

NPX-SPI



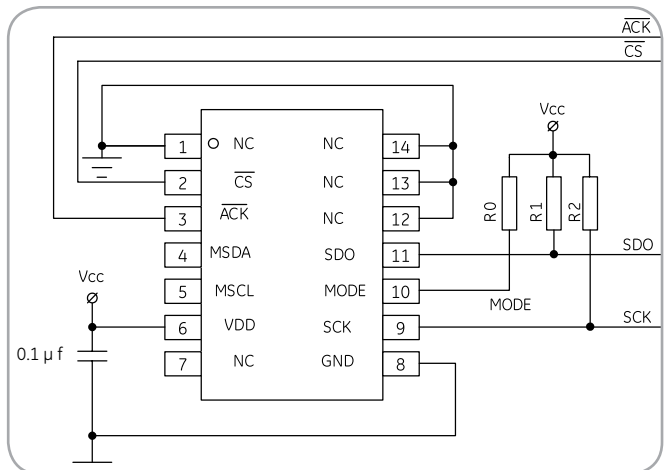
The NPX-SPI uses NovaSensor's NPX series as the foundation for a small, digitally compensated pressure sensor that does not require additional firmware or software development tools. These sensors are available in 450, 700 and 1400 kPaA pressure ranges and provide a 8-bit output that is scaled to the 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

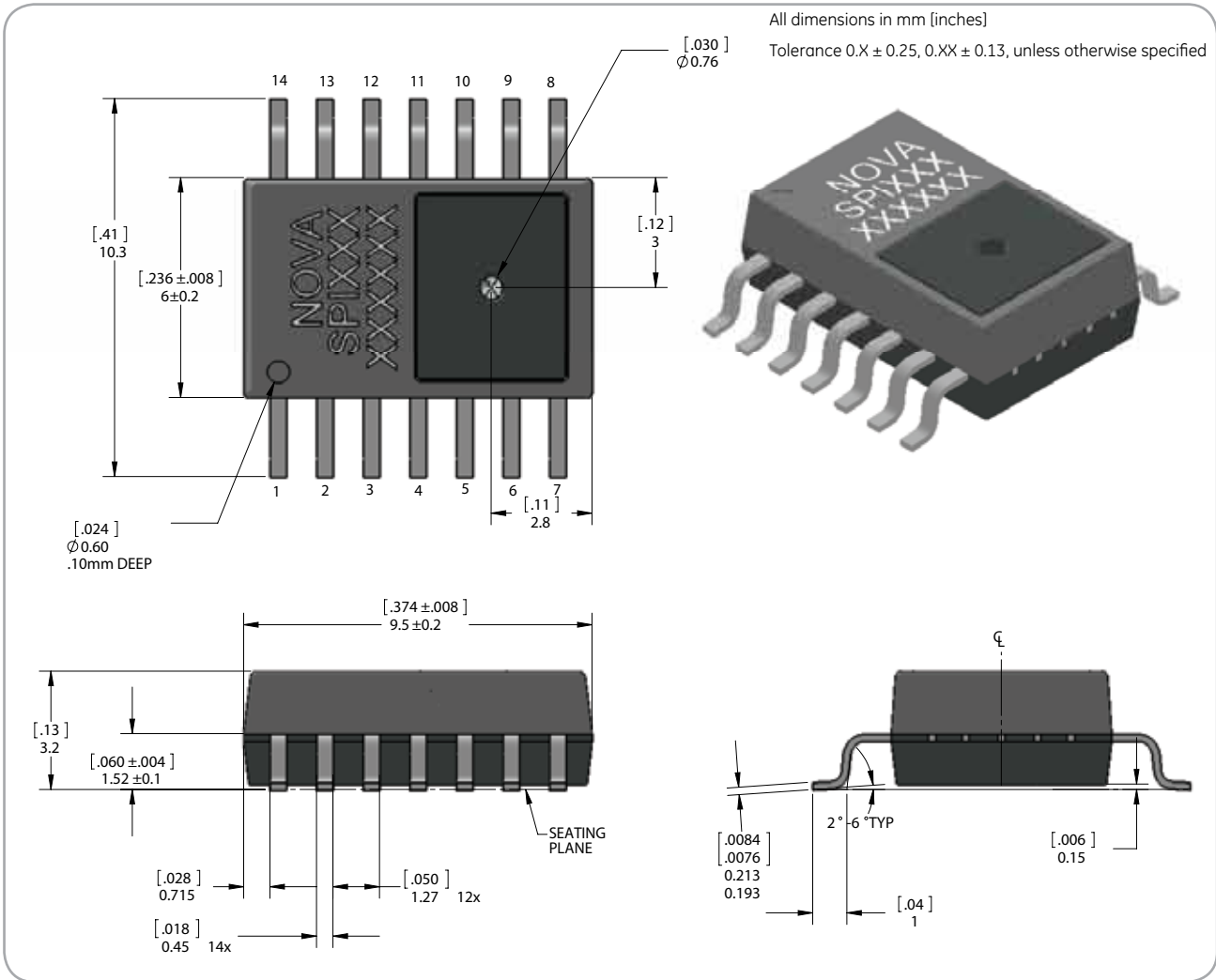
Features

- 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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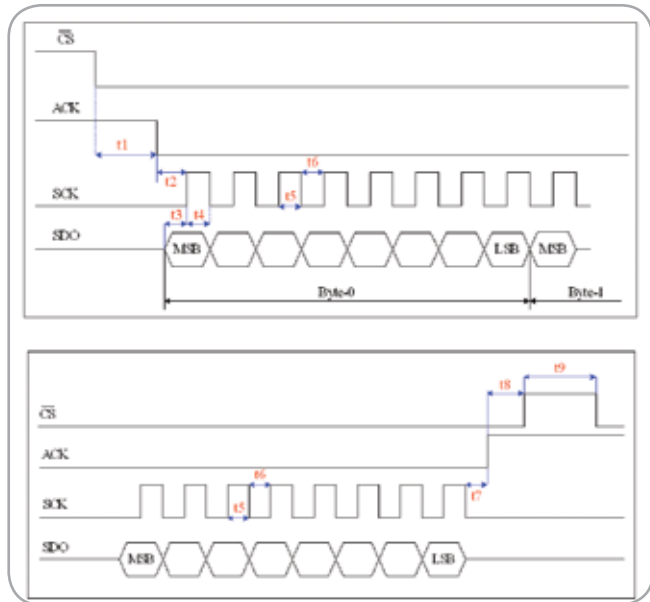
Timing Delays

	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 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		450	KPa	-40 to 125	2.1 to 3.6	1.37 KPa/LSB
	100		700	KPa			2.35 KPa/LSB
	0		1402.5	KPa			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

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