



8-bit Microcontrollers

MC9S08LG32 Family

Automotive value line 5 volt S08 core MCU with LCD driver

Overview

The MC9S08LG32 family microcontrollers offer enhanced EMI/EMC performance and an advanced LCD driver for value line automotive cluster applications of interest to emerging markets. Freescale provides an array of instrument cluster solutions for diverse cluster requirements from mopeds to luxury vehicles.

Our S08LG family includes five devices that offer a number of memory size, RAM and package options that scale from 48 to 80 pins. Each device offers two temperature range options of -40°C to +85°C and -40° to +105°C. The SO8LG family is ideal for value line cluster applications and other automotive applications with LCD display needs, such as HVAC controllers.

S08LG32 Block Diagram

1 x SPI	2 x 16 KB Dual Flash	WDG
1 x I ² C	2 KB RAM	12-bit, 16-ch. ADC
2 x SCI	ICE	BDM
RTC	ICS	6-ch. + 2-ch., 16-bit Timer 1-ch., 8-bit MTIM
GPIO	S08 CPU 20 MHz Bus	37 x 8/41 x 4 LCD
		80 LQFP 64 LQFP 48 LQFP

Applications

- Entry-level instrument clusters
- Automotive HVAC system
- Automotive audio system

Family Differences

Feature	MC9S08LG32	MC9S08LG32	MC9S08LG32	MC9S08LG16	MC9S08LG16
Package	80-pin LQFP	64-pin LQFP	48-pin LQFP	64-pin LQFP	48-pin LQFP
FLASH	32768 (Dual 16K Arrays)	32768 (Dual 16K Arrays)	32768 (Dual 16K Arrays)	18432 (Dual 16+2K Array)	18432 (Dual 16+2K Array)
RAM	1984 bytes	1984 bytes	1984 bytes	1984 bytes	1984 bytes
LCD	8 x 37 4 x 41	8 x 29 4 x 33	8 x 21 4 x 25	8 x 29 4 x 33	8 x 21 4 x 25
ADC	16-ch., 12-bit	12-ch., 12-bit	9-ch., 12-bit	12-ch., 12-bit	9-ch., 12-bit
IIC	Yes	Yes	yes	Yes	Yes
IRQ	Yes	Yes	yes	Yes	Yes
KBI	8 pin	8 pin	8 pin	8 pin	8 pin
SCI	2	2	2	2	2
SPI	Yes	Yes	yes	Yes	Yes
TPM	(2+6)-ch.	(2+6)-ch.	(2+6)-ch.	(2+6)-ch.	(2+6)-ch.
MTIM	Yes	Yes	Yes	Yes	Yes
RTC	Yes	Yes	Yes	Yes	Yes
GPIOs	69	53	39	53	39

Key Features

- Up to 40 MHz HCS08 CPU core
- Up to 32 KB on-chip dual flash
- Up to 2 KB on-chip RAM
- 8-bit modulo timer (MTIM) with configurable clock inputs
- Two serial communication interface (SCI) modules
- Up to 16-channel 12-bit resolution successive approximation analog-to-digital converter (ADC)
- One internal clock source (ICS): precision trimming of internal reference allows 0.2% resolution and 2% deviation over temperature and voltage
- One serial peripheral interface (SPI) module
- One inter-integrated circuit (I²C) module
- LCD driver, configurable up to 8 x 37 or 4 x 41. Active in lowest power mode. All LCD pins are multiplexed with GPIOs
- One 2-channel and one 6-channel timer/pulse-width modulator (TPM), which can drive stepper motors
- Real-time background debug mode (BDM) with ICE
- Up to 69 standard GPIOs

- Eight keyboard (KBI) and one IRQ interrupt with selectable polarity
- 8-bit real time counter (RTC) with low-power operation and wake up
- Two temperate range options: -40°C to +85°C and -40°C to +105°C

Enablement Tools

The MC9S08LG32 family leverages and expands on the extensive suite of hardware and software development tools available today for the S08 families. Cost effective MC9S08LG32 family demo boards are available now. CodeWarrior™ Development Tool Suite and a range of third-party development software support will also help for rapid application development.

Cluster reference design boards are also available. Please contact Freescale sales office in your region.

Hardware Development Selector Guide

Part Number	Description	Pricing*
DEMO9S08LG32	Demonstration board with soldered MC9S08LG32 in a 80 LQFP package	\$99

* Manufacturer's Suggested Resale Price

Learn More: For current information about Freescale products and documentation, please visit www.freescale.com/automotive.