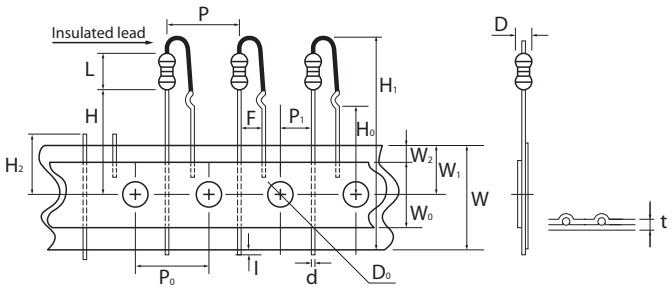
Panasert Type 2:



Items(项目)	Symbol	Dimension 尺寸 (mm)			
		1/4W	1/2WS	1WS	2WS
Body diameter 本体直径	D	2.5 (Max)	3±0.5	3.5±0.5	4±0.5
Body length 本体长度	L	6.8 (Max)	9±1	9±1	11.5±1
Body height 本体高度	H	12 (Max)	17 (Max)	19 (Max)	21 (Max)
Lead-wire diameter 导线直径	d	0.60±0.05	0.60±0.05	0.70±0.05	0.70±0.05
Pitch of component 零件间距	p	12.7±1	12.7±1	12.7±1	12.7±1
Feed hole pitch 孔距	P0	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
Hole center to lead 中心测量	P1	3.85±0.7	3.85±0.7	3.85±0.7	3.85±0.7
Hole center to body 孔心至本体	P2	6.35±1.3	6.35±1.3	6.35±1.3	6.35±1.3
Lead to lead distance 两脚导线中心测量	F	5±1	5±1	5±1	5±1
Component aligment 零件偏移	Δh	0±1	0±1	0±1	0±1
Tape width 纸带宽度	W	18±1	18+1/-1.5	18+1/-1.5	18+1/-1.5
Sticky tape width 热熔胶带宽	W0	12.5 (Min)	/	12.5 (Min)	12.5 (Min)
		6 (min)	6±0.2	6±0.2	6±0.2
Hole position 孔位	W1	9±0.5	9+0.75/-0.5	9+0.75/-0.5	9+0.75/-0.5
Uncovered paper tape width 纸带露出宽度	W2	1.5 (Max)	1.5 (Max)	1.5 (Max)	1.5 (Max)
Lead –wire clinch height 导线固定高度	H0	16.5 (Max)	16±0.5	16±0.5	16±0.5
Length of snipped lead 导线剪断高度	H1	11 (Max)	11 (Max)	11 (Max)	11 (Max)
Feed hole diameter 孔径	D0	4±0.3	4±0.3	4±0.3	4±0.3
Total tape thickness 胶带厚度	t	0.5±0.2	0.5±0.2	0.5±0.2	0.5±0.2
Lead wire protrusion 导线露出	i	1Max	-	-	-
Length of lead cut 切脚的长度	H1-w1	2±0.5	2±0.5	2±0.5	2±0.5

Avisert(1) Type【Avisert(1)型】

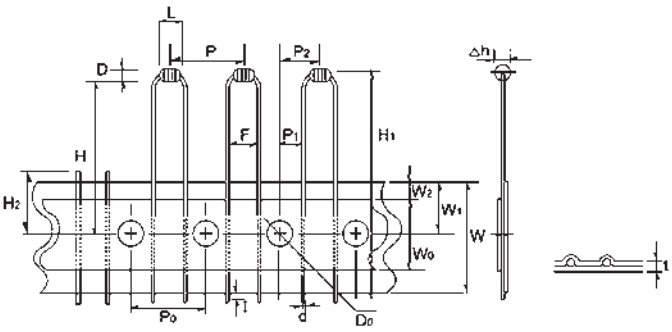
- This specification is applicable for CFR1/4W,CPR1/2W&MF1/4W,1/2WS,0.6WS,MOR1/4W,1/2WS,product only; For other product (size), please consult factory for the specification and drawing.
  适用于 CFR1/4W, CPR1/2W & MF1/4W, 1/2WS, 0.6WS, MOR1/4W, 1/2WS 固定电阻。其它产品的立式加工，可洽询工厂以取得可生产的规格图样。
- Standard product is insulated lead wire,insulated coating length 9.5±1mm
  标准品为绝缘引线，绝缘涂层长度为 : 9.5±1mm。



Items (项目)	Symbol	Dimension 尺寸 (mm) 1/4W
Body diameter 本体直径	D	2.5 (Max)
Body length 本体长度	L	6.8 (Max)
Lead-wire diameter 导线直径	d	0.60±0.05
Pitch of component 零件间距	p	12.7±1
Feed hole pitch 孔距	P0	12.7±0.3
Hole center to lead 中心测量	P1	3.85±0.7
Lead to lead distance 两脚导线中心测量	F	5±1
Tape width 纸带宽度	W	18±1
Sticky tape width 热熔胶带宽	W0	12.5 (Min)
		6 (min)
Hole position 孔位	W1	9.5±0.5
Uncovered paper tape width 纸带露出宽度	W2	3.0 (Max)
Height of component from tape center 零件至纸带中间的宽度	H	17.3±0.5
Lead –wire clinch height 导线固定高度	H0	16.5 (Max)
Component height 零件高度	H1	34.5 (Max)
Length of snipped lead 导线剪断高度	H2	11 (Max)
Feed hole diameter 孔径	D0	4±0.3
Total tape thickness 胶带厚度	t	0.5±0.2
Lead wire protrusion 导线露出	i	1 (Max)

Avisert(2) Type【Avisert(2)型】

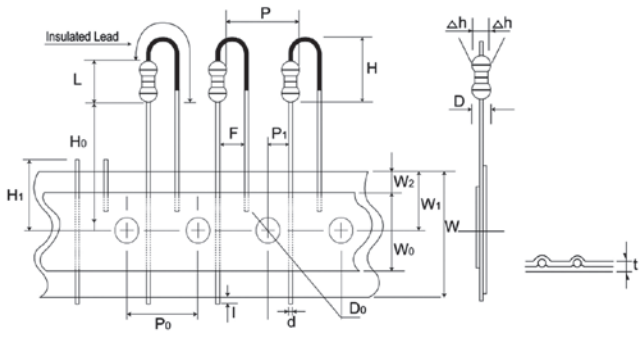
- This specification is applicable for CFR1/8W, 1/4WS&MF1/8W, 1/4WS product only; For other product avaiable forming products, please consult factory for the specification and drawing.
  适用于 CFR1/8W, 1/4WS&MF1/8W, 1/4WS 固定电阻。其它产品的立式加工，可洽询工厂以取得可生产的规格图样。



Items (项目)	Symbol	Dimension 尺寸 (mm) 1/8W
Body diameter 本体直径	D	1.85 (Max)
Body length 本体长度	L	3.5 (Max)
Lead-wire diameter 导线直径	d	0.45±0.05
Pitch of component 零件间距	p	12.7±1
Feed hole pitch 孔距	P0	12.7±0.3
Hole center to lead 中心测量	P1	3.85±0.7
Hold center to component center 孔心至零件中心距离	P2	6.35±1.3
Lead to lead distance 两脚导线中心测量	F	5±1
Tape width 纸带宽度	W	18±1
Sticky tape width 热熔胶带宽	W0	6 (Min)
Hole position 孔位	W1	9.0±0.5
Uncovered paper tape width 纸带露出宽度	W2	3.0 (Max)
Lead wire protrusion 打弯处到纸带中心位置	H	21.25 (Max)
Component height 零件高度	H1	32.25 (Max)
Length of snipped lead 导线剪断高度	H2	11 (Max)
Feed hole diameter 孔径	D0	4±0.3
Total tape thickness 胶带厚度	t	0.5±0.2
Lead wire protrusion 导线露出	i	1 (Max)

Avisert(3) Type【Avisert(3)型】

- This specification is applicable for CFR1/8W, CFR1/4WS, MF1/8W, MF1/4WS, MF1/4W, MF1/2WS, MF0.6WS, MOR1/4W, MOR1/2WS. For other product (size), please consult factory for the specification and drawing.
  下图规格适用于 CFR1/8W,CFR1/4WS,MF1/8W,MF1/4WS,MF1/4W,MF1/2WS,MF0.6WS,MOR1/4W,MOR1/2WS ; 其它产品的立式加工，可洽询工厂以取得可生产的规格图样 .
- Standard product is insulated lead wire,insulated coating length 9.5±1mm.
  标准品为绝缘引线，绝缘涂层长度为：9.5±1mm.



Items (项目)	Symbol	Dimension 尺寸 (mm)	
		1/8W	1/4W
Body diameter 本体直径	D	2.0 (Max)	2.5 (Max)
Body length 本体长度	L	4.2 (Max)	6.8 (Max)
Lead-wire diameter 导线直径	d	0.45±0.05	0.60±0.05
Pitch of component 零件间距	p	12.7±1	12.7±1
Feed hole pitch 孔距	P0	12.7±0.3	12.7±0.3
Hole center to lead 中心测量	P1	3.85±0.7	3.85±0.7
Lead to lead distance 两脚导线中心测量	F	2.5±1	5±1
Tape width 纸带宽度	W	18±1	18±1
Sticky tape width 热熔胶带宽	W0	6min	6min
Hole position 孔位	W1	9.0±0.5	9.0±0.5
Uncovered paper tape width 纸带露出宽度	W2	3.0 (Max)	3.0 (Max)
Body height 本体高度	H	7.0 (Max)	10.0 (Max)
Lead –wire clinch height 导线固定高度	H0	20.0 (Max)	16.0 (Max)
Component aligment 零件偏移	Δh	0±1	0±1
Length of snipped lead 导线剪断高度	H1	11 (Max)	11 (Max)
Feed hole diameter 孔径	D0	4±0.3	4±0.3
Total tape thickness 胶带厚度	t	0.5±0.2	0.5±0.2
Lead wire protrusion 导线露出	i	1 (Max)	1 (Max)

Ordering Procedure (Example: CFR1/4W 5% 100KΩ T/B-2000 PANASERT Type)

订购方式 (例如: CFR1/4W 5% 100KΩ T/B-2000 PANASERT Type)

C F R 0 W 4 J 0 1 0 4 A 2 P

Product Type (产品类型):
CFR = Carbon Film Fixed Resistors (碳膜固定电阻器)
MF = Metal Film Fixed Resistors (金属膜固定电阻器)
MOR= Metal Oxide Film Fixed Resistors (金属氧化膜固定电阻器)

Special Feature (特征):
O=Standard(标准品)
I=Non-Inductive (无感型)

Wattage (功率):
W8=1/8W
W4=1/4W
W2=1/2W
S4=1/4W-S
S2=1/2W-S
06=0.6W-S

Tolerance (公差):
G=2% J=±5%
K=±10%

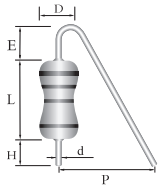
Resistance Value (阻值):
2%, 5%, 10% (E-24 series):
the 1st digit is "0", the 2nd & 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following;
2%, 5%, 10% 产品 (E-24 系列阻值):
第 1 位是 0, 第 2、3 位表示阻值的有效数 , 第 4 位表示有几个 0.
≤1% (E-96 series):
the 1st to 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following.
≤1% 产品 (E-96 系列阻值):
第 1~3 位表示阻值的有效数 , 第 4 位表示有几个 0.

