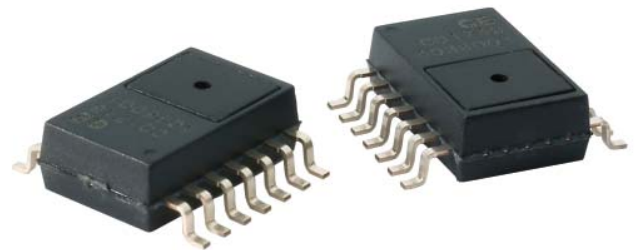


NPX-SPI

The NPX-SPI uses GE Sensing's NPX series as the foundation for a small, digitally compensated pressure sensor that does not require any additional firmware or software development tools. These sensors are available in 450, 700 and 1400 kPa pressure ranges and provides 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 included a temperature, battery voltage, status and parity error. The NPX-SPI is meant for low-powered operations and will work on power supplies from 2.1 to 3.6 volts. The communications with the NPX-SPI is very similar to that of a serial A/d converter with a \overline{CS} (chip select) line, an SDO (data) line, an SCK (clock) line, an \overline{ACK} (acknowledging) line and a MODE line. The MODE lines allows the NPX-SPI to remain on standby mode or placed in sleep mode.

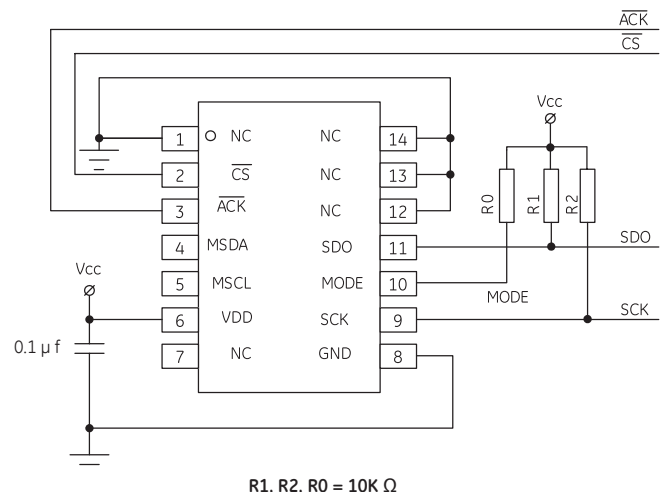


Applications

- 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

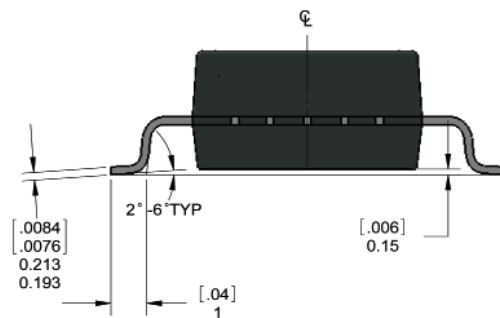
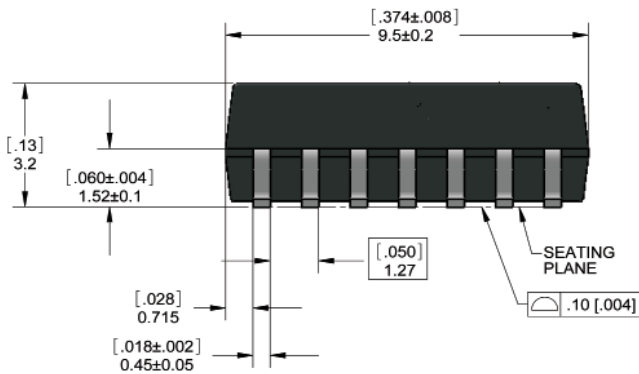
