

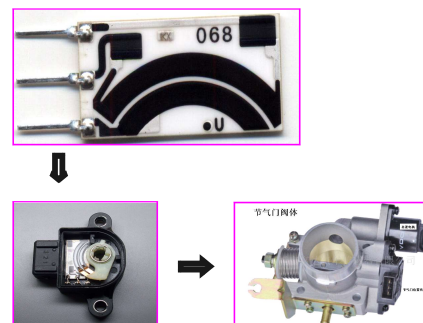
■ 节气门位置传感器用厚膜电阻板

TFR FOR TPS

◆ 特点 Features

DHMY系列厚膜电路是本公司专门为电喷型汽车发动机节气门位置传感器设计的厚膜电路板。该产品采用丝网印刷、高温烧结、激光调阻等先进的厚膜工艺加工而成，产品耐燃油、润滑油及盐化雾等工业环境的腐蚀能力强，输出线性特性曲线好、抗磨性能强，使用寿命长，可用于德国BOSCH系统和美国DELPHI系统的节气门位置传感器。

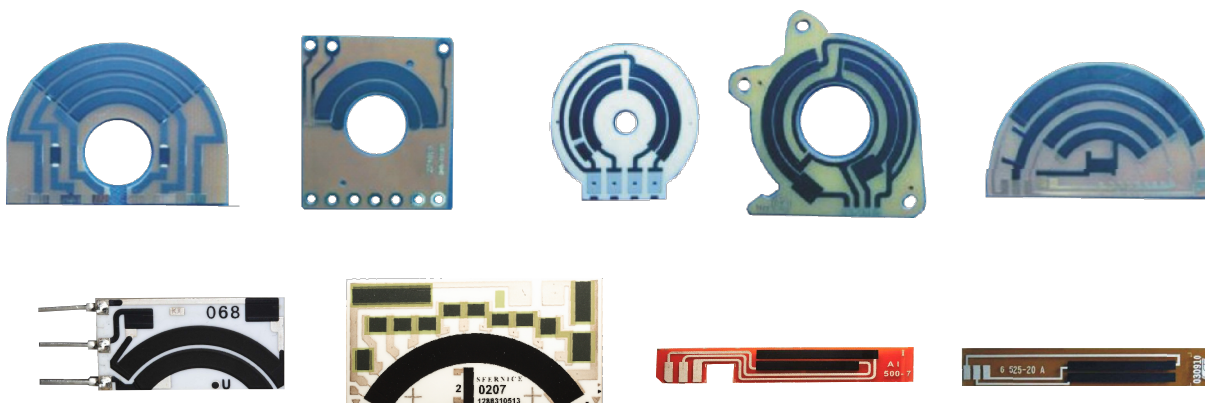
DHMY series of thick film circuit is the company dedicated to EFI cars engine throttle position sensor designed for thick film circuit board. The product uses screen printing, high-temperature sintering, laser trimming of thick film technology and other advanced processing, the product resistant to fuels, lubricants and other industrial environments Salt fog corrosion ability, linear output characteristic curve is good, wear performance, long life, the system can be used in Germany BOSCH and the United States DELPHI system, throttle position sensor.



◆ 额定值 Ratings

- * 工作温度范围 Operating temperature range: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$.
- * 基片材料: 96%氧化铝基板、聚酰亚胺薄膜、环氧PCB板。
Substrate materials: 96% Al_2O_3 ceramic substrate, polyimide film, epoxy PCB board.
- * 电阻阻值精度 Resistance tolerance:
 $\pm 30\%$ (可根据客户的要求订制 Can be customized according to customer requirements).
- * 电阻体材料: 高性能导电材料, 耐磨性能好。
Resistance material: High-performance conductive material, good wear resistance.

◆ 相关产品 Other Applications



- * 可根据客户实际要求进行订制。
We can especially product for the client, if the client has special requirements to the products.