Packing Type(包装类型):
A=Tape/Box (编带 / 盒装)
T=Tape/Reel (编带 / 卷装)

Packing Qty. (包装数量):
2=2,000pcs(T/B only)(限 T/B)
5=5,000pcs(T/R only)(限 T/R)
T/R is 2500PCS per reel &2reels per box (T/R 是每卷 2,500pcs, 每盒 2 卷)

Additional Information(注):
P=Panasert type 1
Q=Panasert type 2
1= Avisert type 1
2= Avisert type 2
3= Avisert type 3

F Forming Type (F 型)

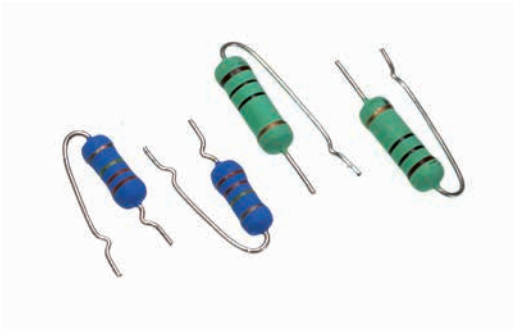


F Type (F 型)

F1 Type (F1 型)

F2 Type (F2 型)

F3 Type (F3 型)

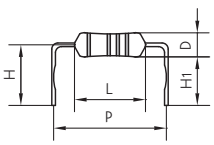


Dimension (尺寸) (mm)

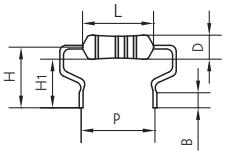
Power Rating 功率	L Max. L 最大	D Max. D 最大	d ± 0.05	P +1 -3	H ± I	E ± 0.5
I W (2W-S)	12	5.0	0.70	8	6	2.5
2 W (3W-S)	16	5.5	0.70	8	6	2.5

M Forming Type (M 型)

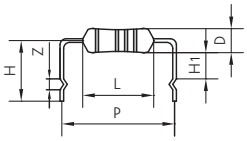
MB Type (MB 型)



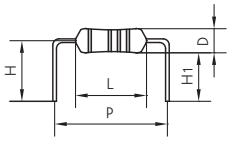
MC Type (MC 型)

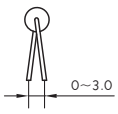


MK Type (MK 型)



M Type (M 型)

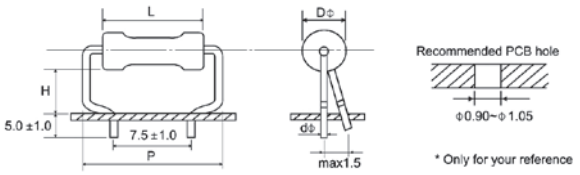




Power Rating 功率 70°C	L(Max)	D(Max)	d±0.05	H±2	P±1.5
1/2W & 1WS	10	4	0.70	14	13
1W & 2WS	12	5	0.70	14	15
2W & 3W-S	16	5.5	0.70	18	20
3W & 5WS	17.5	6.5	0.75	20	25
5W	26	8.5	0.75	20	31

T Forming Type (T 型)

Power Rating 功率 70°C	L(Max)	D(Max)	d±0.05	P(Max)	H +1 -0
1W-S	10	3.5	0.70	12.5	8
1W(2W-S)	12	5.0	0.70	15	8
2W(3W-S)	16	55	0.70	20	9



Ordering Procedure (Example: MOR1WS 5% 10Ω B/B M Type with flattened lead wire)

订购方式 (例如: MOR1WS 5% 10Ω B/B M 型导线打扁)

M O R 0 1 S J 0 1 0 0 B M F

Product Type (产品类型):
MOR=Metal Oxide Film Fixed Resistors (金属氧化膜固定电阻器)
CFR=Carbon Film Fixed Resistors (碳膜固定电阻器)

Special Feature (特征):
O=Standard(标准品)
I=Non-Inductive (无感型)

Wattage (功率):
W2=1/2W 1W=1W
2W=2W 3W=3W
5W=5W 1S=1W-S
2S=2W-S 3S=3W-S
5W=5W-S

Tolerance (公差):
G=2% J=±5% K=±10%

Resistance Value (阻值):
5% & 10% (E-24 series):
the 1st digit is "0", the 2nd & 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following;
5%,10% 产品 (E-24 系列阻值):
第 1 位是 0, 第 2、3 位表示阻值的有效数 , 第 4 位表示有几个 0.
2% (E-96 series):
the 1st to 3rd digits are for the significant figures of the resistance and the 4th indicate the numbers of zeros following.
2% 产品 (E-96 系列阻值):
第 1~3 位表示阻值的有效数 , 第 4 位表示有几个 0.

Packing Type(包装类型):
B=Bulk/Box (散装 / 盒装)

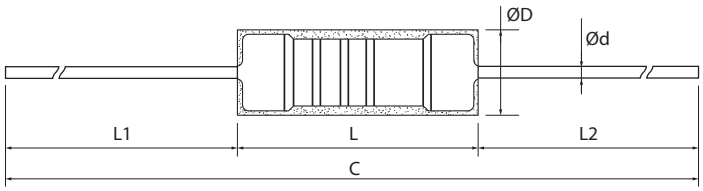
Additional Information(注):
F0=F Type (F 型) F1=F1 Type (F1 型)
F2=F2Type (F2 型) F3=F3 Type (F3 型)
T0=T Type (T 型)
MF=M Type with flattened lead wire M 型导线打扁
MC=M Type with bending lead wire M 型导线打弯曲
MK=M Type with kinked lead wire M 型导线打弯折
ML=M Type with normal lead wire M 型导线直线

Feature (特性)

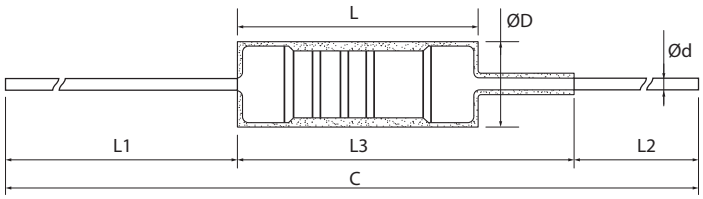
- Used for insulation protection and fusing protection of wire-wound (fusible) resistor.
  用于涂装产品的绝缘防护及绕线 (保险丝) 电阻的熔断防护。
- This specification is applicable for KNP、KNPU product only. For the other products (size), please consult factory for the available specification and drawing..
  适用于 KNP、KNPU 的产品，其他产品请洽谈工厂取得可生产的规格图样。

TZ Forming Type (TZ 轴向套管)

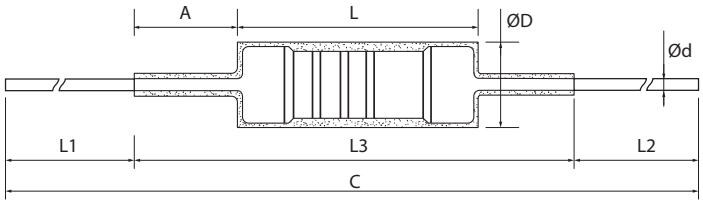
TZ-1 Wrapped resistor body only
TZ-1套管包电阻本体



TZ-2 Wrapped resistor body and lead one side only
TZ-2套管包电阻本体及一边导线



TZ-3 Wrapped resistor body and lead both two side
TZ-3套管包电阻本体及两边导线

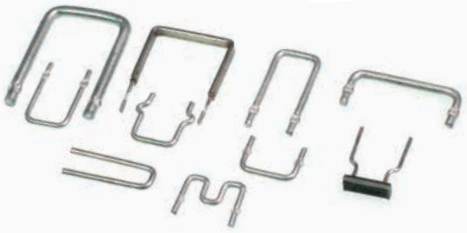


Dimension (尺寸) (mm)

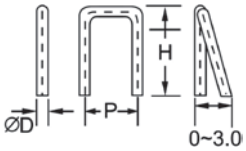
Type 类型	Forming type 加工形态	Dimension (尺寸)(mm) (L1、L2、L3 Adjustable range 可调范围)							
		D±1	L±1	L1	L2	L3	Ød±0.05	A (Max.)	C (Max.)
1/4W、1/2W、1WSS	TZ-1	2.5	6.5	38	25	/	0.54	/	Max.68mm
	TZ-2			38	2Min.	40Max.		/	
	TZ-3			2Min.	2Min.	40Max.		33	
1/2W、1WS、2WSS	TZ-1	3.5	9.5	38	25	/	0.54	/	Max.71mm
	TZ-2			38	2Min.	40Max.		/	
	TZ-3			2Min.	2Min.	40Max.		30	
1W、2WS、3WSS	TZ-1	4.5	11.5	38	25	/	0.70	/	Max.73mm
	TZ-2			38	2Min.	40Max.		/	
	TZ-3			2Min.	2Min.	40Max.		28	
2W、3WS、4WSS	TZ-1	5.5	15.5	38	25	/	0.70	/	Max.77mm
	TZ-2			38	2Min.	40Max.		/	
	TZ-3			2Min.	2Min.	40Max.		25	

Feature (特性)

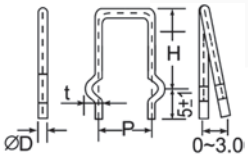
- Made by Cu/Ni or Mn/Cu Alloy resistance wire materials
  由铜 / 镍或锰 / 铜合金电阻线制成
- Excellent Solderability 优越的焊接性能
- Suitable for all kinds of Current sense application
  适用于各种类型的电流感应器应用
- Application: Power Supply 电源供应



