



**M5623**

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## High-Speed USB2.0 Scanner Controller

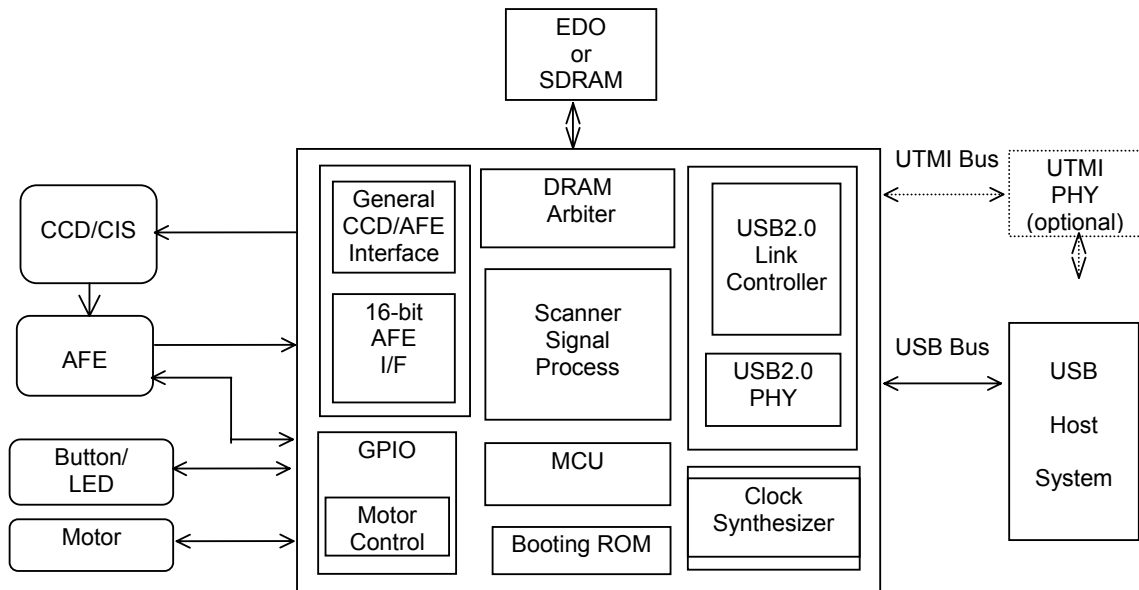
*Preliminary Product Brief*

### Overview

ALI's M5623 High-Speed USB2.0 Scanner Controller provides a high-integrated solution for high-speed 600/1200/2400 dpi USB CCD/CIS scanner system. With built-in advanced scanner engine and micro-controller unit (MCU), M5623 also integrates high-speed USB2.0 controller and transceiver. With added design flexibility to work with 1Mb/4Mb/16Mb/64Mb EDO/SDRAM, M5623 provides high-performance programmable interface and yet cost-effective solution for color image scanner application.

### Features

- **Flexible AFE/CCD/CIS Interface Support**
  - Support 16-bit nibble mode AFE
  - Support 3-Channel CCD/CIS/AFE high-flexible timing generator
- **Fast Scanner Engine**
  - High performance real 16-bit scanner control kernel support three-channel mode operation
  - 16-bit input signal calibration for shading and offset process
  - 16-to-16 (max) downloadable gamma table for each channel
  - Support filter to approve image quality
  - Arbitrary dpi and boundary output selections
  - Mosaic compression support for each channel
  - H/W complementary circuitry for CCD sensor line space
  - Supports 600/1200/2400 dpi linear/stagger CCD
  - Multi-purpose DRAM Arbiter supports 600/1200/2400 dpi CCD with 1/4/16 Mb EDO or 4/16/64 Mb SDRAM
- **High-Speed Stepper Motor Control**
- **PWM CCFL Control**
- **USB2.0 Interface Integration**
  - USB Specification revision 2.0 Compliant
  - 480 MHz high-speed operation with on-chip USB transceiver, SIE & UBL
  - Supports 4 Configurable Endpoints for control, bulk, and interrupt transfers
- **Built-in 8032 MCU** for USB interface and scanner flow control
  - Booting ROM built-in.
  - Proprietary program-code download capability through USB bus for support customized scanner operation
- **Built-in Clock Synthesizer** for using low-cost 12Mhz crystal or external 12Mhz clock sources
- **128-pin PQFP package**

**Functional Block Diagram**

**System Performance Benchmark**

	Preview, 150dpi, 300dpi	600dpi	1200dpi	2400dpi
<b>Line Scanner Speed</b>	<2 ms	2.2 ms (1.6ms*)	4.3 ms (3.2ms*)	8.6 ms (6.5 ms*)
<b>A4 color scanner Time</b>	<5 sec	15 sec (12 sec*)	60 sec (45 sec*)	240 sec (180 sec*)

\* Index Time shown within ( ) is set to run at 16-bit software-gamma operation mode

**Specification Comparison Reference**

	Interface	Scan Speed	Max. Resolution	AFE Interface	DRAM Support	1-bit scan threshold	Line-flip Support
<b>ALi M5623</b>	USB2.0	10 MSPS	16-bit	Nibble	1M/4M/16/64M EDO,SDRAM	Programmable	Yes (8x pixels)
<b>ALi M5617</b>	USB1.0	1.5 MSPS	14-bit	Parallel & Nibble	1M/4M/16M EDO	Fix (msb)	NA

	Shading Coefficient	Scan Registers	Power & Interface	Internal DMA			
<b>ALi M5623</b>	8/9/10/12-bit	Two bank	3.3V	Read/Write Separate			
<b>ALi M5617</b>	8-bit DPCM	One bank	3.3/5V	Read/Write Share			