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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	Coldfire V2
Core Size	32-Bit Single-Core
Speed	66MHz
Connectivity	I²C, SPI, UART/USART, USB OTG
Peripherals	DMA, LVD, POR, PWM, WDT
Number of I/O	55
Program Memory Size	128KB (128K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	16K x 8
Voltage - Supply (Vcc/Vdd)	3V ~ 3.6V
Data Converters	A/D 8x12b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 85°C (TA)
Mounting Type	Surface Mount
Package / Case	81-LBGA
Supplier Device Package	81-MAPBGA (10x10)
Purchase URL	https://www.e-xfl.com/product-detail/nxp-semiconductors/mcf52211cvm66j

Figure 3 shows the pinout configuration for the 81 MAPBGA.

	1	2	3	4	5	6	7	8	9
A	V_{SS}	UTXD1	$\overline{\text{RSTI}}$	$\overline{\text{IRQ5}}$	$\overline{\text{IRQ3}}$	ALLPST	TDO	TMS	V_{SS}
B	$\overline{\text{URTS1}}$	URXD1	$\overline{\text{RSTO}}$	$\overline{\text{IRQ6}}$	$\overline{\text{IRQ2}}$	$\overline{\text{TRST}}$	TDI	V_{DD}PLL	EXTAL
C	$\overline{\text{UCTS0}}$	TEST	$\overline{\text{UCTS1}}$	$\overline{\text{IRQ7}}$	$\overline{\text{IRQ4}}$	$\overline{\text{IRQ1}}$	TCLK	V_{SS}PLL	XTAL
D	URXD0	UTXD0	$\overline{\text{URTS0}}$	V_{SS}	V_{DD}	V_{SS}	PWM7	GPT3	GPT2
E	SCL	SDA	V_{DD}	V_{DD}	V_{DD}	V_{DD}	V_{DD}	PWM5	GPT1
F	QSPI_CS3	QSPI_CS2	QSPI_DIN	V_{SS}	V_{DD}	V_{SS}	GPT0	V_{STBY}	AN4
G	QSPI_DOUT	QSPI_CLK	$\overline{\text{RCON}}$	DTIN1	CLKMOD0	AN2	AN3	AN5	AN6
H	QSPI_CS0	QSPI_CS1	DTIN3	DTIN0	CLKMOD1	AN1	V_{SSA}	V_{DDA}	AN7
J	V_{SS}	JTAG_EN	DTIN2	PWM3	PWM1	AN0	V_{RL}	V_{RH}	V_{SSA}

Figure 3. 81 MAPBGA Pin Assignments

Table 2 shows the pinout configuration for the 100 LQFP.

