

High Precision Analog Front End For Optical Control

FEATURES

- ▶ Analog I/O
 - ▶ Up to 32 external voltage/current channels, single-ended
 - ▶ Selectable 12-bit, 2MSPS ADC sample or 3 channel monitor output
 - ▶ Sequence mode with digital comparators
 - ▶ 0V to VREF analog input range
 - ▶ Power/VDAC/IDAC/temperature monitor internal channels
- ▶ 17 Channel, 12-bit voltage output DACs
 - ▶ 0V ~ 2.5V/ VDDVDACx - 0.2V, selectable output range
 - ▶ 35mA source and 10mA sink drive ability, voltage, and current monitoring
- ▶ 1 Channel, 12-bit voltage output DACs
 - ▶ 0V ~ 2.5V/ AVDD - 0.3V, selectable output range
 - ▶ 2mA source drive ability, voltage, and current monitoring
- ▶ 8 Channel, low noise, 12-bit current output DACs
 - ▶ Configurable output range: 100 mA, 150 mA, 200 mA, or 250mA
 - ▶ Voltage and current monitoring
- ▶ Integrated photodiode bias (VCMH)
 - ▶ 50mA output current range
 - ▶ 0.5V ~ 2.52V/(AVDD - 0.35V) output voltage range
- ▶ Digital Interface
 - ▶ 1x SPI, 3.3V/1.8V, 40MHz
 - ▶ 1x I2C, 3.3V/1.8V, 100KHz/400KHz/1MHz
 - ▶ 8 separate IDAC fast disable pin for corresponding IDAC channel
- ▶ Power
 - ▶ Multiple supplies, separate IDAC/VDAC power supply to save power
 - ▶ AVDD/DVDD: 2.85V ~ 3.63V
 - ▶ IOVDD: 1.7V ~ 3.63V
 - ▶ PVDDx: 1.50V ~ AVDD
 - ▶ VDDVDACx: 2.85V ~ AVDD
- ▶ Packages and temperature range
 - ▶ 3.8 mm × 3.9mm, 0.35mm pitch, 100-ball WLCSP package
 - ▶ Fully specified for -40°C to +125°C junction temperature

APPLICATIONS

- ▶ Optical networking – 1.6T/3.2T or higher speed optical modules

GENERAL DESCRIPTION

The AD1088 is an analog front end (AFE) that includes a high precision analog-to-digital converter (ADC), voltage output digital to-analog converters (VDACs), current output digital-to-analog converters (IDACs).

The analog input contains 32 external voltage/current inputs channels, it can use three monitor output pins for external measurement current/voltage or use a 12-bit 2 MSPS successive approximation register (SAR) ADC for on-chip sampling.

The AD1088 provides eight IDAC channels. These are low noise, low drift current sources with programmable full-scale output ranges (100 mA, 150 mA, 200 mA, or 250 mA). Each IDAC channel has 12-bit resolution and support fast shut down with each DISIDACx pin.

There are 17 channels, 12-bit VDAC outputs that support a voltage range of 0V to VDDVDACx - 0.2V with 35mA source ability and 10mA sink drive ability.

There is one channel, 12-bit VDAC outputs that support a voltage range of 0V to AVDD - 0.3V with 2mA source ability.

Use the 4-wire serial port interface (SPI) for up to 20MHz or the 2-wire I2C interface for up 1MHz to configure each functional block and to collect the ADC data.

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