



## 汽车油压传感器用厚膜电路产品说明书

HIC for Automotor oil-pressure sensors product explain

### 一、产品简介: Brief introduction

JTD 系列厚膜电路是本公司专门为各种汽车、摩托车机油压力传感器设计的厚膜陶瓷电路板。该系列产品耐燃油、润滑油及盐化雾等工业环境的腐蚀能力强,具有输出线性特性曲线好、抗磨性能强,使用寿命长等优点。

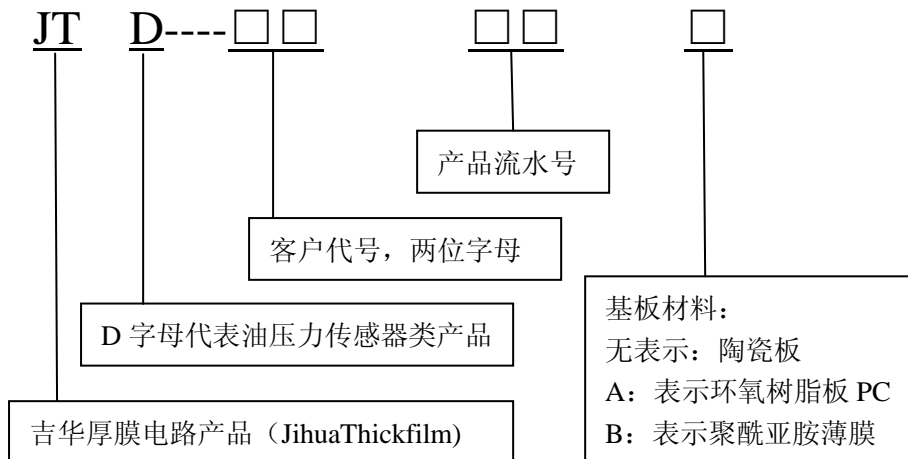
JTD series products is my corporation for Automotor's、autocycle's sensors R&D thick film chinaware Printed Circuit Board; So they are fuel-resistant, lubricating oil-resistant, it also have high resistance to corrosion against salt fog in industry environment, their output character abrasivity and long life characters



### 二、产品特点: Product trait

- 该系列产品具有性能可靠、输入输出特性稳定、高精度、低 TCR 等特点;
- 最小线条宽度 0.12mm,最小线间距 0.15mm,日/美系高性能 Ag-Pd 导体材料;
- 具有极佳的线性特点,适合 Ag-Gr、Ag-Pb、white-Cu 不锈钢合金等触点,耐磨性好;
- 产品使用寿命长、一致性好,可用于各类型进口、国产直线型油压传感器。
- 设计灵活多样,供货周期短,成本低廉;

### 三、定货方式 Order



### 四、产品特性 Characteristics

- 1、工作温度范围:  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$   
Operation Temp.Range:  $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- 2、基片材料: 96%AL<sub>2</sub>O<sub>3</sub> 陶瓷基片  
Substrate material: 96%AL<sub>2</sub>O<sub>3</sub> ceramic substrate
- 3、导体材料: Ag/Pd, 导体附着力强, 进口材料;  
Conductive material: Ag/Pd, with strong adhesion, importation material;



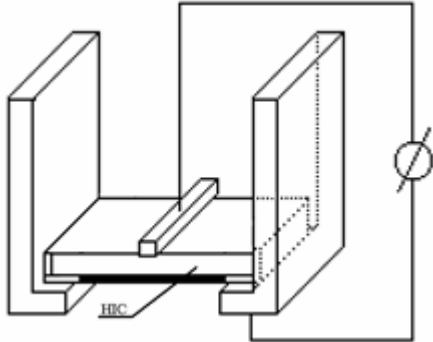
4、电阻体材料：高性能导电材料，耐磨性能好，可达 200 万次

Resistance material: high level conductive material, good abrasivity, and abrasivity attain 200mil.cycle

5、焊接能力：阻值变化小于 0.5%（265℃焊锡炉，浸入 10S，反复 5 次，检测阻值变化率）

Seal capability: resistance variational  $\leq 0.5\%$  (immerge the 265℃soldering tin holding 10S, time after time carry through 5 order, back-check resistance variational)

