PERFORMANCE SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Conditions	Min	Max	Unit	Notes
Supply voltage	V_{DD}	Ta = 25 °C	-0.3	4	V	
Storage temperature	T_S		-40	+85	°C	1
Overpressure	P	Ta = 25 °C (ISO22810)		10	bar	2

NOTES

1) Storage in an environment of dry and non-corrosive gases.
2) The MS5540C is qualified referring to the ISO 22810 standard and can withstand an absolute pressure of 10 bar in salt water or 100 m water respectively.

ELECTRICAL CHARACTERISTICS

(Ta = 25 °C, V_{DD} = 3.0 V unless noted otherwise)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating pressure range	p		10		1100	mbar abs.
Supply voltage	V_{DD}		2.2	3.0	3.6	V
Supply current,		V_{DD} = 3.0 V				
average (1)	I_{avg}			4		µA
during conversion (2)	I_{sc}			1		mA
standby (no conversion)	I_{ss}				0.1	µA
Current consumption into MCLK (3)		MCLK = 32.768 kHz			0.5	µA
Operating temperature range	T		-40		+85	°C
Conversion time	t_{conv}	MCLK = 32.768 kHz			35	ms
External clock signal (4)	MCLK		30.000	32.768	35.000	kHz
Duty cycle of MCLK			40/60	50/50	60/40	%
Serial data clock	SCLK				500	kHz

NOTES

1) Under the assumption of one conversion every second. Conversion means either a pressure or a temperature measurement started by a command to the serial interface of MS5540C.
2) During conversion the sensor will be switched on and off in order to reduce power consumption; the total on time within a conversion is about 2 ms.
3) This value can be reduced by switching off MCLK while MS5540C is in standby mode.
4) It is strongly recommended that a crystal oscillator be used because the device is sensitive to clock jitter. A square-wave form of the clock signal is a must.

PERFORMANCE SPECIFICATIONS (CONTINUED)

PRESSURE OUTPUT CHARACTERISTICS

With the calibration data stored in the interface IC of the MS5540C, the following characteristics can be achieved:

(V_{DD} = 3.0 V unless noted otherwise)

Parameter	Conditions	Min	Typ	Max	Unit	Notes
Resolution			0.1		mbar	1
Absolute Pressure Accuracy	p =750 .. 1100 mbar Ta = 25°C	-1.5		+1.5	mbar	2, 6
Relative Pressure Accuracy	p =750 .. 1100 mbar Ta = 25°C	-0.5		+0.5	mbar	3, 6
Relative Pressure Error over Temperature	T = 0 .. +50°C p =300 .. 1000 mbar	-1		+1	mbar	4, 6
	T = -40 .. +85°C p =300 .. 1000 mbar	-2		+5	mbar	4
Long-term Stability	12 months		-1		mbar	5
Maximum Error over Supply Voltage	V_{DD} = 2.2 .. 3.6 V p = const.	-1.6		1.6	mbar	

NOTES

1) A stable pressure reading of the given resolution requires taking the average of 2 to 4 subsequent pressure values due to noise of the ADC.
2) Maximum error of pressure reading over the pressure range.
3) Maximum error of pressure reading over the pressure range after offset adjustment at one pressure point.
4) With the second-order temperature compensation as described in Section "FUNCTION". See next section for typical operating curves.
5) The long-term stability is measured with non-soldered devices.
6) Wet/dry cycle: sensor must be dried typically once a day.

TEMPERATURE OUTPUT CHARACTERISTICS

This temperature information is not required for most applications, but it is necessary to allow for temperature compensation of the output.

(V_{DD} = 3.0 V unless noted otherwise)

Parameter	Conditions	Min	Typ	Max	Unit	Notes
Resolution		0.005	0.01	0.015	°C	
Accuracy	T = 20 °C	-0.8		0.8	°C	
	T = -40 .. + 85°C	-2		+2	°C	1
Maximum Error over Supply Voltage	V_{DD} = 2.2 .. 3.6 V	-0.2		+0.2	°C	2

NOTES

1) With the second-order temperature compensation as described in Section "FUNCTION". See next section for typical operating curves.
2) At Ta = 25 °C.