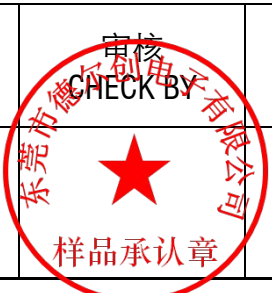


# 规格书

## SPECIFICATION

客户 CUSTOMER	立创商城
客户料号 CUSTOMER P/N	C2921243
规格描述 DESCRIPTION	5Ω/D11/F7.5/直脚/L3.5/(5D-11)
产品编码 PART NUMBER	MZ05011D14A00
日期 DATE	2021-11-15

德尔创承认栏 APPROVED BY DERSONIC			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
				

东莞市德尔创电子有限公司

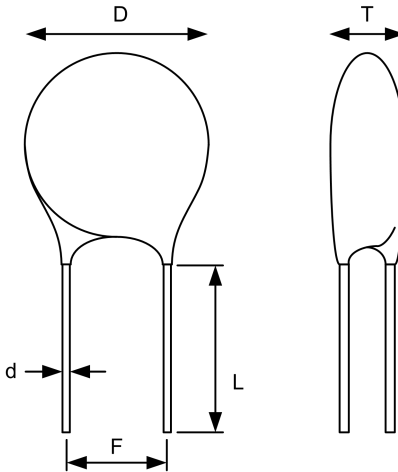
DONGGUAN DERSONIC ELECTRONIC CO., LTD.

广东省东莞市长安镇锦厦河南工业区锦平路 5 号

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1. APPEARANCE 外观					
1-1. Dimensions (mm)尺寸			1-2. Marking 标志		
			NTC 5D-11		
			1-3. Coating 包封		
			<input type="checkbox"/> No coating 无包封 <input checked="" type="checkbox"/> Coating 包封		
			Material 包封材料		Color 颜色
			<input checked="" type="checkbox"/> PF resin 酚醛树脂 <input type="checkbox"/> Silicon 硅树脂 <input type="checkbox"/> Epoxy 环氧树脂 <input type="checkbox"/> Others 其他		<input type="checkbox"/> Green 绿色 <input type="checkbox"/> Red 红色 <input type="checkbox"/> Tan 黄色 <input checked="" type="checkbox"/> Black 黑色 <input type="checkbox"/> Blue 兰色
			1-4. Leads 引线		
D: ≤13			<input type="checkbox"/> Tin-plated copper wire 镀锡铜线 <input checked="" type="checkbox"/> Tin-plated steel wire 镀锡钢线		
T: ≤6.5			<input checked="" type="checkbox"/> Straight 直形 <input type="checkbox"/> In-Forming 内弯		
F: 7.5 ± 1.0			<input type="checkbox"/> Axis-formed 轴弯 <input type="checkbox"/> Out-Forming 外弯		
d: 0.75 ± 0.06					
L: 3.5 ± 0.5					
2. Parameters of Technology 主要技术参数					
Rated Zero-Power Resistance 额定零功率电阻值 $R_{25}$ (Ω)	5	详细见附录说明			
Material Constant 材料常数 $B_{25/85}$ (K)	2700	详细见附录说明			
Max. Steady State Current 最大稳态电流 (A)	4	详细见附录说明			
Thermal Dissipation Constant 耗散系数 (mW/°C)	≥13	详细见附录说明			
Thermal Time Constant 热时间常数 $\tau$ (s)	≤55	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.: R11D050MP74CEOB  
 抽样方法按 IEC410/ DIN ISO 2859-1 ( GB/T2828.1-2012 ); 试验方法按 SPEC.NO.: R11D050MP74CEOB

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 RN	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 存贮环境条件:

