规格书 Specification

制造商:深圳市毫欧电子有限公司

适用：本规格书适用于深圳市毫欧电子有限公司封体合金电阻系列选型

包 含： 1206D、2512D、2725D、2728D、4527D、4527DS系列。

■ 产品特点 Features：

合金芯片，封体工艺，焊接性能良好

高可靠性，高过载能力，产品精度高。

使用温度范围较宽无感型设计

电阻温度系数 TCR×10-6/℃≤25-50ppm

符合 ROHS 要求和无卤要求

■ 产品名称 Product Name

封体合金电阻

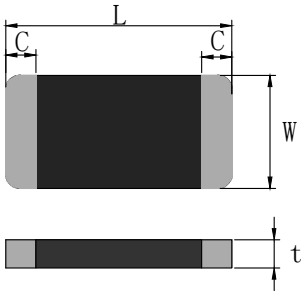
■ 产品型号 Product number

Ho	LR	2725D	4W	3mR	1%
制造商	产品系列	封装	额定功率	阻值	精度
Ho 毫欧电子	LR 合金	1206D	1W、2W	0~10mR	±0.5% ±1% ±5%
		2512D	3.5W	0.25~1mR	
			2W、3W	0.25~62mR	
		2725D	4W	0.2~3mR	
		2728D	4W	4~50mR	
		4527D	5W	0.5~120mR	
		4527DS	7W	0.5~100mR	

国家高新技术企业 IATF16949 ISO9001 TÜV SÜD SGS

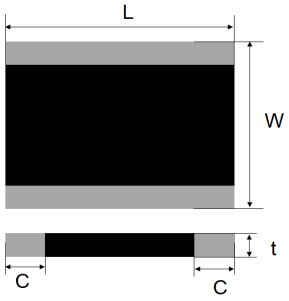
地址：深圳市龙华新区观澜大布头路南通邦高新产业园 A 栋 8 楼

■ 产品尺寸 Product Size



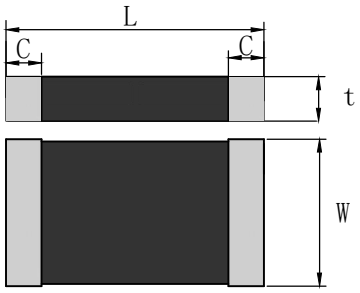
1206D

2512D

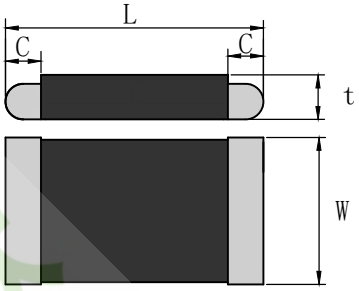


2725D

2728D



4527D

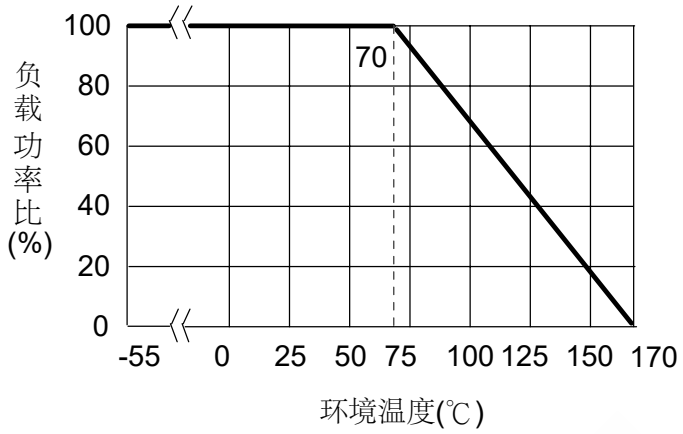


4527DS

型号	功率	阻值	尺寸（mm）			
			L	W	C	t
1206D	1W、2W	0mR	3.15±0.25	1.65±0.25	0.6±0.25	0.6±0.25
		1mR 2mR			1.2±0.25	
		3mR			0.8±0.25	
		4~10mR			0.6±0.25	
2512D	3.5W	0.25~1mR	6.4±0.25	3.2±0.25	2.2±0.25	0.8±0.25
	2W、3W	0.25、0.5mR			1.72±0.25	
		1mR~4mR			1.5±0.25	
		5mR~62mR			0.85±0.25	
2725D	4W	0.2mR、0.25mR	6.8±0.25	6.5±0.25	1.7±0.25	1.2±0.10
		0.5~2mR			1.2±0.25	
		3mR			1.0±0.25	
2728D	4W	4~50mR	7.2±0.25	6.8±0.25	1.1±0.25	1.0±0.25
4527D	5W	0.5~10mR	11.5±0.25	6.85±0.25	2.2±0.25	1.9±0.25
		15~120mR			1.8±0.25	
4527DS	7W	0.5~100mR	11.6±0.3	6.6±0.5	1.6±0.5	2±0.35
备注	此系列产品按车规级产品开发的具有抗硫化的特性，采用两端电极和电阻芯片焊接工艺，合金电阻都是合金芯片在里面表面涂层比较薄,容易出现边缘细微缺口,产生外观轻微瑕疵现象,对产品性能无影响。					

