

PERFORMANCE SPECIFICATIONS (Continued)
PRESSURE OUTPUT CHARACTERISTICS ($V_{DD} = 3\text{ V}$, $T = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Conditions		Min.	Typ.	Max	Unit
Operating Pressure Range	P_{range}		300		1200	mbar
Extended Pressure Range	P_{ext}	Linear Range of ADC	10		2000	mbar
Relative Accuracy ^{(1) (4)}	600...1000 mbar, at 20°C		-0.5		+0.5	mbar
	300...1100 mbar, 0...60°C		-2		+2	
	300...1100 mbar, -20...85°C		-4		+4	
Resolution RMS	OSR	8192		0.016	mbar	
		4096		0.021		
		2048		0.028		
		1024		0.039		
		512		0.062		
		256		0.11		
Maximum error with supply voltage ⁽²⁾	$V_{DD} = 1.5\text{ V} \dots 3.6\text{ V}$			± 2		mbar
Long-term stability				± 2		mbar/yr
Reflow soldering impact	IPC/JEDEC J-STD-020C (Refer to application note AN808)			± 4		mbar
Recovering time after reflow ⁽³⁾				7		days

⁽¹⁾ With autozero at one pressure point

⁽²⁾ With autozero at 3V point

⁽³⁾ Time to recover at least 66% of reflow impact

⁽⁴⁾ Wet/dry cycle: sensor must be dried typically once a day

TEMPERATURE OUTPUT CHARACTERISTICS ($V_{DD} = 3\text{ V}$, $T = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Conditions		Min.	Typ.	Max	Unit
Relative Accuracy	-20...85°C, 300...1100 mbar		-2		+2	°C
Maximum error with supply voltage	$V_{DD} = 1.5\text{ V} \dots 3.6\text{ V}$			± 0.3		°C
Resolution RMS	OSR	8192		0.002	°C	
		4096		0.003		
		2048		0.004		
		1024		0.006		
		512		0.009		
		256		0.012		

DIGITAL INPUTS (SDA, SCL)

Parameter	Symbol	Conditions	Min.	Typ.	Max	Unit
Serial data clock	SCL				400	kHz
Input high voltage	V_{IH}		80% V_{DD}		100% V_{DD}	V
Input low voltage	V_{IL}		0% V_{DD}		20% V_{DD}	V
Input leakage current	I_{leak}	$T = 25^\circ\text{C}$			0.1	μA

DIGITAL OUTPUTS (SDA)

Parameter	Symbol	Conditions	Min.	Typ.	Max	Unit
Output high voltage	V_{OH}	$I_{\text{source}} = 1\text{ mA}$	80% V_{DD}		100% V_{DD}	V
Output low voltage	V_{OL}	$I_{\text{sink}} = 1\text{ mA}$	0% V_{DD}		20% V_{DD}	V

MS5837-02BA

Gel-filled, ultra-compact, water resistant digital pressure and temperature sensor

TYPICAL PERFORMANCE CHARACTERISTICS

RELATIVE PRESSURE ERROR AND TEMPERATURE ERROR VS PRESSURE AND TEMPERATURE (TYPICAL VALUES)