4-1. Temperature 温度: -10°C ~ +40°C

4-2. Humidity 湿度: ≤70%RH

4-3. Term 期限: ≤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）

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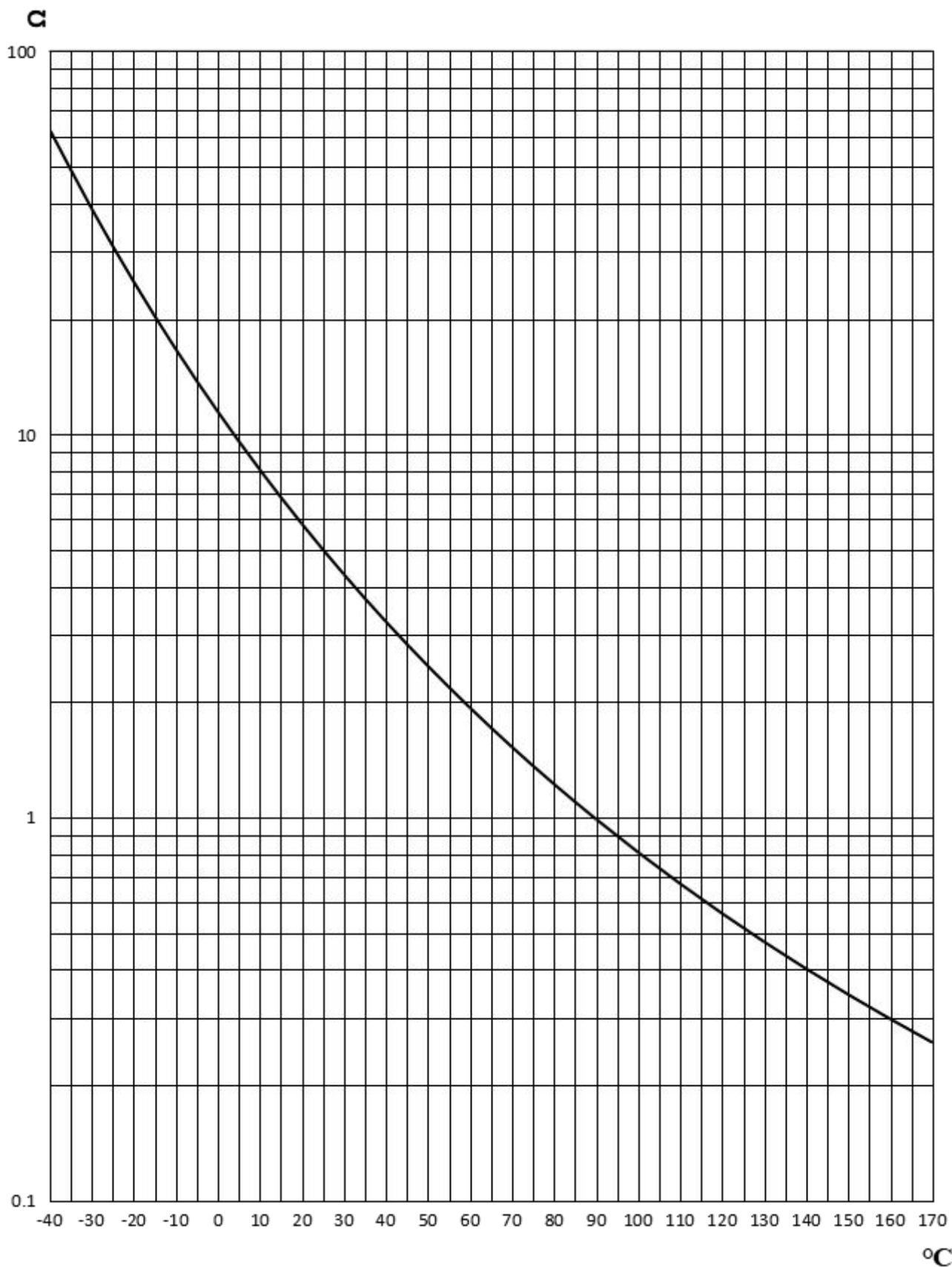
5D-11

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版本

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### 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 $235 \pm 5^\circ\text{C}$ 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 $235 \pm 5^\circ\text{C}$ 、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 $\Delta R/R_N \leq 20\%$ ( $\Delta R =  R_N - R_N' $ )	Dipping the NTC terminals to a depth of 15mm in a soldering bath of $260 \pm 5^\circ\text{C}$ and to the place for 6mm below from NTC body for $10 \pm 1\text{s}$ . After recovering 4-5h under $25 \pm 2^\circ\text{C}$ . 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 $260 \pm 5^\circ\text{C}$ 、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 $25 \pm 2^\circ\text{C}$ 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 $\Delta R/R_N \leq 20\%$ ( $\Delta R =  R_N - R_N' $ )	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 $90^\circ$ 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 $25 \pm 2^\circ\text{C}$ , 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 10 S; 试验 Ub: 弯曲 $90^\circ$ , 拉力 5N, 持续 10 S; 扭转 $180^\circ$ , 拉力 5N, 持续 10 S。 在 $25 \pm 2^\circ\text{C}$ 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 $R_N (\Omega)$	5.0±20%	Ambient temp. Range:25°C ± 2°C (T <sub>A</sub> ). Testing voltage: 1.5V <sub>DC</sub> 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°C ± 2°C 测试电压: 1.5V <sub>DC</sub> 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)	≥13	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)	≤55	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±5% $B=T_1T_2/(T_2-T_1) \times \ln(R_1/R_2)$	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> = 298.15°K(25°C) T <sub>2</sub> = 358.15°K(85°C)			
2-1-5.Max.Steady State Current 最大稳态电流(A)	4A  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°C ± 2°C. Testing Current 测试电流:4.0A			

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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 ± 5 °C / 30min → 25 ± 2 °C / 5min → Tb: 150 ± 5 °C / 30min → 25 ± 2 °C / 5min Cycles: 5times After recovering 4~5 h under 25 ± 2 °C , the rated zero power resistance value R <sub>N'</sub> shall be measured. 在 Ta=-40 ± 5 °C 和 Tb=150 ± 5 °C 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 °C 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 °C) 4~5 小时后测量零功率电阻 R <sub>N'</sub> .			
*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 °C ± 2 °C. Cycles: 1,000times On / Off: 1m / 5m Test Current 4.0A After recovering 4~5h under 25 ± 2 °C , the rated zero power resistance value R <sub>N'</sub> shall be measured. 环境温度: 25 °C ± 2 °C. 循环次数: 1,000 次 通/断: 1m / 5m 测试电流: 4.0A 样品置于室温 (25 ± 2 °C) 4~5 小时后, 测量其零功率电阻 R <sub>N'</sub> .			
*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 °C ± 2 °C; 4.0A / 1,000 ± 24h After recovering 4~5 h under 25 ± 2 °C , the rated zero power resistance value R <sub>N'</sub> shall be measured. 环境温度: 25 °C ± 2 °C. 样品通过最大工作电流 4.0A , 1,000 ± 24 小时后, 取出置于室温 (25 ± 2 °C) 4~5 小时后, 测量其零功率电阻 R <sub>N'</sub> .			
*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 °C ± 2 °C R.H.: 93 ± 3% , Energized time: 1000 ± 24 h After recovering 4~5 h under 25 ± 2 °C , the rated zero power resistance value R <sub>N'</sub> shall be measured. 在温度 40 ± 2 °C , 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 °C) 4~5 小时后, 测量其零功率电阻 R <sub>N'</sub> .			

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