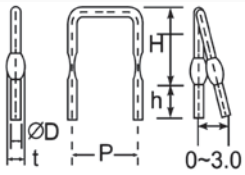
CSRA Type- CSRA 型



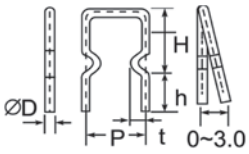
CSRB Type- CSRB 型



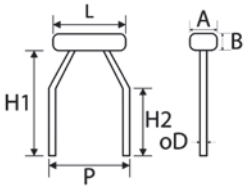
CSRC Type- CSRC 型



CSRD Type- CSRD 型



CSRE Type- CSRE 型



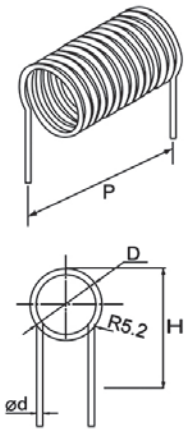
Specification(性能)

Type 类型	ΦD 线径	Rated Current 额定电流	Resistance Range 阻值范围	TCR	Remark 备注
CSRA CSRB CSRC CSRD	Φ0.8mm	4.5A	5mΩ~50mΩ	±100PPM/℃	*P&H could be design by customer's requirement P 值和 H 值可根据客户的要求进行设计 *Temperature coefficient of resistor could be design by customer's requirement 温度系数可根据客户的要求进行设计
	Φ0.9mm	5.0A	5mΩ~40mΩ		
	Φ1.0mm	5.5A	3mΩ~30mΩ		
	Φ1.1mm	6.0A	3mΩ~20mΩ		
	Φ1.2mm	7.0A	3mΩ~20mΩ		
	Φ1.3mm	7.5A	3mΩ~20mΩ		
	Φ1.4mm	8.0A	3mΩ~20mΩ		
	Φ1.5mm	9.0A	3mΩ~20mΩ		
	Φ1.6mm	9.5A	3mΩ~15mΩ		
	Φ1.8mm	11A	3mΩ~10mΩ		
	Φ2.0mm	12A	3mΩ~10mΩ		
	Φ2.3mm	14A	3mΩ~7mΩ		
CSRE	Φ1.0mm	50A	1mΩ		

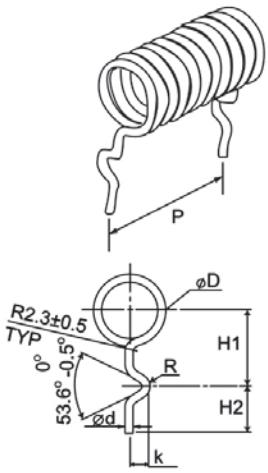
Feature (特性)

- Made by Cu/Ni or Mn/Cu Alloy resistance wire materials
  由铜 / 镍或锰 / 铜合金电阻线制成
- Excellent Solderability 优越的焊接性能
- Suitable for all kinds of Current sense application
  适用于各种类型的电流感应器应用
- Application: Power Supply 电源供应

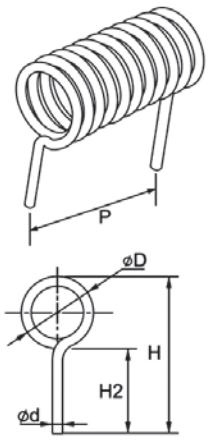
CSSA Type- CSSA 型



CSSB Type- CSSB 型



CSSC Type- CSSC 型



Type 类型	ΦD 线径	Rated Current 额定电流	Resistance Range 阻值范围	Remark 备注
CSSA CSSB CSSC	Φ0.8mm	4.5A	5mΩ~50mΩ	*P&H could be design by customer's requirement *P 值和 H 值可根据客户的要求进行设计
	Φ1.0mm	5.5A	3mΩ~30mΩ	
	Φ1.6mm	9.5A	3mΩ~15mΩ	
	Φ2.0mm	12A	3mΩ~10mΩ	

Ordering Procedure (Example: CSRC Φ1.5mm 10mΩ±5% B/B)

订购方式 (例如: CSRC Φ1.5mm 10mΩ±5% B/B)

C S R C 1 5 J 0 1 0 L B 0 0

Type (产品类型):
CSRA = CSRA type
CSRB = CSRB type
CSRC = CSRC type
CSRD = CSRD type
CSRE = CSRE type
CSSA = CSSA type
CSSB = CSSB type
CSSC = CSSC type

Wire Ø (线径 Ø):
08=Ø0.8 10=Ø1.0
12=Ø1.2 15=Ø1.5
16=Ø1.6 20=Ø2.0
23=Ø2.3

Tolerance (公差):
J=±5% K=±10%

Resistance Value (阻值):
2%, 5% (E-24 series): the 1st digit is "0"; the 2nd & 3rd digits are for the significant figures of the resistance and the 4th digit denotes number of zeros following.
2%, 5%产品 (E-24系列电阻): 第1位是0，第2,3位表示阻值的有效数，第4位表示有几个0.
≤1%(E-96 Series)
the 1st to 3rd digits are for the significant figures of the resistance and the 4th digit denotes number of zeros following:
≤1% 产品 (E-96系列阻值)
第1~3位表示阻值的有效数，第4位表示有几个0.

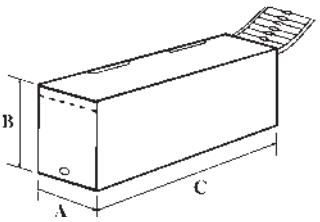
Packing Type (包装类型):
B=Bulk/Box (散装 / 盒装)

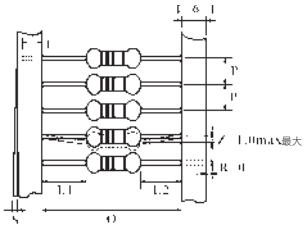
Packing Qty. (包装数量)
0=Bulk/Box
0= 散装 / 盒装

Additional Information (注):
0=NIL (标准品)

Remark: Please refer to page 141 for ordering guide. 注：下单请详见 P141 页说明。

Tape in Box Packing (Ammo Pack) (编带盒装)



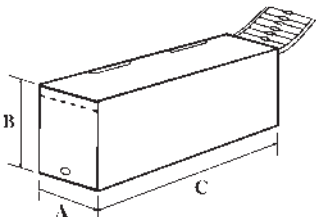


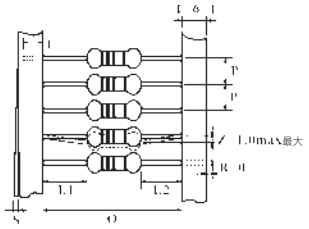
*L1-L2=1.0 Max. 最大
ZW: 0
**S=0.5 Max. 最大
PT-26: 0.8 Max. 最大

Part No 料号	Type 类型	Dimension of T/B(尺寸) (mm)					Qty./Box 数量 / 盒
		O	P	A±5	B±5	C±5	
Carbon Film Fixed Resistors(碳膜固定电阻器)							
CFR0W8	CFR-12	52±1	5±0.3	75	70	255	5,000
CFR0S4	CFR-25-S	52±1	5±0.3	75	70	255	5,000
CFR0W4	CFR-25	52±1	5±0.3	75	98	255	5,000
CFR0W2	CFR-50	52±1	5±0.3	75	45	255	1,000
CFR01S	CFR-100-S	52±1	5±0.3	86	82	255	1,000
CFR01W	CFR-100	64±5	10±0.5	94	88	255	1,000
CFR02S	CFR-200-S	64±5	10±0.5	94	88	255	1,000
CFR02W	CFR-200	64±5	10±0.5	90	88	255	500
CFR03S	CFR-300-S	64±5	10±0.5	90	88	255	500
CPR0W2	CPR-50	52±1	5±0.3	75	116	255	5,000
CPR01W	CPR-100	52±1	5±0.3	75	45	255	1,000
CPR02W	CPR-200	52±1	5±0.3	86	82	255	1,000
Precision Metal Film Lilm Fixed Resistors (金属膜固定电阻器)							
MF0W8	MF-12	52±1	5±0.3	75	70	255	5,000
MF0S4	MF-25-S	52±1	5±0.3	75	70	255	5,000
MF004	MF-40-SS	52±1	5±0.3	75	70	255	5,000
MF0W4	MF-25	52±1	5±0.3	75	98	255	5,000
MF0S2	MF-50-S	52±1	5±0.3	75	98	255	5,000
MF006	MF-60-S	52±1	5±0.3	75	98	255	5,000
MF0W2	MF-50	52±1	5±0.3	75	45	255	1,000
MF01S	MF-100-S	52±1	5±0.3	75	45	255	1,000
MF01W	MF-100	52±1	5±0.3	86	82	255	1,000
MF02S	MF-200-S	52±1	5±0.3	86	82	255	1,000
MF02W	MF-200	64±5	10±0.5	94	88	255	1,000
MF03S	MF-300-S	64±5	10±0.5	94	88	255	1,000
MF03W	MF-300	64±5	10±0.5	90	88	255	500
Metal Film Power Resistors (高功率金属膜电阻器)							
PMR01S	PMR-100-S	52±1	5±0.3	75	98	255	5,000
PMR02S	PMR-200-S	52±1	5±0.3	86	82	255	1,000
PMR03S	PMR-300-S	64±5	10±0.5	90	88	255	1,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
注: 以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Tape in Box Packing (Ammo Pack) (编带盒装)



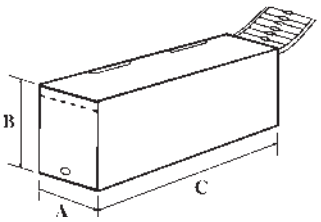


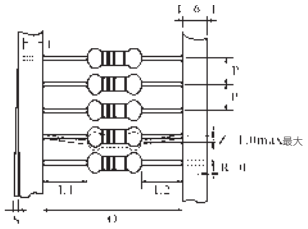
*L1-L2=1.0 Max. 最大
ZW: 0
**S=0.5 Max. 最大
PT-26: 0.8 Max. 最大

