LCD Monitor

Overview

Over a billion PCs are sold every year, each with a visual interface for the human user. A recent addition to this interface market is the LCD monitor. LCD monitors have the following features:

> Light weight

> Thin shape

> Flat screens

> Energy saving

> Emissions free

> Digital video PC display

Since introducing the first dedicated on-screen display chip for LCDs in 1996, Freescale Semiconductor has led the way with MCUs designed for LCDs.

Key Benefits

> USB interface on MCU

> Flash-based MCU provides additional benefits:

• In application programming, reducing time-to-market

• Faster Flash memory programming and erase times

• End-of-line customization for regional variations in consumer demands

• Standardized platforms, reducing product variability

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LCD MONITOR SYSTEM

Freescale Chip

Other Vendor's Chip

Freescale Planned Chip
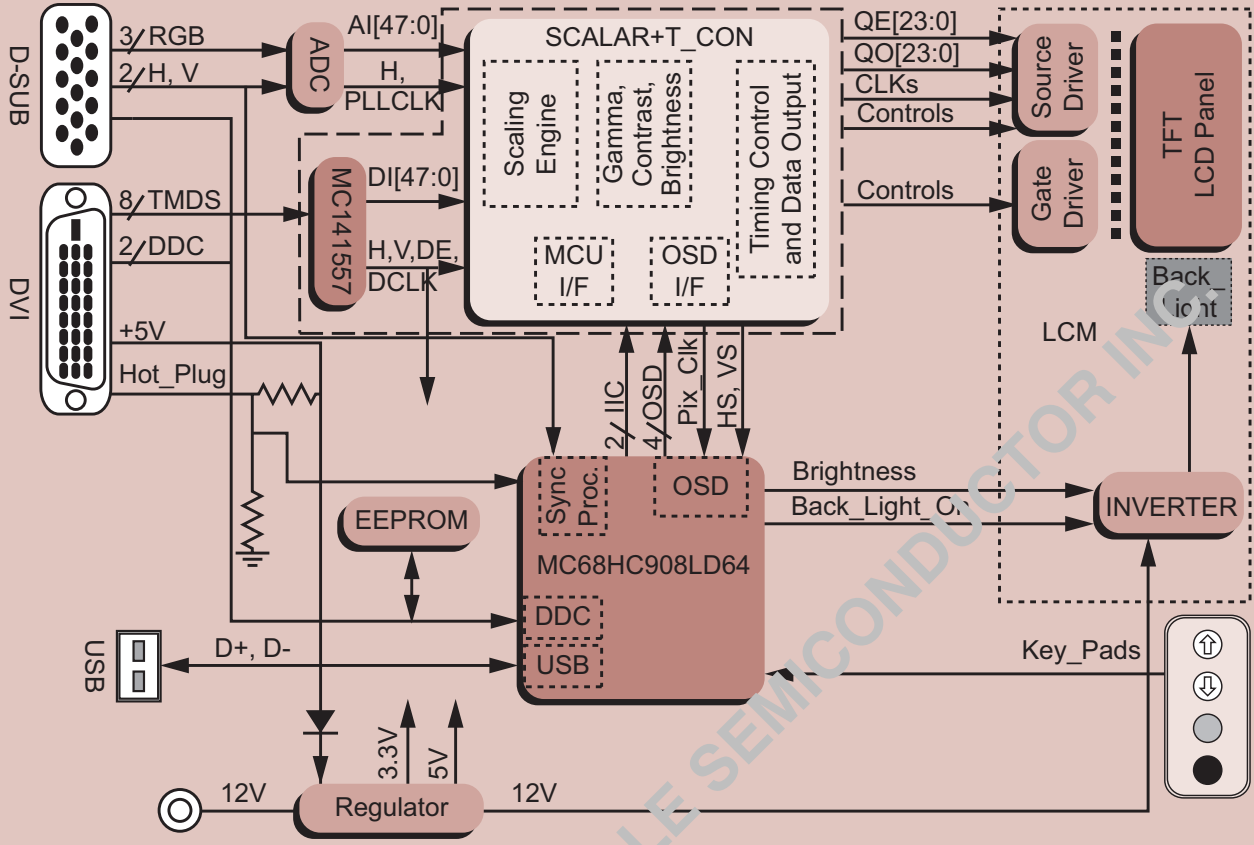
Freescale Ordering Information		
Part Number	**Product Highlights**	**Additional Information**
68HC908LD64	> 60KB Flash > 2KB RAM > 6-channel, 8-bit ADC > USB with hub > On-screen display (OSD) module	www.freescale.com[Note]
MC141557	120M transition minimized differential signaling (TMDS) receiver	www.freescale.com[Note]
68HC908LD120	> 120KB Flash > 2KB RAM > 6-channel, 8-bit ADC	www.freescale.com[Note]
Note: Search on the listed part number.		

