

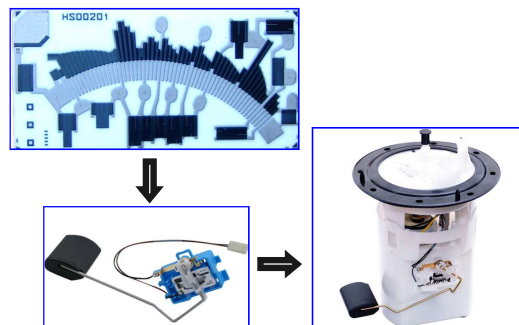
## ■ 油位传感器用厚膜电阻板

TFR for Fuel Level Sensor

### ◆ 特点 Features

FLS系列产品包括摩托车油位电阻片、汽车油位电阻片，是本公司专门为汽车、摩托车油位传感器设计的电阻板。采用厚膜工艺加工而成，具有良好的耐柴油、汽油腐蚀性和良好的抗磨性能。

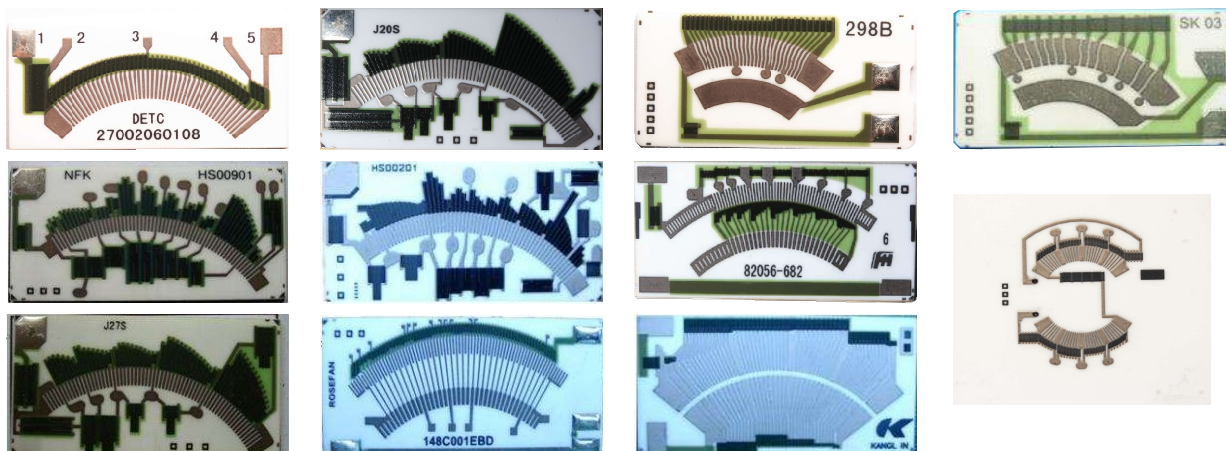
FLS series products which include motorcycle and automobile, are the resistor panel which are especially designed for automobile and motorcycle oil sensor. It is manufactured by using thick film technology, with good resistance to diesel, petrol and good corrosion resistance anti-wear performance.



### ◆ 额定值 Ratings

- \* 工作温度范围 Operating temperature range:  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ .
- \* 基片材料 Substrate materials:  $96\%\text{AL}_2\text{O}_3$ .
- \* 导体材料 Conductor material: Ag/Pd, 导体附着力强 Strong adhesion.
- \* 耐磨指标: 铍青铜触点在电极表面滑动(接触压力为 $0.25 \pm 0.05\text{N}$ )，200万次（空气中）或500万次（汽油或柴油中）后能满足电阻特性要求。  
Wear life: When bronze slide on the conductor (pressure is  $0.25 \pm 0.05\text{N}$ ), the resistance can be filled after 200 million cycle (in the air) or 500 million cycle (dip in gasoline or diesel oil).
- \* 电阻阻值精度 Resistance tolerance:  $\pm 1\%$  or  $\pm 0.5\%$ .
- \* 电阻温度系数 Temperature coefficient(TCR):  $\pm 250\text{ppm}/^{\circ}\text{C}$ .