Part No 料号	Type 类型	Dimension of T/B(尺寸) (mm)					Qty./Box 数量 / 盒
		O	P	A±5	B±5	C±5	
Metal Oxide Film Fixed Resistors (金属氧化膜固定电阻器)							
MOR0W4	MOR-25	52±1	5±0.3	75	116	255	5,000
MOR0S2	MOR-50-S	52±1	5±0.3	75	116	255	5,000
MOR0W2	MOR-50	52±1	5±0.3	75	45	255	1,000
MOR01S	MOR-100-S	52±1	5±0.3	75	70	255	1,000
MOR01W	MOR-100	52±1	5±0.3	86	82	255	1,000
MOR02S	MOR-200-S	52±1	5±0.3	86	82	255	1,000
MOR02W	MOR-200	64±5	10±0.5	90	119	255	1,000
MOR03S	MOR-300-S	64±5	10±0.5	90	119	255	1,000
MOR03W	MOR-300	64±5	10±0.5	90	88	255	500
MOR05S	MOR-500-S	64±5	10±0.5	90	88	255	500
MOR05W	MOR-500	90±5	10±0.5	115	124	500	500
Metal Glaze Film Fixed Resistors (精密玻璃釉膜固定电阻器)							
MGR0W4	MGR-25	52±1	5±0.3	75	116	255	4,000
MGR0W2	MGR-50	52±1	5±0.3	75	70	255	1,000
MGR01W	MGR-100	52±1	5±0.3	86	82	255	1,000
MGR02W	MGR-200	64±5	10±0.5	90	119	255	1,000
MGR03W	MGR-300	64±5	10±0.5	90	88	255	500
MGR0S2	MGR-50-S	52±1	5±0.3	75	116	255	4,000
MGR01S	MGR-100-S	52±1	5±0.3	75	70	255	1,000
MGR02S	MGR-200-S	52±1	5±0.3	86	82	255	1,000
MGR03U	MGR-300-SS	52±1	5±0.3	86	82	255	1,000
MGR03S	MGR-300-S	64±5	10±0.5	90	119	255	1,000
Fusible Resistors(保险丝电阻器)							
FRN0W4	FRN-25	52±1	5±0.3	75	116	255	5,000
FRN0S2	FRN-50-S	52±1	5±0.3	75	116	255	5,000
FRN004	FRN-40	52±1	5±0.3	75	116	255	5,000
FRN0W2	FRN-50	52±1	5±0.3	75	45	255	1,000
FRN075	FRN-75	52±1	5±0.3	80	70	255	1,000
FRN01W	FRN-100	52±1	5±0.3	80	70	255	1,000
FRN01A	FRN-150	52±1	5±0.3	86	82	255	1,000
FRN02W	FRN-200	52±1	5±0.3	86	82	255	1,000
FRN03W	FRN-300	64±5	10±0.5	90	119	255	1,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Tape in Box Packing (Ammo Pack) (编带盒装)



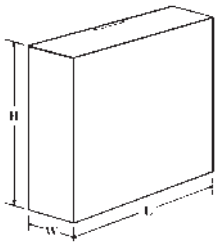


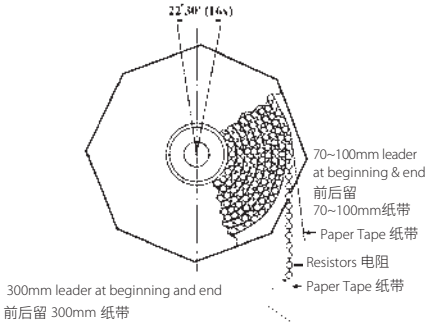
*L1-L2=1.0 Max. 最大
ZW: 0
**S=0.5 Max. 最大
PT-26: 0.8 Max. 最大

Part No 料号	Type 类型	Dimension of T/B(尺寸) (mm)					Qty./Box 数量 / 盒
		O	P	A±5	B±5	C±5	
Wire Wound Fixed Resistors KNP (with Non-inductive KNPN & Anti-surge KNPA) 绕线固定器 (含无感型 KNPN 与耐脉冲型 KNPA)							
KNP*W4	KNP*-25	52±1	5±0.3	75	116	255	5,000
KNP*S2	KNP*-50-S	52±1	5±0.3	75	116	255	5,000
KNP*W2	KNP*-50	52±1	5±0.3	75	45	255	1,000
KNP*1S	KNP*-100-S	52±1	5±0.3	75	45	255	1,000
KNP*1W	KNP*-100	52±1	5±0.3	86	82	255	1,000
KNP*2S	KNP*-200-S	52±1	5±0.3	86	82	255	1,000
KNP*2W	KNP*-200	64±5	10±0.5	90	119	255	1,000
KNP*3S	KNP*-300-S	64±5	10±0.5	90	119	255	1,000
KNP*3W	KNP*-300	64±5	10±0.5	90	88	255	500
KNP*5S	KNP*-500-S	64±5	10±0.5	90	88	255	500
KNP*5W	KNP*-500	90±5	10±0.5	115	124	500	500
KNP*7S	KNP*-700-S	90±5	10±0.5	115	124	500	500
Jumper Wires & Zero Ohm Resistors(跳线和零欧姆固定电阻器)							
ZWA0	ZW-A	52±1	5±0.3	75	98	255	10,000
ZWB0	ZW-B	52±1	5±0.3	75	116	255	10,000
ZWB-1	ZW-B1	52±1	5±0.3	75	116	255	10,000
ZWC0	ZW-C	52±1	5±0.3	75	116	255	8,000
ZWD0	ZW-D	52±1	5±0.3	75	116	255	8,000
ZWE0	ZW-E	52±1	5±0.3	75	116	255	7,000
ZOT0W8 **ZOC0W8**	ZOT-12 ZOC-12	52±1	5±0.3	75	70	255	5,000
ZOT0W4 **ZOC0W4**	ZOT-25 ZOC-25	52±1	5±0.3	75	98	255	5,000
PT-26Type (PT-26 类型)							
CFR0W8 **MF0W8**	CFR-12 MF-12	26 $^{+1.5}_{-1.0}$	5±0.5	50	66	255	5,000
CFR0S4 **MF0S4**	CFR-25-S MF-25-S	26 $^{+1.5}_{-1.0}$	5±0.5	50	66	255	5,000
MF004	MF-40-SS	26 $^{+1.5}_{-1.0}$	5±0.5	50	66	255	5,000
CFR0W4 **MF0W4** **FRN0W4**	CFR-25 MF-25 FRN-25	26 $^{+1.5}_{-0}$	5±0.5	50	100	255	5,000
MF0S2 **MOR0S2**	MF-50-S MOR-50-S	26 $^{+1.5}_{-0}$	5±0.5	50	100	255	5,000
MF006	MF-60-S	26 $^{+1.5}_{-0}$	5±0.5	50	100	255	5,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Tape in Reel (编带卷装)





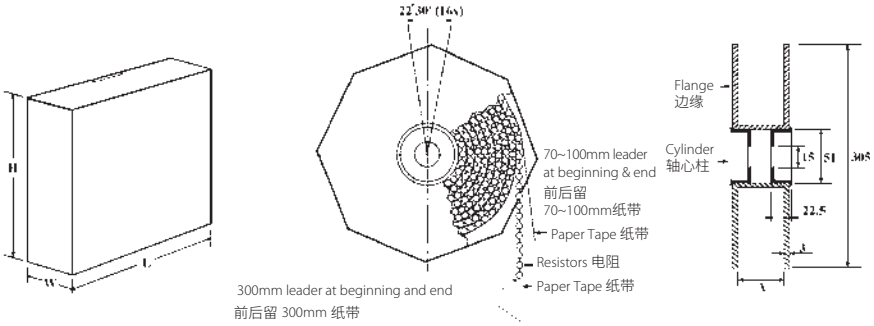
Part No 料号	Type 类型	Dimension of T/R(尺寸) (mm)					Qty./Box 数量 / 盒
		O	A	W±5	H±5	L±5	
Carbon Film Fixed Resistors(碳膜固定电阻器)							
CFR0W8	CFR-12	52±1	73±2	85	295	293	5,000
CFR0S4	CFR-25-S	52±1	73±2	85	295	293	5,000
CFR0W4	CFR-25	52±1	73±2	85	295	293	5,000
CFR0W2	CFR-50	52±1	73±2	85	295	293	2,500
CFR01S	CFR-100-S	52±1	73±2	85	295	293	2,500
CFR01W	CFR-100	64±5	80±5	95	295	293	1,000
CFR02S	CFR-200-S	64±5	80±5	95	295	293	1,000
CFR02W	CFR-200	64±5	80±5	95	295	293	1,000
CFR03S	CFR-300-S	64±5	80±5	95	295	293	1,000
CPR0W2	CPR-50	52±1	73±2	85	295	293	5,000
CPR01W	CPR-100	52±1	73±2	85	295	293	2,500
CPR02W	CPR-200	52±1	73±2	85	295	293	2,500
Precision Metal Film Fixed Resistors (金属膜固定电阻器)							
MF0W8	MF-12	52±1	73±2	85	295	293	5,000
MF0S4	MF-25-S	52±1	73±2	85	295	293	5,000
MF004	MF-40-SS	52±1	73±2	85	295	293	5,000
MF0W4	MF-25	52±1	73±2	85	295	293	5,000
MF0S2	MF-50-S	52±1	73±2	85	295	293	5,000
MF0W2	MF-50	52±1	73±2	85	295	293	2,500
MF006	MF-60-S	52±1	73±2	85	295	293	5,000
MF01S	MF-100-S	52±1	73±2	85	295	293	2,500
MF01W	MF-100	52±1	73±2	85	295	293	2,500
MF02S	MF-200-S	52±1	73±2	85	295	293	2,500
MF02W	MF-200	64±5	80±5	95	295	293	1,000
MF03S	MF-300-S	64±5	80±5	95	295	293	1,000
MF03W	MF-300	64±5	80±5	95	295	293	1,000
Metal Film Power Resistors (高功率金属膜电阻器)							
PMR01S	PMR-100-S	52±1	73±2	85	295	293	5,000
PMR02S	PMR-200-S	52±1	73±2	85	295	293	2,500
PMR03S	PMR-300-S	64±5	80±5	95	295	293	1,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Standard Packing of Coated Type Resistors

涂装型电阻器包装标准

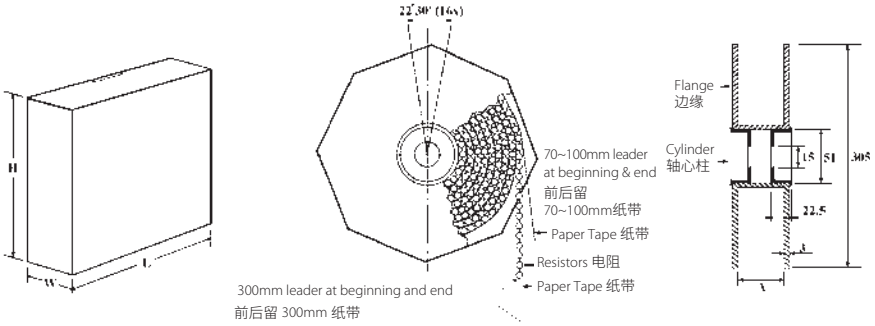
Tape in Reel (编带卷装)



