



TYRE PRESSURE SENSOR FOR HEAVY VEHICLES

SP12T is a piezoresistive pressure sensor designed for tyre pressure measurement in heavy vehicle applications. The design is based on proven high-volume, low cost production processes developed for products to be used in automotive applications.

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

The SP12T measures pressure, temperature and supply voltage, and by integrating these functions with an ASIC in one package, SensoNor has developed the ideal product for tyre pressure monitoring applications, offering the system designer the flexibility to determine sequences and functionality.

| | | |
|--------------------------|--------|---------------|
| ■ Pressure sensor: | Range: | 50 to 1400kPa |
| ■ Temperature sensor: | Range: | -40 to +125°C |
| ■ Supply Voltage sensor: | Range: | 1.8 to 3.6V |

SP12T



PRODUCT BRIEF

PRESSURE MEASUREMENTS

All specification limits to be understood as 5 sigma values. The specified values reflect the situation with an ideal voltage source (0 ohm internal resistance)

| PARAMETER | SPECIFICATION | | | | AMBIENT CONDITION | | |
|-------------------|---------------|-----|------|------|-------------------|----------------|--------------------|
| | Unit | Min | Typ | Max | Temperature [°C] | Pressure [kPa] | Supply voltage [V] |
| Input range | kPa | 50 | -- | 1400 | -40 to 125 | 50 - 1400 | 2.1 - 3.6 |
| Resolution | kPa/lsb | | 2.97 | | -40 to 125 | 50 - 1400 | 2.1 - 3.6 |
| Measurement error | kPa | -28 | | 28 | 0 to 50 | 50 - 1400 | 2.1 - 3.6 |
| | kPa | -48 | | 48 | -20 to 70 | 50 - 1400 | 2.1 - 3.6 |
| Measurement time | kPa | -68 | | 68 | -40 to 125 | 50 - 1400 | 2.1 - 3.6 |
| | ms | | | 6 | | | |

TEMPERATURE MEASUREMENTS

All specification limits to be understood as 5 sigma values

| PARAMETER | SPECIFICATION | | | | AMBIENT CONDITION | |
|-----------------------------------|---------------|-----|-----|-----|-------------------|--------------------|
| | Unit | Min | Typ | Max | Temperature [°C] | Supply voltage [V] |
| Input range | °C | -40 | | 125 | -40 to 125 | 2.1 - 3.6 |
| Resolution | °C/lsb | | 1 | | -40 to 125 | 2.1 - 3.6 |
| Deviation from actual temperature | °C | -4 | | 4 | 0 to 50 | 2.1 - 3.6 |
| | °C | -5 | | 5 | -40 to 100 | 2.1 - 3.6 |
| | °C | -8 | | 8 | 100 to 125 | 2.1 - 3.6 |
| | °C | -7 | | 7 | 0 to 50 | 2.1 - 3.6 |
| | °C | -10 | | 10 | -40 to 125 | |
| Measurement time | ms | | | 1.5 | | |

SUPPLY VOLTAGE MEASUREMENTS

All specification limits to be understood as 5 sigma values

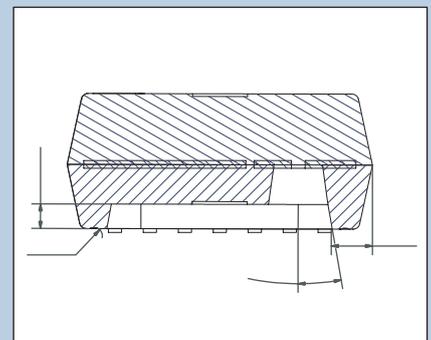
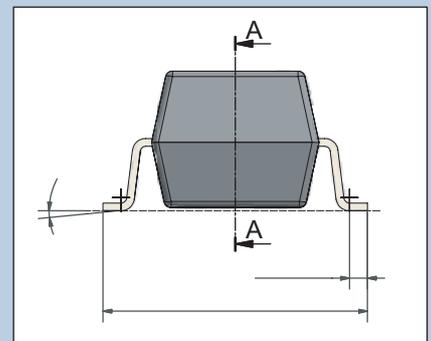
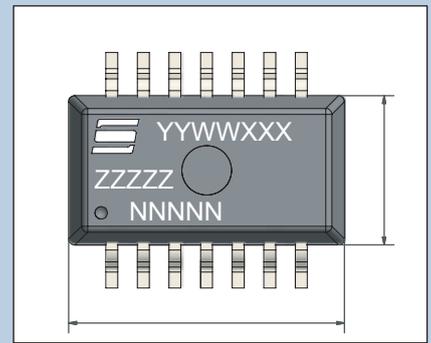
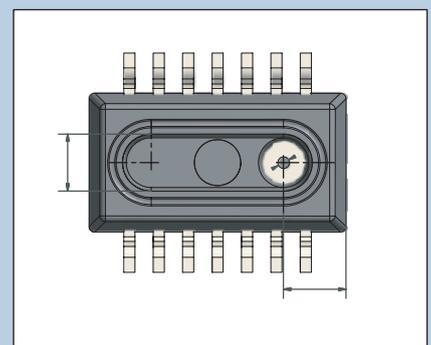
| PARAMETER | SPECIFICATION | | | | AMBIENT CONDITION | |
|--|---------------|------|--------|-----|-------------------|--------------------|
| | Unit | Min | Typ | Max | Temperature [°C] | Supply voltage [V] |
| Input range | V | 1.8 | | 3.6 | -40 to 125 | 1.8 - 3.6 |
| Resolution | V/lsb | | 0.0184 | | -40 to 125 | 2.1 - 3.6 |
| Measurement error | V | -0.1 | | 0.1 | -40 to 125 | 2.1 - 3.6 |
| Delay time between supply voltage measurement command and sampling | ms | 2.8 | 3.5 | 4.2 | -40 to 125 | 2.1 - 3.6 |
| Delay time between sampling and A/D conversion | ms | 8 | 10 | 12 | -40 to 125 | 2.1 - 3.6 |
| Supply measurement time | ms | | | 17 | | |

ABSOLUTE MAXIMUM RATINGS

Prolonged exposure to values between recommended operating conditions and absolute maximum ratings might affect the performance or reliability of the device

| PARAMETER | MIN | MAX | UNIT |
|---------------------------------------|------|----------|------|
| Input pressure | | 3300 | kPa |
| Storage temperature | -40 | 150 | °C |
| Temperature in application | -40 | 150 | °C |
| Temperature in application, transient | -40 | 175 | °C |
| Supply voltage | -0.3 | 6.0 | V |
| Input voltage, any pin | -0.3 | VDD +0.3 | V |
| Latch-up protection | -100 | 100 | mA |
| ESD protection (machine model) | -200 | 200 | VkV |
| ESD protection (human body model) | -2 | 2 | g |
| Mechanical shock | | 2000 | g |
| Static acceleration | | 2000 | |

PACKAGE TYPE 1



How to reach us:
 Phone: +47 33 03 50 00
 Fax: +47 33 03 50 05
 www.sensonor.com
 marketing@sensonor.no

Published by
 SensoNor AS
 Knudsrødveien 7
 PO Box 196

Attention please!

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

Terms of delivery and rights to technical change reserved.

We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits descriptions and charts stated herein.

Information

For further information on technology, delivery terms and conditions and prices please contact SensoNor AS