

***ROTARY POSITION SESOR
TEST DATA OF
SV01 SERIES***

SUMMARY OF TEST DATA

MODEL : SV01

RESISTANCE VALUE : 10k ohm

| No. | Test Item | Specification | | Test Data | | | |
|-----|---|------------------|-----------------|-----------|--------|---------|--------|
| | | | | n | Max. | Ave. | Min. |
| 1 | Temperature Coefficient of Resistance (TCR) | -40°C +85°C | ± 500ppm/°C | 10 | -111.9 | -116.57 | -125.0 |
| | | | | 10 | 85.1 | 71.60 | 60.5 |
| 2 | Temperature Cycle (Thermal Shock) | ΔTR Linearity | ± 20% ± 3% | 10 | -3.27 | -3.417 | -3.59 |
| | | | | 10 | 1.54 | 1.109 | 0.55 |
| 3 | Humidity Exposure | ΔTR Linearity | ± 20% ± 3% | 10 | 3.63 | 3.488 | 3.28 |
| | | | | 10 | 1.74 | 1.142 | 0.69 |
| 4 | Vibration | ΔTR Linearity | ± 10% ± 3% | 10 | -0.12 | -0.168 | -0.25 |
| | | | | 10 | 1.68 | 1.010 | 0.44 |
| 5 | Shock | ΔTR Linearity | ± 10% ± 3% | 10 | -0.01 | -0.046 | -0.07 |
| | | | | 10 | 1.71 | 0.957 | 0.58 |
| 6 | Humidity Load Life | ΔTR Linearity | ± 20% ± 3% | 10 | -1.94 | -2.000 | -2.10 |
| | | | | 10 | 1.73 | 1.165 | 0.76 |
| 7 | High Temperature Exposure | ΔTR Linearity | +5/-30% ± 3% | 10 | -4.48 | -4.727 | -5.01 |
| | | | | 10 | 1.65 | 1.150 | 0.73 |
| 8 | Low Temperature Exposure | ΔTR Linearity | ± 20% ± 3% | 10 | 0.69 | 0.659 | 0.61 |
| | | | | 10 | 1.69 | 1.181 | 0.81 |
| 9 | Rotational Life | ΔTR Linearity | ± 20% ± 3% | 10 | -0.24 | -0.348 | -0.72 |
| | | | | 10 | 1.85 | 1.309 | 0.94 |
| 10 | Resistance to Soldering Heat | ΔTR Linearity | ± 20% ± 3% | 10 | -5.45 | -5.965 | -6.62 |
| | | | | 10 | 1.57 | 0.998 | 0.72 |

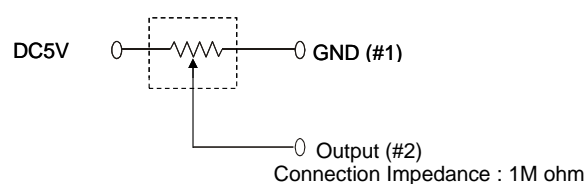
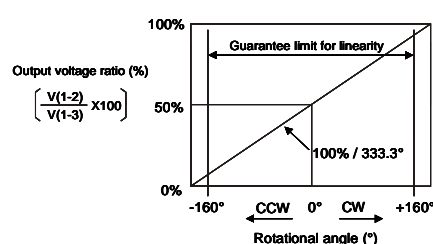
(Note)

• ΔTR : Total Resistance Change

• Linearity

Independent linearity shall vary no more than ±2% within ±160° to 50% voltage ratio.

Taper : linear, 100%/333.3° Measured with the circuit as below.



TEST METHOD

1. Temperature coefficient of resistance (TCR)

The rotary position sensor should be subjected to each of the following temperatures for 30~45 minutes.

[Table 1]

| Sequence | *1 | 2 | *3 | 4 |
|------------|----|-----|----|----|
| Temp. (°C) | 25 | -40 | 25 | 85 |

Note* : Reference temperature

Temperature coefficient of resistance should be applied to the following formula.

$$TCR = (R_2 - R_1) / (R_1 (T_2 - T_1)) \times 10^6 \text{ (ppm / } ^\circ\text{C)}$$

T_1 : Reference temperature in degrees celsius

T_2 : Test temperature in degrees celsius

R_1 : Resistance at reference temperature in ohm

R_2 : Resistance at test temperature in ohm

2. Temperature cycle (Thermal shock)

The rotary position sensor should be subjected to Table 2 temperature for 5 cycles.

Then, the rotary position sensor should be kept in the dry box for 1~2 hours.

[Table 2]

| Sequence | 1 | 2 | 3 | 4 |
|-----------|-------|--------|-------|--------|
| Temp.(°C) | -40±3 | +25±2 | +85±3 | +25±2 |
| Time | 30 | 5 max. | 30 | 5 max. |

3. Humidity Exposure

The rotary position sensor should be stored in a chamber at temperature of 60±2°C and relative humidity of 90~95% for 250±8 hrs. After removing from the chamber, the rotary position sensor should be kept in the dry box for 5±1/6 hours.

4. Vibration

The rotary position sensor should be tested under the condition of the amplitude of 1.5mm, the frequency range from 10 to 55Hz (should be traversed in approximately one minute) and 2 hours in each of 3 mutually perpendicular directions(total 6 hours). Then, the rotary position sensor should be kept in the dry box for 1~2 hours.

5. Shock

The rotary position sensor should be tested under the condition of the peak acceleration 20G max. in half-sine wave and 5 shocks in each of 3 mutually perpendicular directions(total 15 shocks).

Then, the rotary position sensor should be kept in the dry box for 1~2 hours.

6. Humidity load life

Full rated continuous working voltage not exceeding 5Vdc should be applied intermittently between terminal #1 and terminal #3 of the rotary position sensor, 1.5 hours on and 0.5 hours off, for 96±4 hours in total in a chamber at a temperature of 40±2°C and the relative humidity of 90~95%.

After removing from the chamber, the rotary position sensor should be kept in the dry box for 5±1/6 hours.

7. High temperature exposure

The rotary position sensor should be stored in a chamber at a temperature of 85±2°C without loading for 250±8 hours. After removing from the chamber, the rotary position sensor should be kept in the dry box for 1~2 hours.

8. Low temperature exposure

The rotary position sensor should be stored in a chamber at a temperature of -40±3°C without loading for 168±4 hours. After removing from the chamber, the rotary position sensor should be kept in the dry box for 1~2 hours.

9. Rotational life

The adjustment rotor should be continuously rotated within ±160° of effective electrical rotational angle, at the rate of one cycle for 6 seconds for 1 Million cycles under the condition of 25±2°C of temperature without loading. Then, the rotary position sensor should be kept in the dry box for 10±5 minutes.

10. Resistance to soldering heat

The rotary position sensor should be soldered by reflow soldering method according to the standard soldering Condition(refer to the below table). Then, the rotary position sensor should be kept in the dry box for 24 +8/-0 hours.

| Pre-heating | | Heating | | Peak | Cycle of reflow |
|-------------|------------|-----------|------------|-----------|-----------------|
| Temp.(°C) | Time(sec.) | Temp.(°C) | Time(sec.) | Temp.(°C) | |
| 150~180 | 60~120 | 230 | 30~50 | 260 +5/-0 | 2 |