Part No 料号	Type 类型	Dimension of T/R(尺寸) (mm)					Qty./Box 数量 / 盒
		O	A	W±5	H±5	L±5	
Metal Oxide Film Fixed Resistors (金属氧化膜固定电阻器)							
MOR0W4	MOR-25	52±1	73±2	85	295	293	5,000
MOR0S2	MOR-50-S	52±1	73±2	85	295	293	5,000
MOR0W2	MOR-50	52±1	73±2	85	295	293	2,500
MOR01S	MOR-100-S	52±1	73±2	85	295	293	2,500
MOR01W	MOR-100	52±1	73±2	85	295	293	2,500
MOR02S	MOR-200-S	52±1	73±2	85	295	293	2,500
MOR02W	MOR-200	64±5	80±5	95	295	293	1,000
MOR03S	MOR-300-S	64±5	80±5	95	295	293	1,000
MOR03W	MOR-300	64±5	80±5	95	295	293	1,000
MOR05S	MOR-500-S	64±5	80±5	95	295	293	1,000
MOR05W	MOR-500	90±5	115±5	121	310	310	700
Metal Glaze Film Fixed Resistors (精密玻璃釉膜固定电阻器)							
MGR0W4	MGR-25	52±1	73±2	85	295	293	5,000
MGR0W2	MGR-50	52±1	73±2	85	295	293	2,500
MGR01W	MGR-100	52±1	73±2	85	295	293	1,000
MGR02W	MGR-200	64±5	80±5	95	295	293	1,000
MGR03W	MGR-300	64±5	80±5	95	295	293	1,000
MGR0S2	MGR-50-S	52±1	73±2	85	295	293	5,000
MGR01S	MGR-100-S	52±1	73±2	85	295	293	2,500
MGR02S	MGR-200-S	52±1	73±2	85	295	293	1,000
MGR03U	MGR-300-SS	52±1	73±2	85	295	293	1,000
MGR03S	MGR-300-S	64±5	80±5	95	295	293	1,000
Fusible Resistors(保险丝电阻器)							
FRN0W4	FRN-25	52±1	73±2	85	295	293	5,000
FRN0S2	FRN-50-S	52±1	73±2	85	295	293	5,000
FRN004	FRN-40	52±1	73±2	85	295	293	5,000
FRN0W2	FRN-50	52±1	73±2	85	295	293	2,500
FRN075	FRN-75	52±1	73±2	85	295	293	2,500
FRN01W	FRN-100	52±1	73±2	85	295	293	2,500
FRN01A	FRN-150	52±1	73±2	85	295	293	2,500
FRN02W	FRN-200	52±1	73±2	85	295	293	2,500
FRN03W	FRN-300	64±5	80±5	95	295	293	1,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Tape in Reel (编带卷装)



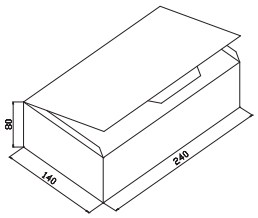
Part No 料号	Type 类型	Dimension of T/R(尺寸) (mm)					Qty./Box 数量 / 盒
		O	A	W±5	H±5	L±5	
Wire Wound Fixed Resistors KNP (with Non-inductive KNPN & Anti-surge KNPA) 绕线固定器 (含无感型 KNPN 与耐脉冲型 KNPA)							
KNP*W4	KNP*-25	52±1	73±2	85	295	293	5,000
KNP*S2	KNP*-50-S	52±1	73±2	85	295	293	5,000
KNP*W2	KNP*-50	52±1	73±2	85	295	293	2,500
KNP*1S	KNP*-100-S	52±1	73±2	85	295	293	2,500
KNP*1W	KNP*-100	52±1	73±2	85	295	293	2,500
KNP*2S	KNP*-200-S	52±1	73±2	85	295	293	2,500
KNP*2W	KNP*-200	64±5	80±5	95	295	293	1,000
KNP*3S	KNP*-300-S	64±5	80±5	95	295	293	1,000
KNP*3W	KNP*-300	64±5	80±5	95	295	293	1,000
KNP*5S	KNP*-500-S	64±5	80±5	95	295	293	1,000
KNP*5W	KNP*-500	90±5	115±5	121	310	310	700
KNP*7S	KNP*-700-S	90±5	115±5	121	310	310	700
Jumper Wires & Zero Ohm Resistors(跳线和零欧姆固定电阻器)							
ZWA0	ZW-A	52±1	73±2	85	295	293	10,000
ZWB0	ZW-B	52±1	73±2	85	295	293	10,000
ZWB-1	ZW-B1	52±1	73±2	85	295	293	10,000
ZWC0	ZW-C	52±1	73±2	85	295	293	10,000
ZWD0	ZW-D	52±1	73±2	85	295	293	10,000
ZWE0	ZW-E	52±1	73±2	85	295	293	10,000
ZOT0W8 ZOC0W8	Z0-12	52±1	73±2	85	295	293	5,000
ZOT0W4 ZOC0W4	ZO-25	52±1	73±2	85	295	293	5,000

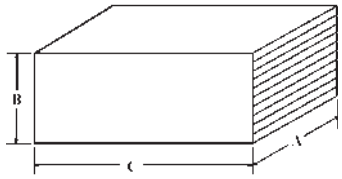
Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Standard Packing of Coated Type Resistors

涂装型电阻器包装标准

Bulk in Box Packing (散装盒装)

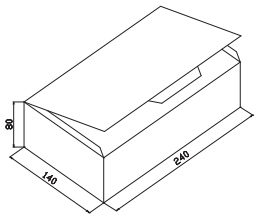


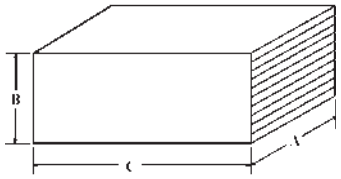


Part No 料号	Type 类型	Dimension of B/B(尺寸) (mm)			Qty.of Bag/Box 袋数量 / 盒数量
		A±5	B±5	C±5	
Carbon Film Fixed Resistors(碳膜固定电阻器)					
CFR0W8	CFR-12	140	80	240	1,000/20,000
CFR0S4	CFR-25-S	140	80	240	1,000/20,000
CFR0W4	CFR-25	140	80	240	500/10,000
CFR0W2	CFR-50	140	80	240	250/5,000
CFR01S	CFR-100-S	140	80	240	100/2,500
CFR01W	CFR-100	140	80	240	100/1,500
CFR02S	CFR-200-S	140	80	240	100/1,500
CFR02W	CFR-200	140	80	240	100/1,000
CFR03S	CFR-300-S	140	80	240	100/1,000
CPR0W2	CPR-50	140	80	240	500/10,000
CPR01W	CPR-100	140	80	240	250/5,000
CPR02W	CPR-200	140	80	240	100/2,500
Precision Metal Film Fixed Resistors (金属膜固定电阻器)					
MF0W8	MF-12	140	80	240	1,000/20,000
MF0S4	MF-25-S	140	80	240	1,000/20,000
MF004	MF-40-SS	140	80	240	1,000/20,000
MF0W4	MF-25	140	80	240	500/10,000
MF0S2	MF-50-S	140	80	240	500/10,000
MF0W2	MF-50	140	80	240	250/5,000
MF006	MF-60-S	140	80	240	500/10,000
MF01S	MF-100-S	140	80	240	250/5,000
MF01W	MF-100	140	80	240	100/2,500
MF02S	MF-200-S	140	80	240	100/2,500
MF02W	MF-200	140	80	240	100/1,500
MF03S	MF-300-S	140	80	240	100/1,500
MF03W	MF-300	140	80	240	100/1,500
Metal Film Power Resistors (高功率金属膜电阻器)					
PMR01S	PMR-100-S	140	80	240	500/10,000
PMR02S	PMR-200-S	140	80	240	100/2,500
PMR03S	PMR-300-S	140	80	240	100/1,500

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Bulk in Box Packing (散装盒装)



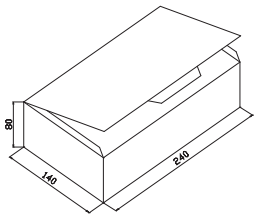


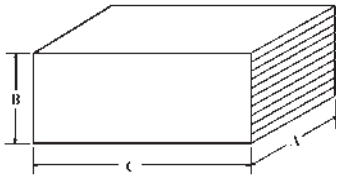
Part No 料号	Type 类型	Dimension of B/B(尺寸) (mm)			Qty.of Bag/Box 袋数量 / 盒数量
		A±5	B±5	C±5	
Metal Oxide Film Fixed Resistors (金属氧化膜固定电阻器)					
MOR0W4	MOR-25	140	80	240	500/10,000
MOR0S2	MOR-50-S	140	80	240	500/10,000
MOR0W2	MOR-50	140	80	240	250/5,000
MOR01S	MOR-100-S	140	80	240	250/5,000
MOR01W	MOR-100	140	80	240	100/2,500
MOR02S	MOR-200-S	140	80	240	100/2,500
MOR02W	MOR-200	140	80	240	100/1,500
MOR03S	MOR-300-S	140	80	240	100/1,500
MOR03W	MOR-300	140	80	240	100/1,000
MOR05S	MOR-500-S	140	80	240	100/1,000
MOR05W	MOR-500	140	80	240	25/400
MOR07W	MOR-700	140	80	240	25/300
MOR08W	MOR-800	140	80	240	25/200
MOR09W	MOR-900	140	80	240	25/200
Metal Glaze Film Fixed Resistors (精密玻璃釉膜固定电阻器)					
MGR0W4	MGR-25	140	80	240	500/10,000
MGR0W2	MGR-50	140	80	240	250/5,000
MGR01W	MGR-100	140	80	240	100/2,500
MGR02W	MGR-200	140	80	240	100/1,500
MGR03W	MGR-300	140	80	240	100/1,000
MGR0S2	MGR-50-S	140	80	240	500/10,000
MGR01S	MGR-100-S	140	80	240	250/5,000
MGR02S	MGR-200-S	140	80	240	100/2,500
MGR03U	MGR-300-SS	140	80	240	100/2,500
MGR03S	MGR-300-S	140	80	240	100/1,500

