TWO CMDV OPERATION

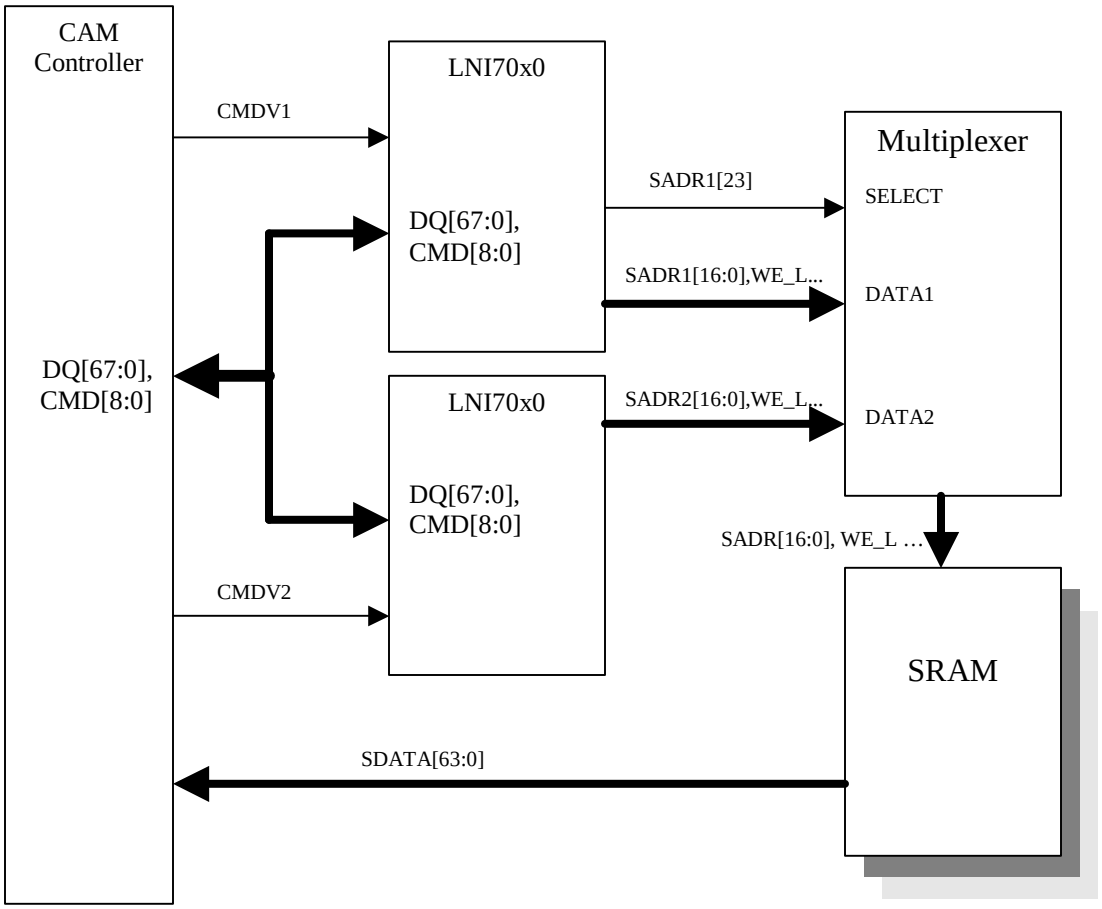
Application Note 010 (AN010)

Introduction

The purpose of this Application Note is to provide a reader with the reference design for developing an efficient search subsystem using Cypress Semiconductor Corporation's search subsystem solution. This application is good for the customer only use two CAM in the project. It can help our customer reduce the power consumption and speed up search and update operation by using two different CMDV signal to control two different CAM.

Connection

Cypress's search engine is very friendly use. It only has four operations: read, write, search and learn. All operations need a CMVD to activate the operation. By use two different CMDV signal to control two different CAM and use a SADR1[23] to control the multiplixer out put to SRAM. SADR1[23] is from the CMD[8]. The multiplexer just pass all the Read and Write to the SRAM and the SRAM will send back the data to the CAM Controller. At the front-end side, CAM1 and CAM2 will share the same DQ bus and the CMD bus. At the back-end side, Both CAM's SADR bus and all the control signal will control by the SADR1[23]. The SADR1[23] will select which CAM control the SRAM bus. See connection Figure 1.



Control Signal

Since the SADR bus are both driving the bus, so it needs a multiplexer to separate the bus. Whenever CMDV1 is active, after certain latency the SADR bus will switch to SADR1 bus. Otherwise the bus will set on SADR2 bus. So the default connection will be SADR2 bus to the SRAM. Control signal SADR[23] is generate buy the CMD[8]. Whenever do a Read, Write or Search operation in the CAM1. The SADR[23] will pass the signal from CMD[8] after certain latency. It will match exactly latency with the SADR bus. CMD[8] should set to high for multiplexer selector. Otherwise CMD[8] will remain low for all cases.

Multiplexer

The Multiplexer can be select as SN74CBT16233 (16bit) and SN74CBT16233 (4bit). 16bit Mul is for SADR[15:0] and the 4bit Mul is for the control signal CE_L, WE_L, OE_L and ALE_L. SN74CBT16233 and SN74CBTLV3257 are 2 to 1 FET multiplexer used in separate two data paths. The SEL_1 and SEL_2 from SN74CBT16233 will

connect to SADR1[23]. The S will also connect to SADR1[23]. Data from CAM1 should connect to all B1 and CAM2 data should connect to all B2. All out A will connect to the SRAM address and control signals.

CAM Power Saving

By using two CMDV signal, it can save about 40% of power at a search operation. Since it can do a search in one CAM and put other CAM in sleep by using the CMDV. For the costumer who has two different tables look up this setup will help a lot. So they can search one table with search other table. Or search in one table and read from other table. For the cascade model, a search command will be active and search at both CAM.

CONTACT