

## SP30

Tyre Pressure Sensor



### With integrated Microcontroller, LF Receiver and Accelerometer

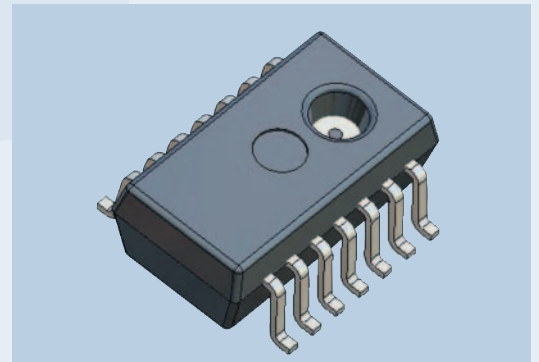
The SP30 Tyre Pressure Monitoring (TPM) Sensor represents Infineon's third generation TPM sensors. Based on former sensor platforms, the SP30 adds a level of integration by including a microcontroller and LF-input stage to meet market demands for flexible, customer specific solutions and overall system cost reduction.

The sensor design is based upon Infineon's proprietary and patented solutions aimed at high reliability measurements in harsh automotive environments, still with a predictable and stable quality in high volume applications.

The SP30 measures pressure, temperature, supply voltage and acceleration (optional), and by integrating these functions with an ASIC in one package, Infineon has developed the ideal product for tyre pressure monitoring applications.

#### Measurements

- |                         |                                 |
|-------------------------|---------------------------------|
| ■ Pressure Sensor       | 100 to 450/700/800/900/1400 kPa |
| ■ Temperature Sensor    | -40 to +125°C                   |
| ■ Supply Voltage Sensor | 1.8 to 3.6 V                    |
| ■ Acceleration Sensor   | -12 to 115 g                    |



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Sensors



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## Pressure Measurements

The presented performance reflects the use of 11-bit measurement of pressure signal and 10-bit measurement of temperature.

### Standard Pressure Measurement Range

(Pressure measurement specifications, 100–450 kPa range)

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Pressure Range	100	450	kPa	-40 ... 125°C	–
Measurement Error	-7	7	kPa	0 ... 50°C	2.1 ... 3.6
	-17.5	17.5	kPa	-40 ... 125°C	2.1 ... 3.6

### Optional Pressure Measurement Range

(Pressure measurement specifications, 100–700 kPa range)

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Pressure Range	100	700	kPa	-40 ... 125	–
Measurement Error	-11	11	kPa	0 ... 50	2.1 ... 3.6
	-28	28	kPa	-40 ... 125	2.1 ... 3.6

(Pressure measurement specifications, 100–800 kPa range)

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Pressure Range	100	800	kPa	-40 ... 125	–
Measurement Error	-12.5	12.5	kPa	0 ... 50	2.1 ... 3.6
	-31.5	31.5	kPa	-40 ... 125	2.1 ... 3.6

(Pressure measurement specifications, 100–900 kPa range)

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Pressure Range	100	900	kPa	-40 ... 125	–
Measurement Error	-14	14	kPa	0 ... 50	2.1 ... 3.6
	-35	35	kPa	-40 ... 125	2.1 ... 3.6

(Pressure measurement specifications, 100–1400 kPa range)

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Pressure Range	100	1400	kPa	-40 ... 125	–
Measurement Error	-22	22	kPa	0 ... 50	2.1 ... 3.6
	-35	35	kPa	-40 ... 125	2.1 ... 3.6

## Acceleration Measurements

The presented performance reflects the use of 12-bit measurement of acceleration signal and 10-bit measurement for temperature.

### Acceleration Measurement Specifications

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Input Range	-12	115	g	-40 ... 90°C	2.1 ... 3.6
Sensitivity Accuracy	-18.75	18.75	%	-40 ... 90°C	2.1 ... 3.6
Offset Accuracy	-6	6	g	-20 ... 70°C	2.1 ... 3.6
	-8.5	8.5	g	-40 ... 90°C	2.1 ... 3.6

## Temperature Measurements

The presented performance reflects the use of 10-bit measurement of temperature.

### Temperature Measurement Specifications

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Measurement Error	-3	3	°C	-20 ... 70°C	2.1 ... 3.6
	-5	5	°C	-40 ... 90°C	2.1 ... 3.6
	-3	7	°C	90 ... 125°C	2.1 ... 3.6

## Supply Voltage Measurements

The presented performance reflects the use of 9-bit measurement of supply voltage.

### Supply Voltage Measurement Specifications

Parameter	Limit Values		Unit	Test Conditions	
	min.	max.		Temperature [°C]	V <sub>DD</sub> [V]
Measurement Error	-100	100	mV	-40 ... 125°C	V <sub>THR</sub> ... 3.6