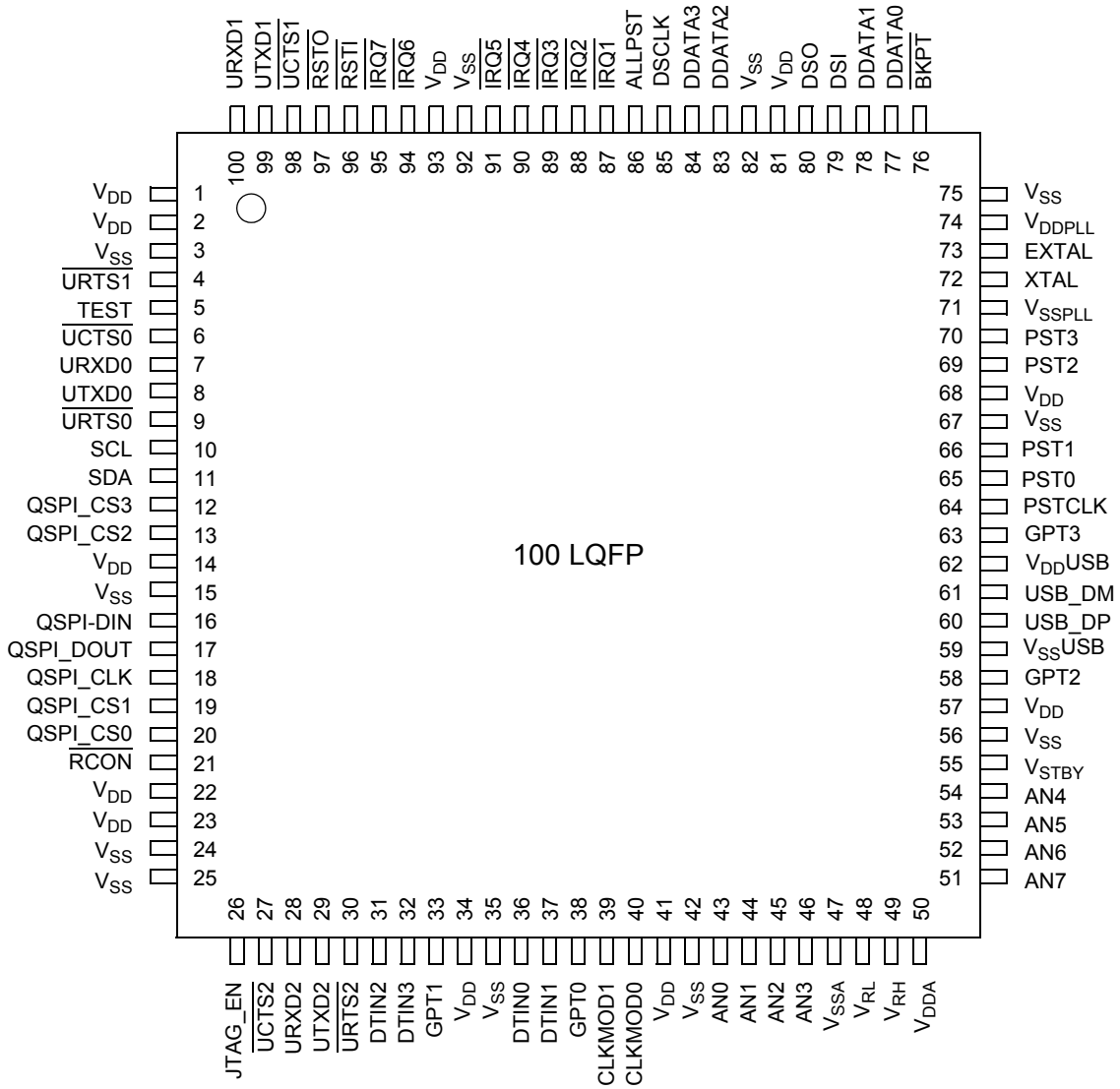

Figure 2. 100 LQFP Pin Assignments

Table 2. Orderable Part Number Summary (continued)

Freescale Part Number	Description	Speed (MHz)	Flash/SRAM (Kbytes)	Package	Temp range (°C)
MCF52211CVM66	MCF52211 Microcontroller, 2 UARTs	66	128 / 16	81 MAPBGA	-40 to +85
MCF52211CVM80	MCF52211 Microcontroller, 2 UARTs	80	128 / 16	81 MAPBGA	-40 to +85
MCF52212CAE50	MCF52212 Microcontroller, 2 UARTs	50	64 / 8	64 LQFP	-40 to +85
MCF52212AE50	MCF52212 Microcontroller, 2 UARTs	50	64 / 8	64 LQFP	0 to +70
MCF52213CAE50	MCF52213 Microcontroller, 2 UARTs	50	128 / 8	64 LQFP	-40 to +85
MCF52213AE50	MCF52213 Microcontroller, 2 UARTs	50	128 / 8	64 LQFP	0 to +70

1.2.20 Interrupt Controller (INTC)

The device has a single interrupt controller that supports up to 63 interrupt sources. There are 56 programmable sources, 49 of which are assigned to unique peripheral interrupt requests. The remaining seven sources are unassigned and may be used for software interrupt requests.

1.2.21 DMA Controller

The direct memory access (DMA) controller provides an efficient way to move blocks of data with minimal processor intervention. It has four channels that allow byte, word, longword, or 16-byte burst line transfers. These transfers are triggered by software explicitly setting a DCR*n*[START] bit or by the occurrence of certain UART or DMA timer events.

1.2.22 Reset

The reset controller determines the source of reset, asserts the appropriate reset signals to the system, and keeps track of what caused the last reset. There are seven sources of reset:

- External reset input
- Power-on reset (POR)
- Watchdog timer
- Phase locked-loop (PLL) loss of lock / loss of clock
- Software
- Low-voltage detector (LVD)
- JTAG

Control of the LVD and its associated reset and interrupt are managed by the reset controller. Other registers provide status flags indicating the last source of reset and a control bit for software assertion of the $\overline{\text{RSTO}}$ pin.

1.2.23 GPIO

Nearly all pins on the device have general purpose I/O capability and are grouped into 8-bit ports. Some ports do not use all eight bits. Each port has registers that configure, monitor, and control the port pin.

1.2.24 Part Numbers and Packaging

This product is RoHS-compliant. Refer to the product page at freescale.com or contact your sales office for up-to-date RoHS information.

Table 2. Orderable Part Number Summary

Freescale Part Number	Description	Speed (MHz)	Flash/SRAM (Kbytes)	Package	Temp range (°C)
MCF52210CAE66	MCF52210 Microcontroller, 2 UARTs	66	64 / 16	64 LQFP	-40 to +85
MCF52210CEP66	MCF52210 Microcontroller, 2 UARTs	66	64 / 16	64 QFN	-40 to +85
MCF52210CVM66	MCF52210 Microcontroller, 2 UARTs	66	64 / 16	81 MAPBGA	-40 to +85
MCF52210CVM80	MCF52210 Microcontroller, 2 UARTs	80	64 / 16	81 MAPBGA	-40 to +85
MCF52211CAE66	MCF52211 Microcontroller, 2 UARTs	66	128 / 16	64 LQFP	-40 to +85
MCF52211CAF80	MCF52211 Microcontroller, 3 UARTs	80	128 / 16	100 LQFP	-40 to +85
MCF52211CEP66	MCF52211 Microcontroller, 2 UARTs	66	128 / 16	64 QFN	-40 to +85