

# TMP6x

## Silicon-based linear thermistors for temperature sensing

<https://www.ti.com/lit/gpn/TMP61>

### Features

- Resistance options at 25°C: **10kΩ, 47kΩ, 100kΩ**
- Resistance tolerance from 0 to 70°C: **± 1%**
- Max lifetime resistance sensor drift:
  - < **1%**: 2/3<sup>rd</sup> less than NTC thermistor competition
- Thermal response time:
  - 0.6 seconds** (DEC package): 66% faster than NTC thermistors
- TCR : 6400ppm/°C **± 0.2%**
- Operating Temperatures:

Qualification	DEC (0402)	DYA (0603)	LPG (TO-92s)
Commercial	-40 to 125°C	-40 to 125°C	-40 to 150°C
Automotive AEC-Q100	-40 to 125°C	-40 to 150°C	-40 to 170°C

Packaging options:



### Applications

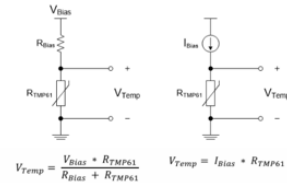
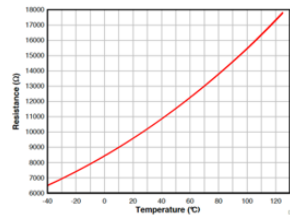
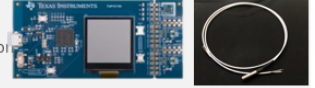
- Displays
- DC/DC
- Power Modules
- Inverters
- GPUs
- Motor Control
- Charging Infrastructure
- Batteries
- HVAC
- Appliances
- Speakers

### Benefits

- Smallest and most cost-effective linear thermistor in the market
- Outperforms both NTCs and linear PTC thermistors
- Enables **±0.3°C** accuracy via a 1-point room temperature offset
- Small size allows for closer proximity to thermal hotspots and quicker thermal response
- Minimizes thermistor self-heating and reduces power consumption
- Eliminates linearization circuitry and simplifies software.
- Easy switch from NTCs and linear PTCs**

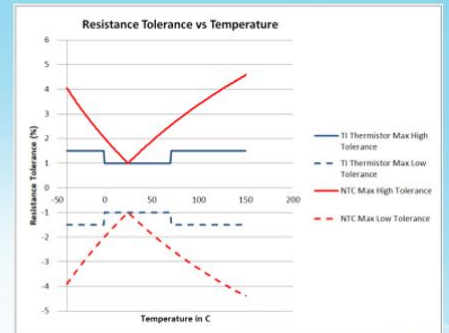
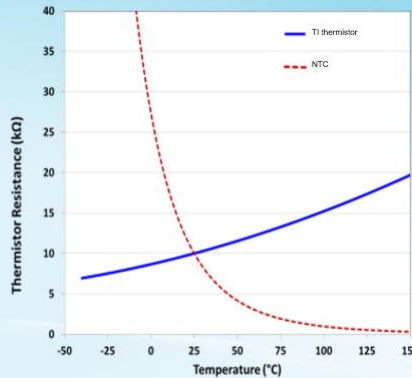
### Tools

- [Thermistor design tool](#)
  - Includes voltage and current biasing
  - R-T tables, code examples, NTC comparison
- [TMP6x EVM](#)
  - Detachable sensor for remote prototyping



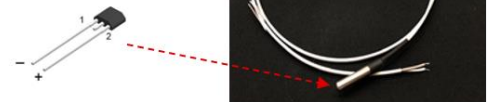
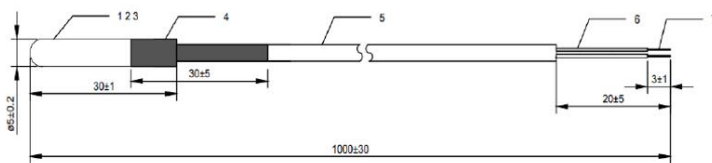
# TMP6131LPG -SST(5-30)-1000XJFH

## 1%, Ultra Low-Drift, 10K Ohm Linear Probe



## TMP6131LPG -SST(5-30)-1000XJFH Specification

(一) Product model: TMP6131 LPG IC Sensor  
(二) Appearance size :



9	Hi-Pot Leakage	AC 750 V / 1sec	<10mA				
8	Operating temperature	-40-125°C					
7	Bare Wire	3mm with Tin coating					
6	Lead Wires	Black & White/Stripping 20mm					
5	Jacket Wire (Flat Wire)	F224 White/without UL	2.9*1.7mm				
4	Heat Shrinkable Tube	UP to 125°C/Black					
3	Coating	Epoxy		Design	Temperature sensor	TMP61LPG-SST(5-30)-1000XJFH	Date 20220713
2	IC	TMP6131 LPG		Drafting			Scale
1	Probe	SUS304 Φ5*30MM		Examine			Unit mm
NO.	ITEM	MATERIAL LIST	Remarks	Approval	Company		Page P01

Vp connects to the White lead wire  
Vn connects to the Black lead wire

Table1: Electrical Specifications

PARAMETER	TEST CONDITIONS	MIN TYP MAX			UNIT	
R <sub>25</sub>	Thermistor Resistance at 25°C <sup>(1)</sup>	T <sub>a</sub> = 25°C	9.9	10	10.1	kΩ
R <sub>TOL</sub>	Resistance Tolerance <sup>(1)</sup>	T <sub>a</sub> = 25°C	-1		1	%
		T <sub>a</sub> = 0°C to 70°C	-1		1	
		T <sub>a</sub> = -40°C to 125°C	-1.5		1.5	
TCR <sub>25</sub>	Temperature Coefficient of Resistance	T1 = 20°C, T2 = 30°C		+6220		ppm/°C
		T1 = 80°C, T2 = 90°C		+5910		
TCR <sub>25</sub> %	Temperature Coefficient of Resistance Tolerance	T1 = 20°C, T2 = 30°C		±0.4		%
		T1 = 80°C, T2 = 90°C		±0.3		
ΔR	Sensor Long Term Drift (Reliability)	96 hours continuous operation R <sub>25</sub> = 95%, T <sub>a</sub> = 130°C, V <sub>bias</sub> = 5.5V	-1	0.1	1	%
	Sensor Long Term Drift (Reliability)	600 hours continuous operation at T <sub>a</sub> = 150°C V <sub>bias</sub> = 5.5V, DEC Package	-1	0.5	1.8	
	Sensor Long Term Drift (Reliability)	600 hours continuous operation at T <sub>a</sub> = 150°C V <sub>bias</sub> = 5.5V, DYA Package	-1	0.2	1.2	
	Sensor Long Term Drift (Reliability)	1000 hours continuous operation at T <sub>a</sub> = 150°C V <sub>bias</sub> = 5.5V, LPG Package	-0.5	0.5	1.4	