



# 规格书

## SPECIFICATION

客户 CUSTOMER	华秋商城
客户料号 CUSTOMER P/N	
规格描述 DESCRIPTION	5Ω/D9/F5.08/内弯/L22/(5D-9)
产品编码 PART NUMBER	MZ05009C4HA00
日期 DATE	2021-11-15

呈昆承认栏 APPROVED BY CHENGGUN			客户承认栏 APPROVED BY CUSTOMER	
批准 APPROVED BY	审核 CHECK BY	制订 FORMULATE BY	批准 APPROVED BY	审核 CHECK BY

东莞市呈昆电子有限公司

DONGGUAN CITY CHENGGUN ELECTRONIC CO., LTD.

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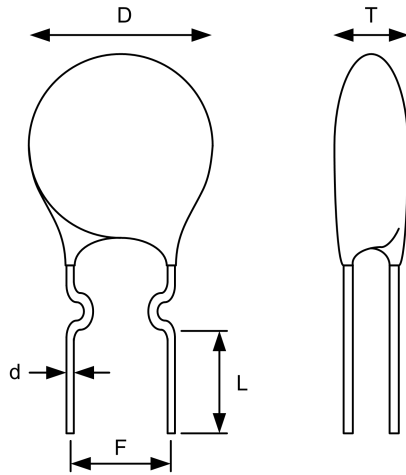
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1. APPEARANCE 外观

1-1. 尺寸 Dimensions (mm)