■ 功率曲线 Power curve

操作温度范围 - 55 ～+170 ℃，当电阻温度达到 70℃时，降功率示意图



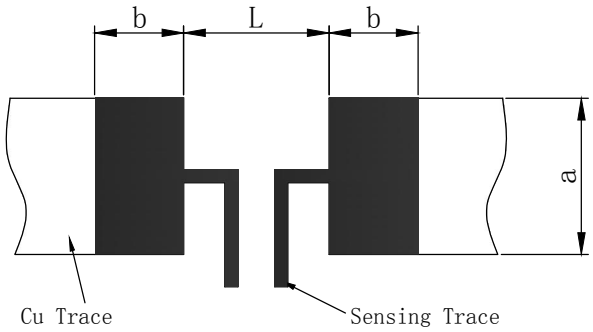
■ 额定电流计算公式 The rated current is calculated by the following Formu

I :Rated Current (A)
P:Rated Power (W)
R:Resistance Value (Ω)

$$I = \sqrt{P/R}$$

■ 建议焊盘尺寸 Recommended Solder Pad Dimension

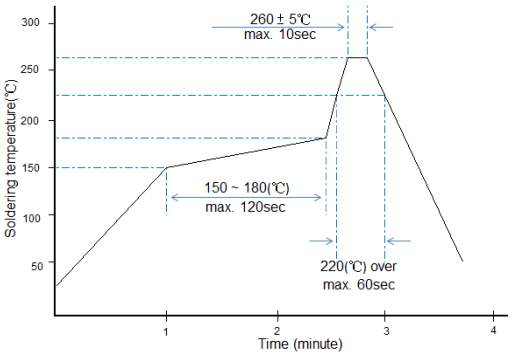
型号	阻值	尺寸（mm）		
		a	b	L
1206D	0R,4-10mR	2.35	1.3	1.25
	1mR、2mR		1.9	0.2
	3mR		1.5	0.85
2512D	0.25~1	4.0	3.15	1.15
	0.25~0.5		2.57	2.11
	1~4		2.35	2.55
	5~62		1.7	3.85
2725D	0.2mR、0.25mR	7.8	2.7	2.1
	0.5~2mR		2.2	3.1
	3mR		2.0	3.5
2728D	4~50mR	8.2	2.1	3.6
4527D	0.5~10mR	8.05	3.2	5.9
	15~120mR		2.8	6.7
4527DS	0.5~100mR	7.8	2.6	7.2



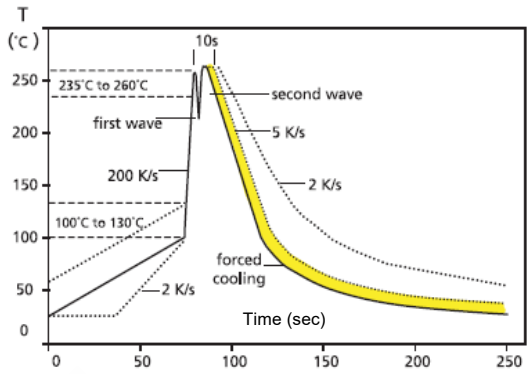
■ 建议焊接参数 / Recommended Customer Soldering Parameters

1、The solderability of the components with surface adhesion will be tested at 245 ° C / 3 seconds.

2、Soldering iron: temperature 350 ℃± 10 ℃, residence time less than 3 seconds.