## 五、电气性能 Performance Specification

项目 Item	规格 specification	
电阻范围 (resistance range)	<b>1Ω~10MΩ</b>	
电阻公差 (tolerance for resistor)	<b>±1.0% ±5.0% ±10.0% ±20.0%</b>	
电阻温度系数 (resistance temperature coefficient)	$1\Omega \leq R < 10\Omega$	±250PPM/°C
	$1M\Omega < R \leq 10M\Omega$	
	$10\Omega \leq R \leq 1M\Omega$	±150PPM/°C
耐磨性 (Abrasivity property)	≥200 万次	以符合本产品标准的耐磨性测试夹具装配固定好元件，启动耐磨实验台进行耐磨性测试，每两个行程（即一个来回）为 1 次，依次类推进行反复实验。200 万次后产品指标符合要求。 Product should be using a corrd with install of standard making for test,befor 2 million times it's qualified still.)
线性度 (linearity)	≤2%	以符合本产品标准的耐磨性测试夹具装配固定好元件进行实验，检测产品在不同开度时的电阻输出曲线与理想拟合直线最小偏差的比值。 Product should be using a corrd with install of standard making for test, To testing resistance export of product at different angle,Then using it with ideal linearity for compare test.)
绝缘电阻 (insulation resistance)	1000MΩ	在基片与电极间施加 100V 直流电压，通电 1.0min 后测试绝缘电阻值。 



<p><b>可焊性 (solderability)</b></p>	<p>可焊接面积大于 95%； The termination coverage should be 95% cover min</p>	<p>将产品浸入非活性焊剂中浸渍大约 2S, 然后去除多余焊剂,将产品浸入到焊料槽内深达 10mm,焊料槽温度为 240℃ ± 5℃,浸入时间为 2s ± 0.5s,用溶剂清洗掉电阻器上的焊剂残余物,后在 10 倍放大镜下观察。 Product should be dipped in the melted solder bath at 240℃ ± 5℃ for 2s ± 0.5s. Flux should be removed from the surface of the termination with clean organic solvent.</p>
<p><b>耐焊接热 Resistanceto Soldering Heat</b></p>	<p>无可见损伤 Nomechanical damage <math>\Delta R \leq \pm (1.0\%R + 0.05\Omega)</math></p>	<p>将元件浸入焊料槽内深达 10mm,焊料槽内温度为 270℃ ± 5℃,浸入时间 10s ± 1s,在室温放置 1~ 2 小时. 用溶剂将多余的焊剂清洗掉, 然后测量电阻值。 Product should be dipped in the melted solder bath at 270℃ ± 5℃ for 10 s ± 1s, Flux should be removed from the surface of the termination with clean organic solvent., resistor should be exposed at room condition for one or two hours, then check the resistance value.</p>
<p><b>温度快速变化 Rapid Temperature cycle 温度快速变化 Rapid Temperature cycle</b></p>	<p>无可见损伤 Nomechanical damage. <math>\Delta R \leq \pm (1.0\%R + 0.05\Omega)</math></p>	<p>-55℃ ± 3℃ 30 分钟 ← 常温 (2~3) 分钟 → 125℃ ± 3℃ 30 分钟连续 5 个循环. 元件在标准大气条件下恢复不少于 1 小时,也不多于 2 小时。 -55 °C ± 3 °C for 30mins ← normal temp.for (2~3) mins → 125 °C ± 3 °C for 30mins ,total 5 cycles.</p>
<p><b>稳态湿热 Steady State Humidity</b></p>	<p>无可见损伤 Nomechanical damage. <math>\Delta R \leq \pm (3.0\%R + 0.1\Omega)</math></p>	<p>元件在温度为 40℃ ± 2℃,湿度 90%~ 95%湿热试验箱内维持 1000 小时。 Product should be exposed at 40℃ ± 2℃ and 90~95% relative humidity in a humidity test chamber for 1000 hours.</p>
<p><b>耐溶剂性 Resistanceto Solvent</b></p>	<p>无可见损伤 Nomechanical damage.</p>	<p>溶解溶液:三氯乙烯,浸 10 小时 ± 1 小时。 Dipping in solvent solution of Isopropyl alcohol for 10h ± 1h.</p>



## 六、推荐使用手工焊接

Recommended Recommended Recommended Soldering Soldering Soldering Profile Profile Profile;

- 推荐的焊丝类型 Recommended solder alloy: 96.5SnSnSn-3.0AgAgAg-0.5CuCuCu;
- 推荐使用烙铁功率 15~20W, 温度 240~270℃;
- 推荐使用中性助焊剂, 酸性或碱性焊剂使用后必须进行清洗后方可投入使用;
- 贮存条件: 温度 5℃~35℃, 相对湿度 45%~70%;

Storage conditions: T: 5℃~35℃, RH: 45%~70%;

- 避免存放于有腐蚀性气体的环境。 Avoiding storage in place full of corrosive gas;

## 七、相关产品 Other Applications

可根据用户实际要求进行订制设计、开发;

We can especially product for the client R&D, if the client has special requirements to the products.