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

Standard Packing of Coated Type Resistors
涂装型电阻器包装标准

Bulk in Box Packing (散装盒装)





Part No 料号	Type 类型	Dimension of B/B(尺寸) (mm)			Qty.of Bag/Box 袋数量 / 盒数量
		A±5	B±5	C±5	
Fusible Resistors(保险丝电阻器)					
FRN0W4	FRN-25	140	80	240	500/10,000
FRN0S2	FRN-50-S	140	80	240	500/10,000
FRN004	FRN-40	140	80	240	500/10,000
FRN0W2	FRN-50	140	80	240	250/5,000
FRN075	FRN-75	140	80	240	250/5,000
FRN01W	FRN-100	140	80	240	250/5,000
FRN01A	FRN-150	140	80	240	100/2,500
FRN02W	FRN-200	140	80	240	100/2,500
FRN03W	FRN-300	140	80	240	100/1,500
Wire Wound Fixed Resistors KNP (with Non-inductive KNPN & Anti-surge KNPA) 绕线固定器 (含无感型 KNPN 与耐脉冲型 KNPA)					
KNP*W4	KNP*-25	140	80	240	500/10,000
KNP*S2	KNP*-50-S	140	80	240	500/10,000
KNP*W2	KNP*-50	140	80	240	250/5,000
KNP*1S	KNP*-100-S	140	80	240	250/5,000
KNP*1W	KNP*-100	140	80	240	100/2,500
KNP02S	KNP*-200-S	140	80	240	100/2,500
KNP*2W	KNP*-200	140	80	240	100/1,500
KNP*3S	KNP*-300-S	140	80	240	100/1,500
KNP*3W	KNP*-300	140	80	240	100/1,000
KNP*5S	KNP*-500-S	140	80	240	100/1,000
KNP*5W	KNP*-500	140	80	240	25/400
KNP*7S	KNP*-700-S	140	80	240	25/400
KNP*7W	KNP*-700	140	80	240	25/300
KNP*8S	KNP*-800-S	140	80	240	25/300
KNP*8W	KNP*-800	140	80	240	25/200
KNP*9S	KNP*-900-S	140	80	240	25/200
KNP*9W	KNP*-900	140	80	240	25/200
KNP*AS	KNP*-1000-S	140	80	240	25/200
Zero Ohm Resistors(零欧姆固定电阻器)					
ZOT0W8 ZOCOW8	ZO-12	140	80	240	1,000/20,000
ZOT0W4 ZOCOW4	ZO-25	140	80	240	500/10,000

Note: The above is recommended packaging, the actual packing method is in accordance with the order.
以上为推荐包装方式，实际以工厂依订单情形的包装方式为准

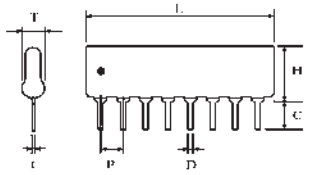
Feature (特性)

- Miniature, high density packaging
  小型高密度封装
- High reliability R_uO_2 paste
  使用高稳定性 R_uO_2 电阻材料

Application (应用)

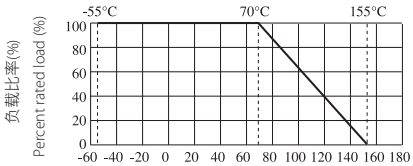
- Control circuit V.C.R. (V.C.R.控制电路)
- Air-conditioner (空调)
- Computer, color TV (计算机，彩电)
- Facsimile (传真机)

Dimension (尺寸) (mm)



"●" indicate the 1st pin (表示第一脚位置)

Derating Curve (降功率曲线)



Type 类型	Dimension of L(Max.) L 的最大尺寸											H max	C +0.5 -0.3	T max	t±0.05	P±0.2	D±0.1
	4pin	5pin	6pin	7pin	8pin	9pin	10 pin	11 pin	12 pin	13 pin	14 pin						
RNL	10.2	12.7	15.3	17.8	20.4	22.9	25.4	28.0	30.5	33.1	35.6	5.08	3.3	2.5	0.25	2.54	0.5
RPL	10.2	12.7	15.3	17.8	20.4	22.9	25.4	28.0	30.5	33.1	35.6	5.08	3.3	2.5	0.25	2.54	0.5
RNM	10.2	12.7	15.3	17.8	20.4	22.9	25.4	28.0	30.5	33.1	35.6	6.35	3.3	2.5	0.25	2.54	0.5
RPH	10.2	12.7	15.3	17.8	20.4	22.9	25.4	28.0	30.5	33.1	35.6	8.89	3.3	2.5	0.25	2.54	0.5

Circuit Structure (电路结构)

A	B	C	D	E
RNL/RPL/RNM/RPH	RNL/RPL/RNM/RPH	RNL	RNL	RNL
R1=R2=.....Rn	R1=R2=.....Rn	R1=R2=R_n	R1=R2=.....Rn $R_1 \neq R_2 \neq$.....Rn	R1=R2 or R1≠R2

G	H	L	P	R
RNL	RNL	RNL	RNL	RNL/RPL/RNM/RPH
R1=R2=.....Rn				R1=R2 or R1≠R2

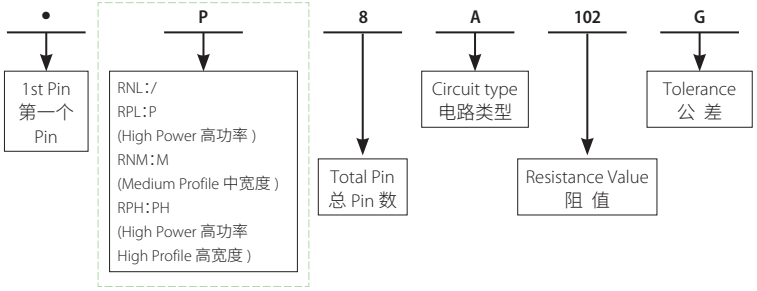
* Custom Design Circuit could be available on a case to case basis. (可按客户特殊要求定制)

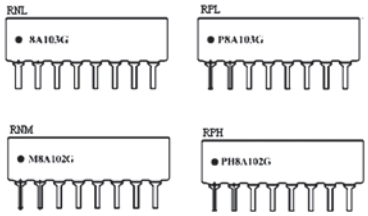
Package Power Ratings (封装功率等级)

Type 类型	4PIN	5PIN	6PIN	7PIN	8PIN	9PIN	10PIN	11PIN	12PIN	13PIN	14PIN
RPL	0.5W	0.63W	0.75W	0.88W	1.0W	1.13W	1.25W	1.38W	1.5W	1.63W	1.75W
RNM	0.6W	0.75W	0.9W	1.05W	1.20W	1.35W	1.50W	1.65W	1.80W	1.95W	2.10W
RPH	0.8W	1.0W	1.2W	1.4W	1.6W	1.8W	2.0W	2.2W	2.4W	2.6W	2.8W

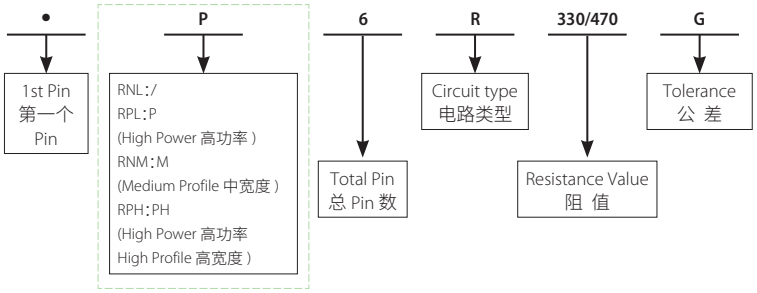
Type 类型	Power Rating (功率)70℃	Max .Working Voltage 最大工作电压	Max. Overload Voltage 最大过负荷电压	Dielectric Withstanding Voltage 绝缘耐压	Resistance Range 阻值范围	Tolerance 公差	Operating Temperature 工作温度范围
RNL	B type(B 型): 0.2W Others(其它类型): 0.125W	100V	150V	200V	R Type(R 型): 100Ω~10K Others(其它类型): 10Ω~1MΩ	±2% ±5%	-55℃~+155℃
RPL	A:0.2W	100V	150V	200V	10Ω~1MΩ	±2% ±5%	-55℃~+155℃
	B:0.3W				10Ω~1MΩ		
	R:0.2W				100Ω~10KΩ		
RNM	A:0.25W	100V	150V	200V	10Ω~1MΩ	±2% ±5%	-55℃~+155℃
	B:0.4W				10Ω~1MΩ		
	R:0.25W				100Ω~10KΩ		
RPH	A:0.3W	100V	150V	200V	10Ω~1MΩ	±2% ±5%	-55℃~+155℃
	B:0.5W				10Ω~1MΩ		
	R:0.3W				100Ω~10KΩ		

Marking (Single Value) [标示(单个阻值)]:





Marking(Dual Value)[标示(双阻类型)]:



Dual Value (双阻型阻值系列)(R1/R2)(Ohm)

160 / 240	330 / 390
180 / 390	330 / 470
220 / 270	1.5K / 3.5K
220 / 330	3.0K / 6.2K

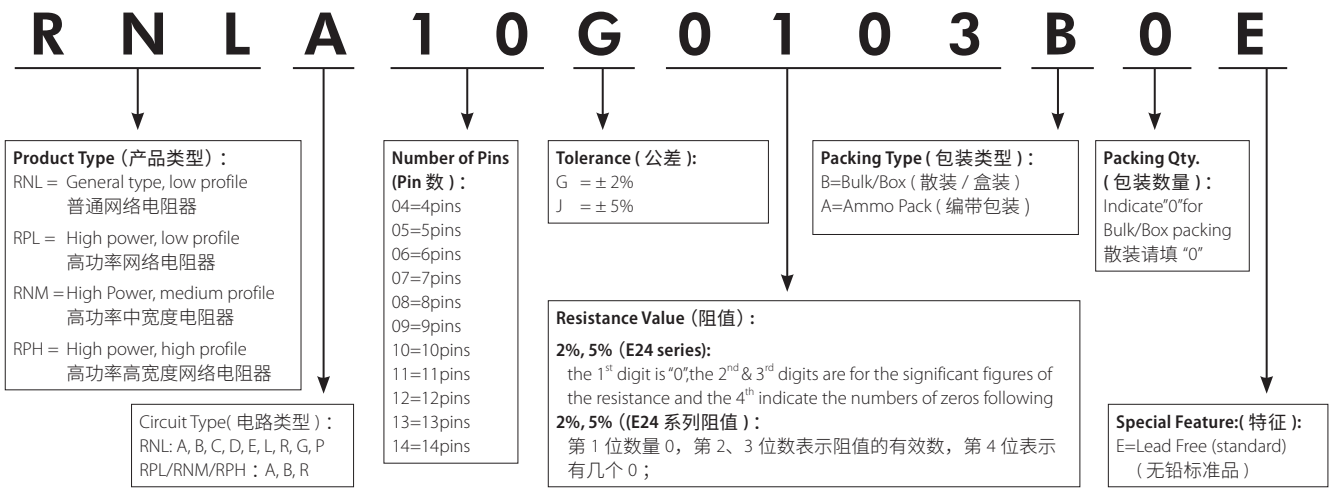
* Special Value available on a case to case basis. (另可按客户特殊要求订做)