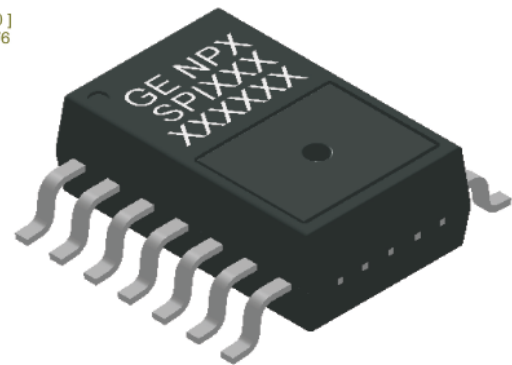
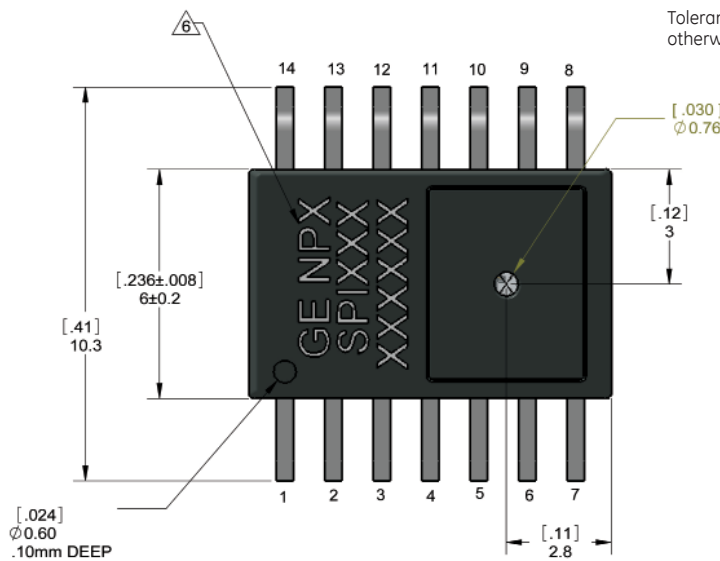


GE imagination at work

NPX Package Outline

All dimensions in mm [inches]

Tolerance $0.X \pm 0.25$, $0.XX \pm 0.13$, unless otherwise specified



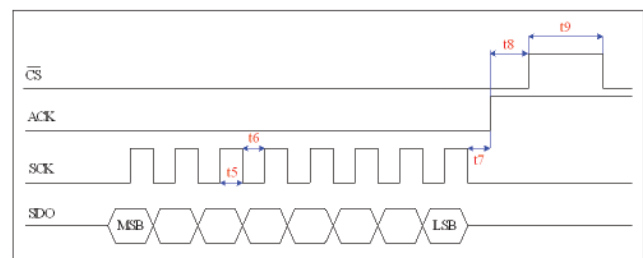
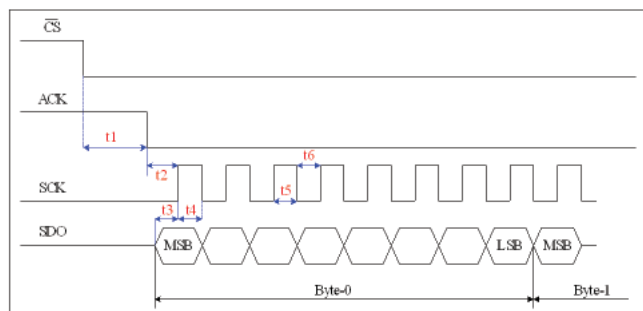
NPX-SPI Package Outline

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

The system could control the speed of communication with controlling the period of SCK. It's better to read back the data as soon as possible in case the current pressure or temperature would vary too much from the measured values.

Note:

1. The maximum interval of T2, T3, T4, T5, T6 and T8 is determined by host's responding time.
2. Actually, the NPX device would make the first bit be available before dropping ACK to low.
3. Usually here T3 equals to T6, and T4 equals to T5.



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
NPX-SPI-451	100-450-KPaA	SPI451
NPX-SPI-701	100-700-KPaA	SPI701
NPX-SPI-142	0-1400-KPaA	SPI142