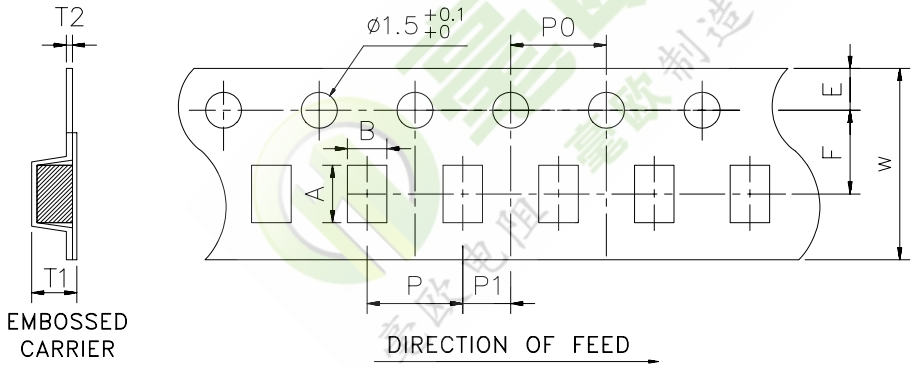


回流焊曲线图



波峰焊曲线图

■ 彩带尺寸 Ribbon size(Unit:mm)



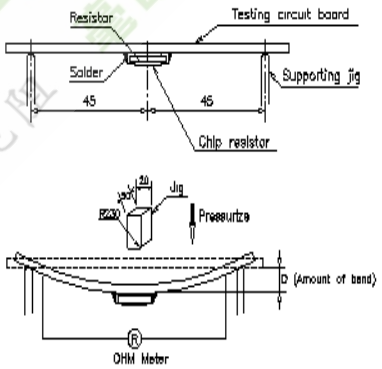
单位：mm

项目 / 型号	A	B	W	E	F	T1	T2	P	P0	P1
1206D	3.5±0.20	1.90± 0.20	8.0±0.15	1.75±0.10	3.5±0.10	1.08 ±0.10	0.24 ±0.05	4.0±0.10	4.0±0.10	2.0±0.10
2512D	6.9±0.20	3.60± 0.20	12.0±0.15	1.75±0.10	5.5±0.10	1.20 ±0.10	0.24 ±0.05	4.0±0.10	4.0±0.10	2.0±0.10
2725D	7.15±0.20	6.95± 0.20	12.0±0.15	1.75±0.10	5.5±0.10	1.450 ±0.10	0.25 ±0.05	8.0±0.10	4.0±0.10	2.0±0.10
2728D	7.15±0.20	7.70± 0.20	12.0±0.15	1.75±0.10	5.5±0.10	1.450 ±0.10	0.25 ±0.05	12.0±0.10	4.0±0.10	2.0±0.10
4527D	12.0±0.20	7.40± 0.20	24.0±0.15	1.75±0.10	11.5±0.10	2.30±0.10	0.30 ±0.10	12.0±0.10	4.0±0.10	2.0±0.10
4527DS	12.0±0.20	7.40± 0.20	24.0±0.15	1.75±0.10	11.5±0.10	2.30±0.10	0.30 ±0.10	12.0±0.10	4.0±0.10	2.0±0.10