Performance Specification(性能)

Test Item 试验项目		Evaluation Criteria 判定标准			
		RNL	RPL	RNM	RPH
Temperature	温度系数	50Ω~1MΩ：±200PPM/°C <50Ω&>1MΩ：±250PPM/°C	50Ω~1MΩ：±100PPM/°C <50Ω&>1MΩ：±250PPM/°C		
Short-time overload	短时间过负荷	ΔR/R≤±(0.5%+0.1Ω)	ΔR/R≤±(0.25%+0.1Ω)		
Insulation resistance	绝缘电阻	≥10,000MΩ			
Dielectric withstanding voltage	绝缘耐压	No Evidence of flashover,arcing or insulation breakdown(无击穿、飞弧及可见机械损伤)			
Terminal strength	端子强度	ΔR/R≤±(0.5%+0.1Ω)	ΔR/R≤±(0.25%+0.1Ω)		
Soldering heat	耐焊接热	ΔR/R≤±(0.5%+0.1Ω)			
Solderability	可焊性	Coverage must be over 95%.			
Thermal shock	热冲击	ΔR/R≤±(0.5%+0.1Ω)	ΔR/R≤±(0.25%+0.1Ω)		
Rapid change of temperature	温度快速变化	ΔR/R≤±(0.5%+0.1Ω)			
Load life in humidity	湿度寿命	ΔR/R≤±(3%+0.1Ω)	ΔR/R≤±(0.5%+0.1Ω)		
Load life	负载寿命	ΔR/R≤±(3%+0.1Ω)	ΔR/R≤±(1%+0.1Ω)		

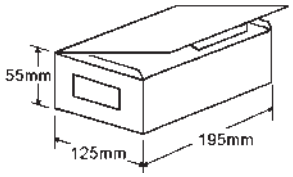
Ordering Procedure (Example: RNL A type 10 PIN 2% 10KΩ B/B)

订购方式 (例如: RNL A 型 10 PIN 2% 10KΩ B/B)



Remark: Please refer to page 141 for ordering guide. 注：下单请详见 P141 页说明。

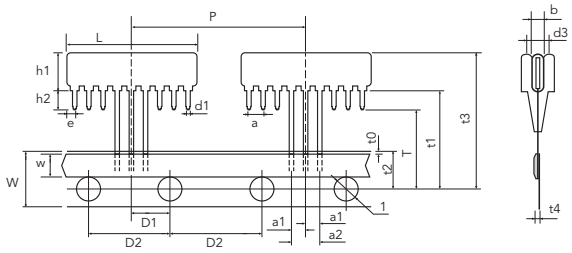
Standard Packing of Resistor Network (网络电阻器的标准包装)



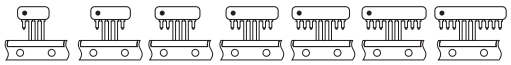
Type 类型	Pins Pins 数	Weight of 1,000pcs 1,000 只 重量 (g)	Qty.per Bag 每袋数量	Qty.per Box 每盒数量	Qty.per Carton 每箱数量
RNL RPL	4	210	200	1,000	30,000
RNM		240	100		
RPH		330			
RNL RPL	5	250	200	1,000	30,000
RNM		300	100		
RPH		410			
RNL RPL	6	320	200	1,000	30,000
RNM		360	100		
RPH		490			
RNL RPL	7	360	200	1,000	30,000
RNM		420	100		
RPH		570			
RNL RPL	8	430	200	1,000	30,000
RNM		480	100		
RPH		660	50	500	15,000
RNL RPL	9	450	200	1,000	30,000
RNM		540	50	500	15,000
RPH		760			

Type 类型	Pins Pins 数	Weight of 1,000pcs 1,000 只 重量 (g)	Qty.per Bag 每袋数量	Qty.per Box 每盒数量	Qty.per Carton 每箱数量
RNL RPL	10	530	200	1,000	30,000
RNM		610	50	500	15,000
RPH		870			
RNL RPL	11	600	100	500	15,000
RNM		670	50		
RPH		950			
RNL RPL	12	650	100	500	15,000
RNM		730	50		
RPH		1030			
RNL RPL	13	710	100	500	15,000
RNM		790	50		
RPH		1130			
RNL RPL	14	770	100	500	15,000
RNM		850	50		
RPH		1210			

Ammo Pack of Resistor Network (网络电阻器编带包装)

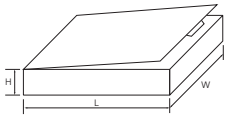


* … n=Pin Count



Dimension 尺寸 (mm)		Dimension 尺寸 (mm)	
H1	Max 5.08	t0	2.0Max
L	Max 2.54*n	t1	18.99±0.5
a	2.54±0.25	t2	9.0±0.5
d1	0.5±0.1	t3	24.46Max
P	25.4±1.0	t4	1.5max
W	18±0.5	I	φ4.0±0.3
w	5.0min	h2	3.0±0.5
P1	6.35±0.7	a1	2.54±0.25
P2	12.7±0.3	a2	5.08±0.3
B	Max 2.49	d3	2.0Max
T	16±0.5	/	/

Packing quantity (包装数量)

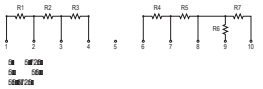
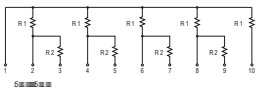
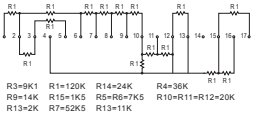
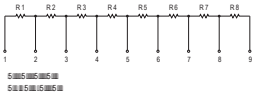


The inner box sizes 内盒尺寸 :
4~9pin: 320(L) × 207(W) × 40(H)mm
10pin:315(L) × 295(W) × 40(H)mm

Pins Pins 数	Qty.per Box 每盒数量	Qty.per Carton 每箱数量
4~10	1,000	12,000

Special Network-SIP Series
特殊网络电阻器 SIP 系列

"●" indicate the 1st pin (表示第一脚位置)

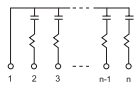
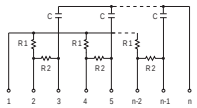
Type(类型)	SN0001	SN0002	SN0003	SN0004
Circuit Structure (电路结构)				
Dimension of L(max) 尺寸 L(最大)	10PINS:25.4mm	10PINS:25.4mm	10PINS:43.2mm	9PINS:22.9mm
H(max) H(最大)	5.08mm	5.08mm	6.35mm	5.08mm
Power Rating at 70°C 功率 70°C	0.2W	0.2W	0.125W	0.125W
Max Working Voltage 最大工作电压	100V	100V	100V	100V
Max Overload Voltage 最大过负荷电压	150V	150V	200V	150V
Operating Temperature 工作温度	-55~+155 ℃	-55~+155℃	-55~+155 ℃	-55~+155 ℃

* Custom Design Circuit could be available on a case to case basis (可提供客户特殊要求之线路产品)

Resistor/Capacitor Network - SIP Series
网络阻容器 - SIP 系列

F

"●" indicate the 1st pin (表示第一脚位置)

A	B
	

Electrical Characteristics- Capacitor (电容特性)

Capacitance Dielectric 电容介质	Capacitance Range 电容范围	Capacitance Tolerance 电容公差	Capacitance Voltage 电容电压
NPO	39pF~270pF	±10%	50V
X7R	>270pF~0.1μF	±20%	

Dimension (尺寸) (mm):

Type 类型	H (mm)	F (mm)
RCH	7.62 Max.	3.81 Max.
RCN	8.89 Max.	3.81 Max.

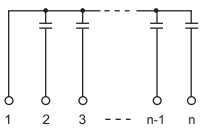
Dimension (尺寸) (mm):

L	
4 PIN: 10.2mm	10 PIN: 25.4mm
5 PIN: 12.7mm	11 PIN: 28.0mm
6 PIN: 15.3mm	12 PIN: 30.5mm
7 PIN: 17.8mm	13 PIN: 33.1mm
8 PIN: 20.4mm	14 PIN: 35.6mm
9 PIN: 22.9mm	

* Custom Design Circuit could be available on a case to case basis （可提供客户特殊要求之线路产品）

Capacitor Network-SIP Series
网络电容器 SIP 系列

F



"●" indicate the 1st pin (表示第一脚位置)

Circuit Structure (电路结构)

Electrical Characteristics- Capacitor (电容特性)

Capacitance Dielectric 电容介质	Capacitance Range 电容范围	Capacitance Tolerance 电容公差	Capacitance Voltage 电容电压
NPO	39pF~270pF	±10%	50V
X7R	>270pF~0.1μF	±20%	

Dimension (尺寸) (mm):

Type 类型	H (mm)	F (mm)
CNM	6.35 Max.	3.81 Max.
CNH	7.62 Max.	3.81 Max.

