MCP6S2X, Programmable Gain Amplifiers - PGAs

Microchip offers SPI™ Bus Programmable Gain Amplifiers with Built-in Analog Multiplexer

The MCP6S21, MCP6S22, MCP6S26 and MCP6S28 Programmable Gain Amplifiers (PGAs) offer 1, 2, 6 or 8 input channels respectively and eight steps of gain. These devices are programmable over an SPI bus and thus add gain control and input channel selection to the embedded control system. This is all achieved in one simple integration that allows for considerable greater bandwidth at a low supply current. Even greater energy savings can be achieved by use of the shutdown command.

The gain steps that have been provided for these devices are: 1, 2, 4, 5, 8, 10, 16 and 32. This allows for four decimal steps and six binary steps.

These amplifiers were designed with the embedded control system in mind. The typical complexity of multiple sensor systems is reduced to one amplifier that the microcontroller can control. This reduces the demand on microcontroller I/O and allows control over the level gain. One superior amplifier can be used to perform the functions of multiple amplifiers at a lower cost.

Features:

- SPI Bus to Control Gain and Select Input Channel
- 1, 2, 6 and 8 Channel Devices
- Gain Steps of 1, 2, 4, 5, 8, 10, 16 and 32 V/V
- -3 dB Bandwidth of 2 to 12 MHz
- \(V_{OS} < 200 \mu V\)
- Gain Error < 1%
- Rail-to-Rail Input and Output
- Low Noise: 10 nV/√Hz
- Low Supply Current: 1.1 mA (typical)
- Single Supply 2.5V to 5.5V
- Industrial Temperature Range: -40°C to 85°C
- Available in a Small 8-pin MSOP Package (MCP6S21 and MCP6S22)
Development Tools Support:
The MCP6S21/2/6/8 family of Programmable Gain Amplifiers is provided in 1, 2, 6, and 8 signal input channels, respectively. The user can select a specific input channel and set the gain digitally. The MCP6S2X Evaluation Board User’s Guide shows how to operate the MCP6S2X Evaluation Board. This board uses the MCP6S21 and MCP6S26 to allow the user to connect two signal sources and evaluate the PGAs.

<table>
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<th>MCP6S2X, Programmable Gain Amplifiers (PGAs)</th>
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<td>Product</td>
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<tr>
<td>MCP6S21</td>
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Package Key:  
P = PDIP  MS = MSOP  SL = SOIC  SN = SOIC  ST = TSSOP

Visit our website at www.microchip.com for additional product information and your local sales office.