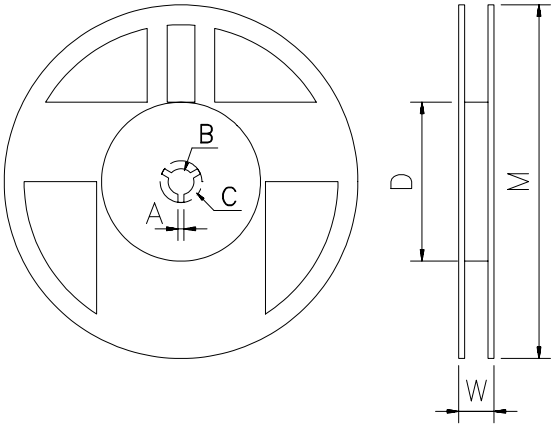
■ 可靠性测试 Reliability Tests

Test Items	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC60115-1 4.8 JIS C 5201-1 4.8	+25℃~ +125℃	Refer to product feature description
Load Life	IEC60115-1 4.25.1 JIS C 5201-1 4.25.1	Put the micro resistance of the metal plate in the oven at 70 ± 2 ℃, apply the rated current, turn it on for 90 minutes, turn it off for 30 minutes, take it out for 1000 hours, and then measure the change of resistance value after standing for more than 60 minutes	≦ ±1% No damage to appearance
Short Time Overload	IEC60115-1 4.13 JIS C 5201-1 4.13	5 X rated power for 5s	≦±0.5%
Bias Humidity	IEC60115-1 4.24.2.1a) JIS C 5201-1 4.24.2.1a)	Place the micro resistance of the metal plate in a constant humidity and constant temperature circulator with 85 ℃± 5 ℃ / 85 ± 5% RH, apply the rated current, turn on for 90 minutes and turn off for 30 minutes, take out the micro resistance and let it stand for more than 60 minutes, and then measure the change rate of resistance value.	≦±0.5% No damage to appearance
Temperature cycle	IEC60115-1 4.19 JIS C 5201-1 4.19	The micro resistance of the metal plate is put into the hot and cold circulation machine,The temperature is -55℃ +155℃ , 300cycle, 15min per extreme condition	≦ ±0.5%
Resistance to Soldering Heat	JIS C 5201-1 4.18	Immerse the metal plate micro resistance in a tin furnace at 260 ± 5 ℃ for 10 ± 1s, take it out and stand for more than 60 minutes, and then measure the change rate of resistance value	≦±0.5% No damage to appearance
Solderability	IEC60115-1 4.17 JIS C 5201-1 4.17	The microresistance of the metal plate was immersed in the furnace at 245 ± 5 ℃ for 3 ± 1 seconds, and then it was taken out and placed under a microscope to observe the solder area.	At least 95% of surface area of electrode shall be covered with new solder

■ 可靠性测试 Reliability Tests

Test Items	Reference standard	Condition of Test	Test Limits
High Temperature Exposure	JIS C 5201-1 4.23.2	The micro resistance of the metal plate was placed in the oven at 170 ± 5 ℃ for 1000 hours, and then the resistance change rate was measured after standing for more than 1 hour.	≦ ±1% No damage to appearance
Low Temperature Storage	JIS C 5201-1 4.23.4	Low temperature storage put the metal plate micro resistance in a constant temperature box at - 55 ± 2 ℃ for 1000 hours, and then measure the change rate of resistance value after standing for more than 60 minutes	≦±0.5% No damage to appearance
Substrate Bending	IEC60115-1 4.33 JIS C 5201-1 4.33	The wafer is resistance welded into a bending test plate, placed on a bending tester, and applied force on the center of the test plate to measure the resistance change rate under load. Pressing depth (d): 2mm 	≦ ±0.5% There is no damage, side guide falling off and body fracture.
Insulation Resistance	IEC60115-1 4.6 JIS C 5201-1 4.6	Place the micro resistance of the metal plate on the fixture, apply 100VDC to the positive and negative electrodes for one minute, and measure the insulation resistance between the electrode and the protective layer and between the electrode and the substrate (substrate)	≧$10^9\Omega$

■ 卷轴规格 Reel Specification



Type	W	M	A	B	C	D
1206D	9+0.5	178±1	2.5±1	13.5±1	17.7±1	60±2
2512D	16.2+0.5	178±1	2.5±1	13.5±1	17.7±1	60±2
2725D	16.2+0.5	178±1	2.5±1	13.5±1	17.7±1	60±2
2728D	16.2+0.5	178±1	2.5±1	13.5±1	17.7±1	60±2
4527D	27.5+0.5	178±1	2.0±1	13.5±1	16.5±1	57±2
4527DS	27.5+0.5	178±1	2.0±1	13.5±1	16.5±1	57±2

■ 包装方式 Packing

型号	包装数量
1206D	4000PCS
2512D	4000PCS
2725D	1000PCS
2728D	1000PCS
4527D	500PCS
4527DS	500PCS

Unikeyic Electronics

Global Electronic Components Distributor

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Milliohm:

HOXTo-220-20W-100R-5% HoFL2Z-200A-75mV-0.5%-YS HoLR2512-330mR-1% LR2512D-2W-3mR-1% HoJLR2512-2W-10mR-1% HoLLR2512-3W-3mR-1% HoFL2-500A-75mV-0.5%-YS HoJLR1206-1W-20mR-1% To-247-100W-51R-5% HoJLR2512-2W-180mR-1%-75ppm HoJLR2512-2W-6mR-1% HoLR2512-170mR-1% HoYLR2512-3W-3mR-1% To-220-20W-120R-5% HoFL2-400A-75mV-0.5%-YS HoJLR1206-1W-4mR-1% HoXGS1575-7W-2mR-1% HoYH1206-1W-250mR-1% To-220-35W-20R-1% To-220-35W-5R-5% HoJLR1206-1W-2mR-1% HoJLR2512-2W-50mR-1%-75ppm HoYLR1206-1W-20mR-1% HolRS3921-5W-0.3mR-1% HoK1210.5-20-M HoRX-200W-150R-5% HoRX-25W-1R-5% HoYLR2512-2W-12mR-1% HolRS3921-5W-0.2mR-1% HoLLR1206-1W-5mR-1%