

ONE TECHNOLOGY PLACE - HOMER, NEW YORK 13077

TEL: +1 607 749 2000 FAX: +1 607 749 3295 www.PanavisionImaging.com / sales@PanavisionImaging.com

Application Notes of LIS-500 500x1 Line Scan CMOS Image Sensor

This note describes the usage of VREF pin, suggests 2 possible application circuits, and describes the best sampling time to capture the video signal to optimize performance.

VREF is an analog output which can be left unconnected. However for better performance it is recommended to subtract VREF from the Video. This application note describes two methods to do this. 1. VREF can be used to subtracted from VOUT via an op-amp; 2. Set the low reference of an A/D if desired.

Method 1: A reference design for simple op-amp subtractor of method 1 is demonstrated in Figure 1.

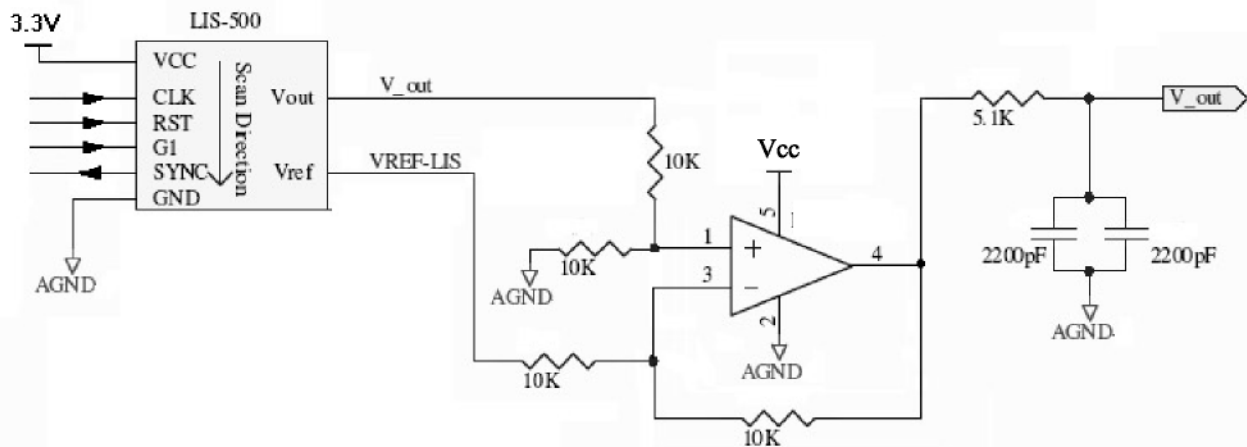


Figure 1. Subtract circuit using VREF of LIS500

In Figure 2, resulted signals using subtract circuit are demonstrated.