1-2. Marking 标志

NTC  
5D-9

1-3. Coating 包封

- No coating 无包封  
 Coating 包封

Material 包封材料

- PF resin 酚醛树脂  
 Silicon 硅树脂  
 Epoxy 环氧树脂  
 Others 其他

Color 颜色

- Green 绿色  
 Red 红色  
 Tan 黄色  
 Black 黑色  
 Blue 蓝色

1-4. Leads 引线

- Tin-plated copper wire 镀锡铜线  
 Tin-plated steel wire 镀锡钢线

- Straight 直形       Axis-formed 轴弯  
 In-Forming 内弯       Out-Forming 外弯

D: ≤11

T: ≤6

F: 5.0 ± 1.0

d: 0.75 ± 0.06

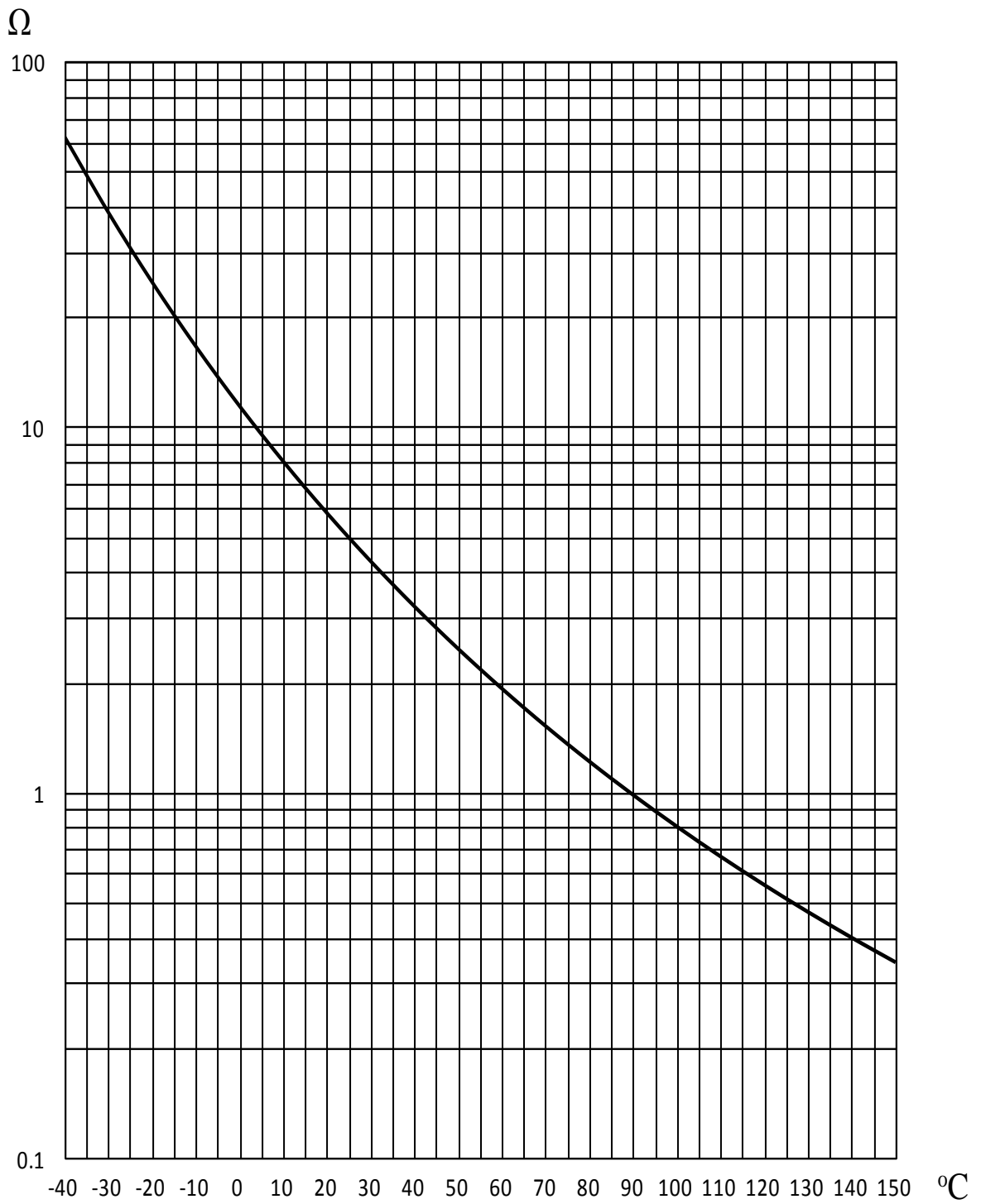
L: ≥16

2. Parameters of Technology 主要技术参数

Rated Zero-Power Resistance 额定零功率电阻值 R25 (Ω)	5	详细见附录说明
Material Constant 材料常数 B25/85 (K)	2700	详细见附录说明
Max. Steady State Current 最大稳态电流 (A)	3	详细见附录说明
Thermal Dissipation Constant 耗散系数(mW/°C)	≥11	详细见附录说明
Thermal Time Constant 热时间常数τ(s)	≤35	详细见附录说明
Operating Temperature Range 工作温度范围 (°C)	-40°C—150°C	

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3. INSPECTION 检验方法						
3-1. Lot Inspection 批量检验						
Sampling with IEC410 / DIN ISO 2859-1 (GB/T2828.1-2012); Testing with SPEC.NO.:R09D050MP24BENA. 抽样方法按 IEC410/ DIN ISO 2859-1 ( GB/T2828.1-2012 ); 试验方法按 SPEC.NO.:R09D050MP24BENA.						
Item 指标项目	IL	AQL		Item 指标项目	IL	AQL
Appearance 外观	II	0.65		Rated Zero-Power Resistance 额定零功率电阻 $R_N$	II	0.65
Soldering-ability 可焊性	S-2	2.5		Max. Steady State Current 最大稳态电流 (A)	S-2	2.5
4. STORAGE CONDITIONS 存储环境条件:						
4-1. Temperature 温度: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$						
4-2. Humidity 湿度: $\leq 70\%RH$						
4-3. Term 期限: $\leq 6$ months (First-in/ First-out 先进先出)						
4-4. Place 地点:						
Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics.						
不要暴露在下列环境条件下, 否则将导致性能衰退或参数飘移:						
1) Corrosive gas or deoxidizing gas. 腐蚀性或易氧化气体						
2) Flammable and explosive gases. 易燃易爆气体						
3) Oil, water and chemical liquid. 油、水和化学溶液						
4) Under the sunlight. 太阳光下						
4-5. Handling after seal open: After unpacking of the minimum package, reseal it promptly or store it inside a sealed container with a drying agent.						
尽量保证开口最小化, 立即重新封好, 并贮存在密封、带有干燥剂的容器中。						
5. WARNING 注意、警告 						
Do not apply the components under the following conditions, otherwise, it may result in deterioration of characteristics, destruction of components or in the worst case, to catching fire.						
请不要在下列条件下使用本元件, 否则将可能导致产品性能衰退或产品损毁, 甚至引发火灾:						
1) Exceeding $I_{max}$ . 超过最大工作电流						
2) Exceeding rated temperature range. 超过许可工作温度范围						
3) Inferior thermal dissipation (Due to badly inferior thermal dissipation, some part of the components body will become overheated and then be damaged.)						
散热不良 (由于散热不良, 本元件可能因部分过热而导致破坏)						

