

**Thin-Film**  
**Platinum Resistance**  
**Temperature Sensor**



**DATA SHEET**  
**(Preliminary, Feb 2022)**



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**Description**

SCL’s thin film temperature sensors are made of high purity platinum, which is deposited by E-beam evaporation system on silicon substrate. The sensing element was patterned using photolithographic process as per the design layout. The electrical connection between die pads to pin out through aluminum wire bonding using ultrasonic wire bonder.

PRT is a two terminal Pt- based resistance. Sensor resistance changes with temperature. Change in sensor resistance may be detected by known constant current excitation and reading back sensor voltage.

**Specifications**

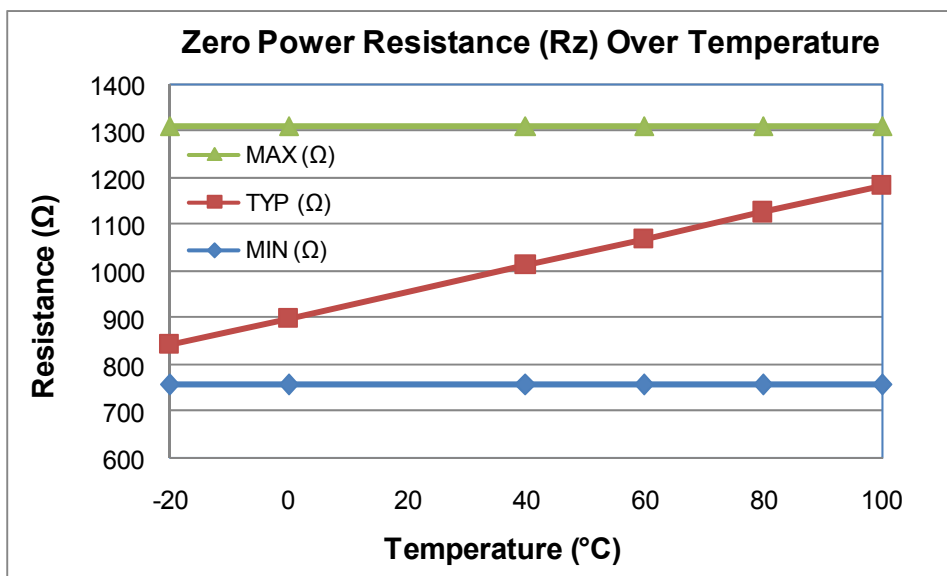
Platinum Resistance Temperature Sensor (PRT)	
Part No.	TS GGN
Temperature Range	-20°C to 100 °C
Accuracy <sup>1</sup>	< 0.5°C
Nominal Resistance (at 0°C), R <sub>0</sub>	900 Ω
Nominal Temperature Coefficient, TCR	0.00315 Ω/Ω/°C
Package Style	TO46 with Cap
Body Base Material	KOVAR Header with Nickel Cap
Lead Base Material	KOVAR
Weight (Maximum)	350 mg
Lead Length	13.5 ± 0.5mm
Storage Temperature	-65°C to 135°C
Response Time in still air using LCSR2 method (τ63.2%)	< 40 sec

Note-1: Worst case accuracy with calibration coefficients (R0, A & B) in the range -20°C to 100 °C.

Note-2: LCSR (Loop Current Step Response). This response time corresponds to the chosen package TO46.



Zero Power Resistance & Temperature Characteristics



Resistance vs. Temperature Calibration Polynomial

$$R_T = R_0 (1 + AT + BT^2)$$

$R_T$  = Resistance at Temperature  $T^\circ\text{C}$

$R_0$  = Resistance at Temperature  $0^\circ\text{C}$

A, B = Polynomial Coefficients

Each sensor is individually calibrated with 0.1 mA of measurement dc current.



### Absolute Maximum Ratings

The maximum ratings shall not be exceeded at any time during use or storage

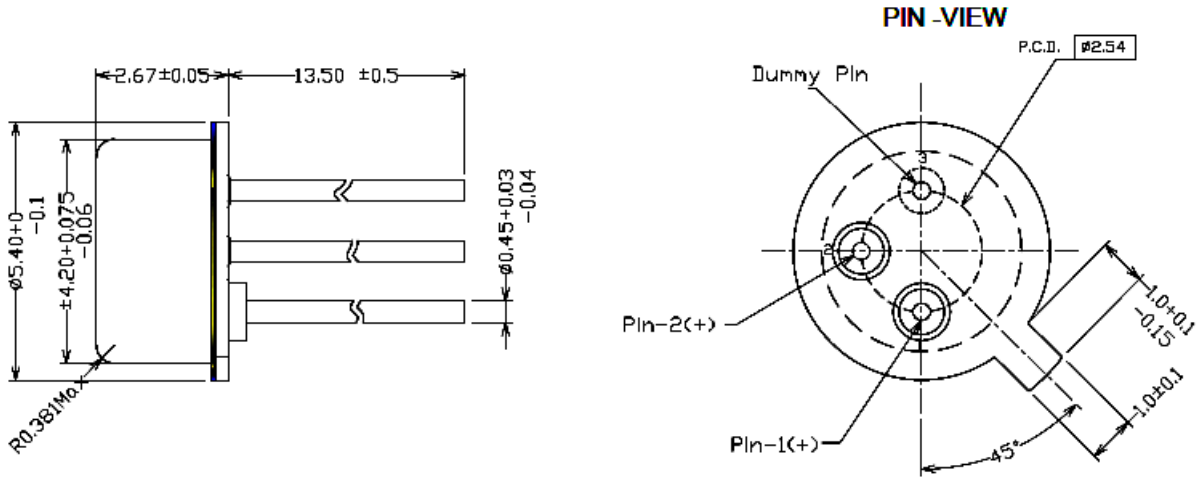
Parameter	Min.	Max.	Units
DC Measurement Voltage	-	0.76	Volts
DC Measurement Current	-	1.0	mA
Power dissipation (PD)		1.5	mW
Storage Temperature (T <sub>STG</sub> )	-65	135	°C

### Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Units
Operating DC Voltage	-	0.1	0.23	Volts
Operating DC Current	-	0.1	0.3	mA
Zero Power Resistance (RZ) at 0°C	810	900	990	Ω
TC of Resistance (TCR)	0.00306	0.00315	0.00324	(Ω/Ω/°C)
Insulation Resistance	100	-	-	MΩ
Operating Temperature (T <sub>AMB</sub> )	-20	-	100	°C



Mechanical Drawing



All dimensions are in mm

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