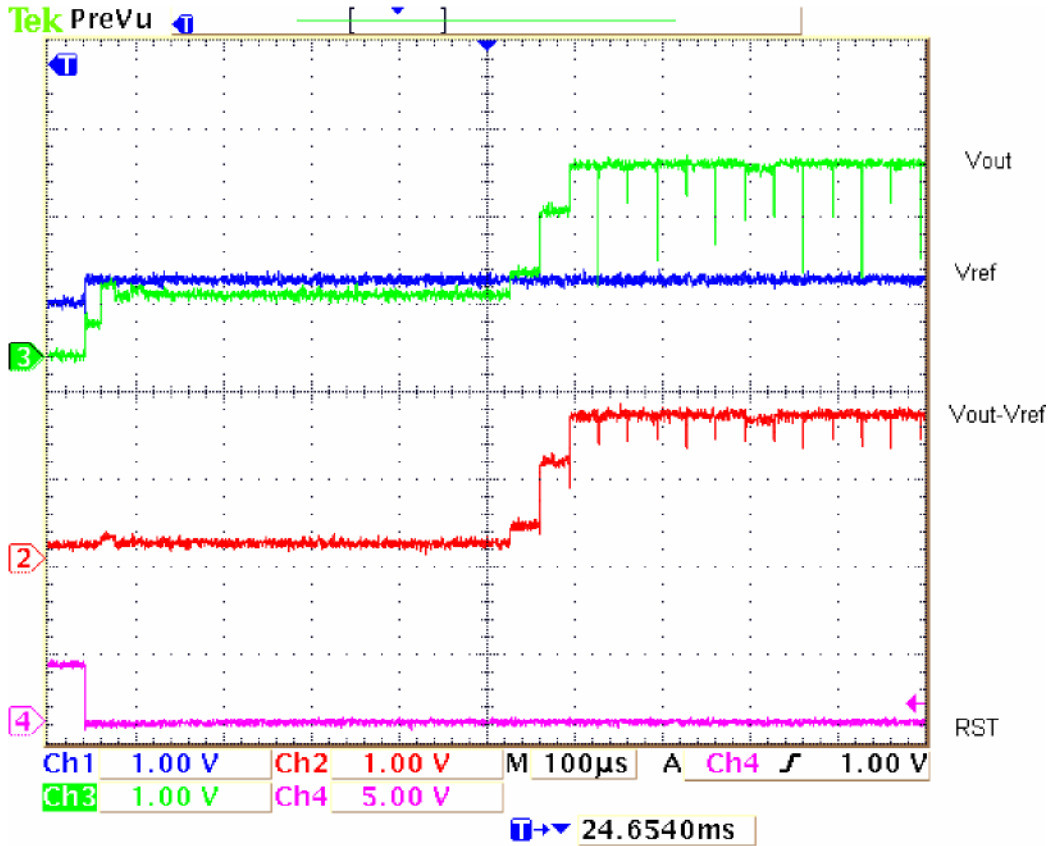


Figure 2 Captured Waveforms

NOTE: The optimal time to capture or sample the resultant video with you A/D is between the falling and rising edges of the clock. As can be seen in the trace for Vout – Vref above there is a voltage drop that corresponds with the rising edge of the clock (CLK signal).

Method 2: In Figure 3, Method 2 is demonstrated as VREF is connected to the references pin of the AD converter to remove the dark value from valid video output form VOUT pin of LIS 500.

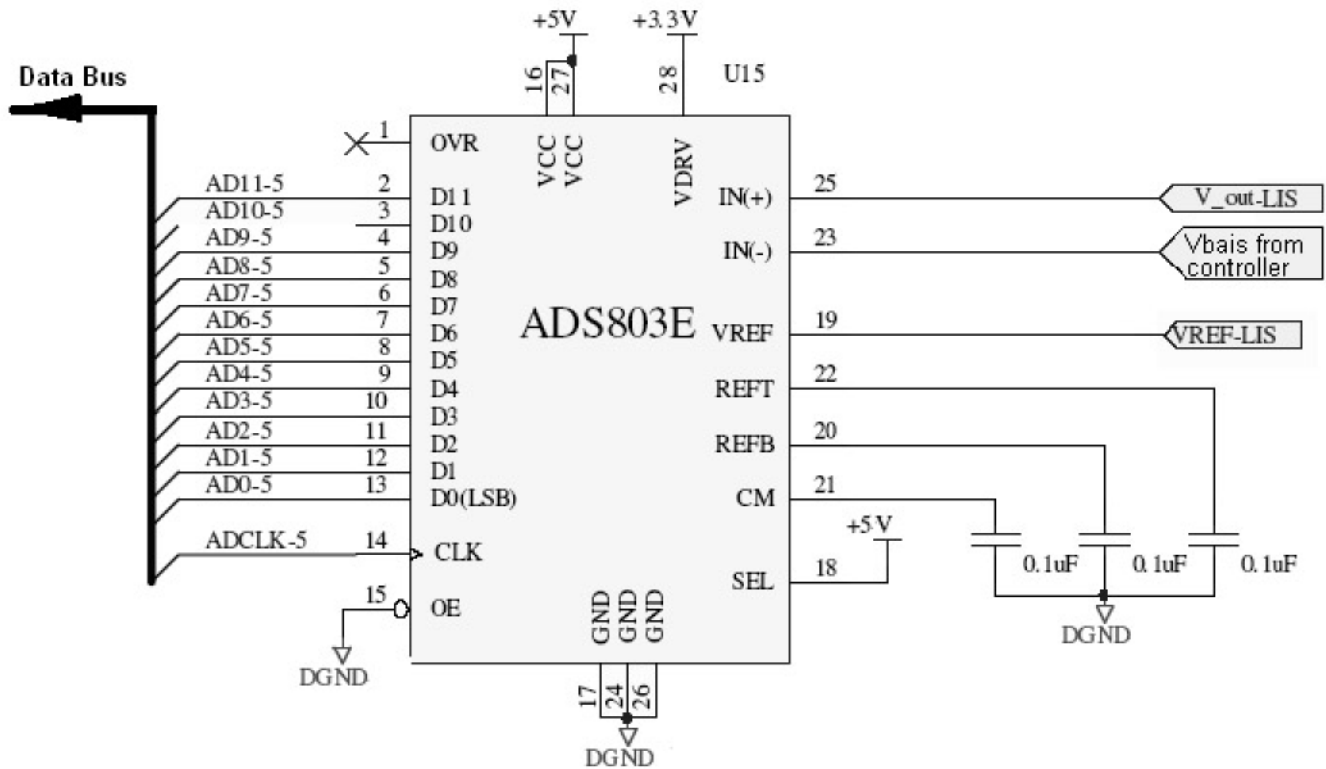


Figure 3 ADC circuit using VREF of LIS500

In practical design, these two circuits can be employed together to achieve better performance.

SAMPLING TIME:

The time to take the sample for A/D conversion is critical in order to maximize Signal to noise and performance. Figure 3 of the Product Specification (document # PDS00029) describes this in detail.