

## 2.2 Temperature Specification<sup>1</sup>

| Parameter         | Value  |
|-------------------|--|
| Measurement range | -20 °C to +85 °C                                   |
| Resolution        | 16 bit   |
| Accuracy          | 2 °C (-10 °C to +60 °C)<br>3 °C (-20 °C to +85 °C) |
| Repeatability     | 0.1°C  |

## 2.3 Electrical Specifications

| Parameter           | Symbol           | Condition  | Min. | Typ. | Max | Units | Comments                    |
|---------------------|------------------|------------|------|------|-----|-------|-----------------------------|
| Supply Voltage      | V <sub>DD</sub>  |            | 2.7  | 3.3  | 5.5 | V     | Recommended:<br>3.3V +/- 5% |
| Power-up/down level | V <sub>POR</sub> |            | 2.3  | 2.5  | 2.7 | V     |                             |
| Supply current      | I <sub>DD</sub>  | Measuring  |      | 3.8  | 5.5 | mA    | VDD 3.3V                    |
|                     |                  | Idle state |      |      | 1.1 | mA    |                             |
|                     |                  | Sleep mode |      |      | 1   | uA    |                             |

## 2.4 Timing Specifications

| Parameter                      | Symbol           | Min.  | Typ. | Max. | Units | Comments  |
|--------------------------------|------------------|-------|------|------|-------|---|
| Power-up time                  | t <sub>PU</sub>  |       | 2    |      | ms    | Time to sensor ready  |
| Soft reset time                | t <sub>SR</sub>  |       |      | 2    | ms    | Time between soft reset command or exit sleep mode and sensor ready |
| Warm-up time                   | t <sub>w</sub>   |       | 30   |      | ms    | To reach accuracy spec after first measurement command              |
| I <sup>2</sup> C SCL frequency | f <sub>I2C</sub> |       | 400  | 1000 | kHz   |   |
| Update rate flow value         |                  | 1800  | 2000 | 2200 | Hz    |   |
| Update rate temperature value  |                  | 112.5 |      |      | Hz    | Temperature value is updated at least every 16 flow values          |

<sup>1</sup> The measured temperature is the temperature of the bulk silicon in the sensor. This temperature value is not only depending on the gas temperature, but also on the sensor's surroundings. Using the signal to measure solely the gas temperature will need special precautions, such as isolating the sensor from external temperate influences.

## 2.5 Mechanical Specifications

| Parameter                | Symbol      | Min. | Typ. | Max. | Units | Condition/Comment |
|--------------------------|-------------|------|------|------|-------|-------------------|
| Operating pressure range |             | 0.7  |      | 1.3  | bar   | absolute          |
| Allowable overpressure   | $P_{max}$   | -0.2 |      | 0.2  | bar   | gauge             |
| Rated burst pressure     | $P_{burst}$ |      |      | >1   | bar   | gauge             |
| Weight                   | W           |      |      | 14.6 | g     |                   |

## 2.6 Materials

| Parameter        |   |
|------------------|---|
| Wetted materials | PPE+PS blend, Si, glass ( $Si_3N_4$ , $SiO_x$ ), gold, FR4, copper alloy, lead-free solder, epoxy, polyurethane, stainless steel (annealed) |
| REACH, RoHS      | REACH and RoHS compliant  |

## 2.7 Absolute Minimum and Maximum Ratings

| Parameter                                | Rating               | Units |
|--|----------------------|-------|
| Supply Voltage $V_{DD}$                  | -0.3 to 5.5          | V     |
| Max Voltage on pins (SDA, SCL)           | -0.3 to $V_{DD}+0.3$ | V     |
| Input current on any pin                 | $\pm 70$             | mA    |
| Operating temperature range <sup>1</sup> | 0 to +60             | °C    |
| Storage temperature range                | -20 to +70           | °C    |
| Max. humidity for long term exposure     | 40°C dew point       |       |
| ESD HBM (human body model)               | 2                    | kV    |

## 2.8 Pin Assignment

The pin assignments of the SFM3019 series can be found in Table 1. The cap of the SFM3019 is compatible with DuraClik™ Wire-to-Board Receptacle Housing, Single Row, 4 Circuits. (Molex product number: 502351-0400).

| Pin no. | Name | Description  |
|---------|------|--|
| 1       | SCL  | Serial Clock (I <sup>2</sup> C Interface)              |
| 2       | VDD  | VDD Supply   |
| 3       | GND  | Connect to ground                                      |
| 4       | SDA  | Bidirectional Serial Data (I <sup>2</sup> C Interface) |

digital:

**Table 1:** SFM3019 series pin assignment.

<sup>1</sup> For Air and N<sub>2</sub>. Long term exposure to (high concentrations of) O<sub>2</sub> at high temperatures can reduce the product lifetime