6. R/T curve 阻温曲线



## Appendix 附录

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1. MECHANICAL CHARACTERISTICS 机械性能					
Item 指标项目	Specification 技术要求	Test Conditions & Methods 测试条件/方法			
1-1. Solder-ability 可焊性	The terminals shall be uniformly tinned, and its area $\geq 95\%$ 浸润部分上锡均匀, 上锡面积 $\geq 95\%$	Dipping the NTC terminals to a depth of 15mm in a soldering bath of 240-245°C and to the place of 6mm far from NTC body for 2-3s (See IEC68-2-20 /GB2423.28 Ta) 将引出端沾助焊剂后, 浸入到温度为 240-245°C、深度为 15mm 的锡槽中锡面距 NTC 本体下端 6mm 处, 持续 2-3 秒。 (参见 IEC68-2-20 /GB2423.28 试验 Ta)			
1-2. Resistance To Soldering Heat 耐焊接热	No visible mechanical damage. 无可见损伤 $\Delta R/RN \leq 20\%$ ( $\Delta R =  RN - RN' $ )	Dipping the NTC terminals to a depth of 15mm in a soldering bath of 265 $\pm$ 5°C and to the place for 6mm below from NTC body for 10 $\pm$ 1s. After recovering 4-5h under 25 $\pm$ 2°C. The rated zero power resistance value $R_N'$ shall be measured. (See IEC68-2-20 /GB2423.28 Tb) 根据 IEC68-2-20 (GB2423.28) 试验 Tb 进行试验。 采用焊槽法, 将引出端沾助焊剂后, 浸入到温度为 265 $\pm$ 5°C、深度为 15mm 的锡槽中, 锡面距 NTC 本体下端 6mm 处, 维持 10 $\pm$ 1 秒。在 25 $\pm$ 2°C 条件下恢复 4-5h 后, 复测额定零功率电阻 $R_N'$ 。			
1-3. Strength of lead terminal 引出端强度	No break out 无损坏 $\Delta R/RN \leq 20\%$ ( $\Delta R =  RN - RN' $ )	Fasten the body and apply a force gradually to each lead until 10N and then keep for 10sec, Hold body and apply a force to each lead until 90° slowly at 5N in the direction of lead axis and then keep for 10sec, and do this in the opposite direction repeat for other terminal. After recovering 4~5h under 25 $\pm$ 2°C, the rated zero power resistance value $R_N'$ shall be measured. (See IEC68-2-21/GB2423.29 Ua / Ub) 根据 IEC68-2-21 (GB2423.29) 试验 U 进行试验。 试验 Ua: 拉力 10N, 持续 10S; 试验 Ub: 弯曲 90°, 拉力 5N, 持续 10S; 扭转 180°, 拉力 5N, 持续 10S。 在 25 $\pm$ 2°C 条件下恢复 4~5 h 后, 复测额定零功率电阻 $R_N'$			

