



## Product Overview

### LC898212XA: AF(Auto Focus) Control LSI

For complete documentation, see the data sheet

#### Product Description

The AF control device, LC898212XA-MH, provides an ideal way to implement the reduced power consumption and the improved autofocus precision and speed (reduced convergence time) required in high-pixel-count camera modules for use in smartphones. The LC898212XA-MH integrates on a single chip an equalizer circuit employing digital calculation, and it can be combined with position sensors to build a closed-loop actuator control system. Since closed-loop control provides better ability to maintain the control object than conventional open-loop systems and is not affected by position differences, the LC898212XA-MH is ideal for use in AF systems used in a wide variety of cameras. A closed-loop system uses position sensors for position control, and power consumption is lower than with conventional open-loop control, which uses current values for position control. In addition, a new PWM drive system employed suppresses noise that could affect image quality while achieving reduced power consumption, making this IC ideal for use in mobile devices such as smartphones. The filter coefficients of the equalizer circuit can be adjusted to any values desired by making register settings via I2C communication. This makes it possible to build a control circuit optimized to the various types of actuators and thereby achieve faster autofocus (reduced convergence time) performance. The integrated ADC provides up to 10-bit precision for highly accurate AF position control. Also integrated on-chip are a constant current supply DAC for drive and an op-amp with adjustable gain for use with the position sensors indispensable for building a closed-loop control system.

#### Features

- Built-in equalizer circuit using digital operation
- I<sup>2</sup>C Interface
- Built-in A/D converter
- Built-in D/A converter
- Built-in OP Amp
- Built-in OSC
- Built-in PWM pulse generator circuit
- 1-chip motor driver
- Supply voltage
  - Logic unit: Internal core type 1.2V(1.08V to 1.32V), AVDD(2.6V to 3.6V)
  - Driver unit: VM(2.6V to 3.6V)

#### Benefits

- LC898212XA-MH provides an ideal way to implement the reduced power consumption and the improved autofocus precision and speed (reduced convergence time) required in high-pixel-count camera modules for use in smartphones.
- The LC898212XA-MH integrates on a single chip an equalizer circuit employing digital calculation, and it can be combined with position sensors to build a closed-loop actuator control system. Since closed-loop control provides better ability to maintain the control object than conventional open-loop systems and is not affected by position differences, the LC898212XA-MH is ideal for use in AF systems used in a wide variety of cameras. A closed-loop system uses position sensors for position control, and power consumption is lower than with conventional open-loop control, which uses current values for position control.
- In addition, a new PWM drive system employed suppresses noise that could affect image quality while achieving reduced power consumption, making this IC ideal for use in mobile devices such as smartphones. The filter coefficients of the equalizer circuit can be adjusted to any values desired by making register settings via I2C communication. This makes it possible to build a control circuit optimized to the various types of actuators and thereby achieve faster autofocus (reduced convergence time) performance.
- The integrated ADC provides up to 10-bit precision for highly accurate AF position control. Also integrated on-chip are a constant current supply DAC for drive and an op-amp with adjustable gain for use with the position sensors indispensable for building a closed-loop control system.

#### Applications

- AF control

#### End Products

- Smart Phone
- Tablet

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