◆ 特性 Characteristics

试验项目 Test Item	规定值 Standard	测试方法 Test Method
线性度 Linearity	输出电压的线性度应 $\leq 2\%$ Linearity of the output voltage should be $\leq 2\%$	保持传感器全闭-全开-全闭的循环两次以上，过程中记录节气门位置传感器的输出电压与转角之间的对应关系。 Maintain the sensor fully closed - full - more than twice the whole closed loop, records the corresponding relation between the throttle position sensor output voltage and the corner during the process.
电阻体耐磨性 Wear life	试验后，输出电压的线性度应 $\leq 2\%$ After the test, the linearity of the output voltage should be $\leq 2\%$	使用材料为铂钯合金丝的滑动触点在电阻体的滑动区内滑动。触点与电阻体的接触压力为 $0.15 \text{ N} \pm 0.05 \text{ N}$ ，按电阻板的电阻体有效转动角度的来回作为一个周期，试验要求不少于400万个周期。 Materials used for the platinum-palladium alloy wire sliding contact in the sliding resistance of the body of the slide area. Contact resistance of the body and the contact pressure is $0.15 \text{ N} \pm 0.05 \text{ N}$, the resistance of the body by the effective resistance of plate rotation angle of the back and forth as a cycle, the test requires less than 400 million cycles.
电阻温度系数 T.C.R	在规定值内 within specified T.C.R	IEC 60115-1 4.8 $+25^{\circ}\text{C}/-40^{\circ}\text{C}/+25^{\circ}\text{C}/+125^{\circ}\text{C}/+25^{\circ}\text{C}$
短时间过负载 Short Time Overload	$ \Delta R/R \leq 5\%$	IEC 60115-1 4.13 其中对产品施加16V电压，持续时间60min。 One of the products applied voltage of 16V, duration 60min.
温度快速变化 Rapid Change of Temperature	$ \Delta R/R \leq 5\%$	IEC 60115-1 4.19 -40°C (30分钟) \sim 常温 (5分钟) $\sim 125^{\circ}\text{C}$ (30分钟) 5个循环； -40°C (30min) \sim normal temperature(5min) $\sim 125^{\circ}\text{C}$ (30min) 5cycles;
耐低温工作性 Low Temperature Operation	$ \Delta R/R \leq 5\%$	将产品放进低温箱内，使箱内的温度降到 -40°C ，待温度保持稳定后，保持 1 h。然后施加 $(5 \pm 0.1) \text{ V}$ 标称电压，保持 48 h。 Put the product into the low temperature, make the temperature inside dropped to -40°C , until the temperature is kept stable, maintaining 1 h. Then applied $(5 \pm 0.1) \text{ V}$ nominal voltage, to maintain 48 h.
70°C 耐久性 Endurance at 70°C	$ \Delta R/R \leq 5\%$	IEC 60115-1 4.25.1 $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$, 1000小时，额定电压或元件极限电压（取较小值），通1.5小时/断0.5小时。 $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$, 1000h, Rated voltage or limiting element voltage whichever is lower 1.5h ON/0.5h OFF.
稳态湿热 Damp Heat Steady State	$ \Delta R/R \leq 5\%$	IEC 60115-1 4.24 $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$, $93\% \pm 3\% \text{ RH}$, 1000h.
低温贮存 Low Temperature Storage	$ \Delta R/R \leq 5\%$	将电阻板放置于 $-40^{\circ}\text{C} \pm 1^{\circ}\text{C}$ 的低温试验箱存储，持续1000 h。 Place the resistance plate in $-40^{\circ}\text{C} \pm 1^{\circ}\text{C}$ low temperature storage chamber, continuous 1000 h.
高温贮存 Resistance to Dry Heat	$ \Delta R/R \leq 5\%$	将电阻板放置于 $150^{\circ}\text{C} \pm 1^{\circ}\text{C}$ 的高温试验箱存储，持续1000 h。 Place the resistance plate on the $150^{\circ}\text{C} \pm 1^{\circ}\text{C}$ high temperature storage chamber, continuous 1000 h.

■ 修订履历 Revision History

版本Version	日期Date	修订内容 Change Description	修改确认 Checked by
V2020.0	2020-06-23	- 原版 The original version.	吴晓玲 Xiaoling Wu

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