

Absolute Maximum Ratings

The absolute maximum ratings are stress ratings only. Stresses greater than those listed below can cause permanent damage to the device. Functional operation of the FS1012 at absolute maximum ratings is not implied. Exposure to absolute maximum rating conditions may affect device reliability.

Table 2. Absolute Maximum Ratings

| Symbol | Parameter | Conditions | Minimum | Maximum | Units |
|------------|-----------------------|------------|---------|---------|-------|
| V_H | Heater Voltage Supply | | | 5.6 | V |
| T_{STOR} | Storage Temperature | | -50 | 130 | °C |

Operating Conditions

Table 3. Recommended Operating Conditions

| Symbol | Parameter | Minimum | Typical | Maximum | Units |
|---------------|--|---------|---------|---------|-------|
| T_{AMB} | Ambient Operating Temperature ^[a] | 0 | | 85 | °C |
| I_{HTR_CC} | Heater Driving Current – Constant Current ^[a] | | 10 | 20 | mA |
| V_{HTR_CV} | Heater Driving Voltage – Constant Voltage ^[a] | | 3 | 5.6 | V |

[a] Sensor specifications are tested at the wafer die level.

Electrical Characteristics

Table 4. Electrical Characteristics

Note: See important notes at the end of the table.

| Symbol | Parameter | Conditions | Minimum | Typical | Maximum | Units |
|-------------------|---|---|---------|---------|---------|------------|
| R_H | Heater Resistor ^[a] | | 230 | 290 | 400 | Ω |
| ∞_{HTR} | Heater Temperature Coefficient of Resistance ^[a] | | | 300 | | ppm/°C |
| V_{TP_OUT} | Thermopile Output ^[a] | 3V driving voltage, in air, 20°C, no flow | 30 | 35 | 60 | mV |
| R_{TP} | Thermopile Resistance ^[a] | 20°C | 100 | 210 | 300 | K Ω |
| $V_{TP_OUTDIFF}$ | Thermopile Differential Output ^[a] | 3V driving voltage, in air, 20°C, no flow | -1 | 0 | 1 | mV |
| t_{RESP} | Response Time | | | | 2 | ms |

| Symbol | Parameter | Conditions | Minimum | Typical | Maximum | Units |
|--|-------------|----------------|---------|---------|---------------|----------------|
| Standard Gas Flow Range^{[b], [c]} | | | | | | |
| | Gas Flow | FS1012-1020-NG | 0 | | 2 (2000) | SLPM (SCCM) |
| | | FS1012-1100-NG | 0 | | 10 (10000) | SLPM (SCCM) |
| Standard Liquid Flow Range^{[b], [c]} | | | | | | |
| | Liquid Flow | FS1012-1001-LQ | 0 | | 0.5 (500) | SLPM (SCCM) |
| | | FS1012-1002-LQ | 0 | | 1.0 (1000) | SLPM (SCCM) |

[a] Sensor specifications are tested at the wafer die level.

[b] SLPM: Standard liter per minute.

[c] SCCM: Standard cubic centimeter per minute.