### ◆ 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
导体耐磨性 Wear life	试验后产品接触导线不断线，试验后阻值符合要求。 After test contact wire line, after the test value conforms to the requirement	使用材料为铍青铜的滑动触点在导体层的滑动区内接触导体，触点与导体层滑动区的接触压力为 $0.25 \text{ N} \pm 0.05 \text{ N}$ ，来回磨擦，每一个来回为一次，试验要求不少于200万个周期(空气中)或500万个周期(浸入汽油或柴油中)。 Materials used for the bronze sliding contact area in sliding contact with the conductor layer of the conductor, the conductor layer sliding contact with the contact area pressure $0.25 \text{ N} \pm 0.05 \text{ N}$ , rub back and forth, back and forth to each one, the test requires less than 200 million cycles (in the air) or 500 million cycle (dip in gasoline or diesel oil).
耐有机溶剂 腐蚀性 Corrosion resistance to organic solvents	$ \Delta R/R  \leq 1\%$	使用溶剂：85%柴油(或92#汽油)+15%乙醇。 Solvent: 85% diesel ( or 92 # gasoline) + 15% ethyl alcohol 溶剂温度： $(23 \pm 5)^\circ\text{C}$ Solvent temperature: $(23 \pm 5)^\circ\text{C}$ 浸泡时间： $(10 \pm 1)\text{h}$ Soaking time: $(10 \pm 1)\text{h}$
耐焊接热 Resistance to Soldering Heat	$ \Delta R/R  \leq 1\%$	将焊盘完全浸入 $270^\circ\text{C} \pm 5^\circ\text{C}$ 的锡槽，保持 $(5 \pm 1)\text{s}$ 。恢复时间 $(24 \pm 4)\text{h}$ 。 The pad completely immersed in $270^\circ\text{C} \pm 5^\circ\text{C}$ of the tin bath, to maintain $(5 \pm 1)\text{s}$ . Recovery time $(24 \pm 4)\text{h}$ .
电阻温度系数 T.C.R	在规定值内 within specified T.C.R	IEC 60115-1 4.8 $+25^\circ\text{C}/-55^\circ\text{C}/+25^\circ\text{C}/+125^\circ\text{C}/+25^\circ\text{C}$
温度快速变化 Rapid Change of Temperature	$ \Delta R/R  \leq 1\%$	IEC 60115-1 4.19 $-40^\circ\text{C}$ (30分钟)~常温(5分钟)~ $85^\circ\text{C}$ (30分钟)5个循环； $-40^\circ\text{C}$ (30min)~normal temperature(5min)~ $85^\circ\text{C}$ (30min)5cycles;
短时间过负载 Short Time Overload	$ \Delta R/R  \leq 1\%$	IEC 60115-1 4.13 施加2.5倍额定电压或最大过负荷电压(取较小者)，持续5秒。 Apply 2.5 times rated voltage or Max overload voltage, whichever is lower, for 5 s.
70℃耐久性 Endurance at70℃	$ \Delta R/R  \leq 1\%$	IEC 60115-1 4.25.1 $70^\circ\text{C} \pm 2^\circ\text{C}$ , 1000小时 额定电压通1.5小时, 断0.5小时, 持续1000小时。 $70^\circ\text{C} \pm 2^\circ\text{C}$ , 1000h Rated voltage 1.5h on/ 0.5h OFF 1000h.
稳态湿热 Damp Heat Steady State	$ \Delta R/R  \leq 1\%$	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 1\%$	将产品放置于 $(-55 \pm 1)^\circ\text{C}$ 的低温试验箱存储，持续时间：1000 h。 Place the product in the low temperature storage chamber which the temperature is $(-55 \pm 1)^\circ\text{C}$ , duration: 1000 h.
高温贮存 Resistance to Dry Heat	$ \Delta R/R  \leq 1\%$	将电阻板放置于 $(125 \pm 1)^\circ\text{C}$ 的高温试验箱存储，持续1000 h。 Place the resistance plate on the $(125 \pm 1)^\circ\text{C}$ high temperature storage chamber, continuous 1000 h.

\* 上述试验电阻值均按总阻值进行测量判断。

The above test resistance values are measured by total resistance values.

## ■ 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
V2020.1.0	2021-01-13	- 删除额定值中“额定电压” Delete the rated voltage in Ratings.	何志江 Zhijiang He

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