

NPX-SPI



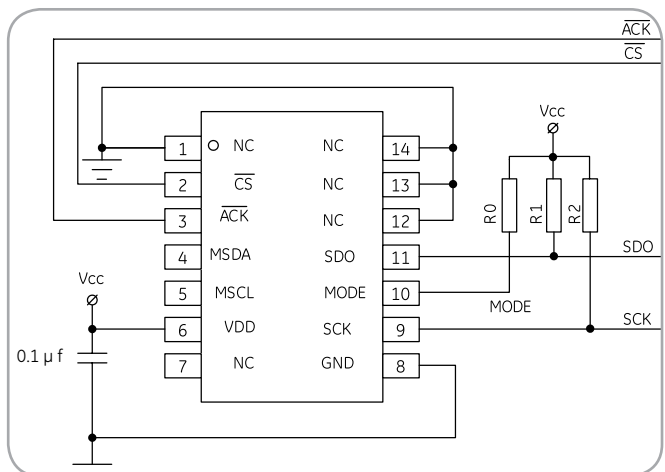
The NPX-SPI uses NovaSensor's NPX series as the foundation for a small, digitally compensated pressure sensor that does not require additional firmware or software development tools. These sensors are available in 450, 700 and 1400 kPaA pressure ranges and provide a 8-bit output that is scaled to the input pressure. In addition to pressure, the NPX-SPI will also provide 4 additional data bytes that include temperature, battery voltage, status and parity error. The NPX-SPI is meant for low-power operations and will work with power supplies from 2.1 to 3.6 volts. Communications with the NPX-SPI is very similar to that of a serial A/D converter with a CS (chip select) line, an SDO (data) line, an SCK (clock) line, an ACK (acknowledging) line and a MODE line. The MODE line allows the NPX-SPI to remain on standby mode or placed in sleep mode.

