



iC-PE Series

XMR Sensor Multiplexer-Amplifier

Description

iC-PE series are low-power 3:1 multiplexed amplifiers with differential rail-to-rail inputs and outputs. Its internal shift register allows sequential reading of 3 sensors per chip. Multiple chips can be connected in chain configuration, permitting the reading of a large number of sensors, minimizing bill-of-materials and system power consumption.

iC-PE series features a sensor supply control. The circuit and the sensor supply outputs are activated by serial data, making iC-PE series especially suited for power sensitive applications. By means of the implemented safety protocol, sequential reading is interrupted when a short-circuit condition is detected. In the same way, it provides short-circuit protected outputs.

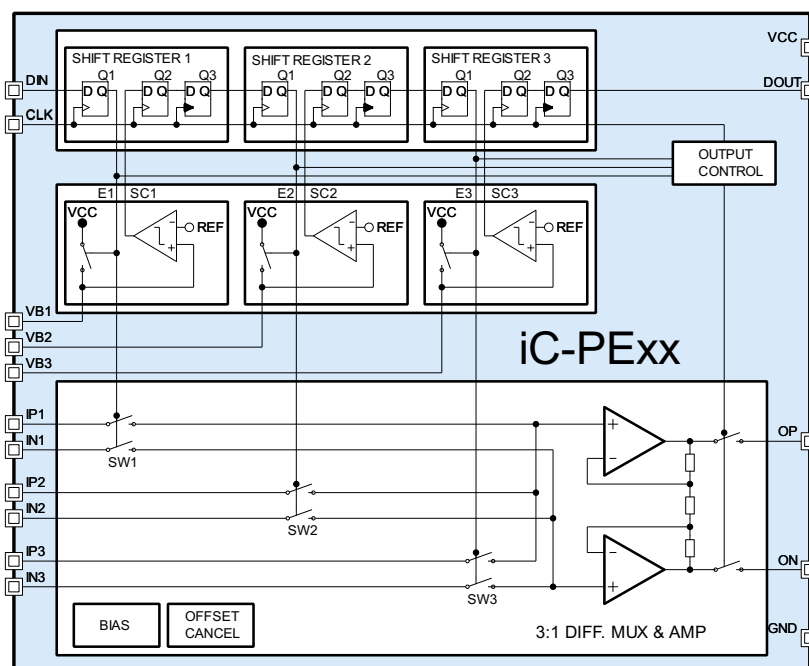
Applications

- AMR, GMR, TMR sensor conditioning
- Magnetic Field Sensing
- Proximity Switches
- Position Sensors
- Safety Applications

Features

- Differential 3:1 channel analog multiplexer
- Internal shift register for chain operation of multiple devices
- Implemented safety protocol
- Sensor reading activated by serial data
- Differential gain 1, 10, 20, 30, 50 (depending on iC-PExx)
- 3-channel differential rail-to-rail inputs
- Channel settling < 25 μ s after selection
- Input bias current < 1 nA
- Internal offset-canceling function
- 1-channel differential rail-to-rail output, bus-capable
- Output current capability 1 mA, short-circuit-proof
- 3V to 5.5V supply voltage
- Current consumption < 100 μ A during 3.3V operation
- Standby current < 15 μ A at 3.3V
- Operating temperature range of -40 $^{\circ}$ C to +125 $^{\circ}$ C

Block Diagram



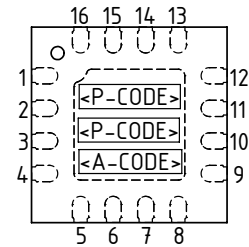
iC-PE Series

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Pin Functions

No.	Name	Function
1	IP1	Sensor Input 1
2	VB1	Sensor Supply Output 1
3	DIN	Control Logic, Data Input
4	CLK	Control Logic, Clock Input
5	GND	Ground
6	OP	Analog Output
7	ON	Analog Output, inverted
8	VCC	+3.0V...+5.5V Supply Voltage Input
9	DOUT	Control Logic, Data Output
10	IN3	Sensor Input 3, inverted
11	IP3	Sensor Input 3
12	VB3	Sensor Supply Output 3
13	IN2	Sensor Input 2, inverted
14	IP2	Sensor Input 2
15	VB2	Sensor Supply Output 2
16	IN1	Sensor Input 1, inverted
	BP	Backside Pad

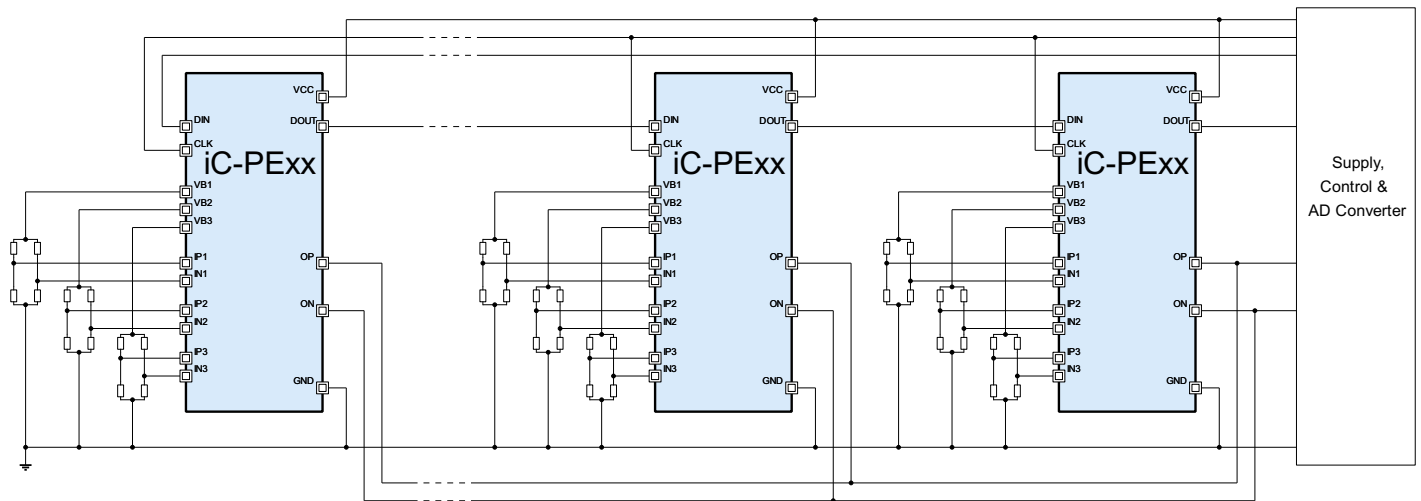
Pin Configuration QFN16-3x3



iC-PE Series

iC-PE _{xx}	Feature	Application
IC-PE01	GAIN = 1	buffer
IC-PE10	GAIN = 10	amplifier
IC-PE20	GAIN = 20	amplifier
IC-PE30	GAIN = 30	amplifier
IC-PE50	GAIN = 50	amplifier

Chain Configuration



Safety Applications

The iC-PE series are specifically designed for safety applications. In addition to short-circuit protected outputs (sensor supply VB1-3, and signal outputs OP, ON), iC-PE series detects both open-circuit and short-circuit conditions of the sensor supply outputs VB1 to VB3.

An open-circuit is indicated when both analog outputs OP, ON stay high during

reading. Even when an open-circuit is detected, the sequential reading process is not stopped.

A short-circuit is indicated when both outputs OP, ON stay low during reading. When a short-circuit is detected, an internal signal is generated, stopping the sequential reading process.