Dimension (尺寸) (mm):

L	
4 PIN: 10.2mm	10 PIN: 25.4mm
5 PIN: 12.7mm	11 PIN: 28.0mm
6 PIN: 15.3mm	12 PIN: 30.5mm
7 PIN: 17.8mm	13 PIN: 33.1mm
8 PIN: 20.4mm	14 PIN: 35.6mm
9 PIN: 22.9mm	

* Custom Design Circuit could be available on a case to case basis （可提供客户特殊要求之线路产品）

Thin Film Technology Feature (薄膜技术特征)

- ✓ 采用薄膜工艺制程获得精准的线路
- ✓ 优化的使用散热陶瓷材料特性
- ✓ 高热可靠性，能承受 300℃ 1min 热板测试
- ✓ 良好的热结合力，可达拉力 1Kg 以上
- ✓ 优异的导通性能，阻抗 ≤0.1E
- ✓ 可按客户要求进行设计
- ✓ 高散热系数材料远优于 PCB 和 LTCC
- ✓ 高热稳定性远优于铝基板
- ✓ 符合 ROHS 要求

- ✓ Thin-film process to obtain accurate of line
- ✓ Optimize the best used of thermal properties of ceramic
- ✓ High reliability , withstand 300 ℃ within 1
- ✓ Good thermal adhesion, tensile reach > 1kg up
- ✓ Excellent conduction performance, impedance under controlled within 0.1E
- ✓ According to customer requirements, OEM available
- ✓ Highly dissipation coefficient than PCB and LTCC
- ✓ Highly heat stability superior than aluminum substrate
- ✓ ROHS compliant for global application

Process Capability 制程能力

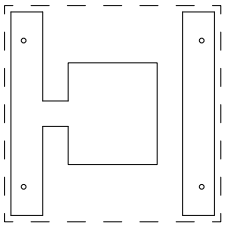
Item 项目	Reference Range 参考范围
Material 材质	AL_2O_3、ALN
Dimension & Thickness 尺寸厚度	Sheet size 4.5"114.3x114.3mm 0.38mm, 0.5mm, 1.0mm
Set-PIN 上机孔	Φ1、1.3、1.5、1.8、2mm Depending on the client machine 取决于客户机台
VIA diameter 导通孔径	75~150μm Depending on the customer requirement 依客户需求
Line spacing 线路间距	The smallest diameter of up to 60μm 最小线径可达 60μm
Plate margins 板边距	Sheet design set aside a minimum of 3mm 基板设计预留最小 3mm
Copper Thickness 镀层厚度	Cu 30~75μm
Surface Coating 表面处理	Electronless Gold/Silver 化学镀 (金 / 银)、Eletrolytic Gold/Silver 电镀 (金 / 银)、OSP Antioxidant treatment 抗氧化处理

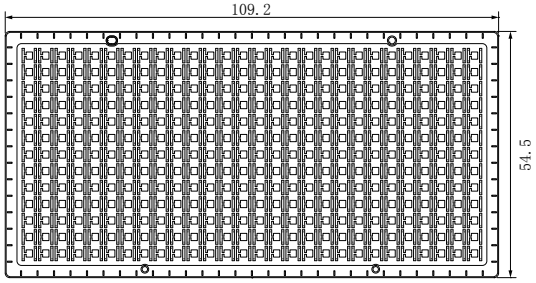
Reliability Test (可靠性测试)

NO	Item 项目	Parameter 测试参数	Specification 测试规范
1	Adhesion test 附着力试验	1. Temp: RT 温度: RT 2. Tool: 3M 600# 工具: 3M 600# 3. Time adhesive 30 seconds 持续粘合 30 秒 4. Angle:180° 角度 : 180°	• The extensor must be no separate 镀层没有被分离
2	Thermal Test 热板试验	1. Temp:300°C 温度 : 300°C 2. Times:1min 时间 :1 分钟	• No yellowing、blisters 未黄变、起泡现象
3	耐热持久性试验 Thermal durability test	1. Temp:150°C 温度 : 150°C 2. Times:3 hours 时间 :3 小时	• test before-and-after 试验前后 • 尺寸形变量 ≤1% • Size shape variables are 1% or less • 导通阻抗恒低于 5mE • Conduction resistance constant below 5 mE

Reference Pattern (Thin-Film) 参考设计图形 (薄膜)

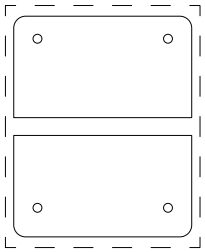
TYPE 1

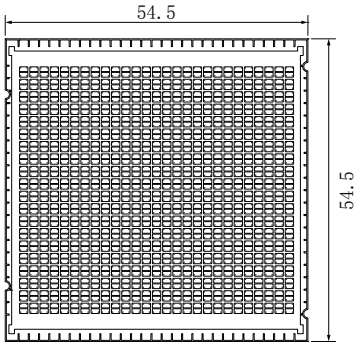




28×13=364 PCS

TYPE 2





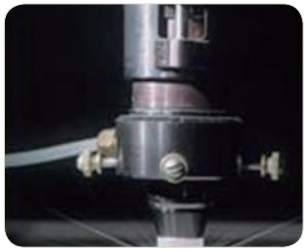
27×20=540 PCS

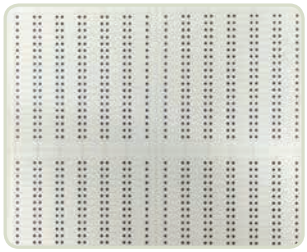
* Product drawing for reference only 产品图片仅供参考
* Custom Design Circuit could be available on a case to case basis. (可按客户特殊要求定制)

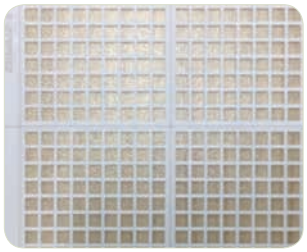
Ceramic Processing Parts (陶瓷加工件)

- ✓ 优异的加工精准度
- ✓ 高绝缘性能及机械性能强度
- ✓ 客制化服务，可按客户要求进行加工
- ✓ 精密研磨，表面粗化处理等
- ✓ 适用于 LED 照明、汽车组件等产品加工

- ✓ Superior processing of accuracy
- ✓ High performance of insulation and mechanical properties
- ✓ Customized design services, OEM available
- ✓ Precision grinding, coarsening treatment of surface
- ✓ It's suitable for LED lighting, automotive components and other products processing







Storage conditions (储存条件)

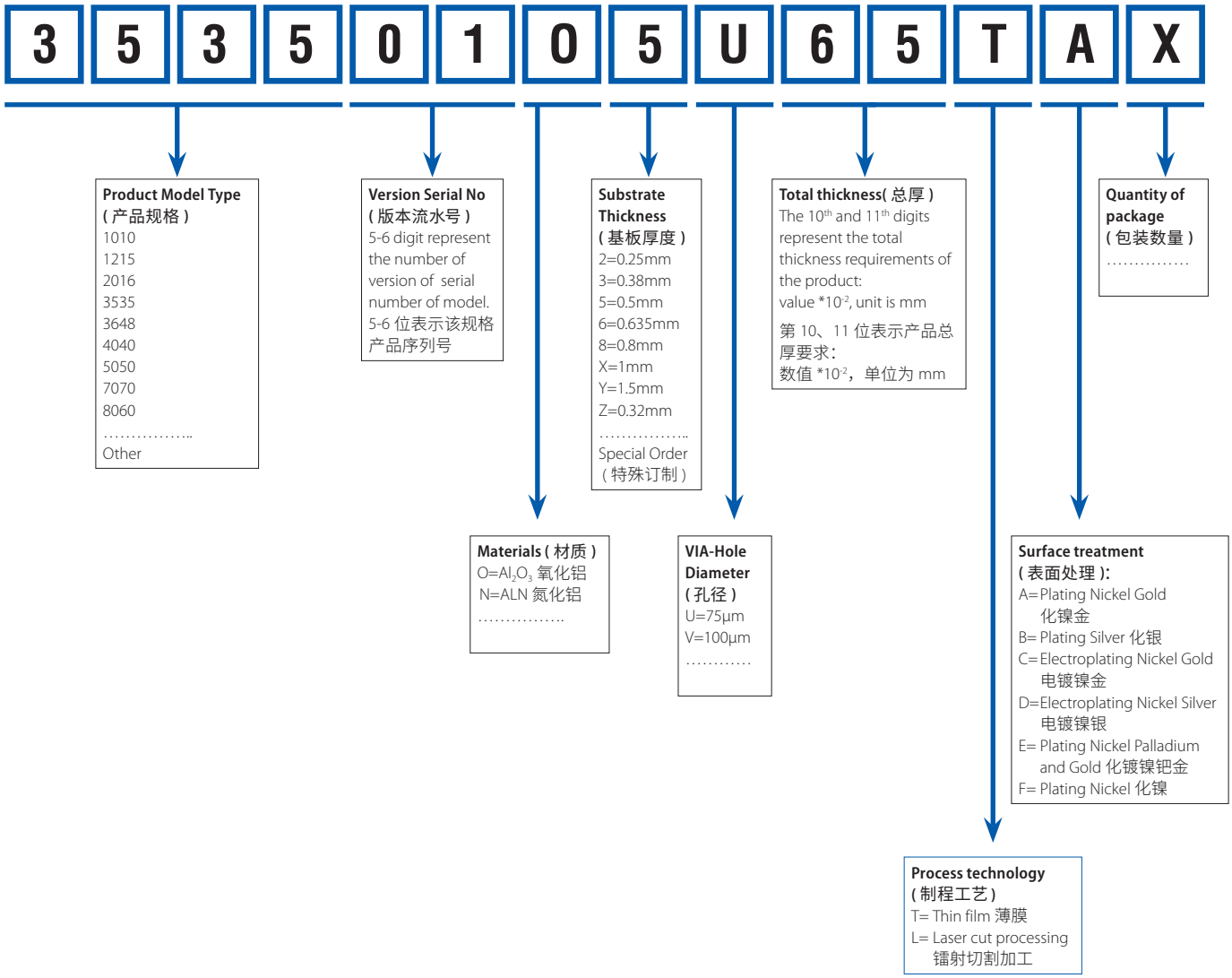
- ✓ Store under 25±5℃,50±10% RH when sealed (密封保存)
- ✓ The expiration date is less than 3 months when unsealed (不开封产品保质期在 3 个月以内)
- ✓ Store under 25±5℃,50±10%RH when unsealed (开封产品的储存条件)
- ✓ Please store unsealed package in airtight containers and try to used within 3 days (已开封产品请于 3 日内使用完，并在一个密闭容器内开封)

Ordering Procedure

订购方式

Example: Open version of 3535 model type , Alumina sheet size 4.5" (114.3x114.3x0.5mm), via hole 75μm, total thickness 0.65mm, Gold (Au) thickness ≥0.03μm

例如：公版 1 3535 规格 氧化铝基板尺寸 4.5 寸 (114.3x114.3x0.5mm), 孔径要求 75μm 总厚要求 0.65mm 金 ≥0.03μm



Uni-Royal

厚聲集團

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Resistors 电阻成品	Material 电子材料	Heat Dissipation Substrate 散热基板

ROYALOHM　uniohm U Need it!　FOSS　aeon

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