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2.ELECTRICAL CHARACTERISTICS 电气性能					
2-1.Test Conditions & Method 测试条件/方法					
Items 指标项目	Spec. 技术要求	Test Conditions & Methods 测试条件/方法			
2-1-1.Rated Zero-Power Resistance 额定零功率电阻 $R_N (\Omega)$	5±20%	Ambient temp. Range:25℃±2℃(T <sub>A</sub> ). Testing voltage:1.5Vdc After placing for 1~2 hours under T <sub>A</sub> , the resistance value shall be measured. 环境温度 T <sub>A</sub> :25℃±2℃ 测试电压:1.5Vdc 在常温 T <sub>A</sub> 条件下, 放置 1~2 小时 后测得阻值 R <sub>N</sub> 。			
2-1-2.Thermal Dissipation Constant 热耗散系数δ (mW/°C)	≥11	The thermal dissipation constant(δ) could be calculated by the ratio of a change in power dissipation(ΔP) of the thermistor to a change in temperature(ΔT) of the thermistor at a specified ambient temperature 在特定的环境温度下, 热耗散系数(δ)为热敏电阻电功率消耗(ΔP)与本体温度变化量 (ΔT)的比值.			
2-1-3.Thermal Time Constant 热时间常数 τ (s)	≤35	The time(τ) shall be measured within which the temperature change of NTC thermistor is reached at 63.2% of the ambient temperature change under zero power condition 热时间常数(τ)为在零功率条件下, 热敏电阻的温度下降到其最初温度与最终温度之差为 63.2% 时所需要的时间			
2-1-4.Material Constant 材料常数 B (K)	2700±10% $B=T_1T_2/(T_2-T_1) \times \ln(R_1/R_2)$	R <sub>1</sub> , R <sub>2</sub> is zero-power resistance at T <sub>1</sub> , T <sub>2</sub> R <sub>1</sub> , R <sub>2</sub> 分别为 T <sub>1</sub> , T <sub>2</sub> 温度下的零功率电阻 T <sub>1</sub> = 298.15K(25℃) T <sub>2</sub> = 358.15K(85℃)			
2-1-5.Max.Steady State Current 最大稳态电流(A)	3.0A  No visible mechanical damage. 无可见损伤  $\Delta R_N / R_N \leq 20\%$  ( $\Delta R =   R_N - R_N'  $ )	Ambient temp. Range 环境温度:25℃±2℃. Testing Current 测试电流:3.0A			

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3. Reliability Test 可靠性试验 (周期性检测项目)					
Items 指标项目	Spec. 技术要求	Test Conditions & Methods 测试条件/方法			
*3-1. Temp. Cycling Testing 温度循环测试	No visible mechanical damage.  无可见损伤  $\Delta R_N / R_N \leq 20\%$  ( $\Delta R =   R_N - R_N'  $ )	Ta:-40±3℃/ 30min→25±2℃/ 5min→ Tb:150±3℃/ 30min→25±2℃/ 5min Cycles:5times After recovering 4~5 h under 25±2℃, the rated zero power resistance value $R_N'$ shall be measured. 在 Ta=-40±3℃和 Tb=150±3℃的环境温度中各存放 30 分钟, 循环 5 次.每次高低温循环都有在 25±2℃的环境中过渡 5 分钟。 样品进行温度循环测试后, 取出放置室温 (25±2℃) 4~5 小时后测量零功率电阻 $R_N'$ .			
*3-2. Electrical Cycling Testing 电循环测试	No visible mechanical damage.  无可见损伤  $\Delta R_N / R_N \leq 20\%$  ( $\Delta R =   R_N - R_N'  $ )	Ambient temp. Range:25℃±2℃. Cycles:2,000times On / Off:5 s / 55 s Test Current3.0A After recovering 4~5h under 25±2℃, the rated zero power resistance value $R_N'$ shall be measured. 环境温度:25℃±2℃. 循环次数:2,000 次 通/断:5 s / 55 s 测试电流:3.0A 样品置于室温 (25±2℃) 4~5 小时后,测量其零功率电阻 $R_N'$ .			
*3-3.LoadLife ( Endurance ) Testing 持久性测试	No visible mechanical damage.  无可见损伤  $\Delta R_N / R_N \leq 20\%$  ( $\Delta R =   R_N - R_N'  $ )	Ambient temp. Range:25℃±2℃;3.0A/ 1,000±24h After recovering 4~5 h under 25±2℃, the rated zero power resistance value $R_N'$ shall be measured. 环境温度:25℃±2℃. 样品通过最大工作电流 3.0A , 1,000±24 小时后, 取出置于室温 (25±2℃) 4~5 小时后,测量其零功率电阻 $R_N'$ .			
*4-3. Humidity Testing 耐湿性测试	No visible mechanical damage.  无可见损伤  $\Delta R_N / R_N \leq 20\%$  ( $\Delta R =   R_N - R_N'  $ )	Ambient temp. range :40℃±2℃ R.H.:93±3% , Energized time:1000±24 h After recovering 4~5 h under 25±2℃, the rated zero power resistance value $R_N'$ shall be measured. 在温度 40±2℃,相对湿度 93±3%的环境中放置 1000±24 小时后, 取出置于室温 (25±2℃) 4~5 小时后, 测量其零功率电阻 $R_N'$ .			