Qorivva MPC560xS Family

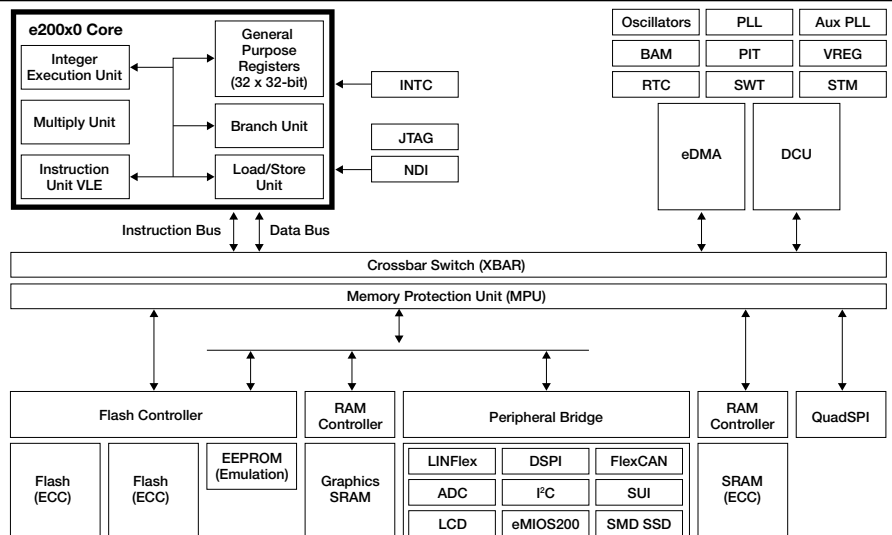## MCUs for instrument clusters

BUILT ON

Power™

Target Applications

- Instrument cluster
- Central display

Overview

The Qorivva MPC560xS family is the latest generation of 32-bit microcontrollers (MCUs) built on Power Architecture® technology that address color thin-film transistor (TFT) displays in automotive instrument cluster applications. The platform architecture includes an on-chip display control unit that directly drives the TFT display. In addition, system memory can be expanded via the on-chip serial peripheral interface should the need for more headroom arise. The Qorivva MPC560xS family offers you a cost-effective mid-level instrument cluster solution with the ability to scale your designs to fit your performance needs.

Qorivva MPC560xS Block Diagram

e200x0 Core		
Integer Execution Unit	General Purpose Registers (32 x 32-bit)	
Multiply Unit	Branch Unit	
Instruction Unit VLE	Load/Store Unit	

INTC

JTAG

NDI

Oscillators	PLL	Aux PLL
BAM	PIT	VREG
RTC	SWT	STM

eDMA | DCU

Instruction Bus | Data Bus

Crossbar Switch (XBAR)

Memory Protection Unit (MPU)

Flash Controller			RAM Controller	Peripheral Bridge			RAM Controller	QuadSPI
Flash (ECC)	Flash (ECC)	EEPROM (Emulation)	Graphics SRAM	LINFlex	DSPI	FlexCAN	SRAM (ECC)	
				ADC	I²C	SUI		
				LCD	eMIOS200	SMD SSD		

■ Freescale Technology

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Enablement Ecosystem

The Qorivva MPC560xS family of MCUs is supported by similar tools as Freescale's Qorivva MPC5500 products, offering a widespread, established network of tools and software vendors. The MPC560xS also features a high-performance Nexus 5001 debug interface.

Development Support

- Automotive evaluation boards (EVBs) featuring CAN, LIN interfaces and more
- Compilers
- Debuggers
- JTAG and Nexus 5001 interfaces

Software Support

- OSEK solutions from multiple third parties
- CAN and LIN drivers
- AUTOSAR package

Low-Power Design

- Designed for dynamic power management of core and peripherals
- Software-controlled clock gating of peripherals
- Multiple power domains to minimize leakage in low-power modes

Key Features

- e200 32-bit Book E-compliant CPU core complex built on Power Architecture technology
- Variable length encoding (VLE) instruction set enables significant code size reduction over conventional Book E-compliant code
- Up to 1 MB on-chip flash with flash controller
- Separate 4 x 16 KB flash block for EEPROM emulation
- Up to 48 KB on-chip SRAM with ECC
- Up to 160 KB on-chip graphics SRAM (no ECC)
- Driving TFT displays up to WVGA resolution parallel data interface (PDI) for digital video input
- Sound generation and playback using PWM channels and eDMA2x
- 40 x 4 LCD segment display driver
- Stepper motor drivers with stepper stall detect for up to six gauges

Selector Guide

Product Number	Temp. Ranges	Features	Package	Speed
MPC5606S	-40°C to +105°C	e200z0h core, up to 64 MHz, 1 MB flash, 4 x 16 KB EEPROM emulation block (ECC), 48 KB RAM, 160 KB graphics RAM, 12 entry MPU, 16-ch. eDMA	144 LQFP, 176 LQFP	64 MHz
MPC5604S	-40°C to +105°C	e200z0h core, up to 64 MHz, 512 KB flash, 4 x 16 KB EEPROM emulation block, 48 KB RAM, 12 entry MPU, 16-ch. eDMA	144 LQFP	64 MHz
MPC5602S	-40°C to +105°C	e200z0h core, up to 64 MHz, 256 KB flash, 4 x 16 KB EEPROM emulation block, 24 KB RAM, 12 entry MPU, 16-ch. eDMA	144 LQFP	64 MHz

Development Tools

Part Number	Description	Pricing*
MPC5606S-DEMO-V2	Instrument cluster reference design with LCD display	$299
XPC560SKIT176S	Kit includes JDP motherboard (XPC56XXMB), daughter card (XPC560SADPT176S) and P&E Wiggler	$497
XPC560SKIT144S	Kit includes JDP motherboard (XPC56XXMB), daughter card (XPC560SADPT144S) and P&E Wiggler	$497
XPC560SKIT208S	Kit includes JDP motherboard (XPC56XXMB), daughter card (XPC560SADPT208S) and P&E Wiggler	$497
XPC560SADPT176S	176 LQFP daughter card	$120
XPC560SADPT144S	144 LQFP daughter card	$120
XPC560SADPT208S	208 MAPBGA daughter card	$120
XPC56XXMB	JDP motherboard	$375

*Manufacturer Suggested Resale Price

Documentation

Freescale Document Number	Title	Description
MPC560xSPB	MPC560xS Microcontroller Product Brief	Device family summary

For more information, visit freescale.com/Qorivva