Applications

- Process Control
- Pneumatic Control
- Altitude Correction

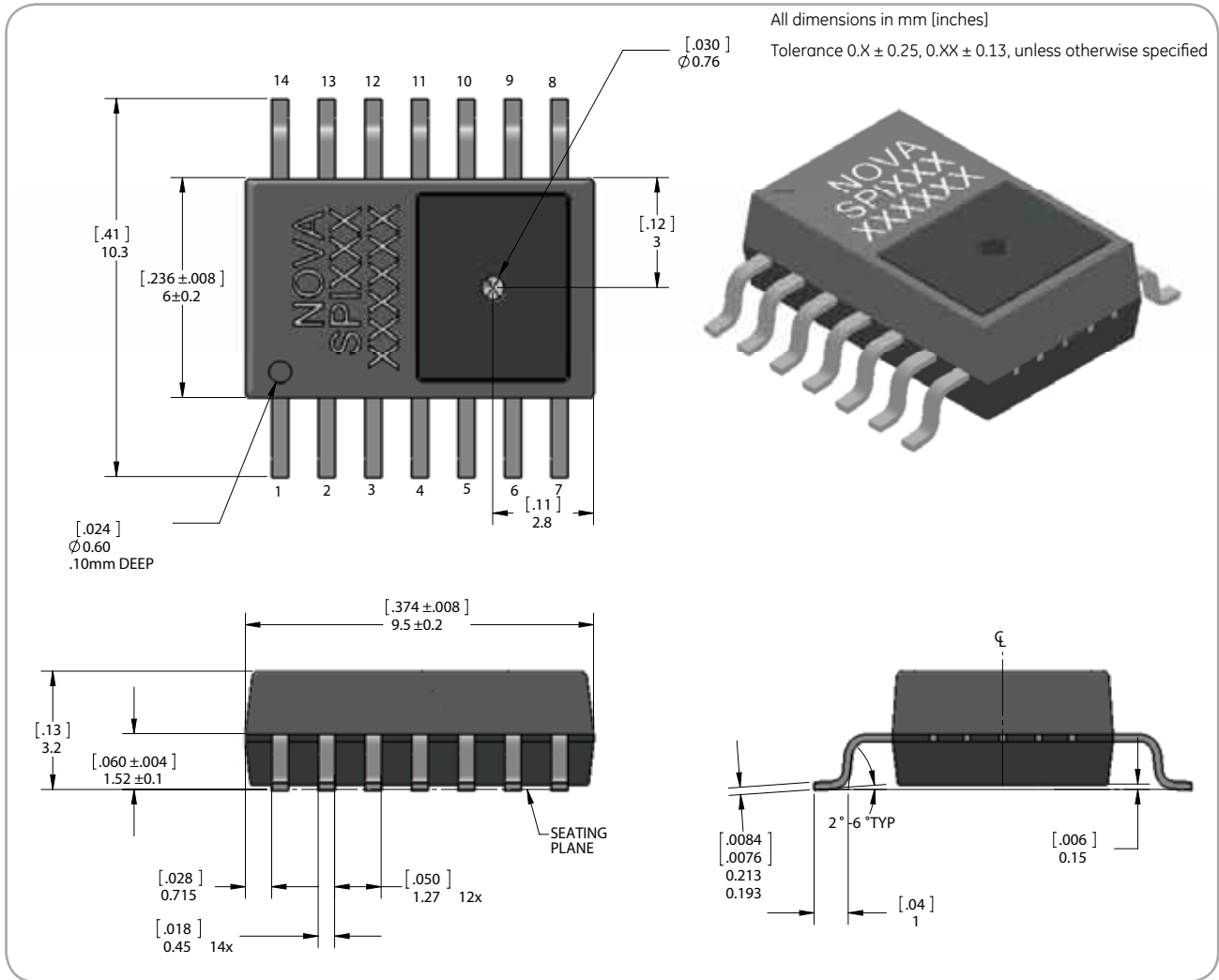
Features

- 8-bit calibrated output
- Low-power, 3 volt DC operation
- Continuous or single measurement configurations
- Serial Interface
- Available in 450, 700 and 1400 kPa ranges



R1, R2, R0 = 10K Ω

NPX-SPI Package Outline



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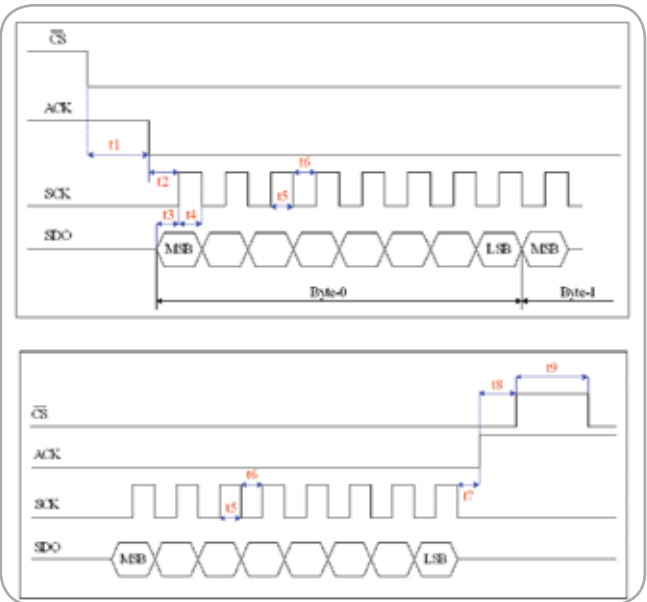
Timing Delays

	Limit			Units	Condition	Note
	Min	Typical	Max			
T1	27	32	37	ms	CS low to ACK low	
T2	17			μs	ACK low to first SCK rising edge	1
T3	17			μs	Data valid to SCK rising edge setup	1, 2
T4	12			μs	Data valid after SCK rising edge hold	1
T5	12			μs	Minimal SCK High/Low pulse width	1
T6	5			μs	Minimal SCK High/Low pulse width	1
T7	0	4	10	μs	Byte sent/received to ACK high	
T8		7		μs	ACK high to CS high	1
T9	10			μs	CS high	

The speed of communication is controlled by the system SCK

Note:

1. The maximum interval of T2, T3, T4, T5, T6 and T8 is determined by host's responding time.
2. The first bit will be available before dropping $\overline{ACK}$ to low.



Product Characteristics

Product Characteristics		
Parameter	Value	Unit
Operating supply voltage ¹	2.1 – 3.6	V
Supply current (2 MHz, instruction clock)	400	µA

Product Characteristics							
Parameter	Specification				Ambient Conditions		Comments
	Min	Typ	Max	Unit	Temp [°C]	Supply Voltage [V]	
Pressure Ranges	100 100 0		450 700 1402.5	KPa KPa KPa	-40 to 125	2.1 to 3.6	1.37 KPa/LSB 2.35 KPa/LSB 5.49 KPa/LSB
Pressure Accuracy	-8		8	LSB	-40 to 125	2.1 to 3.6	
Temperature Resolution		1.0		°C/LSB			-50 to 205°C
Temperature Accuracy	-6		8	LSB	-40 to 125	2.1 to 3.6	10 bit sampling
Battery voltage resolution		10.8		mV/LSB			1.246 to 4.0 volts
Battery voltage Accuracy	-6		6	LSB	-40 to 125	2.1 to 3.6	12 bit sampling
Over Pressure		10X					

Ordering Information			
Part No.	Pressure Range	Marking	Shipping
NPX-SPI-451T	100-450-kPaA	SPI451	Tape and reel
NPX-SPI-701T	100-700-kPaA	SPI701	Tape and reel
NPX-SPI-142T	0-1400-kPaA	SPI142	Tape and reel