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Design Challenges

As the complexity and functionality of electronic systems continues to grow, demands for the designer to reduce cycle time and system cost are increasing. Finding an MCU that minimizes the overall cost of the system, while still fulfilling the system specifications, is one of the main challenges faced by most designers today. Freescale Semiconductor's 8- and 16-bit MCUs provide designers with the flexibility and reliability needed to get their designs into production quickly and efficiently.

Freescale Semiconductor Solution

Freescale Semiconductor's LCD monitor design is based around an 68HC908LD64 8-bit MCU (page 2), which features 60KB Flash memory and a USB interface. The most recent trend in LCD display design is the digital video interface (DVI). Freescale Semiconductor plans to broaden its portfolio with a highly integrated DVI-compliant LCD display control chip that integrates the DVI receiver with high bandwidth digital content protection (HDCP), scalar, and timing controller.

As the Flash industry leader, Freescale Semiconductor's Flash MCUs provide features and flexibility in new designs:

> In-application programming, reducing time-to-market

> Improved write/erase and data retention performance for Flash, allowing users to define their own preferred programs

> Faster Flash memory programming and erase times

> Flexible block protection and security

> Flash can be used to emulate EEPROM

> Reduced code obsolescence/scrapped product

> End-of-line customization for regional variations in consumer demands

> Standardized platforms, reducing product variability

Development Tools

Tool Type	Product Name	Vendor	Description
In-System Programming	PC Software and Printer Port Connection	Freescale Semiconductor	Contact your Freescale Semiconductor sales representative for more information.
C-Reference Code for LCD Monitor	LCD Monitor Demonstration Software on MC68HC908LD64	Freescale Semiconductor	Contact your Freescale Semiconductor sales representative for more information.
OSD Front/Menu Editor	Windows Application	Freescale Semiconductor	Contact your Freescale Semiconductor sales representative for more information.
Freescale Semiconductor Modular Evaluation System (MMEVS)	M68EML08LD64	Freescale Semiconductor	Contact your Freescale Semiconductor sales representative for more information.

Freescale Semiconductor Reference Designs

Part Number	Product Highlights	Additional Information
RD68HC908USB	**Universal Serial Bus (USB) Based Sensor-Actuator Interface Reference Design** Universal Serial Bus is an industry standard communications protocol between computer peripherals. Widely used to connect peripherals such as printers and scanners, USB is also a standard used in measurement, control, and e-commerce; e.g., Smartcard readers and barcode scanners.	www.freescale.com[Note]

Note: Search on the listed part number.

Related Documentation

Document Number	Description
SG1006	Microcontrollers Product Selector Guide

Internet Web Site

URL	Description
www.ddwg.org	Digital Display Working Group—addresses the industry's requirements for digital connectivity specifications for high-performance PCs and digital displays.

Notes

Learn More: Contact the Technical Information Center at +1-800-521-6247 or +1-480-768-2130.

For more information about Freescale products, please visit **www.freescale.com**.

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