Replacing EV12AS200 with EV12AS200A

Application Note

1. Introduction

The EV12AS200A has been developed in order to improve and replace the EV12AS200.

This application note provides a comparison of the two versions and some recommendations in order to migrate from the EV12AS200 to the EV12AS200A, including:

- Performance improvement,
- Power supply modifications,
- Analog and digital controls evolutions.

These modifications have been made in order to keep the best hardware compatibility from EV12AS200 to EV12AS200A, some slight hardware optimizations would ensure the best performances of the EV12AS200A.

We recommend EV12AS200 users to check the impact of each of the modifications described in this document on their applications before replacing EV12AS200 with EV12AS200A.

This document applies to EV12AS200AZPY and must be read with the latest datasheet version of the product available on www.e2v.com

For further assistance please contact hotline-bdc@e2v.com

2. Differences between EV12AS200 and EV12AS200A

2.1 Performance Improvement

2.1.1 Track and hold improvement

The track and hold of the EV12AS200A has been improved in order to reduce the H3 level and the SFDR. So, it is no more necessary to use a LUT (Look-Up Table) in order to reach the datasheet performances (SFDR = 65 dBFS @Fin = 1600 MHz @1.5 GSps).

2.1.2 Data eye diagram improvement

Eye diagram of the EV12AS200A has been largely improved and remains wide open over all the temperature range whatever the sampling rate is up to 1.5 GSps in DMUX1:2.

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for the latest version of the datasheet

2.2 Power Supply Evolution

2.2.1 Vcco is now 2.5V and 3.3V compliant

In order to ease the use of the EV12AS200A, it is now possible to work with 3 or 2 power supplies. Indeed, the Vcco has been modified in order to be compliant with 3.3V. It means that it is still possible to work with Vcco = 2.5V ±100mV or Vcc0 = 3.3V ± 150mV.

2.5V ±100mV will optimize power consumption, while 3.3V ±150 could optimize board design.

As a side effect, the HBM model ESD immunity tolerance of the EV12AS200A is now compliant with class 1A instead of class 1B for the EV12AS200.

2.2.2 Vcca5 has been reduced from 5.2V +300/–200mV to 5.0V ±250mV

Vcca5 which was specified to be between 5V and 5.5V, is now specified to be between 4.75V and 5.25V. This allows to easily using 5V standard voltage regulator.

Note: In case the voltage is between 5.25V and 5.4V, the EV12AS200A is used out of its specification. In this case, it has been seen that the linearity performances might be reduced for input signal higher than –2 dBFS.

2.3 Control Modification

2.3.1 Sampling Delay Adjust (SDA) step size has been reduced to 24fs

In order to ease the tune of the sampling delay, the step size has been reduced to 24fs for EV12AS200A, instead of 120fs for EV12AS200. Since the resolution has been increased, the SDA register (Address 0011) mapping has changed. SDA fine is now coded on 10 bits instead of 8 on the EV12AS200. Consequently SDA coarse bits are now on bits 11 and 10 instead of 9 and 8 for the EV12AS200.

2.3.2 For DC current application, CMI ref is available on an external pin

For DC coupling application, the common mode value to apply is available as reference on the CMIREF pin (pin N14).

2.3.3 HSR (High Sampling Rate) mode removed

The HSR mode configuration has been removed. It means that, on the EV12AS200A it is now possible to output data at sampling rate up to 1 GSps in DMUX1:1 without modifying the configuration of the output stage and without any extra power consumption.

2.3.4 Temperature diode characteristics modification

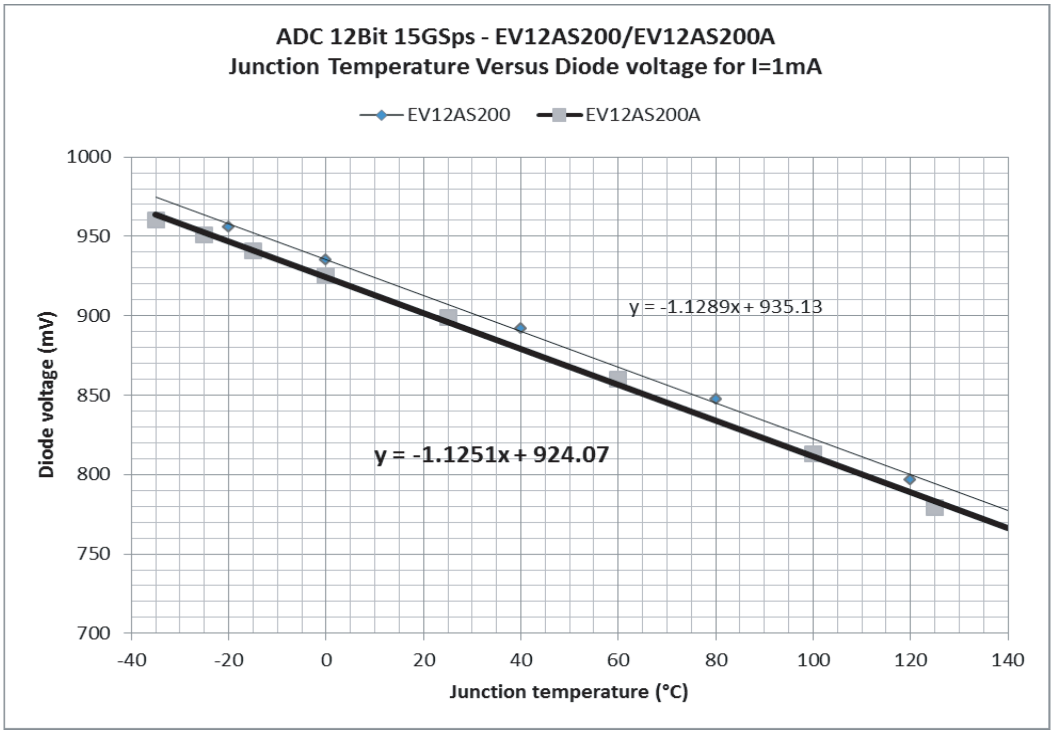
The access resistance of the temperature diode has been reduced so that the voltage across the diode has also been reduced.

When the diode of EV12AS200A is supplied with a 1mA current source, the voltage across the diode is equal to: Udiode(@1mA) = –1.125xTemperature(°C) + 925 mV

So the temperature is equal to (925 – Udiode (@1mA))/1.125 °C

As an example if you measure 800mV across the diode while it is flown by a 1mA current, it means that the temperature of the junction is about (925-800)/1.125 ~110°C

The following charts shows the voltage depending of the junction temperature.



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